1. **APPENDIX A - BIOSOLIDS COMPOSTING FACILITY OPERATING AND MAINTENANCE MANUAL SPECIFICATION SECTION 14451 - MIXER**

Congratulations,

on the selection of your Supreme Feed Processor! We believe you have exercised excellent judgment in the purchase of the Supreme. It is our endeavor to show our gratitude by giving you the best quality and service you deserve.

Supreme International Limited has been in the agricultural equipment business since 1953. Our motto “Through service and specialization we grow” has guided us throughout the years.

We are proud of our Supreme Feed Processor and ask you to **READ THIS OPERATOR’S MANUAL BEFORE OPERATING THE MACHINE**. By fully understanding the operation of the Supreme you will get maximum benefits with minimum effort. Failure to follow our guidance in the use and care of your machine might compromise the extent of our warranty.

Respectfully yours,

Jeannette Guertin

President

SUPREME INTERNATIONAL LIMITED

Box 6450, 6010-47 Street
Wetaskiwin, Alberta Canada
T9A 2G2

Phone: (780) 352-6061
Fax: (780) 352-6056
Toll Free: 1-800-563-2038

*** Please contact your local dealer if you have any questions or call our office.*

Supreme International's Vision

The premier manufacturer of the highest quality equipment providing unmatched performance and reliability.

Supreme International's Mission

Supreme's mission is to efficiently manufacture vertical processing and feeding equipment that is unsurpassed in quality, performance and reliability. We will grow our markets, reputation and delivery of innovative products by providing the agricultural and environmental industries with premium equipment that enhances our customers' operations.

Two Locations to Serve You Better

Wetaskiwin, Alberta, Canada

Dodge City, Kansas, USA

Original Instructions (English)
The English version of this manual controls over any error in or conflicting interpretation of any translation.

TABLE OF CONTENTS

TABLE OF CONTENTS

SUPREME INTERNATIONAL LIMITED WARRANTY

Supreme International Processor Warranty Statement

Supreme International Limited offers a standard one (1) year parts and labor warranty on the complete processor unit, against defects in materials and workmanship under normal use when used and maintained in accordance with the operator's manual or instructions. The one (1) year warranty period begins at the date of original sale, or in the case of rent-to-own or lease programs, the original in-service date, or whichever occurs first.

In order for the one (1) year standard warranty to be in effect the Warranty Registration Form must be completed, signed and submitted to Supreme International at time of sale, or in cases of rent to own, at time of original in-service date.

For a Dealer/Supreme Demo unit the standard one (1) year warranty begins on date of invoice to the dealer.

Excluded items from the one (1) year standard warranty:
Tires & batteries - Supreme International offers a limited thirty (30) day warranty against installation defects. Tires and batteries are covered under direct manufacturer warranty.

Scale and scale components - Supreme International offers a limited thirty (30) day warranty against installation defects. All scales and scale components are covered under a direct manufacturer warranty.

Items under normal wear and tear, such as exterior finish, replacement parts - such as cutting knives, chains, oil, brake pads and drums (or rotors) - and conveyor pans, liners, walls etc. or other replacement parts. Wear after damage is done is also not covered under warranty.

Truck cabs, chassis, engine, etc. are not covered under this warranty. These may be covered under the truck manufacturer's warranty, where applicable.

In addition to the standard one (1) year warranty, Supreme International also provides a 100% parts and labor warranty on the major components against defects in quality and workmanship for an additional two (2) years (three (3) years from original sale or in-service date) under normal use when used and maintained in accordance with the operator's manual or instructions. The major components are planetary gear sets, 90 degree gearboxes, through-shaft “T” gearboxes, fluid drive, hydraulic pumps and hydraulic motors.

In order for the three (3) year major component warranty to be in effect:
the Warranty Registration Form must be completed, signed and submitted to Supreme International at time of sale, or in cases of rent to own, at time of original in-service date.

For a Dealer/Supreme Demo unit the three (3) year major component coverage begins on date of invoice to the dealer.

During the warranty period, Supreme International Limited, will at its discretion, repair or replace defective parts which are returned by prepaid freight, as directed, to either:

Supreme International Limited, at the factory in Wetaskiwin, AB, Canada or
Supreme US Inc., at the factory in Dodge City, KS, USA or
to the manufacturer or supplier at the address supplied by Supreme International's warranty department.

The remedy of repair or replacement of a defective part during the warranty period specified shall be the customer's exclusive remedy. Neither Supreme International Ltd., any company affiliated with Supreme International or the selling dealer shall be liable for loss of the use of the product, loss of time, inconvenience, commercial loss, or consequential damages.

Supreme International Limited has the exclusive rights to make changes, improvements, or modification in specifications without obligation to install the same on those products previously manufactured.

Warranty Terms and Conditions

A. Supreme International Limited will warrant the repair or replacement of defective parts by an Authorized Supreme Dealer and it will be done free of charge for both parts and labor (following the Supreme Warranty Flat Rate Guide) providing the replacement parts are approved Supreme parts.

B. The Selling Supreme Dealer must perform the repairs or the replacements. If the Selling Supreme Dealer is not available, any other authorized Supreme Dealer may perform the repair or replacement.

C. It is the responsibility of the Selling Dealer to review the warranty provisions with the User prior to the retail sale and ensure compliance with Supreme International Limited policy requirements.

D. The Selling Dealer must receive written notice of any defect within thirty (30) days from the time the Buyer first has knowledge.

E. All warranty will be null and void unless the repairs and/or the replacements are done by an authorized Supreme Dealer.

F. Warranty will be null and void if the unit has been altered or repaired in a manner that, in the opinion of Supreme International Limited, affects the performance, stability, or reliability of the unit.

G. Warranty will be null and void if the unit has been used under operating conditions for which it was not designed including abuse, misuse, negligence of proper maintenance or any other negligence, fire or accident. This also includes fluid contamination and/or damage to the major components due to fluid contamination and/or abuse/misuse.

H. Warranty will not apply if parts, alterations, or attachments other than those made or marketed by Supreme International Limited have been used in connection with the unit, and in the opinion of Supreme International Limited has affected the performance, stability or reliability of the unit.

I. Supreme International Limited will not be held responsible for costs related to any travel time or delivery of the unit to or from a Dealer's service shop for repair.

J. Supreme International Limited will not be held responsible for units sold beyond the specified coverage period.

K. Supreme International Limited will not be held responsible for any damage caused by environment, such as exposure to abrasive/corrosive materials or weather.

L. Supreme International Limited will not pay any out of pocket expenses for damages resulting in down time requiring the Buyer to rent other equipment.

M. Supreme International Limited will not be responsible for any damage or repairs to the tractor/truck used to operate the unit.

N. All Warranty will be null and void on Feed Processors or Feedlot Series units that are sold to environmental or compost operations or processors used for other purposes than intended at time of sale.

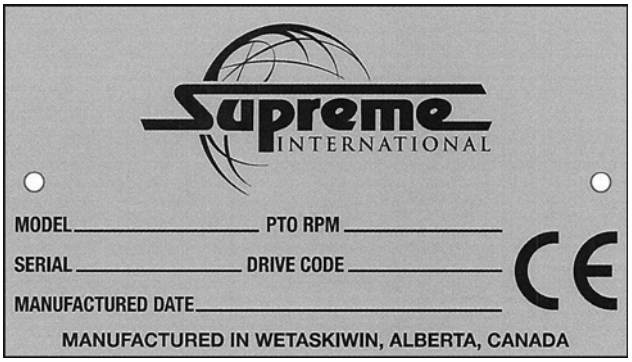
INTRODUCTION

General Information

This manual is intended to be a permanent part of your Supreme Feed Processor and should remain so at all times. This manual has been written and designed to provide you with safe operating and maintenance guidelines. Please familiarize yourself with this manual to ensure years of safe and trouble-free use.

Model and Serial Number Location

The model and serial number of your Supreme Feed Processor are located on the identification plate. This plate is located on the left hand front corner of the unit. **Please refer to this identification plate prior to parts and service inquiries.**



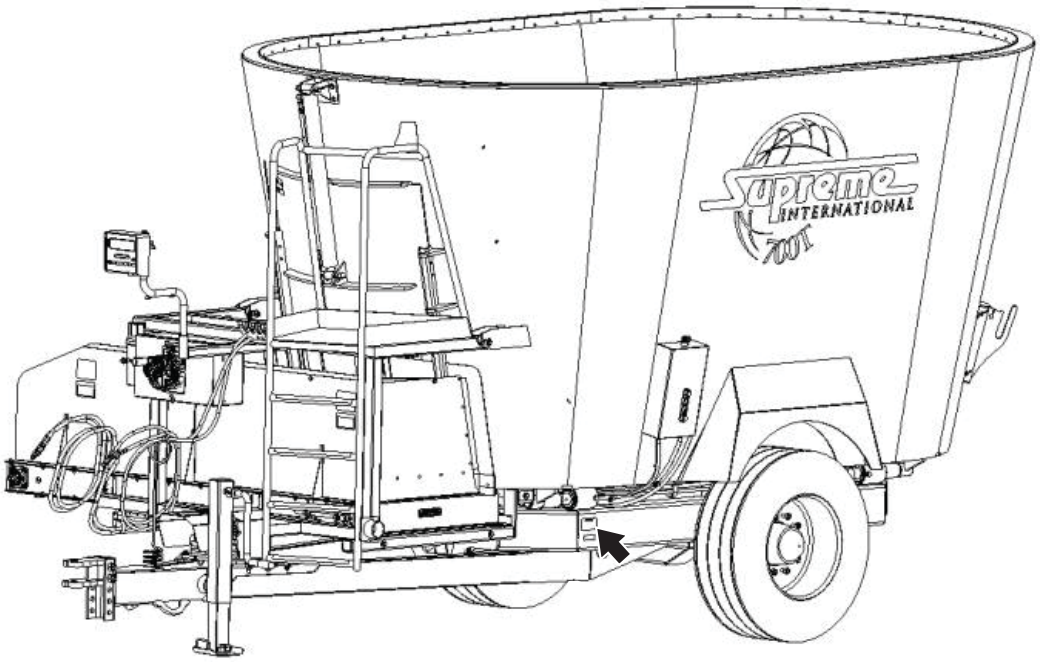
Your Supreme Feed Processor

The operation of your Supreme Feed Processor varies greatly with climatic conditions and various feed components. There are basic rules and steps required to obtain the desired processed feed results. The operation of the Supreme Feed Processor is very easy, providing a few basic, but important instructions are followed.

A new machine will require an initial break-in period. Please refer to the *INITIAL BREAK-IN* section of this manual for proper break-in procedures. In addition to the procedures, a new machine may require several loads for the tub walls and auger flighting to become polished. Until this is accomplished, you may experience spillage, uneven movement of feed or increased horsepower requirements. Loads may have to be downsized until the unit is adequately polished.

The Supreme Feed Processor is designed to quickly and efficiently process a wide variety of feedstuffs. By blending these feedstuffs with other rationed components, you will be able to produce an unmatched quality of feed for your livestock.

It is important to remember that varying conditions and operations may require some experimentation with the procedures described.



Declaration of Conformity

Declaration of Conformity

(according to ISO/IEC Guide 22 and EN 45014)

Manufacturer's Name: Supreme International Limited

Manufacturer's Address: 6010- 47 Street, Wetaskiwin, AB, CANADA

declares, that the product:

Product Name: Pull Type Feed Processors

Model Number(s): 300, 400, 500, 600, 500T, 600T, 700T, 800T, 900T, 1000T, 1200T, 1400T, 1600T, Segue 790, 1070, 2310, 2520, 3570, 3820, 3840

to which this declaration relates, **meets the essential health and safety requirements** and is in conformity with the relevant EU Directives listed below:

EU Machinery Directive 2006/42/EC

using the relevant section of the following EU standards and other normative documents:

Safety**:**

EN ISO 14121-1:2007
EN ISO 12100-2/A1:2009
EN ISO 4254-1:2005

Wetaskiwin, AB, Canada
(Place of issue)

October 22, 2012
(date of issue)

Jeannette Guertin
(Name and signature or equivalent marking of authorized person)

NOTE: *This Declaration of Conformity was in effect at the time of publishing and is subject to change without notice. Please check with your Supreme Authorized Distributor to obtain the current Declaration of Conformity, if necessary.*

SAFETY

For Your Safety

The safety messages in this manual are the primary methods used to call your attention to the potential hazards associated with the feed processor. Follow all the precautions listed throughout this manual and on the equipment safety labels while moving equipment, operating the equipment, cleaning components, and during any maintenance or troubleshooting procedure.

Keep the safety labels from becoming dirty, worn or illegible. Replace them when lost or damaged.

The safety information given in this manual does not replace local safety codes, environmental regulations, insurance requirements or federal, state and local laws. Personnel operating the feed processor must be aware of these regulations.

Misuse of Equipment

Improper use of a Supreme mixer could cause mechanical damages and/or human injury. Please read and understand the operator's manual completely before using. If you should have any operational questions please contact Supreme International at 1-800-563-2038.

Safety Alert Symbols

Safety symbols, signal words, statements, and symbols are used in this manual and on the feed processor to identify and alert you of potential hazards where personal safety precautions are required.

The safety alert symbol is used to alert you of potential personal injury hazards. Carefully read the safety message associated with safety symbol and follow any instructions provided to ensure your safety.

Safety signal words are used to alert you of potential personal injury hazards. Carefully read the safety message associated with safety signal word and follow any instructions provided to ensure your safety.

Safety statements are used to explain and inform you of potential personal injury hazards and provide precautionary instructions.

Signal Words

⚠ DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury, and/or property and equipment damage.

NOTICE

Provides useful information to the operator. It could have to do with the care of equipment or using it more efficiently.

Read and Understand Procedures

⚠ WARNING

Do not operate this equipment until you have carefully read and understand the safety and operation procedures in this manual and all other equipment manufacturers' manuals that will be used with it.

Do not allow inexperienced or unqualified personnel to operate the feed processor. Have a thorough understanding of the equipment before operating. Keep all bystanders, children and pets away while in operation. Always use common sense while operating the feed processor.

Supreme International cannot anticipate every possible circumstance that might involve a potential hazard. You must satisfy yourself that a technique is safe for you and others. You should also ensure that the equipment will not be damaged or made unsafe by the operation or maintenance procedures you perform.

Follow all applicable federal, state, local and industry-specific regulations.

Safety Precautions

There is no substitute for common sense and following careful operation and maintenance procedures. Improper practices and carelessness can cause personal injury or even death.

The following safety precautions and guidelines must be followed in addition to the specific safety precautions listed throughout this manual and on the feed processor.

To ensure your safety, the safety of others and the safe operation of the feed processor, read, follow and practice the following:

⚠ WARNING

The safety precautions that follow have WARNING level hazards.

Exposure Hazard

ALWAYS wear the appropriate personal protective equipment as required by the task at hand, including but not limited to:

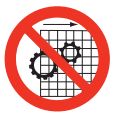
- **Relatively tight and belted clothing**
- **Safety gloves**
- **Safety shoes/boots**
- **Safety eye glasses/goggles/shields**
- **Hearing protection, ear plugs**
- **Head protection, hard hats**

ALWAYS read and comply with safety labels on all chemical containers.

Entanglement / Sever Hazard

- **NEVER wear jewelry, watches, unbuttoned cuffs, ties or loose-fitting clothing and ALWAYS tie long hair back when working near moving/rotating parts.**
- **Never reach into the tub to clean twine, feed, debris or any other object when the feed processor is in operation.**

- **ALWAYS keep hands, feet, hair and clothing away from all moving/rotating parts.**



- **NEVER operate the feed processor without the guards and safety shields in place.**
- **Never allow anyone to position themselves near or at the top of the feed processor. The rotating vertical screw or rotor from cutter will cut or sever.**

⚠ WARNING

Crush Hazard

Never reach in, around, or over the discharge door(s). Door(s) could quickly open or close during operation.

Never allow riders on the ladder or the platform while the feed processor is being towed. Always ascend and descend the ladder while facing it.

Alcohol and Drug Hazard

NEVER operate or service the feed processor while under the influence of alcohol, awareness-altering drugs or medications that would affect your ability to operate or maintain the system safely.

Entanglement Hazard

NEVER leave the key in the key switch when you are servicing the machine. Someone may accidentally start it and not realize you are servicing it.

Sudden Movement Hazard

ALWAYS stop the engine before beginning service.

Piercing Hazard

- NEVER check for hydraulic leaks with bare hands.
- Hydraulic fluid is under extreme pressure and pin-hole leaks in hoses or other components can inject fluid through skin tissue upon contact.

ALWAYS turn off the engine when moving or working on hydraulic hoses or any other hydraulic component.

ALWAYS wear protective clothing and eye protection when working near high-pressure hydraulic components.

⚠ CAUTION

The safety messages that follow have CAUTION level hazards.

Flying Object Hazard

ALWAYS wear eye protection when servicing the machine or when using compressed air or high-pressure water. Dust, flying debris, compressed air, pressurized water or steam may injure your eyes.

If a problem occurs during operation of the feed processor, always shut off the equipment and disconnect the PTO shaft before performing any repairs. Do not operate the equipment until all repairs have been properly completed.

⚠ CAUTION

The following safety messages pertain to the hazards when transporting the feed processor.

- Do not exceed 15 kph (10 mph) when transporting over flat, smooth dry areas. Reduce speed when on rocky, wet or soft terrain.
- Reduce speed when transporting when the hopper is full
- Use caution when on side slopes and when turning.
- Avoid operating the feed processor when making sharp turns or on rough, uneven ground.
- When driving on slopes or up and down inclines, keep the tractor transmission in the lowest gear possible.
- When unhitching the feed processor, park on flat level ground and block the tires.
- If you are towing the feed processor on a public road, a light kit must be installed. Check with your local ordinances for the proper requirements.

⚠ CAUTION

- **Make sure the SMV (Slow Moving Vehicle) sign and reflectors are clean and properly placed and maintained so they can be clearly seen by other vehicles.**
- **Whenever towing any equipment, safety chains must be used. The chains' maximum strength must be equal to or greater than the gross weight of the equipment being towed.**

Safety Labels and Decals

The safety labels and decals are attached to the feed processor. They must be checked regularly. If the safety labels and decals are unreadable or missing, they must be replaced.

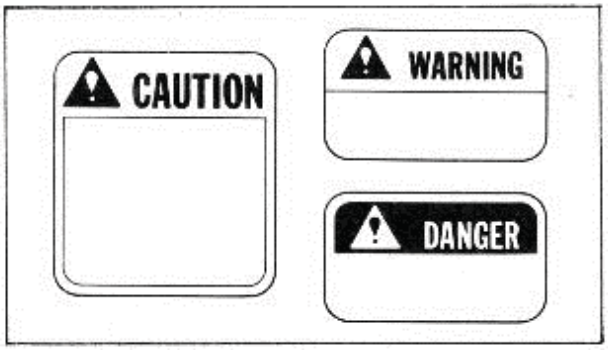


Figure 1

- Make sure anyone who operates the feed processor understands all the information, warning, caution and danger safety decals.
- Keep all the decals clean so they are readable. Do not cover up or obstruct any of the decals from view.
- Make sure all the safety decals are installed and in good condition. Replace any missing or unreadable safety decals. Do not operate the feed processor until the decals are replaced.
- Safety decals can be ordered through a dealer or directly from Supreme International Limited. The decal part number is located in the lower right hand corner of the decal. The part numbers can also be found in the parts catalog under their corresponding component page.

Figure 2

- When replacing decals make sure the surface is clean and dry. Use a clean cloth to remove any trapped air bubbles from under the decal for good adhesion. Decals should be applied in temperatures of 50°F (10°C) or warmer.

Safety Labels and Decals Locations

The following safety labels and decals are attached to the Feed Processor. They must be checked regularly. If the safety labels and decals are unreadable or missing, they must be replaced before operating the Feed Processor.

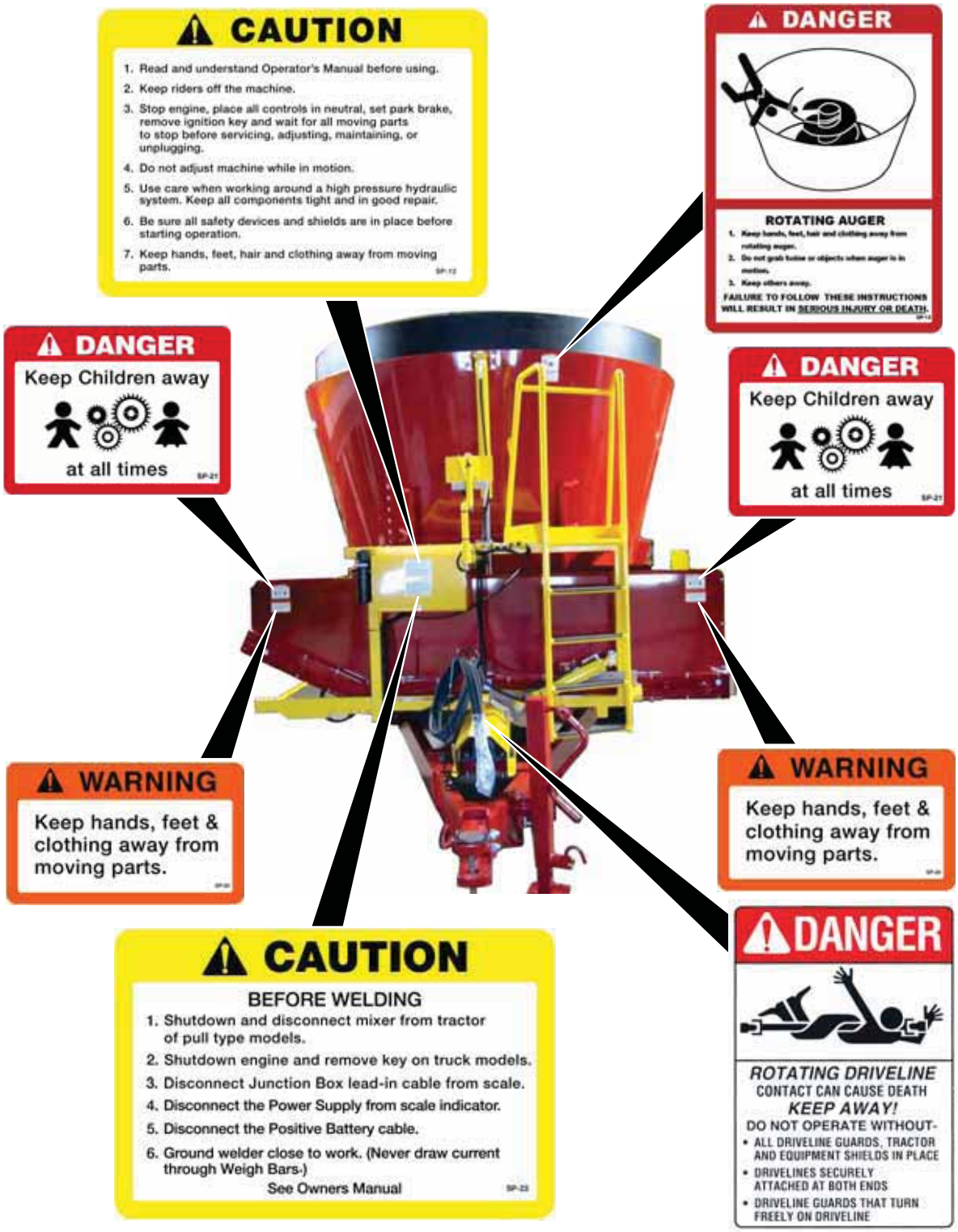


Figure 3

Table 1. Safety Labels

PART NUMBER	SIGNAL WORD	DESCRIPTION
SP-12	CAUTION	Read and understand Operator's Manual before using. Keep riders off the machine. Stop engine, place all controls in neutral, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, maintaining, or unplugging. Do not adjust machine while in motion. Use care when working around a high pressure hydraulic system. Keep all components tight and in good repair. Be sure all safety devices and shields are in place before starting operation. Keep hands, feet, hair and clothing away from moving parts.
SP-13	DANGER	Rotating Auger. Keep hands, feet, hair and clothing away from rotating auger. Do not grab twine or objects when auger is in motion. Keep others away.
SP-20	WARNING	Keep hands, feet and clothing away from moving parts.
SP-21	DANGER	Keep children away at all times.
SP-23	CAUTION	Before Welding. Shutdown and disconnect mixer from tractor of pull type models. Shutdown engine and remove key on truck models. Disconnect Junction Box lead-in cable from scale. Disconnect the Power Supply from scale indicator. Disconnect the Positive Battery cable. Ground welder close to work. (Never draw current through Weigh Bars.) See Owner's Manual.
	DANGER	Rotating Driveline. Contact can cause death! Keep Away! Do not operate without all driveline guards, tractor and equipment shields in place, drivelines securely attached at both ends and driveline guards that turn freely on driveline.

MIXER SETUP AND CONFIGURATION

PTO and Hitch

The PTO configurations found on all Supreme mixers are designed and manufactured to American Society of Agricultural and Biological Engineers (ASABE) standards.

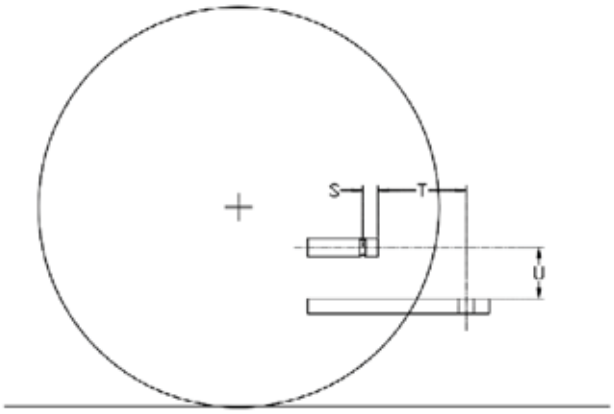
All units can be geared for either 540 RPM or 1000 RPM in the following configurations.

1-3/8, 6 spline for 540 RPM
1-3/8, 21 spline for 1000 RPM
1-3/4, 20 spline for 1000 RPM

Please review *Figure 1* and *Table 2* and ensure your PTO and Hitch configuration match accordingly.

Tractor Hitch to PTO Guidelines

NOTE: *The following dimensions are in accordance with ASABE manufacturing standards.*



Tractor Power Take-Off and Drawbar
Figure 1

Table 2. Tractor Power Take-Off and Drawbar

	Tractor PTO Category		
	1	**2**	**3**
RPM	540	1000	1000
PTO shaft size and number of splines	1-3/8" - z6	1-3/8" - z21	1-3/4" - z20
PTO Horsepower	20 - 147	60 - 147	147<
Distance of groove to end of tractor PTO shaft (S)	1.5"	1.0"	1.5"
Distance from end of tractor PTO to tractor hitch pin (T)	14"	16"	20"
Distance from PTO centerline to top of tractor drawbar (U)	6"	10"	11"

Clevis

Adjust hitch clevis to ensure the mixer operates in a level position when attaching the Supreme Feed Processor to its tractor.

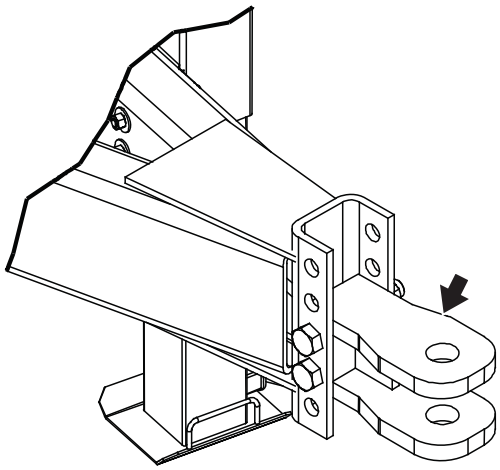


Figure 2

Horsepower Requirements

The horsepower requirements for your model are based on normal dairy and beef rations. These requirements will vary depending on the type of ration being processed. One must also consider adequate horsepower when transporting loads over difficult ground conditions.

See Pull-Type Models on page 51 for the horsepower requirements.

It is recommended to avoid stopping the auger(s) when completely loaded, if at all possible. When a loaded tub is left sitting for long periods of time, or has to travel over rough terrain for unloading purposes, the mixed ration will settle in the tub and on the auger flighting. The horsepower requirements to restart the unit will be much higher and possibly cause more stress on the tractor PTO clutch.

NOTE: *If you have a fluid drive, please read operation details in Fluid-Drive System on page 32.*

Hydraulic System Requirements

The tractor hydraulic system should supply a minimum of 15 GPM at 2000 PSI (57 LPM at 13.78 mPa) to adequately power the hydraulic components of the Feed Processor.

A tractor with two hydraulic outlet sets will be required to operate your Supreme Feed Processor. One set will operate the discharge door while the second will operate the conveyor orbit motor. If the tractor is not equipped with such, a manual or electric selector valve can be ordered with the unit or installed later as required.

Electrical System Requirements

All Supreme Feed Processors equipped with scale displays operate via a 12 VDC marine grade battery located in the battery box on the platform. This battery is charged by plugging in the provided 7-pin electrical plug-in into your tractor's standard 7-pin accessory outlet.

Supreme Feed Processors equipped with light kits utilize the same 7-pin electrical plug-in for power.

Augers

The augers in models 900T, 1000T, 1200T, 1400T and 1600T Supreme Feed Processors rotate between 32 and 34 RPM at the rated tractor PTO RPM.

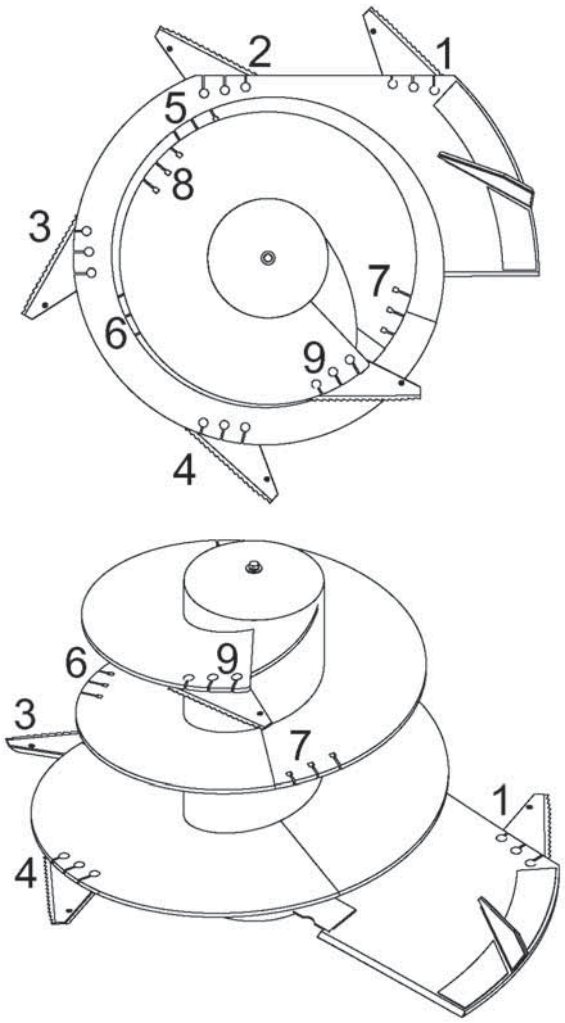
The augers in models 300, 400, 500, 600, 500T, 600T, 700T and 800T rotate at 38 – 40 RPM at the rated tractor PTO RPM.

Cutting Knives and Positions

The Supreme Feed Processor comes equipped with five cutting knives per auger (four per auger on Model 300, 400 and 500T). This is the standard setup.

All augers come with several extra pre-cut positions in the auger flighting to enable the addition of knife assemblies and/or the re-location of the existing knife assemblies. Adding, removing and/or changing the existing knife locations may be required to achieve the desired results. Models 300, 400, 500T and 600T have six pre-cut positions. The 700T has seven pre-cut knife positions and all other models have nine.

Starting from the bottom of the auger, closest to the mixer floor, a knife and backing plate assembly will be bolted to the auger flighting in each of the first four positions. The fifth knife and backing plate assembly will be bolted to the very top, or last position, on the auger *(see Figure 3)*.



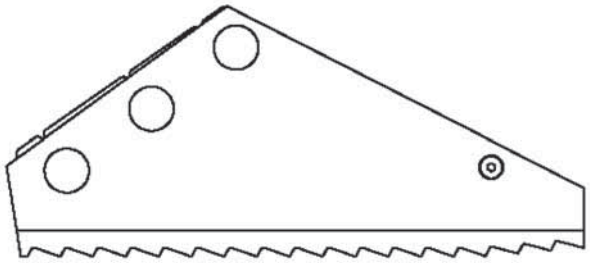
Knife Position Layout

Figure 3

It is important to consider that an increase in horsepower draw may be experienced when adding knife assemblies to the auger(s). Please *see TROUBLESHOOTING on page 49*, when regarding auger and knife setups.

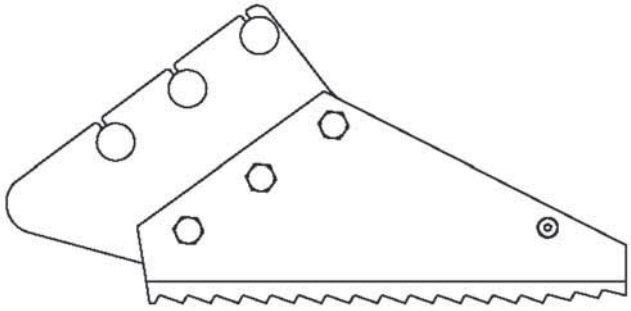
Extended Backing Plates

Units without the optional Second Cutter will not be equipped with extended backing plates; however, in certain applications the addition of extended backing plates can improve the performance of the mixer.



Standard Backing Plate - Knife Assembly

Figure 4



Extended Backing Plate - Knife Assembly

Figure 5

High Roughage Rations

Rations of 50% or higher amounts of dry, long stem roughage may be difficult to deliver out of the discharge door. In this instance the addition of one or possibly two backing plates, (also known as knife extenders) on the auger will aid in the delivery of the ration. In most cases positioning the knife extenders in the third or fourth position (or both) will improve delivery. The knife extenders help to push material out of the discharge door and ensure the accurate and even delivery of feed.

Hard Core Bales

Operations using round bales that are tightly wound or of poor quality may experience difficulty with breaking up and/or processing the cores of these bales. In most cases the addition of an extra knife assembly to the auger(s) will quickly rectify this problem. With the most difficult of bales it may be necessary to add a knife extender, towards the top of the auger. This will allow the knife to cut further into the core of the bale, thereby reducing the processing time.

Side Door Discharge Units

(with or without conveyors)

The sidewalls on most models are more perpendicular to the tub floor than the front and end walls. Standard units with front center doors have angled or sloped front and end walls. As feed is sliding down the tub walls with the discharge door open, gravity helps discharge the feed. With side door discharges the feed needs to be pushed out of the opening by the auger. Again, adding one or two knife extenders to the auger(s) on units with side delivery will help to push more material out of the discharge door. This will help to even out the delivery of feed onto the conveyor or drop chute.

⚠ CAUTION

Never place a extended backing plate on the very top knife position of any auger. This will cause undue stress on the upturned portion of the top flighting. The continuous loading of large, whole, round and square bales may cause the top portion of the flighting to bend down, greatly reducing the quality of mix in the ration.

NOTE: *It is important to consider that adding extended backing plates* ***will*** *cause an increase in horsepower requirements.*

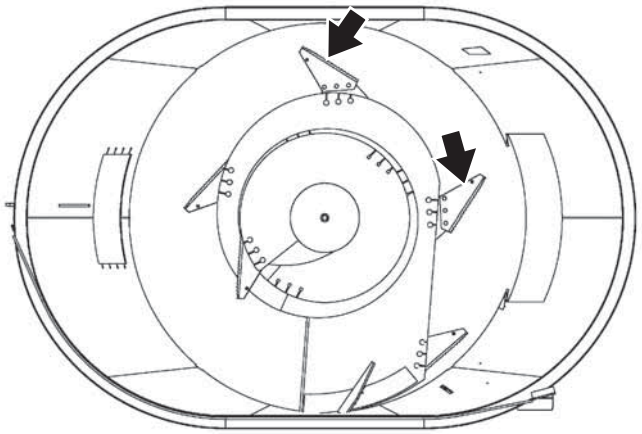


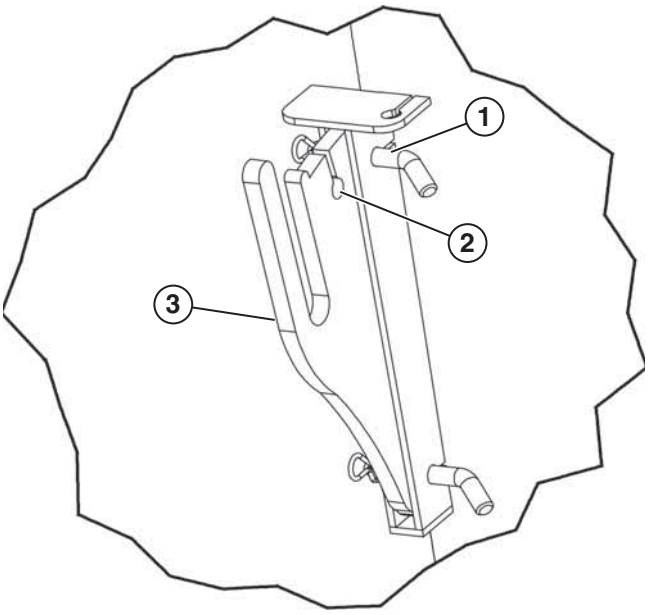
Figure 6

Restrictor Plates

The restrictor plates are the yellow plates that are positioned at the front and back corners of the tub. The function of the restrictor plate is to slow down the circular movement of material around the tub. This is accomplished by moving the restrictor plate into position #2. This extends the restrictor plate into the mixing chamber, thereby regulating the cut length of the forage.

Standard restrictor plate settings are as follows:

Lock both restrictor plates into position #1. In this position the restrictor plates are retracted, or in the neutral position.



1 – Position #1
2 – Position #2
3 – Restrictor Plate

Figure 7

This setting can be left unchanged during the entire cutting/mixing process. With the restrictor plates in this position the cut length of the forage will be approximately 4 – 6 in. (102 – 152 mm).

NOTE: *This standard restrictor plate setting is recommended for alfalfa and most other forages listed in MIXER OPERATION on page 22.*

We recommend moving one or both restrictor plates to position #2 (the extended position), if the forages are more difficult to process. When moving one or both restrictor plates into position #2, one may experience a buildup or bridging of forage in the corners of the tub where the restrictor plates are located.

We suggest using the restrictor plates in position #2 only when processing the most difficult of forages.

If the unit is equipped with a second cutter, *see Second Cutter on page 38* for further details.

Transporting and Lifting

If the mixer must be lifted, always lift from the frame. NEVER lift from the tub or weighbars. When transporting the mixer on a truck or trailer, use the tie-down hooks which are located at the front and rear of the mixer frame.

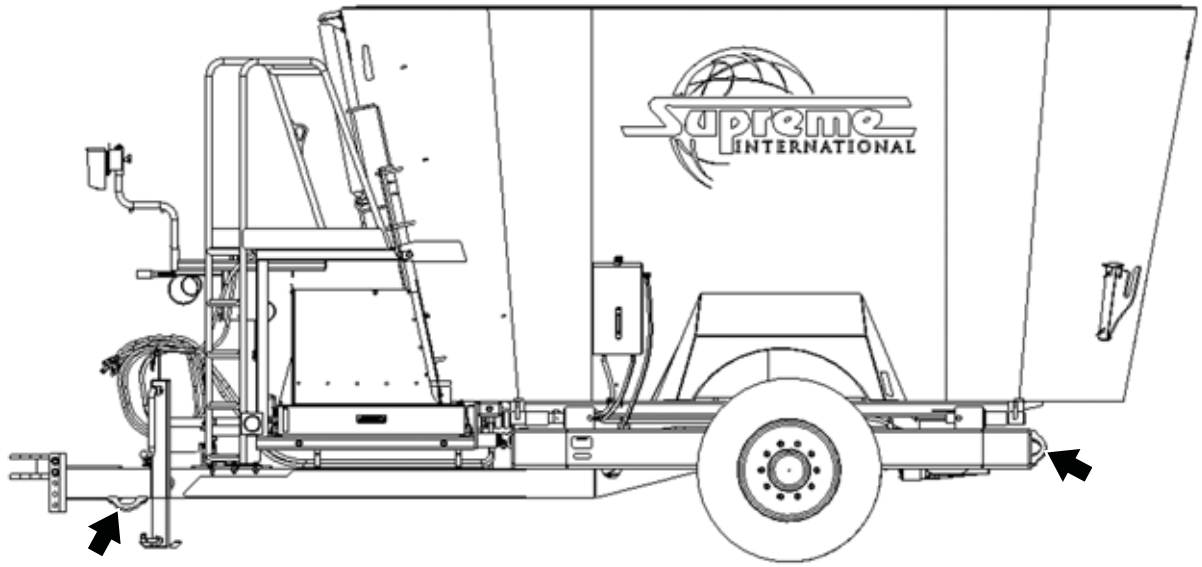


Figure 8

Protective Gear to Wear

When operating the unit it is recommended that operators not wear loose-fitting clothing. Loose-fitting clothing can easily get caught in moving parts and cause serious injury.

When inspecting the mixing action from the viewing platform it is recommended that safety glasses be worn. Wearing safety glasses will reduce the risk of the operator getting dust or any feed particles into his or her eyes.

Exposure to loud noises can damage hearing. The operator should wear suitable hearing protection such as earplugs or earmuffs to protect against loud noises and hearing loss.

When performing any maintenance on the mixer it is recommended that proper gloves be worn to reduce the risk of cuts and scrapes. Any time when the operator is handling mixer knives, work gloves should be worn.

Starting / Stopping Equipment

Starting and stopping your Supreme Pull-Type mixer is controlled by engaging and disengaging the tractor PTO.

- To start the mixer's augers, engage the tractor PTO.
- To stop the mixer's augers, disengage the tractor PTO.

- To operator the mixer's auxiliary functions, turn the tractor's auxiliary switches on or off.

Emergency Stop

The Supreme Pull-Type mixer has no emergency stop as it is powered by another piece of equipment. Operators must refer to the emergency stop procedure in the tractor's operator's manual before using.

Equipment Protection Devices

Supreme mixers are equipped with driveline guards to protect operators from the moving drive shafts of the mixer.

Optional tail light kits are available on Supreme Pull-Type mixers. Always use flashing warning lights and turn signals when driving on public roads.

Connecting the Mixer to the Tractor

Always read the tractor's operator manual and become familiar with the tractor controls that will control the mixer.

PTO Drive Shaft Connection

With the tractor engine shut off, align the tractor PTO stub shaft with the mixer's PTO shaft. Pull the locking collar back on the end of the PTO shaft while sliding it onto the PTO stub shaft of the tractor. Release the locking collar to ensure that it is locked.

Electrical Connections

Supreme Pull-Type mixers are equipped with a wiring harness that is used for charging the scale system battery, and the optional tail light kit. This wiring harness has a standard 7-pole plug on the end which can be plugged into the tractors 7 pole socket.

Hydraulic Line Connections

Supreme Pull-Type mixers are equipped with hydraulic hoses with pioneer-style hose ends. In order to have all the mixer's auxiliary functions operational, these hose ends will need to be connected to the tractor's hydraulic ports at the rear of the tractor. Please refer to the tractor's operator's manual on connecting hydraulic lines to the tractor's hydraulic ports.

Equipment Inspection Before Startup

See APPENDIX B Maintenance Schedule on page 52.

Functional Checks Before Operating

See APPENDIX B Maintenance Schedule on page 52.

MIXER OPERATION

Categories of Hay

We differentiate hay into two categories. Alfalfa baled hay, and the other being mixed grasses, wheat hay, slough hay, coastal grasses, Bermuda grasses, green feed, silage bales and any grasses not mentioned above.

Loading Sequence and Mixing

⚠ WARNING

Before loading your Supreme mixer, always ensure the mixer is stabilized on flat, level ground.

The sequential loading of your Supreme Feed Processor is crucial to achieving desirable mixing results. It is an absolute must that dry forages be loaded and coarsely cut first. Other heavier ingredients must always follow dry forages. Ensure that the mixer is being loaded on level ground. Our recommended sequence as follows:

1. Ensure the tractor is running approximately 3/4 of the rated PTO speed.
2. Load and coarsely cut all dry forages first.

NOTICE

Do not load any long stem hay at or near the end of the loading sequence. This hay will have a tendency to "float" and may not completely work into the ration.

Small and large square bales will require very little break up and initial cutting time. Large round bales of Bermuda or Coastal hay may require a longer initial cutting time to achieve a coarse cut. Be careful not to overprocess these materials before adding other ingredients to the ration.

3. Load ingredients such as silage and haylage.

   The forage will continue to be cut when heavier ingredients and commodities are added.

Figure 9

4. Load minerals, proteins and other small quantity ingredients.
5. Load grain and commodities.

6. Load all liquids. Fats, water and other liquids should be loaded into the center of the tub.

Load the rations as quickly as possible. Final mix times after completely loaded will vary between 2 and 7 minutes.

High roughage (50% or more) rations may require the PTO speed to be reduced if tractor horsepower is sufficient. This reduction of PTO speed will allow the roughage to move from top to bottom of the mix and decrease any possibilities of spillage.

Restrictor plate settings, PTO speed, final mix time and loading sequence may need to be altered to achieve the desired result.

Unloading and Delivery

To begin the unloading and delivery process:

1. Ensure that the tractor and mixer are in a straight line. This will reduce any undue stress on the PTO shaft.
2. Extend the conveyor to the side that you will be feeding off of.
3. Open the discharge door approximately 3/4 open and engage PTO, if it has been stopped.
4. Engage the conveyor chain and begin to move forward.

While moving forward, you may need to adjust the opening of the discharge door to regulate the amount of processed feed being fed.

PTO speed should gradually be increased to full as the mixer empties. This will ensure a complete cleanout of the unit. The centrifugal forces on the auger will force the processed feed off of the auger flighting and out the door.

Conveyor speed can be adjusted with the flow controls on the tractor hydraulics. Adjusting the conveyor chain speed to match your ground speed will ensure a quick and even delivery of processed feed.

Adjusting the Mix

If in the final mixed sample, the forage is cut too short:

- Decrease tractor RPM to slow down auger RPM.
- Reduce the initial break-up or cutting time.
- Remove one or more cutting knives from the auger flighting. Always leave the top knife on the auger(s). This top knife breaks apart the baled hay (particularly round bales) and aids in the mixing process.

If in the final mixed sample, the forage is too long:

- Move one or both restrictor plates into position #2.
- Increase the auger(s) RPM.
- Add a knife assembly to the auger(s).
- Increase the final mix time after the final ingredient is loaded.

If the forage bale is slow to come apart or the core will not come apart:

Add an additional knife to the top of the auger, one notch below the top knife (knife position #8 as shown in *Augers on page 17*, depending on model).

If the bale is coming apart, but it is slow to cut into smaller lengths:

Add an additional knife to the bottom of the auger, working up one notch from the last knife (knife position #5 shown in *Augers on page 17*.

If ration is being cut faster than it is mixed:

Try removing knife #4 and/or #3 to even out the process.

NOTICE

It is important to remember the following guidelines when adding or removing knives.

Too many knives may impede the cutting/mixing process. Any more than seven knives may prevent the feed from falling to the bottom of the tub and subsequently slow down the cutting/mixing process. Too few knives or removing knives will slow down the cutting process.

TROUBLESHOOTING on page 49 provides some examples of problems that can arise during the cutting/mixing process and troubleshooting tips on how to correct those problems.

INITIAL BREAK-IN

As with nearly all new mechanical equipment, a certain break-in period is required to allow their components and mechanical devices to seat and mesh properly.

Supreme International recommends the following items be completed at the prescribed timelines in order to fully take advantage of Supreme International's reputation for strength and reliability. For maintenance intervals, *see APPENDIX B Maintenance Schedule on page 52*.

After the first 10 hours of operation:

- Re-torque wheel lug nuts as specified *(see Wheels and Tires on page 37)*.
- Verify and adjust tire pressures *(see Wheels and Tires on page 37)*.
- Check oil level in oil reservoir and top up *(see Planetary Drives section on page 27)*.
- Grease all driveline components with two pumps (except gearboxes) as shown in *see APPENDIX C Lubrication Chart on page 53*.
- Check and tighten all fasteners holding the knives on the auger *(see APPENDIX H Torque - Quick Reference on page 58* and *APPENDIX I Metric Bolt Grade and Recommended Torque Chart on page 59)*.
- Re-tighten the setscrew on the steady bearing locking-collar *(see Drivetrain on page 25)*.
- Check and tighten hitch clevis bolts and PTO at the implement side *(see APPENDIX H Torque - Quick Reference on page 58* and *APPENDIX I Metric Bolt Grade and Recommended Torque Chart on page 59)*.
- Visually inspect oil lines and hydraulics lines for leaks. Tighten fittings as necessary.
- Check and tighten scale head-swivel adjustment knob.

After the first 100 hours of operation:

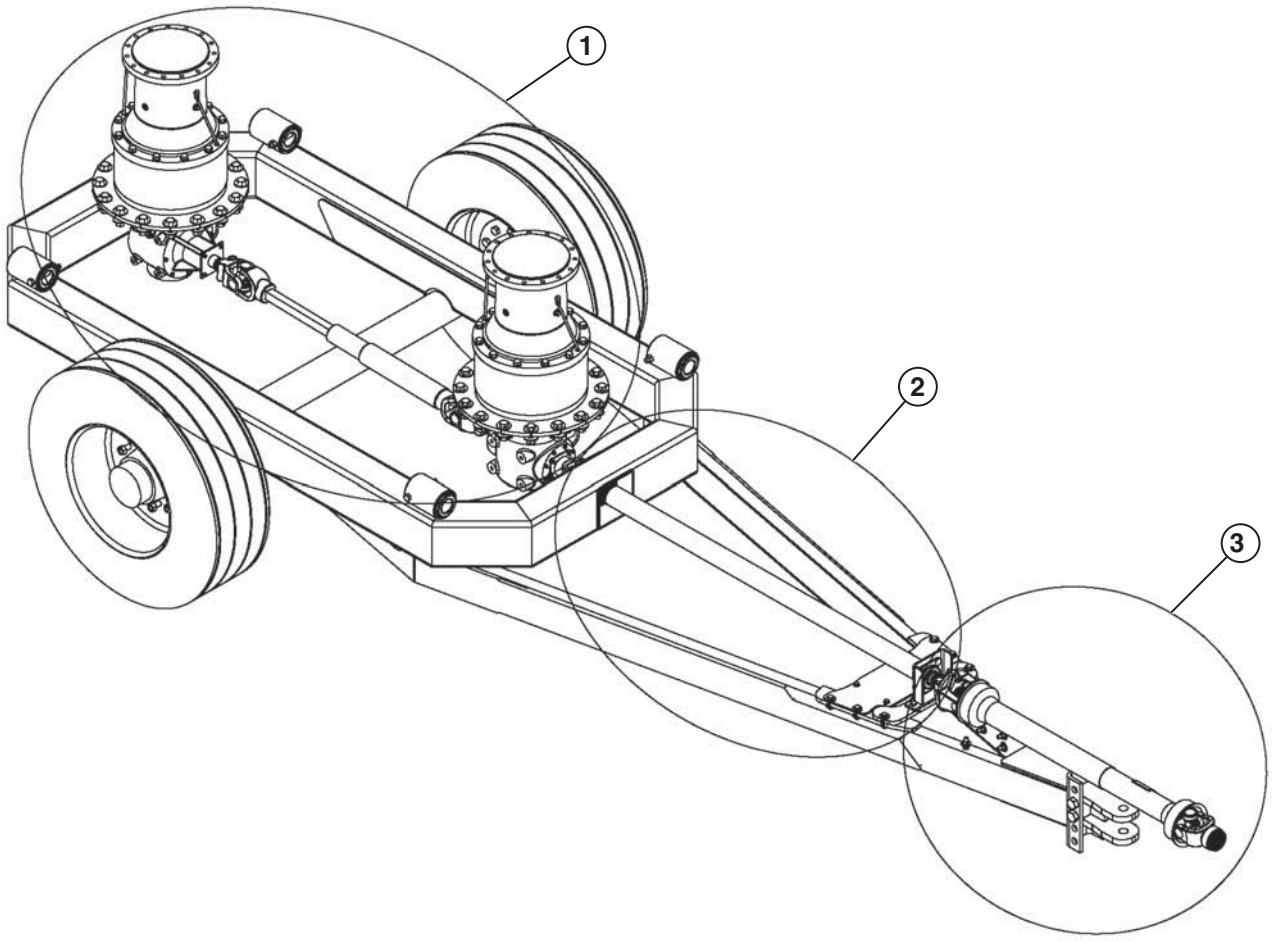
- After an initial break-in, the tension on the conveyor chain may need to be adjusted *(see Conveyors on page 36)* for chain tensioning procedure).
- Change oil in all gearboxes and planetaries to remove any filings and burrs that may have dislodged after initial break-in *(see Gearboxes on page 32* and *Planetary Drives on page 27)*.

MAINTENANCE

Drivetrain

The drivetrain on a Supreme Pull-Type mixer consists of three main assemblies:

- PTO driveline (tractor to implement hookup)
- Secondary driveline (steady bearing to first gearbox, including U-joint)
- Final driveline (includes planetaries, gearboxes and telescoping shaft)



1 – Final Driveline
2 – Secondary Driveline
3 – PTO Driveline

Figure 10

PTO Driveline

The PTO is used to transmit power from the tractor to the mixer. Weasler Engineering specifically designs our PTOs for each mixer. For this reason, Weasler drivelines and their parts are not interchangeable and in case of any damaged components, please call your local dealer to order the proper components.

The PTO driveline has two shear bolts installed on the mixer end, to protect against overload. These shear bolts will require no maintenance. In case of failure, ensure to replace the shear bolts with new bolts of the same diameter, length and grade as follows:

It is imperative to follow the recommended Weasler PTO lubrication procedures to ensure a long life and top performance. The Weasler PTO lubrication procedures are provided in *Appendices D, E and F*.

NOTE: *The locations of all grease zerks are shown in APPENDIX C Lubrication Chart on page 53.*

Secondary Driveline

The secondary driveline consists of a welded driveshaft, steady bearing bracket, self-aligning bearing and a universal joint.

Replace the self-aligning bearing as required. Ensure to always use a fastener adhesive on the setscrew of the bearing lock-collar after replacement.

Ensure that the universal joint mounted to the first gearbox under the tub is greased at regular intervals.

Final Driveline

The final driveline consists of a telescoping driveshaft, gearboxes (right angle and T-Box - if applicable) and planetary drives. Maintenance of these components will follow consecutively.

Telescoping Driveshaft

The telescoping driveshaft links both gearboxes together and must be greased at regular intervals. It uses the same frequency intervals as the PTO. Please refer to the Weasler PTO lubrication procedures provided in *APPENDIX D on page 54*.

NOTE: *The locations of all grease zerks are shown in APPENDIX C Lubrication Chart on page 53.*

Gearboxes (Angle, T-Box and two-speed gearboxes inclusive)

The gearbox(es) are detachable from some of the planetary drives and therefore have independent lubricating systems. The oil reservoir located on the side of the tub is for the planetary drive(s) *only*. Oil levels for the gearboxes can *only* be checked by removing their corresponding “level check plugs.” Approximate oil level requirements for each gearbox are found in *APPENDIX G Oil Quantities on page 57*.

Models 300, 400, 500, 600, 500T, 600T, 700T and 800T units are equipped with an integral, one-piece planetary drive and gearbox assembly. The oil supply is common to both components and can be checked at the sight glass located on the oil reservoir. Oil in the sight glass will indicate safe operating levels. The oil reservoir is located on the side of the tub.

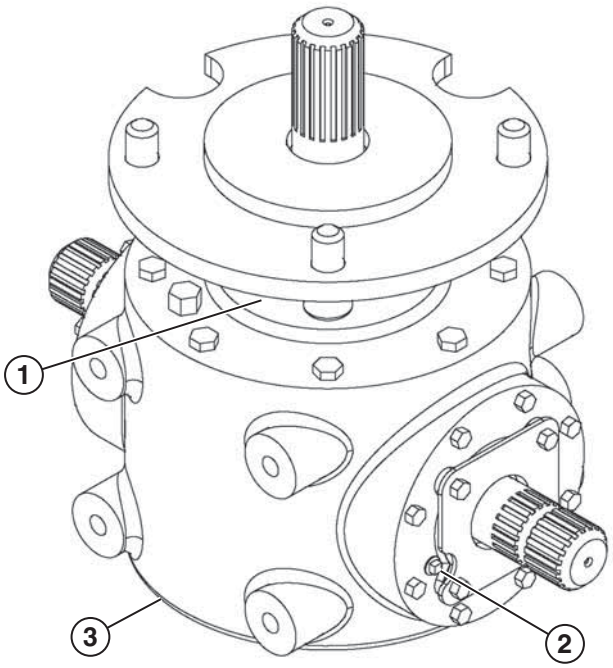
We recommend that oil changes be performed once a year or every 1500 hours, whichever comes first. We recommend using an SAE 80/90 Gear Oil in mild climate regions. SAE 70/80 can be used in colder regions.

Oil Change and Lubrication

The following oil change procedure can be done for all 900T, 1000T, 1200T, 1400T and 1600T pull-type models. The following procedure may also be applied to two-speed gearboxes and the gearboxes mounted below the second cutter.

1. Place an oil pan below the applicable gearbox.

2. Remove the Level Check Plug from the gearbox, as shown in *Figure 11*.



1 – Grease Zerk
2 – Level Plug
3 – Drain Plug

Figure 11

3. Remove the drain plug and drain the oil completely.
4. Re-install the drain plug.
5. Using a mechanical pump, pump oil into gearbox at the Level Check Plug until it starts to come out.
6. Re-install the Level Check Plug.
7. Grease zerk found under mounting flange with five pumps of grease.

Check all gearboxes for safe oil levels every 3 months as specified in *APPENDIX B Maintenance Schedule on page 52*.

Planetary Drives

NOTICE

Check the planetary drive oil level daily. This can be done at the sight glass on the planetary oil reservoir. Oil in the sight glass will indicate safe operating levels. The oil reservoir is located on the side of the tub.

NOTE: *We recommend that planetary drive oil changes be performed every 1500 hours or once a year, whichever comes first. We recommend SAE 80/90 Gear Oil to be used in mild climate regions. SAE 70/80 can be used in cold climate regions.*

All oil line fittings for the planetaries and oil reservoir are barbed. These fittings can be removed by unthreading them from their respective bushings and couplings, while keeping the oil line attached to the fitting. The oil line should spin on barbed fitting during removal.

⚠ CAUTION

When adding oil to the planetaries, do not over pressurize the planetaries. If too much pressure is used it will blow out the output shaft seal.

Tools needed for oil change procedure:

- Hand-operated oil pump (if pneumatic, ensure that it is set to less than 10 psi [69 kPa])
- Two oil pans - ensure one pan is capable of holding 6.6 gal (25 liters)
- Gear oil
- Applicable wrenches

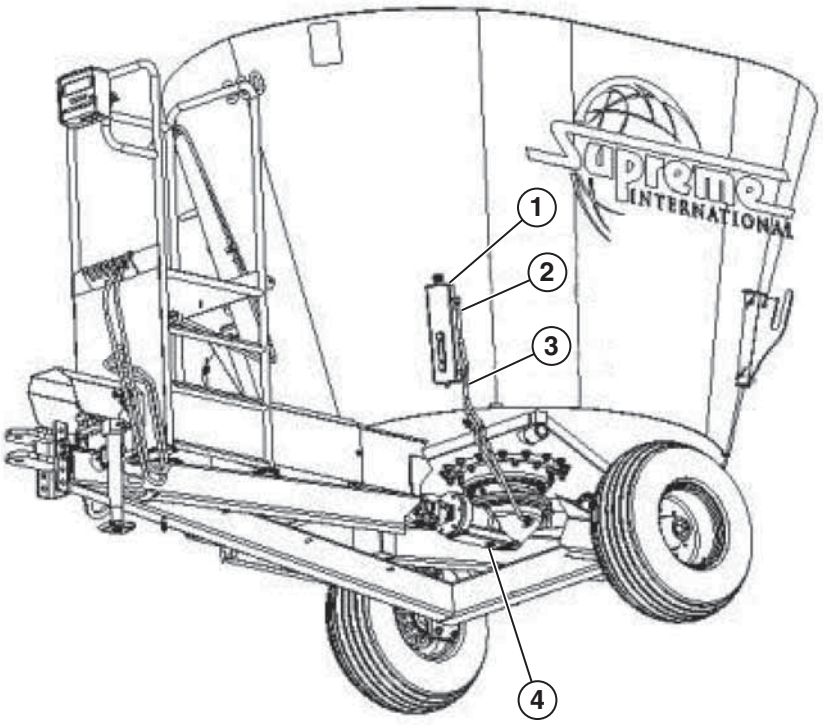
Planetary Oil Change Procedure – Models 300 and 400 (see Figure 12)

Drain

1. Place a large oil pan below the planetary/gearbox.
2. Remove the drain plug from base of planetary/gearbox.
3. Disconnect the Vent Line Fitting located at the base of the planetary/gearbox to allow the oil to drain faster.
4. Complete draining will take several minutes.
5. Verify that the proper amount of oil has been removed as per chart *APPENDIX G Oil Quantities on page 57*.

Fill

1. Replace the drain plug on the planetary/gearbox.
2. Reconnect the Vent Line Fitting at the base of the planetary/gearbox.
3. Disconnect the Fill Line Fitting at the oil reservoir.
4. To refill, pump oil into the Fill Line Fitting with a mechanical pump until oil circulates through and starts to enter the oil reservoir through the Vent Line.
5. Reconnect the Fill Line Fitting at the oil reservoir.
6. Wait a few minutes for the oil level to stabilize.
7. Top up oil reservoir so that sight glass is 3/4 full.



1 – Oil Reservoir
2 – Vent Line
3 – Fill Line
4 – Drain Plug

Figure 12

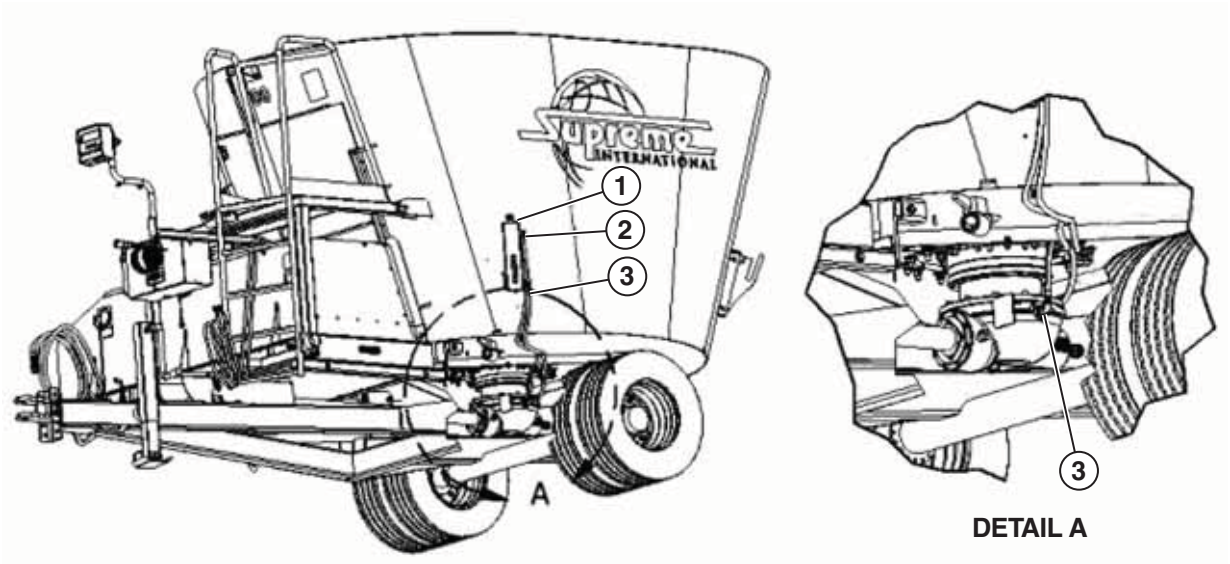
Planetary Oil Change Procedure – Models 500 and 600 (see Figure 13)

Drain

1. Place a large oil pan below the planetary/gearbox.
2. Remove the drain plug from base of planetary/gearbox.
3. Disconnect the Vent Line Fitting located at the base of the planetary/gearbox to allow the oil to drain faster.
4. Complete draining will take several minutes.
5. Verify that the proper amount of oil has been removed as per chart *APPENDIX G Oil Quantities on page 57*.

Fill

1. Replace the drain plug on the planetary/gearbox.
2. Reconnect the Vent Line Fitting at the base of the planetary/gearbox.
3. Disconnect the Fill Line Fitting at the oil reservoir.
4. To refill, pump oil into the Fill Line Fitting with a mechanical pump until oil circulates through and starts to enter the oil reservoir through the Vent Line.
5. Reconnect the Fill Line Fitting at the oil reservoir.
6. Wait a few minutes for the oil level to stabilize.
7. Top up oil reservoir so that sight glass is 3/4 full.



1 – Oil Reservoir
2 – Vent Line
3 – Fill Line

Figure 13

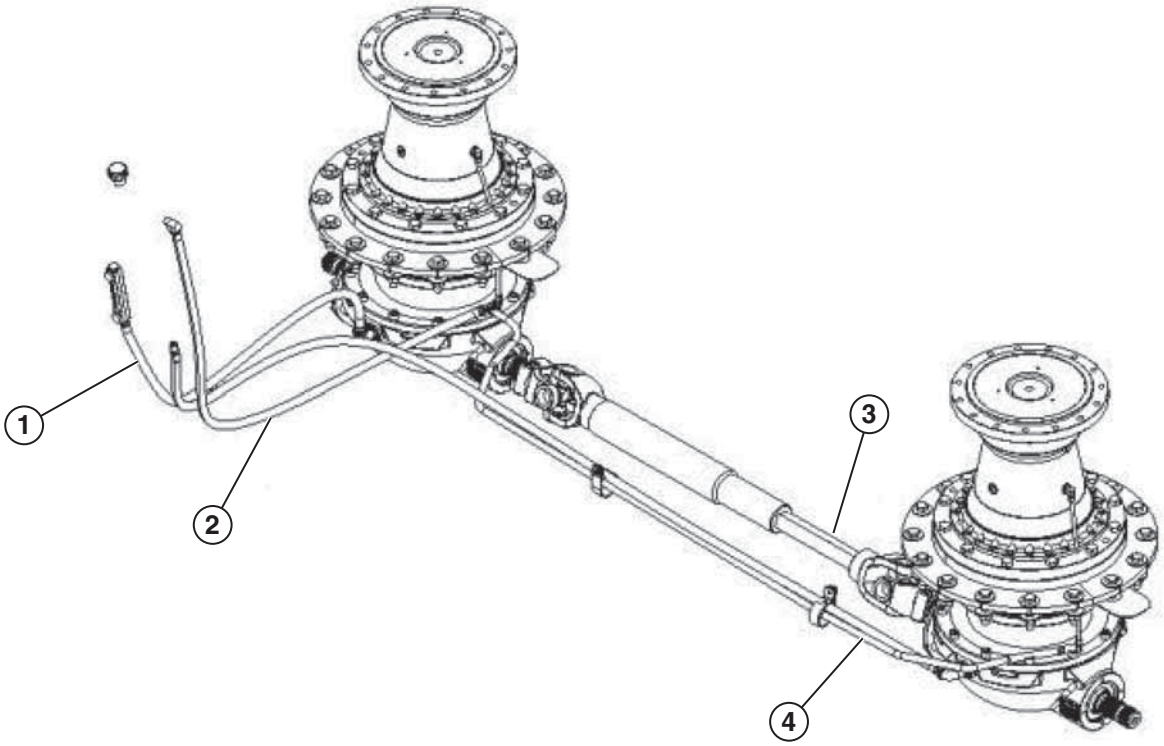
Planetary Oil Change Procedure – Models 500T, 600T, 700T and 800T (see Figure 14)

Drain

1. Place a large oil pan under rear planetary.
2. Disconnect the Fill Line Fitting located at the base of the rear planetary.
3. Disconnect the Vent Line Fitting located at the base of the rear planetary to allow the oil to drain faster. The Vent Line Fitting for the front planetary is at the T-fitting.
4. Complete draining of planetary will take several minutes.
5. Repeat steps 1 to 4 for the front planetary. Verify that the proper amount of oil has been removed as per chart *APPENDIX G Oil Quantities on page 57*.

Fill

1. Reconnect the Fill Line Fittings below the planetaries.
2. Reconnect the Vent Line Fitting below the planetaries.
3. Disconnect both Fill Line Fittings at the base of the oil reservoir.
4. Use a mechanical pump and refill *each* planetary by forcing oil into its corresponding Fill Line at the oil reservoir. Pump oil until it circulates through and begins to flow into the oil reservoir and out the bottom.
5. Reconnect the Fill Line Fittings at the oil reservoir.
6. Wait a few minutes for the oil level to stabilize.
7. Top up oil reservoir so that sight glass is 3/4 full.



1 – Oil Reservoir
2 – Vent Line
3 – Fill Line
4 – Drain Plug

Figure 14

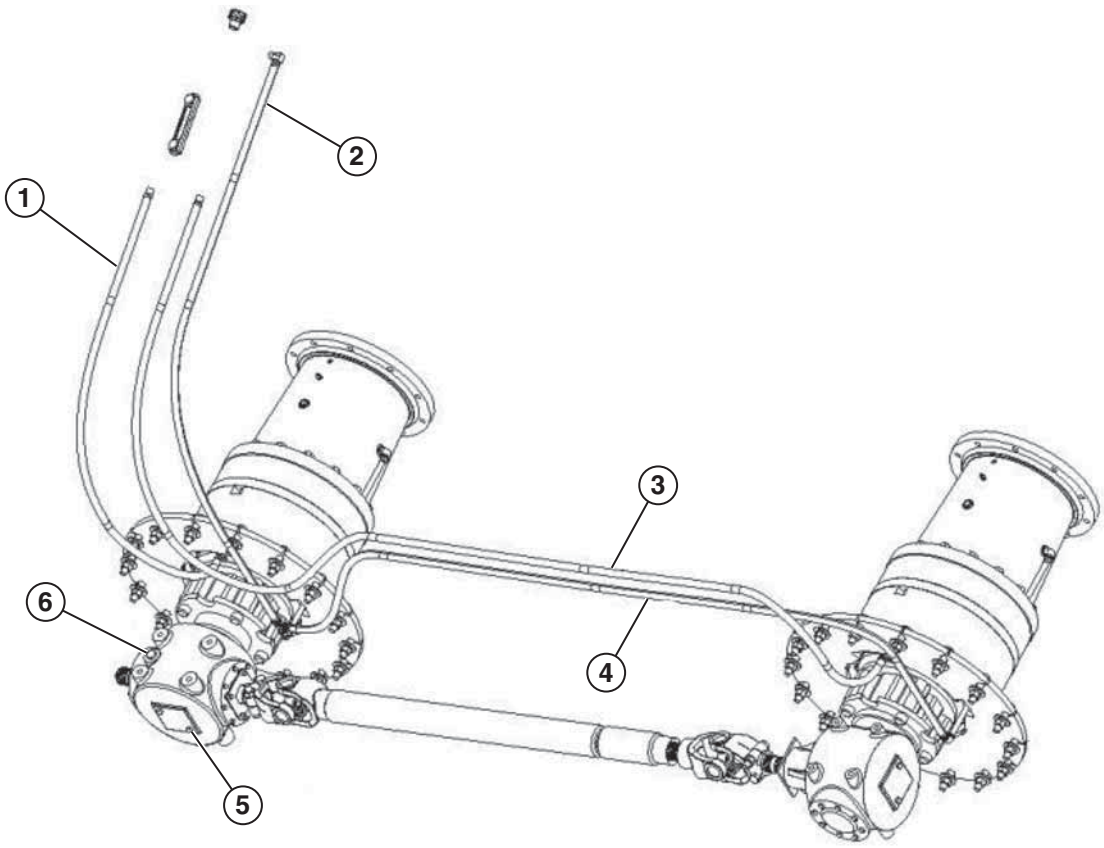
Planetary Oil Change Procedure – Models 900T, 1000T, 1200T, 1400T, 1600T (see Figure 15)

Drain

1. Place a large oil pan under rear planetary.
2. Disconnect the Fill Line Fitting located at the base of the rear planetary.
3. Disconnect the Vent Line Fitting located at the base of the rear planetary to allow the oil to drain faster. The Vent Line Fitting for the front planetary is at the T-fitting.
4. Complete draining of planetary will take several minutes
5. Repeat steps 1 to 4 for the front planetary.
6. Verify that the proper amount of oil has been removed as per chart *APPENDIX G Oil Quantities on page 57*.

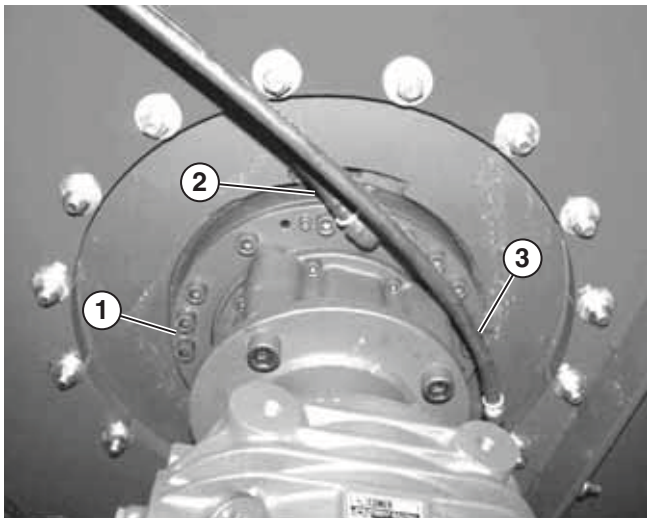
Fill

1. Reconnect the Fill Line Fittings below the planetaries.
2. Reconnect the Vent Line Fitting below the planetaries.
3. Disconnect both Fill Line Fittings at the base of the oil reservoir.
4. Use a mechanical pump and refill *each* planetary by forcing oil into its corresponding Fill Line at the oil reservoir. Pump oil until it circulates through and begins to flow into the oil reservoir and out the bottom.
5. Reconnect the Fill Line Fittings at the oil reservoir.
6. Wait a few minutes for the oil level to stabilize.
7. Top up oil reservoir so that sight glass is 3/4 full.



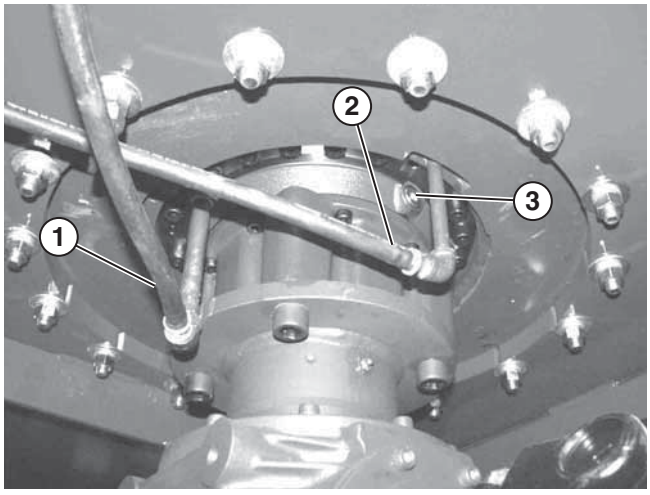
1 – Front Fill Line
2 – Front Vent Line (Teed with Rear Vent)
3 – Rear Fill Line
4 – Rear Vent Line
5 – Drain Plug
6 – Check/Fill Plug

Figure 15



1 – Drain Plug
2 – Pump Inlet
3 – Vent Line

Front Planetary
Figure 16



1 – Fill Line
2 – Vent Line
3 – Drain Plug

Rear Planetary
Figure 17

Fluid-Drive System

Description

Some 1400T and 1600T mixers are equipped with a unique fluid-drive system. The system consists of two reduction gearboxes and a fluid coupling. The system is designed for smooth and slow mixer engagement that protects your tractor's PTO on start-up and allows the mixer to run at its optimum mixing speed when at full PTO RPM.

Operation

The PTO must be engaged between 1200 and 1400 RPM (engine speed) for proper operation, regardless of whether the unit is loaded or not. Once the PTO is engaged, slowly accelerate engine RPM until the PTO has reached 1000 RPM. PTO disengagement is the reverse of the engagement. Slowly decelerate the engine RPM until the unit is running at approximately 1200 RPM, then disengage the PTO. Ensure that the Fluid-Drive assembly is kept free of debris at all times for proper air flow and cooling.

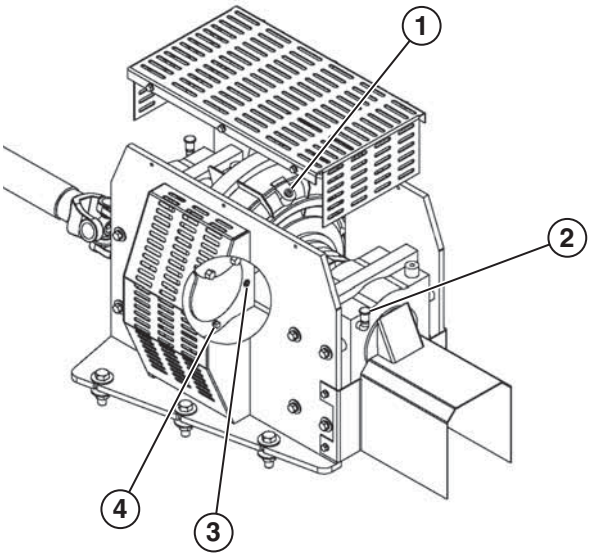
Service

Prior to any service, remove top guard and thoroughly blow out any debris that may be found within the assembly. Inspect, repair and replace any seal leaks, damaged components and missing shields.

Gearboxes

We recommend that oil changes be performed once a year or every 1500 hours, whichever comes first. Use high-quality SAE 80/90 Gear Oil in mild climate regions. High-quality SAE 70/80 can be used in colder regions *(see Figure 18)*.

NOTE: *Drain and level plugs for both gearboxes can be accessed from below the assembly.*



1 – Fluid Coupler Fill Port
2 – Fill Port
3 – Level Plug
4 – Drain Plug

Figure 18

Fluid Coupler

We recommend that the oil changes be performed every year or 1500 hours, whichever comes first. Fill the fluid coupler with 3.75 gal (14.2 L) of ISO HM32 hydraulic oil (or the equivalent SAE 10W non-detergent motor oil). At low ambient temperatures (near 32°F [0°C]), it is recommended to use ISO FD 10 (or equivalent SAE 5W) oil.

NOTICE

Tractors with instant PTO engagement may require 77 series PTO (282-24109) as option.

Augers

Auger Timing

If, for any reason, the augers need to be removed, it is important to remember that they will need to be timed upon their installation.

If, for any reason, the driveshaft between the gearboxes needs to be removed for service or maintenance it is important to ensure that the augers have remained timed prior to installation of the driveshaft.

See *Figure 19* for timing of the augers.

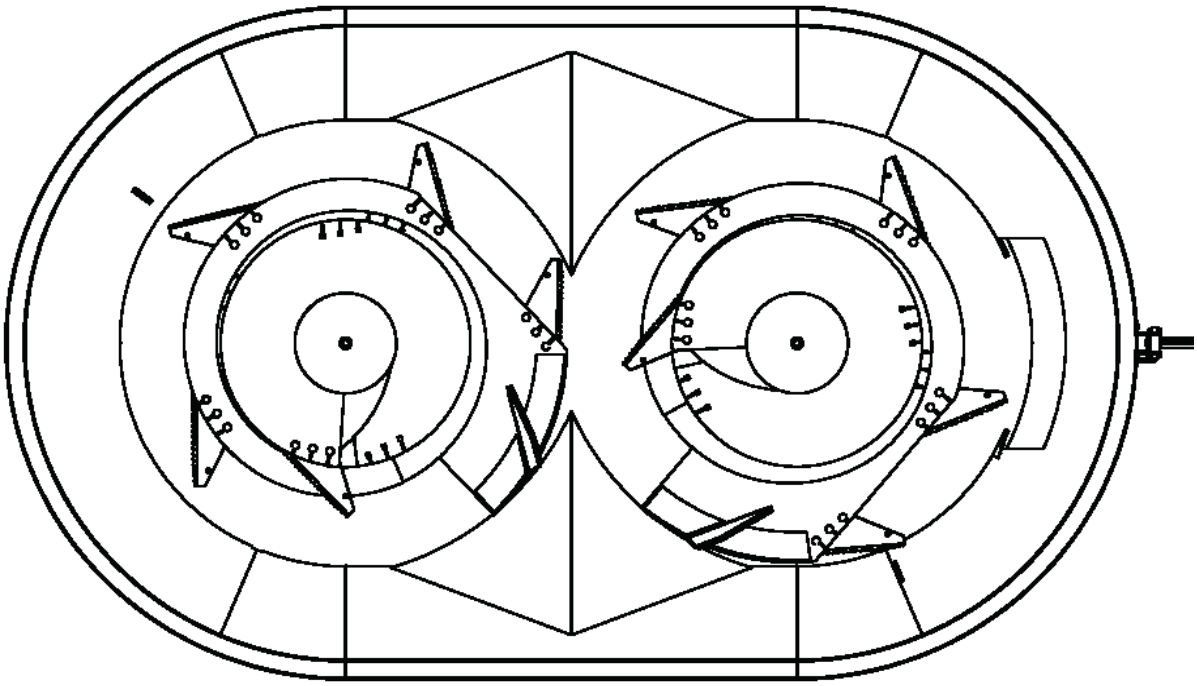


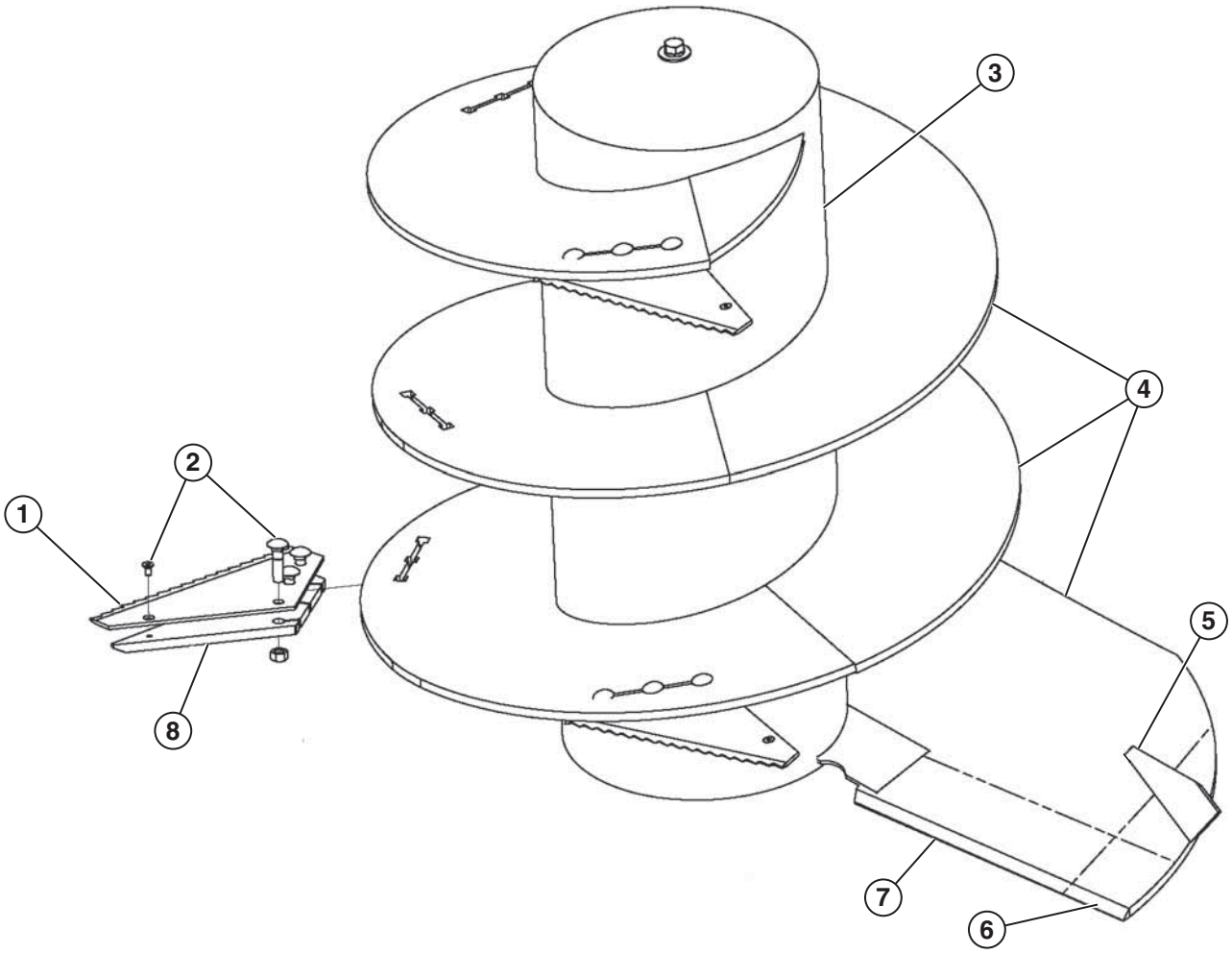
Figure 19

Wear Components

When a particular auger component begins to show signs of wear, you will also notice an increase in horsepower draw to run the mixer.

Critical wear components on an auger are as follows *(see Figure 20)*:

- Knives
- Fasteners
- Backing Plates
- Kicker Plate
- Pipe
- Flighting
- Outer Edge
- Leading Edge



1 – Knife
2 – Fasteners
3 – Pipe
4 – Flighting
5 – Kicker Plate
6 – Outer Edge
7 – Leading Edge
8 – Backing Plate

Figure 20

Knives, Fasteners, Backing Plates

These items are the most commonly replaced items on an auger. These are removed and replaced as required (dull, broken, worn, uses more horsepower).

Kicker Plate

The kicker plate is critical to the mixing action of your Supreme mixer. If the kicker is worn down and the mixer takes longer to mix, call your local Supreme International dealer to have it removed and replaced.

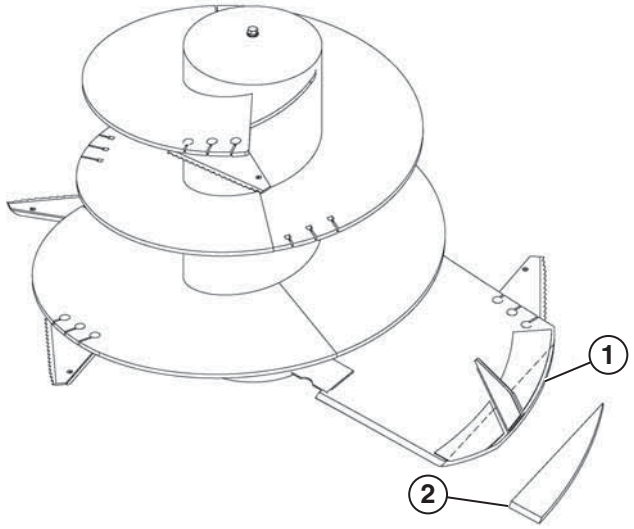
Pipe and Flighting

Remove and replace the auger when the flighting is worn thin to the point where it flexes and bends easily and is scraping the floor of the tub.

Remove and replace the auger before the pipe wall loses structural integrity and you are easily able to dent it with a hammer.

Outer Edge

Call your local dealer to have the outer edge replaced when it begins to look like *Figure 21*.

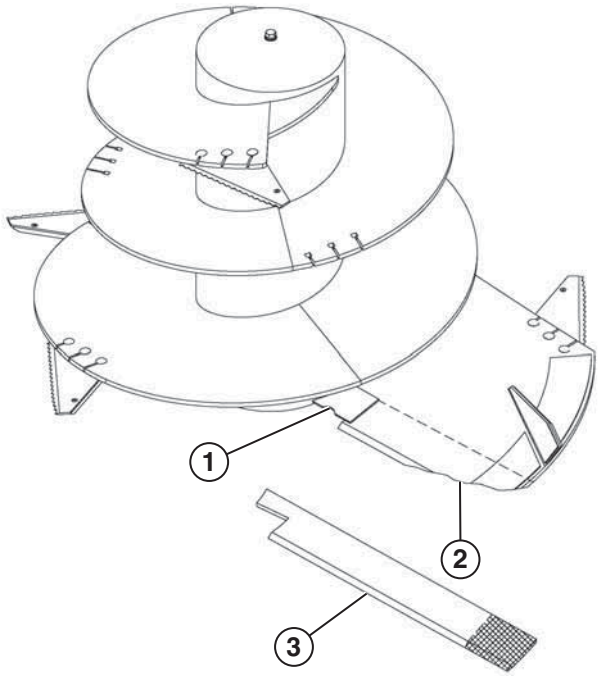


1 – Worn Out Outer Edge
2 – Replacement Outer Edge

Figure 21

Leading Edge

Call your local dealer to have the leading edge replaced when it begins to look like *Figure 22*.



1 – Cover Plate
2 – Worn Out Leading Edge
3 – Replacement Leading Edge

Figure 22

Tub

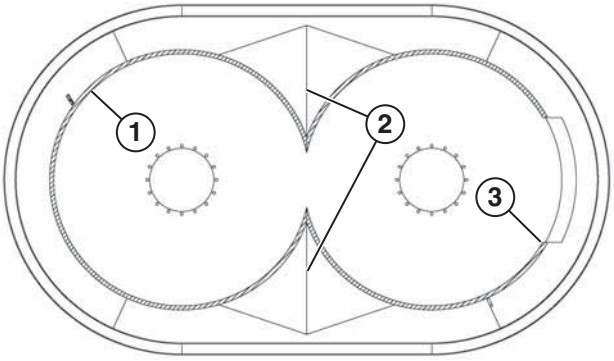
The tub is nearly maintenance free. Although, the lack of care and attention to tub wear can potentially cause a big repair bill.

The rate at which a tub will wear varies on the commodities used and the amount of work a mixer does.

The following signs of wear indicate that it is time to install a liner kit in the tub. Failure to do so will render the tub useless in a short matter of time, as the walls began to puncture and spillage of commodities occurs.

- The weld at the baffle seams are nearly worn off and the baffles are close to separating.
- The bottom 12 in. (305 mm) of the wall, just above the floor, is thinning out, visible signs of rippling and/or bubbling can seen on the outside of the tub at this sections.
- The metal on lower portion of the wall, at the door opening, is worn back and has a sharp edge.

NOTE: *If any of these signs of wear are visible, call your local Supreme International dealer and get a liner kit installed.*



1 – High Wear Area Bottom 12 in. (305 mm) all around tub
2 – High Wear at Baffle Seams
3 – Door Edge Worm Back

Figure 23

Conveyors

All conveyors are equipped with a Heavy Duty 2082 Roller Chain. Periodically lubricate the conveyor chain assembly to ensure the free rotation of the chain rollers.

The four conveyor bearings (two on each end of the conveyor) should be greased regularly. Supreme recommends two pumps every 50 hours.

NOTE: *The locations of all grease zerks are shown in APPENDIX C Lubrication Chart on page 53.*

Open the Clean-Out Door daily and remove any feed buildup. Conveyors that are equipped with 2-direction discharge will not have the clean-out door.

Conveyor Chain Adjustment

⚠ WARNING

Never adjust the conveyor chain with the tractor running. The tractor should be turned off and the key removed from the start switch.

Typically the chain tension will need to be adjusted when the conveyor becomes noisy during operation. This can be done at the take-up bearing/slack adjusters located at one end of the conveyor, opposite the conveyor orbit motor.

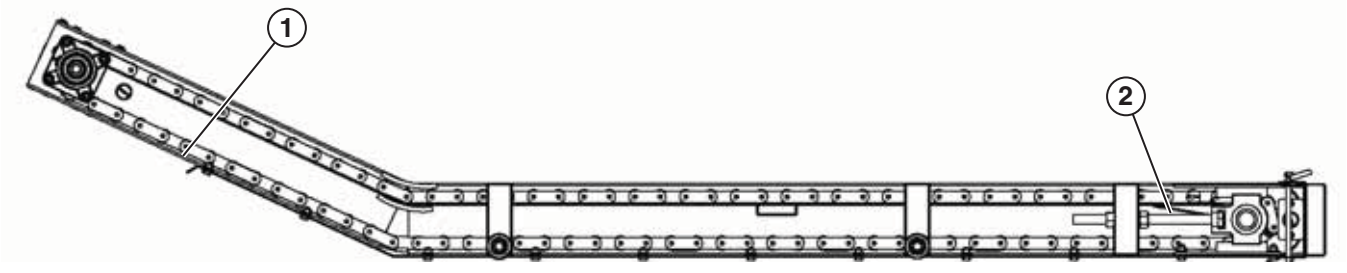
When adjusting the conveyor chain tension, it is important to ensure that the entire chain assembly, drive shaft with sprockets, and idler shaft with rollers remain centered between the conveyor rails. Improper adjustment will cause the chain assembly to walk over to one side. This may result in a conveyor chain failure.

Flat Conveyors

Check for proper chain tension at bottom side of the discharge end of conveyor (roughly 12 in. [305 mm] from the end). Chain deflection should measure between 1/2 and 3/4 in. (12.7 and 19.1 mm). The chain should not contact the bottom pan of the conveyor at any point, therefore reducing conveyor noise.

Dogleg Conveyors

Check for proper chain tension at bottom side of the discharge end of conveyor (roughly 12 in. [305 mm] from the end). Chain deflection should measure between 1/2 and 3/4 in. (12.7 and 19.1 mm).



1 – Dogleg Conveyor: Check deflection here. Same for flat conveyor
2 – Chain Take-Up Adjuster

Figure 24

Wheels and Tires

Factory wheels and tires are sized to support the gross weight of the loaded mixer. It is not recommended to alter from factory specifications; however, options are available for specific applications. Please consult your dealer or Supreme International Limited for information on these.

1. Wheel nuts should be checked and re-torqued after the first week of operation. Wheel nuts should be checked periodically after initial break-in as per the *APPENDIX B Maintenance Schedule on page 52*.
2. Tire pressure should be checked and maintained at regular service intervals per the *APPENDIX B Maintenance Schedule on page 52*.
3. Models 600T, 700T, 900T, 1200T and 1400T are equipped with oil bath wheel hubs. Check sight glasses daily to ensure safe operating oil levels.
4. Service oil bath hubs as necessary. Change the oil on a yearly basis. We recommend using SAE 80/90 gear oil.
5. All other Pull-Type models come with grease packed bearings and should be serviced on a yearly basis.

Tire Specifications

MODEL	TIRE TYPE	TIRE SIZE	PLY	TIRE LOAD CAP.	RATED SPEED	TIRE Ø	TIRE WIDTH	PSI	WHEEL OFFSET	WHEEL NUT TORQUE
300	Implement Tire	12.5L-15	12	5620 Lbs (2386 kg)	25 MPH (40 km/hr)	32-1/2	12-3/4	90 (621 kPa)	1	90
400	Implement Tire	19.0/45 -17	14	8400 Lbs (3810 kg)	6 MPH (10 km/hr)	33-1/2	19	75 (517 kPa)	1.5	90
500/600	Dual Truck Tires	235/75R17.5	18	6005 Lbs (2724 kg)	65 MPH (105 km/hr)	31.4	9.5	125 (862 kPa)	0	450
500T	Aircraft Tire	H40x14.5x19	26	12000 Lbs (5443 kg)	< 20@60PSI (32 km/hr)	37-1/2	14-5/8	100 (689 kPa)	0	450
	Floatation Tire	500/45-20	16	15000 Lbs (6804 kg)	12 MPH (19 km/hr)	38-5/8	19-1/4	85 (586 kPa)	3.65	450
600T/700T	Truck Tire	385/65R-22.5	18	9910 Lbs (4495 kg)	10 MPH (16 km/hr)	42-1/4	15-1/8	100 (689 kPa)	3.25	450
	Floatation Tire	500/45-20	16	15000 Lbs 6804 (kg)	12 MPH (19 km/hr)	38-5/8	19-1/4	85 (586 kPa)	3.65	450
800T	Implement Tire	19.0/45 -17	14	8400 Lbs (3810 kg)	6 MPH (10 km/hr)	33-1/2	19	75 (517 kPa)	1.5	90
900T	Dual Truck Tires	11R22.5	16	6175 Lbs (2801 kg)	25 MPH (40 km/hr)	42	24	100 (689 kPa)	0	450
	Floatation Tire	700/40-22.5	18	22000 Lbs (9979 kg)	5 MPH (8 km/hr)	46-1/8	27-5/8	87 (600 kPa)	2	450
	Dual Truck Tires	275/70R22.5	16	7750 Lbs (3515 kg)	10 MPH (16 km/hr)	37-5/8	24	100 (689 kPa)	0	450
1000T/1200T	Dual Truck Tires	275/70R22.5	16	7750 Lbs (3515 kg)	10 MPH (16 km/hr)	37-5/8	24	100 (689 kPa)	0	450
	Dual Truck Tires	11R22.5	16	6175 Lbs (2801 kg)	25 MPH (40 km/hr)	42	24	100 (689 kPa)	0	450
	Floatation Tire	500/45-20	16	15000 Lbs (6804 kg)	12 MPH (19 km/hr)	38-5/8	19-1/4	85 (586 kPa)	3.65	450
	Truck Tire	385/65R-22.5	18	9910 Lbs (4495 kg)	10 MPH (16 km/hr)	42-1/4	15-1/8	100 (689 kPa)	3.25	450
1400T/1600T	Dual Truck Tires	275/70R22.5	16	7750 Lbs (3515 kg)	10 MPH (16 km/hr)	37-5/8	24	100 (689 kPa)	0	450
	Dual Truck Tires	11R22.5	16	6175 Lbs (2801 kg)	25 MPH (40 km/hr)	42	24	100 (689 kPa)	0	450
	Floatation Tire	500/45-20	16	15000 Lbs (6804 kg)	12 MPH (19 km/hr)	38-5/8	19-1/4	85 (586 kPa)	3.65	450
	Truck Tire	385/65R-22.5	18	9910 Lbs (4495 kg)	10 MPH (16 km/hr)	42-1/4	15-1/8	100 (689 kPa)	3.25	450

OPTIONS: OPERATION / MAINTENANCE

Two-Speed

Operation

The function of the two-speed gearbox is to reduce the horsepower requirements from the tractor by approximately 20%.

When the first or low gear is selected on the two-speed, the auger RPM is reduced, thereby reducing the horsepower requirements. When direct or high gear is selected on the two-speed, the auger(s) will rotate at normal operating speed.

⚠ CAUTION

The tractor PTO must be disengaged and augers completely stopped before shifting gears on the two-speed.

It is important to consider that when first or low gear is selected, incomplete cleanout of the auger(s) may occur.

To clear the remaining ration off of the auger(s):

1. Disengage the tractor PTO.
2. Select the direct or high gear on the two-speed gearbox.
3. Engage tractor PTO. Auger(s) will rotate at normal operating speed and any remaining feed will be forced off the auger(s).

Maintenance

Check for safe operating oil level in the two-speed gearbox daily. This can be done at the sight glass located on the front of the two-speed. Oil in the sight glass will indicate a safe operating oil level.

We recommend SAE 80/90 Gear Oil to be used in mild climate regions. SAE 70/80 can be used in cold climate regions.

We recommend oil changes be performed every 1500 hours or once a year, whichever comes first.

See Gearboxes (Angle, T-Box and two-speed gearboxes inclusive) on page 26 for proper oil change procedures and oil capacities.

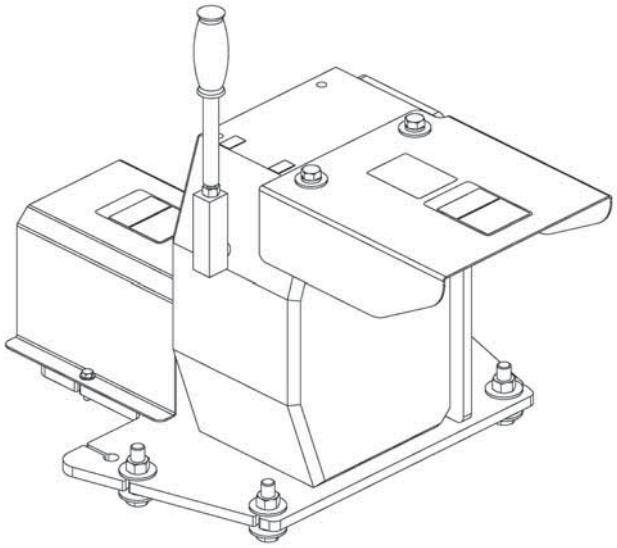


Figure 25

Second Cutter

The Second Cutter has three main functions: reducing processing time, stockpiling feed and spreading livestock bedding. The performance of the second cutter is very similar to that of a tub grinder. It processes forages rapidly but allows the user to control the particle length of these forages during processing.

The Supreme Second Cutter is mounted directly to the back of the Feed Processor. It consists of a chamber, rotating shaft with cutting knives, and a row of removable interference knives to regulate cut length. There are 11 rows of cutting knives with four knives per row for a total of 44 cutting knives.

The interference knives allow the user to regulate cut length, by simply positioning these knives into or away from the rotating knife assembly.

Units equipped with the Supreme Second Cutter option will have two extended backing plates in lieu of the standard backing plates. The function of the extended backing plates is to force more material into the second cutter assembly. Depending on the model, these extended backing plates will be located on second or third knife position or the third and fourth knife position.

On twin-screw models, these extended backing plates will be installed only on the rear auger.

See Extended Backing Plates on page 18.

It is important to consider that using the Second Cutter can draw up to 20% more horsepower from the tractor propelling the mixer. Different types of forages will also vary that amount of horsepower draw.

NOTICE

Second Cutter not available on models 300, 400, 500, 600 and 600T.
Second Cutter option only available with 1000 PTO equipped units.

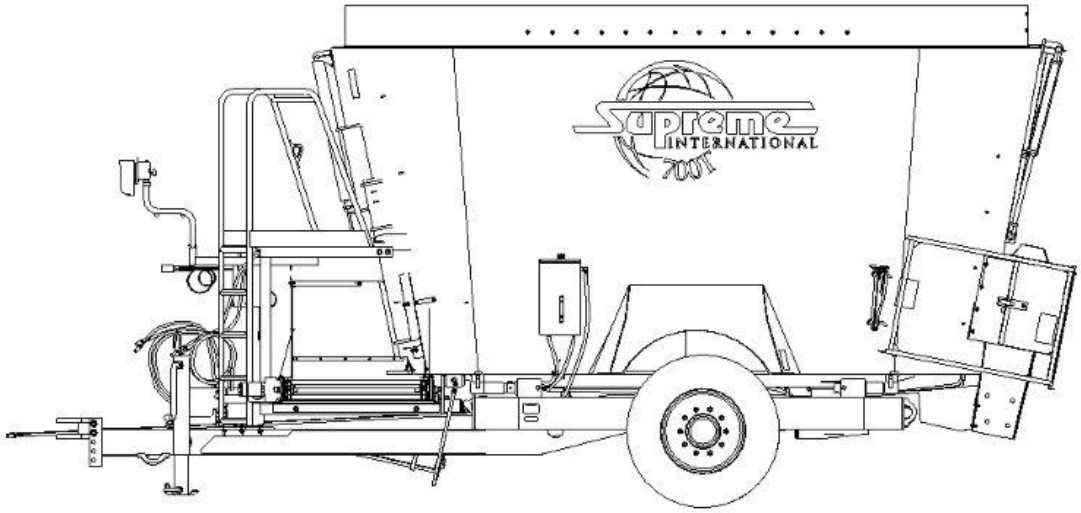


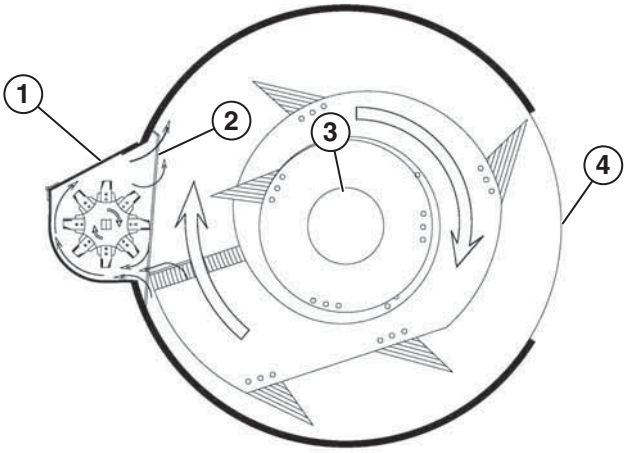
Figure 26

Operation

The Second Cutter is always rotating when the PTO is engaged. To disable the second cutter, simply disconnect the driveshaft from the rear of the T-box. This driveshaft connects the T-box to the 108 degree gearbox located under the Second Cutter housing. Let the disconnected driveshaft sit in the box slot of the frame when the Second Cutter is not needed.

Reducing Processing Time

The primary function of the Supreme Second Cutter is to significantly reduce the processing time of forages and hard to cut commodities. Depending on commodities mixed, it is common to reduce processing time by 50%. With door #2 open and door #1 closed, as shown in *Figure 27*, processed material will remain in the mixing chamber and will quickly blend with other ingredients to complete the ration.



***NOTE:** Arrows show feed movement. Setup for faster processing.*

1 – Door #1 in closed position
2 – Door #2
3 – Screw
4 – Door #3

Feed Movement: Second Cutter
Figure 27

Steps to reduce processing time:

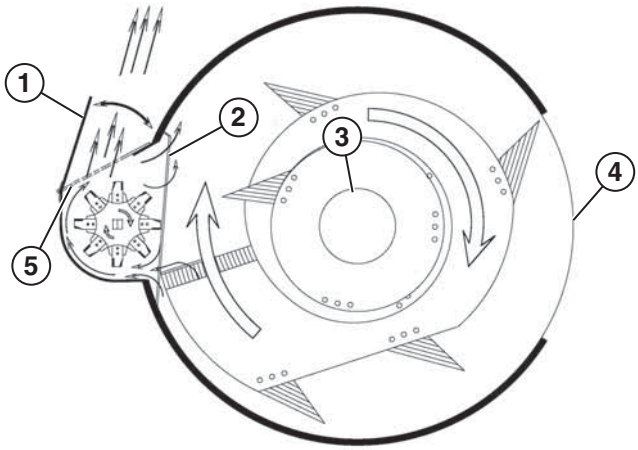
1. Ensure that both doors, #1 and #2, are closed.
2. Engage tractor PTO and increase RPM.
3. Load forages to be processed.
4. Allow for initial break-up time (approximately 1 minute), slowly increase tractor RPM to full throttle. (The second cutter must rotate at 2000 RPM to operate properly; therefore it is recommended that the tractor be running at full throttle when operating the second cutter).
5. Slowly open door #2 thereby allowing material to enter the Second Cutter chamber.
6. When roughage is processed sufficiently, simply close door #2 and begin loading remaining rationed components.

Stockpiling

In addition to a reduction in processing time, the Supreme Second Cutter is ideal when only a portion of a whole bale is needed in the ration. Any excess amount of forage can simply be discharged out of the Second Cutter door #1 to distances of up to 30 ft (9.1 m) and stockpiled for later use.

Livestock Bedding

Finally the Supreme Second Cutter is ideal for processing and spreading straw and other hard to process commodities, for bedding purposes. The processed material can simply be discharged evenly out the Second Cutter door #1 in a desired area.



NOTE: *Arrows show feed movement. Setup for stockpiling or bedding.*

1 – Door #1 in open position
2 – Door #2
3 – Screw
4 – Door #3
5 – Door in closed position

Feed Movement: Second Cutter
Figure 28

Steps for stockpiling and bedding:

1. Open door #1 and close door #2.
2. Engage tractor PTO and increase RPM.
3. Load forages to be processed.
4. Allow for initial break-up time (approximately 1 minute), slowly increase tractor RPM to full throttle. (The second cutter must rotate at 2000 RPM to operate properly; therefore it is recommended that the tractor be running at full throttle when operating the second cutter.) Slowly open door #2, allowing material to enter the Second Cutter chamber. Processed material will then be discharge out of the Second Cutter door to the desired area.
5. For discharging measured amounts of roughage through the Second Cutter, maintain eye contact with the electronic scale.
6. Simply close door #2, when desired amount of roughage is discharged.

Maintenance

It may be necessary to periodically empty the Second Cutter. This will allow any material (chaff and fines) that may accumulate in the Second Cutter to be discharged. This can be done by operating the Second Cutter with door #1 open and door #2 closed.

Check for safe operating oil level in the Second Cutter gearbox every 100 hours of operation. The level plug is located on the input nose of the gearbox.

We recommend oil changes be performed every 1500 hours or once a year, whichever comes first. *See Oil Change and Lubrication on page 26* for proper oil change procedures.

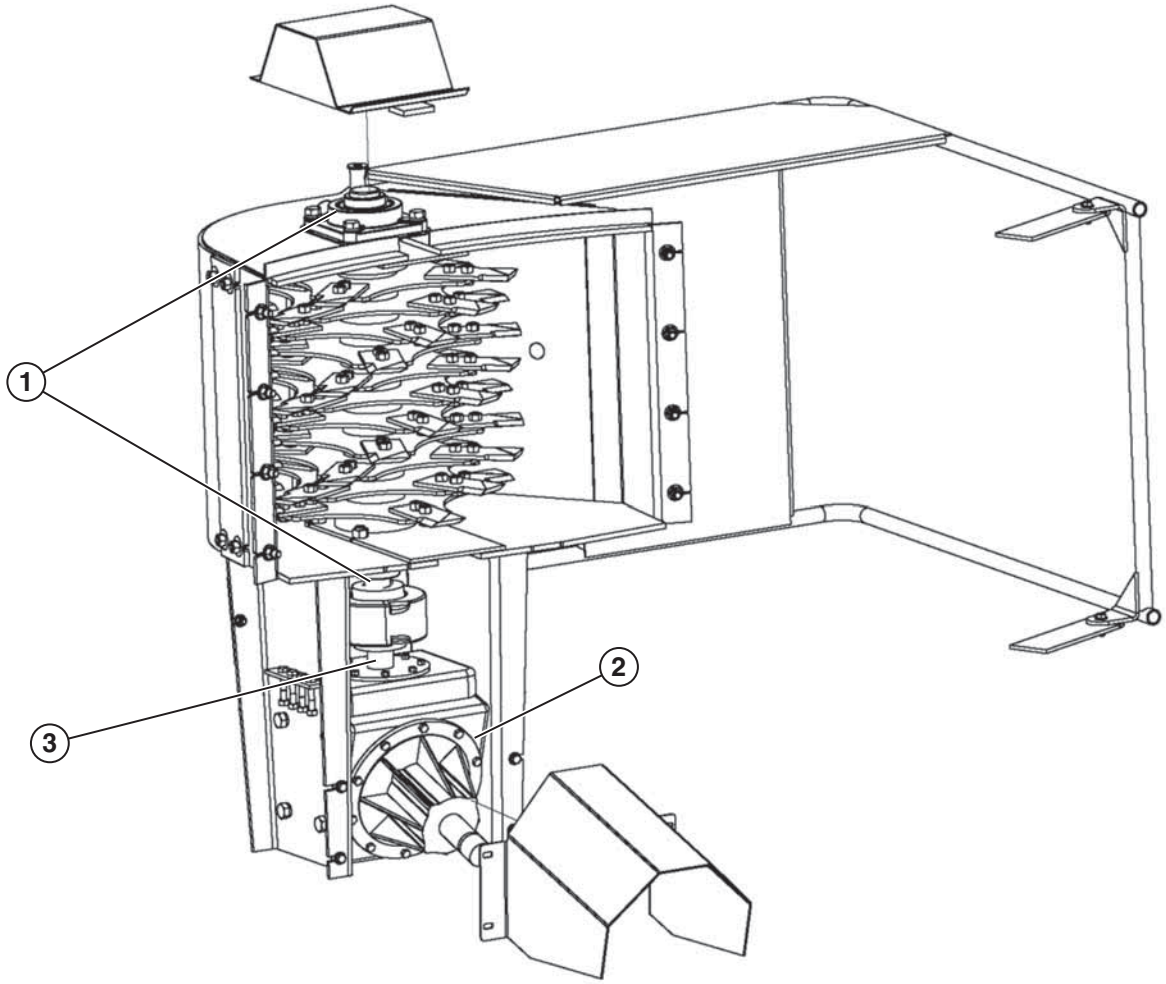
Grease chain coupling every 100 hours of operation.

Grease upper and lower bearings with five pumps of grease every 100 hours of operation.

Replace or rotate knives once they are worn past their bevel cutting edge. Knives may only be rotated once.

NOTICE

Always replace or rotate knives in pairs, meaning that the opposite knife on the rotor be changed at the same time, regardless of condition. This is to retain the characteristics of a balanced rotor.



1 – Bearings
2 – 108° Gearbox
3 – Chain Coupling

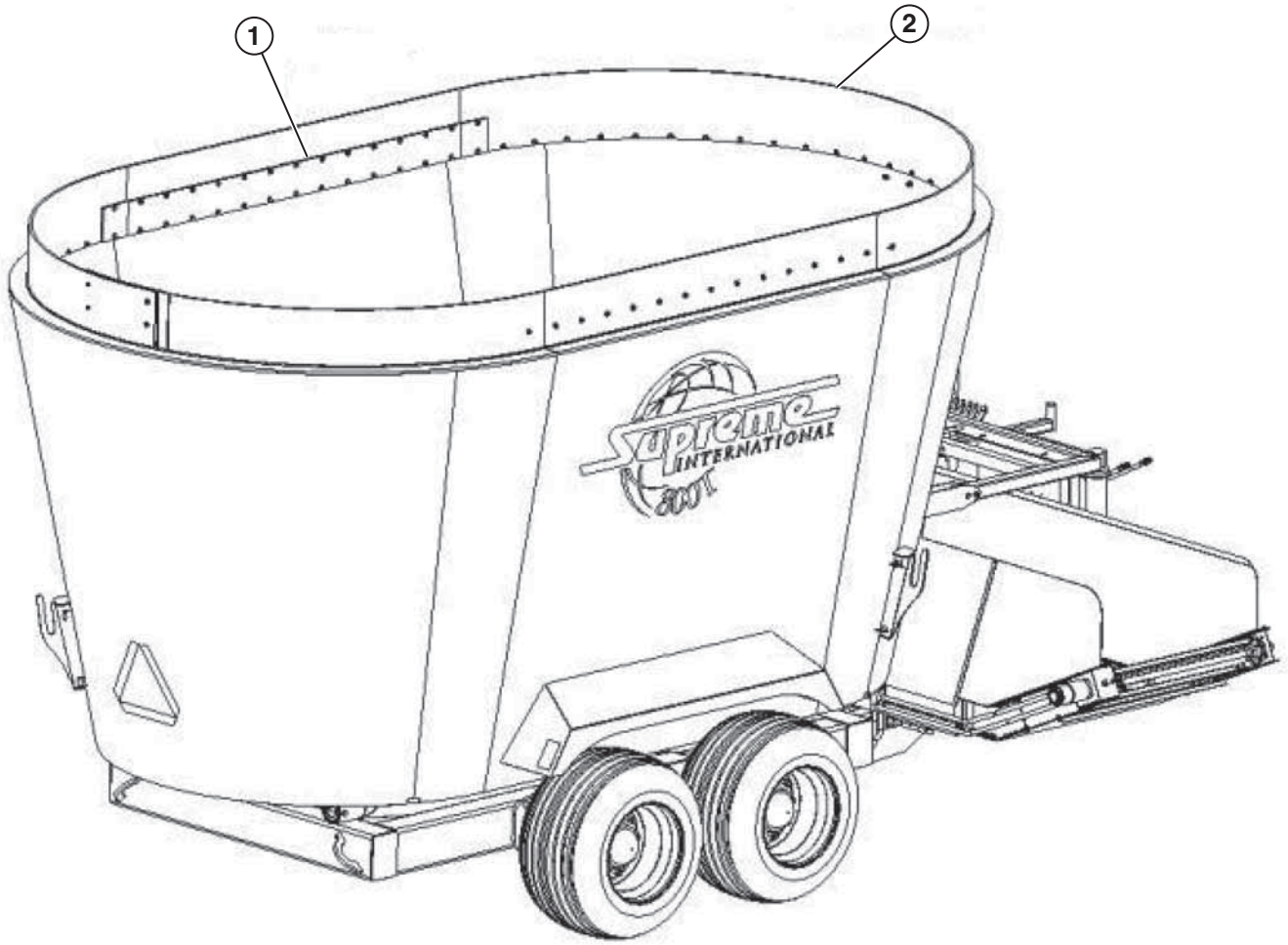
Second Cutter Assembly
Figure 29

Rubber Extension

The Rubber Extension option consists of a heavy duty, maintenance-free 1/2 in. (12.7 mm) rubber belting, bolted along the inside ring of the tub. A stiffener is also incorporated to the straight edges of the tub for added rigidity and to prevent collapse during loading.

This option is not intended to increase the tub capacity for the purpose of holding more mixed feed. The purpose of the rubber extension is to minimize the spillage of a mix with a high percentage of roughage loaded into the tub.

When installed, the overlapping seam should be at the back of the tub, marked by start and finish lines on the tub wall. The stiffeners should be installed along the sides of the tub extension. The stiffeners will also help reduce any damage to the tub extension that may occur during the loading process.



1 – Stiffener 2 – Rubber Extension

Figure 30

Conveyor Options

Standard equipment on models 500, 600, 700, 600T, 700T, 900T and 1400T is an 8 ft (2.4 m) flat conveyor with either a left or right hand discharge.

Standard equipment on models 1000T and 1200T is a 10 ft (3.05 m) flat conveyor with either a left or right hand discharge.

Standard equipment on models 300 and 400 is either a left or right hand drop chute.

Supreme mixers, depending on the model, have several conveyors options available to accommodate many types of operations in the field.

300 and 400 Conveyors

Models 300 and 400 can get a 21 in. (533 mm) and 36 in. (914 mm) side-discharge conveyor as well as a 36 in. (914 mm) Hydraulic Folding, side-discharge conveyor.

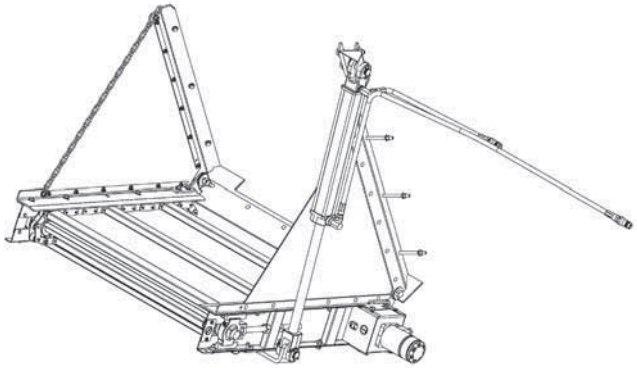


Figure 31

Dogleg Conveyor

Dogleg conveyors enable the user to discharge commodities at an elevated height. Heights between 40 and 49 in. (1.02 and 1.24 m) are available depending on model. The dogleg conveyor will allow the operator to discharge into bunks of various sizes. The dogleg conveyor is available in 8 ft (2.4 m) and 10 ft (3.05 m) in either left or right hand discharge.

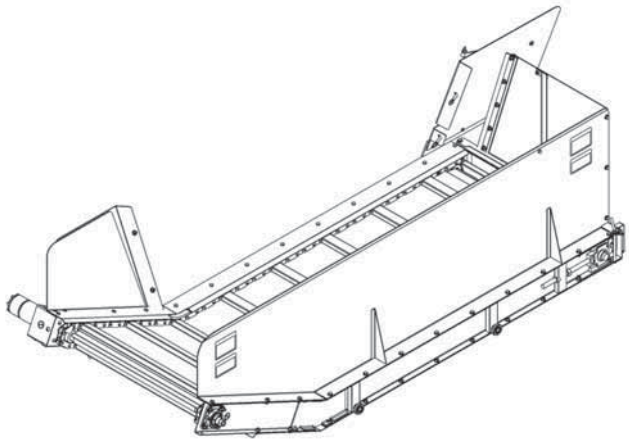


Figure 32

Hydraulic Folding Conveyor

Hydraulic Folding conveyors enable the user to discharge commodities at an elevated height. Heights between 26 and 58 in. (0.66 and 1.47 m) are available depending on model. The hydraulic folding conveyor will allow the operator to discharge into bunks of various sizes. The Hydraulic Folding conveyor is available in an 8 ft (2.4 m) length in either left or right hand discharge.

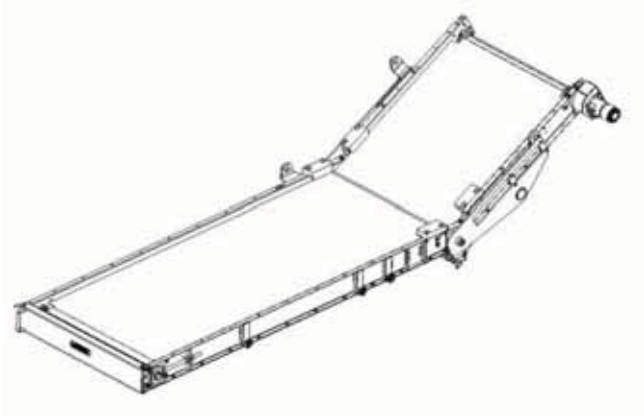


Figure 33

Dual Discharge

Dual Discharge conveyors enable the user to discharge commodities on either side of the mixer. Dual Discharge conveyors can come in 8 ft (2.4 m) and 10 ft (3.05 m) flats as well as 8 ft (2.4 m) and 10 ft (3.05 m) doglegs. This option is used for discharging from either the left or right of the mixer.

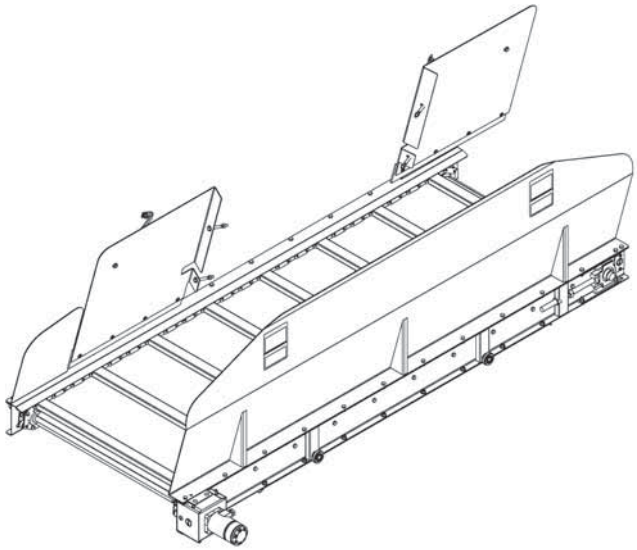


Figure 34

Conveyor Swing Gate

A Conveyor Swing Gate option is recommended for 8 ft (2.4 m) and 10 ft (3.05 m) dual discharge conveyors. When discharging from the left side of the mixer, the clockwise rotation of the augers may throw mixed feed past the opposite (RH) end of the conveyor. The conveyor gate will prevent this by shielding the end of the conveyor. This gate will fold away when the conveyor is extended to discharge from the right.

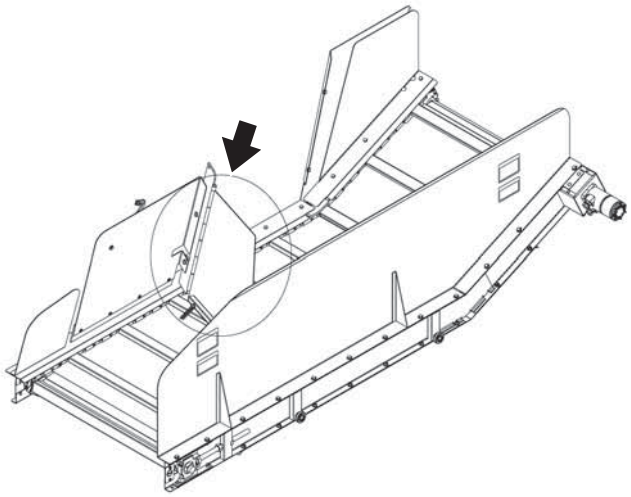


Figure 35

Hydraulic Extender Kit

The Hydraulic Extender allows the conveyor to be extended and retracted hydraulically. This option replaces the manual locking pin that comes with a standard equipped unit.

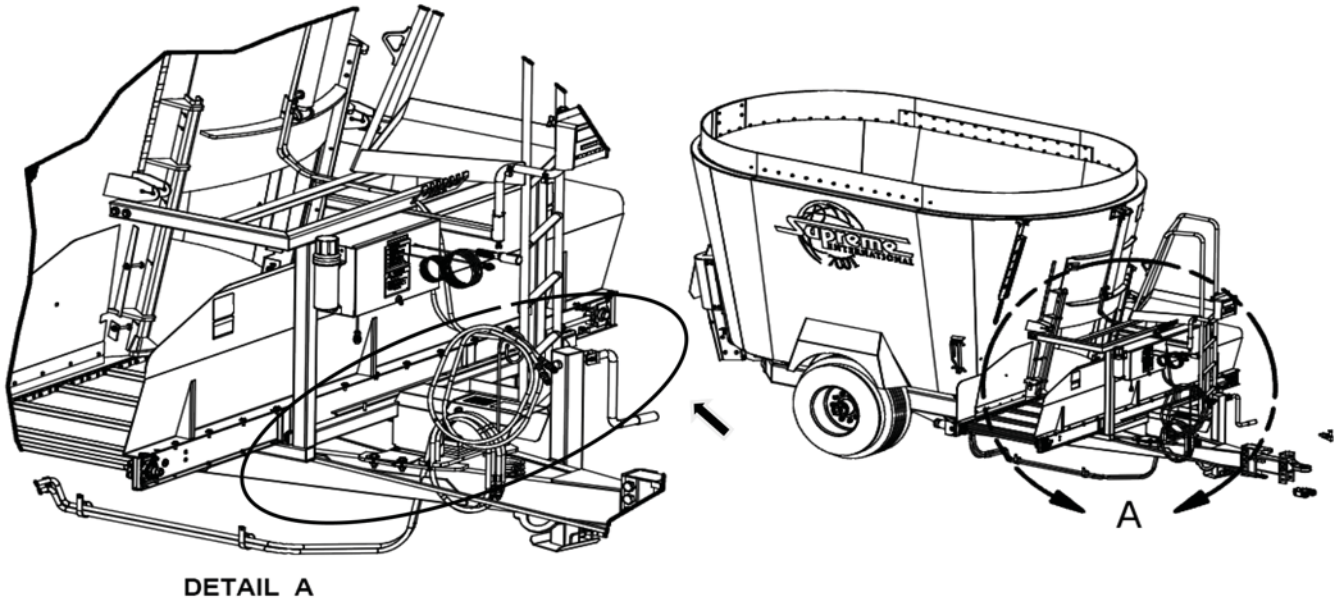
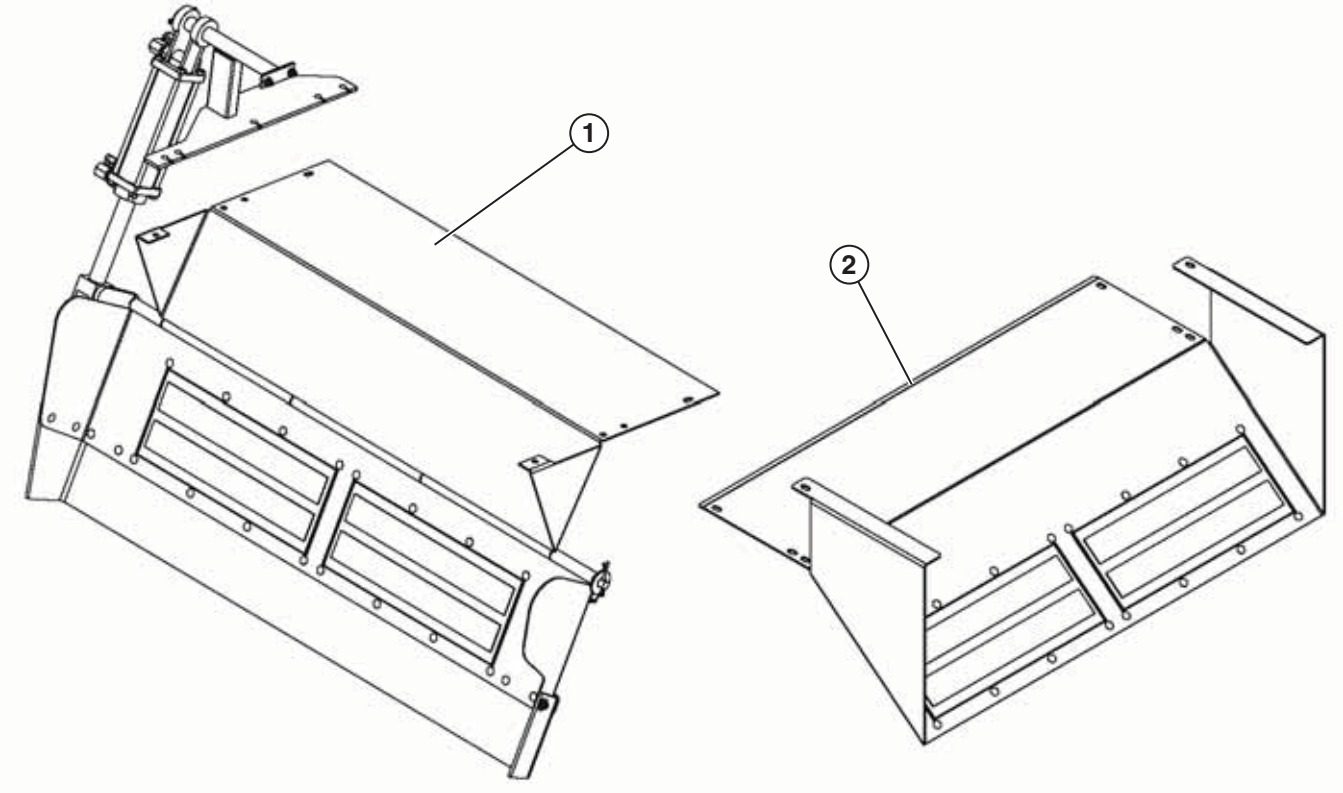


Figure 36

Conveyor Magnets and Drop Chutes

Conveyor magnets are designed to reduce the possibility of hardware disease in your livestock. Magnets can be installed on fixed or hydraulic drop chutes.

Drop chutes can be fixed (bolt-on) or hydraulically operated. Drop chutes can be installed on both flat and dogleg conveyors.



1 – Hydraulic Drop Chute Shown with Magnets

2 – Fixed Drop Chute Shown with Magnets

Figure 37

Taillights

We offer taillight kits to customers located in regions where laws requires all vehicles traveling on roadways to have taillights or for customers who just want an added safety measure for their Supreme mixer.

Operation of the taillight assembly is made possible by plugging in the main accessory plug of the mixer into your tractor's main accessory inlet.

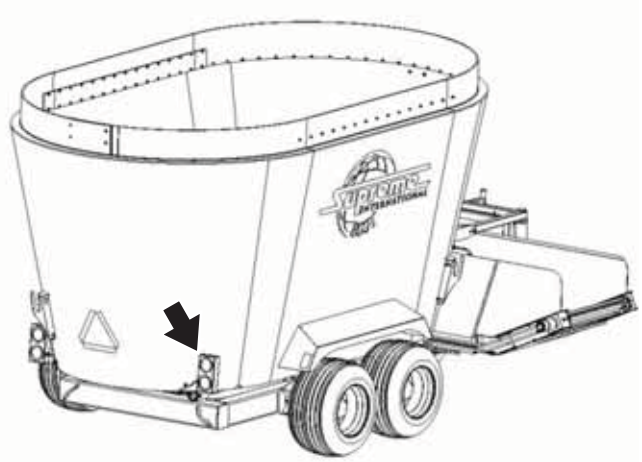
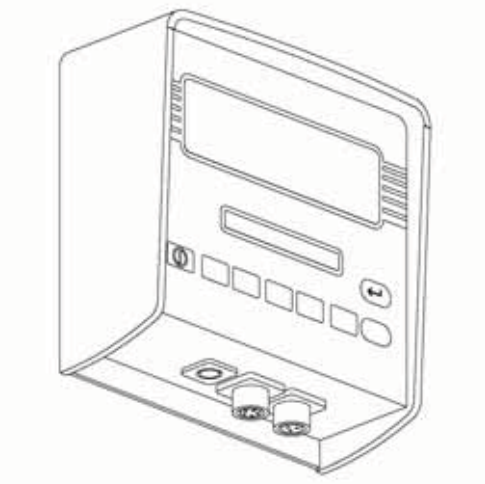
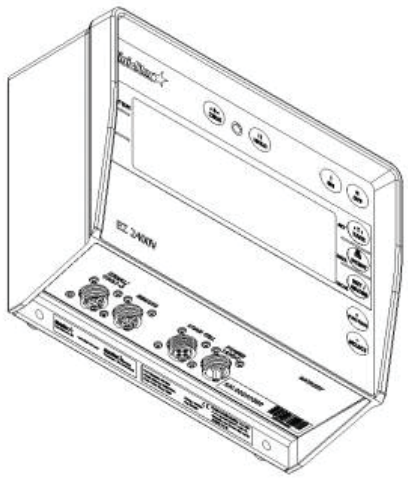


Figure 38

Electronic Scales

Supreme International Limited uses dinamica generale and Digi-Star products on its feed processors. Please refer to the scale owner's manual for operating procedures. Any troubleshooting or service related issues should be directed to appropriate contact listed below.





dinamica generale

DG 24/7 Tech Support
1-800-332-1123

DG - Canada
Interweigh Systems, Inc.
51 Bentley Street
Markham, Ontario L3R 3L1
Ph: 416-491-7001
Contact: Jeff Hughes

DG - USA
Fairbanks Scales Inc.
4000 Northeast 33rd Terrace Suite 11
Kansas City, MO 64117
Ph: 800-237-2253
Contact: Zach Cline

Digi-Star

Digi-Star 24/7 Tech Support
1-800-225-7695
Digi-Star, LLC
W5527 Hwy 106
Fort Atkinson, WI 53538
Toll Free: 800-225-7695
Phone: 1-920-563-140

CV - PTO

A Constant Velocity PTO shaft option is available with all PTO shafts, except models 300, 400 and 1400. A constant velocity PTO shaft is recommended for operations where the unit will be turning sharp corners while the PTO is still engaged.

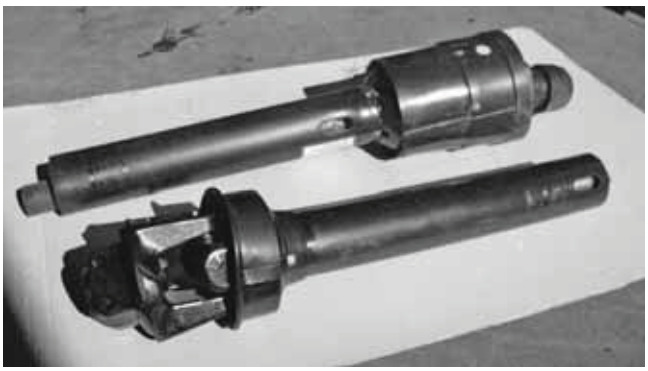


Figure 39

Hay Ring

The Hay Ring option is intended for users who have a high percentage of roughage in their rations. The tubes of the hay ring prevent the roughage from boiling out and over the wall of the mixer. The hay ring cannot be used in conjunction with the rubber tub extension option.

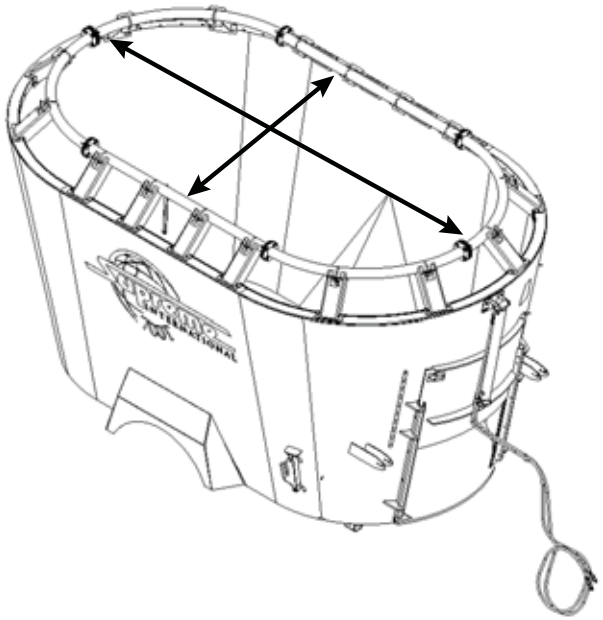


Figure 40

Brakes

A braking axle option is available on 900T through 1600T Pull-Type mixers. The braking axle helps assist in reducing the forward moment of the mixer when slowing down. Both hydraulic over hydraulic and electric over hydraulic options are available.

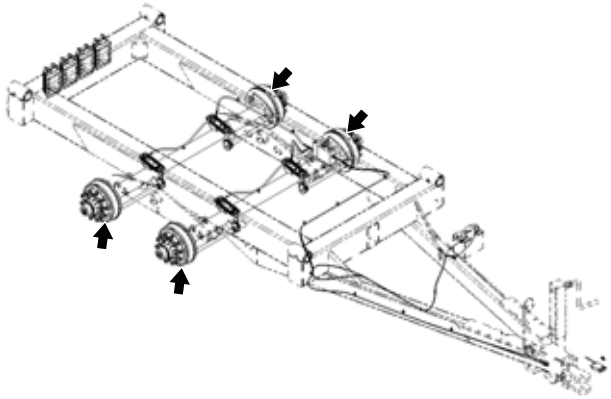


Figure 41

TROUBLESHOOTING

The following are some examples of problems that can arise during the **CUTTING/MIXING PROCESS** and troubleshooting tips on how to correct those problems.

CONDITION	CAUSE	CORRECTION
Hay boils over top of tub	Unit overloaded	Decrease dry roughage.
	Restrictor plates set in too far	Check yellow restrictor plates on tub. Restrictor plates that are in too far can cause lighter commodities to push up in the tub instead of falling down to the bottom. You may have to pull the restrictor plates all the way out.
Hay floats on top of mix	Hay was not loaded first	Make sure to load dry light commodities first.
	Bale not processed enough before adding other commodities	Process dry commodity long enough to make sure core comes apart.
	Restrictor plates in too far	Check yellow restrictor plates on tub. They should be in no more than one notch. If restrictor plates are already in one notch then pull restrictor all the way out.
Uneven mix	Has not had sufficient time to mix	May have to run unit a little longer.
	Restrictor plates in too far	Lock the restrictor plates in the out position.
Forage lengths are too short	Over processing of forage	Faster loading of commodities.
		Decrease tractor PTO speed.
		Remove knife #4 and/or #3 from auger.
Forage lengths are too long	Under processing of forage	Adjust restrictor plates in one notch.
		Increase tractor PTO speed.
		Make sure dry forage is added first.
		Let forage process longer before adding other commodities.
		Add one more knife to auger.
Hard core bale, difficult to break up and process	Tightly wound, coarse roughage	Add and extended backing plate to position #6 or #7 on the augers to decrease processing time.

The following are some examples of problems that can arise during the **FEEDING PROCESS** and troubleshooting tips on how to correct those problems.

CONDITION	CAUSE	CORRECTION
Uneven feeding into bunk or windrow	Conveyor chain is turning too fast	Slow conveyor speed to match flow of feed out door.
	Tub door is not open enough	Check and open door for better feed flow.
	High roughage content in ration	With longer cut or dry roughage mixes, adding water or moisture to ration will deter feed from hanging up in door.
		Add an extended backing plate to third or fourth position (or both) on the applicable auger to aid in the discharge at the front or side-discharge door.

The following are some troubleshooting tips for Supreme Feed Processors that have **been in use for a longer period** and are now experiencing problems.

CONDITION	CAUSE	CORRECTION
It takes longer to cut my dry forage now, than when it was new.	Knives worn	Check knives. Dull knives will lengthen cutting time.
The machine takes more HP than it did when new.	Knives worn	Check knives. Dull knives can act as a brake and therefore require more tractor HP.
There is a dead spot in the tub. (Feed moves slower or not at all in one spot.)	Auger leading edge worn *(see Figure 22 on page 35)*.	Check leading edge of auger for wear *(see Figure 22 on page 35)*. Is leading edge worn away from tub wall? Worn-away edge will not pull feed away from tub wall consequently feed will hang up in one spot.
	Auger kicker plate worn *(see Figure 20 on page 34)*.	Check kicker plate for wear. Worn off kicker plate will not direct feed into the auger, consequently slowing down mix.

APPENDICES

APPENDIX A
SPECIFICATIONS

Pull-Type Models

Model	Empty Weight		Height*		W/10" Extension		Overall Width**		Overall Length		Min. H.P. Req'd ***	Capacity W/10" Extension		Capacity (Struck Level)		Payload	
	lbs.	kgs	in.	cm	in.	cm	in.	cm	in.	cm		cu. ft	cu. m	cu. ft	cu. m	lbs	kgs
300	5700	2586	98	249	108	274	97	246	171	434	50	278	7.9	235	6.7	6000	2727
400	6400	2903	102	259	112	284	110	279	178	452	60	378	10.7	321	9.1	10,000	4545
500	9000	4082	105	267	115	292	108	274	221	561	100	462	13.1	398	11.3	14,000	6363
600	9750	4423	115	292	125	318	108	274	224	569	100	537	15.2	469	13.3	14,000	6363
500T	11,950	5420	99	251	109	277	99	251	241	612	80	555	15.7	480	13.6	14,000	6363
600T	12,730	5774	105	267	115	292	102	259	254	645	100	641	18.2	549	15.5	14,000	6363
700T	12,835	5822	113	287	123	312	102	259	242	615	100	649	18.4	568	16.1	14,000	6363
800T	16,150	7326	106	269	116	295	119	302	252	640	125	751	21.3	649	18.4	18,000	8165
900T	16,255	7373	117	297	127	322	123	312	273	693	130	849	24.1	739	20.9	24,000	10,908
1000T	19,400	8800	109	277	119	302	123	312	318	808	170	906	25.7	789	22.4	30,000	13,608
1200T	23,750	10773	121	307	131	333	122	310	320	813	180	1072	30.4	933	26.4	40,000	18,180
1400T	25,500	11567	130	330	140	356	122	310	329	836	230	1312	37.2	1157	32.8	40,000	18,180
1600T	26,500	12020	142	361	152	386	122	310	329	836	245	1480	41.9	1325	37.5	40,000	18,180

Stationary Models

Contact factory office for specifications. Units are custom designed due to power available for hook-up; therefore electrical/power packages are specific to customer's requirements.

* **Height** for Models 500T, 600T and 700T equipped with standard aircraft tires.
* **Height** for Model 900T, 1000T, 1200T, 1400T and 1600T equipped with truck tires.

** **Overall width and length** dependent on style of conveyor/discharge and options ordered (dogleg conveyor adds 4 in. [101.6 mm] of width to models 500, 600 and 700).

*** **Horsepower** requirements dependent on weight and commodity mix.

Due to continuing improvements in the design and manufacturing of equipment, specifications and technical data are subject to change without incurring any obligation on goods purchased.

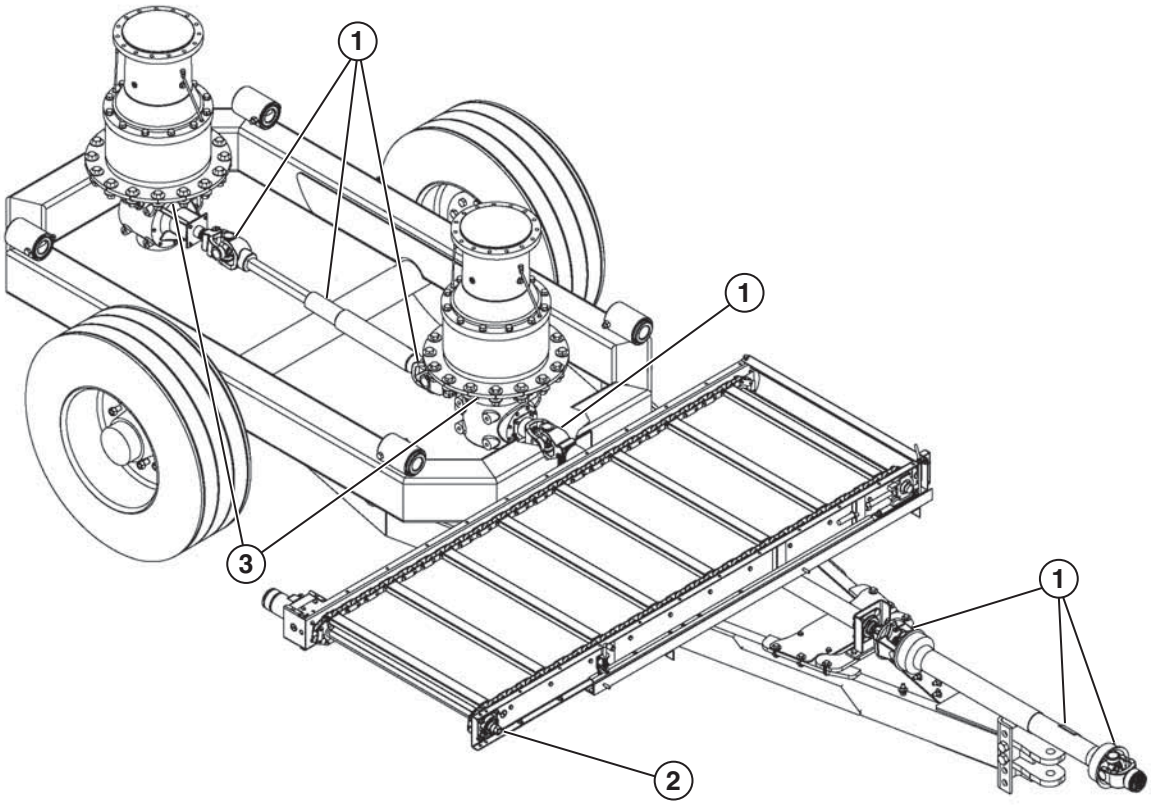
APPENDIX B
MAINTENANCE SCHEDULE

For all Supreme International Pull-Type Models

	HOURS					
	Daily	**Every 10**	**Every 50**	**Every 100**	**Every year or 1500, (whichever occurs first)**	
Check Oil Reservoir oil level	✓					
Grease PTO	Refer to PTO section in Operator's Manual for lubrication procedures					
Grease Telescoping Driveline	Refer to PTO section in Operator's Manual for lubrication procedures					
Check Wheel Hub oil level		✓				
Check Tire Pressure		✓				
Check Tire Wear		✓				
Check Hydraulic Circuits for leakage		✓				
Grease Walking Beam Axle		✓				
Check Conveyor Chain Tension			✓			
Grease Conveyor bearings			✓			
Grease Jack			✓			
Grease Second Cutter bearings			✓			
Check Second Cutter Gearbox oil level				✓		
Check Fluid Coupler oil level				✓		
Check Driveline Steady Bearing				✓		
Check Battery Box and battery				✓		
Check for loose or damaged wiring				✓		
Check for loose or missing fasteners				✓		
Check condition of Guards				✓		
Check Auger Knife wear				✓		
Check Auger Knife Bolt wear				✓		
Check Auger Flighting wear				✓		
Check Auger Kicker Plate wear				✓	✓	
Grease Wheel Hubs					✓	
Change Axle Oil Bath Oil					✓	
Change Planetary Oil					✓	
Change Planetary Gearbox Oil					✓	
Change Fluid-Drive Gearbox Oil					✓	
Change 2-Speed Gearbox Oil					✓	
Change Fluid Coupler Oil					✓	
Second Cutter Gearbox Oil					✓	
Grease Planetary Gearbox (if applicable)					✓	

*Optional equipment

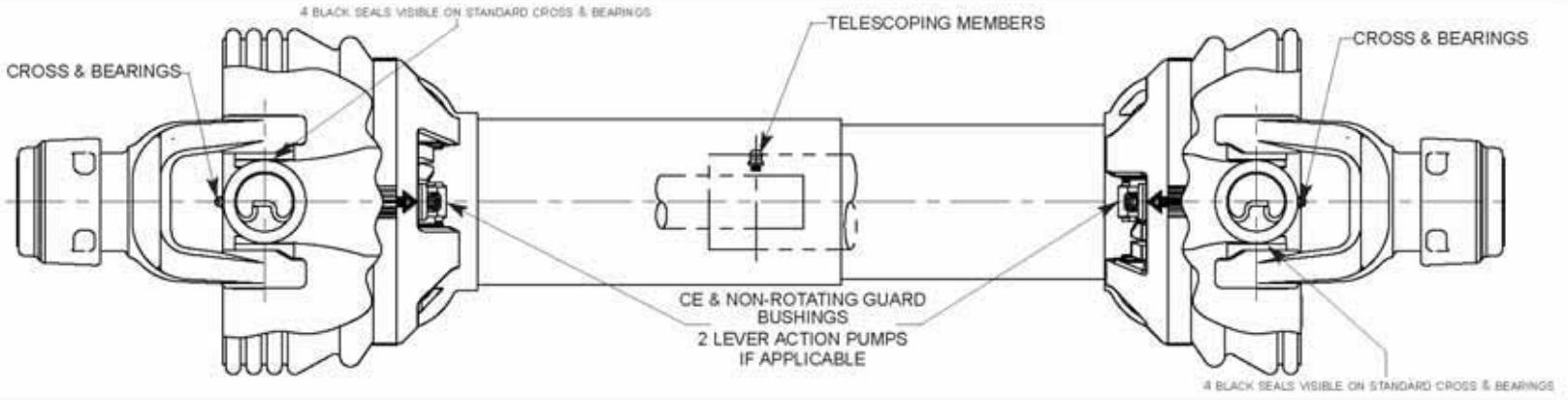
APPENDIX C
LUBRICATION CHART



1 – Two Pumps Every 8 Hours
2 – Conveyor Bearings (X4)
Two Pumps Every 50 Hours
3 – Five Pumps at Every Oil Change

Figure 42

Weasler — RECOMMENDED CUSTOMER LUBRICATION PROCEDURE FOR TELESCOPING DRIVELINES



LUBRICATE ALL FITTINGS WITH A GOOD QUALITY LITHIUM SOAP COMPATIBLE E.P. GREASE MEETING THE N.L.G.I. #2 SPECIFICATIONS AND CONTAINING NO MORE THAN 1% MOLYBDENUM DISULFIDE.

AN E.P. GREASE MEETING THE N.L.G.I. #2 SPECIFICATIONS AND CONTAINING 3% MOLYBDENUM DISULFIDE MAY BE SUBSTITUTED IN THE TELESCOPING MEMBERS ONLY.

LUBE RECOMMENDATIONS:	INTERVAL	LOCATION	AMOUNT
	50 HRS	EXTENDED LUBE CROSS & BEARING (ORANGE SEALS NOT VISIBLE)	2-3 LEVER ACTION PUMPS
	8 HRS.**	STANDARD CROSS & BEARINGS (BLACK SEALS)	2-3 LEVER ACTION PUMPS
	8 HRS.	TELESCOPING MEMBERS	8-10 LEVER ACTION PUMPS

** CONSTANT ANGLE APPLICATIONS MAY REQUIRE A LUBE INTERVAL OF 4 HOURS

CAUTION!! REPLACEMENT PARTS ARE NOT LUBRICATED

REPLACEMENT PARTS MUST BE LUBRICATED AT TIME OF ASSEMBLY AND DURING USE PER THE LUBE RECOMMENDATIONS

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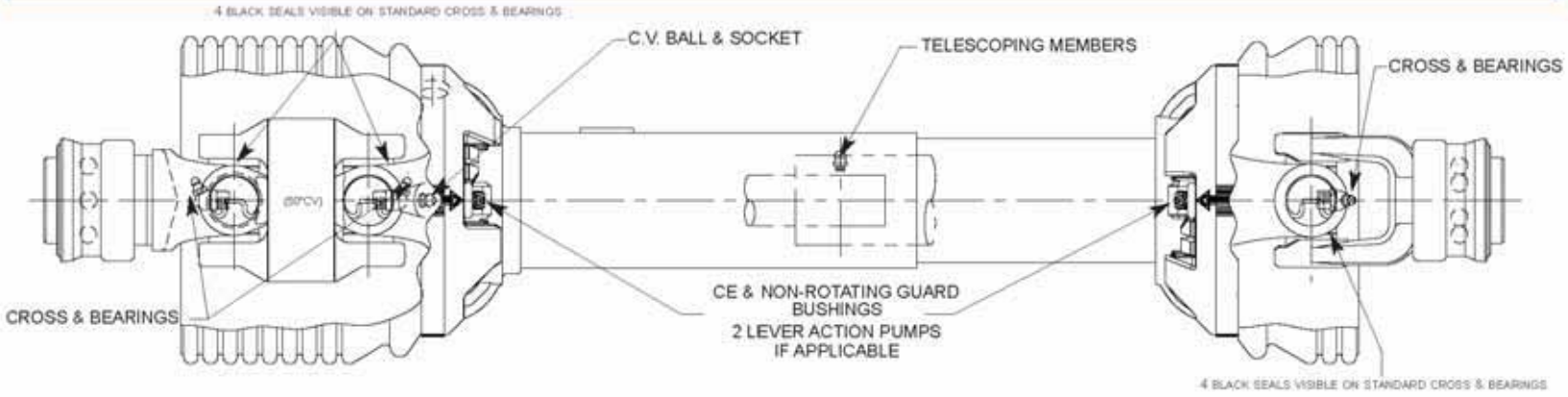
MB001-00

Weasler — RECOMMENDED CUSTOMER LUBRICATION PROCEDURE FOR 50° CV DRIVELINES



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LUBE RECOMMENDATIONS:	INTERVAL	LOCATION	AMOUNT
	50 HRS.	EXTENDED LUBE CROSS & BEARING (ORANGE SEALS NOT VISIBLE)	2-3 LEVER ACTION PUMPS
	8 HRS.**	STANDARD CROSS & BEARINGS (BLACK SEALS)	2-3 LEVER ACTION PUMPS
	8 HRS.	TELESCOPING MEMBERS	8-10 LEVER ACTION PUMPS
	8 HRS.**	CV BALL & SOCKET	4-6 LEVER ACTION PUMPS

** CONSTANT ANGLE APPLICATIONS MAY REQUIRE A LUBE INTERVAL OF 4 HOURS

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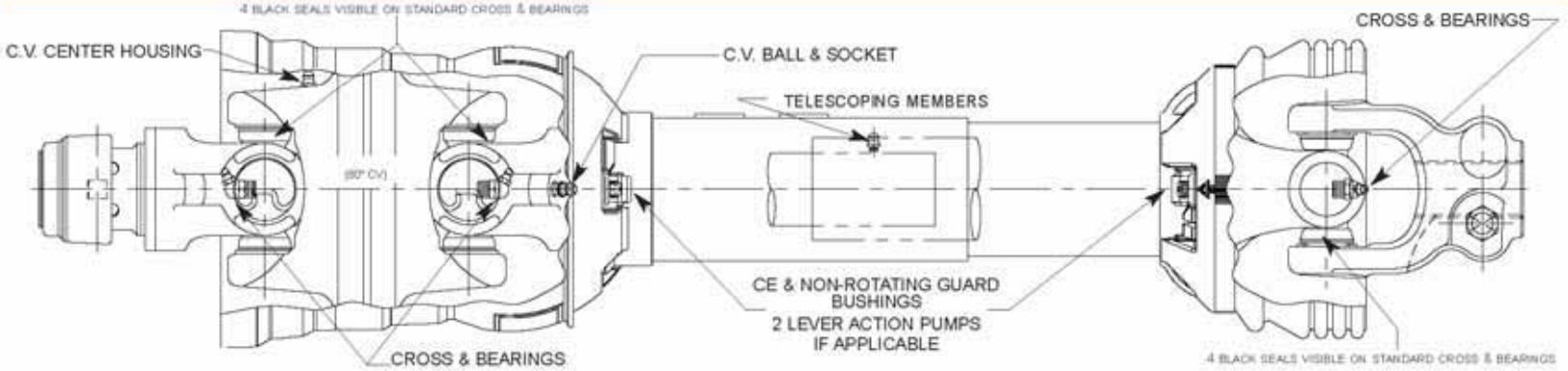
M3002-00

Weasler — RECOMMENDED CUSTOMER LUBRICATION PROCEDURE FOR 80° CV DRIVELINES



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LUBE RECOMMENDATIONS:	INTERVAL	LOCATION	AMOUNT
	50 HRS.	EXTENDED LUBE CROSS & BEARINGS (ORANGE SEALS NOT VISIBLE)	2-3 LEVER ACTION PUMPS
	8 HRS.**	STANDARD CROSS & BEARINGS (BLACK SEALS)	2-3 LEVER ACTION PUMPS
	8 HRS.	TELESCOPING MEMBERS	8-10 LEVER ACTION PUMPS
	8 HRS.**	CV BALL & SOCKET	4-6 LEVER ACTION PUMPS
	24 HRS.	CV CENTER HOUSING	12-15 LEVER ACTION PUMPS

** CONSTANT ANGLE APPLICATIONS MAY REQUIRE A LUBE INTERVAL OF 4 HOURS

CAUTION!! REPLACEMENT PARTS ARE NOT LUBRICATED

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APPENDIX G
OIL QUANTITIES

Planetary Oil Quantities

MODEL	PLANETARY	FRONT		REAR		TANK		TOTAL	
		Gal.	Liters	Gal.	Liters	Gal.	Liters	Gal.	Liters
300	PGA1602VM	3.85	17.5	–	–	0.33	1.5	4.18	19
400	PGA1602VM	3.85	17.5	–	–	0.33	1.5	4.18	19
500	PGA2002VM/PGA2003VM	5.06	23	–	–	0.33	1.5	5.39	24.5
600	PGA2002VM/PGA2003VM	5.06	23	–	–	0.33	1.5	5.39	24.5
500T	PGA2002VM/PGA2003VM	5.06	23	5.06	23	1.21	5.5	11.33	51.5
600T	PGA2002VM/PGA2003VM	5.06	23	5.06	23	1.21	5.5	11.33	51.5
700T	PGA2002VM/PGA2003VM	5.06	23	5.06	23	1.21	5.5	11.33	51.5
800T	PGA2002VM/PGA2003VM	5.06	23	5.06	23	1.21	5.5	11.33	51.5
900T	PG3002VM	4.34	19.75	4.34	19.75	1.21	5.5	9.9	45
1000T	PG3002VM	4.34	19.75	4.34	19.75	1.21	5.5	9.9	45
1200T	PG3002VM	4.34	19.75	4.34	19.75	1.21	5.5	9.9	45
1400T	PG3002VM	4.34	19.75	4.34	19.75	1.21	5.5	9.9	45
1600T	PG3002VM	4.34	19.75	4.34	19.75	1.21	5.5	9.9	45

Gearbox Oil Quantities

GEARBOX	TOTAL	
	Gallons	Liters
T269 (RIGHT ANGLE)	0.71	3.25
T269 (T BOX)	0.60	2.75
T301 (RIGHT ANGLE)	0.99	4.5
T301 (T BOX)	0.99	4.5
L-180 (RIGHT ANGLE)	0.77	3.5
2 SPEED 1.3:1	2.09	9.5

APPENDIX H
TORQUE - QUICK REFERENCE

The amount of twisting force (torque) on a bolt or screw is normally measured by the use of a torque wrench. The correct tightening of bolts is one of the most singularly important operations done when repairing an engine or component. Correct torque can eliminate deformation of mating surfaces. It can also eliminate bolt breakage, thread stripping, water and oil leaks.

Virtually every bolt and screw on an engine or component has a torque specification for correct tightening. It is imperative that the manufacturer's recommendation be followed for correct tightening sequence and tightness to eliminate problems created by bolts and screws being too tight or too loose.

S.A.E. Bolt Grade and Recommended Torque Chart

S.A.E. GRADE	1 or 2	5	6	8	Recommended for Competition and Critical Use
					
1/4 DIA	5 ft lbs	7 ft lbs	10 ft lbs	10.5 ft lbs	11 ft lbs
5/16	9	14	19	22	24
3/8	15	25	34	37	40
7/16	24	40	55	60	65
1/2	37	60	85	92	97
9/16	53	88	120	132	141
5/8	74	120	167	180	192
3/4	120	220	280	286	316
7/8	190	302	440	473	503
1	282	466	660	714	771

APPENDIX I
METRIC BOLT GRADE AND RECOMMENDED TORQUE CHART

Torque Wrench Setting (N·m)

Screw on steel or cast iron.

ISO METRIC THREAD - Coarse Pitch											
Nom. Size	Pitch	Quality 4.8		Quality 6.8		Quality 8.8		Quality 10.9		Quality 12.9	
(mm)	(mm)	min	max	min	max	min	max	min	max	min	max
4	0,7	1,5	1,9	2,3	2,8	3,1	3,8	4,4	5,3	5,2	6,3
5	0,8	3,0	3,7	4,5	5,5	6,0	7,3	8,5	10,3	10,2	12,4
6	1	5,2	6,3	7,8	9,5	10,4	12,7	14,7	17,8	17,6	21,4
8	1,25	12,5	15,2	18,7	22,7	25,0	30,3	35,1	42,6	42,1	51,1
10	1,5	25,0	30,3	37,4	45,5	49,9	60,6	70,2	85,2	84,2	102,3
12	1,75	42,5	51,6	63,7	77,4	85,0	103,2	119,5	145,1	143,4	174,2
14	2	67,6	82,1	101,5	123,2	135,3	164,3	190,2	231,0	228,3	277,2
16	2	102,4	124,3	153,6	186,5	204,8	248,6	287,9	349,6	345,5	419,6
18	2,5	142,7	173,3	214,1	259,9	285,4	346,6	401,4	487,4	481,7	584,9
20	2,5	200	243	300	364	400	486	562	683	675	819
22	2,5	268	326	402	489	537	652	755	916	906	1.1
24	3	346	420	518	629	691	839	972	1.18	1.166	1.416
27	3	504	612	756	918	1.008	1.224	1.418	1.721	1.701	2.066
30	3,5	688	835	1.032	1.253	1.375	1.67	1.934	2.349	2.321	2.818

ISO METRIC THREAD - Fine Pitch											
Nom. Size	Pitch	Quality 4.8		Quality 6.8		Quality 8.8		Quality 10.9		Quality 12.9	
(mm)	(mm)	min	max	min	max	min	max	min	max	min	max
8	1	13,1	15,9	19,7	23,9	26,2	31,8	36,9	44,8	44,2	53,7
10	1,25	26,0	31,5	38,9	47,3	51,9	63,0	73,0	88,6	87,6	106,4
12	1,25	45,3	55,0	67,9	82,4	90,5	109,9	127,3	154,6	152,8	185,5
12	1,5	43,9	53,3	65,8	79,9	87,8	106,6	123,4	149,9	148,1	179,8
14	1,5	71,4	86,7	107,1	130,0	142,8	173,4	200,8	243,8	241,0	292,6
16	1,5	107,2	130,1	160,8	195,2	214,3	260,3	301,4	366,0	361,7	439,2
18	1,5	154,9	188,0	232,3	282,1	309,7	376,1	435,6	528,9	522,7	634,7
20	1,5	215	261	322	391	430	522	604	734	725	881
22	1,5	286	347	429	521	572	695	805	977	966	1.173
24	2	367	446	551	669	734	891	1.032	1.254	1.239	1.504
27	2	531	645	797	968	1.063	1.291	1.495	1.815	1.793	2.178
30	2	739	897	1.108	1.345	1.477	1.794	2.077	2.522	2.493	3.027

PTO Shear Bolt Sizes

PTO Model	RPM	Size (in.)	Standard or CV	Shear Bolt Size (in.)	Grade	Models Used On
242-23494	540	1-3/8	Standard	1/4 x 1-1/4	5	300, 400
262-21147	540	1-3/8	Standard	5/16 x 1-1/2	5	500, 600, 500T, 600T, 700T, 900T
265-24976	540	1-3/8	Constant Velocity	5/16 x 1-1/2	5	500, 600, 500T, 600T, 700T, 900T
242-22218	1000	1-3/8	Standard	1/4 x 1-1/4	5	300, 400
262-20596	1000	1-3/8	Standard	5/16 x 1-1/2	5	500, 600, 500T, 600T, 700T, 900T, 1000T, 1200T
265-24975	1000	1-3/8	Constant Velocity	5/16 x 1-1/2	5	500, 600, 500T, 600T, 700T, 900T, 1000T, 1200T
T80.086P02 8359	1000	1-3/8	Constant Velocity	M12X65	8.8	800T
262-21228	1000	1-3/4	Standard	5/16 x 1-1/2	5	500, 600, 500T, 600T, 700T, 900T
265-24972	1000	1-3/4	Constant Velocity	5/16 x 1-1/2	5	500, 600, 900T
272-21556	1000	1-3/4	Standard	3/8 x 2-1/2	5	1000T, 1200T, 1400T, 1600T
265-24974	1000	1-3/4	Constant Velocity	5/16 x 1-1/2	5	500T, 600T, 700T, 1000T, 1200T, 1400T, 1600T
272-23303	1000	1-3/4	Standard	3/8 x 2-1/2	5	1400T, 1600T
282-24109	1000	1-3/4	Standard	7/16 x 2	8	1400T, 1600T

The previous torque tables correspond to an axial preload, which is between 70% and 85% of the material yield stress.

Coefficient of Friction: 0.14

With lubricated thread use 70% of abovementioned tables. When quality 12.9 fasteners are used in tapped holes in grey cast iron, the fasteners should be torqued to quality 10.9 specifications.

APPENDIX J
WEIGHBAR CALIBRATION CHARTS

Refer to *SETTING OF THE PARAMETERS* or *CALIBRATION* in the owner's manual for this procedure.

Digi-Star Set-up Calibration Numbers

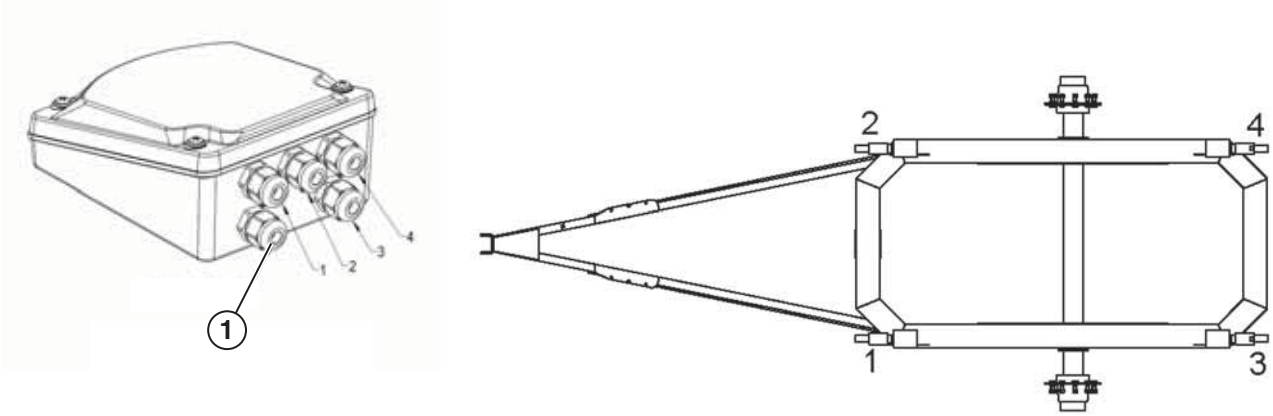
DIGI-STAR LOAD CELL MODEL	SUPREME P/N	N° of load cells installed	mV/V @ weight	Digi-Star Microcomputer	
				set-up #	calibration #
2-1/8 in. MOBILE		3	0.3 mV/V = 6000 lbs	146018	24,480
2-1/8 in. MOBILE		4	0.3 mV/V = 6000 lbs	146040	32,640
2-7/8 in. MOBILE		3	0.750 mV/V= 15,000 lbs	137060	23,930
2-7/8 in. MOBILE		4	0.750 mV/V= 15,000 lbs	127066	33,812

Dinamica Generale Set-up Calibration Numbers

SUPREME LOAD CELL MODEL	SUPREME P/N	N° of load cells installed	mV/V @ weight	DG Microcomputer PASSWORD 12	
				CAL value kg	CAL value lbs
2-1/8 in. DIA STATIC	PRT2003	3	0.5 mV/V = 10,000 lbs	5005	11,034
2-1/8 in. DIA STATIC	PRT2003	4	0.5 mV/V = 10,000 lbs	6674	14,713
2-1/8 in. DIA MOBILE	PRT2003	3	0.3 mV/V = 6000 lbs	5005	11,034
2-1/8 in. DIA MOBILE	PRT2003	4	0.3 mV/V = 6000 lbs	6674	14,713
2-7/8 in. DIA STATIC	PRT2004	3	1,150 mV/V = 23,000 lbs	5005	11,034
2-7/8 in. DIA STATIC	PRT2004	4	1,150 mV/V = 23,000 lbs	6674	14,713
2-7/8 in. DIA MOBILE	PRT2004	3	1,150 mV/V = 23,000 lbs	5005	11,034
2-7/8 in. DIA MOBILE	PRT2004	4	1,150 mV/V = 23,000 lbs	6674	14,713

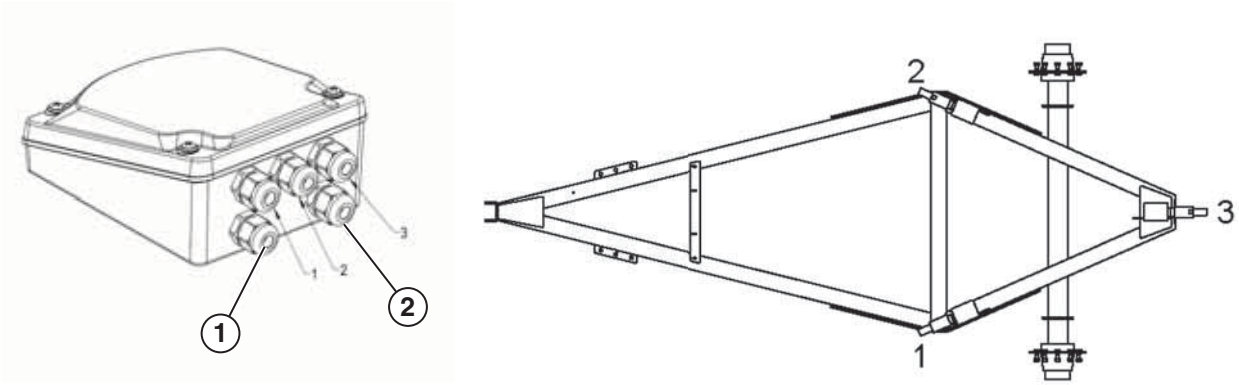
APPENDIX K
WEIGHBAR / JUNCTION BOX LAYOUT

Digi-Star



1 – Sensor Cable

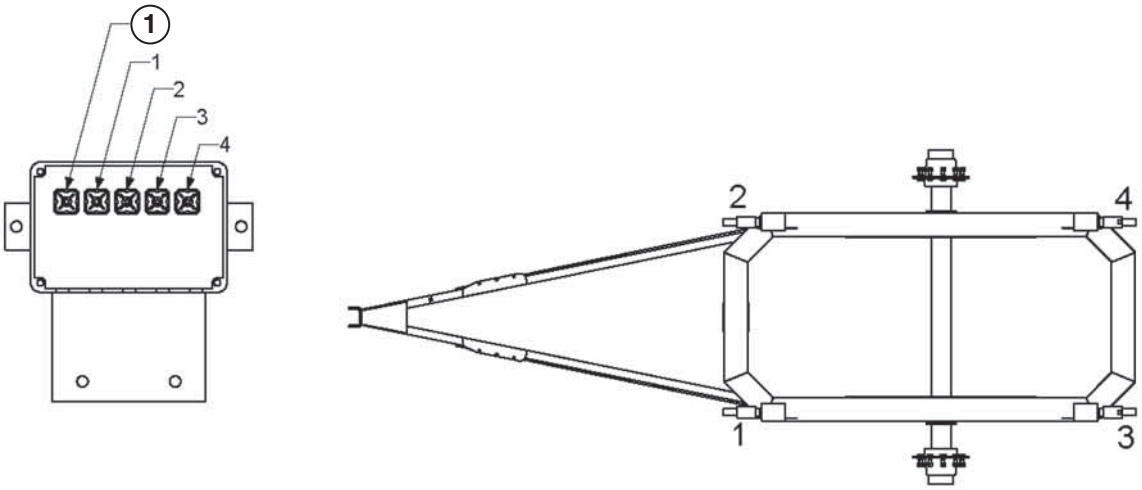
4-Point Weighing System
Figure 43



1 – Sensor Cable 2 – Cap/Plug

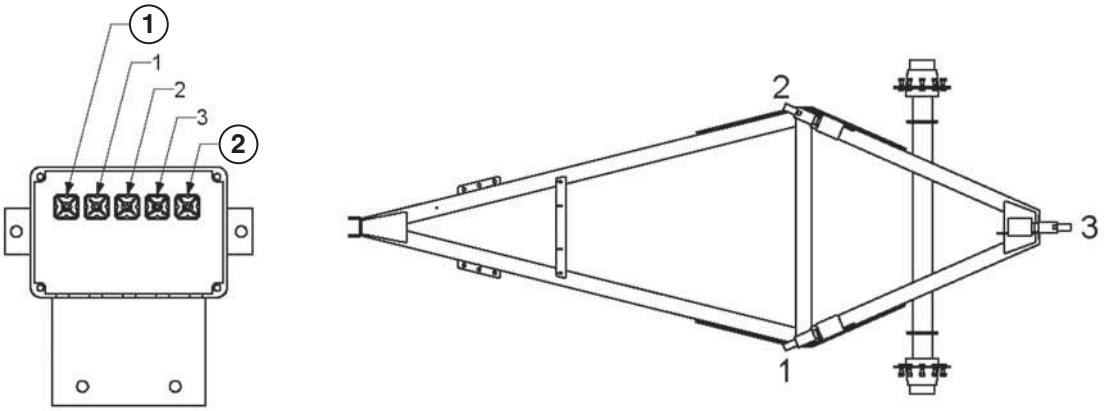
3-Point Weighing System
Figure 44

Dinamica Generale



1 – Sensor Cable

4-Point Weighing System
Figure 45



1 – Sensor Cable

2 – Cap

3-Point Weighing System
Figure 46

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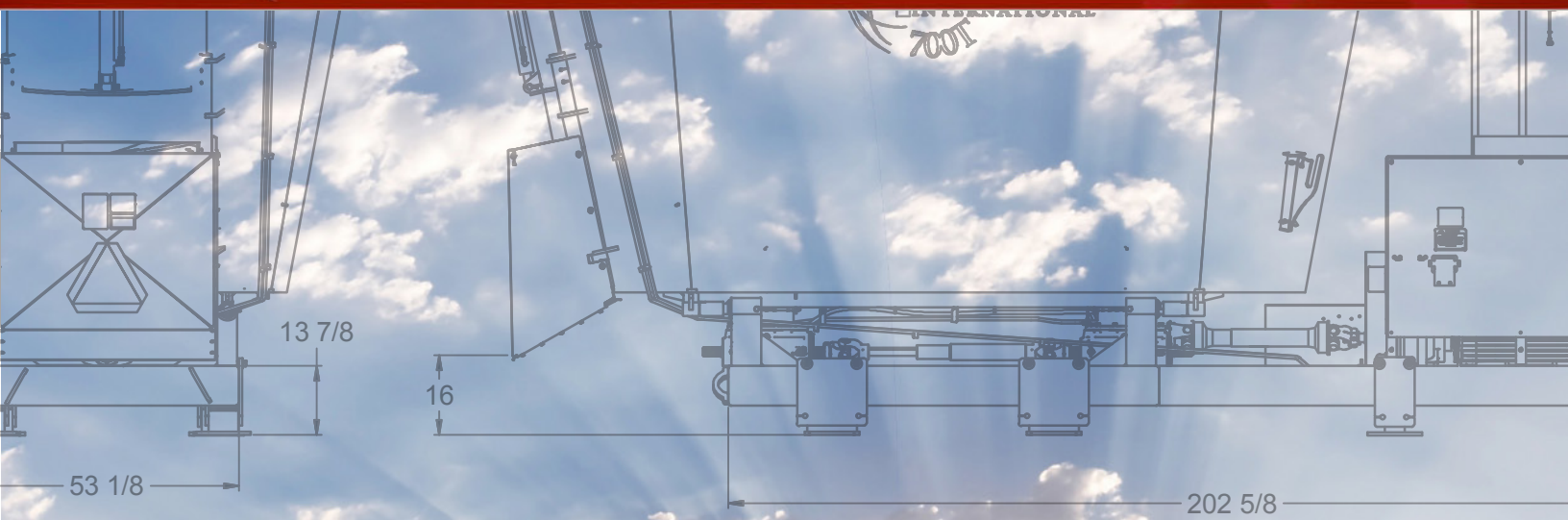
Parts Book

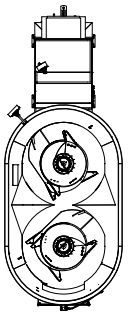


SUPREME INTERNATIONAL
Supreme INTERNATIONAL
1953 60 YEARS 2013

700T Stationary

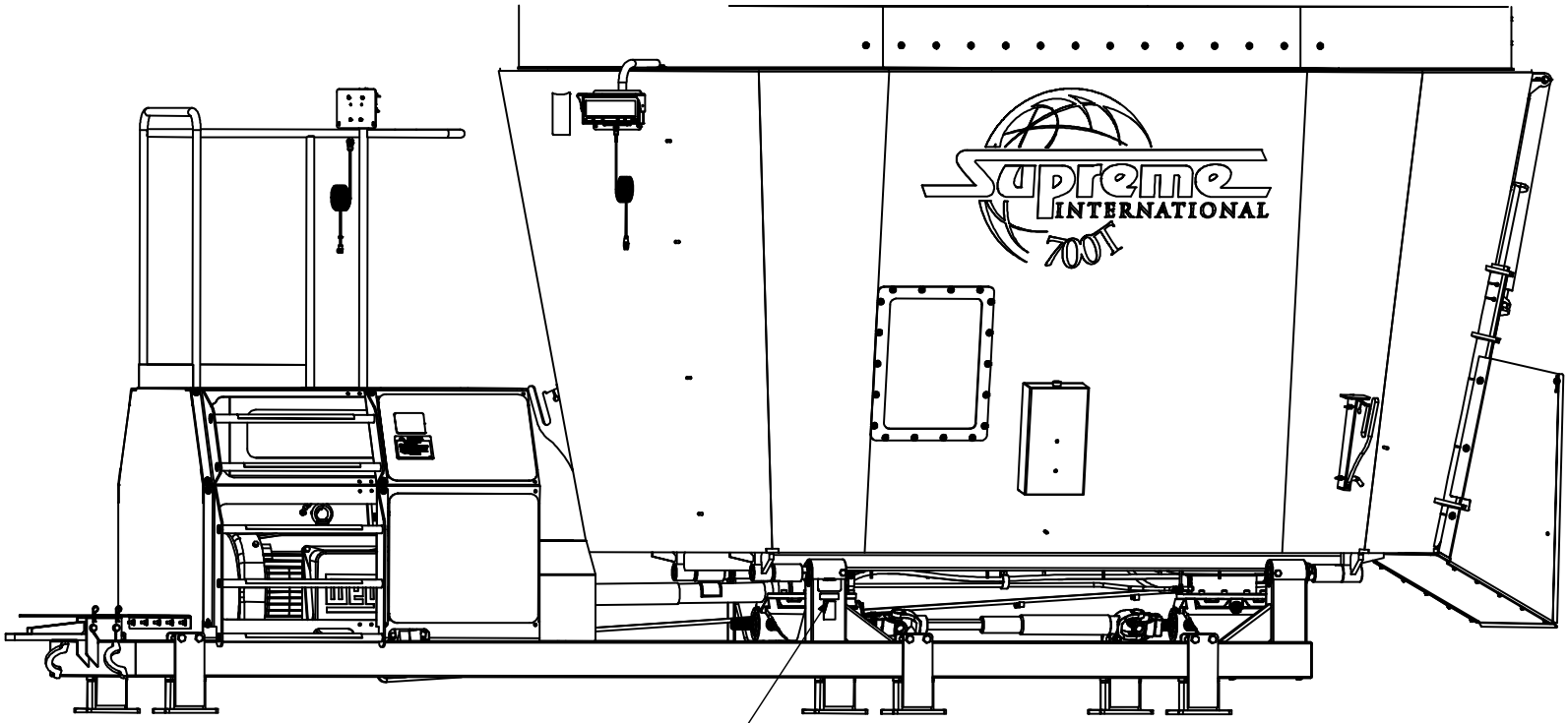
Index

LEFT RIGHT



MODEL ORIENTATION

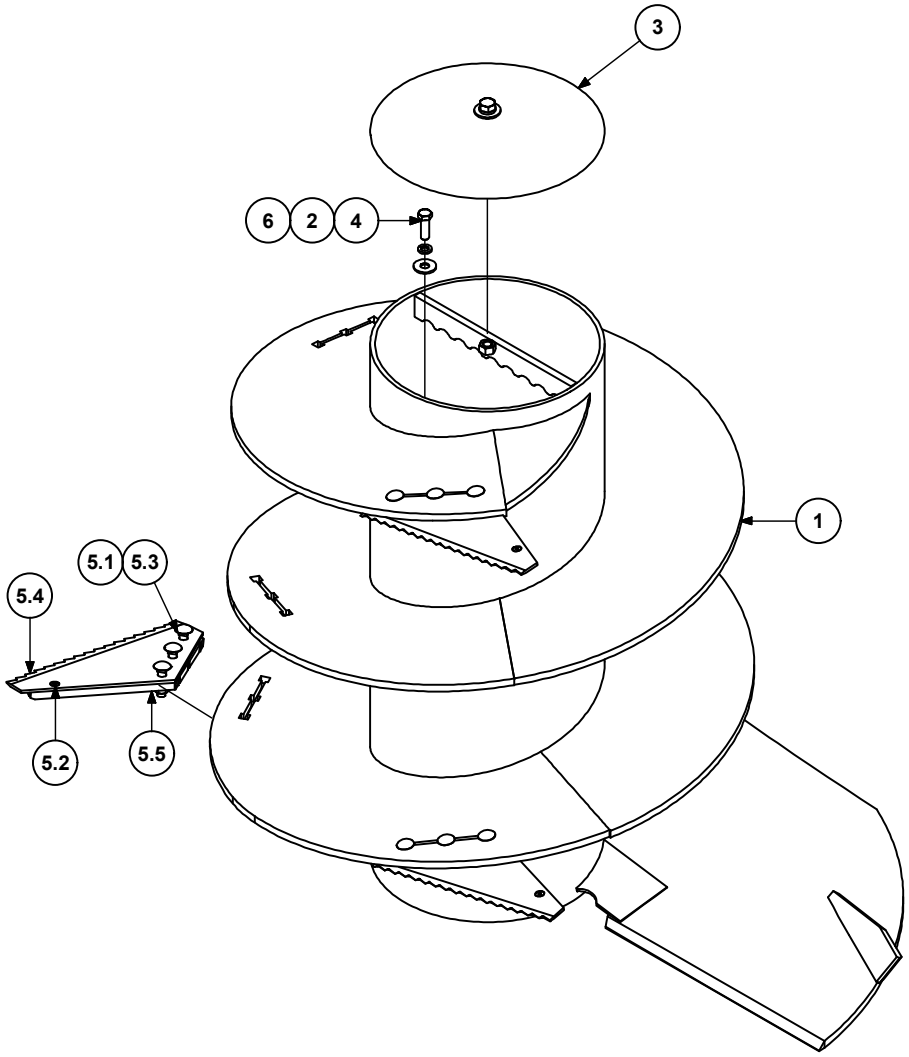
YOUR MODEL



YOUR SERIAL NUMBER IS LOCATED HERE
(PLEASE HAVE THIS NUMBER AVAILABLE WITH ANY INQUIRIES)

AUGER ASSEMBLY

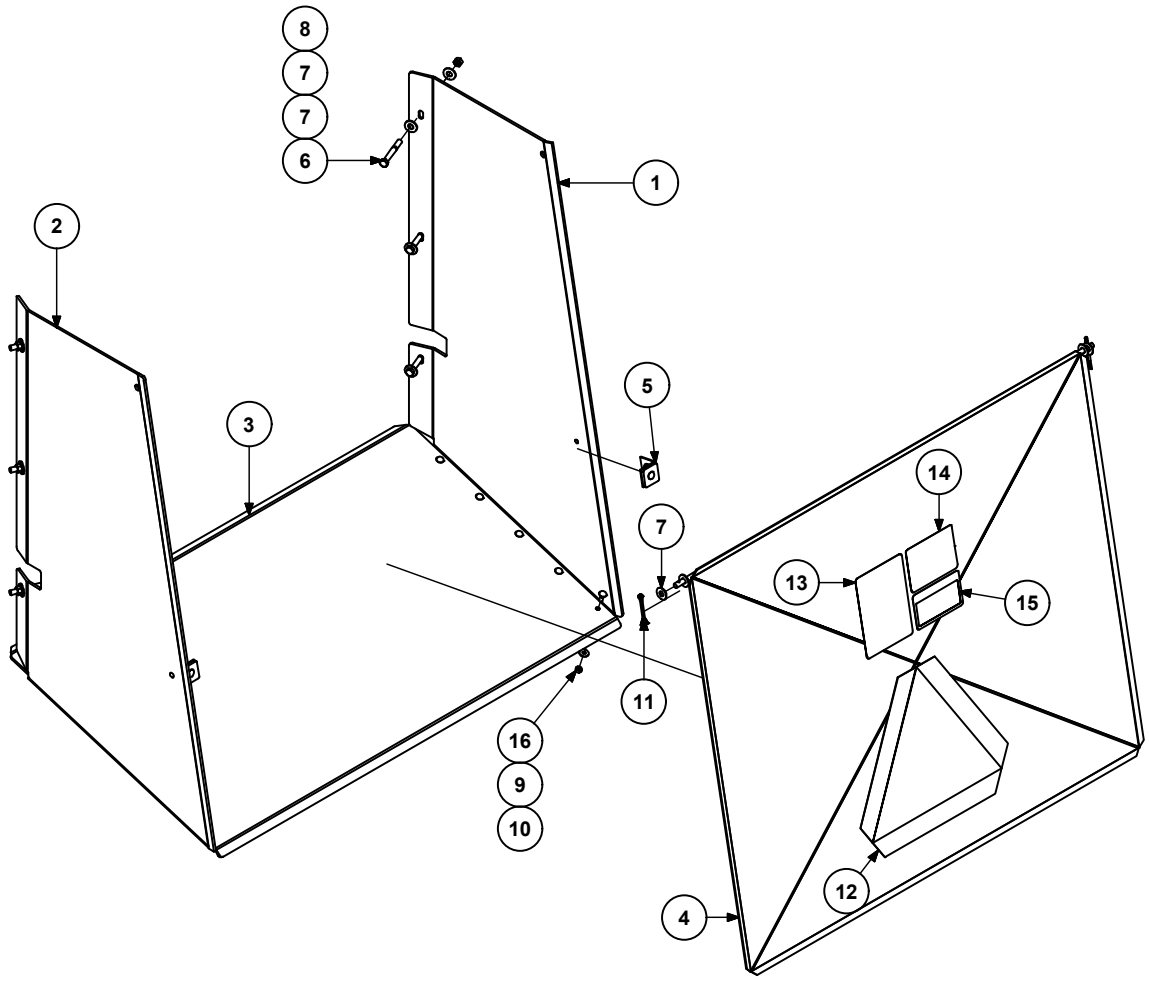
AUX121



ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	AUX122	AUGER 7T WLD	5.2	1	BT3/8X3/4FHNCSK	BOLT 3/8 x 3/4 FHNCSK
2	15	LKW5/8P	LOCKWASHER 5/8" PLATED	5.3	3	CBT5/8X2-1/2NC8	CARRIAGE BOLT 5/8 X 2-1/2 GR 8
3	1	AUX18CAP	AUGER CAP 18" ASY	5.4	1	OSM17X	AUGER KNIFE
4	15	BTM16X50X2	BOLT 16MM X 50MM X 2	5.5	1	BPX002	AUGER KNIFE BACKING PLT
5	5	AUX055	AUGER KNIFE ASY	6	15	FLTW5/8P	FLAT WASHER 5/8" PLATED
5.1	3	LKNUT5/8NCP	LOCKNUT 5/8" NC PLATED				

CHUTE ASSEMBLY

CHX066

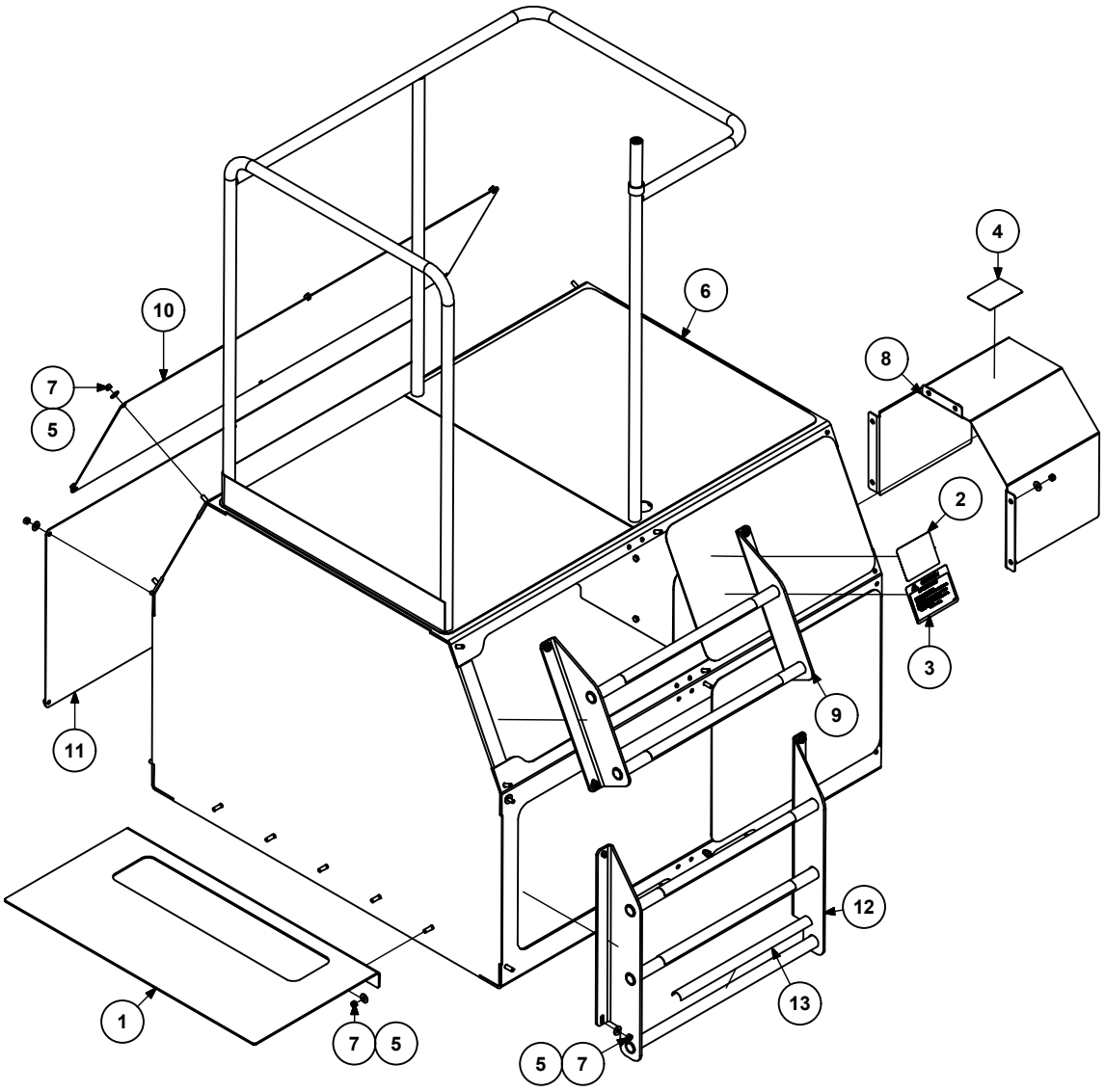


ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CHX065	CHUTE REAR DR RH SIDE PANEL 7T
2	1	CHX070	CHUTE REAR DR LH SIDE PANEL 7T
3	1	SHX073	CHUTE REAR DR BTM PAN 7T/9T
4	1	SHX074	CHUTE REAR DR GATE 7T/9T WLD
5	2	CHX067	CHUTE REAR DR GATE STPR ASY
6	6	BT3/8X3NC5P	BOLT 3/8" x 3" NC GR.5 PLATED
7	14	FLTW3/8P	FLATWASHER 3/8" PLATED
8	6	LKNUT3/8NCP	LOCKNUT 3/8" NC PLATED

ITEM	QTY	PART NUMBER	DESCRIPTION
9	10	FLTW1/4P	FLATWASHER 1/4" PLATED
10	10	CBT1/4X3/4NC5P	CARR. BOLT 1/4" X 3/4" NC GR5 PL
11	2	COT3/16X1-1/2	COTTER PIN 3/16" x 1 1/2"
12	1	SMV	DECAL "SLOW MOVING VEHICLE"
13	1	SP13	DECAL "DANGER ROTATING SCREW"
14	1	SP21	DECAL -DANGER/KEEP CHILDREN AW
15	1	SP20	DECAL -WARNING/KEEP HANDS AWAY
16	10	LKNUT1/4NCP	LOCKNUT 1/4" NC PLATED

PLATFORM ASSEMBLY

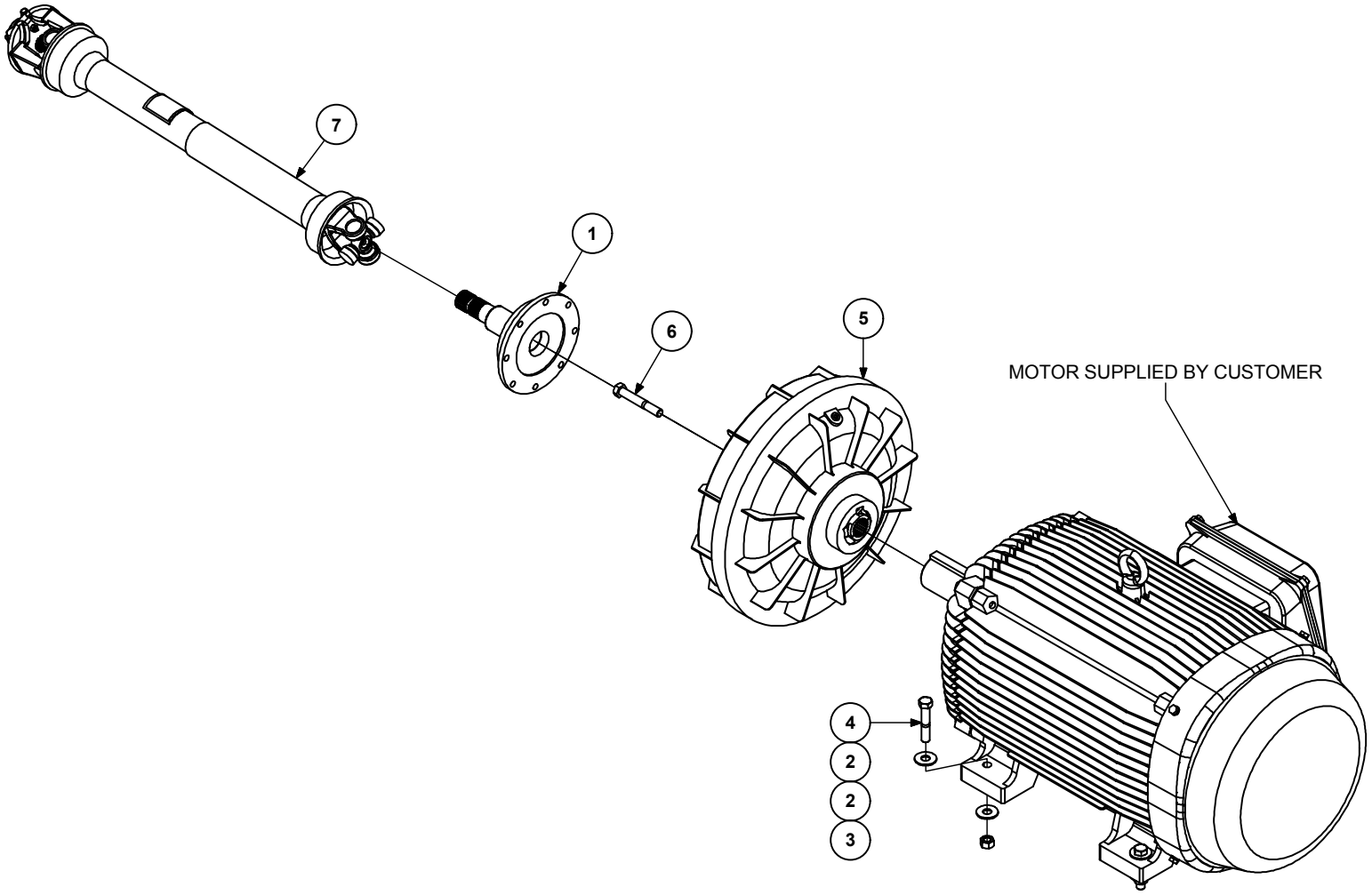
PLX734



ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	FRX373	FRAME SWITCH MNTG PLT 9TS	8	1	PLX493	PLTFRM PTO GUARD 14TS
2	1	SP21	DECAL -DANGER/KEEP CHILDREN AW	9	1	PLX713	PLTFRM STEP WLD
				10	1	PLX728	PLTFRM SIDE COVER LONG 7T
3	1	SP23	DECAL - CAUTION / NO WELDING	11	1	PLX729	PLTFRM SIDE COVER LONG 7T
4	1	SP101	DECAL - DANGER ROTATING D-LINE	12	1	PLX732	PLTFRM STEP 7T WLD
5	31	FLTW3/8P	FLATWASHER 3/8" PLATED	13	5	PLX299	PLTFRM STAIR SAFTY STRIP
6	1	PLX733	PLTFRM 5TS/6TS/7TS WLD				
7	31	LKNUT3/8NCP	LOCKNUT 3/8" NC PLATED				

DRIVELINE ASSEMBLY 150HP

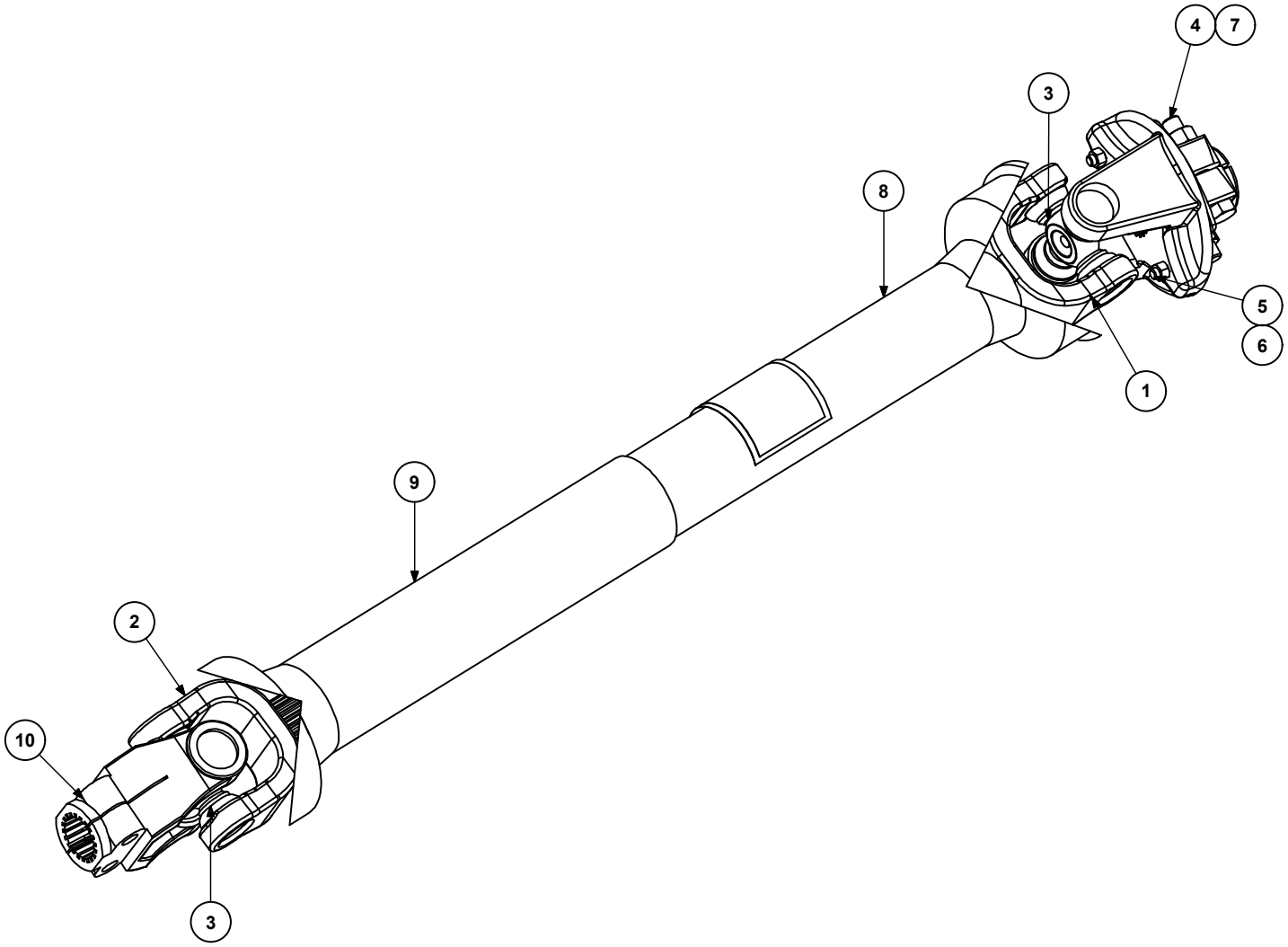
DRX649



ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	DRX077	DRVLN FLD CPLR HUB #21/24 WLD	5	1	21KR3.375	FLUID COUPLER W/3-3/8" BORE
2	8	FLTW3/4P	FLATWASHER 3/4" PLATED	6	1	BT3/4X5NC8P	BOLT 3/4"x 5" GR8 PLATED
3	4	LKNUT3/4NCP	LOCKNUT 3/4" NYLON	7	1	DRX353	PTO 1-3/4 20Z MODIFIED 272-23303
4	4	BT3/4X4NC8P	BOLT 3/4" x 4" GR 8 PLATED				

PTO ASSEMBLY

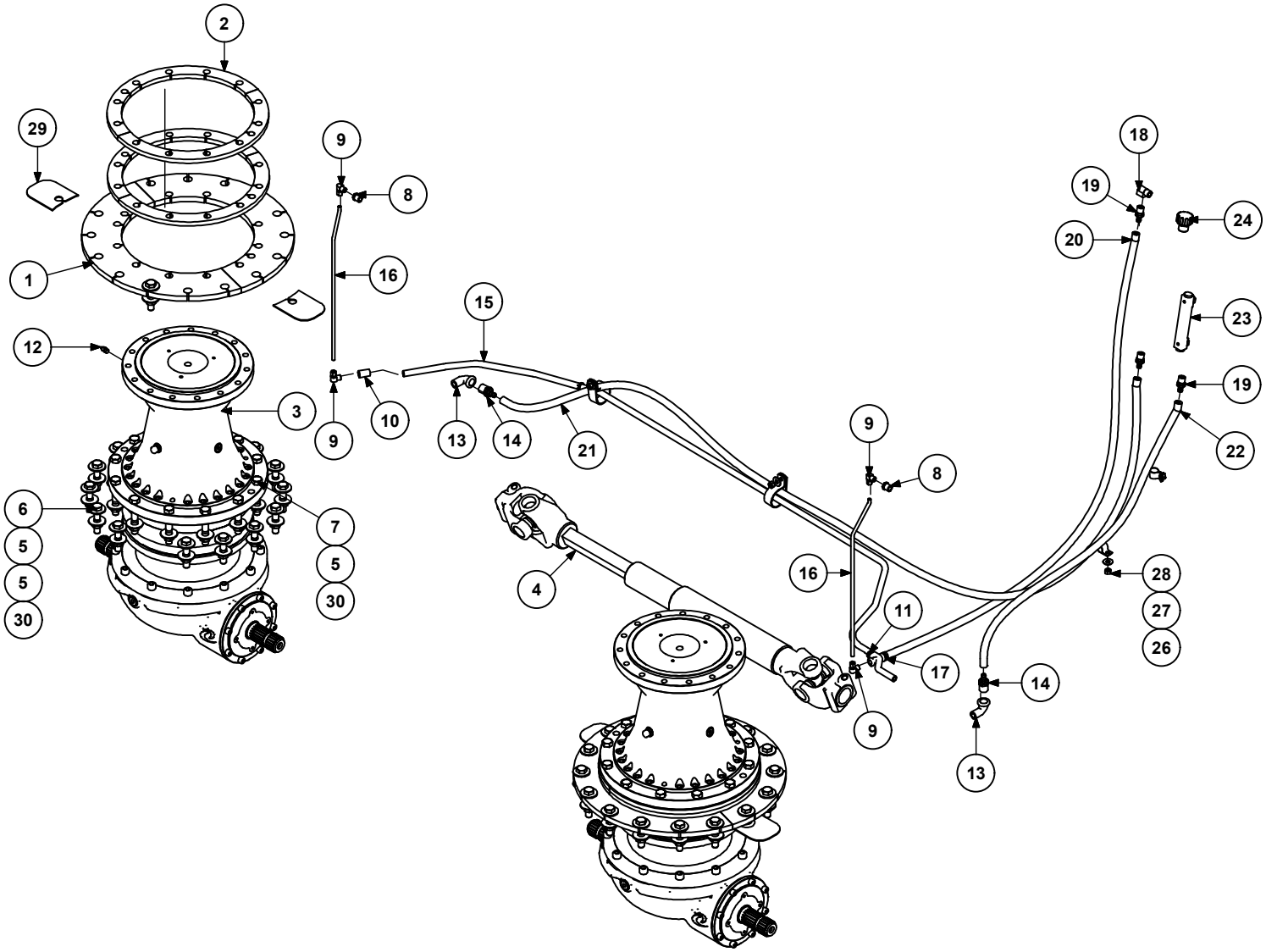
DRX353



ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	98-23303	YOKE, TUBE AND SLIP SLEEVE	6	2	LKNUT3/8NCP	LOCKNUT 3/8" NC PLATED
2	1	99-23303	YOKE AND SHAFT	7	2	LKNUT5/8NCP	LOCKNUT 5/8" NC PLATED
3	2	03-15307	CROSS KIT 55R	8	1	96-23303	INNER GUARD
4	2	BT5/8X3-1/2NC5P	BOLT 5/8" X 3 1/2"NC GR5 PLATE	9	1	97-23303	OUTER GUARD
5	2	BT3/8X1-1/2NC8P	BOLT 3/8" x 1 1/2" NC GR.8 PLA	10	1	55053-1001	YOKE DBL CLAMP 55R 1-3/4x2 0Z

FINAL DRIVE ASSEMBLY

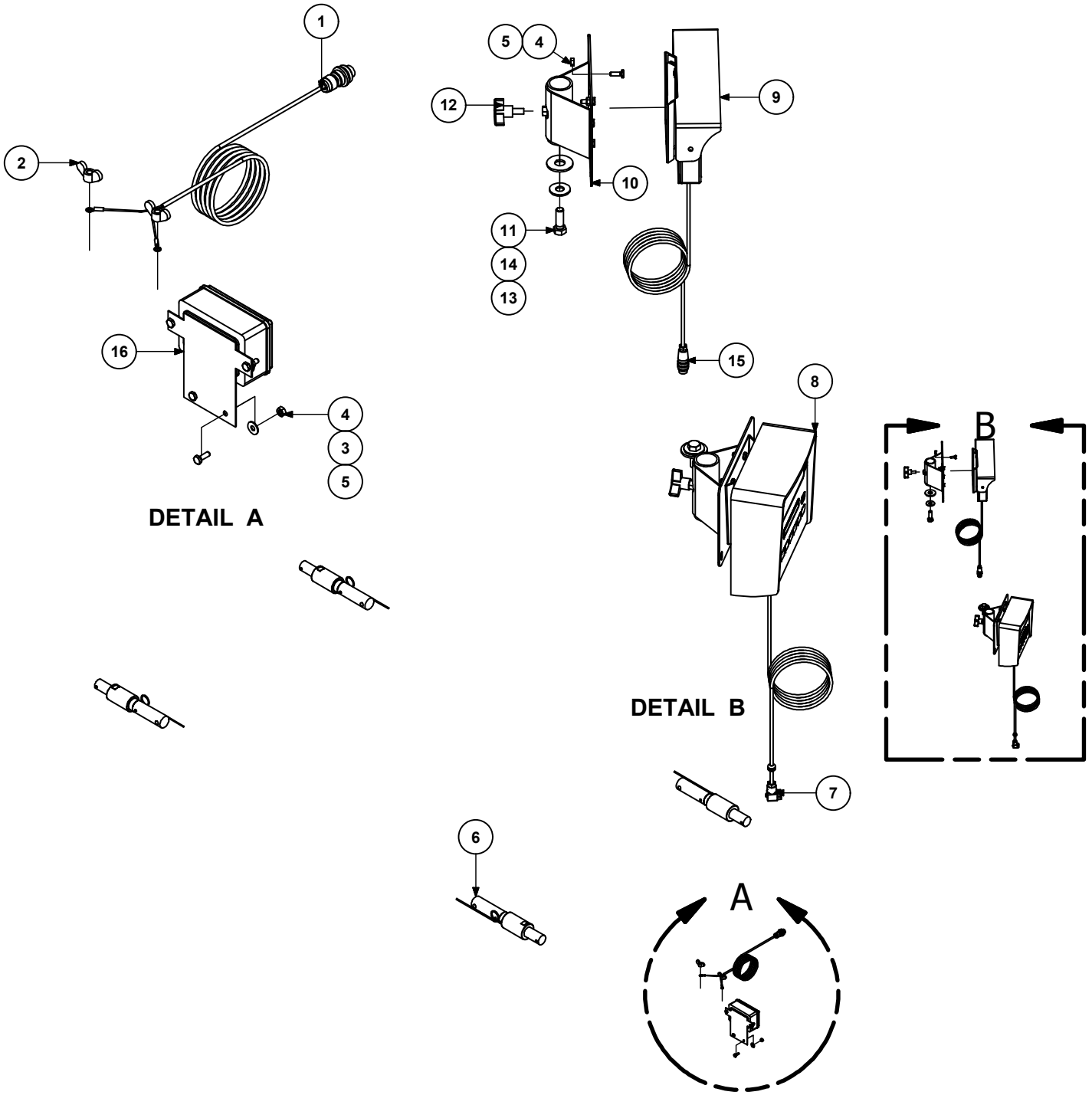
FDX191



ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	FDX196	FNL DRV PLNTRY BASE PLT 5T	16	2	FDX139	FNL DRV OIL LN COP VENT 7T
2	8	FDX189	FNL DRV PLNTRY BASE PLT 5T	17	1	1/4T	TEE 1/4 PIPE
3	2	PGA2003VM25.89	PGA2003VM25.89 (1000RPM)	18	1	D115-C	ELBOW 3/8"X90 DEG STR/BRASS
4	1	242-20598	DRIVESHAFT TELESCOPING (50-78)	19	3	D362-6C	HOSE BARB 3/8 HOSE x 3/8 NPT/M
5	88	FLTW5/8P	FLAT WASHER 5/8" PLATED	20	1	FDX193	FNL DRV OIL LN FRNT VENT 5T
6	32	BT5/8X3NC5P	BOLT 5/8" X 3NC GR5 PLATE	21	1	FDX194	FNL DRV OIL LN REAR FILL 5T
7	24	BT5/8X4NC5P	BOLT 5/8" x 4" NC GR.5 PLA	22	1	FDX195	FNL DRV OIL LN FRNT FILL 5T
8	2	3/8X1/4BUSH	BUSHING 3/8 x 1/4 HEX	23	1	G1615-05-A-1	LEVEL GUAGE 5"
9	4	D69-5B	ADTR 5/16" COP x 1/4 NPT x 90°	24	1	CPS40N12	OIL RESERVOIR BREATHER CAP
10	1	1/4WICOUP	COUPLING 1/4 NPT	25	2	900729-13	CLAMP 2" RUBBER COVERED
11	3	D362-6B	HOSE BARB 3/8 HOSE 1/4 NPT/M	26	2	900729-4	CLAMP 3/4"ID RUBBER COVERED
12	2	1/8ZERK	ZERK 1/8" NPT	27	4	FLTW3/8P	FLATWASHER 3/8" PLATED
13	2	1/2X90STREL	STREET ELBOW 1/2 NPT - 90°	28	4	LKNUT3/8NCP	LOCKNUT 3/8" NC PLATED
14	2	D362-6D	HOSE BARB 3/8 HOSE x 1/2 NPT/M	29	4	FDX200	TUB FLOOR ACCESS COVER PLT
15	1	FDX134	FNL DRV OIL LN REAR VENT 7T	30	56	LKNUT5/8NCP	LOCKNUT 5/8" NC PLATED

SCALE/WEIGH BAR ASSEMBLY

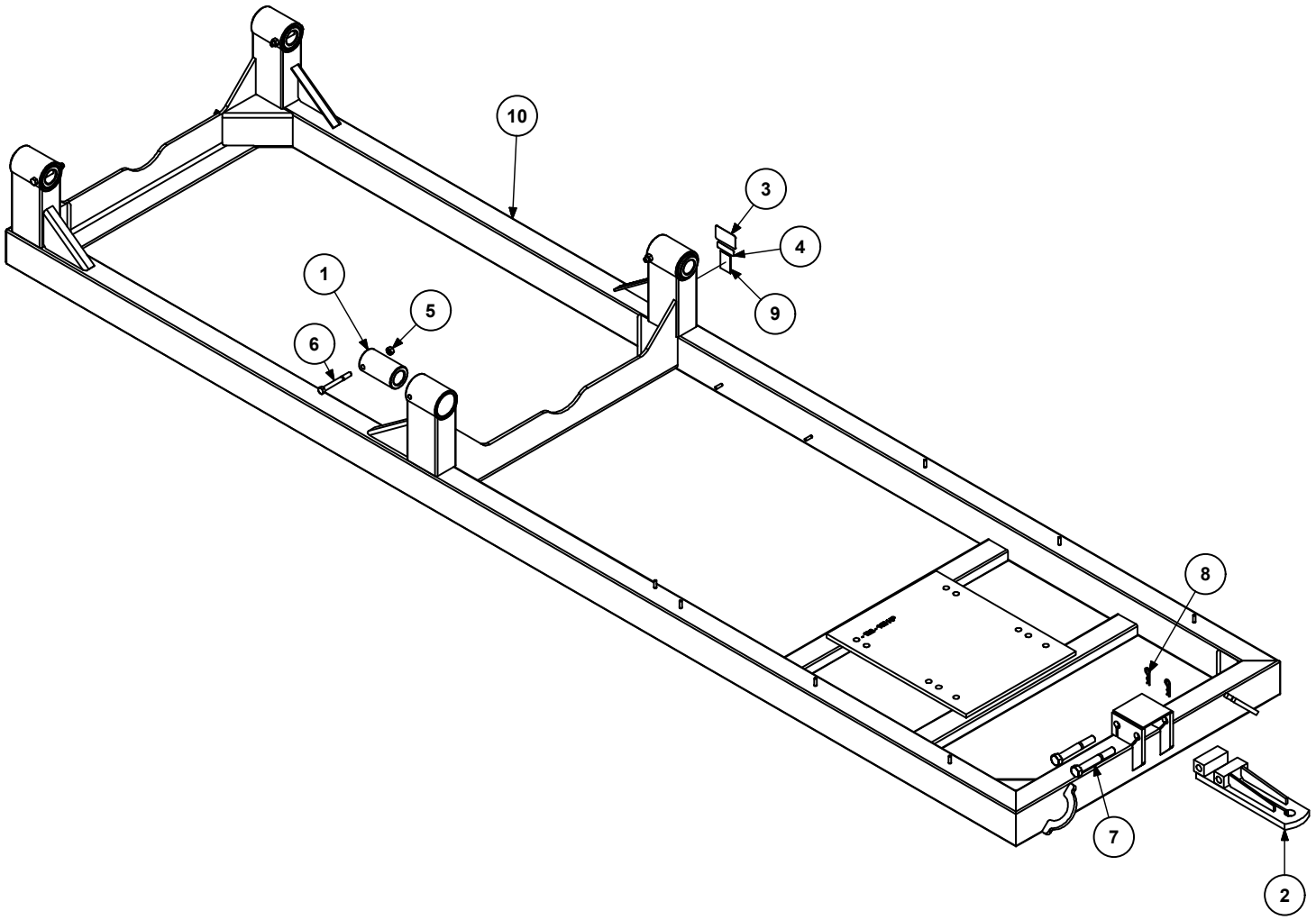
SCX173



ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	PRT2009	SCALE CABLE POWER 11.5'W/MIL 3 PIN CONN	9	1	PRT2012	SCALE WEIGHT REPEATER 5 DIGIT
				10	2	SCX133	SCALE MOUNTING BKT
2	2	WGNUT3/8NCP	WING NUT 3/8" NC PLATED	11	2	BT1/2X1-1/2NC5P	BOLT 1/2" x 1 1/2" NC GR.5 PLA
3	4	FLTW1/4P	FLATWASHER 1/4" PLATED	12	2	DK-1220	KNOB - BLACK NYLON 3/8NC X 3/4
4	12	LKNUT1/4NCP	LOCKNUT 1/4" NC PLATED	13	2	FLTW5/8P	FLAT WASHER 5/8" PLATED
5	12	BT1/4X3/4NC5P	BOLT 1/4" x 3/4" NC GR 5 PLATE	14	2	FLTW1/2P	FLATWASHER 1/2" PLATED
6	4	PRT2003	SCALE WEIGH BAR 2-1/8" W/26'CABLE	15	1	PRT2013	SCALE CABLE WEIGHT REPEATER 25.2'
7	1	PRT2007	SCALE CABLE JUNCTIN BOX 14.8'W/MIL 5 PIN	16	1	PRT2005	SCALE JUNCTION BOX
8	1	PRT2000	SCALE STAD 04 PLUS/WR/MIL/CONN				

FRAME ASSEMBLY

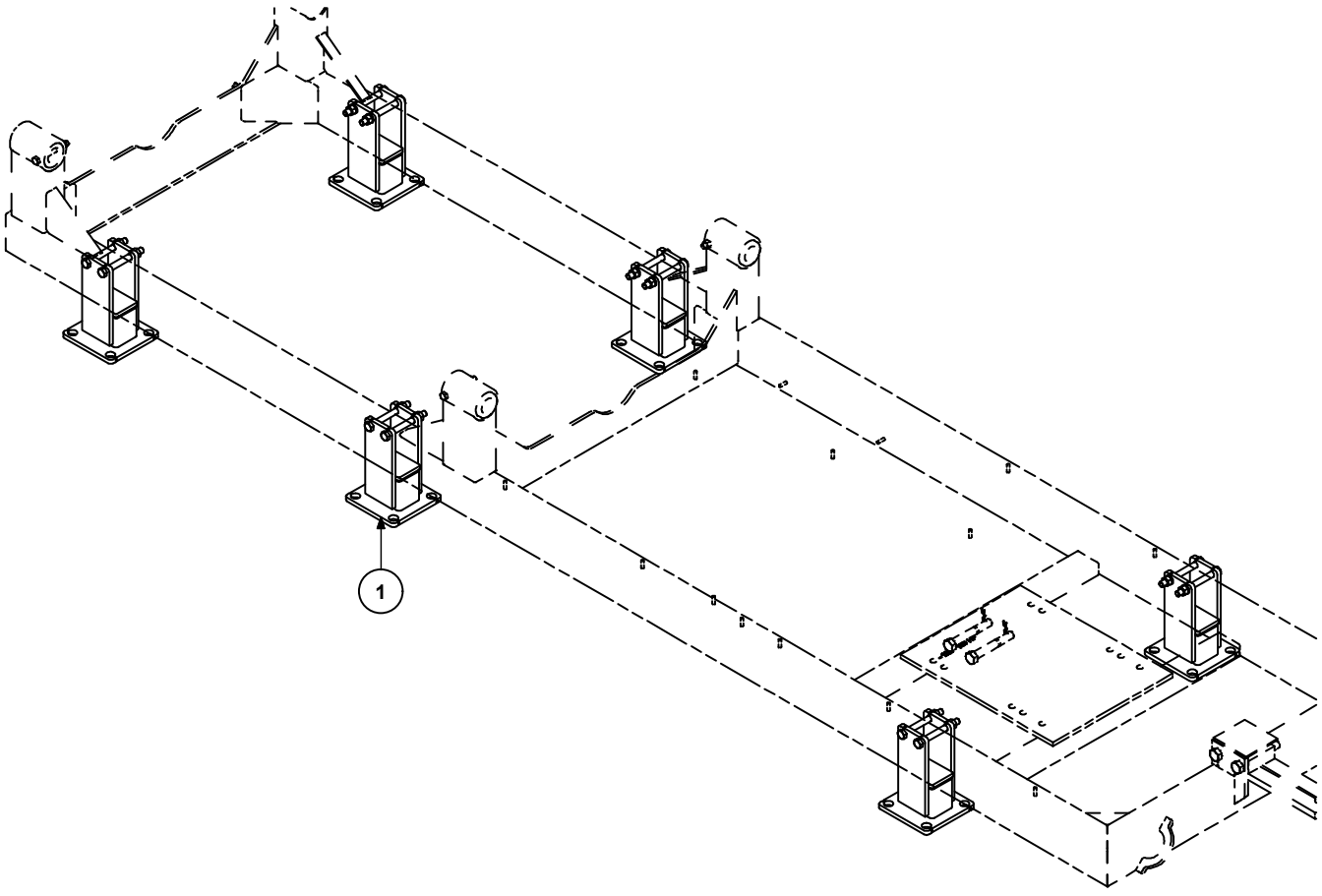
FRX865



ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	FRX021	FRAME WBAR BUSHING SML 2-1/8	6	4	BT5/8X5-1/2NC8P	BOLT 5/8" x 5 1/2" NC GR.8 PLA
2	1	HIX046	FRAME HITCH CLEVIS EXT WLD	7	2	BT1X7NC8P	BOLT 1"X 7"NC GR 8 PLATED
3	1	SNPLATE	SERIAL # PLATE	8	2	PRT1053	HAIR PIN 3/16 X 3-3/4
4	1	SPE15	DECAL PATENT US/CAN	9	1	DECAMC	DECAL "AMC"
5	4	LKNUT5/8NCP	LOCKNUT 5/8" NC PLATED	10	1	FRX864	FRAME MECH 6TS/7TS WLD

FRAME PEDESTAL KIT

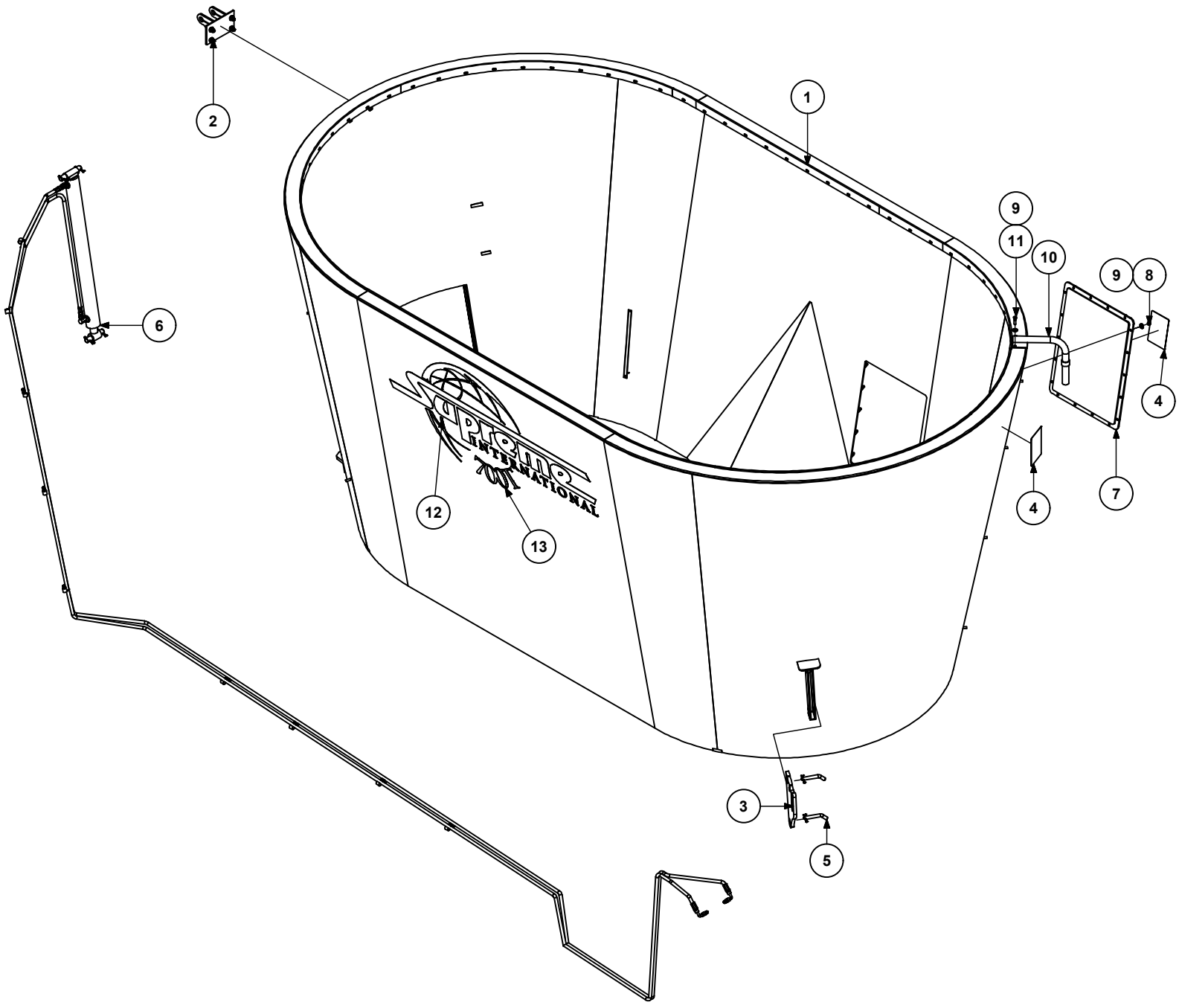
FRX516



ITEM	QTY	PART NUMBER	DESCRIPTION
1	6	FRX512	FRAME PEDSTL 6" 3ST/4ST ASY

TUB ASSEMBLY

TUX584

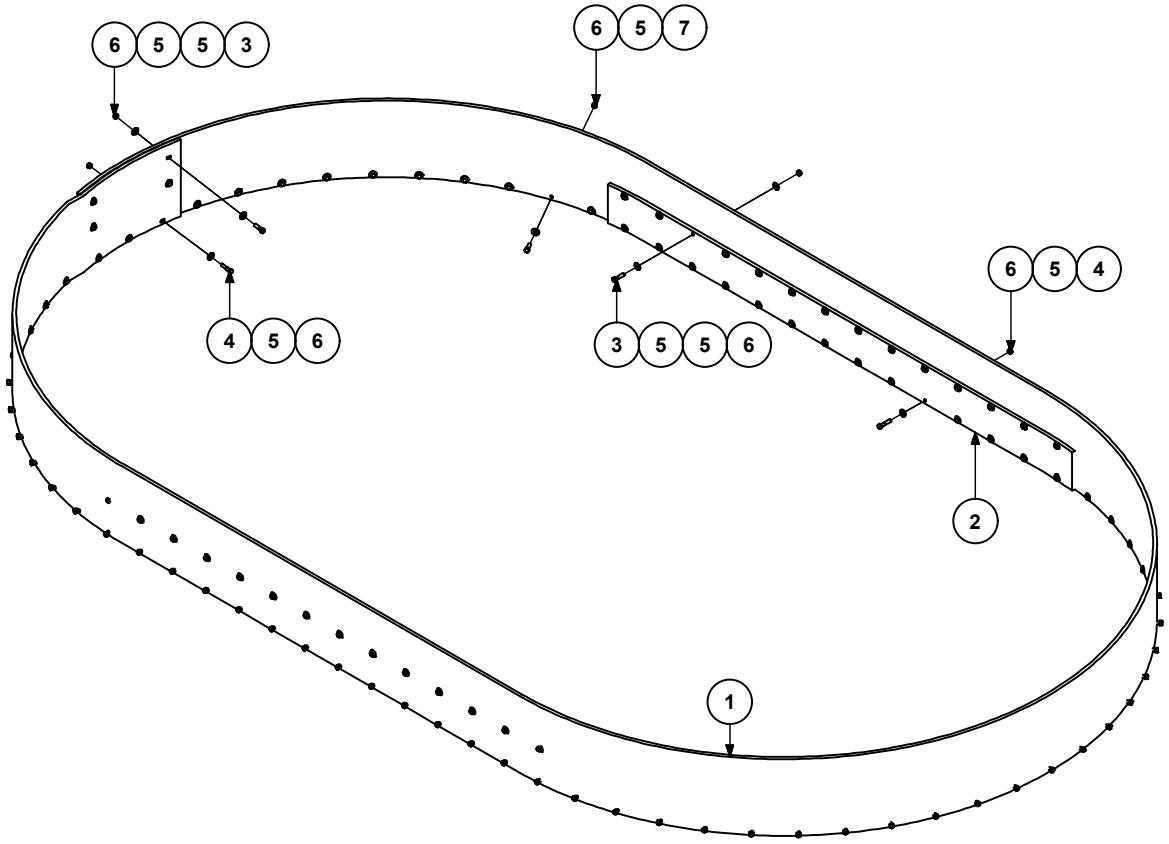


ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	TUX583	TUB REAR DR MECH 7TS WLD	8	20	LKNUT3/8NCP	LOCKNUT 3/8" NC PLATED
2	1	TUX024	TUB DOOR RAM BKT ASY	9	22	FLTW3/8P	FLATWASHER 3/8" PLATED
3	2	TUX067	TUB RESTR 2 POSITION	10	1	SCX075	SCALE REMOTE ARM BOLT-ON WLD
4	2	SP13	DECAL "DANGER ROTATING SCREW"	11	2	BT3/8X1-1/2NC5P	BOLT 3/8" x 1 1/2" NC GR.5 PLA
5	4	PIN5/8X3	PULL PIN 5/8" X 3" W/HAIRPIN	12	2	DEC2756	DECAL "SUPREME"
6	1	HYX447	HYD REAR DR 9TS ASY	13	2	DEC700T-1	DECAL 700T SERIES I
7	1	TUX495	TUB WALL HATCH WLD				

OPTIONAL EQUIPMENT

10" RUBBER EXTENSION OPTION

TU10EXT7T-OP



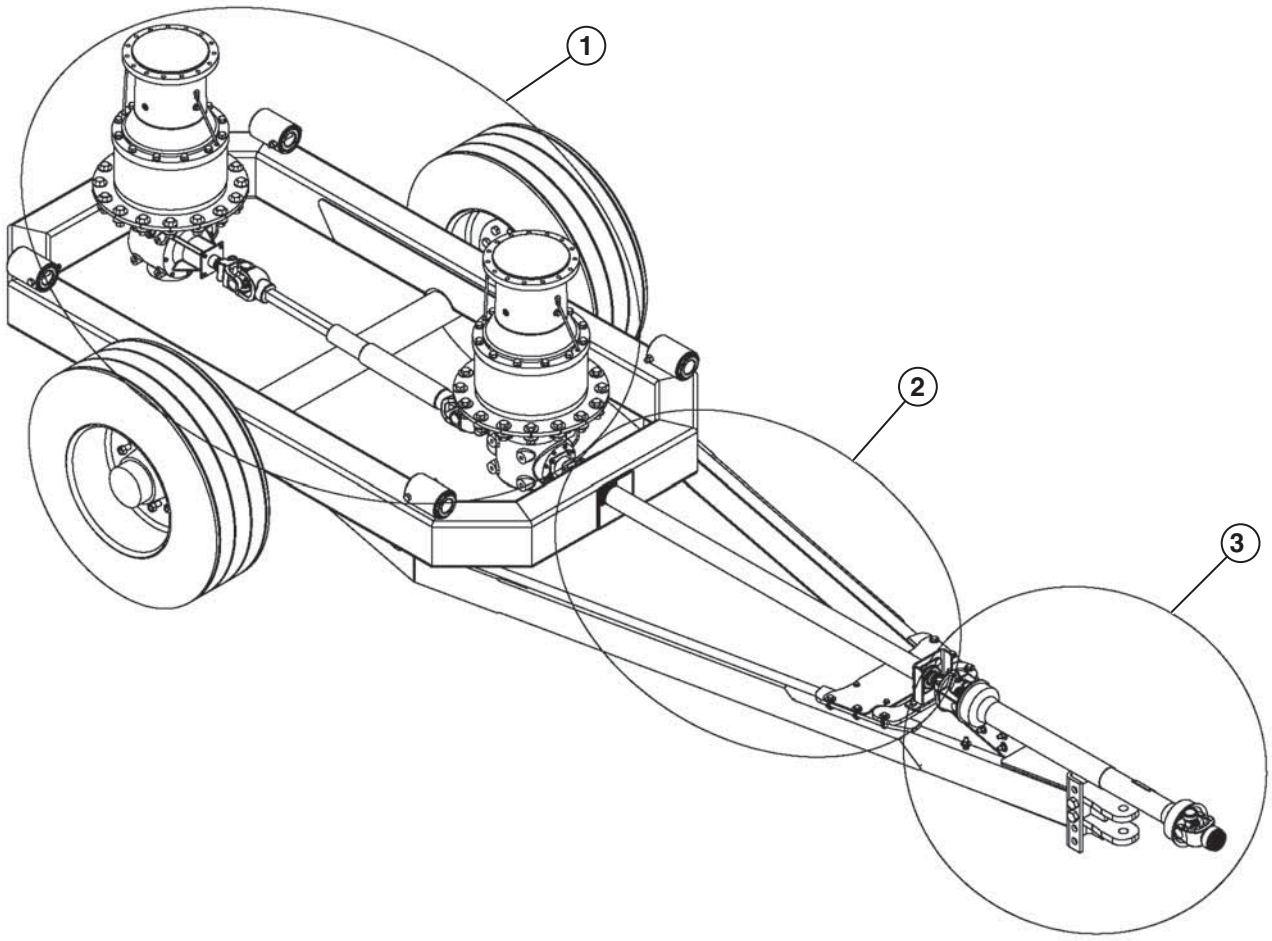
ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	TUX207	TUB EXT RUB 7T	5	140	FLTW3/8P	FLATWASHER 3/8" PLATED
2	2	TUX208	TUB EXT RUB SIDE STIFFNER 7T	6	106	LKNUT3/8NCP	LOCKNUT 3/8" NC PLATED
3	32	BT3/8X1-1/2NC5P	BOLT 3/8" x 1 1/2" NC GR.5 PLA	7	43	BT3/8X1-1/4NC5P	BOLT 3/8" x 1 1/4" NC GR.5 PLA
4	31	BT3/8X1-3/4NC5P	BOLT 3/8" x 1 3/4" NC GR.5 PLA				

MAINTENANCE

Drivetrain

The drivetrain on a Supreme Pull-Type mixer consists of three main assemblies:

- PTO driveline (tractor to implement hookup)
- Secondary driveline (steady bearing to first gearbox, including U-joint)
- Final driveline (includes planetaries, gearboxes and telescoping shaft)



1 – Final Driveline
2 – Secondary Driveline
3 – PTO Driveline

Figure 10

PTO Driveline

The PTO is used to transmit power from the tractor to the mixer. Weasler Engineering specifically designs our PTOs for each mixer. For this reason, Weasler drivelines and their parts are not interchangeable and in case of any damaged components, please call your local dealer to order the proper components.

The PTO driveline has two shear bolts installed on the mixer end, to protect against overload. These shear bolts will require no maintenance. In case of failure, ensure to replace the shear bolts with new bolts of the same diameter, length and grade as follows:

It is imperative to follow the recommended Weasler PTO lubrication procedures to ensure a long life and top performance. The Weasler PTO lubrication procedures are provided in *Appendices D, E and F*.

NOTE: *The locations of all grease zerks are shown in APPENDIX C Lubrication Chart on page 53.*

Secondary Driveline

The secondary driveline consists of a welded driveshaft, steady bearing bracket, self-aligning bearing and a universal joint.

Replace the self-aligning bearing as required. Ensure to always use a fastener adhesive on the setscrew of the bearing lock-collar after replacement.

Ensure that the universal joint mounted to the first gearbox under the tub is greased at regular intervals.

Final Driveline

The final driveline consists of a telescoping driveshaft, gearboxes (right angle and T-Box - if applicable) and planetary drives. Maintenance of these components will follow consecutively.

Telescoping Driveshaft

The telescoping driveshaft links both gearboxes together and must be greased at regular intervals. It uses the same frequency intervals as the PTO. Please refer to the Weasler PTO lubrication procedures provided in *APPENDIX D on page 54*.

NOTE: *The locations of all grease zerks are shown in APPENDIX C Lubrication Chart on page 53.*

Gearboxes (Angle, T-Box and two-speed gearboxes inclusive)

The gearbox(es) are detachable from some of the planetary drives and therefore have independent lubricating systems. The oil reservoir located on the side of the tub is for the planetary drive(s) *only*. Oil levels for the gearboxes can *only* be checked by removing their corresponding “level check plugs.” Approximate oil level requirements for each gearbox are found in *APPENDIX G Oil Quantities on page 57*.

Models 300, 400, 500, 600, 500T, 600T, 700T and 800T units are equipped with an integral, one-piece planetary drive and gearbox assembly. The oil supply is common to both components and can be checked at the sight glass located on the oil reservoir. Oil in the sight glass will indicate safe operating levels. The oil reservoir is located on the side of the tub.

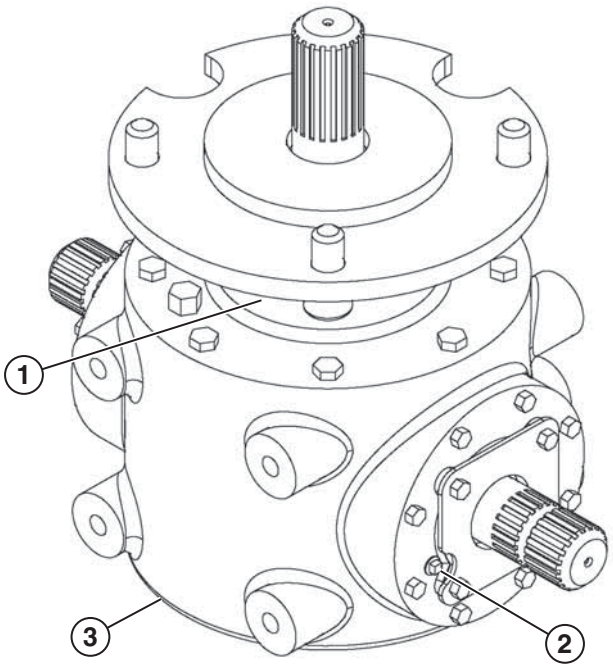
We recommend that oil changes be performed once a year or every 1500 hours, whichever comes first. We recommend using an SAE 80/90 Gear Oil in mild climate regions. SAE 70/80 can be used in colder regions.

Oil Change and Lubrication

The following oil change procedure can be done for all 900T, 1000T, 1200T, 1400T and 1600T pull-type models. The following procedure may also be applied to two-speed gearboxes and the gearboxes mounted below the second cutter.

1. Place an oil pan below the applicable gearbox.

2. Remove the Level Check Plug from the gearbox, as shown in *Figure 11*.



1 – Grease Zerk
2 – Level Plug
3 – Drain Plug

Figure 11

3. Remove the drain plug and drain the oil completely.
4. Re-install the drain plug.
5. Using a mechanical pump, pump oil into gearbox at the Level Check Plug until it starts to come out.
6. Re-install the Level Check Plug.
7. Grease zerk found under mounting flange with five pumps of grease.

Check all gearboxes for safe oil levels every 3 months as specified in *APPENDIX B Maintenance Schedule on page 52*.

Planetary Drives

NOTICE

Check the planetary drive oil level daily. This can be done at the sight glass on the planetary oil reservoir. Oil in the sight glass will indicate safe operating levels. The oil reservoir is located on the side of the tub.

NOTE: *We recommend that planetary drive oil changes be performed every 1500 hours or once a year, whichever comes first. We recommend SAE 80/90 Gear Oil to be used in mild climate regions. SAE 70/80 can be used in cold climate regions.*

All oil line fittings for the planetaries and oil reservoir are barbed. These fittings can be removed by unthreading them from their respective bushings and couplings, while keeping the oil line attached to the fitting. The oil line should spin on barbed fitting during removal.

⚠ CAUTION

When adding oil to the planetaries, do not over pressurize the planetaries. If too much pressure is used it will blow out the output shaft seal.

Tools needed for oil change procedure:

- Hand-operated oil pump (if pneumatic, ensure that it is set to less than 10 psi [69 kPa])
- Two oil pans - ensure one pan is capable of holding 6.6 gal (25 liters)
- Gear oil
- Applicable wrenches

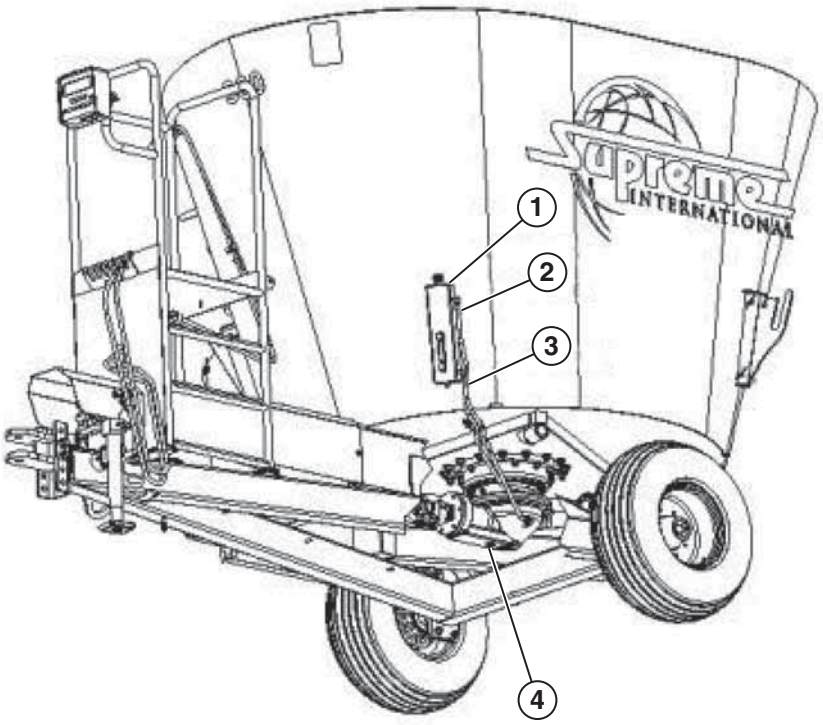
Planetary Oil Change Procedure – Models 300 and 400 (see Figure 12)

Drain

1. Place a large oil pan below the planetary/gearbox.
2. Remove the drain plug from base of planetary/gearbox.
3. Disconnect the Vent Line Fitting located at the base of the planetary/gearbox to allow the oil to drain faster.
4. Complete draining will take several minutes.
5. Verify that the proper amount of oil has been removed as per chart *APPENDIX G Oil Quantities on page 57*.

Fill

1. Replace the drain plug on the planetary/gearbox.
2. Reconnect the Vent Line Fitting at the base of the planetary/gearbox.
3. Disconnect the Fill Line Fitting at the oil reservoir.
4. To refill, pump oil into the Fill Line Fitting with a mechanical pump until oil circulates through and starts to enter the oil reservoir through the Vent Line.
5. Reconnect the Fill Line Fitting at the oil reservoir.
6. Wait a few minutes for the oil level to stabilize.
7. Top up oil reservoir so that sight glass is 3/4 full.



1 – Oil Reservoir
2 – Vent Line
3 – Fill Line
4 – Drain Plug

Figure 12

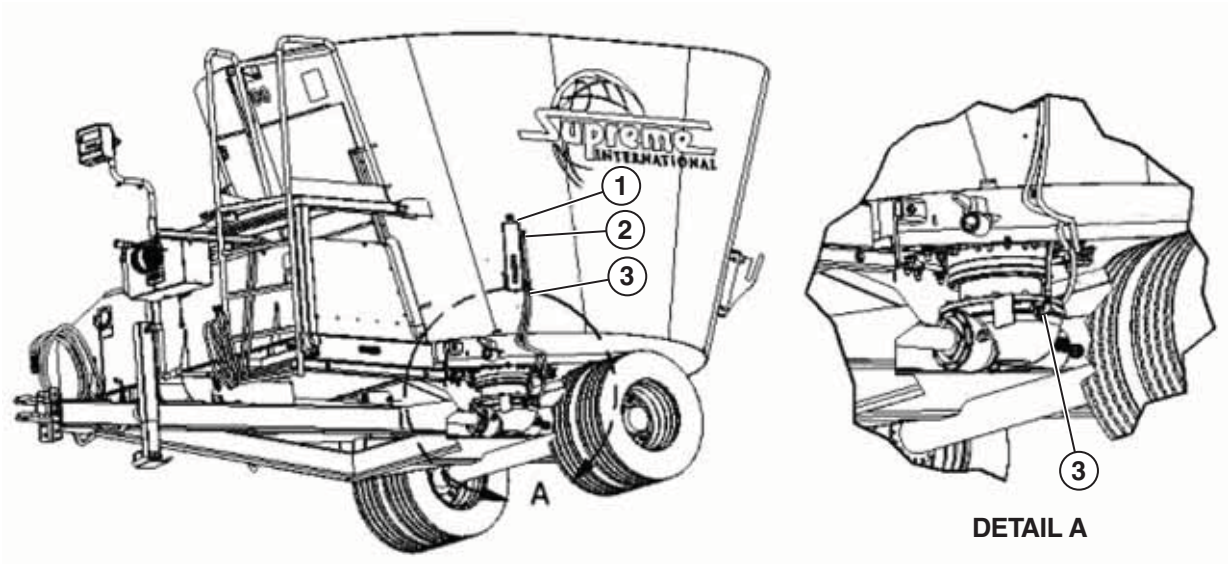
Planetary Oil Change Procedure – Models 500 and 600 (see Figure 13)

Drain

1. Place a large oil pan below the planetary/gearbox.
2. Remove the drain plug from base of planetary/gearbox.
3. Disconnect the Vent Line Fitting located at the base of the planetary/gearbox to allow the oil to drain faster.
4. Complete draining will take several minutes.
5. Verify that the proper amount of oil has been removed as per chart *APPENDIX G Oil Quantities on page 57*.

Fill

1. Replace the drain plug on the planetary/gearbox.
2. Reconnect the Vent Line Fitting at the base of the planetary/gearbox.
3. Disconnect the Fill Line Fitting at the oil reservoir.
4. To refill, pump oil into the Fill Line Fitting with a mechanical pump until oil circulates through and starts to enter the oil reservoir through the Vent Line.
5. Reconnect the Fill Line Fitting at the oil reservoir.
6. Wait a few minutes for the oil level to stabilize.
7. Top up oil reservoir so that sight glass is 3/4 full.



1 – Oil Reservoir
2 – Vent Line
3 – Fill Line

Figure 13

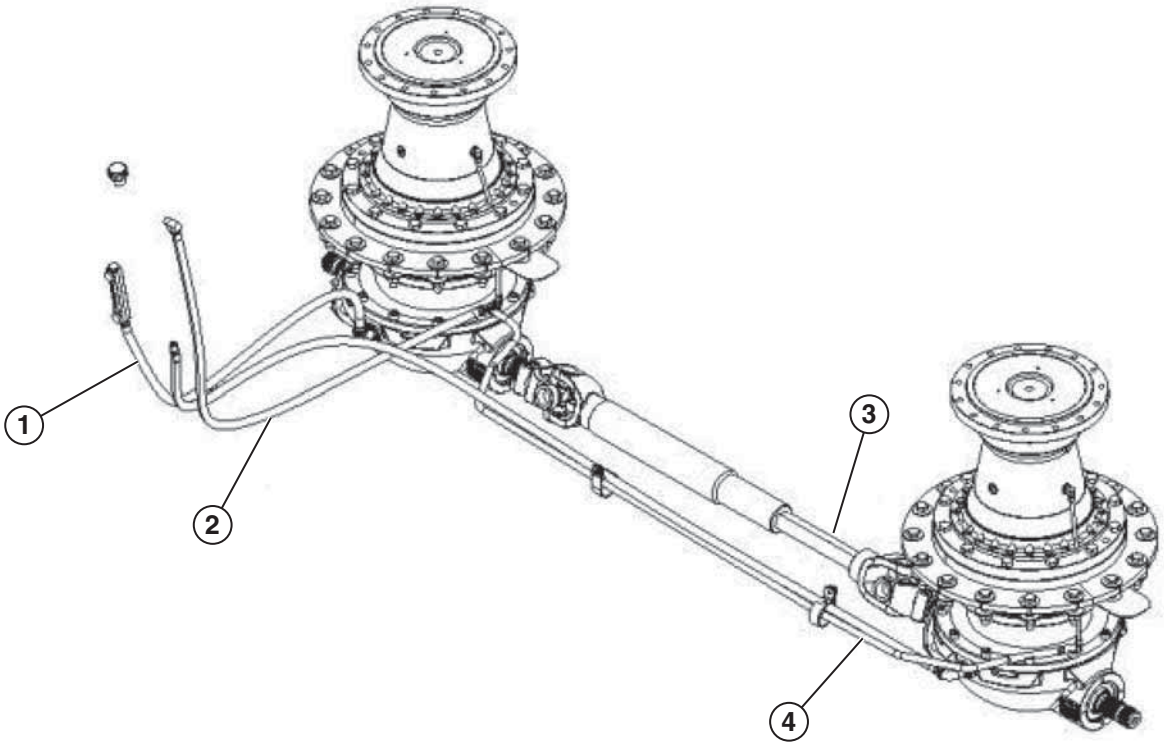
Planetary Oil Change Procedure – Models 500T, 600T, 700T and 800T (see Figure 14)

Drain

1. Place a large oil pan under rear planetary.
2. Disconnect the Fill Line Fitting located at the base of the rear planetary.
3. Disconnect the Vent Line Fitting located at the base of the rear planetary to allow the oil to drain faster. The Vent Line Fitting for the front planetary is at the T-fitting.
4. Complete draining of planetary will take several minutes.
5. Repeat steps 1 to 4 for the front planetary. Verify that the proper amount of oil has been removed as per chart *APPENDIX G Oil Quantities on page 57*.

Fill

1. Reconnect the Fill Line Fittings below the planetaries.
2. Reconnect the Vent Line Fitting below the planetaries.
3. Disconnect both Fill Line Fittings at the base of the oil reservoir.
4. Use a mechanical pump and refill *each* planetary by forcing oil into its corresponding Fill Line at the oil reservoir. Pump oil until it circulates through and begins to flow into the oil reservoir and out the bottom.
5. Reconnect the Fill Line Fittings at the oil reservoir.
6. Wait a few minutes for the oil level to stabilize.
7. Top up oil reservoir so that sight glass is 3/4 full.



1 – Oil Reservoir
2 – Vent Line
3 – Fill Line
4 – Drain Plug

Figure 14

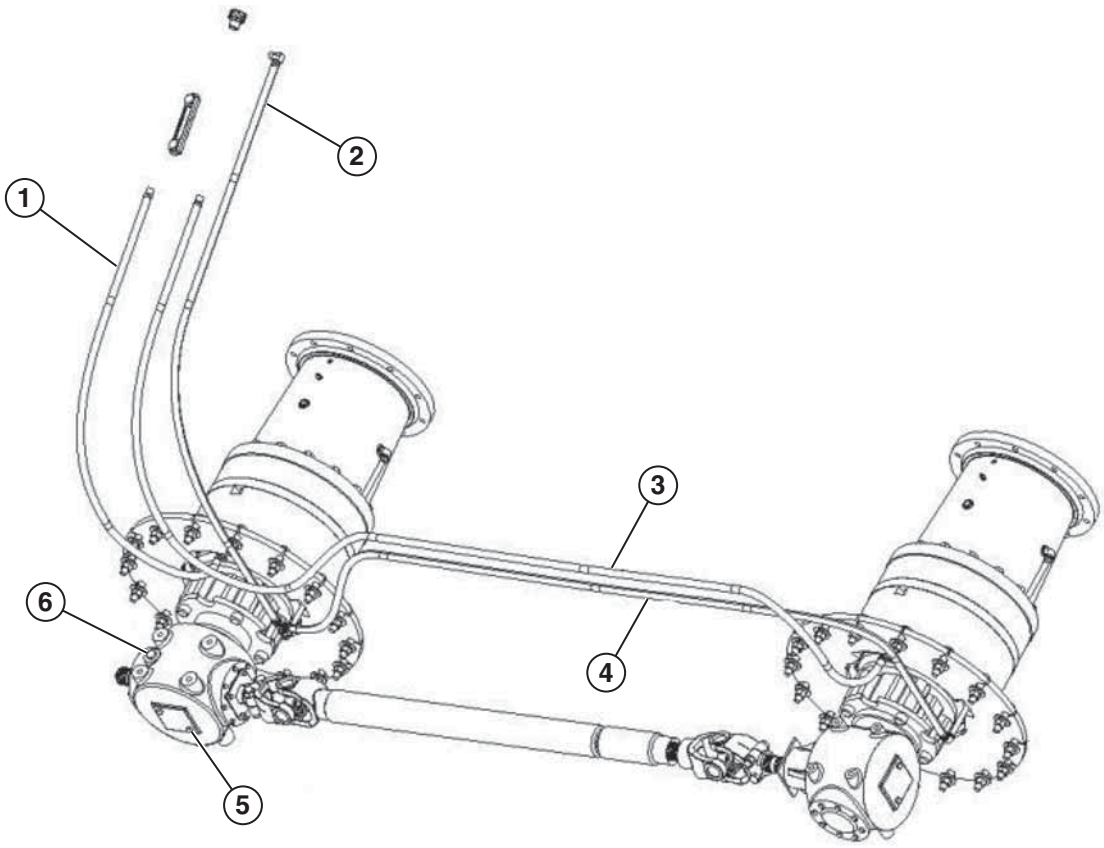
Planetary Oil Change Procedure – Models 900T, 1000T, 1200T, 1400T, 1600T (see Figure 15)

Drain

1. Place a large oil pan under rear planetary.
2. Disconnect the Fill Line Fitting located at the base of the rear planetary.
3. Disconnect the Vent Line Fitting located at the base of the rear planetary to allow the oil to drain faster. The Vent Line Fitting for the front planetary is at the T-fitting.
4. Complete draining of planetary will take several minutes
5. Repeat steps 1 to 4 for the front planetary.
6. Verify that the proper amount of oil has been removed as per chart *APPENDIX G Oil Quantities on page 57*.

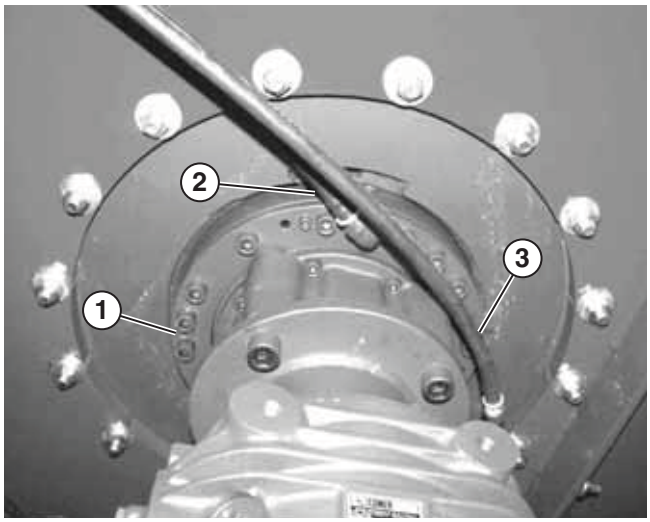
Fill

1. Reconnect the Fill Line Fittings below the planetaries.
2. Reconnect the Vent Line Fitting below the planetaries.
3. Disconnect both Fill Line Fittings at the base of the oil reservoir.
4. Use a mechanical pump and refill *each* planetary by forcing oil into its corresponding Fill Line at the oil reservoir. Pump oil until it circulates through and begins to flow into the oil reservoir and out the bottom.
5. Reconnect the Fill Line Fittings at the oil reservoir.
6. Wait a few minutes for the oil level to stabilize.
7. Top up oil reservoir so that sight glass is 3/4 full.



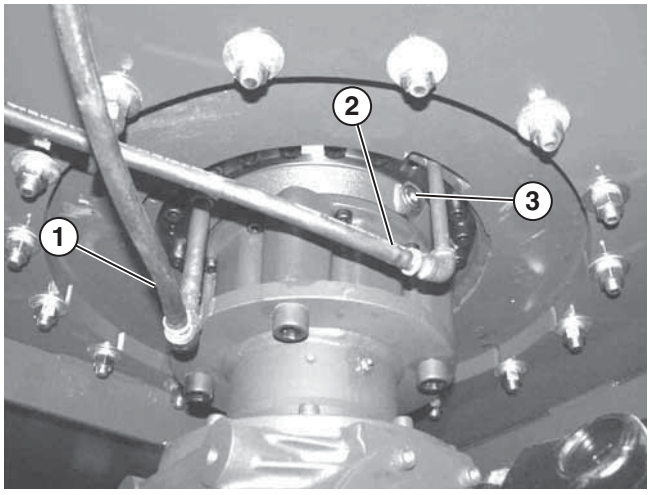
1 – Front Fill Line
2 – Front Vent Line (Teed with Rear Vent)
3 – Rear Fill Line
4 – Rear Vent Line
5 – Drain Plug
6 – Check/Fill Plug

Figure 15



1 – Drain Plug
2 – Pump Inlet
3 – Vent Line

Front Planetary
Figure 16



1 – Fill Line
2 – Vent Line
3 – Drain Plug

Rear Planetary
Figure 17

Fluid-Drive System

Description

Some 1400T and 1600T mixers are equipped with a unique fluid-drive system. The system consists of two reduction gearboxes and a fluid coupling. The system is designed for smooth and slow mixer engagement that protects your tractor's PTO on start-up and allows the mixer to run at its optimum mixing speed when at full PTO RPM.

Operation

The PTO must be engaged between 1200 and 1400 RPM (engine speed) for proper operation, regardless of whether the unit is loaded or not. Once the PTO is engaged, slowly accelerate engine RPM until the PTO has reached 1000 RPM. PTO disengagement is the reverse of the engagement. Slowly decelerate the engine RPM until the unit is running at approximately 1200 RPM, then disengage the PTO. Ensure that the Fluid-Drive assembly is kept free of debris at all times for proper air flow and cooling.

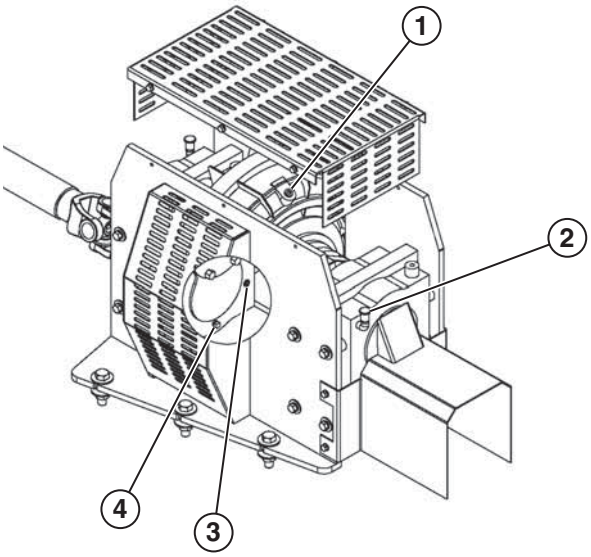
Service

Prior to any service, remove top guard and thoroughly blow out any debris that may be found within the assembly. Inspect, repair and replace any seal leaks, damaged components and missing shields.

Gearboxes

We recommend that oil changes be performed once a year or every 1500 hours, whichever comes first. Use high-quality SAE 80/90 Gear Oil in mild climate regions. High-quality SAE 70/80 can be used in colder regions *(see Figure 18)*.

NOTE: *Drain and level plugs for both gearboxes can be accessed from below the assembly.*



1 – Fluid Coupler Fill Port
2 – Fill Port
3 – Level Plug
4 – Drain Plug

Figure 18

Fluid Coupler

We recommend that the oil changes be performed every year or 1500 hours, whichever comes first. Fill the fluid coupler with 3.75 gal (14.2 L) of ISO HM32 hydraulic oil (or the equivalent SAE 10W non-detergent motor oil). At low ambient temperatures (near 32°F [0°C]), it is recommended to use ISO FD 10 (or equivalent SAE 5W) oil.

NOTICE

Tractors with instant PTO engagement may require 77 series PTO (282-24109) as option.

Augers

Auger Timing

If, for any reason, the augers need to be removed, it is important to remember that they will need to be timed upon their installation.

If, for any reason, the driveshaft between the gearboxes needs to be removed for service or maintenance it is important to ensure that the augers have remained timed prior to installation of the driveshaft.

See *Figure 19* for timing of the augers.

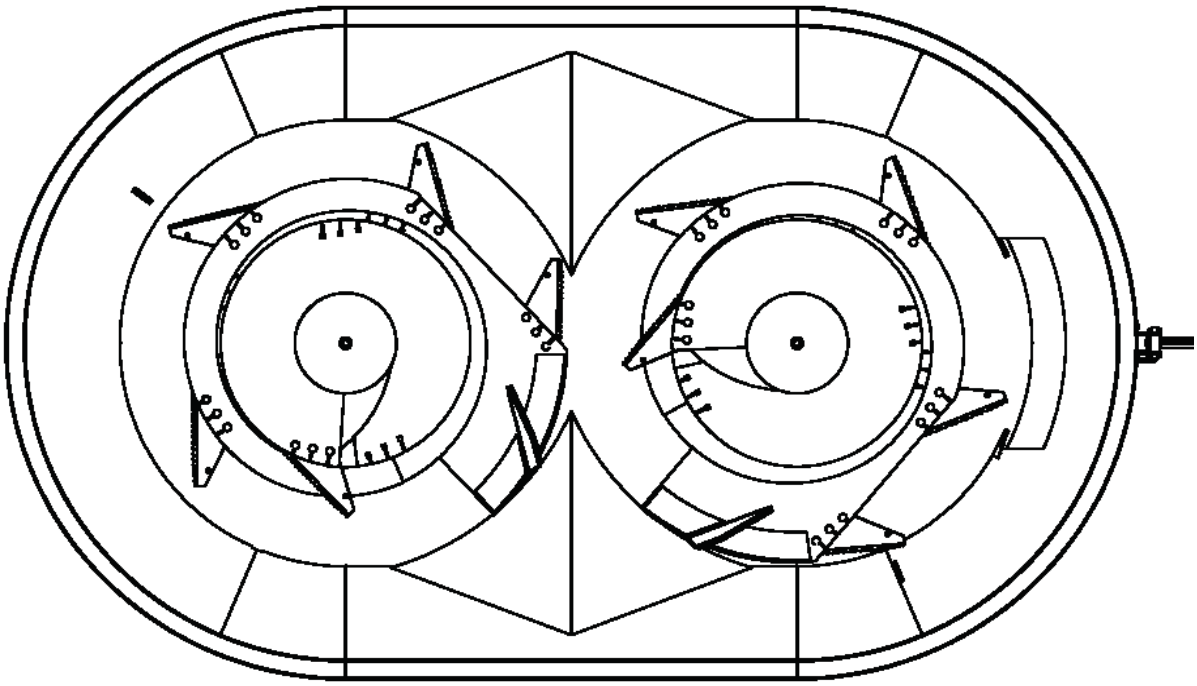


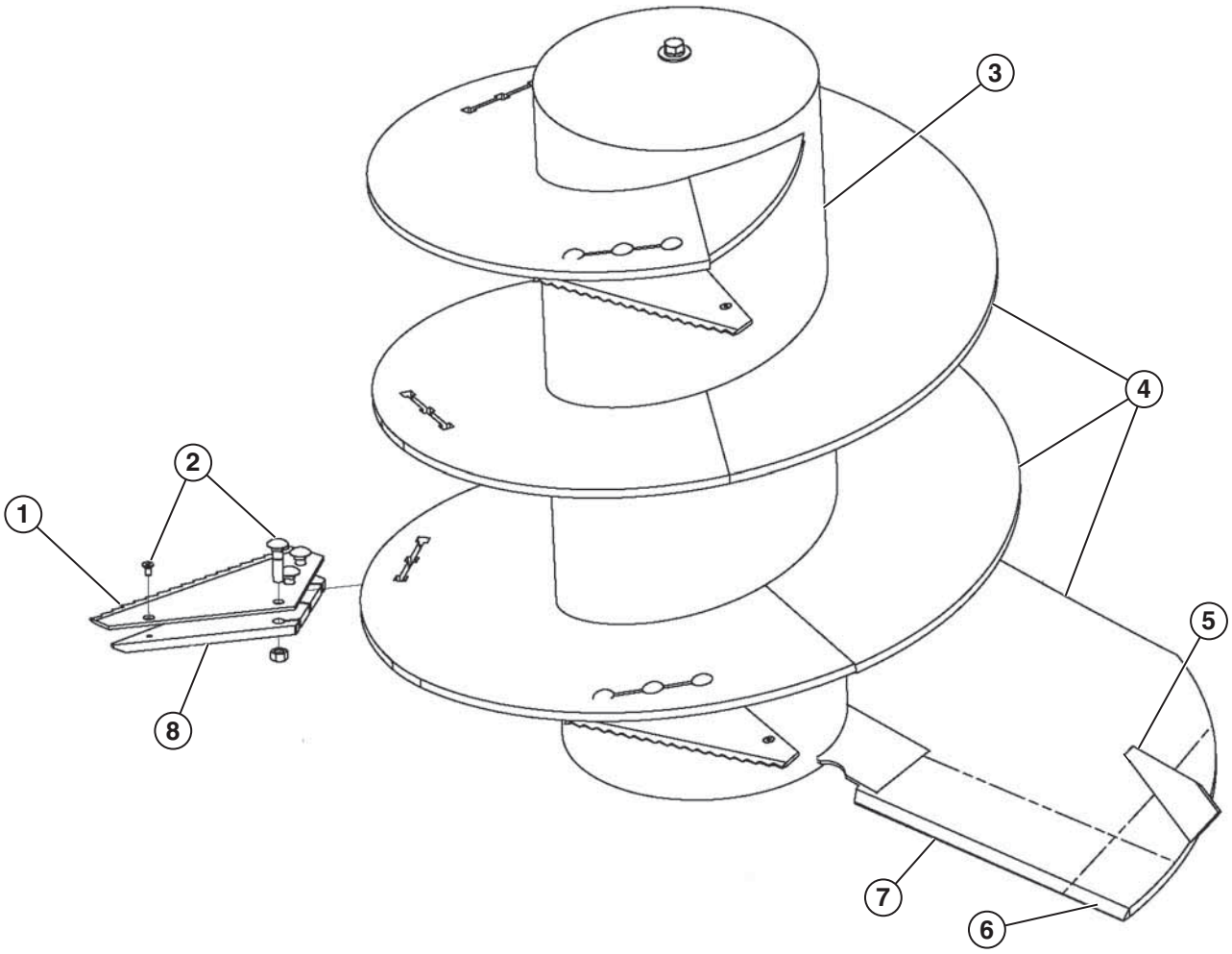
Figure 19

Wear Components

When a particular auger component begins to show signs of wear, you will also notice an increase in horsepower draw to run the mixer.

Critical wear components on an auger are as follows *(see Figure 20)*:

- Knives
- Fasteners
- Backing Plates
- Kicker Plate
- Pipe
- Flighting
- Outer Edge
- Leading Edge



1 – Knife
2 – Fasteners
3 – Pipe
4 – Flighting
5 – Kicker Plate
6 – Outer Edge
7 – Leading Edge
8 – Backing Plate

Figure 20

Knives, Fasteners, Backing Plates

These items are the most commonly replaced items on an auger. These are removed and replaced as required (dull, broken, worn, uses more horsepower).

Kicker Plate

The kicker plate is critical to the mixing action of your Supreme mixer. If the kicker is worn down and the mixer takes longer to mix, call your local Supreme International dealer to have it removed and replaced.

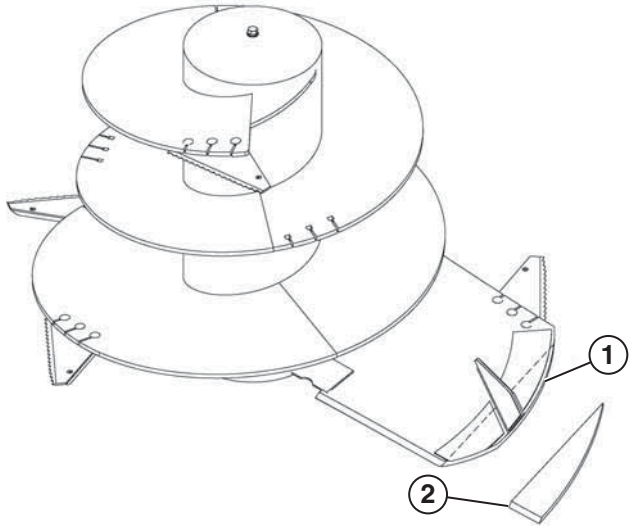
Pipe and Flighting

Remove and replace the auger when the flighting is worn thin to the point where it flexes and bends easily and is scraping the floor of the tub.

Remove and replace the auger before the pipe wall loses structural integrity and you are easily able to dent it with a hammer.

Outer Edge

Call your local dealer to have the outer edge replaced when it begins to look like *Figure 21*.

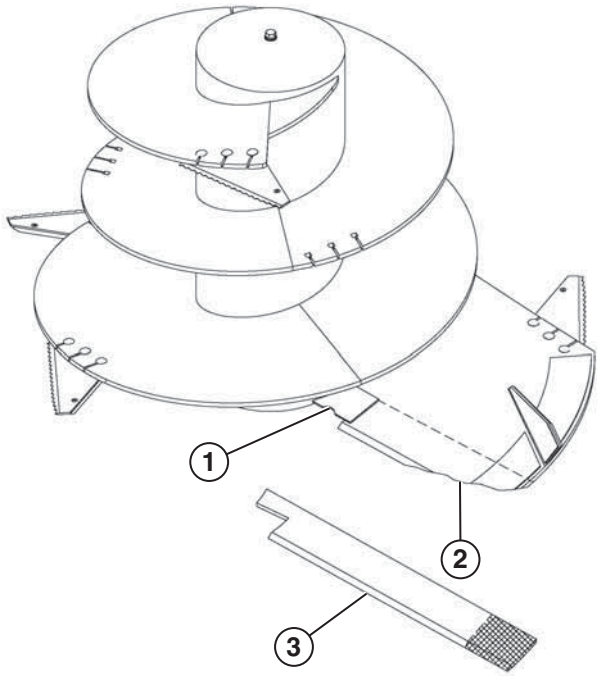


1 – Worn Out Outer Edge
2 – Replacement Outer Edge

Figure 21

Leading Edge

Call your local dealer to have the leading edge replaced when it begins to look like *Figure 22*.



1 – Cover Plate
2 – Worn Out Leading Edge
3 – Replacement Leading Edge

Figure 22

Tub

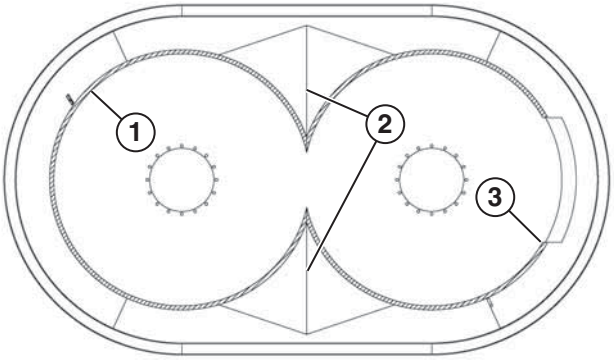
The tub is nearly maintenance free. Although, the lack of care and attention to tub wear can potentially cause a big repair bill.

The rate at which a tub will wear varies on the commodities used and the amount of work a mixer does.

The following signs of wear indicate that it is time to install a liner kit in the tub. Failure to do so will render the tub useless in a short matter of time, as the walls began to puncture and spillage of commodities occurs.

- The weld at the baffle seams are nearly worn off and the baffles are close to separating.
- The bottom 12 in. (305 mm) of the wall, just above the floor, is thinning out, visible signs of rippling and/or bubbling can seen on the outside of the tub at this sections.
- The metal on lower portion of the wall, at the door opening, is worn back and has a sharp edge.

NOTE: *If any of these signs of wear are visible, call your local Supreme International dealer and get a liner kit installed.*



1 – High Wear Area Bottom 12 in. (305 mm) all around tub
2 – High Wear at Baffle Seams
3 – Door Edge Worm Back

Figure 23

Conveyors

All conveyors are equipped with a Heavy Duty 2082 Roller Chain. Periodically lubricate the conveyor chain assembly to ensure the free rotation of the chain rollers.

The four conveyor bearings (two on each end of the conveyor) should be greased regularly. Supreme recommends two pumps every 50 hours.

NOTE: *The locations of all grease zerks are shown in APPENDIX C Lubrication Chart on page 53.*

Open the Clean-Out Door daily and remove any feed buildup. Conveyors that are equipped with 2-direction discharge will not have the clean-out door.

Conveyor Chain Adjustment

⚠ WARNING

Never adjust the conveyor chain with the tractor running. The tractor should be turned off and the key removed from the start switch.

Typically the chain tension will need to be adjusted when the conveyor becomes noisy during operation. This can be done at the take-up bearing/slack adjusters located at one end of the conveyor, opposite the conveyor orbit motor.

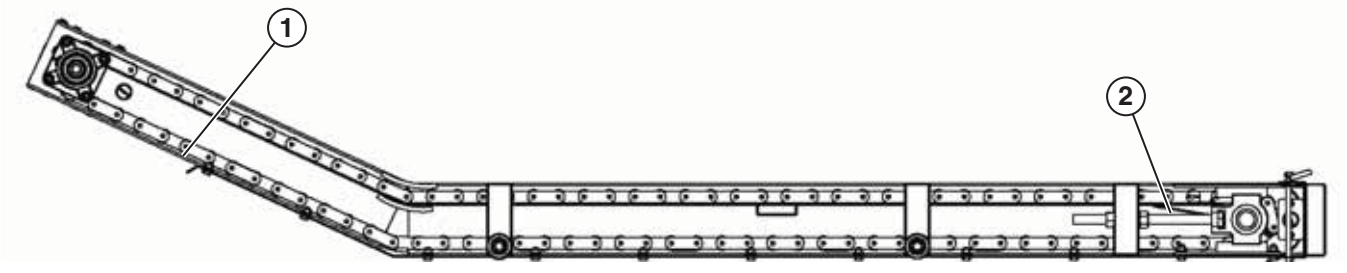
When adjusting the conveyor chain tension, it is important to ensure that the entire chain assembly, drive shaft with sprockets, and idler shaft with rollers remain centered between the conveyor rails. Improper adjustment will cause the chain assembly to walk over to one side. This may result in a conveyor chain failure.

Flat Conveyors

Check for proper chain tension at bottom side of the discharge end of conveyor (roughly 12 in. [305 mm] from the end). Chain deflection should measure between 1/2 and 3/4 in. (12.7 and 19.1 mm). The chain should not contact the bottom pan of the conveyor at any point, therefore reducing conveyor noise.

Dogleg Conveyors

Check for proper chain tension at bottom side of the discharge end of conveyor (roughly 12 in. [305 mm] from the end). Chain deflection should measure between 1/2 and 3/4 in. (12.7 and 19.1 mm).



1 – Dogleg Conveyor: Check deflection here. Same for flat conveyor
2 – Chain Take-Up Adjuster

Figure 24

Wheels and Tires

Factory wheels and tires are sized to support the gross weight of the loaded mixer. It is not recommended to alter from factory specifications; however, options are available for specific applications. Please consult your dealer or Supreme International Limited for information on these.

1. Wheel nuts should be checked and re-torqued after the first week of operation. Wheel nuts should be checked periodically after initial break-in as per the *APPENDIX B Maintenance Schedule on page 52*.
2. Tire pressure should be checked and maintained at regular service intervals per the *APPENDIX B Maintenance Schedule on page 52*.
3. Models 600T, 700T, 900T, 1200T and 1400T are equipped with oil bath wheel hubs. Check sight glasses daily to ensure safe operating oil levels.
4. Service oil bath hubs as necessary. Change the oil on a yearly basis. We recommend using SAE 80/90 gear oil.
5. All other Pull-Type models come with grease packed bearings and should be serviced on a yearly basis.

Tire Specifications

MODEL	TIRE TYPE	TIRE SIZE	PLY	TIRE LOAD CAP.	RATED SPEED	TIRE Ø	TIRE WIDTH	PSI	WHEEL OFFSET	WHEEL NUT TORQUE
300	Implement Tire	12.5L-15	12	5620 Lbs (2386 kg)	25 MPH (40 km/hr)	32-1/2	12-3/4	90 (621 kPa)	1	90
400	Implement Tire	19.0/45 -17	14	8400 Lbs (3810 kg)	6 MPH (10 km/hr)	33-1/2	19	75 (517 kPa)	1.5	90
500/600	Dual Truck Tires	235/75R17.5	18	6005 Lbs (2724 kg)	65 MPH (105 km/hr)	31.4	9.5	125 (862 kPa)	0	450
500T	Aircraft Tire	H40x14.5x19	26	12000 Lbs (5443 kg)	< 20@60PSI (32 km/hr)	37-1/2	14-5/8	100 (689 kPa)	0	450
	Floatation Tire	500/45-20	16	15000 Lbs (6804 kg)	12 MPH (19 km/hr)	38-5/8	19-1/4	85 (586 kPa)	3.65	450
600T/700T	Truck Tire	385/65R-22.5	18	9910 Lbs (4495 kg)	10 MPH (16 km/hr)	42-1/4	15-1/8	100 (689 kPa)	3.25	450
	Floatation Tire	500/45-20	16	15000 Lbs 6804 (kg)	12 MPH (19 km/hr)	38-5/8	19-1/4	85 (586 kPa)	3.65	450
800T	Implement Tire	19.0/45 -17	14	8400 Lbs (3810 kg)	6 MPH (10 km/hr)	33-1/2	19	75 (517 kPa)	1.5	90
900T	Dual Truck Tires	11R22.5	16	6175 Lbs (2801 kg)	25 MPH (40 km/hr)	42	24	100 (689 kPa)	0	450
	Floatation Tire	700/40-22.5	18	22000 Lbs (9979 kg)	5 MPH (8 km/hr)	46-1/8	27-5/8	87 (600 kPa)	2	450
	Dual Truck Tires	275/70R22.5	16	7750 Lbs (3515 kg)	10 MPH (16 km/hr)	37-5/8	24	100 (689 kPa)	0	450
1000T/1200T	Dual Truck Tires	275/70R22.5	16	7750 Lbs (3515 kg)	10 MPH (16 km/hr)	37-5/8	24	100 (689 kPa)	0	450
	Dual Truck Tires	11R22.5	16	6175 Lbs (2801 kg)	25 MPH (40 km/hr)	42	24	100 (689 kPa)	0	450
	Floatation Tire	500/45-20	16	15000 Lbs (6804 kg)	12 MPH (19 km/hr)	38-5/8	19-1/4	85 (586 kPa)	3.65	450
	Truck Tire	385/65R-22.5	18	9910 Lbs (4495 kg)	10 MPH (16 km/hr)	42-1/4	15-1/8	100 (689 kPa)	3.25	450
1400T/1600T	Dual Truck Tires	275/70R22.5	16	7750 Lbs (3515 kg)	10 MPH (16 km/hr)	37-5/8	24	100 (689 kPa)	0	450
	Dual Truck Tires	11R22.5	16	6175 Lbs (2801 kg)	25 MPH (40 km/hr)	42	24	100 (689 kPa)	0	450
	Floatation Tire	500/45-20	16	15000 Lbs (6804 kg)	12 MPH (19 km/hr)	38-5/8	19-1/4	85 (586 kPa)	3.65	450
	Truck Tire	385/65R-22.5	18	9910 Lbs (4495 kg)	10 MPH (16 km/hr)	42-1/4	15-1/8	100 (689 kPa)	3.25	450

APPENDIX B
MAINTENANCE SCHEDULE

For all Supreme International Pull-Type Models

	HOURS					
	Daily	**Every 10**	**Every 50**	**Every 100**	**Every year or 1500, (whichever occurs first)**	
Check Oil Reservoir oil level	✓					
Grease PTO	Refer to PTO section in Operator's Manual for lubrication procedures					
Grease Telescoping Driveline	Refer to PTO section in Operator's Manual for lubrication procedures					
Check Wheel Hub oil level		✓				
Check Tire Pressure		✓				
Check Tire Wear		✓				
Check Hydraulic Circuits for leakage		✓				
Grease Walking Beam Axle		✓				
Check Conveyor Chain Tension			✓			
Grease Conveyor bearings			✓			
Grease Jack			✓			
Grease Second Cutter bearings			✓			
Check Second Cutter Gearbox oil level				✓		
Check Fluid Coupler oil level				✓		
Check Driveline Steady Bearing				✓		
Check Battery Box and battery				✓		
Check for loose or damaged wiring				✓		
Check for loose or missing fasteners				✓		
Check condition of Guards				✓		
Check Auger Knife wear				✓		
Check Auger Knife Bolt wear				✓		
Check Auger Flighting wear				✓		
Check Auger Kicker Plate wear				✓	✓	
Grease Wheel Hubs					✓	
Change Axle Oil Bath Oil					✓	
Change Planetary Oil					✓	
Change Planetary Gearbox Oil					✓	
Change Fluid-Drive Gearbox Oil					✓	
Change 2-Speed Gearbox Oil					✓	
Change Fluid Coupler Oil					✓	
Second Cutter Gearbox Oil					✓	
Grease Planetary Gearbox (if applicable)					✓	

*Optional equipment

TROUBLESHOOTING

The following are some examples of problems that can arise during the **CUTTING/MIXING PROCESS** and troubleshooting tips on how to correct those problems.

CONDITION	CAUSE	CORRECTION
Hay boils over top of tub	Unit overloaded	Decrease dry roughage.
	Restrictor plates set in too far	Check yellow restrictor plates on tub. Restrictor plates that are in too far can cause lighter commodities to push up in the tub instead of falling down to the bottom. You may have to pull the restrictor plates all the way out.
Hay floats on top of mix	Hay was not loaded first	Make sure to load dry light commodities first.
	Bale not processed enough before adding other commodities	Process dry commodity long enough to make sure core comes apart.
	Restrictor plates in too far	Check yellow restrictor plates on tub. They should be in no more than one notch. If restrictor plates are already in one notch then pull restrictor all the way out.
Uneven mix	Has not had sufficient time to mix	May have to run unit a little longer.
	Restrictor plates in too far	Lock the restrictor plates in the out position.
Forage lengths are too short	Over processing of forage	Faster loading of commodities.
		Decrease tractor PTO speed.
		Remove knife #4 and/or #3 from auger.
Forage lengths are too long	Under processing of forage	Adjust restrictor plates in one notch.
		Increase tractor PTO speed.
		Make sure dry forage is added first.
		Let forage process longer before adding other commodities.
		Add one more knife to auger.
Hard core bale, difficult to break up and process	Tightly wound, coarse roughage	Add and extended backing plate to position #6 or #7 on the augers to decrease processing time.

The following are some examples of problems that can arise during the **FEEDING PROCESS** and troubleshooting tips on how to correct those problems.

CONDITION	CAUSE	CORRECTION
Uneven feeding into bunk or windrow	Conveyor chain is turning too fast	Slow conveyor speed to match flow of feed out door.
	Tub door is not open enough	Check and open door for better feed flow.
	High roughage content in ration	With longer cut or dry roughage mixes, adding water or moisture to ration will deter feed from hanging up in door.
		Add an extended backing plate to third or fourth position (or both) on the applicable auger to aid in the discharge at the front or side-discharge door.

The following are some troubleshooting tips for Supreme Feed Processors that have **been in use for a longer period** and are now experiencing problems.

CONDITION	CAUSE	CORRECTION
It takes longer to cut my dry forage now, than when it was new.	Knives worn	Check knives. Dull knives will lengthen cutting time.
The machine takes more HP than it did when new.	Knives worn	Check knives. Dull knives can act as a brake and therefore require more tractor HP.
There is a dead spot in the tub. (Feed moves slower or not at all in one spot.)	Auger leading edge worn *(see Figure 22 on page 35)*.	Check leading edge of auger for wear *(see Figure 22 on page 35)*. Is leading edge worn away from tub wall? Worn-away edge will not pull feed away from tub wall consequently feed will hang up in one spot.
	Auger kicker plate worn *(see Figure 20 on page 34)*.	Check kicker plate for wear. Worn off kicker plate will not direct feed into the auger, consequently slowing down mix.

APPENDICES

APPENDIX A
SPECIFICATIONS

Pull-Type Models

Model	Empty Weight		Height*		W/10" Extension		Overall Width**		Overall Length		Min. H.P. Req'd ***	Capacity W/10" Extension		Capacity (Struck Level)		Payload	
	lbs.	kgs	in.	cm	in.	cm	in.	cm	in.	cm		cu. ft	cu. m	cu. ft	cu. m	lbs	kgs
300	5700	2586	98	249	108	274	97	246	171	434	50	278	7.9	235	6.7	6000	2727
400	6400	2903	102	259	112	284	110	279	178	452	60	378	10.7	321	9.1	10,000	4545
500	9000	4082	105	267	115	292	108	274	221	561	100	462	13.1	398	11.3	14,000	6363
600	9750	4423	115	292	125	318	108	274	224	569	100	537	15.2	469	13.3	14,000	6363
500T	11,950	5420	99	251	109	277	99	251	241	612	80	555	15.7	480	13.6	14,000	6363
600T	12,730	5774	105	267	115	292	102	259	254	645	100	641	18.2	549	15.5	14,000	6363
700T	12,835	5822	113	287	123	312	102	259	242	615	100	649	18.4	568	16.1	14,000	6363
800T	16,150	7326	106	269	116	295	119	302	252	640	125	751	21.3	649	18.4	18,000	8165
900T	16,255	7373	117	297	127	322	123	312	273	693	130	849	24.1	739	20.9	24,000	10,908
1000T	19,400	8800	109	277	119	302	123	312	318	808	170	906	25.7	789	22.4	30,000	13,608
1200T	23,750	10773	121	307	131	333	122	310	320	813	180	1072	30.4	933	26.4	40,000	18,180
1400T	25,500	11567	130	330	140	356	122	310	329	836	230	1312	37.2	1157	32.8	40,000	18,180
1600T	26,500	12020	142	361	152	386	122	310	329	836	245	1480	41.9	1325	37.5	40,000	18,180

Stationary Models

Contact factory office for specifications. Units are custom designed due to power available for hook-up; therefore electrical/power packages are specific to customer's requirements.

* **Height** for Models 500T, 600T and 700T equipped with standard aircraft tires.
* **Height** for Model 900T, 1000T, 1200T, 1400T and 1600T equipped with truck tires.

** **Overall width and length** dependent on style of conveyor/discharge and options ordered (dogleg conveyor adds 4 in. [101.6 mm] of width to models 500, 600 and 700).

*** **Horsepower** requirements dependent on weight and commodity mix.

Due to continuing improvements in the design and manufacturing of equipment, specifications and technical data are subject to change without incurring any obligation on goods purchased.

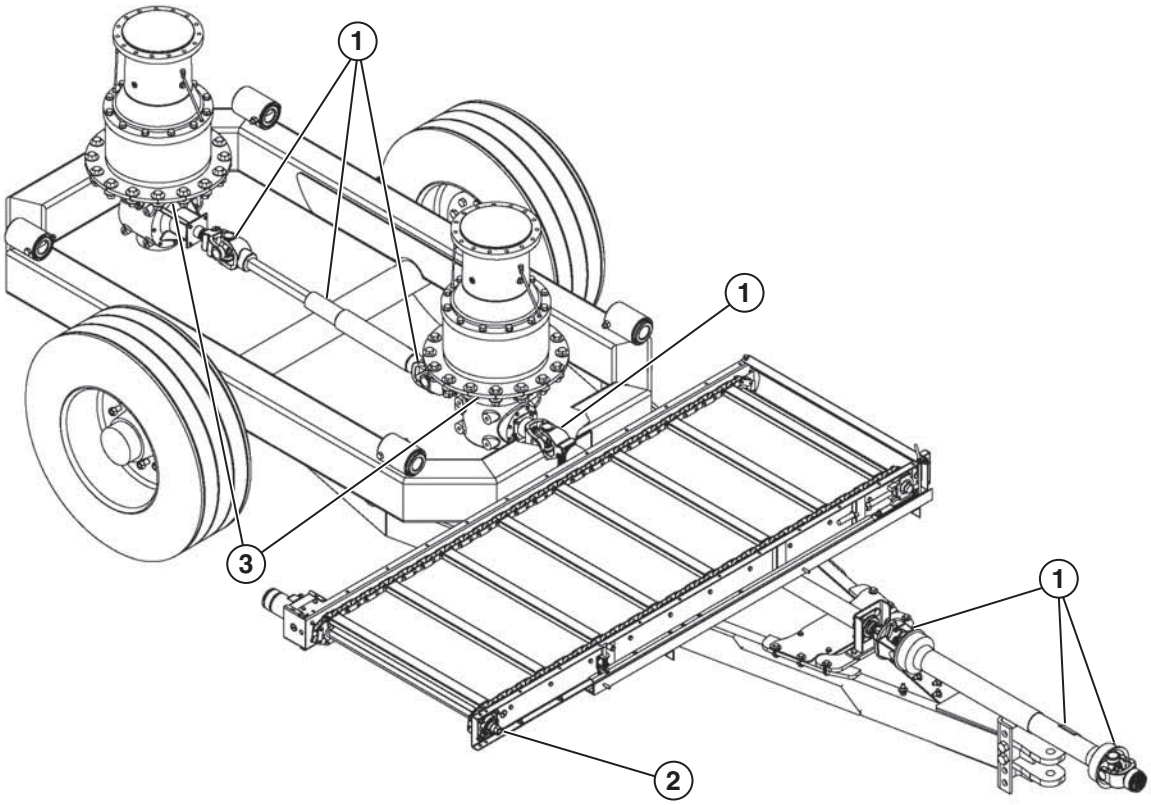
APPENDIX B
MAINTENANCE SCHEDULE

For all Supreme International Pull-Type Models

	HOURS					
	Daily	**Every 10**	**Every 50**	**Every 100**	**Every year or 1500, (whichever occurs first)**	
Check Oil Reservoir oil level	✓					
Grease PTO	Refer to PTO section in Operator's Manual for lubrication procedures					
Grease Telescoping Driveline	Refer to PTO section in Operator's Manual for lubrication procedures					
Check Wheel Hub oil level		✓				
Check Tire Pressure		✓				
Check Tire Wear		✓				
Check Hydraulic Circuits for leakage		✓				
Grease Walking Beam Axle		✓				
Check Conveyor Chain Tension			✓			
Grease Conveyor bearings			✓			
Grease Jack			✓			
Grease Second Cutter bearings			✓			
Check Second Cutter Gearbox oil level				✓		
Check Fluid Coupler oil level				✓		
Check Driveline Steady Bearing				✓		
Check Battery Box and battery				✓		
Check for loose or damaged wiring				✓		
Check for loose or missing fasteners				✓		
Check condition of Guards				✓		
Check Auger Knife wear				✓		
Check Auger Knife Bolt wear				✓		
Check Auger Flighting wear				✓		
Check Auger Kicker Plate wear				✓	✓	
Grease Wheel Hubs					✓	
Change Axle Oil Bath Oil					✓	
Change Planetary Oil					✓	
Change Planetary Gearbox Oil					✓	
Change Fluid-Drive Gearbox Oil					✓	
Change 2-Speed Gearbox Oil					✓	
Change Fluid Coupler Oil					✓	
Second Cutter Gearbox Oil					✓	
Grease Planetary Gearbox (if applicable)					✓	

*Optional equipment

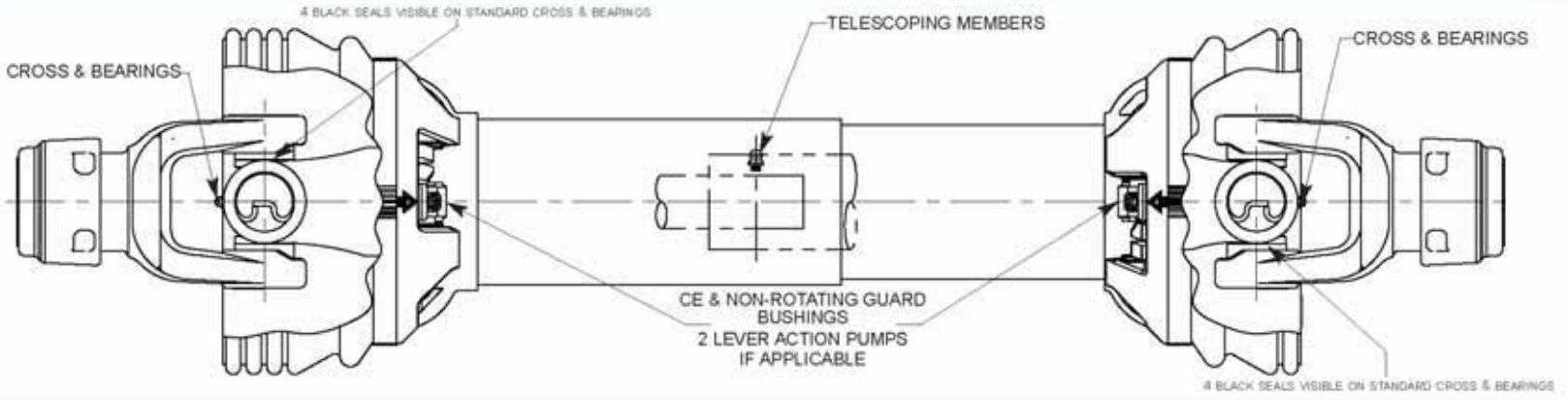
APPENDIX C
LUBRICATION CHART



1 – Two Pumps Every 8 Hours
2 – Conveyor Bearings (X4)
Two Pumps Every 50 Hours
3 – Five Pumps at Every Oil Change

Figure 42

Weasler — RECOMMENDED CUSTOMER LUBRICATION PROCEDURE FOR TELESCOPING DRIVELINES



LUBRICATE ALL FITTINGS WITH A GOOD QUALITY LITHIUM SOAP COMPATIBLE E.P. GREASE MEETING THE N.L.G.I. #2 SPECIFICATIONS AND CONTAINING NO MORE THAN 1% MOLYBDENUM DISULFIDE.

AN E.P. GREASE MEETING THE N.L.G.I. #2 SPECIFICATIONS AND CONTAINING 3% MOLYBDENUM DISULFIDE MAY BE SUBSTITUTED IN THE TELESCOPING MEMBERS ONLY.

LUBE RECOMMENDATIONS:	INTERVAL	LOCATION	AMOUNT
	50 HRS	EXTENDED LUBE CROSS & BEARING (ORANGE SEALS NOT VISIBLE)	2-3 LEVER ACTION PUMPS
	8 HRS.**	STANDARD CROSS & BEARINGS (BLACK SEALS)	2-3 LEVER ACTION PUMPS
	8 HRS.	TELESCOPING MEMBERS	8-10 LEVER ACTION PUMPS

** CONSTANT ANGLE APPLICATIONS MAY REQUIRE A LUBE INTERVAL OF 4 HOURS

CAUTION!! REPLACEMENT PARTS ARE NOT LUBRICATED

REPLACEMENT PARTS MUST BE LUBRICATED AT TIME OF ASSEMBLY AND DURING USE PER THE LUBE RECOMMENDATIONS

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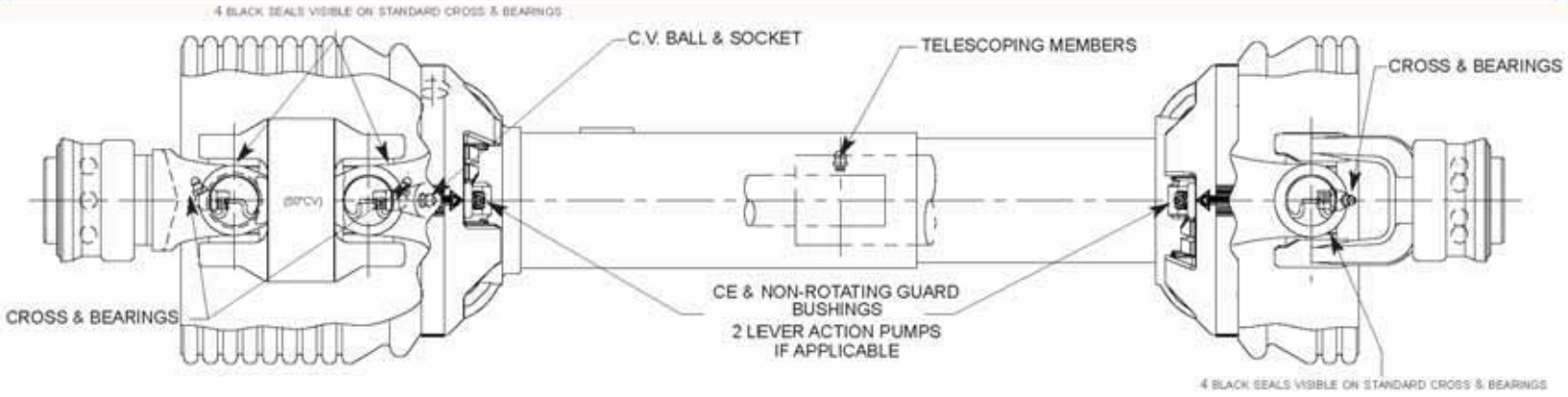
MB001-00

Weasler — RECOMMENDED CUSTOMER LUBRICATION PROCEDURE FOR 50° CV DRIVELINES



LUBRICATE ALL FITTINGS WITH A GOOD QUALITY LITHIUM SOAP COMPATIBLE E.P. GREASE MEETING THE N.L.G.I. #2 SPECIFICATIONS AND CONTAINING NO MORE THAN 1% MOLYBDENUM DISULFIDE.

AN E.P. GREASE MEETING THE N.L.G.I. #2 SPECIFICATIONS AND CONTAINING 3% MOLYBDENUM DISULFIDE MAY BE SUBSTITUTED IN THE TELESCOPING MEMBERS ONLY.

LUBE RECOMMENDATIONS:	INTERVAL	LOCATION	AMOUNT
	50 HRS.	EXTENDED LUBE CROSS & BEARING (ORANGE SEALS NOT VISIBLE)	2-3 LEVER ACTION PUMPS
	8 HRS.**	STANDARD CROSS & BEARINGS (BLACK SEALS)	2-3 LEVER ACTION PUMPS
	8 HRS.	TELESCOPING MEMBERS	8-10 LEVER ACTION PUMPS
	8 HRS.**	CV BALL & SOCKET	4-6 LEVER ACTION PUMPS

** CONSTANT ANGLE APPLICATIONS MAY REQUIRE A LUBE INTERVAL OF 4 HOURS

CAUTION!! REPLACEMENT PARTS ARE NOT LUBRICATED

REPLACEMENT PARTS MUST BE LUBRICATED AT TIME OF ASSEMBLY AND DURING USE PER THE LUBE RECOMMENDATIONS

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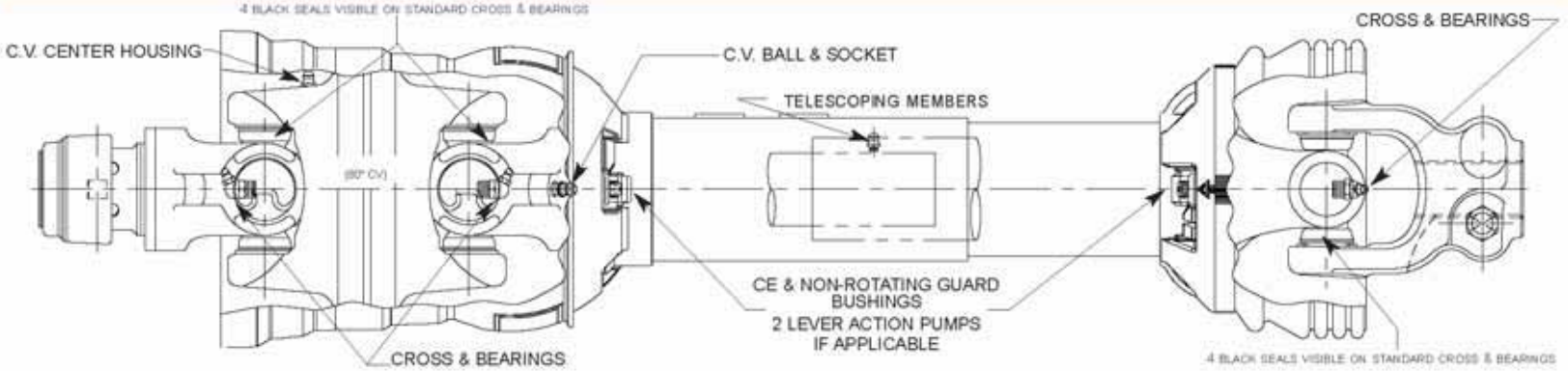
M3002-00

Weasler — RECOMMENDED CUSTOMER LUBRICATION PROCEDURE FOR 80° CV DRIVELINES



LUBRICATE ALL FITTINGS WITH A GOOD QUALITY LITHIUM SOAP COMPATIBLE E.P. GREASE MEETING THE N.L.G.I. #2 SPECIFICATIONS AND CONTAINING NO MORE THAN 1% MOLYBDENUM DISULFIDE.

AN E.P. GREASE MEETING THE N.L.G.I. #2 SPECIFICATIONS AND CONTAINING 3% MOLYBDENUM DISULFIDE MAY BE SUBSTITUTED IN THE TELESCOPING MEMBERS ONLY.

LUBE RECOMMENDATIONS:	INTERVAL	LOCATION	AMOUNT
	50 HRS.	EXTENDED LUBE CROSS & BEARINGS (ORANGE SEALS NOT VISIBLE)	2-3 LEVER ACTION PUMPS
	8 HRS.**	STANDARD CROSS & BEARINGS (BLACK SEALS)	2-3 LEVER ACTION PUMPS
	8 HRS.	TELESCOPING MEMBERS	8-10 LEVER ACTION PUMPS
	8 HRS.**	CV BALL & SOCKET	4-6 LEVER ACTION PUMPS
	24 HRS.	CV CENTER HOUSING	12-15 LEVER ACTION PUMPS

** CONSTANT ANGLE APPLICATIONS MAY REQUIRE A LUBE INTERVAL OF 4 HOURS

CAUTION!! REPLACEMENT PARTS ARE NOT LUBRICATED

REPLACEMENT PARTS MUST BE LUBRICATED AT TIME OF ASSEMBLY AND DURING USE PER THE LUBE RECOMMENDATIONS

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M3003-00

APPENDIX G
OIL QUANTITIES

Planetary Oil Quantities

MODEL	PLANETARY	FRONT		REAR		TANK		TOTAL	
		Gal.	Liters	Gal.	Liters	Gal.	Liters	Gal.	Liters
300	PGA1602VM	3.85	17.5	–	–	0.33	1.5	4.18	19
400	PGA1602VM	3.85	17.5	–	–	0.33	1.5	4.18	19
500	PGA2002VM/PGA2003VM	5.06	23	–	–	0.33	1.5	5.39	24.5
600	PGA2002VM/PGA2003VM	5.06	23	–	–	0.33	1.5	5.39	24.5
500T	PGA2002VM/PGA2003VM	5.06	23	5.06	23	1.21	5.5	11.33	51.5
600T	PGA2002VM/PGA2003VM	5.06	23	5.06	23	1.21	5.5	11.33	51.5
700T	PGA2002VM/PGA2003VM	5.06	23	5.06	23	1.21	5.5	11.33	51.5
800T	PGA2002VM/PGA2003VM	5.06	23	5.06	23	1.21	5.5	11.33	51.5
900T	PG3002VM	4.34	19.75	4.34	19.75	1.21	5.5	9.9	45
1000T	PG3002VM	4.34	19.75	4.34	19.75	1.21	5.5	9.9	45
1200T	PG3002VM	4.34	19.75	4.34	19.75	1.21	5.5	9.9	45
1400T	PG3002VM	4.34	19.75	4.34	19.75	1.21	5.5	9.9	45
1600T	PG3002VM	4.34	19.75	4.34	19.75	1.21	5.5	9.9	45

Gearbox Oil Quantities

GEARBOX	TOTAL	
	Gallons	Liters
T269 (RIGHT ANGLE)	0.71	3.25
T269 (T BOX)	0.60	2.75
T301 (RIGHT ANGLE)	0.99	4.5
T301 (T BOX)	0.99	4.5
L-180 (RIGHT ANGLE)	0.77	3.5
2 SPEED 1.3:1	2.09	9.5

APPENDIX H
TORQUE - QUICK REFERENCE

The amount of twisting force (torque) on a bolt or screw is normally measured by the use of a torque wrench. The correct tightening of bolts is one of the most singularly important operations done when repairing an engine or component. Correct torque can eliminate deformation of mating surfaces. It can also eliminate bolt breakage, thread stripping, water and oil leaks.

Virtually every bolt and screw on an engine or component has a torque specification for correct tightening. It is imperative that the manufacturer's recommendation be followed for correct tightening sequence and tightness to eliminate problems created by bolts and screws being too tight or too loose.

S.A.E. Bolt Grade and Recommended Torque Chart

S.A.E. GRADE	1 or 2	5	6	8	Recommended for Competition and Critical Use
					
1/4 DIA	5 ft lbs	7 ft lbs	10 ft lbs	10.5 ft lbs	11 ft lbs
5/16	9	14	19	22	24
3/8	15	25	34	37	40
7/16	24	40	55	60	65
1/2	37	60	85	92	97
9/16	53	88	120	132	141
5/8	74	120	167	180	192
3/4	120	220	280	286	316
7/8	190	302	440	473	503
1	282	466	660	714	771

APPENDIX I
METRIC BOLT GRADE AND RECOMMENDED TORQUE CHART

Torque Wrench Setting (N·m)

Screw on steel or cast iron.

ISO METRIC THREAD - Coarse Pitch											
Nom. Size	Pitch	Quality 4.8		Quality 6.8		Quality 8.8		Quality 10.9		Quality 12.9	
(mm)	(mm)	min	max	min	max	min	max	min	max	min	max
4	0,7	1,5	1,9	2,3	2,8	3,1	3,8	4,4	5,3	5,2	6,3
5	0,8	3,0	3,7	4,5	5,5	6,0	7,3	8,5	10,3	10,2	12,4
6	1	5,2	6,3	7,8	9,5	10,4	12,7	14,7	17,8	17,6	21,4
8	1,25	12,5	15,2	18,7	22,7	25,0	30,3	35,1	42,6	42,1	51,1
10	1,5	25,0	30,3	37,4	45,5	49,9	60,6	70,2	85,2	84,2	102,3
12	1,75	42,5	51,6	63,7	77,4	85,0	103,2	119,5	145,1	143,4	174,2
14	2	67,6	82,1	101,5	123,2	135,3	164,3	190,2	231,0	228,3	277,2
16	2	102,4	124,3	153,6	186,5	204,8	248,6	287,9	349,6	345,5	419,6
18	2,5	142,7	173,3	214,1	259,9	285,4	346,6	401,4	487,4	481,7	584,9
20	2,5	200	243	300	364	400	486	562	683	675	819
22	2,5	268	326	402	489	537	652	755	916	906	1.1
24	3	346	420	518	629	691	839	972	1.18	1.166	1.416
27	3	504	612	756	918	1.008	1.224	1.418	1.721	1.701	2.066
30	3,5	688	835	1.032	1.253	1.375	1.67	1.934	2.349	2.321	2.818

ISO METRIC THREAD - Fine Pitch											
Nom. Size	Pitch	Quality 4.8		Quality 6.8		Quality 8.8		Quality 10.9		Quality 12.9	
(mm)	(mm)	min	max	min	max	min	max	min	max	min	max
8	1	13,1	15,9	19,7	23,9	26,2	31,8	36,9	44,8	44,2	53,7
10	1,25	26,0	31,5	38,9	47,3	51,9	63,0	73,0	88,6	87,6	106,4
12	1,25	45,3	55,0	67,9	82,4	90,5	109,9	127,3	154,6	152,8	185,5
12	1,5	43,9	53,3	65,8	79,9	87,8	106,6	123,4	149,9	148,1	179,8
14	1,5	71,4	86,7	107,1	130,0	142,8	173,4	200,8	243,8	241,0	292,6
16	1,5	107,2	130,1	160,8	195,2	214,3	260,3	301,4	366,0	361,7	439,2
18	1,5	154,9	188,0	232,3	282,1	309,7	376,1	435,6	528,9	522,7	634,7
20	1,5	215	261	322	391	430	522	604	734	725	881
22	1,5	286	347	429	521	572	695	805	977	966	1.173
24	2	367	446	551	669	734	891	1.032	1.254	1.239	1.504
27	2	531	645	797	968	1.063	1.291	1.495	1.815	1.793	2.178
30	2	739	897	1.108	1.345	1.477	1.794	2.077	2.522	2.493	3.027

PTO Shear Bolt Sizes

PTO Model	RPM	Size (in.)	Standard or CV	Shear Bolt Size (in.)	Grade	Models Used On
242-23494	540	1-3/8	Standard	1/4 x 1-1/4	5	300, 400
262-21147	540	1-3/8	Standard	5/16 x 1-1/2	5	500, 600, 500T, 600T, 700T, 900T
265-24976	540	1-3/8	Constant Velocity	5/16 x 1-1/2	5	500, 600, 500T, 600T, 700T, 900T
242-22218	1000	1-3/8	Standard	1/4 x 1-1/4	5	300, 400
262-20596	1000	1-3/8	Standard	5/16 x 1-1/2	5	500, 600, 500T, 600T, 700T, 900T, 1000T, 1200T
265-24975	1000	1-3/8	Constant Velocity	5/16 x 1-1/2	5	500, 600, 500T, 600T, 700T, 900T, 1000T, 1200T
T80.086P02 8359	1000	1-3/8	Constant Velocity	M12X65	8.8	800T
262-21228	1000	1-3/4	Standard	5/16 x 1-1/2	5	500, 600, 500T, 600T, 700T, 900T
265-24972	1000	1-3/4	Constant Velocity	5/16 x 1-1/2	5	500, 600, 900T
272-21556	1000	1-3/4	Standard	3/8 x 2-1/2	5	1000T, 1200T, 1400T, 1600T
265-24974	1000	1-3/4	Constant Velocity	5/16 x 1-1/2	5	500T, 600T, 700T, 1000T, 1200T, 1400T, 1600T
272-23303	1000	1-3/4	Standard	3/8 x 2-1/2	5	1400T, 1600T
282-24109	1000	1-3/4	Standard	7/16 x 2	8	1400T, 1600T

The previous torque tables correspond to an axial preload, which is between 70% and 85% of the material yield stress.

Coefficient of Friction: 0.14

With lubricated thread use 70% of abovementioned tables. When quality 12.9 fasteners are used in tapped holes in grey cast iron, the fasteners should be torqued to quality 10.9 specifications.

APPENDIX J
WEIGHBAR CALIBRATION CHARTS

Refer to *SETTING OF THE PARAMETERS* or *CALIBRATION* in the owner's manual for this procedure.

Digi-Star Set-up Calibration Numbers

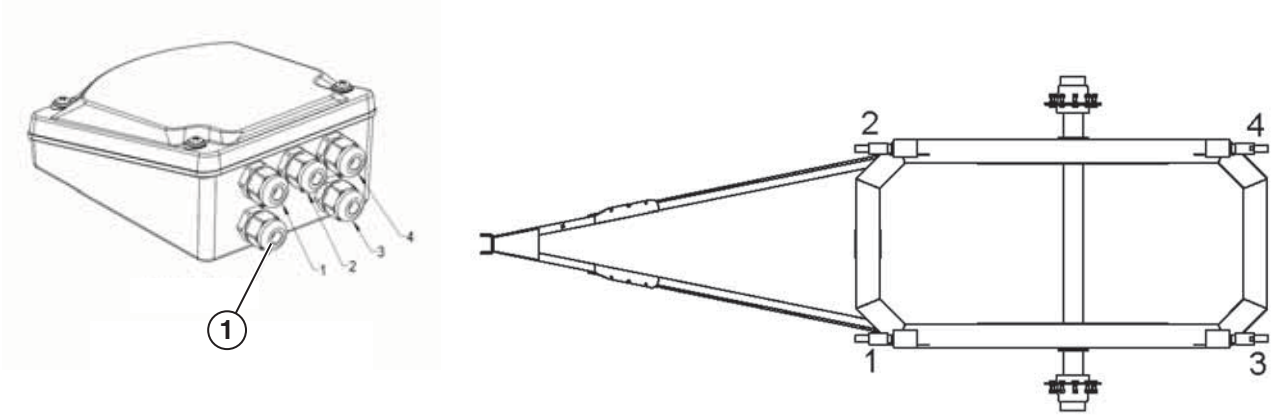
DIGI-STAR LOAD CELL MODEL	SUPREME P/N	N° of load cells installed	mV/V @ weight	Digi-Star Microcomputer	
				set-up #	calibration #
2-1/8 in. MOBILE		3	0.3 mV/V = 6000 lbs	146018	24,480
2-1/8 in. MOBILE		4	0.3 mV/V = 6000 lbs	146040	32,640
2-7/8 in. MOBILE		3	0.750 mV/V= 15,000 lbs	137060	23,930
2-7/8 in. MOBILE		4	0.750 mV/V= 15,000 lbs	127066	33,812

Dinamica Generale Set-up Calibration Numbers

SUPREME LOAD CELL MODEL	SUPREME P/N	N° of load cells installed	mV/V @ weight	DG Microcomputer PASSWORD 12	
				CAL value kg	CAL value lbs
2-1/8 in. DIA STATIC	PRT2003	3	0.5 mV/V = 10,000 lbs	5005	11,034
2-1/8 in. DIA STATIC	PRT2003	4	0.5 mV/V = 10,000 lbs	6674	14,713
2-1/8 in. DIA MOBILE	PRT2003	3	0.3 mV/V = 6000 lbs	5005	11,034
2-1/8 in. DIA MOBILE	PRT2003	4	0.3 mV/V = 6000 lbs	6674	14,713
2-7/8 in. DIA STATIC	PRT2004	3	1,150 mV/V = 23,000 lbs	5005	11,034
2-7/8 in. DIA STATIC	PRT2004	4	1,150 mV/V = 23,000 lbs	6674	14,713
2-7/8 in. DIA MOBILE	PRT2004	3	1,150 mV/V = 23,000 lbs	5005	11,034
2-7/8 in. DIA MOBILE	PRT2004	4	1,150 mV/V = 23,000 lbs	6674	14,713

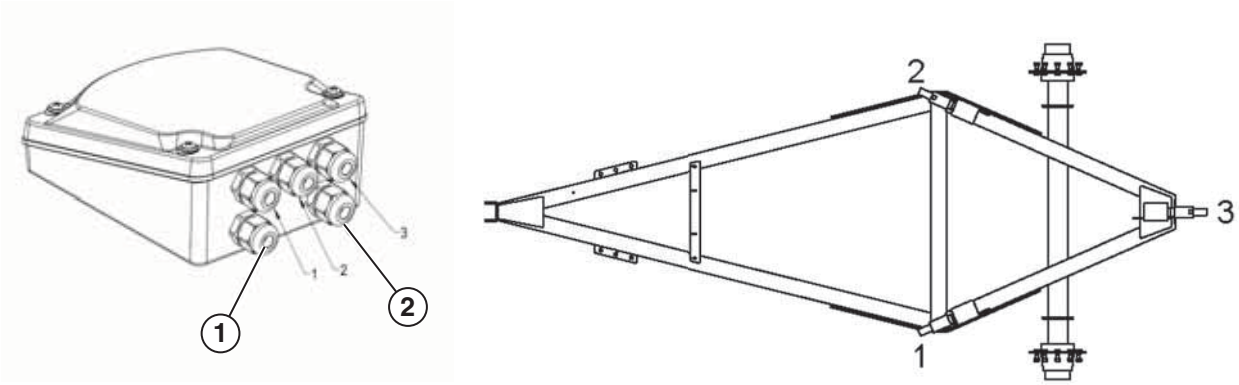
APPENDIX K
WEIGHBAR / JUNCTION BOX LAYOUT

Digi-Star



1 – Sensor Cable

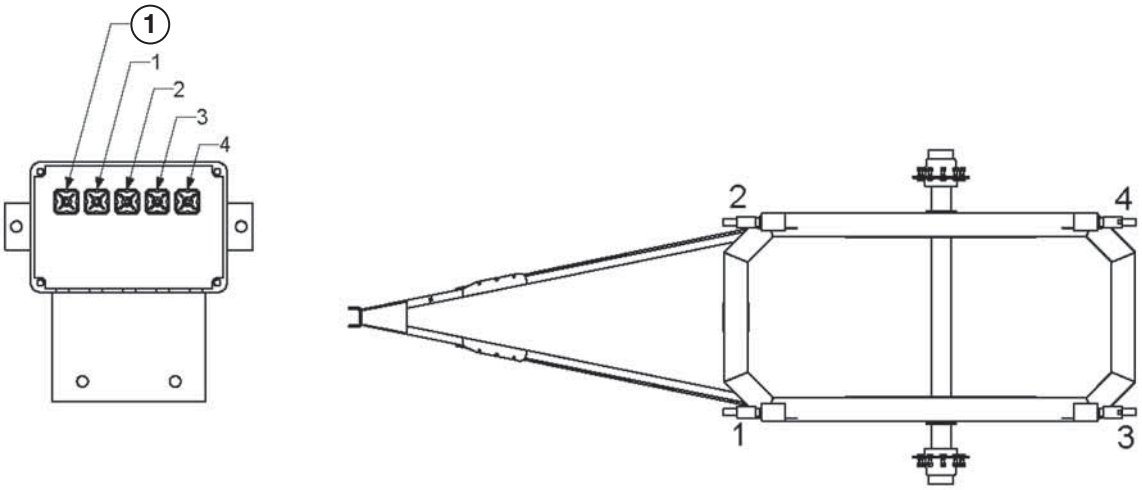
4-Point Weighing System
Figure 43



1 – Sensor Cable 2 – Cap/Plug

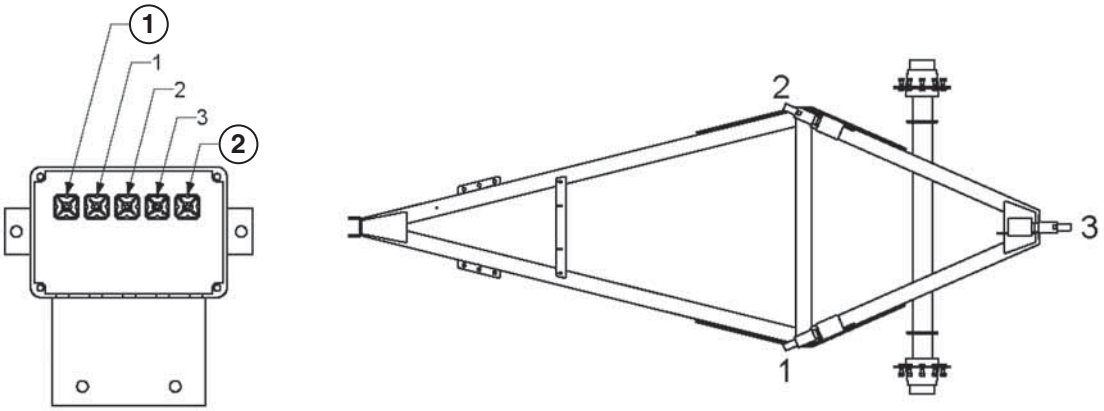
3-Point Weighing System
Figure 44

Dinamica Generale



1 – Sensor Cable

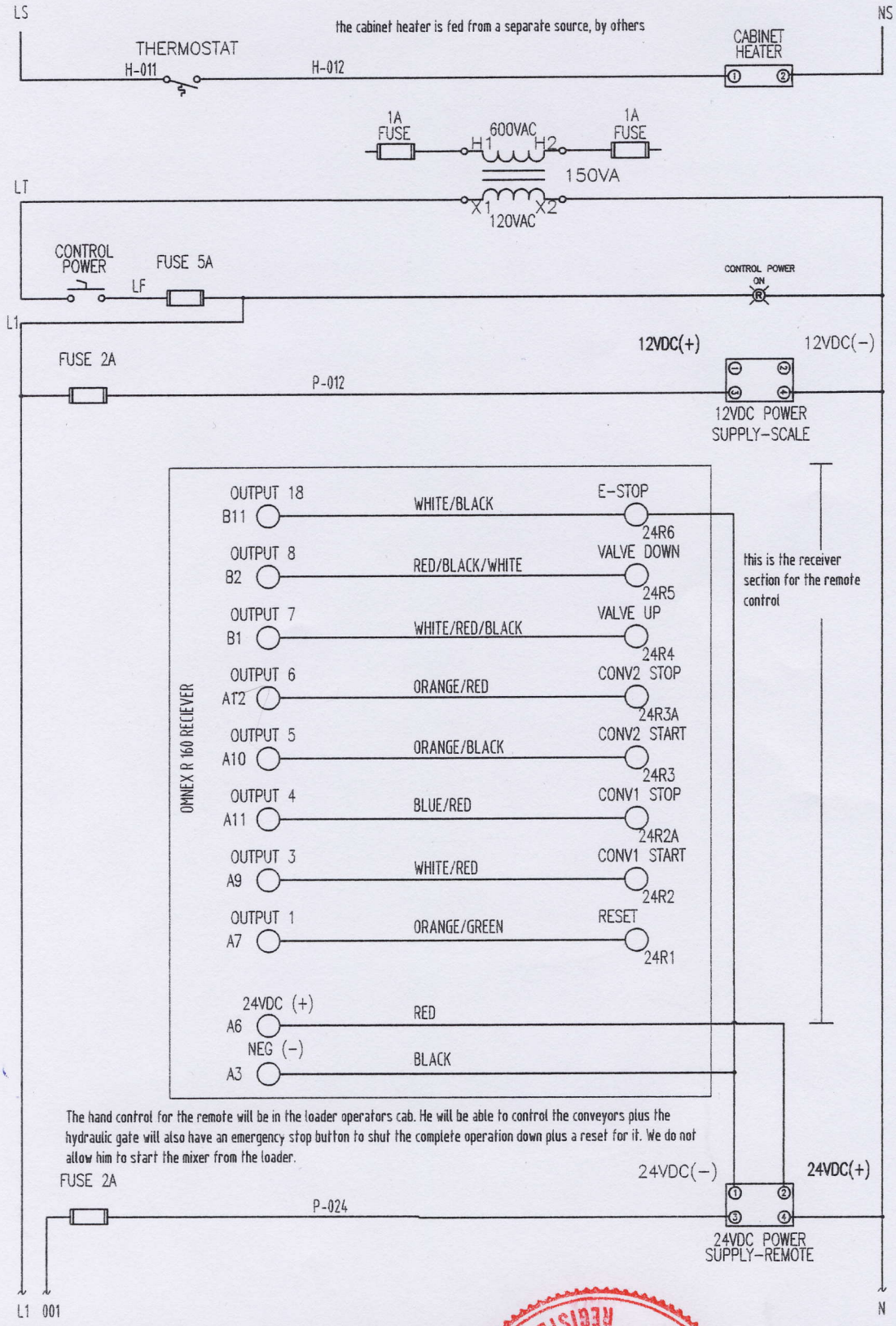
4-Point Weighing System
Figure 45



1 – Sensor Cable

2 – Cap

3-Point Weighing System
Figure 46



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Firm Name and Address	FOWLER ELECTRIC LTD
Scale	
Date	
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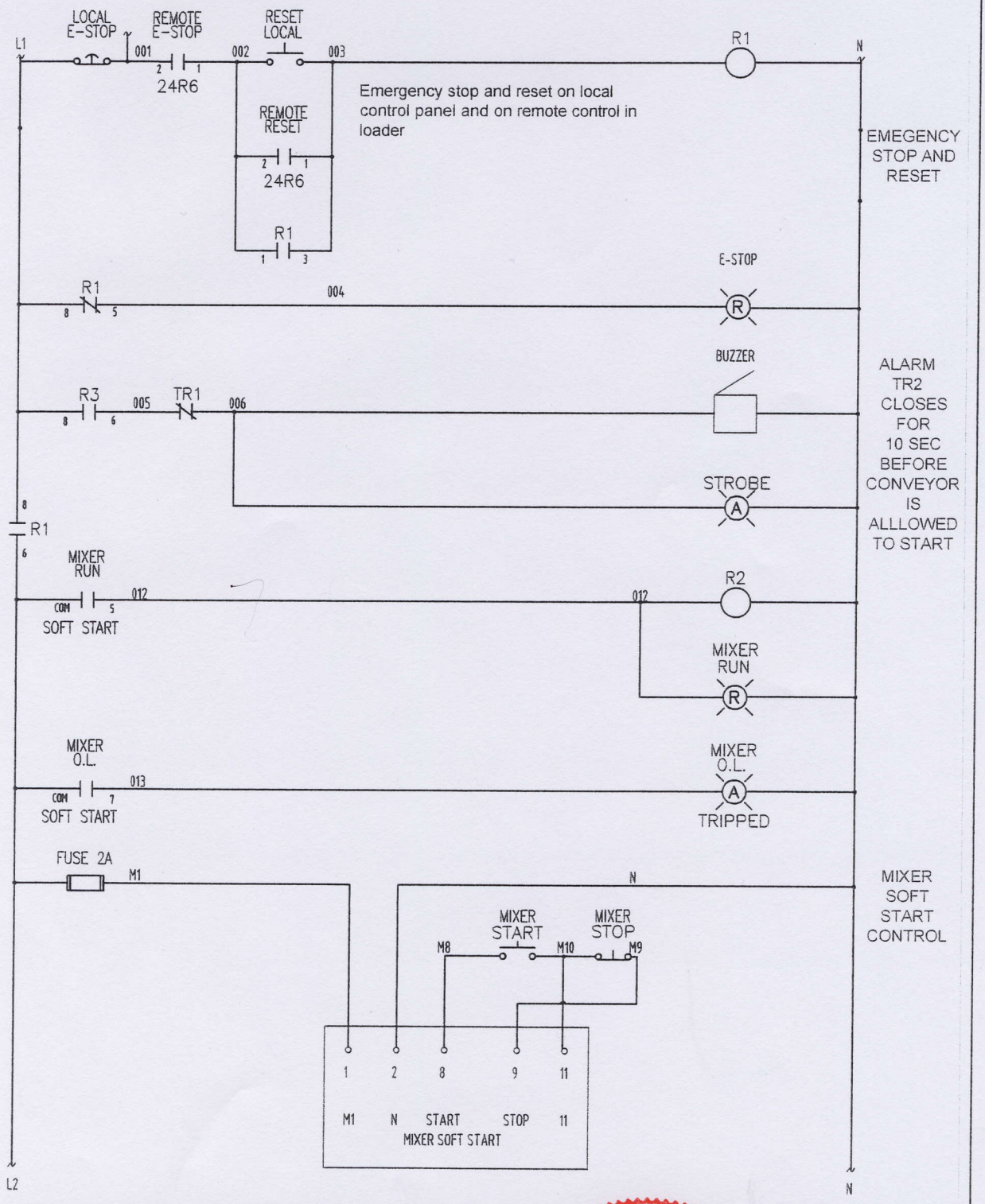
No.	Revision/Issue Date
General Notes	MIXER CONTROL DRAWING



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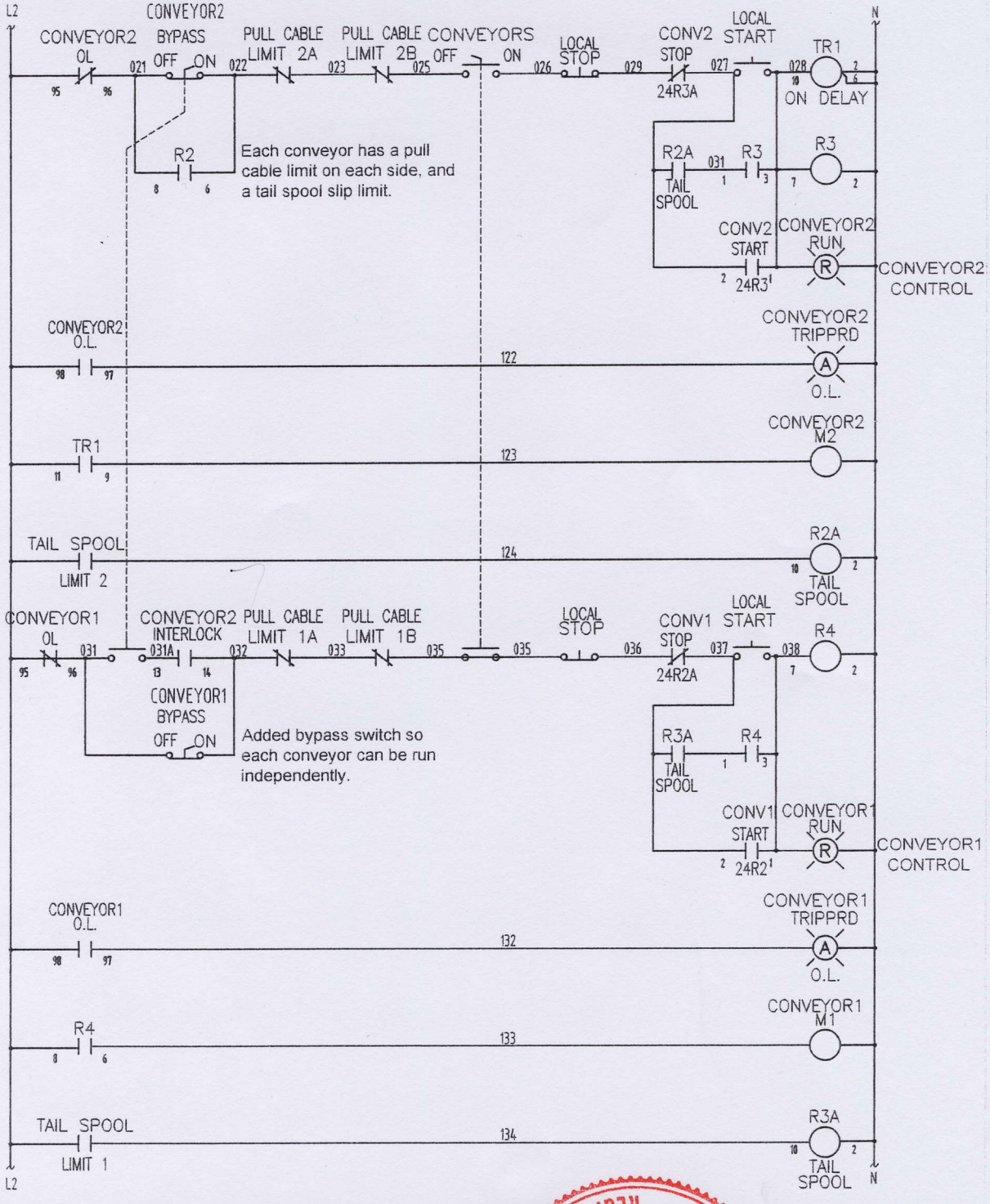
Firm Name and Address	FOWLER ELECTRIC LTD
No. / Revision / Issue Date	
General Notes	MIXER CONTROL DRAWING

PROVINCE OF MANITOBA
REGISTERED PROFESSIONAL ENGINEER
R. ROUHANI
Member
3707

11-14-14



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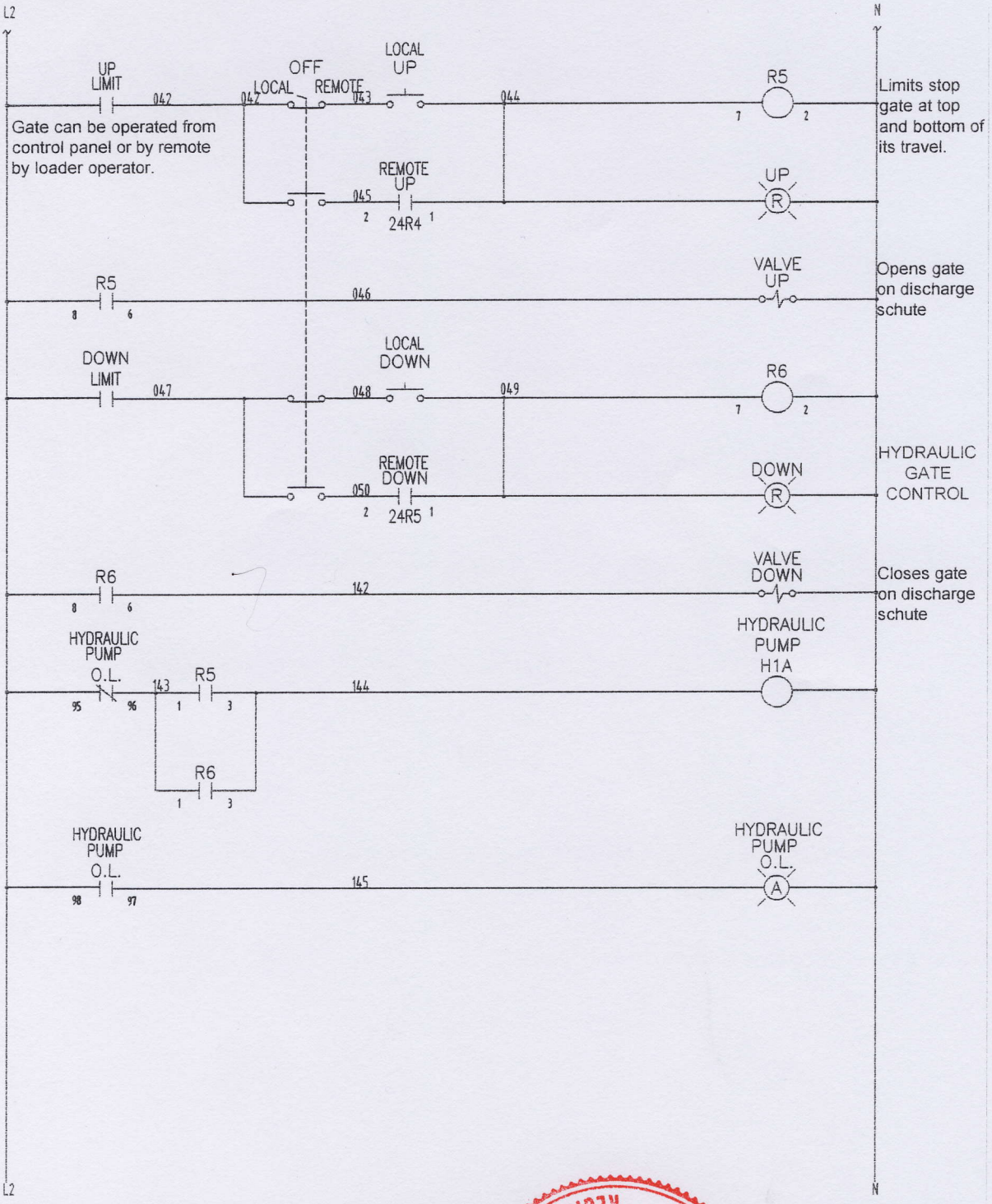

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Date	
Scale	
Sheet	PAGE #4
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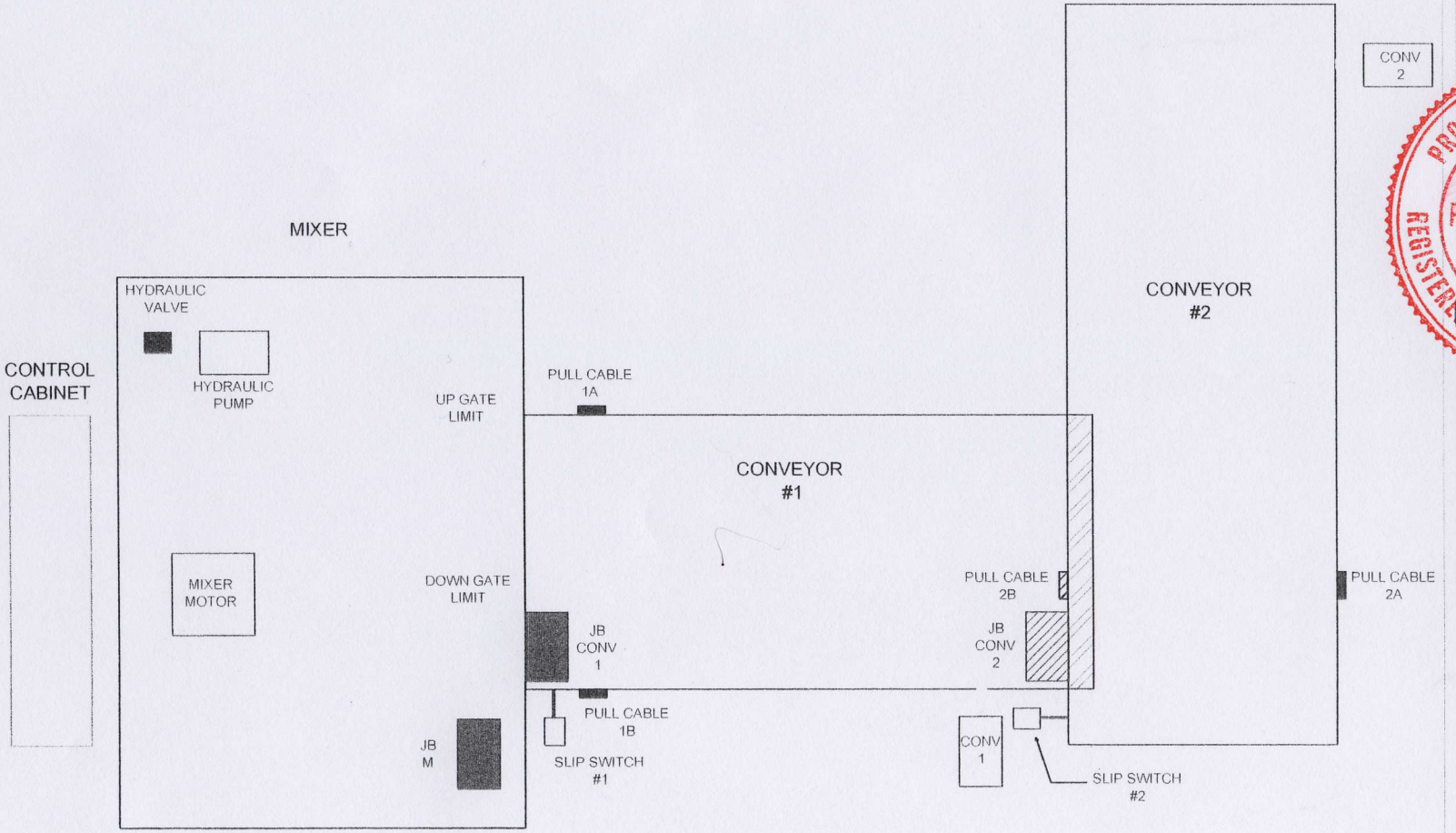
PROVINCE OF MANITOBA
REGISTERED
R ROUHANA
Member
37077
PROFESSIONAL ENGINEER

4-14-14



General Notes

DEVICE LAYOUT

PROVINCE OF MANITOBA
F. ROUHANA
Member 37071
REGISTERED PROFESSIONAL ENGINEER
4-14-14

No.	Revision/Issue	Date

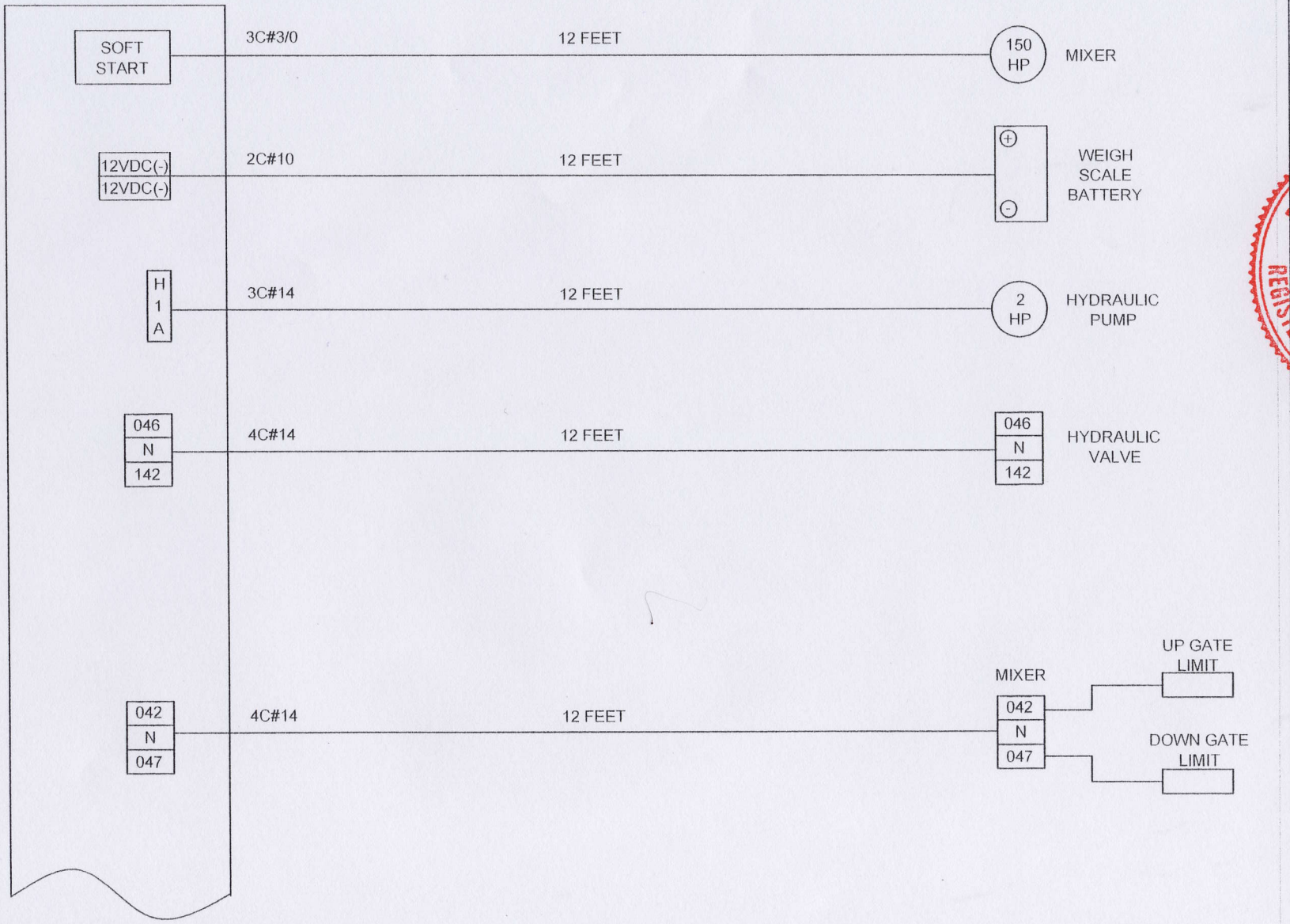
Firm Name and Address

FOWLER ELECTRIC LTD

Project Name and Address

WINNEPEG MIXER PROJECT

Project	Sheet
Date	PAGE #1
Scale	



General Notes

DEVICE LAYOUT

PROVINCE OF MANITOBA
R ROUHANA
Member
3707
REGISTERED PROFESSIONAL ENGINEER

4-14-14

No.	Revision/Issue	Date

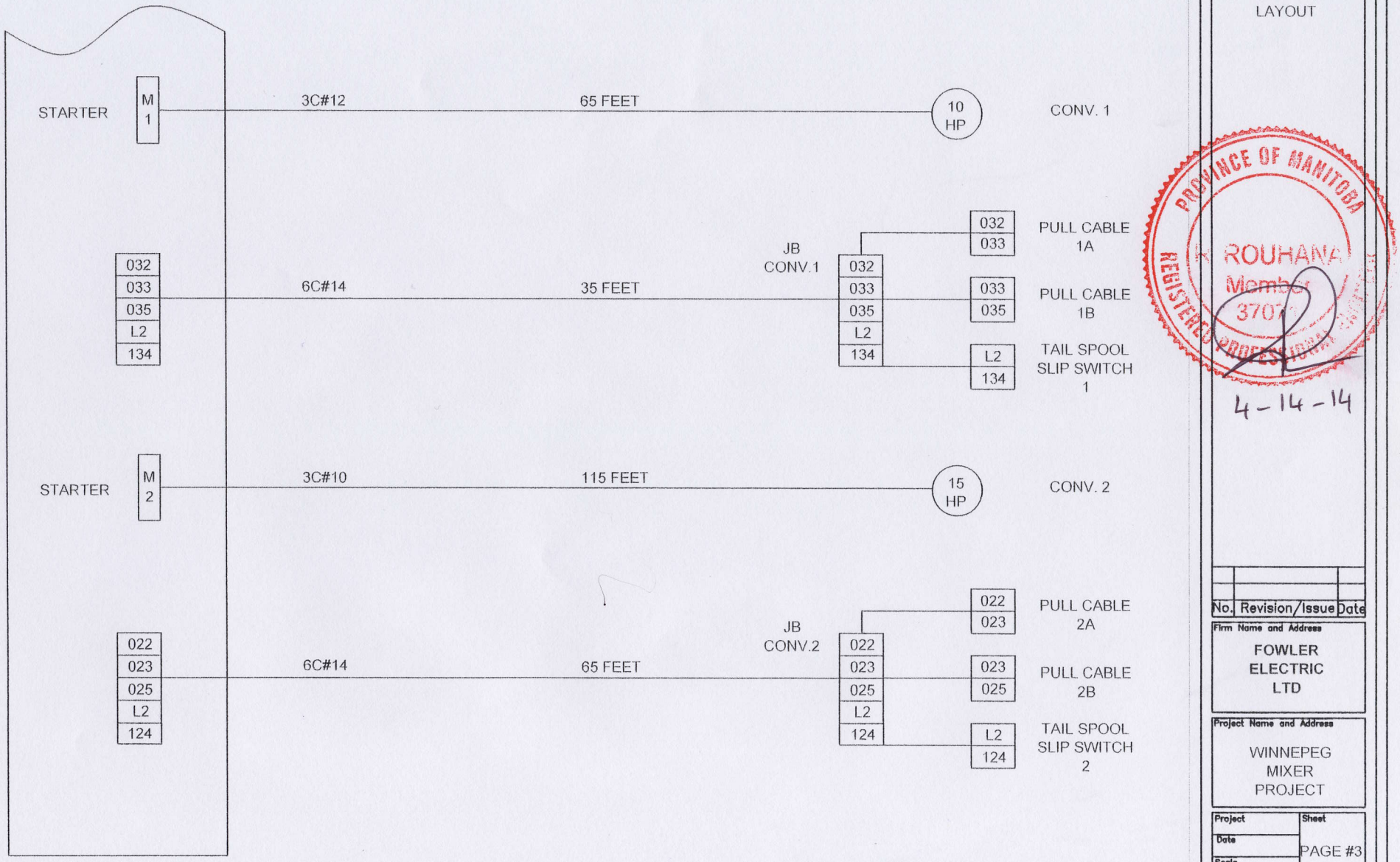
Firm Name and Address

FOWLER ELECTRIC LTD

Project Name and Address

WINNEPEG MIXER PROJECT

Project	Sheet
Date	PAGE #2
Scale	



General Notes

DEVICE LAYOUT

PROVINCE OF MANITOBA
REGISTERED PROFESSIONAL ENGINEER
R. ROUHANA
Member
3707
4-14-14

No.	Revision/Issue	Date

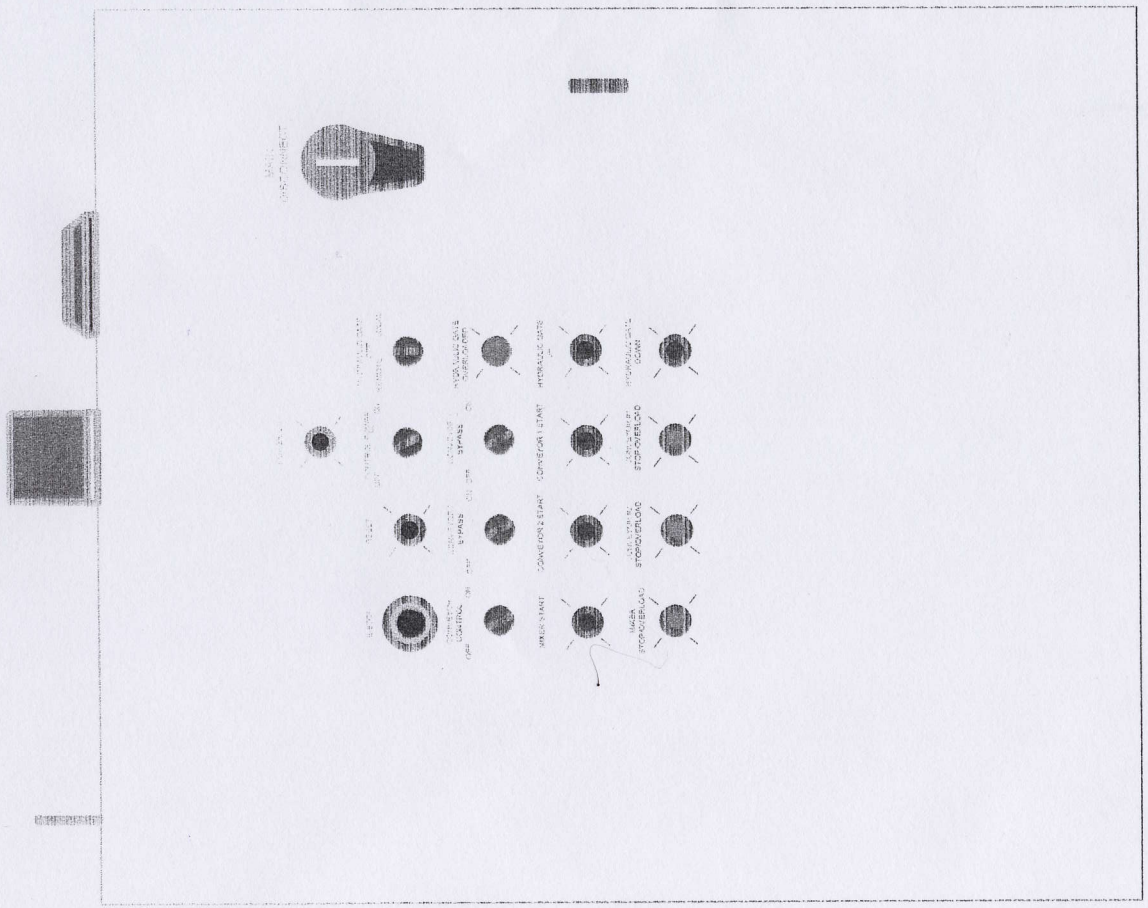
Firm Name and Address

FOWLER ELECTRIC LTD

Project Name and Address

WINNEPEG MIXER PROJECT

Project	Sheet
Date	PAGE #3
Scale	



General Notes

PANEL
FRONT
LAYOUT

PROVINCE OF MANITOBA
R. ROUHANA
Member
37071
REGISTERED PROFESSIONAL ENGINEER

4-14-14

No.	Revision/Issue	Date

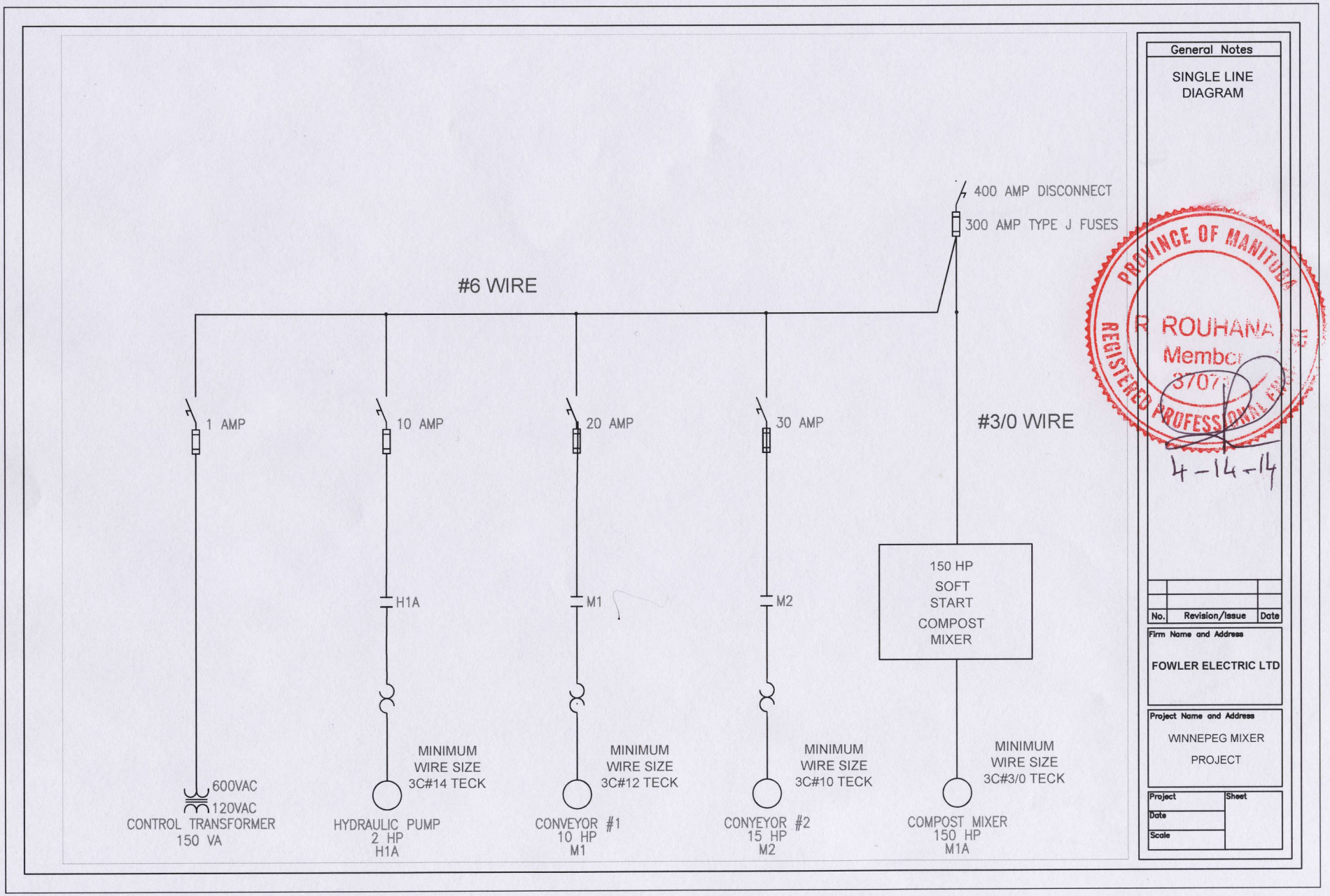
Firm Name and Address

FOWLER
ELECTRIC
LTD

Project Name and Address

WINNEPEG
MIXER
PROJECT

Project	Sheet
Date	
Scale	



General Notes

SINGLE LINE DIAGRAM

PROVINCE OF MANITOBA
R ROUHANA
Member
3707
REGISTERED PROFESSIONAL ENGINEER
4-14-14

No.	Revision/Issue	Date

Firm Name and Address

FOWLER ELECTRIC LTD

Project Name and Address

WINNEPEG MIXER PROJECT

Project	Sheet
Date	
Scale	

OMNEX
TRUSTED WIRELESS™

Field Configurable System

Installation / Configuration Manual

T110C Transmitter
R160 Receiver

January 13, 2009

Revision 2

DM - R160 - 0551A

#74-1833 Coast Meridian Road, Port Coquitlam, BC, Canada • V3C 6G5
Ph# (604) 944-9247 • Fax# (604) 944-9267
Toll Free 1-800-663-8806

Table of Contents

***NOTE:** These instructions are intended only for installing and operating the remote control equipment described here. This is not a complete Operator's Manual. For complete operating instructions, please read the Operator's Manual appropriate for your particular machine.*

Safety Precautions

READ ALL INSTRUCTIONS

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Failure to follow the SAFETY PRECAUTIONS may result in radio equipment failure and serious personal injury

Installation

PROVIDE A SAFETY CUTOFF SWITCH. If maintenance is required, the radio must be disconnected from power

USE PROPER WIRING. Loose or frayed wires can cause system failure, intermittent operation, machine damage, etc.

DO NOT INSTALL IN HOT AREAS. This apparatus can be damaged by heat in excess of 158°F (70°C)

Personal Safety

MAKE SURE MACHINERY AND SURROUNDING AREA IS CLEAR BEFORE OPERATING. Do not activate the remote system unless it is safe to do so.

TURN OFF THE RECEIVER POWER BEFORE WORKING ON MACHINERY. Always disconnect the remote system before doing any maintenance to prevent accidental operation of the machine

Care

KEEP DRY. Do not clean the transmitter / receiver under high pressure. If water or other liquids get inside the transmitter battery or receiver compartment, immediately dry the unit. Remove the case and let the unit air dry

CLEAN THE UNIT AFTER OPERATION. Remove any mud, dirt, concrete, etc. from the unit to prevent clogging of buttons, switches, etc. by using a damp cloth.

Maintenance / Welding

DISCONNECT THE RADIO RECEIVER BEFORE WELDING on the machine the receiver is connected to. Failure to disconnect will result in the destruction of the radio receiver.

System Overview

The **OMNEX Trusted Wireless™ T110C / R160** is a portable, long range, programmable radio remote control system. Designed as a compact and easy-to-use product, this **Trusted Wireless™** system puts complete control of your machine where it's needed most, with the operator. It's robust, easy to install and has complete self-diagnostics. This system can be a simple cable replacement or add intelligence to make it a total control package. It's a radio, a PLC and a valve driver all in one.

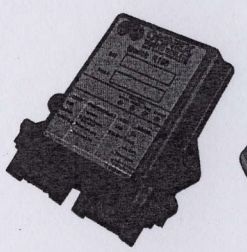
The **OMNEX Trusted Wireless™ T110C / R160** system uses Frequency Hopping Spread Spectrum (FHSS) technology. FHSS devices concentrate their full power into a very narrow signal that randomly hops from frequency to frequency within a designated band. This transmission pattern, along with CRC-16 error-checking techniques, enables our industrially hardened **FHSS** signals to overcome interference that commonly affects licensed radios

The **R160** receiver is designed to be powered from a 12VDC or 24VDC system. It features 19 solid state, high-side driver input / output controls and a reliable E-Stop control.

The **T110C** comes with 4 to 10 buttons to provide the user flexibility to control the functions they need. The transmitter uses regular alkaline AA batteries and is also **CCready™**. When used with the **CCDOCK™**, the T110C can use and recharge NiMH (recommended) or NiCd rechargeable AA batteries. Each T110C transmitter uses a unique ID code to ensure that no two systems will conflict at a job site.

Features

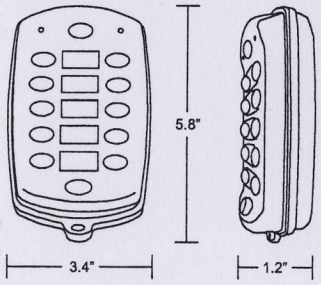
FCC, ISC, CE approved
CCready™ transmitter
License free
1200 foot range @ 900 MHz (900 ft. @ 2.4 GHz)
Hand held / weatherproof / ergonomic
Simple "wire-and-use" installation
Resilient to impact and shock
Available in both 900 MHz and 2.4 GHz
Available with optional E-Stop for ensured operator safety
Factory configurable for all custom applications.

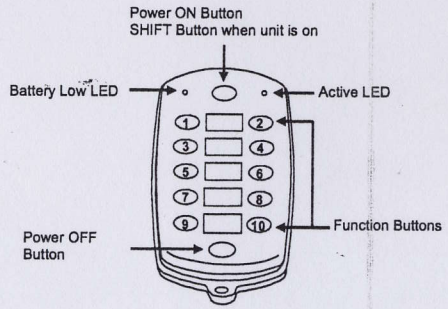


R160 Receiver

T110C Transmitter

T110C Dimensions and Controls

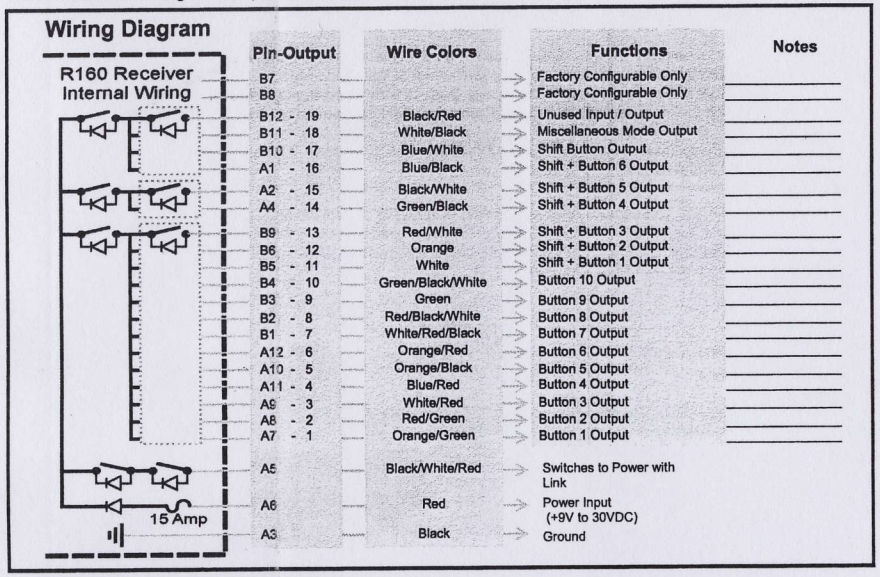




Installing the Receiver

Use the **Wiring Diagram** and the **Connector Diagram** below to connect the receiver pins directly to the appropriate contacts of the machine electronics. R160 Output Cables can be provided with every system to simplify the wiring process. The Wire Color column below only applies to the OMNEX Output Cable configuration. Tips on mounting, power connections and filtering are also provided under **Installation Considerations**.

Wiring Diagram



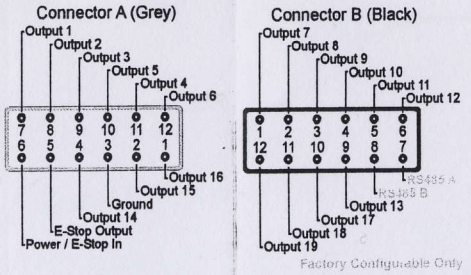
Pin-Output	Wire Colors	Functions	Notes
B7		Factory Configurable Only	
B8		Factory Configurable Only	
B12 - 19	Black/Red	Unused Input / Output	
B11 - 18	White/Black	Miscellaneous Mode Output	
B10 - 17	Blue/White	Shift Button Output	
A1 - 16	Blue/Black	Shift + Button 6 Output	
A2 - 15	Black/White	Shift + Button 5 Output	
A4 - 14	Green/Black	Shift + Button 4 Output	
B9 - 13	Red/White	Shift + Button 3 Output	
B6 - 12	Orange	Shift + Button 2 Output	
B5 - 11	White	Shift + Button 1 Output	
B4 - 10	Green/Black/White	Button 10 Output	
B3 - 9	Green	Button 9 Output	
B2 - 8	Red/Black/White	Button 8 Output	
B1 - 7	White/Red/Black	Button 7 Output	
A12 - 6	Orange/Red	Button 6 Output	
A10 - 5	Orange/Black	Button 5 Output	
A11 - 4	Blue/Red	Button 4 Output	
A9 - 3	White/Red	Button 3 Output	
A8 - 2	Red/Green	Button 2 Output	
A7 - 1	Orange/Green	Button 1 Output	
A5	Black/White/Red	Switches to Power with Link	
A6	Red	Power Input (+9V to 30VDC)	
A3	Black	Ground	

Outputs: 19 solid state, high-side driver outputs, 5A max. per pin and 7A max per bank, total combined current 15A

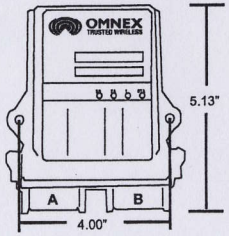
Inputs: All output pins can be factory configured as inputs. Input pins should be connected to a current limiting (fused) source

Connector Pin Assignments

Connectors as seen from under the receiver



R160 Dimensions



Installation Considerations

NOTE: *The FCC and ISC require that the antenna be restricted to that supplied by the manufacturer and approved for use with this product. An optional 0dB coax wire antenna may be supplied. For other antenna options, please contact OMNEX Control Systems ULC.*

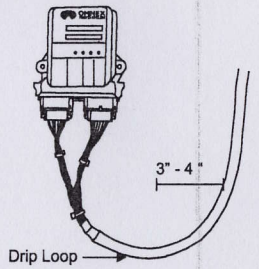
The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Mounting and Installation

The receiver can be mounted by fastening two ¼" bolts through the two mounting holes in the unit's enclosure. When mounting, ensure that the receiver is oriented so that the text is reading right and the connector is pointing "down".

When selecting a mounting point for the receiver, it is recommended that the location require only a minimal length of wiring to connect it to the control panel, that it will be in a visible area where it has good exposure to the operator and that it is mounted on a surface that is protected from the weather and sustains minimal vibration. It is also recommended that the receiver have the best possible line of sight with the transmitter for maximum operating **range.**

When installing the receiver, it is recommended that a "Drip Loop" is formed with the output cables. By creating a Drip Loop, water from condensation, rain or wet environments, will drip off of the cable instead of running along the wire and into the receiver connections or running along the cables into the machine's electronic controls.



Using approximately 1 foot (30 cm) of cable create a loop with an approximate radius of 3-4 inches (8-10 cm). Ensure the loop bottom is lower than the receiver connectors.

If connecting an external antenna, a Drip Loop radius of approximately 2-3 inches (5—8 cm) can be formed from approximately 8 inches (20 cm) of cable.

Power Connections and Wiring

Whenever a power connection is made to an electronic device, it is a good practice to make both the Power (+) and Ground (-) connections directly to the battery and avoid connecting the power from the charging side of existing wiring or making use of existing "ACC" or other peripheral connection points.

When proportional voltage outputs are used to operate critical equipment it is good practice to use a separate enable signal as part of the control circuit. In some cases an application can be designed using an independent enable output for each proportional output (see wiring diagram). An alternative solution is to use the "Switches to Power with Link" line (see wiring diagram) to explicitly enable each of the functions that are using proportional voltage control. This will ensure that under all fault conditions the equipment will be disabled when the link is disabled (e.g. by hitting E-Stop). **As well, following any instance of a fault condition (e.g. output shorted) it is recommended practice to fully cycle the power to the receiver before restarting the transmitter to ensure that the system is restarted from a known state.**

Make sure that wire of sufficient gauge and insulator type is used when connecting the outputs of the receiver to the control panel. Observe any component manufacturer's instructions and recommendations for proper integration of their product. This includes the power ratings and requirements of such components as relays, valves, solenoids, etc.

Be sure to test each of the outputs with a multi-meter prior to connecting the outputs to your end devices. This will ensure that each output has been programmed to operate in the manner required by each end device.

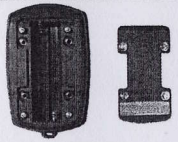
Filtering and Noise Suppression

Whenever a solenoid or electromagnetic switch is controlled by the receiver, it is a good practice to install a diode across its terminals to ensure that surges and spikes do not continue back into the circuit. Appropriate 36V Bi-directional Diodes kits can be ordered under the OMNEX part number "AKIT-2492-01".

Power the Transmitter

1. Install Batteries

Remove the battery cover on the back of the transmitter using a slotted screwdriver and insert 4 "AA" alkaline batteries. When purchased with the CCDOCK™, insert either NiCd or NiMH (recommended) rechargeable AA batteries. Orientation of the batteries is embossed inside the battery housing.

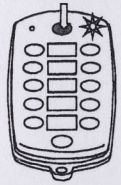


T110C Battery Housing

2. Turn on the Transmitter

Refer to the **Light Legend** below for diagram details.

1. Press Power [ON]



NOTE: *Prior to inserting the batteries into the remote, apply grease (provided packet - Dow Corning 111 Valve Lubricant & Sealant) to the battery contacts. Due to the harsh conditions these remotes operate in and the long term use of the rechargeable batteries, the grease protects the batteries and contacts from corrosion.*

WARNING: do not install batteries backwards, charge, put in fire, or mix with other battery types. May explode or leak causing injury. **Replace all batteries at the same time as a complete set and do not mix and match battery types.**

NOTE: *For operation at temperatures below –10°C lithium batteries are recommended. Low temperatures reduce battery performance for both alkaline and lithium types. Refer to the battery manufacturer's specifications for detailed information on low temperature performance.*

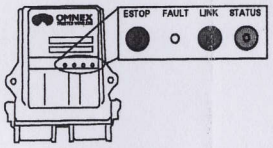
If the transmitter's (Active) light does not flash, check the battery orientation.

To turn off the transmitter, press the Power [OFF] button.

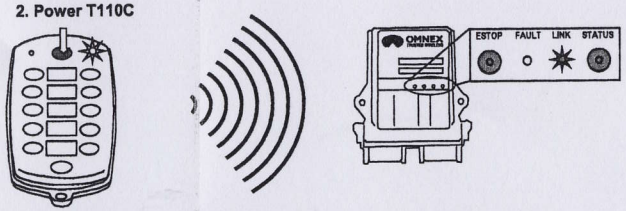
Test the Transmitter / Receiver Link

Follow these steps to ensure that there is a radio link between the transmitter and receiver.
Refer to the **Light Legend** below for diagram details

1. Power R160



2. Power T110C



NOTE: *Depending on the configuration the transmitter can shut itself off after 10 minutes of inactivity as a battery saving feature. Momentarily operating any button on the transmitter, including the [Power] button will restart the 10 minute timer.*

The System is now ready for use.

If the receiver's (Link) light does not become GREEN follow the steps under **Download ID Code**.

Light Legend	Solid	Slow Flash	Fast Flash	Red Light	Green Light	Yellow Light	Alternating Red & Green Light

Special Functions

The [Shift] Function

Outputs 1-10 are controlled by the T110C [Function] buttons "1-10". Outputs 11-16 are controlled by holding the T110C [Shift] button and pressing the [Function] buttons "1-6" (the GREEN Power [ON] button acts as the [Shift] button when the T110C is on).

Download ID Code (Use in case of Link Test failure)

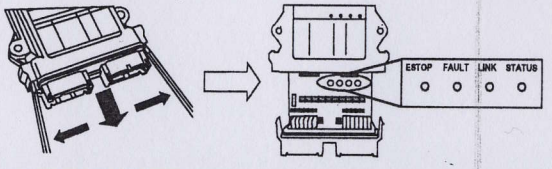
Follow these steps to download the transmitter's unique ID Code into the receiver. This will allow the receiver to establish a radio link with a specific transmitter. This will only download the ID code and will not configure the system. Refer to the **Configuring the System** section to configure the system's outputs. Also refer to **Troubleshooting Chart #4** for Tips and Considerations

NOTE: *It is necessary to download the ID Code when replacing either the transmitter or the receiver.*

1. Opening the R160 Case

The cap is held on by two plastic tabs at opposing sides, which can be unlatched as shown using a screwdriver. Once the cap is free, the R160 can slide open.

Use a small slotted screwdriver to press the Side Tabs inward.



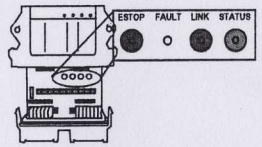
Light Legend	Solid	Slow Flash	Fast Flash	Red Light	Green Light	Yellow Light	Alternating Red & Green Light

Download ID Code (Use in case of Link Test failure)

2. Power R160

A. Supply power to the receiver. The (E-Stop) light and the (Link) light will come on RED and the (Status) light will come on GREEN

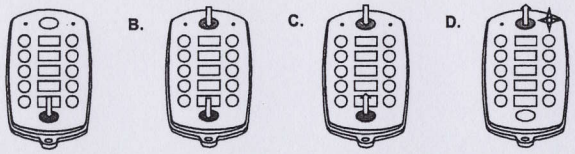
A.



3. Power T110C into Configuration Mode

A. Press and Hold Power [OFF]
B. Press and Hold Power [ON]
C. Release Power [OFF] button
D. Release Power [ON] button

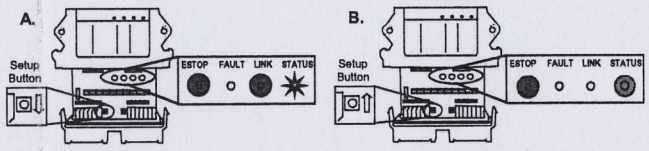
A. B. C. D.



4. Put R160 into Setup Mode

A. Press & hold [Setup] button until (Status) light goes from slow flash to fast flash
B. Release [Setup] button. (Status) light goes to solid GREEN, (Link) light turns off

A. B.



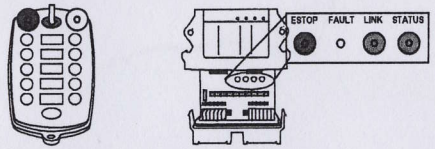
NOTE: *If left idle in Setup Mode for over 30 seconds, the receiver will time out. The (Link) light and (Status) light will flash RED rapidly. To return to Setup Mode, repeat step 4.*

5. Send Code

NOTE: *When downloading a new ID to a receiver, a safety feature requires that the transmitter be in close proximity to the receiver. This will prevent a transmitter from accidentally reprogramming a different receiver in the area.*

A. Press Power [ON] button to send code

A.



Once the ID Code has been downloaded, the RED (Battery) light and the YELLOW (Active) light on the transmitter will go out. The (Link) light on the receiver will change from GREEN to RED.

NOTE: *When replacing the receiver cover, ensure the cover snaps completely into place to create a weather proof seal around the base of the receiver.*

Light Legend	Solid	Slow Flash	Fast Flash	Red Light	Green Light	Yellow Light	Alternating Red & Green Light

Configuring the System

NOTE: *Every T110C / R160 system comes pre-configured and can be used without any additional changes. However, the configuration can be changed to suit a variety of applications.*

The configuration determines certain operating features and the function of the receiver outputs. Changing the configuration therefore makes it possible to customize a function button to act as a Momentary, Latched or Maintained switch with an option of Interlocking paired functions. It also controls the shutdown settings and designates the Output 18 option.

NOTE: *if changing transmitters with an existing receiver, please refer to* ***Retrieving the Configuration Code from the Receiver*** *to determine the existing configuration code of the system before proceeding with the following steps.*

Configuration Code

NOTE: *A simple way to determine a custom Configuration Code is by using the configuration software "R160/R100 Configurator" available at:*

http://www.omnexcontrols.com/resources/

Once the software is running, be sure to select the following options:

Transmitter—select **"LPT TRANSMITTER"**
Receiver—select **"R160"**

The third heading should now read **"LPT Transmitter T110C/R160 Receiver Configuration"**

The Configuration Code is an 18-digit code that contains all the information necessary to customize the T110C / R160 system. Each of the 18 digits represents a specific function and there are a number of options, represented by a number or letter, available for each digit. Refer to the **Output Function Selection Table** for detailed descriptions of all the available options. The first digit of the code represents the **Power On Mode** setting and one out of five options must be chosen. The second digit represents the **Miscellaneous Mode** setting and again, one out of five options must be chosen. The remaining 16 digits represent the **Output Function** Buttons and 1 out of 13 options must be chosen for each.

Refer to the **Output Function Selection Table** on the next page for help determining a Configuration Code. Choose one option for each digit and use the resulting 18-digit Configuration Code in step 4 of the **Changing the Configuration** procedure on the next page.

Enter the Configuration Code numbers using the T110C function buttons. For the purpose of the configuration code and configurator, "10" is represented by "a". To enter "b", "c", "d", "e" or "f", hold the "a" (also the 10 button) button and press the "1", "2", "3", "4" or "5" buttons respectively.

For a: press 10
For b: press 10 + 1
For c: press 10 + 2
For d: press 10 + 3
For e: press 10 + 4
For f: press 10 + 5

NOTE: *The Default Code is 5188888888 88888888. All systems come configured with this code.*

When inputting the Configuration Code into the transmitter as described on the next page, the code will be entered in 2 groups. Group one is a 10-digit set and group two is an 8-digit set. The table on the next page can be used to help determine and record the code for reference during the configuration procedure.

Configuring the System (continued)

Output Function Selection Table

Power ON Mode	
1	ON/OFF - System shuts down when Link is lost
2	ON/OFF - Maintains the state of the Receiver outputs when Link lost
3	Momentary ON - System auto-shuts down in 30 seconds after all buttons release
4	ON/OFF- System ON by entering "3, 1, 4, 2" on T110C and pressing [Power] button shuts down when Link lost
5	ON/OFF - System shuts down when Link lost or after 10 minutes (DEFAULT)
6	Momentary ON - System auto-shuts down in 15 seconds after all buttons release
7	Momentary ON - System auto-shuts down in 5 seconds after all buttons release
9[1]	ON/OFF - System shuts down when Link is lost
a[1]	ON/OFF - Maintains the state of the Receiver outputs when Link lost
b[1]	Momentary ON - System auto-shuts down in 30 seconds after all buttons release
c[1]	ON/OFF- System ON by entering "3, 1, 4, 2" on T110C and pressing [Power] button shuts down when Link lost
d[1]	ON/OFF - System shuts down when Link lost or after 10 minutes
e[1]	Momentary ON - System auto-shuts down in 15 seconds after all buttons release
f[1]	Momentary ON - System auto-shuts down in 5 seconds after all buttons release

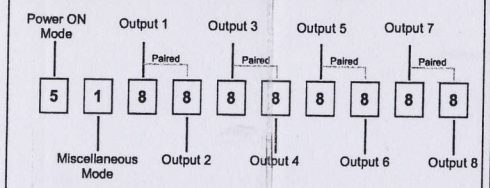
Outputs 1—8	
1	Momentary / Normal ON
2	Momentary / Normal OFF
3	Latched / Normal ON
4	Latched / Normal OFF
5	Maintained / Normal ON / Interlocked with paired output *
6	Maintained / Normal OFF / Interlocked with paired output *
7	Momentary / Normal ON / Interlocked with paired output *
8	Momentary / Normal OFF / Interlocked with paired output * (DEFAULT)
9	Maintained / Interlocked with paired output * (0.5 sec. delay)
a	Maintained / Interlocked with paired output * (2.0 sec. delay)
b	Latched / Normal OFF / Interlocked
c	Latched / Interlocked with paired output * (0.5 sec. delay)
d	Latched / Interlocked with paired output * (2.0 sec. delay)

Miscellaneous Mode	
1	Output 18 is the System ON indicator. (ON when system is ON) (DEFAULT)
2	Output 18 is enabled (close) by any one of the buttons 1-10
3	Output 18 is the System OFF indicator. (ON when system is OFF)
4	Output 18 is enabled (close) by any one of the buttons 1 - 6
5	Output 18 is enabled (close) by any one of the buttons 1 - 4

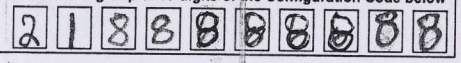
[1] This code enables the "Latched SHIFT" function on the T110C transmitter's [Power] button. Pressing the Green [Power] button will latch the Shift function on indicated by a solid Red LOW BATTERY light. Pressing the Green [Power] button again will change back to primary button operation.

* Paired outputs must use the same number code

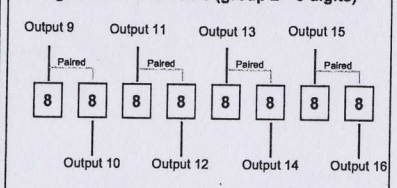
Configuration Code Table (group 1—10 digits)



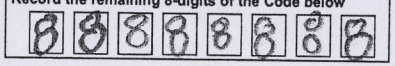
Record the first group of 10-digits of the Configuration Code below



Configuration Code Table (group 2—8 digits)



Record the remaining 8-digits of the Code below



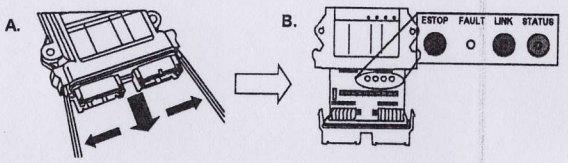
Configuring the System (continued)

Changing the Configuration

NOTE: An 18-digit Configuration Code is needed to complete these steps. Refer to the Configuration Code section on the previous page for directions on how to determine this code.

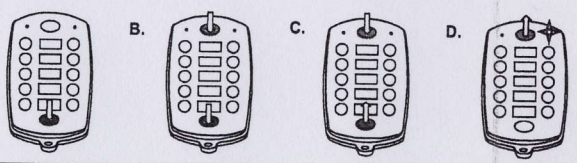
1. Opening the R160 Case and Power R160

A. The cap is held on by two plastic tabs at opposing sides, which can be unlatched as shown using a screwdriver. Once the cap is free, the R160 can slide open.
B. Supply power to the receiver. The (E-Stop) light and the (Link) light will come on RED and the (Status) light will come on GREEN



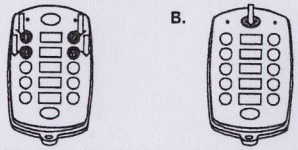
2. Power T110C into Configuration Mode

A. Press and Hold Power [OFF]
B. Press and Hold Power [ON]
C. Release Power [OFF] button
D. Release Power [ON] button



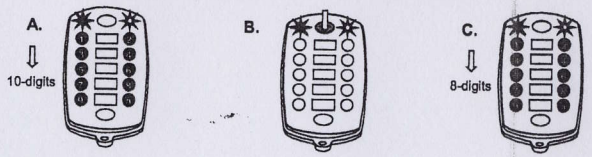
3. Enter Configuration Mode Pass Code

A. Press function buttons in order 3, 1, 4, 2
B. Press Power [ON] button



4. Enter Configuration Code

A. Enter the first group of 10-digits of the Configuration Code (Refer to the **Configuration Code** chart on the previous page to determine this code)
B. Press the Power [ON] button
C. Enter the remaining 8-digits of the Configuration Code



Note: Use the Configuration Code Table to record the 18-digit code entered into the T110C remote control. An example of the Default Code is given.

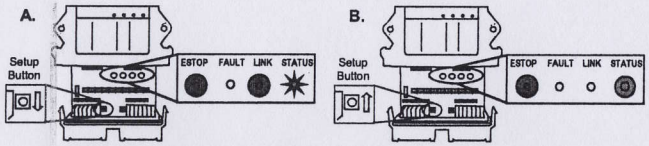
Light Legend	Solid	Slow Flash	Fast Flash	Red Light	Green Light	Yellow Light	Alternating Red & Green Light

Configuring the System (continued)

5. Put R160 into Setup Mode

A. Press & hold [Setup] button until (Status) light goes from slow flash to fast flash

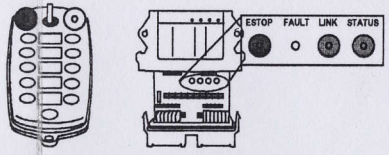
B. Release [Setup] button. (Status) light goes to solid GREEN, (Link) light turns off



NOTE: *If left idle in Setup Mode for over 30 seconds, the receiver will time out. The (Link) light and (Status) light will flash RED rapidly. To return to Setup Mode, repeat step 4.*

6. Send Code

A. Press Power [ON] button to send code



Once the ID Code has been downloaded, the RED (Battery) light and the YELLOW (Active) light on the transmitter will go out. The (Link) light on the receiver will change from GREEN to RED.

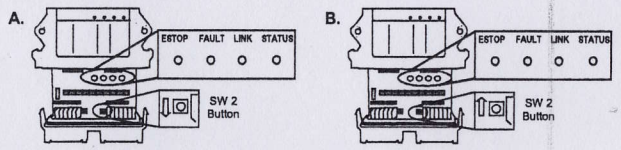
Retrieving the Configuration Code from the Receiver

If the situation occurs where the transmitter needs to be replaced, it must be programmed with the Configuration Code stored in the receiver. It is possible to determine the Configuration Code that is stored in the R160 receiver by following these steps.

1. Power the Receiver into Configuration Check Mode

A. While holding down the [SW 2] button, apply power to the R160. All of the (Diagnostic) lights will be OFF.

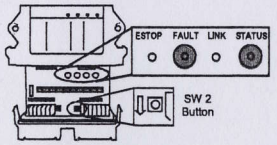
B. Release the [SW 2] button and the (Diagnostic) lights will stay OFF.



NOTE: *An easy way to turn power OFF & ON, is to disconnect and re-connect the grey connector.*

2. Determine Configuration Values

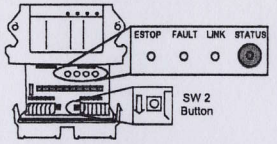
A. Press the [SW 2] button once. The (Diagnostic) lights will show the value of the first digit of the Configuration Code. Record this value in the chart at the bottom of the page.



NOTE: *The (Diagnostic) lights will indicate the output values in Binary format. The first output value of "5" is indicated in the diagram.*

3. Determine Remaining Configuration Values

A. Press the [SW 2] button again, the second code value is shown. Record the code value. Press the [SW 2] button again for the 3rd value. Repeat until you have cycled through all 18 Configuration Code digits.



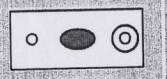
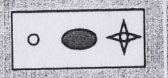
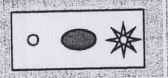
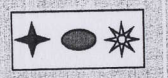
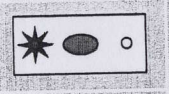
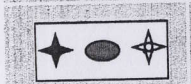
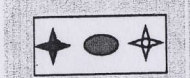
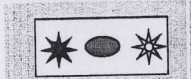
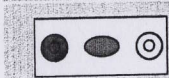
NOTE: *The (Diagnostic) lights in this diagram indicate a value of "1".*

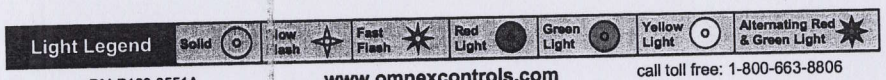
Use the following table to determine the code value from the Diagnostic Light indicators.

1	o o o ●	6	o ● ● o	b	● o ● ●
2	o o ● o	7	o ● ● ●	c	● ● o o
3	o o ● ●	8	● o o o	d	● ● o ●
4	o ● o o	9	● o o ●	e	● ● ● o
5	o ● o ●	a	● o ● o	f	● ● ● ●

Record the current code values here:

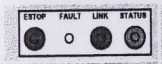
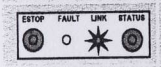
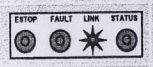
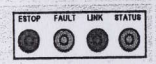
Diagnostics—T110C Transmitter

Indicator Lights	Description	Solution
	Occurs when ever a function is pressed. Will also remain on momentarily on Power Up.	N/A
	Transmitter is in Download mode.	To take it out of Download mode turn transmitter off and turn it back on again.
	Transmitter is in Operating mode.	N/A
	Low Battery.	Change or Recharge Batteries ***Note:** Low batteries will last approximately 8 hours once the Low Battery light begins to flash.*
	Fast Flash for approx. 10 seconds indicates T110C failure.	Send the unit in for service.
	Stuck button detected.	Toggle the buttons a few times. Call for service. Send the unit in for service.
	**On Power Down** Unit is still powered, likely due to an on function or stuck button.	Toggle the buttons a few times. Call for service. Send the unit in for service.
	Transmitter is in Configuration mode.	To take it out of Configuration mode turn transmitter off and turn it back on again.
	Transmitter is downloading ID Code.	Wait for approximately 5 seconds. Once the download is complete the transmitter will automatically shut off.



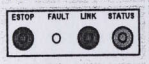
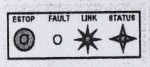
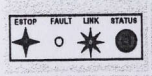
Diagnostics - R160 Receiver

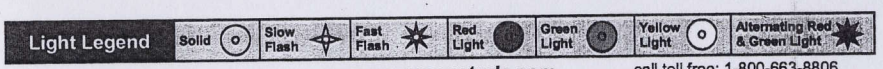
Normal Operation

	Transmitter is OFF If the transmitter is off, the receiver is operating properly.
	Transmitter is ON When the transmitter is turned on, the Link light (fast flashing) and E-Stop (GREEN) indicates the receiver is operating properly
	Transmitter is in Operation When a function is activated on the transmitter, the Fault light will turn on GREEN. This indicates the receiver is operating properly
	Transmitter is OFF When a latched function is activated then the transmitter is turned off, the Fault light will stay on GREEN. If the system was intentionally designed this way, the receiver is operating properly, if not call for service.

Trouble Indicators

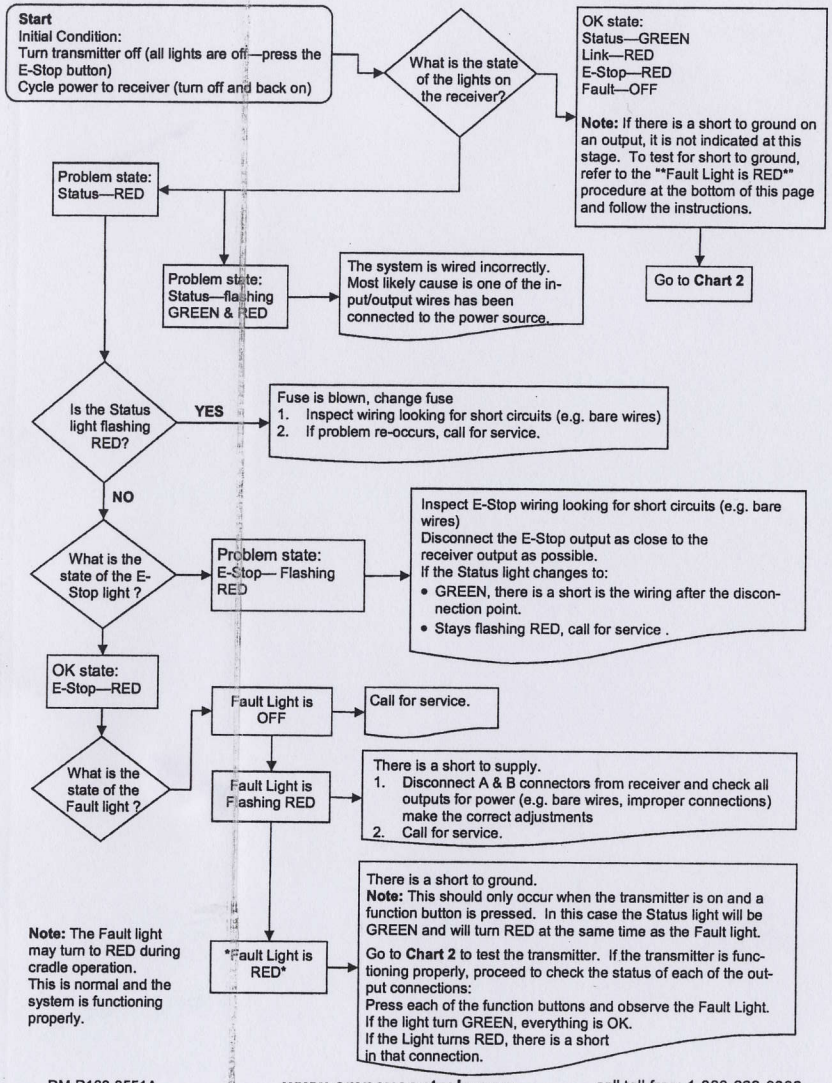
***Note:** In some cases, the indicator lights will be different depending on whether the transmitter is on or off. Please note the transmitter status in the "Description" column for each case.*

Indicator Lights	Description	Solution
	Transmitter is ON The reason is the transmitter is not communicating with the receiver.	Refer to **Troubleshooting Chart #3** for solutions
	Transmitter is ON A low battery condition has been detected.	To detect intermittent conditions caused by poor or corroded ground or power circuits, the GREEN light will continue to flash for 30 seconds after the condition has been removed.
	Transmitter is ON An internal fault with the E-Stop has been detected.	Inspect E-Stop wiring for short circuit. Disconnect E-Stop wire as close to the receiver output as possible. If the Status light changes to: • GREEN, a short occurs after disconnection point. • Stays flashing RED, send it in for service .
	Transmitter is ON A short to ground or excessive current draw on an output. It is most likely caused by a wiring fault.	Ensure transmitter is functioning properly, check status of each output connection: Press each function button and observe Fault Light. • If GREEN, everything is OK. • If RED, there is a short in that connection.
	Transmitter is ON The E-Stop output has been connected with one of the other outputs	Follow the wire and check for connections with other wires, disconnect to see if condition clears. If not, call for service.
	Transmitter is OFF A wiring short to the battery has been detected.	Refer to **Troubleshooting Chart #1** for solutions
	Transmitter is OFF The receiver has detected an internal fault.	Refer to **Troubleshooting Chart #1** for solutions
	Transmitter is OFF Blown fuse detected.	Refer to the **Download ID Code** section for instructions on how to open the receiver case to access fuse. Check wiring for shorts or bare spots. If fuses continue to blow, call for service.
	Transmitter is ON A setup failure has occurred.	Either hold the Setup button for 5 seconds to return to Setup mode or cycle power to return to the normal operating mode.
	Transmitter is OFF The receiver is powered incorrectly.	Most likely cause of this condition is that an output wire or the E-Stop wire has been connected to the power supply while the power wire is disconnected from the power supply.



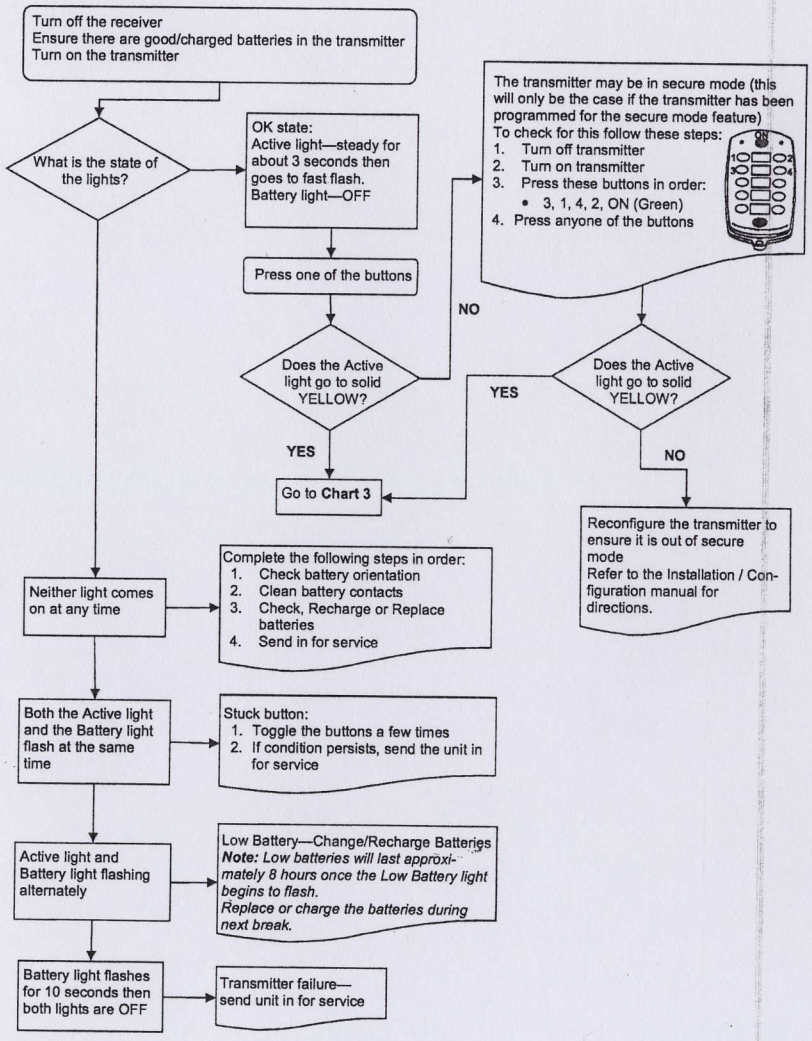
Troubleshooting Guide — Chart #1

Test the Receiver—R160

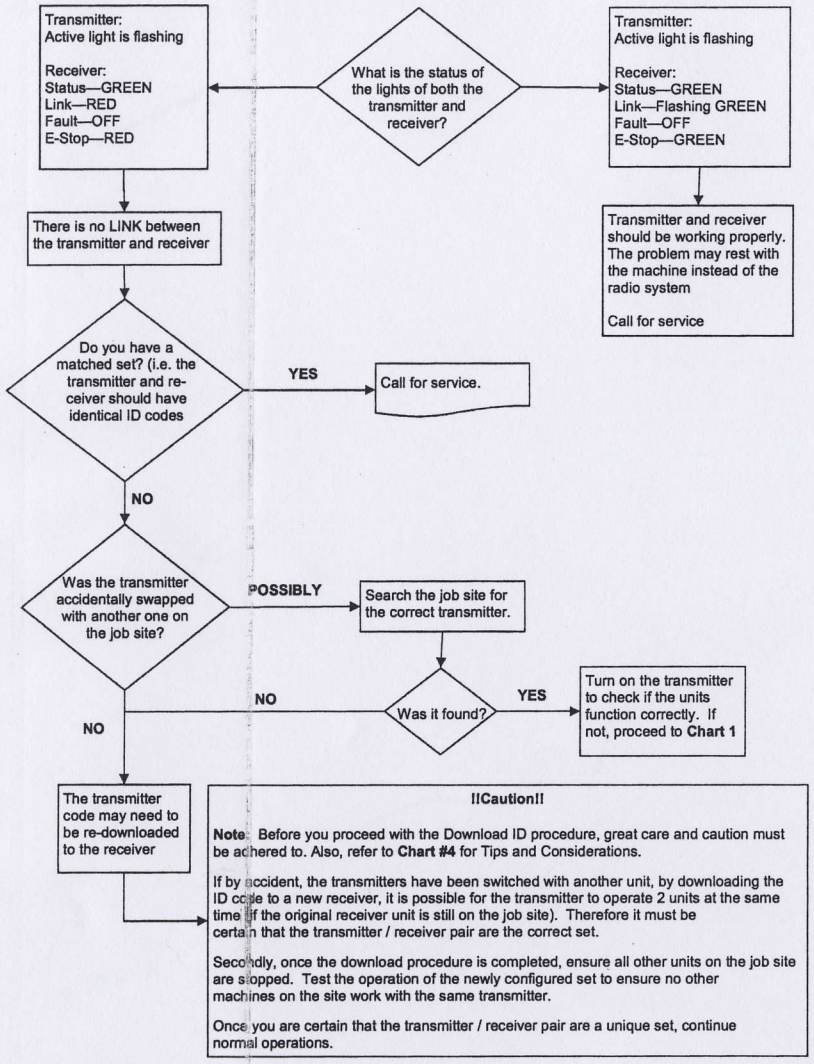


Troubleshooting Guide (continued) — Chart #2

Test the Transmitter—T110C



Testing the Transmitter / Receiver Communication



!!Caution!!

Note: Before you proceed with the Download ID procedure, great care and caution must be adhered to. Also, refer to **Chart #4** for Tips and Considerations.

If by accident, the transmitters have been switched with another unit, by downloading the ID code to a new receiver, it is possible for the transmitter to operate 2 units at the same time (if the original receiver unit is still on the job site). Therefore it must be certain that the transmitter / receiver pair are the correct set.

Secondly, once the download procedure is completed, ensure all other units on the job site are stopped. Test the operation of the newly configured set to ensure no other machines on the site work with the same transmitter.

Once you are certain that the transmitter / receiver pair are a unique set, continue normal operations.

Considerations when Downloading the ID

Potential downloading issues

If testing of the receiver and transmitter both show the system as working (Chart 1 & 2), then the transmitter and receiver will both go into Download/Configuration mode.

Possible issues could arise during Step 4, the download phase of reprogramming. In this case there are 2 symptoms to look for:

1. The Link light on the receiver will not turn GREEN when the power switch is toggled on the transmitter to download
2. The receiver will "time out" indicating that it didn't receive a signal from the transmitter within the 30 seconds from the time the receiver was put into Setup Mode.

If all indications appear normal during the download phase, test the link by turning on the transmitter (note: the transmitter shuts off after transmitting the ID code in Step 4)

1. If the Link light on the receiver doesn't turn GREEN, the receiver didn't receive all of the information that was sent from the transmitter.

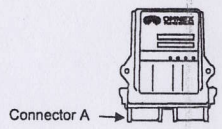
Possible Solutions

1. Try the Downloading steps again
2. If this doesn't correct the problem, send both the transmitter and receiver in for service.

***Note:** you could try to determine whether the fault lies with the transmitter or receiver by completing the Reprogramming procedure with a different transmitter. If this step works, then the fault lies with the original transmitter. If not, the fault may lie with the receiver.*

!!Caution!!

Note: Before attempting reprogramming with another transmitter, understand that reprogramming the receiver with another transmitter, could result in two receivers on the job site responding to the one transmitter. If the original transmitter was sent in for repair, disconnect the receiver (disconnect connector A) to continue using the machine without remote capability and without fear of inadvertently operating the machine with the other transmitter.



Reprogramming Tips:

1. Be patient and deliberate when pressing the Power and E-Stop buttons in the correct order during power up in Configuration mode
2. Use a pointy instrument to depress the Setup button on the receiver (i.e. a pen) as the button is relatively small
3. Follow each step as laid out in the procedure
4. Never lay the receiver circuit board down on anything metallic (there are contact points on the back which could contact the metal and damage the receiver)

Parts & Accessories

Part	OMNEX Part Number	Description
Batteries	B0016	4 x AA NiMH rechargeable batteries
Fuse	F0039	36V Bi-directional, Bussman ATC-15
Belt Clip	AKIT-2428-03	Belt clip for the T110C transmitter
Magnets	AKIT-2428-01	see illustration below
Bipolar Diode Kit	AKIT-2492-01	Motorola P6KE36CA
CCDOCK™	Call OMNEX	see illustration below
R160 Output Cable	ACAB-2493-01	Generic Output Cable- see illustration below
Connector Kit	AKIT-2337-01	Includes Deutsch socket connectors, wedges, pins and sealing plugs
Keypad Label T110C	FLBL-1726-25	Generic Line Pump Labels

CCDOCK™

Belt Clip

Magnets

R160 Output Cable

Specifications

	R160 Receiver	T110C Transmitter
Size	5.1" x 4.7" x 1.4" (130mm x 119mm x 36mm)	5.8" x 3.4" x 1.2" (147mm x 86mm x 30mm)
Weight	0.65lbs (0.295kg)	.65 lbs (295g) incl. batteries
Construction	High impact plastic, weatherproof	High impact, low temperature plastic, weatherproof
Input Power	+9V to 30VDC	4AA alkaline batteries (NiMH or NiCd when used with CCDOCK™)
Battery Life	N/A	160 hours (continuous use)
Operating Temperature Range	-40F to 158F (-40C to 70C)	-22 F to +140 F (-30 to +60 C)
Outputs	3A (max) each (sourcing), 10A (max) each (combined)	N/A
Antenna	Internal	Internal
Approvals	**USA**- FCC part 15.247 **Canada**- ISC RSS 210 Issue 6, Sept. 2005	

FCC Rules and Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC	Part 15.247
ISC	RSS 210 Issue 6, Sept. 2005

Warranty

OMNEX Control Systems ULC warrants to the original purchaser that the OMNEX products are free from defects in materials and workmanship under normal use and service for a period of ONE YEAR, parts (EXCLUDING: SWITCHES, CRYSTALS, OR PARTS SUBJECT TO UNAUTHORIZED REPAIR OR MODIFICATION) and labor from the date of delivery as evidenced by a copy of the receipt. OMNEX's entire liability and your exclusive remedy shall be, at OMNEX's option, either the (a) repair or (b) replacement of the OMNEX product which is returned within the warranty period to OMNEX freight collect by the OMNEX APPROVED carrier with a copy of the purchase receipt and with the return authorization of OMNEX. If failure has resulted from accident, abuse or misapplication, OMNEX shall have no responsibility to repair or replace the product under warranty. In no event shall OMNEX be responsible for incidental or consequential damage caused by defects in its products, whether such damage occurs or is discovered before or after replacement or repair and whether or not such damage is caused by the negligence of OMNEX Control Systems ULC.

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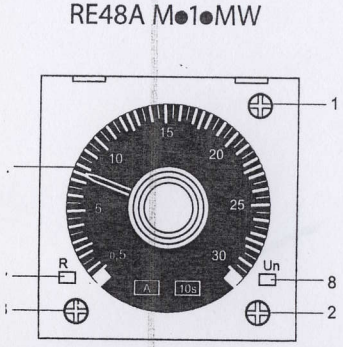
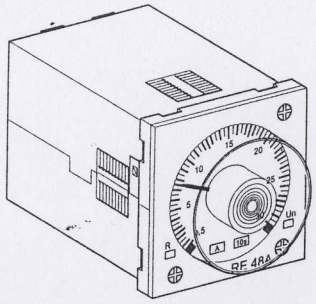
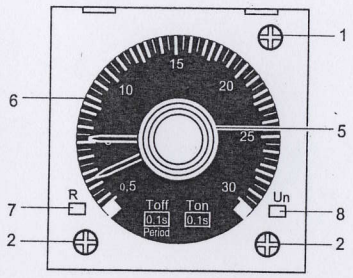
www.omnexcontrols.com

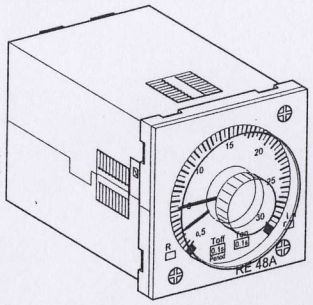
RE48A M●1●MW



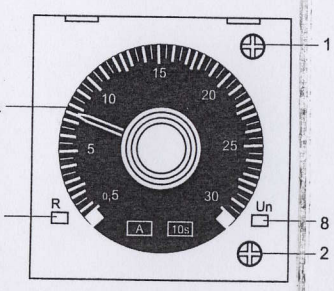


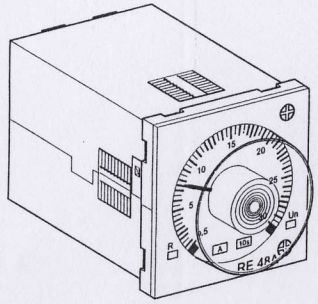
RE48A CV1●MW





RE48A TM12MW





1 : Sélection de la base de temps (12 et 30).
2 : Sélection de l'unité de temps (X0,1 s, X1 s, X10 s, X1 mn, X10 mn, X1 h, X10 h).
3 : Sélection de la fonction :
- RE48ML12MW : A, B, C, Di.
- RE48MH13MW : A1, A2, H1, H2.
4 : Bouton de réglage temporisation Ø 39 mm.
5 : Bouton orange, réglage du temps d'impulsion (L / Li).
6 : Bouton blanc, réglage du temps de pause (L / Li).
7 : Voyant jaune, état du relais temporisé de sortie.
8 : Voyant vert, état de l'alimentation (clignotant pendant temporisation)

1 : Selection of the time base (12 and 30).
2 : Selection of the unit of time:(X0,1 s, X1 s, X10 s, X1 mn, X10 mn, X 1 h, X10 h).
3 : Selection of function:
- RE48ML12MW : A, B, C, Di.
- RE48MH13MW : A1, A2, H1, H2.
4 : Ø 39 mm time delay adjustment button.
5 : Orange dial, for adjustment of the pulse time (L / Li).
6 : White button, adjustment of the pause dial time (L / Li).
7 : Yellow indicator, state of output timer.
8 : Green indicator, state of the supply (flashing during time delay).

1 : Auswahl der Zeitbasis (12 und 30).
2 : Auswahl der Zeiteinheit (X0,1 s, X1 s, X10 s, X1 mn, X10 mn, X1 h, X10 h).
3 : Auswahl der funktion:
- RE48ML12MW : A, B, C, Di.
- RE48MH13MW : A1, A2, H1, H2.
4 : Einstellung der Zeitverzögerung, Ø 39 mm.
5 : Orangefarbenes Zifferblatt, Einstellung der Impulszeit (L / Li).
6 : Weißes Zifferblatt, Einstellung der Pausenzeit (L / Li).
7 : gelbe LED, Schaltzustand des Ausgangsrelais
8 : grüne LED, Zustand der Stromversorgung (blinkt bei Verzögerung)

1 : selección de la base de tiempo (12 y 30).
2 : selección de la unidad de tiempo (X0,1 s, X1 s, X10 s, X1 mn, X10 mn, X1 h, X10 h).
3 : selección de la función:
- RE48ML12MW : A, B, C, Di.
- RE48MH13MW : A1, A2, H1, H2.
4 : botón de ajuste de temporización Ø 39 mm.
5 : Perilla naranja, ajuste de tiempo de impulso (L / Li).
6 : Perilla blanca, ajuste de tiempo de pausa (L / Li).
7 : indicador amarillo, estado del relé temporizado de salida.
8 : indicador verde, estado de la alimentación (intermitente durante la temporización).

1 : Selezione della base di tempo (12 e 30).
2 : Selezione dell'unità di tempo (X0,1 s, X1 s, X10 s, X1 mn, X10 mn, X1 h, X10 h).
3 : Selezione della funzione :
- RE48ML12MW: A, B, C, Di.
- RE48MH13MW: A1, A2, H1, H2.
4 : Pulsante di regolazione temporizzazione Ø 39 mm
5 : Quadrante arancione, regolazione del tempo d'impulso (L / Li).
6 : Quadrante bianco, regolazione del tempo di pausa (L / Li).
7 : Spia gialla, stato del relé temporizzato di uscita.
8 : Spia verde, stato dell'alimentazione (lampeggia durante la temporizzazione).

Généralités

Fonctions :
A, B, C, Di, L, Li, A, A1, A2, H1, H2

14 gammes de temporisation :

0,02 s à 1,2 s	0,5 mn à 30 mn
0,05 s à 3 s	2 mn à 120 mn
0,2 s à 12 s	5 mn à 300 mn
0,5 s à 30 s	0,2 h à 12 h
2 s à 120 s	0,5 h à 30 h
5 s à 300 s	2 h à 120 h
0,2 mn à 12 mn	5 h à 300 h

ex: 0,5 s à 30 s (sélecteur n°1 sur 30)
(sélecteur n°2 sur X1s)

RE48A ●●12MW
Sortie par 1 relais double inverseur temporisé

RE48A MH13MW
Sortie 2 relais simples inverseurs temporisés ou instantanés suivant fonction.

Alimentation :
24 à 240 V ∿ / ⎓

Intensité nominale par contact

General

Functions:
A, B, C, Di, L, Li, A, A1, A2, H1, H2

14 timing ranges:

0.02 s to 1.2 s	0.5 mn to 30 mn
0.05 s to 3 s	2 mn to 120 mn
0.2 s to 12 s	5 mn to 300 mn
0.5 s to 30 s	0.2 h to 12 h
2.s to 120 s	0.5 h to 30 h
5 s to 300 s	2 h to 120 h
0,2 mn to 12 mn	5 h to 300 h

i.e.: 0.5 s to 30 s (selector 1 on 30)
(selector 2 on X1s)

RE48A ●●12MW
Output by 1 double changeover time delay relay

RE48A MH13MW
Output by 2 single changeover time delay or instantaneous relays according to function.

Power supply:
24 to 240 V ∿ / ⎓

Rated current per contact

Allgemeines

Funktionen :
A, B, C, Di, L, Li, A, A1, A2, H1, H2

14 Zeitbeiche :

0,02 s bis 1,2 s	0,5 mn bis 30 mn
0,05 s bis 3 s	2 mn bis 120 mn
0,2 s bis 12 s	5 mn bis 300 mn
0,5 s bis 30 s	0,2 h bis 12 h
2 s bis 120 s	0,5 h bis 30 h
5 s bis 300 s	2 h bis 120 h
0,2 mn bis 12 mn	5 h bis 300 h

z.B: 0,5 s bis 30 s (Wahlschalter Nr. 1 auf 30)
(Wahlschalter Nr. 2 auf X1s)

RE48A ●●12MW
Ausgang über 1 ansprechverzögertes Doppelwechsler-Relais

RE48A MH13MW
Ausgang Doppelwechsler-Zeitrelais, ansprechverzögert oder funktionsabhängig ohne Verzögerung

Stromversorgung :
24 bis 240 V ∿ / ⎓
Nominale Stromstärke pro Kontakt

Generalidades

Funciones :
A, B, C, Di, L, Li, A, A1, A2, H1, H2

14 gamas de temporización :

0,02 s a 1,2 s	0,5 mn a 30 mn
0,05 s a 3 s	2 mn a 120 mn
0,2 s a 12 s	5 mn a 300 mn
0,5 s a 30 s	0,2 h a 12 h
2 s a 120 s	0,5 h a 30 h
5 s a 300 s	2 h a 120 h
0,2 mn a 12 mn	5 h a 300 h

expl: 0,5 s a 30 s (selector n°1 en 30)
(selector n°2 en X1s)

RE48A ●●12MW
Salida con un relé doble inversor temporizado

RE48A MH13MW
Salida 2 relés simple inversor temporizado o instantáneo según función

Alimentación :
24 a 240 V ∿ / ⎓

Intensidad nominal por contacto

Generalita'

Funzioni :
A, B, C, Di, L, Li, A, A1, A2, H1, H2

14 sequenze di temporizzazione :

0,02 s a 1,2 s	0,5 mn a 30 mn
0,05 s a 3 s	2 mn a 120 mn
0,2 s a 12 s	5 mn a 300 mn
0,5 s a 30 s	0,2 h a 12 h
2 s a 120 s	0,5 h a 30 h
5 s a 300 s	2 h a 120 h
0,2 mn a 12 mn	5 h a 300 h

es.: 0,5 s a 30 s (selettore n°1 su 30)
(selettore n°2 su X1s)

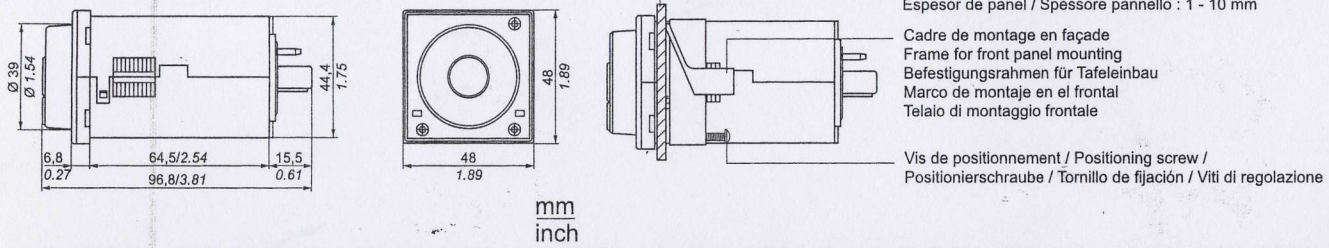
RE48A ●●12MW
Uscita con 1 relè doppio invertitore temporizzati

RE48A MH13MW
Uscita 2 relè semplice invertitore temporizzato o istantaneo, a seconda della funzione.

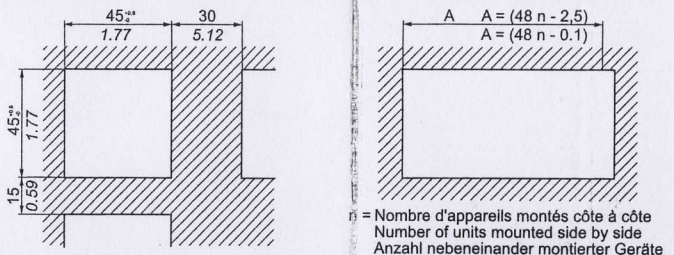
Alimentazione :
24 a 240 V ∿ / ⎓

Intensità nominale con contatto

Encombrement et montage / Dimensions and assembly / Abmessungen / Dimensiones y montaje / Ingrombro e montaggio



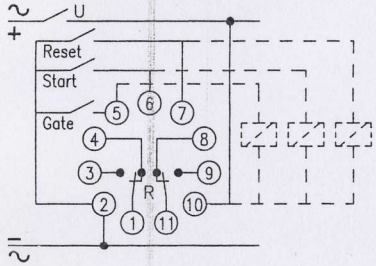
Découpe panneau / Panel cut-out / Schalttafelausschnitt / Abertura en panel / Taglio pannello



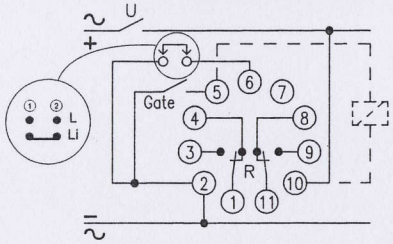
n = Nombre d'appareils montés côte à côte
Number of units mounted side by side
Anzahl nebeneinander montierter Geräte
Número de aparatos montados yuxtapuestos
Numero di apparecchi montati fianco a fianco

tilisation - Branchement / Wiring - Diagram / Anschlußmoglichkeiten / Utilización - Conexionado / Utilizzazione - Collegamento

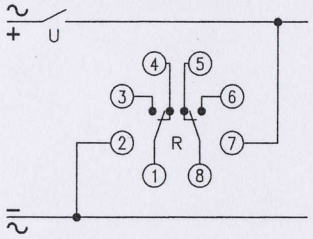
RE48A ML12MW



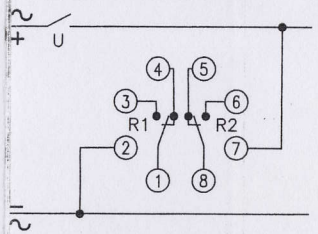
RE48A CV12MW



RE48A TM12MW



RE48A MH13MW



R1: Selectionnable en instantané
Selectable and instantaneous
Sofort wählbar
Seleccionable en instantáneo
Selezionabile in istantaneo

onctionnement

START (Commande)	Démarrage de la fonction (Impulsion 20ms mini)
GATE (Porte)	Blocage uniquement de la temporisation en court. (Impulsion 20ms mini)
RESET (Raz) *Priorité haute*	Réinitialisation de l'appareil sortie à OFF pendant que l'entrée RESET est active. (Impulsion 20ms mini)

Operation

START	Function start. (Pulse 20ms min)
GATE	Interrupt of time delay in progress only. (Pulse 20ms min)
RESET *High priority*	Reinitialisation of unit, output to OFF while RESET input is active. (Pulse 20ms min)

Funktion

START (Instruktion)	Beginn des Funktionsablaufs (Mindest-Impulsdauer 20ms)
GATE (Ein-/Ausgang)	Blockiert nur die laufende Ansprechverzögerung. (Mindest-Impulsdauer 20ms)
RESET (Reinitialisierung) *Hohe Priorität*	Reinitialisierung: Ausgang auf OFF bei aktiver RESET-Eingabe. (Mindest-Impulsdauer 20ms)

Funcionamiento

START (Mando)	Inicio de la función (Impulso 20ms mínimo)
GATE (Porte)	Bloqueo únicamente de la temporización en curso (Impulso 20ms mínimo)
RESET (Raz) *Prioridad alta*	Reiniciación del aparato de salida en OFF mientras la entrada RESET esté activa (Impulso 20ms mínimo)

Funzionamento

START (Comando)	Avvio della funzione (Impulso 20 ms min.)
GATE (Porta)	Blocco soltanto del tempo di pausa in corso (Impulso 20 ms min.)
RESET (Raz) *Alta priorità*	Reinizializzazione dell'apparecchio uscita su OFF, mentre l'entrata RESET è attiva (Impulso 20 ms min.)

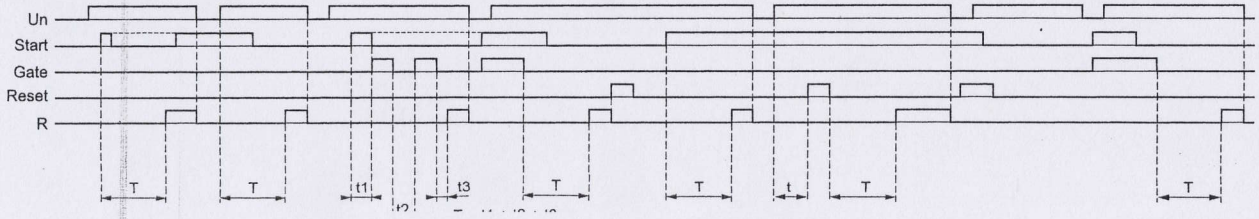
onction A
RESET" prioritaire sur "START" et "GATE"
START" prioritaire sur "GATE"
START" fonctionne sur front montant
RESET" et "GATE" fonctionnent sur niveau

Function A
"RESET" is priority over "START" and "GATE"
"START" is priority over "GATE"
"START" functions on rising edge
"RESET" and "GATE" function on level

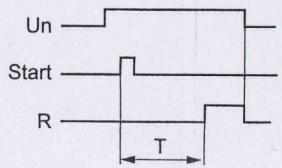
Funktion A
"RESET" prioritär auf "START" und "GATE"
"START" prioritär auf "GATE"
"START" funktioniert am Kurvenanstieg
"RESET" und "GATE" funktionieren auf dem Niveau

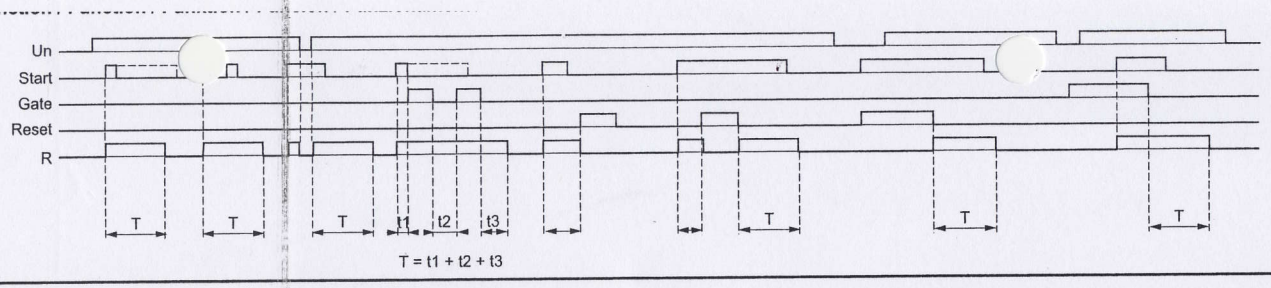
Función A
"RESET" prioritario en "START" y "GATE"
"START" prioritario en "GATE"
"START" funciona en borde ascendente
"RESET" y "GATE" funcionan según nivel

Funzionamento A
"RESET" prioritario su "START" e "GATE"
"START" prioritario su "GATE"
"START" funziona su fronte montante
"RESET" e "GATE" funzionano su livello

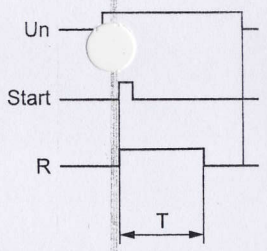


Fonction de base
Basic function
Grundfunktion
Función de base
Funzione di base

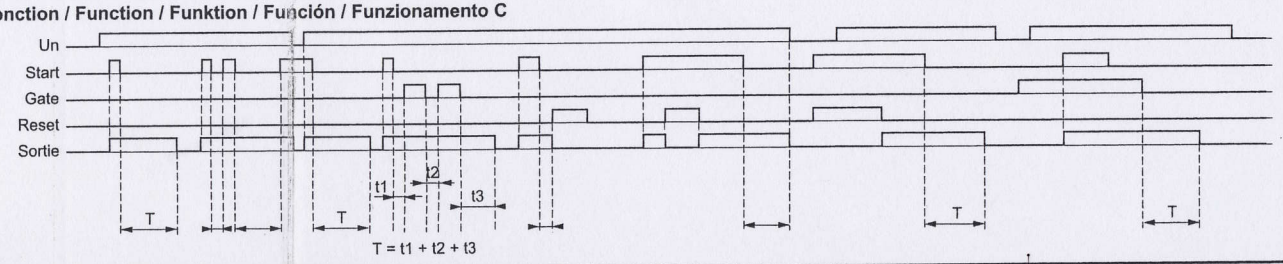




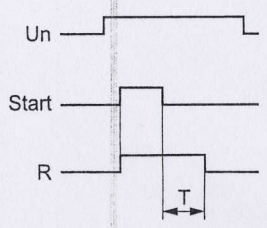
Fonction de base
Basic function
Grundfunktion
Función de base
Funzione di base



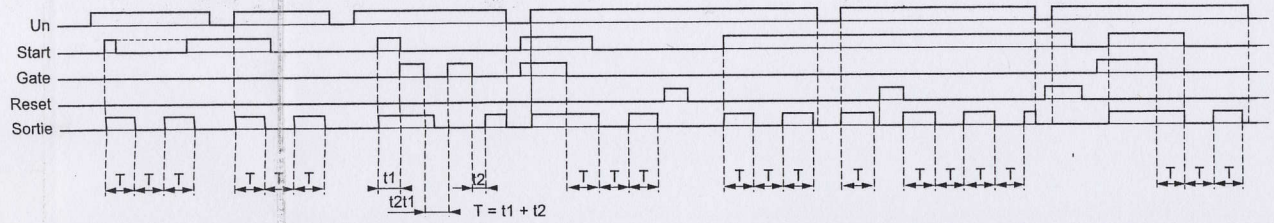
Fonction / Function / Funktion / Función / Funzionamento C



Fonction de base
Basic function
Grundfunktion
Función de base
Funzione di base

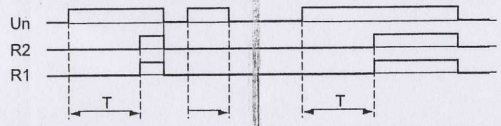


Fonction / Function / Funktion / Función / Funzionamento Di



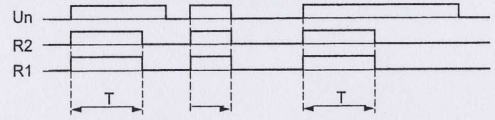
Fonction / Function / Funktion / Función / Funzionamento A1/A2

En mode fonction A1 seul R2 est temporisé, R1 est instantanné
In A1 function mode, only R2 is time delayed , R1 being instantaneous
Im Betriebsmodus A1 ist nur R2 ansprechverzögert, R1 bleibt unverzögert
En modo función A1 sólo R2 está temporizado ,R1 es instantáneo
In modalità funzione A1, soltanto R2 è temporeggiato, R1 è istantaneo



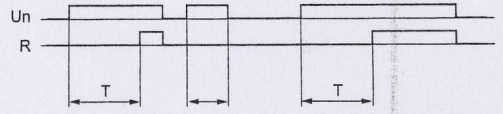
Fonction / Function / Funktion / Función / Funzionamento H1/H2

En mode fonction H1 seul R2 est temporisé, R1 est instantanné
In H1 function mode, only R2 is time delayed, R1 being instantaneous
Im Betriebsmodus H1 ist nur R2 ansprechverzögert, R1 bleibt unverzögert
En modo función H1 sólo R2 está temporizado, R1 es instantáneo
In modalità funzione H1, soltanto R2 è temporeggiato, R1 è istantaneo

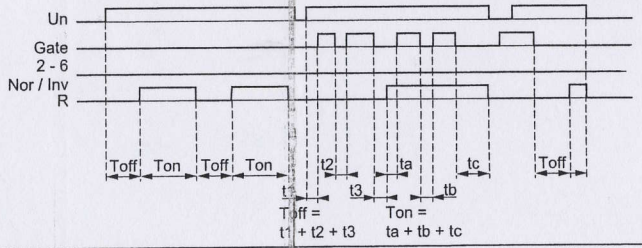


Fonction / Function / Funktion / Función / Funzionamento A

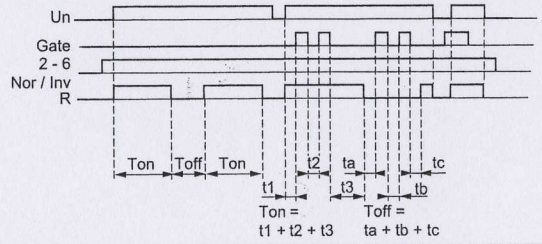
RE48A TM 12 MW



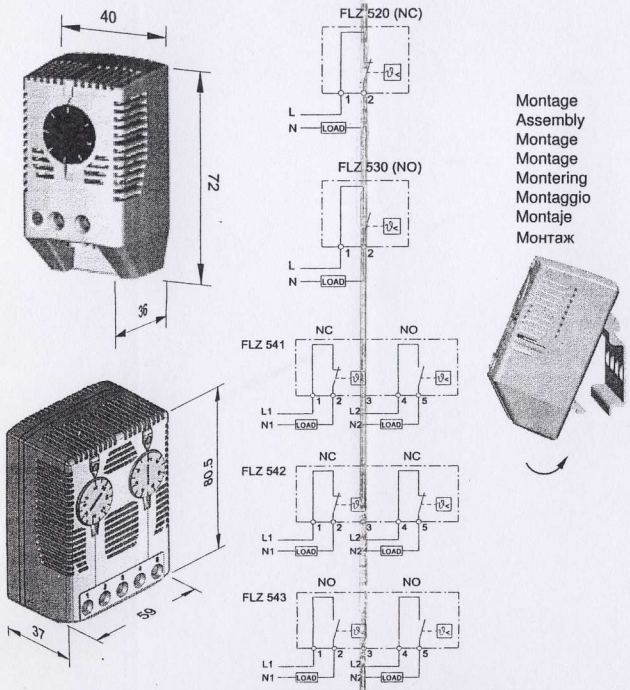
Fonction / Function / Funktion / Función / Funzionamento L



Fonction / Function / Funktion / Función / Funzionamento Li



Thermostat FLZ 530 FLZ 541/ 542/ 543



Montage
Assembly
Montage
Montage
Montering
Montaggio
Montaje
Монтаж

(GB) Thermostat FLZ 520/530, FLZ 54x Instructions for Use

NC: Opener (Contact opens with rising temperature – Setting knob with red imprint)			
NO: Shutter (Contact closes with rising temperature – Setting knob with blue imprint)			
Setting ranges	-20 °C .. +40 °C / -5 °F .. +105 °F	0 °C .. +60 °C / +30 °F .. +140 °F	+20 °C .. +80 °C / +70 °F .. +180 °F
Working temperature range	-20 °C..+80 °C / -5 °F..+180 °F		
Max. breaking capacity	240V AC, 10 (2)A / 120V AC, 15 (2)A Value in brackets: inductive load at cos.φ=0.6 DC: max. 30W		
Temperature difference	< 7K		
Tolerance for switching point	+/- 4K		
Type of contact	Opener – NC / Shutter – NO (snap-action contact)		
Type of connection	2-pole /5-pole clamp, 2,5mm²		
Colour	RAL 7035 – grey		
Protection category	IP 20		
Assembly	Snap fastening for - 35mm profile bars in accordance with EN 60715 - Pfannenberg exhaust filter PFA 3000		

Application:
The thermostats are used for the temperature regulation of cooling units, heating appliances, filter ventilators and heat exchangers inside switch cabinets.
Moreover, they can be used as signal transmitters for reporting excess or insufficient temperatures.
Safety instructions
The thermostats may only be installed by qualified staff.
The protective measures and the protection against contact are to be ensured by the installation.
The information on the name plate (voltage and current) is to be heeded.
The operational reliability of the thermostat is to be ensured by an operating test.
The function of the thermostats was checked with a test voltage of 50V/ 100mA.

Installation instructions:
- The thermostat should be assembled in the upper part of the switch cabinet at the maximum possible distance from heat creating components.
- The ventilation slots of the thermostat should not be covered.

(NL) Gebruikershandleiding thermostaat FLZ 520/ FLZ 54x

NC: opener (contact opent bij stijgende temperatuur - Instelknop met rode opdruk)			
NO: sluiter (contact sluit bij stijgende temperatuur - Instelknop met blauwe opdruk)			
instelbereik	-20 °C .. +40 °C / -5 °F .. +105 °F	0 °C .. +60 °C / +30 °F .. +140 °F	+20 °C .. +80 °C / +70 °F .. +180 °F
gebruikstemperatuur	-20 °C..+80 °C / -5 °F..+180 °F		
max. afschakelvermogen	240V AC, 10 (2)A / 120V AC, 15 (2)A voorlopige waarde: inductieve belasting bij cos.φ=0,6 DC: max. 30W		
schakeltemperatuurverschil	<7K		
schakelpunttollerantie	+/- 4K		
contacttype	Opener – NC / sluiter – NO (schakelbeveiliging)		
aansluitingstype	2-polige/ 5polige klemmen, 2,5mm²		
kleur	RAL 7035 – grijs		
beveiliging	IP 20		
montage	Klikbevestiging voor - 35mm profielrail conform EN 60715 - Pfannenberg voorzetfilter PFA 3000		

Toepassing:
De thermostaten worden gebruikt voor de temperatuurregeling van koelapparaten, verwarmingstoestellen, filterventilatoren en warmtewisselaars binnen in de schakelkast.
Bovendien kunnen ze als aansturing voor signaleringssystemen voor temperatuurafwijkingen gebruikt worden.
Veiligheidsaanwijzingen:
De thermostaten mogen alleen door gekwalificeerd personeel worden geïnstalleerd.
Bij de installatie dienen alle maatregelen met betrekking tot veiligheid in acht genomen te worden (ook beveiliging tegen direct contact).
De gegevens op het typeplaatje (spanning en stroom) moeten in acht genomen worden.
Het veilige gebruik van de thermostaat dient door middel van een functietest vastgesteld t worden.
De functie van de thermostaat werd getest met een spanning door 50V/ 100mA.

Montageaanwijzingen:
- De thermostaat dient gemonteerd te worden in het bovenste gedeelte van de schakelkast op zo groot mogelijke afstand van warmteproducerende onderdelen.
- De ventilatiegleuven van de thermostaat niet afdekken.

(D) Betriebsanleitung Thermostat FLZ 520/530, FLZ 54x

NC: Öffner (Kontakt öffnet bei steigender Temperatur - Einstellknopf mit roter Bedruckung)			
NO: Schließer (Kontakt schließt bei steigender Temperatur - Einstellknopf mit blauer Bedruckung)			
Einstellbereiche	-20 °C .. +40 °C / -5 °F .. +105 °F	0 °C .. +60 °C / +30 °F .. +140 °F	+20 °C .. +80 °C / +70 °F .. +180 °F
Einsatztemperaturbereich	-20 °C..+80 °C / -5 °F..+180 °F		
max. Schaltleistung	240V AC, 10 (2)A / 120V AC, 15 (2)A Wert in Klammern: induktive Last bei cos.φ=0,6 DC: max. 30W		
Schalttemperaturdifferenz	< 7K		
Schaltpunkttoleranz	+/- 4K		
Kontaktart	Öffner - NC / Schließer - NO (Sprungkontakt)		
Anschlussart	2polige/ 5polige Klemme, 2,5mm²		
Farbe	RAL 7035 – grau		
Schutzart	IP 20		
Montage	Schnappbefestigung für - 35mm Profil-Schiene nach EN 60715 - Pfannenberg Austrittsfilter PFA 3000		

Anwendung:
Die Thermostate werden zur Temperaturregelung von Kühlgeräten, Heizgeräten, Filterlüftern u. Wärmetauscher innerhalb von Schaltschränken eingesetzt.
Außerdem können sie als Ansteuerung für Signalgeber zur Meldung von Über- oder Untertemperatur verwendet werden.
Sicherheitshinweise:
Die Thermostate dürfen nur von qualifiziertem Fachpersonal installiert werden.
Die Schutzmaßnahmen und der Berührungsschutz sind durch den Einbau sicherzustellen.
Die Angaben auf dem Typschild (Spannung und Strom) sind zu beachten.
Die Funktionssicherheit des Thermostates ist durch einen Funktionstest sicherzustellen.
Die Thermostate wurden mit einer Prüfspannung von 50V/ 100mA auf Funktion getestet.

Einbauhinweise:
- Der Thermostat sollte im oberen Bereich des Schaltschrankes mit dem größtmöglichen Abstand zu wärmeerzeugenden Bauteilen montiert werden.
- Die Lüftungsschlitze des Thermostates dürfen nicht abgedeckt werden.

(F) Mode d'emploi Thermostat FLZ 520/530, FLZ 54x

NC: Contact de repos (le contact s'ouvre lorsque la température augmente - Bouton de réglage avec inscription rouge)			
NO: Contact de travail (le contact se ferme lorsque la température augmente - Bouton de réglage avec inscription bleue)			
Plages de réglage	-20 °C .. +40 °C / -5 °F .. +105 °F	0 °C .. +60 °C / +30 °F .. +140 °F	+20 °C .. +80 °C / +70 °F .. +180 °F
Plage de température de fonctionnement	de -20 °C à +80 °C / de -5 °F à +180 °F		
Puissance de coupure max.	240V CA, 10 (2)A / 120V CA, 15 (2)A valeur entre parenthèses : charge inductive pour cos.φ=0,6 CC : max. 30W		
Différence de température à la commutation	<7K		
Tolérance du point de commutation	+/- 4K		
Type de contact	Contact de repos – NC / contact de travail - NO (contact à ressort)		
Type de connexion	Borne bipolaire/ à 5 pôles, 2,5mm²		
Couleur	RAL 7035 – gris		
Degré de protection	IP 20		
Montage	Clipsage pour - rail profilé de 35mm conformément à EN 60715 - filtre de sortie Pfannenberg PFA 3000		

Application :
Les thermostats sont utilisés pour réguler la température des appareils de refroidissement, de chauffage, des ventilateurs filtrants et des échangeurs de chaleur installés dans des armoires de distribution. Ils peuvent servir également de commande pour les détecteurs de température insuffisante ou excessive.
Conseils de sécurité :
Les thermostats doivent être installés uniquement par un technicien qualifié.
Les mesures de protection générale et contre les contacts accidentels doivent être assurées par le montage.
Les données de la plaque signalétique (tension et courant) doivent être prises en compte.
La sécurité de fonctionnement du thermostat doit être établie par un test de fonctionnement.
Les thermostats ont été soumis à un test fonctionnel sous une tension d'essai de 50V/ 100mA.

Instructions de montage :
- Le thermostat doit être monté dans la partie supérieure de l'armoire de distribution en l'éloignant le plus possible des composants générateurs de chaleur.
- Les fentes d'aération du thermostat ne doivent pas être obstruées.

(S) Bruksanvisning Termostat FLZ 520/530, FLZ 54x

NC: Öppnare (Kontakten öppnas vid stigande temperatur - Inställningsknapp med röd markering)			
NO: Slutare (Kontakten stängs vid stigande temperatur - Inställningsknapp med blå markering)			
Inställningsområde	-20 °C .. +40 °C / -5 °F .. +105 °F	0 °C .. +60 °C / +30 °F .. +140 °F	+20 °C .. +80 °C / +70 °F .. +180 °F
Användningsområde	-20 °C..+80 °C / -5 °F..+180 °F		
Max utlösningseffekt	240 V AC, 10 (2) A/120 V AC, 15 (2) A Värde i klammer: induktiv belastning vid cos φ=0,6 DC: max. 30W		
Bryttemperatursskillnad	<7 K		
Brytpunktstolerans	+/- 4 K		
Kontakttyp	Öppnare – NC /slutare – NO (vippkontakt)		
Typ av anslutning	2-polig/ 5polig klämma, 2,5 mm²		
Färg	RAL 7035 – grå		
Skyddstyp	IP 20		
Montering	Snäppfäste för - 35 mm profilskena enligt EN 60715 - Pfannenberg försättsfilter PFA 3000		

Användning:
Termostaten används för temperaturstyrning av kylaggregat, värmeapparater, filterfläktar och värmeväxlare i kopplingsskåp.
Dessutom kan de användas som styrning av signalgivare för att meddela över- eller undertemperatur.
Säkerhetsanvisningar:
Termostaterna får endast installeras av kvalificerad fackpersonal.
Skyddsåtgärderna och beröringsskyddet ska säkerställas vid monteringen.
Uppgifterna på märkplåten (spänning och ström) ska beaktas.
Termostatens funktionssäkerhet säkerställs genom en funktionstest.
Termostaternas funktion testades med provspänningen 50V/ 100mA.

Monteringsanvisningar:
- Termostaten ska monteras i den övre delen av kopplingsskåpet med största möjliga avstånd till värmealstrande komponenter.
- Termostatens ventilationsöppning får inte övertäckas.

(I) Istruzioni termostato FLZ 520/530, FLZ 54x

NC: Contatto di apertura	(il contatto si apre con l'aumentare della temperatura - Manopola di regolazione con stampa rosso)		
NO: Contatto di chiusura	(il contatto si chiude con l'aumentare della temperatura – Manopola di regolazione con stampa blu)		
Campo di regolazione	-20°C .. +40°C / -5°F .. +105°F	0°C .. +60°C / +30°F .. +140°F	+20°C .. +80°C / +70°F .. +180°F
Campo temperatura di impiego	-20°C..+80°C / -5°F..+180°F		
Potere di interruzione max.	240V AC, 10 (2)A / 120V AC, 15 (2)A valore fra parentesi: carico induttivo a cos.φ=0,6 DC: max. 30W		
Differenziale di commutazione	<7K		
Tolleranza del punto di commutazione	+/- 4K		
Tipo di contatto	Contatto di apertura – NC / chiusura – NO (contatto ad azione rapida)		
Tipo di collegamento	Terminale bipolare/ 5 poli, 2,5mm²		
Colore	RAL 7035 – grigio		
Tipo di protezione	IP 20		
Montaggio	Fissaggio ad innesto per - guida 35 mm secondo EN 60715 - griglie con filtro Pfannenberg PFA 3000		

npiego:
termostati sono impiegati per la termoregolazione di apparecchi di raffreddamento, riscaldamen-
, ventilatori con filtro e scambiatori di calore all'interno di armadi elettrici.
ossono essere inoltre utilizzati in qualità di trasduttori per la segnalazione di sovra- o sottotempe-
ature.

truzioni di sicurezza:
are installare i termostati esclusivamente da personale specializzato qualificato.
e misure di protezione e la messa a terra protettiva devono essere assicurate in sede di installa-
one.
ttenersi ai dati riportati sulla targhetta dati (tensione e corrente).
erificare la sicurezza di funzionamento a mezzo di un test di funzionamento.
funzionamento dei termostati viene testato con una tensione di prova di 50V/ 100mA.

truzioni di montaggio:
Montare il termostato nel comparto superiore dell'armadio elettrico mantenendo la distanza più ampia possibile rispetto ai componenti generatori di calore.
Non coprire le feritoie di ventilazione del termostato.

(E) Instrucciones del termostato FLZ 520/530, FLZ 54x

NC: Contacto de apertura	(el contacto se abre en caso de producirse un incremento de la temperatura - Mando de ajuste con indicaciones impresas de color rojo)		
NO: Contacto de cierre	(el contacto se cierra en caso de producirse un incremento de la temperatura -) Mando de ajuste con indicaciones impresas de color azul)		
Ámbito de regulación	-20°C .. +40°C / -5°F .. +105°F	0°C .. +60°C / +30°F .. +140°F	+20°C .. +80°C / +70°F .. +180°F
Ámbito de temperatura de regulación	-20° C... +80° C / -5° F... +180° F		
Potencia de conmutación máx.	240V CA, 10 (2)A / 120V CA, 15 (2)A Valor entre paréntesis: carga inductiva a cos.φ=0,6 CC: máx. 30W		
Diferencia de temperatura de conmutación	<7K		
tolerancia del punto de conmutación	+/- 4K		
Tipo de contacto	Contacto de apertura – NC / cierre – NO (contacto de acción rápida)		
Tipo de conexión	Borne bipolar/ 5 polos, 2,5 mm²		
Color	RAL 7035 – gris		
Tipo de protección	IP 20		
Montaje	Fijación por resorte para un - carril de perfil de 35mm conforme a EN 60715 - filtro antepuesto Pfannenberg PFA 3000		

Aplicación:
Los termostatos se aplican a la regulación de la temperatura de refrigeradores, calefactores, ventiladores de filtro y calentadores situados en el interior de armarios de distribución.
Aparte, pueden emplearse como dispositivos de direccionamiento de señalizadores de exceso o defecto de temperatura.

Instrucciones de seguridad:
La instalación de los termostatos será responsabilidad exclusiva de operarios especializados.
Las medidas de seguridad y la protección frente al contacto deberán quedar garantizadas en el momento de la instalación.
Se deberá respetar los datos (tensión y corriente) que figuran en la placa de tipo.
La seguridad operativa del termostato deberá garantizarse mediante una prueba de funcionamiento.
Se probó el funcionamiento de los termostatos con una tensión de prueba de 50V/ 100mA.

Instrucciones de montaje:
- El termostato debería montarse en la parte superior del armario de distribución, guardando la mayor distancia posible con los componentes que desprenden calor.
- No deberían obturarse las ranuras de ventilación del termostato.

(RUS) Руководство по эксплуатации Термостат FLZ 520/530, FLZ 54x

NC: размыкающий контакт	(контакт открывается при возрастающей температуре - Ручка настройки с красной маркировкой)		
NO: замыкающий контакт	(контакт закрывается при возрастающей температуре - Ручка настройки с синей маркировкой)		
Диапазон настройки	-20°C .. +40°C / -5°F .. +105°F	0°C .. +60°C / +30°F .. +140°F	+20°C .. +80°C / +70°F .. +180°F
Температурный диапазон использования	-20°C.+80°C / -5°F..+180°F		
Макс. коммутационная способность	240В AC, 10 (2)A / 120В AC, 15 (2)A Значение в скобках: индуктивная нагрузка при cos.φ=0,6 DC: макс. 30Вт/		
Разница температуры переключения	<7K		
допуск положения точки переключения	+/- 4K		
Тип контакта	Размыкающий – NC /замыкающий контакт – NO (щелчковый контакт)		
Вид подсоединения	2-полюсная/ 5-полюсная клемма, 2,5 мм2		
Цвет	RAL 7035 – серый		
Класс защиты	IP 20		
Монтаж	Защёлкивающееся крепление для - 35мм профильной шины по EN 60715 - Pfannenberg PFA 3000		

Применение:
Термостаты используются для регулирования температуры охлаждающих, отопительных приборов, вентиляторов фильтров и теплообменников внутри шкафов с приборам управления.
Кроме того, они могут использоваться для управления датчиками сигналов для сообщени о слишком высоком или низком значении температуры.

Указания по технике безопасности:
Настройку термостатов может проводить только квалифицированный обученный персонал.
При монтаже следует обеспечить меры защиты и защиту от касаний.
Следует соблюдать указания на типовой табличке (напряжение и ток).
Следует обеспечить надежность работы термостата посредством функционального теста.
Функционирование термостатов проверяется при использовании испытательного напряжения 50 В/ 100mA.

Указания по монтажу
- Термостат следует устанавливать в верхней части шкафа с приборами управления с максимально возможным расстоянием относительно конструктивных деталей, выделяющих тепло.
- вентиляционные шлицы термостата закрывать нельзя.

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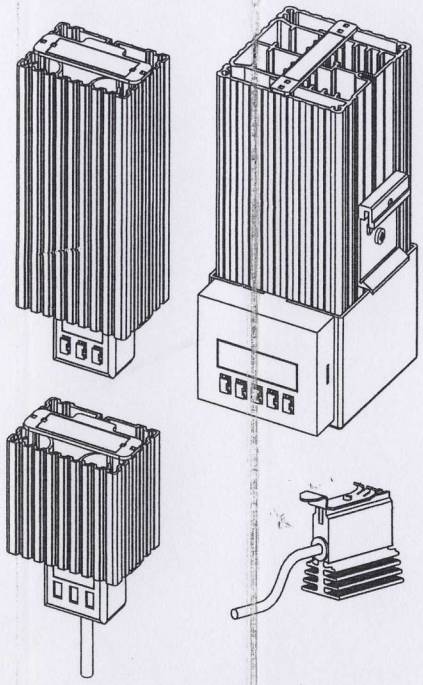

(D) Betriebsanleitung für Schaltschrankheizgeräte FLH ...

chnische Daten	siehe Angaben auf dem Typschild
nsatztemperaturbereich *	Strahlheizgerät: -40°C..+70°C Heizgerät mit Lüfter: AC -40°C..+70°C; DC -20°C..+70°C
gertemperatur	-40°C..+70°C
schluss	Kabelschwanz oder Steckklemm-Anschluss
emmbereich der schlussklemme	eindrähtig: 2x 0,5 – 2,5 mm² feindrähtig: (verzinnt, mit Aderendhülse, mit Stiftkabelschuh) 2x 0,5 – 1,5mm²
nge der Abisolierung w. Aderendhülse	10 – 12mm
ontage	Schnappbefestigung für 35mm Profil-Schiene nach EN 60715

räteart: Heizgeräte mit Eigenkonvektion (PTC-Heizgeräte) und Heizgeräte mit Lüfter.

wendung:
- Vermeidung von Kondensatwasserbildung
- Vermeidung von Temperaturunterschreitungen

htung: Heiße Oberfläche nach Inbetriebnahme! Verletzungsgefahr!

Heizgeräte dürfen nur in geschlossenen Schaltschränken betrieben werden. Zur genauen Schaltrank-Temperaturregelung sollte ein externer Thermostat das Heizgerät steuern.

ntage- und Sicherheitshinweise:

Beim Anschluss des Heizgerätes sind die landesüblichen Vorschriften zu beachten. Der Anschluss darf nur durch qualifiziertes Fachpersonal erfolgen.
Aus Sicherheitsgründen und zur optimalen Luftzirkulation ist zu benachbarten Bauteilen und Leitungen allseitig ein Abstand von mindestens 50mm einzuhalten. Bei lüfterbetriebenen Heizgeräten ist im Ansaug- und Ausblasbereich ein 100-mm-Abstand einzuhalten.
Zur besseren Wärmeausnutzung das Heizgerät im unteren Teil des Schaltschrankes vertikal (Anschluss nach unten) installieren.
Heizgeräte mit Eigenkonvektion (ohne Lüfter) nicht in Serie schalten.
Bei Heizgeräten mit Eigenkonvektion (ohne Lüfter) ist ein ca. 6fach höherer Einschaltstrom als der Nennstrom zu erwarten.
Vorsicht: Strahlungs- und Kontaktwärme: Heizgerät darf nicht auf leicht entflammbaren Materialien montiert werden (Holz, Kunststoff usw.).
Heizgeräte dürfen während des Betriebes nicht abgedeckt werden.
Heizgeräte dürfen nicht in aggressiver Umgebungsluft betrieben werden.
Die Heizgeräte sind wartungsfrei und dürfen aus Sicherheitsgründen nicht repariert werden. Wird das Heizgerät nicht mehr benötigt, ist es vom autorisierten Fachpersonal gemäß den geltenden Umweltschutzvorschriften zu entsorgen.
Bei Heizbetrieb über T ist die Lebensdauer reduziert:
250 W (DC): T> +60 °C 400 W (AC): T> +50 °C 400 W (DC): T> +40 °C

(GB) Operating instructions for switch cabinet heating appliances FLH ...

Technical Data	Refer to specifications on model plate
Operating temperature range *	radiation heating appliance: -40°C..+70°C heating appliance with fan: AC -40°C..+70°C; DC -20°C..+70°C
Storage temperature	-40°C..+70°C
Connection	Cable end or plug terminal -connection
Binding post clamping area	Single filament: 2x 0,5 – 2,5 mm² Fine multi-filament: (soldered, wire end sleeve, pin terminal) 2x 0,5 – 1,5mm²
Length of stripped insulation and/or wire end sleeve	10 – 12mm
Mounting	Snap-in mounting for 35mm profile extrusion in accordance with EN 60715

Device type: Heating appliances with natural convection (PTC-Heating appliances) and heating appliances with fan.

Application:
- Prevents formation of condensation
- Prevents temperature falling too low

Caution: Hot surface after initial operation phase! Risk of injury!

The heating appliances must only be operated in closed switch cabinets. To ensure exact switch cabinet temperature regulation, an external thermostat should be used to regulate the heating appliance.

Mounting and safety information:

1. The country-specific regulations must be followed when connecting the heating appliance. Only qualified personnel should connect the heating appliance.
2. For safety reasons, and for optimum air circulation, all neighbouring components and cables must always have a minimum of 50 mm clearance all-round. Fan-operated heating appliances must always have 100 mm clearance around the induction and exhaust areas.
3. For improved heat dissipation, install the heating appliance vertically in the lower part of the switch cabinet (connection facing down).
5. Heating appliances with natural convection (without fan) must not be connected in series.
6. Heating appliances with natural convection (without fan) require approximately six times more starting current than the expected rated current.
7. Caution: Radiation and contact heat: Heating appliance must not be mounted to easily flammable materials (wood, plastic etc.).
8. Heating appliances must not be covered during operation.
9. Heating appliances must not be operated in aggressive ambient air.
10. The heating appliances are maintenance-free and for safety reasons must NOT be repaired. When the heating appliance is no longer needed, it must be disposed of by authorized specialist personnel in accordance with all applicable environmental protection regulations.

* Heating above T reduces the life span:
250 W (DC): T> +60 °C 400 W (AC): T> +50 °C 400 W (DC): T> +40 °C

(F) Instructions d'emploi des radiateurs en armoires électriques FLH ...

Données techniques	Voir les informations figurant sur le boîtier
Plage de température de fonctionnement *	chauffage radiant: -40°C..+70°C radiateur soufflant: AC -40°C..+70°C; DC -20°C..+70°C
Température de stockage	-40°C..+70°C
Branchement	Extrémité de câble ou branchement par borne à fiche
Surface de fixation des bornes de branchement	Monoconducteur: 2x 0,5 – 2,5 mm² À fils de faible diamètre : (étamé avec embout, avec cosse de câble à pointe) 2x 0,5 – 1,5mm²
Longueur de dénudage ou embout	10 – 12mm
Montage	Fixation par encliquetage pour rail profilé de 35 mm d'après EN 60715

Type d'appareil : radiateurs à convection interne (radiateurs CPT) et radiateurs soufflants.

Application :
- Lutte contre la formation de condensats d'eau
- Lutte contre l'insuffisance de température

Attention: surface brûlante après mise en route ! Danger !

Les radiateurs doivent être utilisés en armoires électriques fermées uniquement. Le réglage précis de la température du radiateur dans l'armoire électrique doit se faire au moyen d'un thermostat externe.

Conseils de montage et de sécurité :

1. Pour le branchement du radiateur, la législation en vigueur dans le pays doit être observée. Le branchement doit être effectué par du personnel spécialisé et qualifié uniquement.
2. Pour des raisons de sécurité et pour une meilleure circulation de l'air, toutes les pièces et conduites avoisinantes doivent être tenues à une distance d'au moins 50 mm. Pour les radiateurs soufflants, une distance de 100 mm doit être respectée dans les zones d'aspiration et de soufflage.
3. Pour une meilleure utilisation de la chaleur, installer le radiateur dans le sens vertical (prise vers le bas) et dans la partie inférieure de l'armoire électrique.
5. Ne pas brancher de radiateurs à convection interne (sans soufflage) en série.
6. Sur les radiateurs à convection interne (sans soufflage), le courant de mise en route peut être environ 6 fois supérieur au courant nominal.
7. Attention: chaleur de radiation et de contact: le radiateur ne doit pas être monté sur des matériaux facilement inflammables (bois, plastique etc.).
8. Les radiateurs ne doivent pas être couverts pendant leur utilisation.
9. Les radiateurs ne doivent pas être utilisés en environnement agressif.
10. Les radiateurs ne requièrent aucune maintenance et ne doivent pas être réparés, pour des raisons de sécurité. Si le radiateur est devenu inutile, il doit être éliminé par le Personnel spécialisé agréé, conformément aux consignes de protection de l'Environnement en vigueur.

* Chauffage au-dessus de T réduit la durée de vie:
250 W (DC): T> +60 °C 400 W (AC): T> +50 °C 400 W (DC): T> +40 °C

(NL) Handleiding voor verwarmingstoestellen voor schakelkasten FLH ...

Technische gegevens	zie aanduidingen op het typeplaatje
Temperatuurbereik voor gebruik *	toestel met stralingswarmte: -40°C..+70°C verwarmingstoestel met ventilator: AC -40°C..+70°C; DC -20°C..+70°C
Opslagtemperatuur	-40°C..+70°C
Aansluiting	Aansluiting met draadeinden of steekklemmen
Klembereik van de aansluitklemmen	eenaderig: 2x 0,5 – 2,5 mm² soepel: (vertind, met ader–eindhuls, met pen–kabelschoen) 2x 0,5 – 1,5mm²
Striplengte resp. lengte van de ader–eindhuls	10 – 12mm
Montage	Snapbevestiging voor 35 mm profielen volgens EN 60715

Toesteltype: Verwarmingstoestellen met eigenconvectie (PTC–verwarmingstoestellen) en verwarmingstoestellen met ventilator.

Toepassing:
- Vermijden van condensatiewatervorming
- Vermijden van te lage temperaturen

Opgelet: warme oppervlakten na ingebruikneming! Biessuregevaar!

De verwarmingstoestellen mogen enkel in gesloten schakelkasten gebruikt worden. Voor een exac temperatuurregeling van de schakelkast moet een afzonderlijke thermostaat het verwarmingstoestel sture

Montage- en veiligheidsaanwijzingen:

1. Bij het aansluiten van het verwarmingtoestel moeten de plaatselijke voorschriften in acht genom worden. De aansluiting mag enkel uitgevoerd worden door gekwalificeerde personen.
2. Om veiligheidsredenen en voor een optimale luchtcirculatie moet naar naburige bouwelementen leidingen rondom een afstand van minimum 50 mm ingehouden worden. Bij verwarmingstoestellen d met ventilator werken, moet in de aanzuig- en blaaszone een afstand van 100 mm ingehouden worde
3. Voor een beter warmterendement wordt het verwarmingstoestel verticaal (aansluiting onderaa geïnstalleerd in het onderste gedeelte van de schakelkast.
5. Verwarmingstoestellen met eigenconvectie (zonder ventilator) niet in serie schakelen.
6. Bij verwarmingstoestellen met eigenconvectie (zonder ventilator) mag een startstroom verwacht word die 6x hoger is dan de nominale stroom.
7. Opgelet: stralings- en contactwarmte: verwarmingstoestel mag niet gemonteerd worden op lic ontvlambare materialen (hout, kunststof enz.).
8. Verwarmingstoestellen mogen tijdens het gebruik niet afgedekt worden.
9. Verwarmingstoestellen mogen niet gebruikt worden in een agressieve omgevingslucht.
10. De verwarmingstoestellen zijn onderhoudsvrij en mogen om veiligheidsredenen niet gerepareerd wo den. Als het **verwarmingstoestel** niet meer nodig is, moet het door geautoriseerd vakpersone overeenkomstig de geldende voorschriften ter bescherming van het milieu bij het afval worden verwijder

* Bij verwarmingsmodus boven T is de levensduur gereduceerd:
250 W (DC): T> +60 °C 400 W (AC): T> +50 °C 400 W (DC): T> +40 °C

(S) Bruksanvisning för värmeapparat till kopplingsskåp FLH ...

Tekniska data	se uppgifter på märkplåten
Användningstemperaturområde *	Strålvärmeugn: -40 °C- +70 °C värmeapparat med fläkt: AC -40 °C- +70 °C ; DC -20 °C - +70°C
Förvaringstemperatur	-40 °C - +70 °C
Anslutning	Kabelanslutning eller stickklämanslutning
Anslutningsklämmornas klämområde	entrådig: 2 x 0,5 – 2,5 mm² fintrådigt: (förtennad med ledarhylsa, med kabelsko) 2 x 0,5 – 1,5 mm²
Längd på avisoleringen resp. ledarändhylsa	10 – 12 mm
Montering	Snäppfäste för 35 mm profilskena enligt EN 60715

Apparattyp: Värmeapparat med självkonvektion (PTC-värmeapparat) och värmeapparat med fläkt.

Användning:
- Undvika kondensvattenbildning
- Undvika att temperaturen underskrids

Varning: Varma ytor efter idrifttagning! Skaderisk!

Värmeapparaten får endast användas i stängda kopplingsskåp. För noggrann temperaturreglering kopplingsskåpet ska värmeapparaten styras med en extern termostat.

Monterings- och säkerhetsanvisningar:

1. Vid anslutning av värmeapparaten ska de i landet gällande bestämmelserna beaktas. Anslutninge får endast utföras av kvalificerad fackman.
2. Av säkerhetsskäl och för optimal luftcirkulation ska ett avstånd på minst 50 mm hållas från alla sid till närliggande komponenter och ledningar. Vid fläktdrivna värmeapparater ska ett avstånd hållas p 100 mm i området kring insug och utblås.
3. För bättre värmeutnyttjande av värmeapparaten ska den installeras vertikalt i den nedre delen a kopplingsskåpet (anslutning nedåt).
5. Värmeapparater med självkonvektion (utan fläkt) får inte seriekopplas.
6. Vid värmeapparater med självkonvektion (utan fläkt) kan man förvänta sig sex gånger högre star ström än märkström.
7. Försiktig: Strålnings- och kontaktvärme: Värmeapparat får inte monteras på lättantändliga materi (trä, plast o.s.v.)
8. Värmeapparater får inte täckas över under drift.
9. Värmeapparater får inte användas i riskabla omgivningar.
10. Värmeapparater är underhållsfria och får av säkerhetsskäl inte repareras. Om man inte behöver värmeapparaten längre ska det skrotas av behörig fackpersonal enligt gällande miljöskyddsbestämmelser.

* Vid värmedrift över T reduceras livslängden:
250 W (DC): T> +60 °C 400 W (AC): T> +50 °C 400 W (DC): T> +40 °C

(I) Istruzioni d'uso di resistenze riscaldanti FLH per quadri elettrici...

pedifiche tecniche	Vedi dati sulla targhetta del modello
:ange temperatura di utilizzo *	resistenza riscaldante radiante: -40°C..+70°C resistenza riscaldante con ventilatore: AC -40°C..+70°C; DC -20°C..+70°C
emperatura di stoccaggio	-40°C..+70°C
:ollegamento	Cavo o collegamento con morsetto a innesto
rea del morsetto di ollegamento	A un filo: 2x 0,5 – 2,5 mm² Con fili sottili multipli: (stagnato, con boccola terminale del filo, con capocorda a spina) 2x 0,5 – 1,5mm²
unghezza della spelatura e/o ella boccola terminale del filo	10 – 12mm
lontaggio	Fissaggio a scatto per guida profilata da 35mm conforme a EN 60715

o di apparecchio: Resistenze riscaldanti con convezione autonoma (resistenze riscaldanti PTC) e resistenze riscaldanti con ventilatore.

plicazioni:
- Prevenzione di formazione di condensa
- Prevenzione di abbassamenti di temperatura

:enzione: Superficie molto calda dopo la messa in funzione! Pericolo di ustioni!

resistenze riscaldanti devono essere utilizzate soltanto nei quadri elettrici chiusi. Per la regolazione esatta della nperatura del quadro elettrico, la resistenza riscaldante deve essere collegata a un termostato esterno.

rme di montaggio e di sicurezza:

Per il collegamento della resistenza riscaldante attenersi alle normative vigenti nel paese di utilizzo.
Il collegamento deve essere eseguito esclusivamente da tecnici qualificati.
Per motivi di sicurezza e per consentire una circolazione ottimale dell'aria rispettare su tutti i lati una distanza di almeno 50 mm dai componenti e dalle linee attigui. Per le resistenze riscaldanti con ventilatore rispettare nell'area di aspirazione e di convezione una distanza di 100 mm.
Ai fini dello sfruttamento ottimale del calore, installare la resistenza riscaldante in verticale (con il collegamento in basso) nella parte bassa del quadro elettrico.
Non collegare in serie le resistenze riscaldanti con convezione autonoma (senza ventilatore).
Nelle resistenze riscaldanti con convezione autonoma (senza ventilatore) la corrente di inserzione è 6 volte maggiore della corrente nominale.
Attenzione! Calore radiante e di contatto: la resistenza riscaldante non deve essere montata su materiali facilmente infiammabili (legno, materie plastiche, ecc.).
Durante il funzionamento le resistenze riscaldanti non devono essere coperte.
Non utilizzare le resistenze in aria ambiente aggressiva.
Le resistenze riscaldanti non necessitano di manutenzione e per motivi di sicurezza non possono essere riparate. Quando la resistenza riscaldante non viene più utilizzata, essa deve essere smaltita in conformità alle norme in vigore in materia di salvaguardia ambientale da parte di personale specializzato autorizzato.

Il riscaldamento al di sopra del massimo valore di T riduce la vita utile:
250 W (DC): T> +60 °C 400 W (AC): T> +50 °C 400 W (DC): T> +40 °C

(E) Instrucciones de servicio para aparatos calefac...s de armarios de distribución FLH ...

Datos técnicos	ver los datos en la placa de características
Intervalo de temperatura *	calefactor por irradiación: -40°C..+70°C calefactor con ventilador: AC: -40°C..+70°C; DC: -20°C..+70°C
Temperatura de almacenamiento	-40°C..+70°C
Conexión	cable flexible de conexión o conexión enchufable a presión
Zona de apriete del borne de conexión	monofilar: 2x 0,5 – 2,5 mm² de hilo fino: (estañado, con virola de cable, con terminal de cable monopolar) 2x 0,5 – 1,5mm²
Longitud sin aislamiento o virola de cable	10 – 12mm
Montaje	Sujeción de resorte para guía perfilada de 35mm según EN 60715

Tipo de aparato: Calefactores con convección propia (calefactores PTC) y calefactores con ventilador.

Aplicación:
- Evitar la formación de agua condensada
- Evitar la bajada de temperatura por debajo del mínimo

Atención: Después de la puesta en marcha la superficie está muy caliente. Existe peligro de sufrir lesiones.

Los calefactores sólo se pueden usar en armarios de distribución cerrados. Para regular con exactitud la temperatura del armario de distribución, el calefactor debería estar controlado por un termostato externo.

Indicaciones de montaje y de seguridad:

1. Observar la normativa nacional al conectar el calefactor. Únicamente personal cualificado debe llevar a cabo la conexión.
2. Por motivos de seguridad y para obtener una circulación óptima del aire se debe mantener una distancia de como mínimo 50mm respecto a los componentes y conductos contiguos. En los calefactores con ventilador, se debe mantener una distancia de 10mm en la zona de aspiración y de salida.
3. Para un mejor aprovechamiento del calor, instalar el calefactor verticalmente (conexión hacia abajo) en la parte inferior del armario de distribución.
5. No conectar en serie varios calefactores de convección propia (sin ventilador).
6. En los calefactores con convección propia (sin ventilador) debe esperarse una corriente de cierre 6 veces superior a la corriente nominal.
7. Cuidado: calor por irradiación y por contacto: no debe montarse el calefactor encima de materiales fácilmente inflamables (madera, plástico, etc.)
8. Durante el servicio, no cubrir los calefactores.
9. No utilizar los calefactores en entornos con aire agresivo.
10. Los calefactores no necesitan mantenimiento y por motivos de seguridad no deben repararse. Si no se necesita más el calefactor se tiene que desechar el mismo por personal técnico autorizado de acuerdo a las prescripciones de protección del medio ambiente vigentes.

* Cuando se utiliza el calentador a T, el tiempo de vida se reduce:
250 W (DC): T> +60 °C 400 W (AC): T> +50 °C 400 W (DC): T> +40 °C

(RUS) Руководство по эксплуатации для обогревательных при... для распределительных шкафов FLH ...

Технические характеристики	См. указания на маркировочной табличке
Температурный диапазон использования *	струйный отопительный прибор: -40°C..+70°C нагревательный прибор с вентилятором: AC: -40°C..+70°C; DC: -20°C..+70°C
Температура хранения	-40°C..+70°C
Подсоединение	Конец кабеля или подключение через клемму с разъемом
Область разъема клеммы подключения	Однопроводная: 2x 0,5 – 2,5 мм2 Провод малого сечения: (оцинкованный, с концевой гильзой жилы, с штыревым кабельным наконечником) 2x 0,5 – 1,5 мм2
Длина изоляции или концевой гильзы жилы	10 – 12мм
Монтаж	Защёлкивающееся крепление для 35мм профильной шины по EN 60715

Вид прибора: Нагревательные приборы с собственной конвекцией (нагревательные ТКС-приборы и нагревательные приборы с вентилятором.

Применение:
- во избежание образование конденсата
- во избежание температурных разниц

Внимание: После ввода в эксплуатацию поверхности горячие! Опасность получения травмы!

Нагревательные приборы можно эксплуатировать только в закрытых распределительных шкафах. Для точного регулирования температуры в распределительном шкафу нагревательным прибором должен управлять внешний термостат.

Указания по монтажу и технике безопасности:

1. При подключении нагревательного прибора следует соблюдать существующие в Вашей стране предписания. Подключение может производить только квалифицированный специальный персонал.
2. По причинам техники безопасности и для оптимальной циркуляции воздуха следует соблюдать расстояние до соседних узлов и проводов по всем сторонам в минимум 50 мм. Для нагревательных приборов с вентиляторным приводом следует соблюдать расстояние в 100 мм в области забора и выдувания.
3. Для лучшего использования тепла следует устанавливать нагревательный прибор в нижней части распределительного шкафа вертикально (подключением вниз).
5. Нагревательные приборы с собственной конвекцией (без вентилятора) не включать последовательно.
6. Для нагревательных приборов с собственной конвекцией (без вентилятора) следует ожидать тока включения в раз больше номинального.
7. Осторожно: Излучаемое и контактное тепло: Нагревательный прибор нельзя монтировать на легко воспламеняющиеся материалы (дерево, пластмасса и пр.).
8. Нагревательные приборы во время эксплуатации накрывать нельзя.
9. Запрещается эксплуатировать нагревательные приборы в агрессивном воздухе окружающей среды.
10. Нагревательные приборы не нуждаются в обслуживании и по причинам безопасности не подлежат ремонту. Если нагревательный прибор больше не нужен, то его должен утилизировать авторизованный специализированный персонал согласно действующим предписаниям по охране окружающей среды.

* Нагрев выше указанной температуры T уменьшает срок службы:
250 W (DC): T> +60 °C 400 W (AC): T> +50 °C 400 W (DC): T> +40 °C

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STAD 04 PLUS

Operator's Manual

REV. B1 10 / 12 / 2007

dinamica generale srl

Electronic weight systems and automation

INDEX

ENGLISH

► General Information

►► Configuration

►►► Use

►►►► Accessories

►►►►► Service

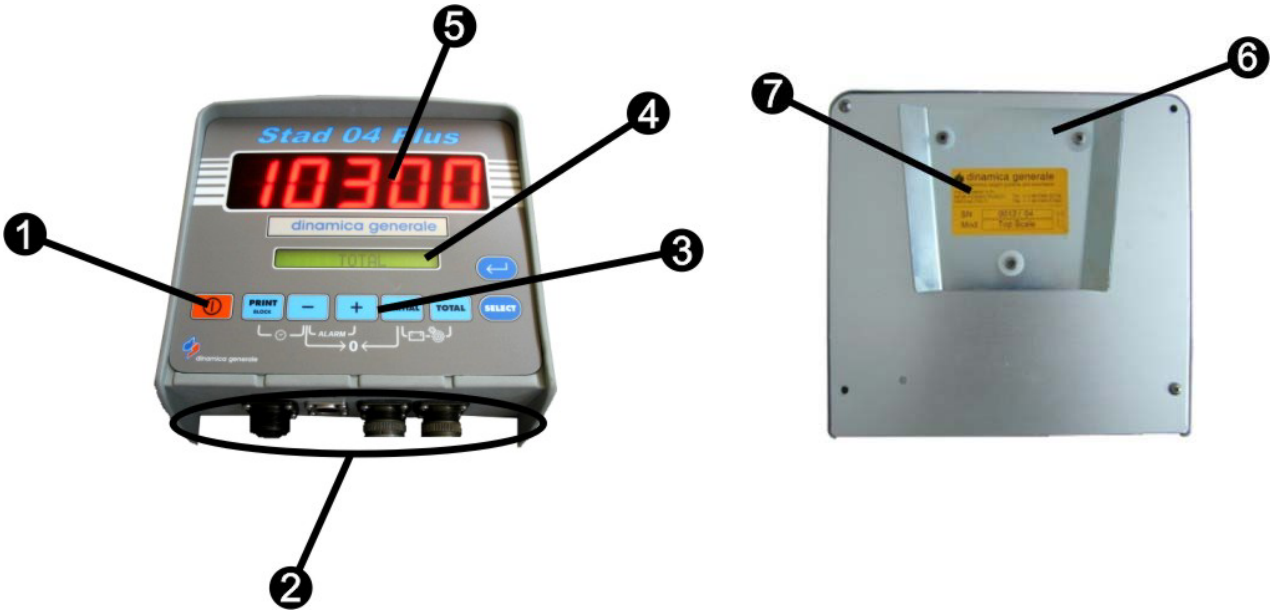
►►►►►► Rules

TECHNICAL DATA

Range (f.s.):	0 – 65.000
Resolution:	1 - 2 - 5 -10 kg
Accuracy:	< +/- 0,015 % f.s.
Operating temperature:	-30 / +65 °C
Power supply:	9,5 – 32 Vd.c. (“LOW BATTERY” < 9,5 Vdc)
Dimensions (mm):	220 x 200 x 100
Weight (gr):	2000
Case:	Polyamide (PA) 30% fibre glass, noise shielded
Protection grade:	IP 66 (IP 67 for a short time)*
Display:	16 LCD alpha-numeric types 7.5 mm high with back light. 5 digit high efficiency red LED diodes 40 mm high
Display view:	> 15 m

* Completely dust-proof and splash-proof, water-proof for brief time in full water immersion with connectors closed by cap or with cables / accessories connected.

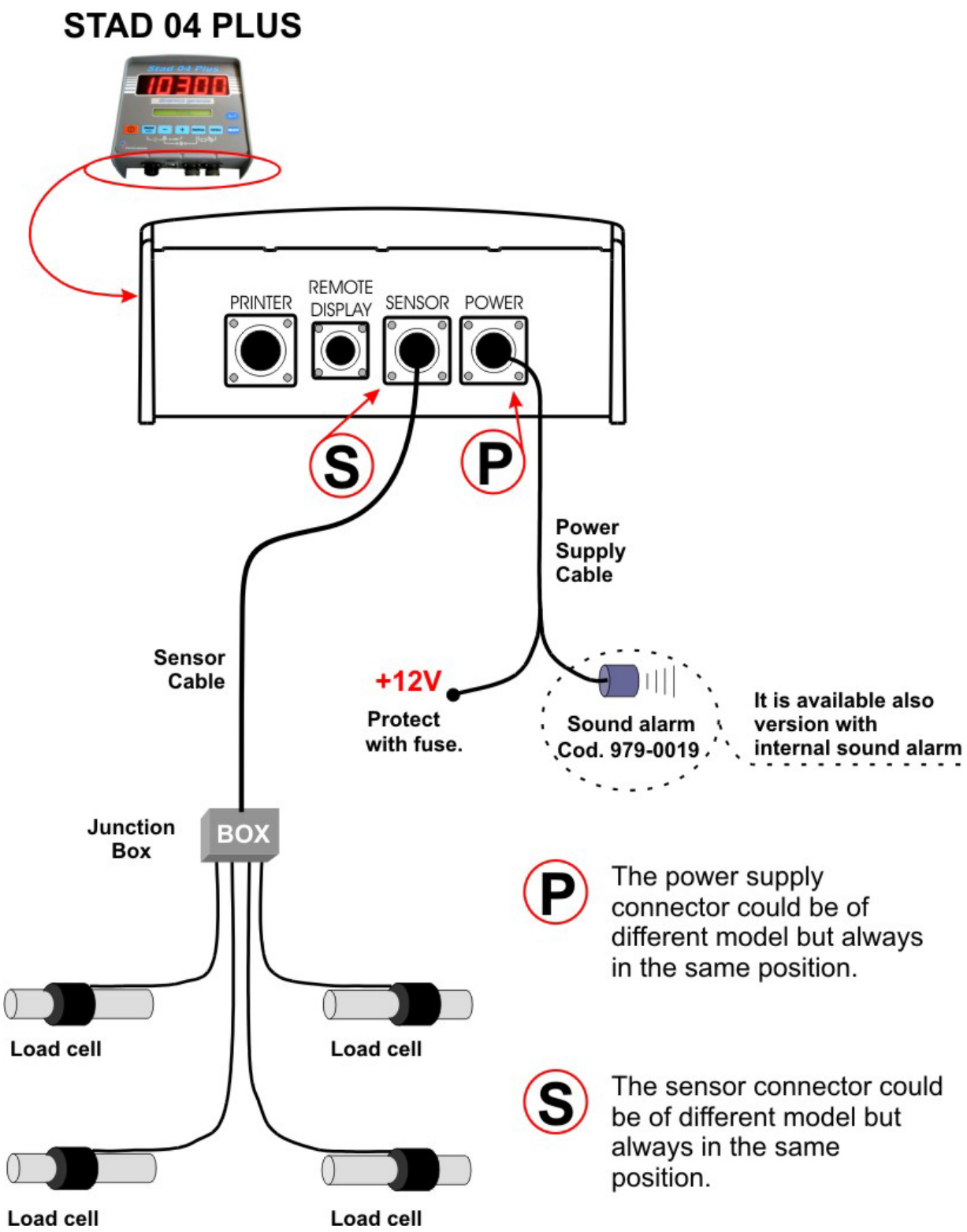
CONFIGURATION



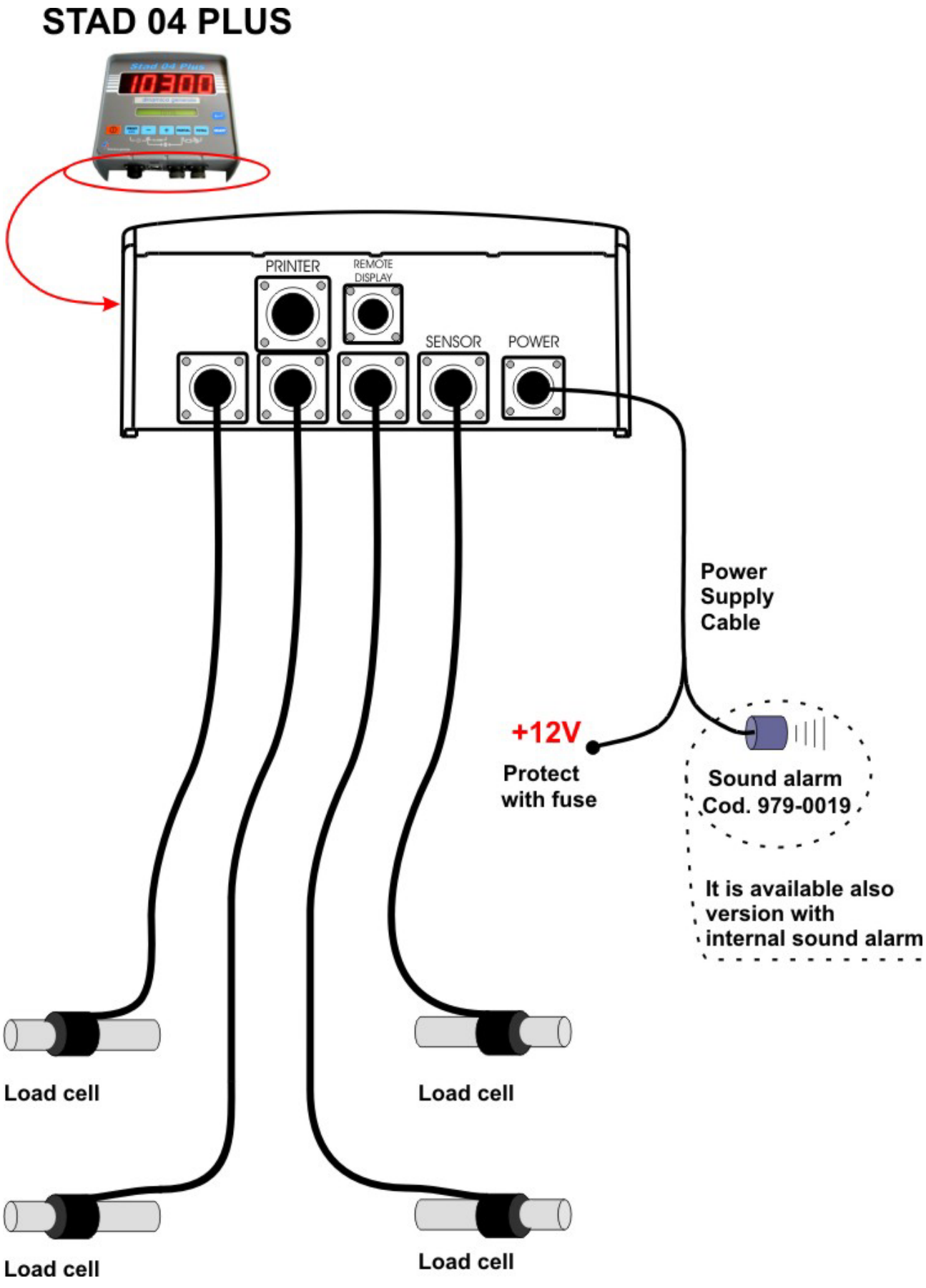
1. **ON /OFF key.**
2. **Connectors.**
3. **Function and setting key.**
4. **16 LCD alpha-numeric types 7.5 mm high with back light.**
5. **5-digit high-efficiency red LED diodes 40 mm high.**
6. **Fixing support.**
7. **Identification label.**

CONNECTIONS SCHEME

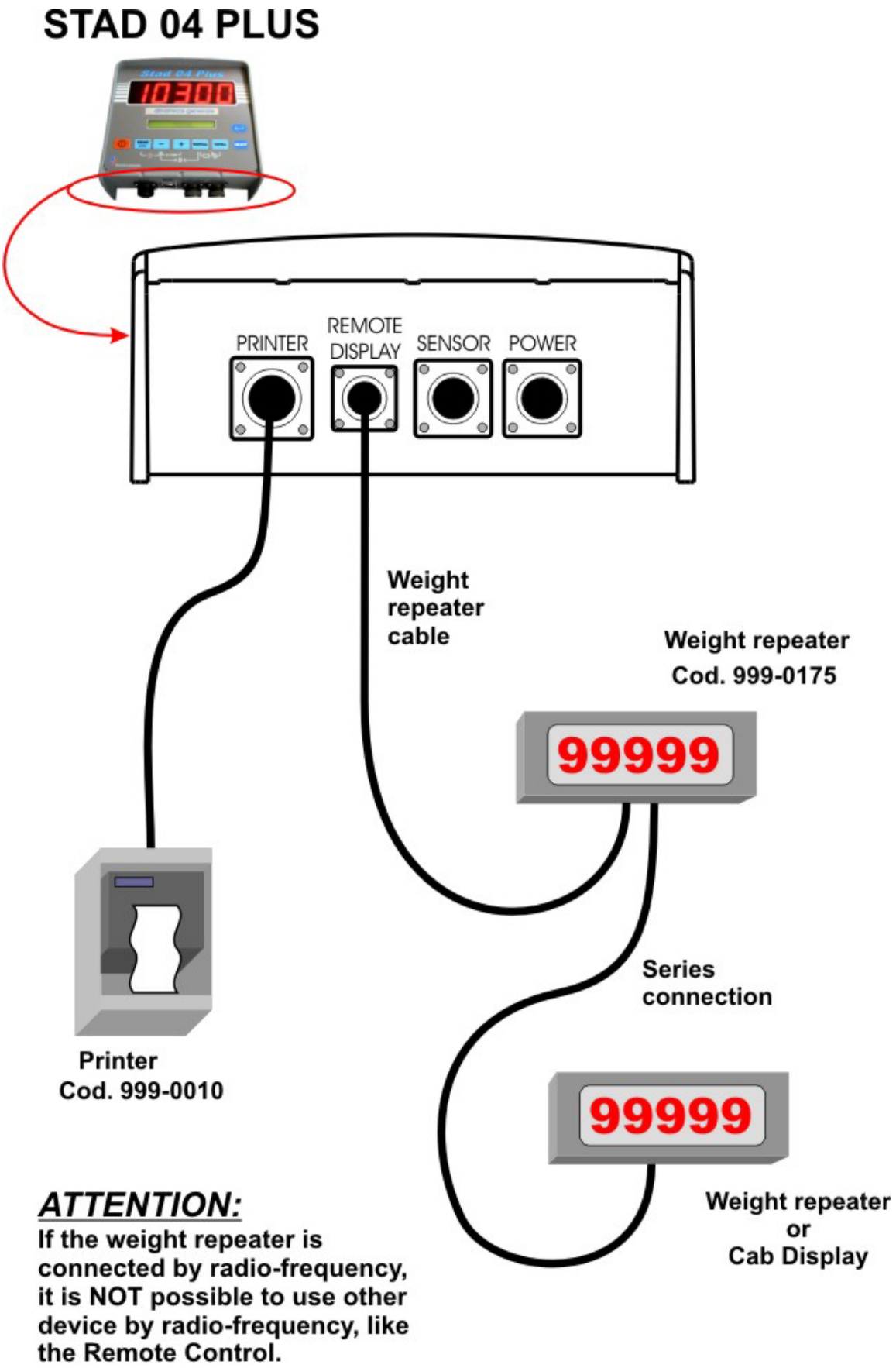
Power and sensor connection (system with junction box)



Power and sensors connection (system without junction box)



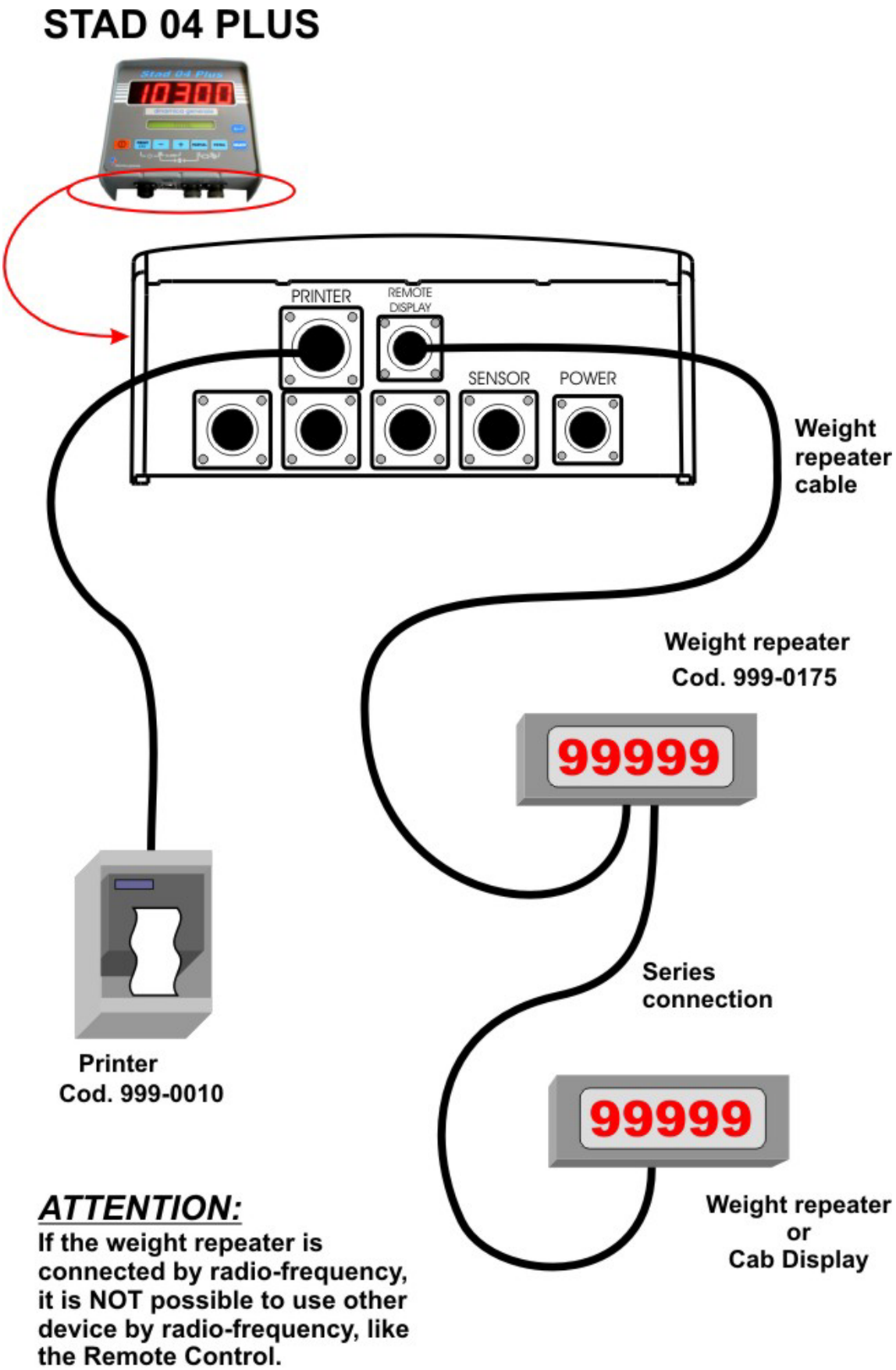
Accessories connection (system with junction box)



ATTENTION:

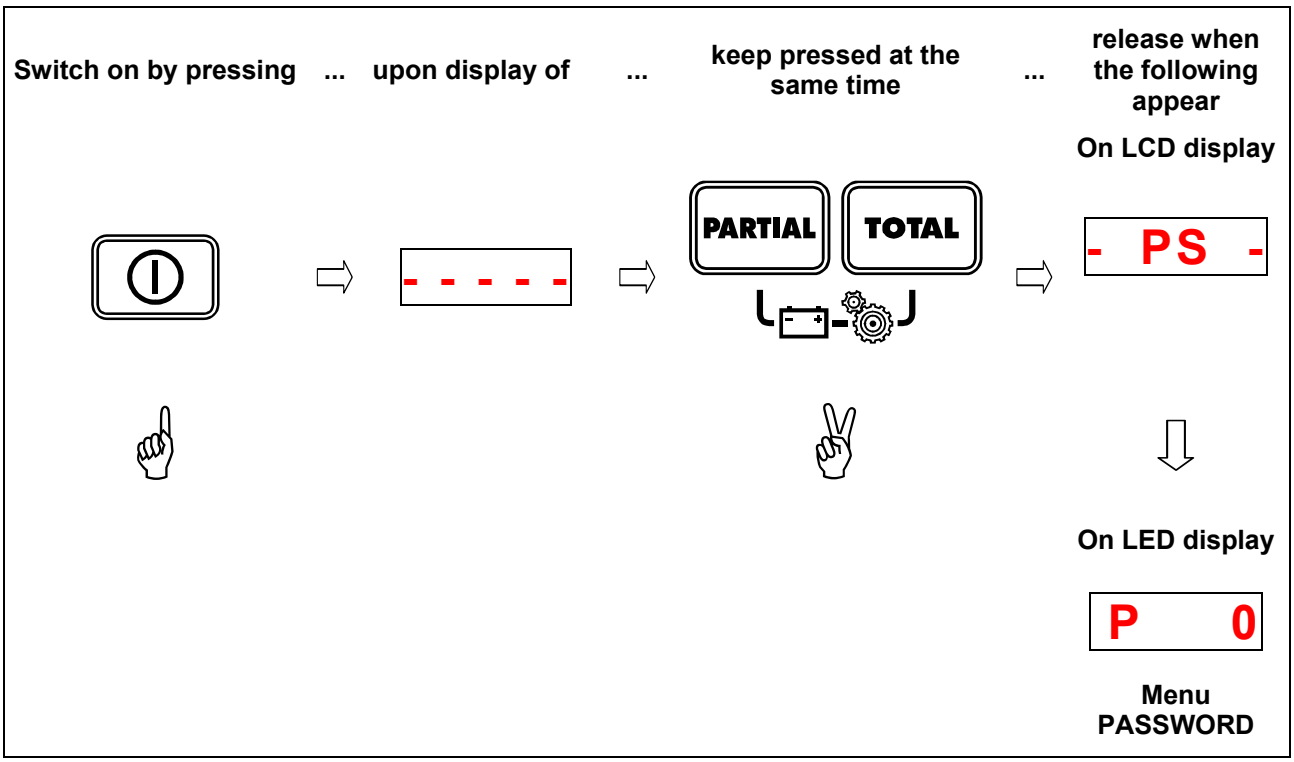
If the weight repeater is connected by radio-frequency, it is NOT possible to use other device by radio-frequency, like the Remote Control.

Accessories connection (system without junction box)

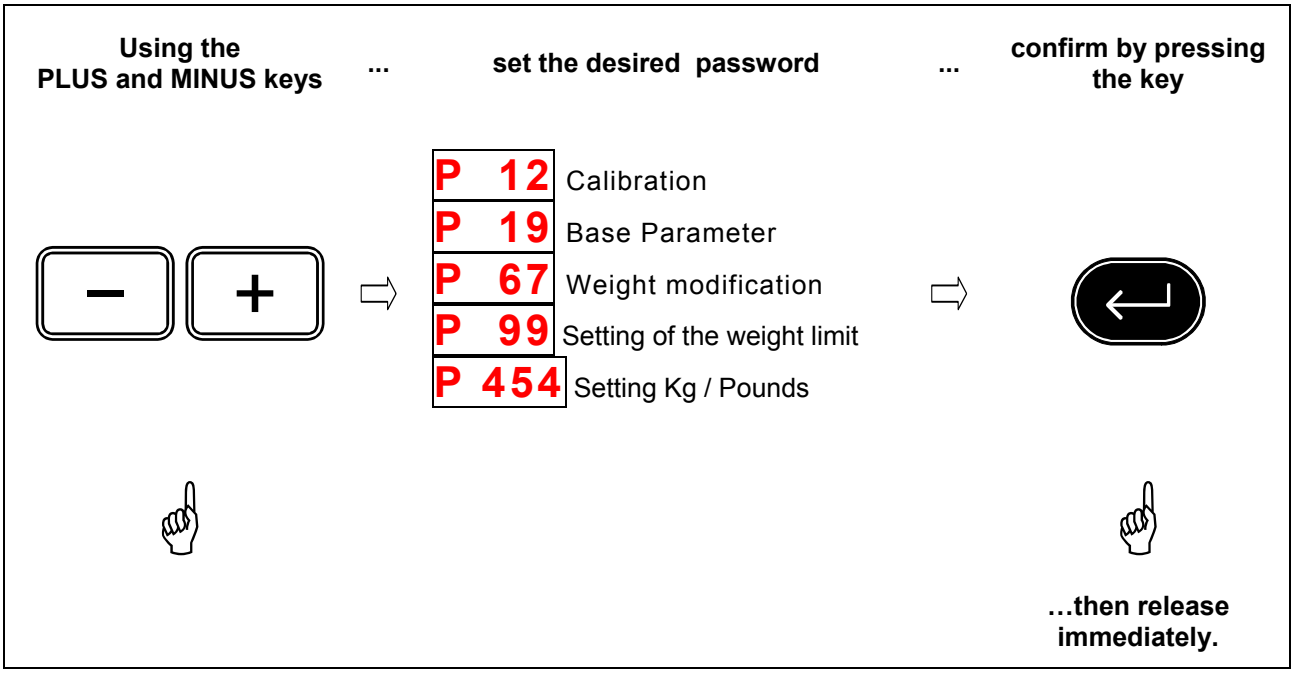


SETTING OF THE PARAMETERS

ACCESS TO THE PASSWORD MENU



SETTING THE PASSWORD



TO EXIT THE PASSWORD MENU

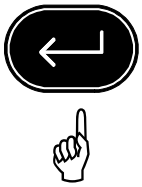
Set the password ZERO

On LCD display

On LED display

...

Press the key



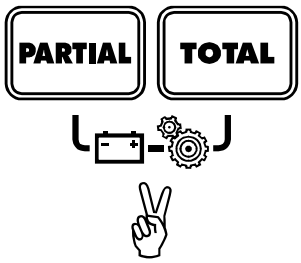
… then release immediately.

CALIBRATION – Password 12 – "– CAL –"

Set the desired calibration by using the PLUS and MINUS keys

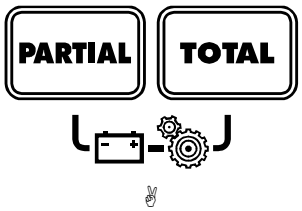
...

confirm the choice by pressing at the same time



… then release immediately.

BASE PARAMETERS – Password 19 –

To change the set values, use the PLUS and MINUS keys	...	To confirm the change press at the same time
	⇨	
		… then release immediately.

to exit ,it is necessary to pass all the voices in succession

- MOT -	**Motion** (Default:250)	MOTION is an alarm that signals sudden weight changes that can damage the system. If it activates check the installation and state of the weight system and the calibration settings.
- DI -	**Resolution of the weight visualisation** (Default:2)	The setting up of the division of the Kg. to be displayed can be set at 1, 2, 5 or 10 Kg always by pressing the PLUS and MINUS keys.
- PAL -	**Weight deviation alarm (%)** (Default:15)	The setting of the percentage of weight deviation to activate the sound alarm which controls the weighing. By setting 15, the alarm will be activated by the deviation of 15% of the programmed weight This is the pre-alarm phase and the sound signal is working in an intermittent way.
- AT -	**Alarm time** (Default:7)	The programming of the sound alarm time which controls the weighing The set number corresponds to the duration of the sound alarm, which is expressed in seconds and starts when the programmed setting is reached.

to exit ,it is necessary to pass all the voices in succession

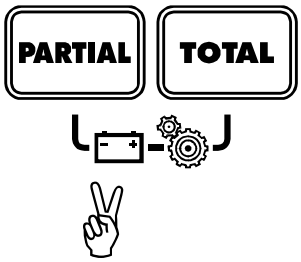
- FI -	**Setting up of filter to stabilize weight reading** (Default:4)	The setting of a filter which allows a more rapid or slower display of the weight. At low settings, the display of the weight will be very fast and sensitive to even the slightest variation. At high settings, the weight display will be more stable and less sensitive to variation. Recommended setting = 4 or 5.
- AUTO -	**Progression of components** (Default:Yes)	Progression of the components (in the programmed loading) and of the unloading points (in programmed unloading). By setting "**AUTO = 1**" the progress from one component to another (or from the unloading point to the following one) will be automatic. By setting "**AUTO = 0**" the progress will be manual. The operation is confirmed by pressing "ENTER". The setting of “0” or “1” values is always carried out by pressing PLUS and MINUS keys.
- PS - **On LCD display …**	**Press ENTER to exit.**	
- 0 - **On LED display …**		

WEIGHING MODIFICATION(-10% ÷ +10%) – Password 67 – "– CPC –

Select the percentage of weight modification (-10% ÷ +10%) by using the PLUS and MINUS keys

...

Confirm the choice by pressing at the same time



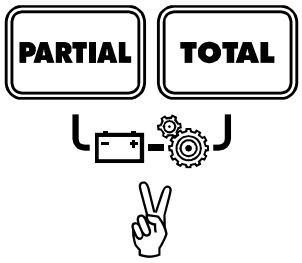
… then release immediately.

SETTING OF THE WEIGHT LIMIT (max=79999) - Password 99 – "- OF-"

Set up the weight limit by using the PLUS and MINUS KEYS

...

Confirm the choice by pressing at the same time



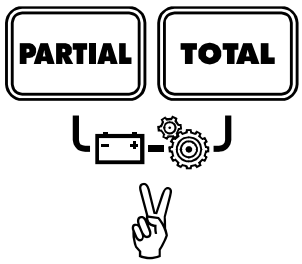
…then release immediately.

SETTING OF THE UNIT OF MEASUREMENT - Password 454 – "-UM-"

Set 0 or 1 value with the PLUS and MINUS keys:
0 = To display weight in kilograms (Kg)
1 = To display weight in pounds (Lb)

…

Confirm your choice by pressing at the same time



…then release immediately.

ATTENTION:

By changing the value of this password, weight will be re-calculated automatically by the system. The weight system will modify the calibration value according to the unit of measurement desired.
The unit of measurement (Kg or Lb) will be indicated next to the weight value on the print-out.

ENGLISH

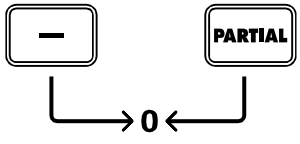
USE OF THE INSTRUMENT

SWITCH ON

Switch-on the equipment by pressing ⏻ wait for r..XXX to appear, then - - - - - and XXXX (a weight value).

ZEROING

If the instrument indicates weight values superior to 14÷20 kg, hold the MINUS and PARTIAL keys pressed at the same time until the message “End” is displayed



PARTIAL / TOTAL (NET / GROSS)

The system allows consecutive partial weighing:

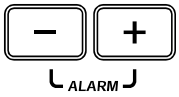
a) After zeroing the system, each time that the PARTIAL key is pressed, the display will show the value“0” in order to have a precise reference of the load weight (net): the activation of Partial weighing is signaled when four dots light up.

b) Once all the partial weighing has been executed, press TOTAL to display the total weight loaded (gross weight).

LOAD WITH ALARM

c) Switch on the instrument and zero the system.

d) Press at the same time the PLUS and MINUS keys.



e) When it is ALARM is displayed on the LCD display, release the keys.

f) Once 0. appears on the LED display, set the weight by pressing first the PLUS key and then the MINUS key.

g) Confirm the set weight by pressing the PARTIAL key before loading (the weight to be loaded will be underlined by 4 little flashing dots). Upon reaching 85% of the load, the sound alarm will start ringing intermittently; at 100% the sound will be continuous. The weight will be displayed as it decreased.

h) After 5 seconds the scale automatically passes to the total weight.

i) Repeat the same steps for each component to be loaded starting from point b.

UNLOAD WITH ALARM

Follow the same procedure of the LOAD WITH ALARM from point 4b.
The instrument automatically recognises the unloading phase.

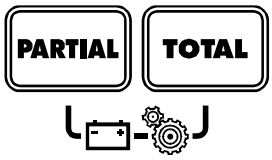
NOTE 1: if an alarm weight has already been set and, during transfer of the instrument, the weight changes, it is possible to reset it by pressing in first “TOTAL” then “PARTIAL”

NOTE 2: if the instrument is switched off with a set alarm weight, this value is set at zero.

ADDITIONAL FUNCTIONS

BATTERY CONTROL

Hold pressed the PARTIAL and TOTAL keys at the same time to display the state of charge of the battery.

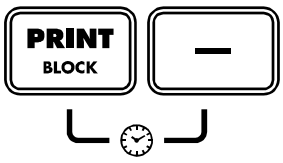


THE NEXT FUNCTIONS ARE AVAILABLE ONLY IF THE INSTRUMENT IS EQUIPPED TO BE CONNECTED TO THE PRINTER (FULL VERSION).

HOURS and MINUTES

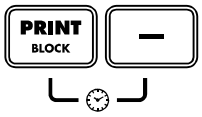
DISPLAY

Keep pressed at the same time PRINT and MINUS keys, hour and date will be shown on the display



SETTING

After switching on, wait … - - - - - , then press the keys …



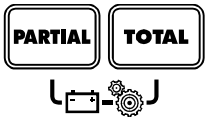
In sequence the LCD display shows:

Hour	[0 – 23]	“Value”,
Min.	[0 – 59]	“Value”,
Day	[1 –31]	“Value”,
Month	[1 – 12]	“Value”,
Year	[0 – 99]	“Value”,

The value will be displayed also on the LED display.

Set any parameter using the – + keys.

Confirm any parameter pressing …



… the scale will automatically go to normal working mode.

PRINT

Press the PRINT key in order to print the displayed weight.

It is not enabled without the printer.

PROGRAM MANAGEMENT

PROGRAMMING OF THE RECIPES / UNLOADING PROGRAMS

Using the SELECT key, set on "PROG. R 1"

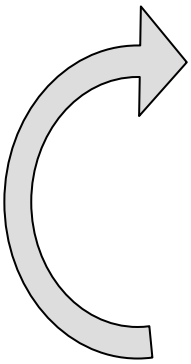
with the − + keys select the program to set (or to change) – 10 prog. -

confirm the choice pressing ↵ key.

with the − + keys select the "COWS"

Note: with "COWS = 0", you program for TOTALS (in kg)

confirm pressing ↵ key.



with the − + keys, insert the weight relative to the indicated component displayed in the centre of the LCD display,

confirm by pressing ↵ key.

Note: The component not used must be set to "0.0 Kg".

REPEAT for all the 12 components

Note.: see table 1 for programming the maximum value for component and program.

With the printer, it is possible to print the recipe by pressing the PRINT BLOCK key.

Once the last component is programmed, the TOTAL OF THE PROGRAM is displayed

confirm by pressing ↵ key.

To return to the SELECT menu, press the SELECT key.

TABLE 1

Kind of program	Max value for component	Max total for program	Error message**
Per Cows	65	65.000	- HHH -
Per Totals	6500	65.000	- HHH -

**When programming a component the ERROR message appears when the total of the program (automatically calculated by the scale) exceeds the value 65.000

Clicking on SELECT the value of the last programmed component is deleted, the program is stored and the system returns to the selection menu.

PROGRAM EXECUTION

Using the 

key set on "EXEC.R 1"

with the  **keys select the program you want to execute,**

confirm the choice pressing  **key.**

If the program is programmed for COWS:

with the  **keys you can change the "COW number"**

confirm by pressing  **key.**

If the program is programmed for TOTALS:

leave the COWS number to "0" and confirm by pressing  **key.**

You can move in correspondence to the component to load with the  **keys.**

Once you have finished loading the printer automatically starts.

The microcomputer returns to MANUAL.

NOTE

WEIGHING BLOCK

A. If during a loading execution you want to stop (block of the weighing), press the PRINT BLOCK key.
In order to re-start the execution, press the same key again.

COMPONENT MANAGEMENT DURING THE EXECUTION

B. Passing to the next or to the previous component by using the PLUS and MINUS keys, you do not store any weighing.

C. If you press the PLUS key when the last component is set, the scale considers the execution ended and returns to total weight.

D. You can load entirely the displayed component waiting for the automatic passage to the next one.

E. You can load only a part of the displayed component confirming the partial weighing with ↵ key.
(in this case the partial weighing is stored and counted)

TOTAL VISUALIZATION DURING THE EXECUTION

F. During the loading execution you can display the total weight charged by pressing the TOTAL key.

To return in the loading execution press again the TOTAL key.

OPTIONAL ACCESSORIES

PRINTER – Cod. 999-0010

Stad 04	Stad 04 Plus	Win Scale	Top Scale
O	√	√	√

- It is connectable to every STAD microcomputer.
- Possibility to define the customer's headline, name, address, company title etc...
- Watertight case IP65 for critical environment.
- Low cost of maintenance.
- Operating temperature from 0 to 50°C
- Thermal Roll paper, width 57,5 mm, max. diameter 50 mm
- Print module with thermal impact
- In accordance with EEC directives

- During manual working, it is possible to print the current weight value (TOTAL and/or PARTIAL) with date and time by pressing the PRINT key
- During the execution of loading or unloading with program, the RECIPE or the UNLOADING program are automatically printed at the end of the process.
- As for the printing of LOADING and UNLOADING programmes stored in the weight system see the specific instructions in the user's manual of the microcomputer in use
- In order to get the advancing of the paper by hand, press the Feed key on the printer panel.

WEIGHT REPEATER – Cod. 999-00175

Stad 04	Stad 04 Plus	Win Scale	Top Scale
√	√	√	√

Weight repeater with big digits connectable to every microcomputer

- Dimensions 281 x 125 x 90.
- High efficiency red "led diodes" display 60 mm high
- Display visibility over 20 meters
- Weight reading up to 99.999 Kg / Pounds
- ABS with IP66 protection, noise shielded
- Simple connection direct to microcomputers DINAMICA GENERALE
- Every datum which is displayed by the microcomputer is repeated on the Weight Repeater.
- Possibility to convert a wire communication to a wireless one at any time.
- Possibility of a series connection of more devices.

DATA TRANSFER MANAGEMENT

Stad 04	Stad 04 Plus	Win Scale	Top Scale
O	-	√	√

Data transfer on the Cartridge, from the microcomputer to the PC and vice-versa.

- With Data Transfer installed on your weight system, you can store all work phases and then check and analyse them, optimising consumption, time and costs.
- 6 months continuous acquisition.
- Programming for 99 Recipes each with 24 components.
- Storage and costs control and statistics analysis.

RADIO CONTROL – Cod. 979-0063

Stad 04	Stad 04 Plus	Win Scale	Top Scale
O	O	O	-

Radio Frequency communication

- Repeat all the functions of the microcomputer (except ON / OFF).
- Range up to 25 meters.
- Battery type AAA 1,5 Volt.
- Autonomy 120 days (normal function).

Dina TEL 2 – Cod. 999-0248

Stad 04	Stad 04 Plus	Win Scale	Top Scale
-	-	√	√

Radio Frequency communication

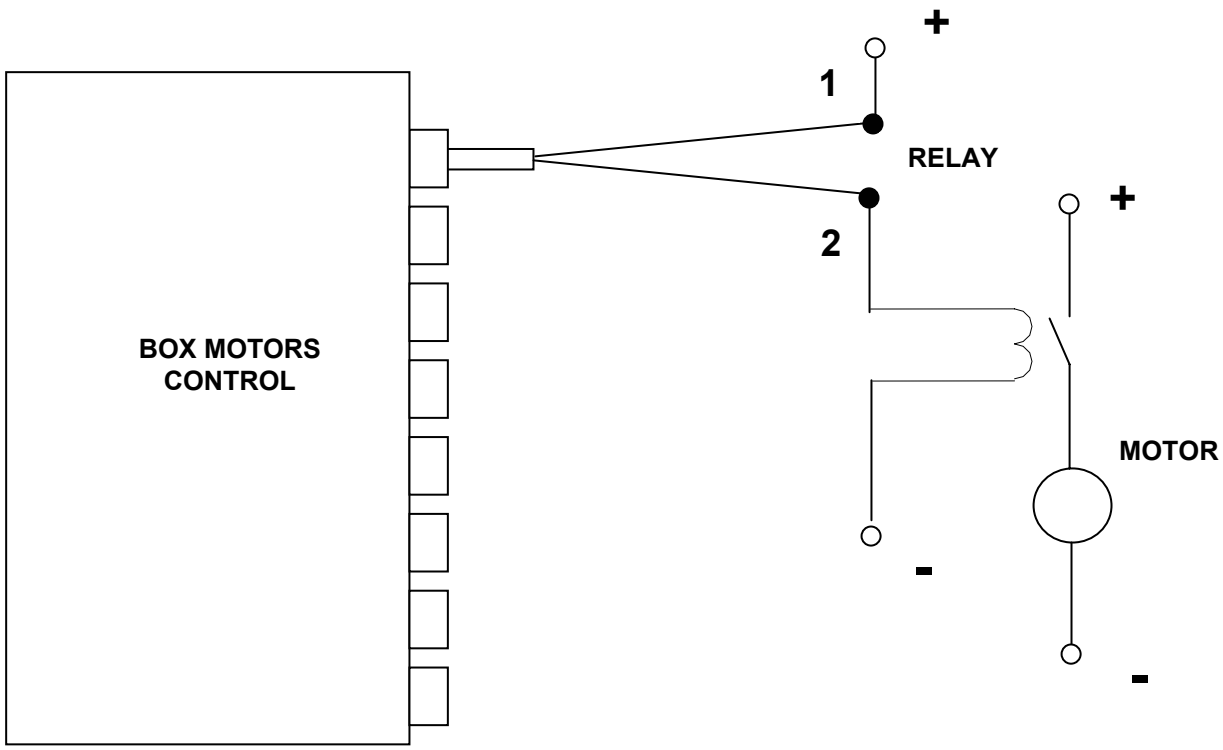
- Hand held control for remote control of the weight system up to 25 metres from the microcomputer, with possibility to execute the main functions:
  - Tare of the system;
  - Total and partial weighing;
  - Execution of loadings;
  - Visualisation of weight and of functions on graphical display.

MOTORS CONTROL – Cod. 979-0077

Stad 04	Stad 04 Plus	Win Scale	Top Scale
-	-	O	O

The motor control card allows control of:
- 8 or 16 LOAD motors
- 8 or 16 UNLOAD motors
- 8 LOAD motors and 8 UNLOAD motors

Each output on the motor card is provided with a driving relay (1A – 12V contact) and with a led indicating its activation.



The board motor control is connected to Top Scale through the same connector for Weight Repeater or Dina-Tel / Palm (see the manual of each microcomputer for specific information).
To use the motor control board it is necessary to set the broadcast communication protocol with the following password (in Top Scale configuration menu 6):

- Password 1999 → Weight repeater with simple protocol? NO

To set and use correctly the Motor Control board see the correspondingt manual of this device.

GSM CONNECTION

Stad 04	Stad 04 Plus	Win Scale	Top Scale
-	-	-	O

The GSM communication module allows Dina Service remote service center to:

- Check the status of Top Scale installed in customers' farm
- Work on configuration parameters of Top Scale in case the customer needs it

The GSM communication module is connected to specific connector through GSM and Can Bus (see the manual of each microcomputer for specific information).

IRM ANALYSIS SYSTEM

Stad 04	Stad 04 Plus	Win Scale	Top Scale
-	-	-	O

Besides the execution of the normal weighing operations with/without loading/unloading programs, the Top Scale microcomputer can also have a accessory system I.R.M. (Intelligent Ration Management).

The purpose of the IRM system is:

- To analyse the alimentary components that have to be loaded according to the loading recipes
- Modulate the weight of the components set in the recipes, according to the values of chemical parameters requested by the nutritionist that the breeder is following.

In particular there are two types of IRM systems:

- "Advanced" IRM that enables analysing of the components as regards only the parameter HUMIDITY
- "Professional IRM " that enables analysing of the components as regards the chemical parameters HUMIDITY, STARCH, PROTEIN, FIBER ADF, FIBER NDF, ASHES

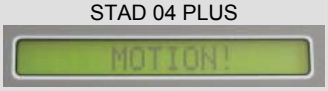
In order to set up the IRM system on the Top Scale microcomputer you need to enter the password: Password 113 → IRM setting parameters.

For further information about the setting and the correct use of the IRM system please see the appropriate manual supplied with this accessory device.

Legend:

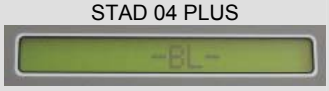
√	**Standard accessory interface**
O	**Accessory interface on request**
-	**Accessory interface not available**

SEARCHING FOR FAULTS

MOTION ALARM		
DISPLAY	**CAUSE**	**SOLUTION**
STAD 04  STAD 04 PLUS  WIN SCALE  TOP SCALE	**Cause1** **The signal coming from the sensors shows sudden and important weight change.** **Cause2** **A connection cable or a load cell does not work correctly.**	**Solution1:** **do the TARE.** **Solution2:** **do the calibration with password 12 and then do the TARE.** **Solution3:** **do the check described as follows.**

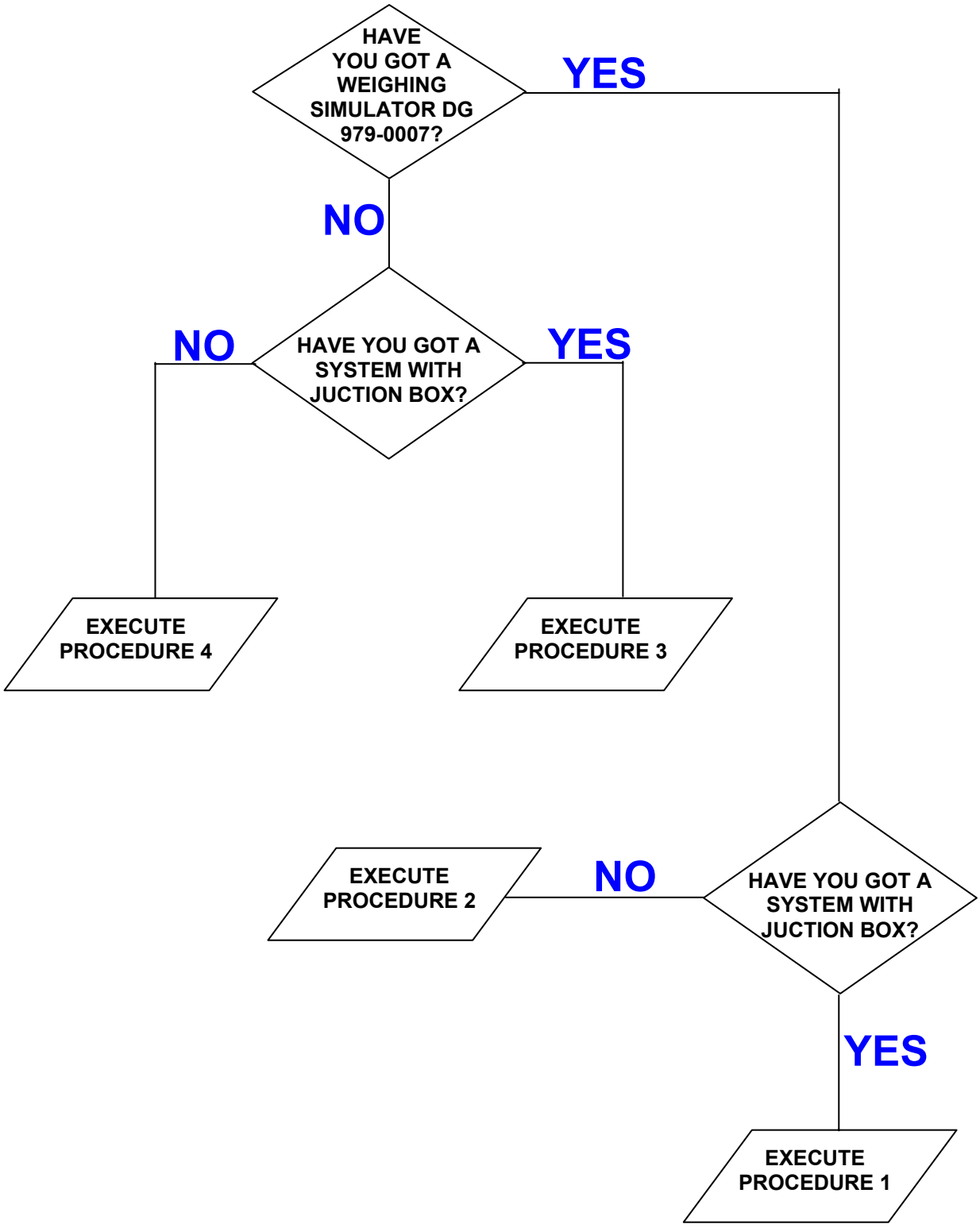
IT DOES NOT SWITCH ON		
DISPLAY	**CAUSE**	**SOLUTION**
OFF	The power supply does not reach the microcomputer.	**Solution1:** **check very carefully the power connection cable.** **Solution2:** **check the efficiency of the power supply system (minimum 9,5 Volts / 0.5 A).** **Solution3:** **contact the service department.**

OVERRANGE ALARM		
DISPLAY	**CAUSE**	**SOLUTION**
STAD 04 STAD 04 PLUS   WIN SCALE  TOP SCALE	**Cause1** **The microcomputer can not read the signal of the load cells: the load cell connection cable does not work correctly.** **Cause2** **A connection cable or a load cell does not work correctly.** **Cause3** **The signal coming from the sensors is out of the valid "RANGE" (see the password 99).**	**Solution1:** **do the TARE.** **Solution2:** **do the calibration with password 12 and then do the TARE.** **Solution3:** **do the check described as follows.**

LOW BATTERY ALARM		
DISPLAY	**CAUSE**	**SOLUTION**
STAD 04  STAD 04 PLUS  WIN SCALE  TOP SCALE	**The microcomputer power is lower than the fixed value.**	**Solution1:** **check the efficiency of the battery.**
		Solution2: **check the CABLES that supply the power from the BATTERY to the MICROCOMPUTER.**
UNSTABLE WEIGHT		
DISPLAY	**CAUSE**	**SOLUTION**
The weight continues to oscillate between tens or hundreds kg	**The signal coming from the sensors is jammed: a cable or a load cell does not work correctly.**	**do the check described as follows.**

CHECK THE DAMAGED COMPONENTS

DEFINE THE TEST PROCEDURE:



PROCEDURE 1 Ref. YES / YES

Check the working of the scale

a) Switch off the microcomputer.

b) Disconnect the sensor cable from the microcomputer.

c) Connect the WEIGHT SIMULATOR (calibrator) with the lever in position “Var” (varying) to the SENSORS connector of the scale.

d) Switch on the microcomputer.

e) Do the TARE (for the execution see the microcomputer manual).

f) The scale has to become stable displaying “0” kg.

g) Verify the correct functioning of the scale by turning the WEIGHT SIMULATOR knob (turning clockwise increases the weight, counter-clockwise decreases the weight).

RESULT	CAUSE	ACTION
Zero stable and correct functioning	The microcomputer is **NOT** damaged	Proceed with the other tests
Zero NOT stable or NOT correct funcitoning	The microcomputer is damaged	Contact the service department.

Check the functioning of the SENSOR CABLES and of the JUNCTION BOX

a) Switch off the microcomputer.

b) Open the JUNCTION BOX.

c) Disconnect the sensors, leaving only the cable that reaches the weight system (SENSOR CABLES).

d) Connect the WEIGHT SIMULATOR (979-0007) in place of one of the sensors using the proper adaptor.

e) Switch on the microcomputer.

f) Do the TARE (use the microcomputer’s manuals for instructions).

g) The scale has to become stable displaying “0” kg.

h) Check the correct functioning by turning the of the WEIGHT SIMULATOR knob (turning clockwise, the weight increase, counter clockwise, the weight decreases).

REPEAT THE TEST CONNECTING THE WEIGHT SIMULATOR IN PLACE OF EACH SENSOR.

RESULT	CAUSE	ACTION
Zero stable and correct functioning	The sensor cable and the junction box are **NOT** damaged	Proceed with the other tests
Functioning not correct only in some junction box connectors.	The junction is damaged or wet	Try to dry the junction box and repeat the test; in case you do not have success, replace the junction box.
Zero NOT stable or NOT correct functioning in all the box’s connectors.	The senso cable is damaged	Replace the sensors’ cable

Check the working of the SENSORS

a) Open the JUNCTION BOX.

b) Just leave connected one sensor and the cable to the scale.

c) Do the TARE (use the microcomputer's manuals for instructions).

d) The scale must steady, viewing "0" Kg.

e) Verify the right working, trying to load weight on the connected sensor (the displayed weight is not important, but it must be steady).

REPEAT THE TEST CONNECTING ONE AT ONCE THE SENSORS.

RESULT	CAUSE	ACTION
Zero and weight stable.	The sensor is **NOT** damaged	Go on with the other sensors.
Zero and weight not stable.	The sensor **is** damaged	Contact the assistance service.

PROCEDURE 2 Ref. YES / NO

Check funcitoning of the scale

a) Switch off the microcomputer.
b) Disconnect all the sensors
c) Connect the WEIGHT SIMULATOR with the lever in “Var” position to one of the sensor connectors of the weighing system.
d) Switch on the microcomputer.
e) Do the TARE (use the microcomputer’s manuals for instructions).
f) The scale must steady, viewing “0” Kg.
g) Verify the right working, turning the knob of the WEIGHT SIMULATOR (clockwise, the weight increase, anticlockwise, the weight decreases).

REPEAT THE TEST CONNECTING THE WEIGHT SIMULATOR AT THE PLACE OF EACH SENSOR.

RESULT	CAUSE	ACTION
Zero stable and correct working of all the connectors	The sensor is **NOT** damaged	Go on with the other tests.
Zero not stable and incorrect working of all the connectors	The sensor **is** damaged	Contact the assistance service.

Check the working of the SENSORS

a) Switch-off the microcomputer.
b) Just leave one sensor connected to the scale connector.
c) Switch-on the microcomputer.
d) Do the TARE (use the microcomputer’s manuals for instructions).
e) The scale has to be stable, displaying “0” Kg.
f) To check the right working, by trying to load weight on the connected sensor (the displayed weight is not important, but it must be steady).

REPEAT THE TEST CONNECTING THE SENSORS ONE AT A TIME.

RESULT	CAUSE	ACTION
Zero and weight stable.	The sensor is **NOT** damaged	Proceed with the other sensors.
Zero and weight not stable.	The sensor **is** damaged	Proceed with the other sensors. Contact the assistance service.

PROCEDURE 3 **Ref. NO / YES**

Check the functioning of the SYSTEM and of the SENSORS

a) Switch off the microcomputer.
b) Open the JUNCTION BOX.
c) Just leave connected one sensor and the cable to the scale (SENSORS' CABLE)
d) Switch on the microcomputer.
e) Do the TARE (use the microcomputer manuals for instructions).
f) The scale has to be stable, displaying "0" Kg.
g) Check the correct functioning by trying to load weight on the connected sensor (the displayed weight is not important, but it must be steady).

REPEAT THE TEST CONNECTING ONE AT ONCE EACH SENSOR IN ITS FIRST POSITION.

RESULT	CAUSE	ACTION
Zero and weight stable in all the connectors	The system works correctly.	Connect everything and try again with normal use.
Zero and weight **NOT** stable only in some connectors of the junction box	The box and the sensors connected to those connectors are damaged.	Connect a working sensor to the "critical" connector; repeat the test and check the two following lines.
With a new sensor: zero and weight **NOT** stable.	The junction box is damaged.	Replace the junction box and repeat the tests.
With a new sensor: zero and weight stable.	The sensor previously connected is damaged.	Contact the assistance service
Zero and weight **NOT** stable in all the connectors of the junction box	The sensor cable or the microcomputer is damaged	Replace the sensor cable, repeat the tests and check the following line.
Zero and weight **NOT** stable yet.	The microcomputer is damaged.	Contact the assistance service

PROCEDURE 4 **Ref. NO / NO**

Check the functioning of the SYSTEM and of the SENSORS

a) Switch off the microcomputer.

b) Just leave connected one sensor to the scale

c) Switch on the microcomputer.

d) Do the TARE (use the microcomputer's manuals for instructions).

e) The scale has to be stable, displaying "0" Kg.

f) Check the correct functioning by trying to load weight on the connected sensor (the displayed weight is not important, but it must be steady).

REPEAT THE TEST CONNECTING EACH SENSOR, ONE AT A TIME, IN THE ORIGINAL CONNECTOR .

RESULT	CAUSE	ACTION
Zero and weight of a sensor **NON** stable.	The sensor is damaged	Contact the assistance service
Zero and weight of all the sensors on the same connector **NOT** stable.	The microcomputer is damaged.	Contact the assistance service
Zero and weight stable with all the sensors in the same connector.	None.	Repeat the test with another scale connector.
Zero and weight stable with all the sensors in all the connectors.	The system works correctly.	Connect everything and try again in normal use

CE CONFORMITY DECLARATION

Company: Dinamica Generale srl

Address: Via Mondadori, 15
46025 Poggio Rusco (MN)
ITALY

WE DECLARE THAT THE PRODUCT:

Model:	All weighing microcomputer Dinamica Generale
Description:	Simple and programmable weighing system
Options:	All the configuration

is in conformity WITH all the essential requirements of European Directive 2004/108/EC, making with the following directives:

EMC for emission:

EN 61326-1
EN 55011(1999) – A1(2000) – A2(2003)

EMC for immunity:

EN 61000-4-2 (96) – A1 (99) – A2 (01)
EN 61000-4-3 (97) – A1 (02)
EN 61000-4-4 (96) – A1 (01) – A2 (01)
EN 61000-4-5 – (1997)
EN 61000-4-6 (97) – A1 (01)
EN 61000-4-8 (97) – A1 (01)

The product was tested in a typical configuration with "Dinamica Generale s.r.l." load cells.

POGGIO RUSCO, 28/08/2006

WARNING

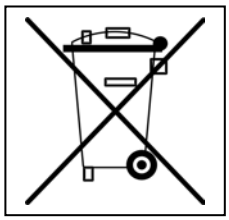
The power supply must be connected directly to the battery or to a regulated feeder.
If it is not the case, DG is not responsible for damages to the micro computer.

Disconnect the power supply cable from the micro computer when the battery is undergoing recharge.
If it is not the case, DG is not responsible for damages to the micro computer.

Disconnect all lines from the local plant before undertaking welding on the lorry.
If it is not the case, DG is not responsible for damages to the micro computer.

For a correct functioning, please make sure that the battery has always a higher voltage than 10,5 Volt.

This marking on the product or on its packaging illustrates that, under European Directive 2002/96/EG governing used electrical and electronic device, this product may not be disposed of with normal household waste. You are responsible for disposal of this equipment through a designated waste electrical and electronic equipment collection. To determine the locations for dropping off such waste electrical and electronic, contact your government office, the waste disposal organization that serves your household or the company at which you purchased the product..



Before cleaning the mixer wagon with jets of water under high pressure, protect the equipment from possible ingress of water. In addition, take great care not to subject the indicator, load cell, junction box, audible alarm, cables or any options to direct jets of water.

If the equipment needs to be cleaned, use a soft, damp, lint-free cloth. Never use sprays, solvents, abrasives, or sharp or pointed objects that could damage the indicator

GUARANTEE

The supplier guarantees, for 24 months from the delivery date, the good quality of materials used, the excellent construction and the steady functioning of the instrument they have manufactured and that bears the trademark or the production serial number. During the guarantee period the supplier undertakes to repair or replace, free supplier's head office, faulty parts due to poor materials or faulty construction, provided that such parts are delivered free port supplier's head office.
Shortcomings and defects due to incorrect use of instruments, inadequate maintenance, changes carried out without the supplier's approval, normal wear are not included in this guarantee.
Liability and compensations by the supplier due to direct or indirect damages to persons, objects or production, even as a consequence of faulty functioning of the supplied instruments or of material or construction defects, are not included in this guarantee.

NOTES:

Dinamica generale s.r.l.
Weight systems and automation

Via Mondadori, 15 – CAP. 46025
Poggio Rusco (Mantova) – Italy

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FAX ++39 (0) 386 – 51523

E-mail info@dinamicagenerale.com
Web www.dinamicagenerale.com

ISO 9001 : 2000 ISO 14001

Manual code: 985-0002

WARRANTY INFORMATION

1. EXCLUSIVE WRITTEN LIMITED WARRANTY

ALL PRODUCTS SOLD ARE WARRANTED BY THE COMPANY (4B COMPONENTS LIMITED, (4B) BRAIME ELEVATOR COMPONENTS LIMITED, AND (4B) S.E.T.E.M. Sarl HEREIN AFTER REFERRED TO AS 4B TO THE ORIGINAL PURCHASER AGAINST DEFECTS IN WORKMANSHIP OR MATERIALS UNDER NORMAL USE FOR ONE (1) YEAR AFTER DATE OF PURCHASE FROM 4B. ANY PRODUCT DETERMINED BY 4B AT ITS SOLE DISCRETION TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP AND RETURNED TO A 4B BRANCH OR AUTHORIZED SERVICE LOCATION, AS 4B DESIGNATES, SHIPPING COSTS PREPAID, WILL BE AS THE EXCLUSIVE REMEDY, REPAIRED OR REPLACED AT 4B'S OPTION.

2. DISCLAIMER OF IMPLIED WARRANTY

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Web: www.go4b.com	Web: www.go4b.com	Web: www.go4b.com

WHIRLIGIG®

UNIVERSAL SHAFT SENSOR MOUNT

4B ELEVATOR COMPONENTS LTD
625 ERIE AVE
MORTON ILL.
309-698-5611
www.go4b.com
SLIP SWITCH
M800V10F

Whirligig® Shown with M300 Slipswitch
(All Sensors Sold Separately)

U.S. Patent #6,109,120

INSTALLATION INSTRUCTIONS

OPERATION MANUAL

WHIRLIGIG - PART NO's. WG1-4B-1, WG1-4B-2, WG1-4B-4, WG1-4B-8

www.go4b.com

Congratulations on your purchase. 4B appreciates your business and is pleased you have chosen our products to meet your needs.

Please read in its entirety and understand the literature accompanying the product before you place the product into service. Please read the safety precautions carefully before operating the product. With each product you purchase from 4B, there are some basic but important safety considerations you must follow to be sure your purchase is permitted to perform its design function and operate properly and safely, giving you many years of reliable service. Please read and understand the Customer Safety Responsibilities listed below. Failure to follow this safety directive and the Operation Manuals and other material furnished or referenced, may result in serious injury or death.

SAFETY NOTICE TO OUR CUSTOMERS

A. In order to maximize efficiency and safety, selecting the right equipment for each operation is vital. The proper installation of the equipment, and regular maintenance and inspection is equally important in continuing the proper operation and safety of the product. The proper installation and maintenance of all our products is the responsibility of the user unless you have asked 4B to perform these tasks.

B. All installation and wiring must be in accordance with Local and National Electrical Codes and other standards applicable to your industry. (Please see the article "Hazard Monitoring Equipment Selection, Installation and Maintenance" at www.go4b.com.) The installation of the wiring should be undertaken by an experienced and qualified professional electrician. Failure to correctly wire any product and/or machinery can result in the product or machine failing to operate as intended, and can defeat its design function.

C. Periodic inspection by a qualified person will help assure your 4B product is performing properly. 4B recommends a documented inspection at least annually and more frequently under high use conditions.

D. Please see the last page of this manual for all warranty information regarding this product.

CUSTOMER SAFETY RESPONSIBILITIES

1. READ ALL LITERATURE PROVIDED WITH YOUR PRODUCT

Please read all user instruction and safety manuals to ensure that you understand your product operation and are able to safely and effectively use this product.

2. YOU BEST UNDERSTAND YOUR NEEDS

Every customer and operation is unique, and only you best know the specific needs and capabilities of your operation. Please call the 24-hour hotline at 309-698-5611 for assistance with any questions about the performance of products purchased from 4B. 4B is happy to discuss product performance with you at any time.

Correct installation of the product is important for safety and performance. If you have not asked 4B to perform the installation of the unit on your behalf, it is critical for the safety of your operation and those who may perform work on your operation that you select a qualified and competent electrical installer to undertake the installation. The product must be installed properly to perform its designed functions. The installer should be qualified, trained and competent to perform the installation in accordance with Local and National Electrical Codes, all relevant OSHA Regulations, as well as any of your own standards and preventive maintenance requirements, and other product installation information supplied with the product. You should be prepared to provide the installer with all necessary installation information to assist in the installation.

4. ESTABLISH AND FOLLOW A REGULAR MAINTENANCE AND INSPECTION SCHEDULE FOR YOUR 4B PRODUCTS

You should develop a proper maintenance and inspection program to confirm that your system is in good working order at all times. You will be in the best position to determine the appropriate frequency for inspection. Many different factors known to the user will assist you in declaring the frequency of inspection. These factors may include but are not limited to weather conditions; construction work at the facility; hours of operation; animal or insect infestation; and the real-world experience of knowing how your employees perform their jobs. The personnel or person you select to install, operate, maintain, inspect or perform any work whatsoever, should be trained and qualified to perform these important functions. Complete and accurate records of the maintenance and inspection process should be created and retained by you at all times.

5. RETAIN AND REFER TO THE OPERATION MANUAL FOR 4B'S SUGGESTED MAINTENANCE AND INSPECTION RECOMMENDATIONS

As all operations are different, please understand that your specific operation may require additional adjustments in the maintenance and inspection process essential to permit the monitoring device to perform its intended function. Retain the Operation Manual and other important maintenance and service documents provided by 4B and have them readily available for people servicing your 4B equipment. Should you have any questions, please call the free 24-hour hotline number (309-698-5611).

6. SERVICE REQUEST

If you have questions or comments about the operation of your unit or require the unit to be serviced please contact the 4B location who supplied the product or send your request via fax (309-698-5615) or call us via our 24-hour hotline number in the USA (309-698-5611). Please have available product part numbers, serial numbers, and approximate date of installation. In order to assist you, after the product has been placed into service, complete the online product registration section which is accessed via our website www.go4b.com.

INTRODUCTION

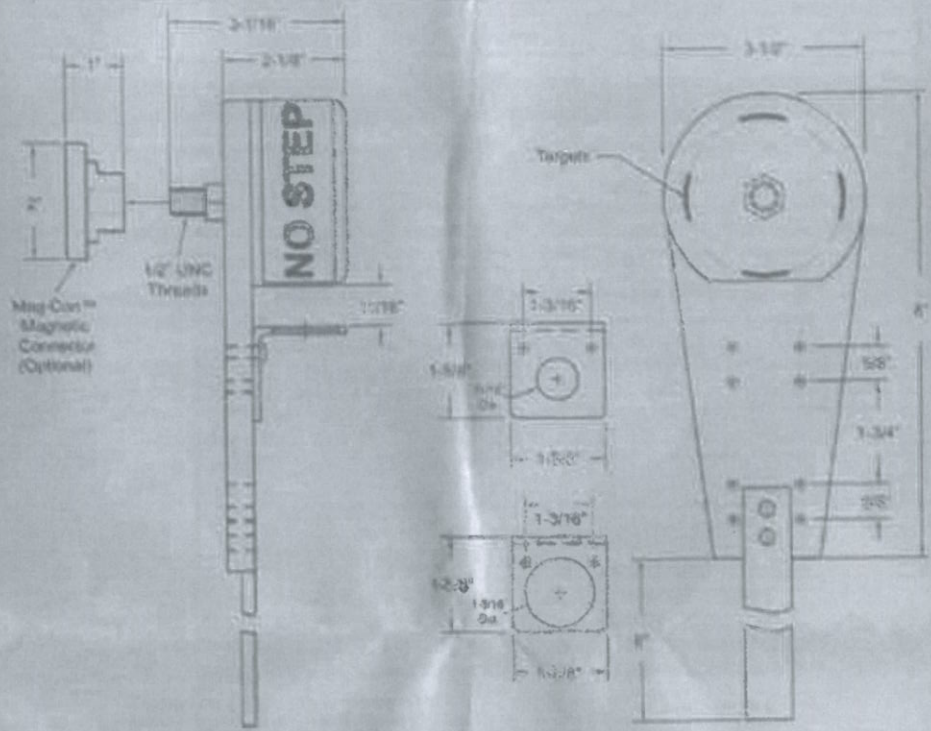
The Whirligig is a fully guarded target for easy mounting of motion sensors. It is a target, bracket and guard suitable for all industry standard cylindrical or DIN style inductive sensors including 4B's M100, M300, and M800 Elite speed switches or P100, P300 and P800 proximity sensors.

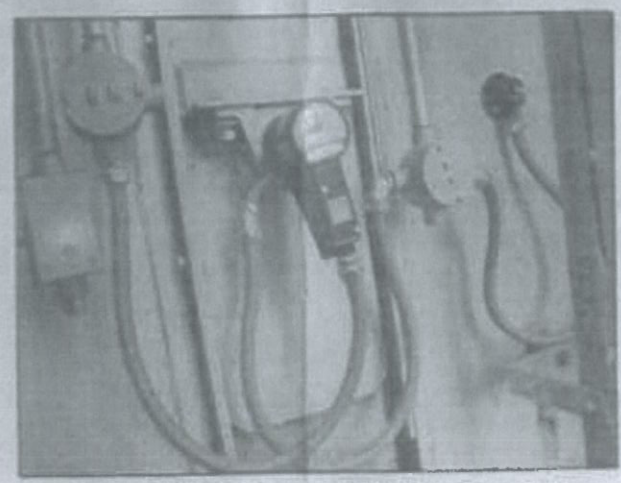
Sensors (sold separately) bolt to the Whirligig and the complete assembly either bolts to the machines shaft through a 1/2" UNC tapped hole, or is connected magnetically using 4B's patented Mag-Con™ adaptor. Shaft or machine vibration does not affect the performance of the sensor, as the whole assembly moves with the shaft. With the Whirligig, installation of speed sensors is now simple, safe and reliable.

SPECIFICATIONS

Shaft Material -	Stainless Steel
Body Material -	Polypropylene
Bearing -	Sealed Stainless Steel
Thread Size -	1/2" UNC
Hex Wrench Size -	5/8"
Maximum Speed -	1,500 RPM
Pulses / Targets -	1, 2, 4 or 8 (Must Specify) Text

DIMENSIONS





Whirligig® on Bucket Elevator with M800 Elite Speed Switch

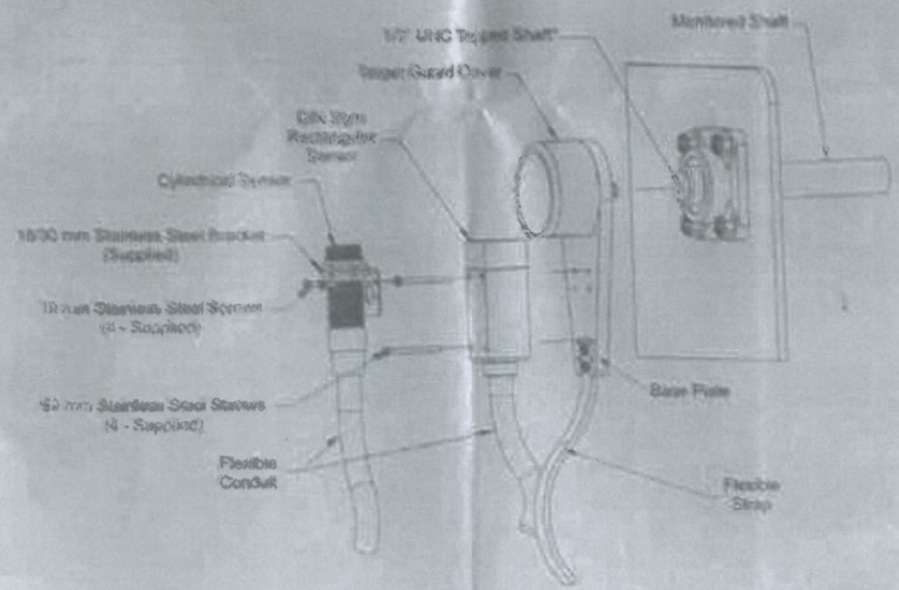
⚠WARNING

- Rotating machinery can cause serious injury or death.
- Always lockout and tagout the machine prior to installation.

INSTALLATION

Do NOT remove the whirligig target guard cover. The rotating components under the cover could cause serious injury.

1. There are two options to attach the Whirligig® to the machine's shaft.
   Option 1 - Use Mag-Con™ magnetic connector. Thread the Mag-Con™ onto the Whirligig® using a suitable thread locking adhesive (Loctite or similar) and attach the unit onto the machine shaft.
   Option 2 - Drill and tap the center of the machine shaft for 1/2" UNC thread, ensure that the shaft is tapped 1" deep. Thread the Whirligig® onto the machine shaft with a 5/8" open ended wrench using suitable thread locking adhesive (Loctite or similar).
2. Fix the white flexible strap to the bottom of the whirligig® base plate using the supplied screws.
3. Install the sensor to the base plate, leave a 2 mm (approximate) gap between the sensor face and the target guard cover. Two sets of predrilled holes are provided for DIN style rectangular sensors. For 18 or 28 mm cylindrical sensors, use the supplied universal stainless steel bracket and screws.
4. Wire the sensor in accordance with the manufacturer's instructions while observing all relevant electrical and OSHA regulations.
5. Fix the white flexible strap to the static structure (if required).



* NOTE - 1/2" UNC Tapped Shaft Not Required If Using Mag-Con™ Magnetic Connector

PART NUMBERS / ACCESSORIES

WG1-4B-1	Whirligig® with 1 Pulse / Target
WG1-4B-2	Whirligig® with 2 Pulse / Target
WG1-4B-4	Whirligig® with 4 Pulse / Target (Standard Version)
WG1-4B-8	Whirligig® with 8 Pulse / Target
WGB1830	18 / 30 mm Stainless Steel Bracket (Supplied)
MAG2000	Mag-Con™ Magnetic Connector (Optional)
SM1	SpeedMaster™ Speed Switch Calibration and Testing Device

Mag-Con™ Magnetic Connector

This device screws onto the Whirligig® and magnetically couples to the shaft being monitored, simplifying installation.

Material - Stainless Steel
Holding Force - Over 150 lbs
Maximum Speed - 300 RPM

U.S. Patent #6,864,209

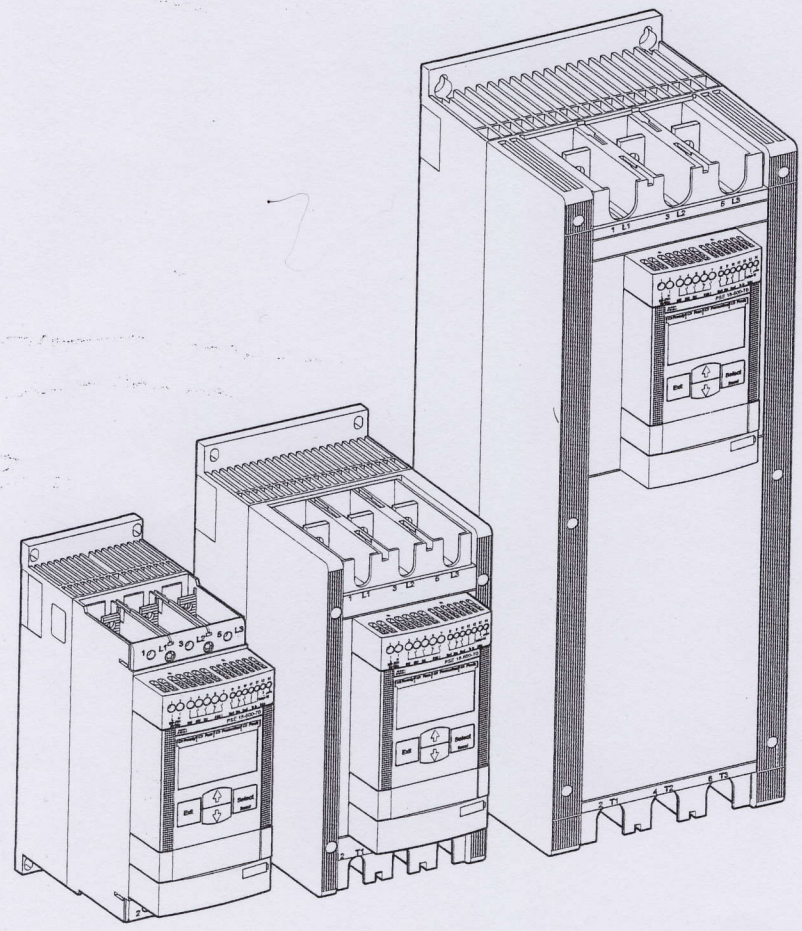
4B COMPATIBLE SENSORS

M8001V10C	M300 Slim Speed Switch
M3001V10F	M300 Slimswitch (2 Wire)
M3005V10CA	M300 Slimswitch (5 Wire)
M1001V10F	M100 Slimswitch
P8002V10FC	P800 ProxSwitch
P8001V34FC	P800 ProxSwitch (NPN/PNP)
P3002V10AI	P300 ProxSwitch
P300V34AI	P300 ProxSwitch (NPN/PNP)
P1002V10A	P100 ProxSwitch
P100V34A	P100 ProxSwitch (NPN/PNP)

For more information on Whirligig® accessories and compatible sensors, visit www.go4b.com

Softstarters Type PSE18...PSE370
User Manual short form

200 H.P. DRIVE



Power and productivity
for a better world™

ABB

EN

1 Read me first

Thank you for selecting this ABB PSE Softstarter. Read carefully and be sure to understand all instructions before mounting, connecting and configuring the Softstarter.

This manual is a short form manual intended for quick and easy installation of the PSE Softstarter. For complete information, please see Softstarters Type PSE18...PSE370, Installation and Commissioning Manual available on: http://www.abb.com/lowvoltage

In this User Manual, the following symbols are used:

*The **caution** icon located in the left margin, indicates the presence of a hazard which could result in personal injury.*

*The **warning** icon located in the left margin, indicates the presence of a hazard which could result in damage to equipment or property.*

*The **information** sign located in the left margin, alerts the reader to pertinent facts and conditions.*

*The **graphics** symbol located in the right margin provides a reference to graphical information.*

Mounting and electrical connection of the softstarter shall be made in accordance with existing laws and regulations and be performed by authorized personnel.

When unpacking your new PSE Softstarter, please check for visible damage. If any is found, contact your local sales agent.

Never lift the softstarter by the connection bars, since it may cause damage to the product.

Service and repair should be performed by authorized personnel only. Note that unauthorized repair may affect the warranty.

Data in this manual subject to change without notice.

2 Description

The PSE Softstarter is microprocessor-based and designed with the latest technology for soft starting, and when applicable, soft stopping of standard squirrel cage motors.

The PSE Softstarter has several features as standard.

- Integrated by-pass.
- Torque control ramp during start and stop.
- Built in Electronic Motor protection.
- Kick start.
- Analog out signal can vary in the range 4 - 20 mA, corresponding to 0 - 120 percent of set I_e (terminals 13 and 14). 100 percent corresponds to 17.3 mA.
- Three output signal relays to indicate Top of Ramp (TOR), trip events (FAULT) and running (RUN).

The PSE Softstarter can be controlled in two ways:

- Hardwire inputs using terminals 8 and 9, in circuit with terminals 11 or 12.
- Fieldbus communication interface.

1. **Check that you have the correct product in regards to operational voltage, control supply voltage, rated motor data, and used numbers of starts per hour.**

The PSE18...PSE370 Softstarters operates over wide voltage ranges.

- Rated operational voltage 208 - 600 V AC
- Rated control supply voltage 100 - 250 V AC

The product should only be used within the specified ratings. Be aware of the ambient temperature and altitude above sea level. Derating is required above 40 °C (104 °F) and above 1000 m (3281 ft). For more details see Softstarters Type PSE18...PSE370, Installation and Commissioning Manual, Document ID 1SFC132057M0201 available on: http://www.abb.com/lowvoltage.

2. **Make sure that any of the recommended short circuit protections are used according to prevailing standards.**

EN

3 Mounting

The PSE Softstarters exist in three different physical sizes which are designed to be mounted with M6 bolts, or bolts of equivalent dimension and strength.

1. **Identify the correct drawing with dimensions for your softstarter**

2. **Verify the drilling plan.**

3. **In applications where the softstarter is installed in an enclosure, make sure that the enclosure size is not smaller than the minimum recommended. Select size from the applicable table for IEC or c UL us .**

4. **Check that the distance to wall and front, as well as the mounting angle fulfills the requirements.**

5. **Ensure a free flow of air through the product.**

⚠

Risk of damage to property. Ensure that no liquids, dust or conductive parts enter the softstarter.

⚠

Using a too small enclosure and/or failure to follow the instructions in other ways, may result in overheating of the PSE Softstarter and operational disturbances.

4 Connection

This product has been carefully manufactured and tested but there is a risk that damage can occur from such as transportation and incorrect handling. Therefore, the procedure below should be followed during initial installation:

⚠

Hazardous voltage. Will cause death or serious injury. Turn off and lock out all power supplying this device before starting work on this equipment.

⚠

Mounting and electrical connection of the softstarter shall be made in accordance with existing laws and regulations and be performed by authorized personnel.

⚠

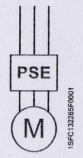
Before connecting the Softstarters PSE size 18...170 to operational supply voltage for the first time, the control supply voltage must be turned on to ensure that the by-pass relays are in the open position. This is necessary to avoid unintentional starting of the equipment during connection.

1. **Connect the terminals 1L1, 3L2 and 5L3 to the operational voltage on the power supply line side.**

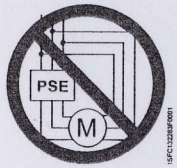
2. **Connect the terminals 2T1, 4T2 and 6T3 to the motor.**

⚠

Connecting Softstarters PSE18...PSE370 Inside Delta will cause damage to the equipment, and there is a risk of death or serious injury.



In Line



Inside Delta

Capacitors for power factor compensation are not allowed between the softstarter and the motor, since this can cause current peaks which can damage the thyristors in the softstarter. If such capacitors are to be used, they should be connected on the line side of the softstarter.

3. **Connect control supply voltage to terminals 1 and 2.**

4. **Connect terminal 14 to the functional earth.**

The earthing is not a protective earth, it is a functional earth. The earthing cable should be as short as possible. Maximum length 0.5 m. The earthing cable should be connected to the mounting plate, which should also be earthed.

5. **Connect the start, stop and other control circuits including the analog out to the terminals, 8, 9, 10, 11, 12, 13 and 14 if needed. This section is using an internal 24 V DC. Do not feed with any external voltage.**

Do not connect an external voltage to the control terminals 8, 9, 10, 11, 12, 13 and 14. Failure to observe the above may damage the softstarter and the warranty may no longer be valid.

6. **Connect terminals 3, 4, 5, 6 and 7 when using the signal output relays. These are potential free contacts for maximum 250 V AC, 1,5 A AC-15. Make sure you are using the same voltage level within this terminal section.**

The same external voltage (maximum 24 V DC or maximum 250 V AC) must be connected to the output relay terminals 3, 4, 5, 6 and 7. Failure to observe the above may damage the softstarter and the warranty may no longer be valid.

7. **Switch ON the control supply voltage, terminals 1 and 2.**

8. **Continue to configure parameters as described in chapter 6, Settings.**

9. **Switch ON the operational voltage.**

There is some flexibility in the connecting of your softstarter, but following the steps above will enable operation of the PSE softstarter. An example of a complete installation can be found in the graphics section. The first one uses fuses and contactors and the second one uses a circuit breaker.

Depending on the two phase control, a connected motor terminal always carries live hazardous voltage. Do not touch terminals when voltage is applied. Output terminals will have live voltage even when the device is OFF. This can cause death or serious injury.

5 Basic functions

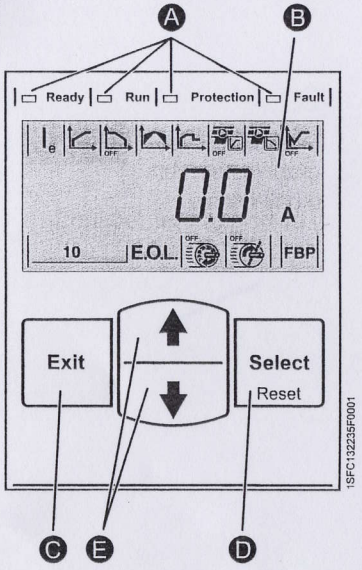


Figure 5.1: HMI

The HMI consists of the parts indicated in figure 5.1.

- **A** LED status indicators.
- **B** LCD display with backlight.
- **C** Exit key for cancelling parameter edits and exiting one menu level.
- **D** Select/Reset key for changing and storing parameter values, entering one menu level, and to reset tripping events.
- **E** Navigation keys for navigating the menu and changing parameter values. Flashing numbers or text shown in the display indicates that the menu/value can be changed or scrolled.

Refer to the timing diagram for the basic functions of the softstarter. 

6 Softstarter settings

The PSE Softstarters can provide soft start and stop with two different basic functions.

- Voltage ramp
- Torque control ramp

All PSE Softstarters need to be configured to the rated current of the motor. Since the motor must be connected In Line, set the rated current to the value written on the rating plate of the motor. Use the following procedure to change this parameter (I_e):

1. **From the Information level, enter the Settings level by pressing the Select key. See graphics 15 A.** 

2. **Press select again to enable editing of the I_e parameter. This is indicated by a flashing value. See graphics 15 B.**

When setting the current limit, and Initial/End Voltage, be aware that the starting current must be high enough to enable for the motor to reach the rated speed. The lowest possible current depends on the performance of the motor and the characteristics of the load.

3. **Increase or decrease the value by pressing the Up or Down keys repeatedly. Holding the key down will speed up the change. See graphics 15 C.** 

4. **When the rated current of the motor is reached, press the Select key again to save. See graphics 15 D.**
5. **If needed, continue to set other parameters according to the application following the same procedure.**

The motor may start unexpectedly if there is a start signal present, when doing any of the actions listed below.

- *Switching from one type of control to another (fieldbus control/ hardwire control).*
- *Resetting events.*
- *If using automatic event reset.*

The PSE Softstarter has several parameters available that fit various types of applications. All available parameters and application settings can be found in tables 6.1 and 6.2.

By pressing both navigation keys for a minimum of four seconds, all parameter settings will be protected from unintentional change.

16

Repeating this for a period of two seconds will unlock the LCD display, and allow changes to the parameter settings.

Read the Softstarters Type PSE18...PSE370, Installation and Commissioning Manual, Document ID 1SFC132057M0201 available on: http://www.abb.com/lowvoltage.

Table 6.1: Parameter list

Description	Display	Setting range	Default value	Actual setting
Rated Current of motor	I_e	Individual	Individual	139
Start Ramp time		1...30 s	10 s	10
Stop Ramp time	OFF	OFF, 1...30 s	OFF	10
Initial/End Voltage		30...70 %	40 %	50
Current Limit		1.5...7 x I_e	7.0 x I_e	4.0
Torque Control during start ramp	OFF	OFF, On	OFF	OFF
Torque Control during stop ramp		OFF, On	On	OFF
Kick Start	OFF	OFF, 30...100 %	OFF	OFF
Electronic Motor Overload Protection (EOL) Tripping class Type of operation	10 E.O.L.	 OFF, 10A, 10, 20, 30 HAnd, Auto ❶	 10 HAnd	Auto 30
Underload Protection Level Type of Operation	OFF	 OFF, 0.2...1 x I_e HAnd, Auto ❶	 OFF HAnd	OFF
Locked Rotor Protection Level Type of Operation	OFF	 OFF, 0.5...7 x I_e HAnd, Auto ❶	 OFF HAnd	OFF
FieldBus Control Fieldbus Address Download Parameter Operation When Fault Type of Operation	FBP	 OFF, On ❷ 0...255 dPon, dPoF ❹ trIP, LocC ❺ HAnd, Auto ❻	 OFF 255 ❸ dPon LocC HAnd	

❶ *HAnd = Manual reset of the protection or fault.*
Auto = Automatic reset of the protection or fault.

❷ *OFF = Fieldbus is not allowed to control the motor.*
On = Fieldbus is allowed to control the motor.

❸ *255 = Address of the FieldBusPlug will be used.*

❹ *dPon = Download of parameters from PLC enabled.*
dPoF = Download of parameters from PLC blocked.

❺ *Accessible only if On is previously selected.*
trIP = Trip on fault.
LocC = Local control on fault - hardwire control is possible

❻ *Accessible only if trIP is previously selected.*
HAnd = Manual reset of the protection or fault.
Auto = Automatic reset of the protection or fault.

Table 6.2: Application settings

	Recommended basic setting					
						
Centrifugal fan	10 s	OFF	40 %	5.0 x I_e	OFF	OFF
Axial fan	10 s	OFF	40 %	5.0 x I_e	OFF	OFF
Centrifugal pump	10 s	10 s	40 %	5.0 x I_e	OFF	On
High pressure pump	10 s	10 s	50 %	5.5 x I_e	OFF	On
Compressor	5 s	OFF	40 %	4.5 x I_e	OFF	OFF
Grinder	10 s	OFF	40 %	5.0 x I_e	OFF	OFF
Mixer	10 s	OFF	40 %	5.0 x I_e	OFF	OFF
Bow thruster	10 s	OFF	40 %	4.5 x I_e	OFF	OFF
Hydraulic pump	10 s	OFF	40 %	4.5 x I_e	OFF	OFF
Crusher	10 s	OFF	40 %	5.0 x I_e	OFF	OFF
Conveyor belt	10 s	OFF	50 %	5.0 x I_e	OFF	OFF
Escalator	10 s	OFF	40 %	4.5 x I_e	OFF	OFF
Lift/Elevator	10 s	OFF	40 %	4.5 x I_e	OFF	OFF
Cutter	10 s	OFF	40 %	5.0 x I_e	OFF	OFF
Band saw	10 s	OFF	40 %	5.0 x I_e	OFF	OFF
Circular saw	10 s	OFF	40 %	5.0 x I_e	OFF	OFF

Please note that the parameter values above are to be used as a guide only. Variations in load conditions may require additional tuning.

For Heavy Duty applications the Initial/End Voltage  as well as the Current Limit  might need to be increased.

7 Troubleshooting

Depending on PSE Softstarter configuration, different events may be signalled on the LCD. All event codes are found in table 7.1: Event list.

Table 7.1: Event list

Event code	Event	Cause
SF20	Software fault	Fault in software
SF3x ❶	Shunt fault	By-pass relay does not open or thyristor short circuit
SF4x ❶	By-pass open	By-pass relay or by-pass contactor does not close
SF50	Softstarter thermal overload	Thyristors overheated
EF1x ❶	Phase loss fault	Power loss on operational current on one or several phases
EF20	Bad network quality	Excessive disturbances in the operational supply network
EF3x ❶	Current lost fault	Operational current on one or several phases lost
EF40	Fieldbus fault	Fault on Fieldbus communication
EF50	Low supply voltage	Voltage too low or briefly interrupted in supplying network for softstarter
EF6x ❶	High current fault	Operational current higher than 8 x I_e
P1	Motor overload protection	Load on motor higher than motor rating and corresponding selected EOL Class. Current limit parameter is set on a too low value.
P2	Underload protection	Load on motor too low
P3	Locked rotor protection	Load on motor too high for a short time

SF = Softstarter fault
EF = External fault
P = Protection

❶ *x = phase number, 4 indicates multiple or unknown phase*

IDEC

B-987(3)

INSTRUCTION SHEET

Switching Power Supply
PS5R-S Series

Confirm that the delivered product is what you have ordered. Read this instruction sheet to make sure of correct operation. Make sure that the instruction sheet is kept by the end user.

SAFETY NOTE

1. SUITABLE FOR USE IN CLASS I, DIV. 2, GROUPS A, B, C, AND D HAZARDOUS LOCATIONS, OR NONHAZARDOUS LOCATIONS ONLY.
2. WARNING - EXPLOSION HAZARD - SUBSTITUTION OF ANY COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIV. 2.
3. WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS.

In this operation instruction sheet, safety precautions are categorized in order of importance to Warning and Caution :

The PS5R-S switching power supplies are designed for installation in a cabinet. This product cannot be used outside of equipment. Embed this product inside an appropriate enclosure before using the product.

⚠ WARNING

Warning notices are used to emphasize that improper operation may cause severe personal injury or death.

- Do not use the switching power supply on control equipment in aircraft, trains, and atomic equipment where malfunction of the switching power supply may cause severe personal injury or threaten human life. These switching power supplies are designed for use on general electronic equipment such as communication equipment, instrumentation equipment, and industrial control equipment.
- Make sure that the operating conditions satisfy the values described in the catalog. Confirm the specification values before designing the equipment to use the switching power supply and before supplying power. Contact IDEC if you have any question.
- Do not modify or repair the switching power supply. Modification or repairing of the switching power supply by users may cause electrical shocks, damage, fire, malfunction, and other heavy accidents.
- Do not install the switching power supply where a human body may come into contact while power is supplied to the switching power supply. Do not touch the switching power supply during operation or immediately after turning off because some parts are heated and at a high voltage, causing burns or electrical shocks. The PS5R-S switching power supplies are designed for installation in a cabinet.
- Do not connect the output terminals or output lead wires together. Fire or damage may result.
- Include a protection in the equipment using the switching power supply in consideration of malfunction or damage of the load in case the switching power supply should fail. If the switching power supply should fail, a very high voltage drop may occur at the output terminals.
- Turn power off before wiring the switching power supply. Make sure of correct wiring. Incorrect wiring may cause electrical shocks or damage.

⚠ CAUTION

Caution notices are used where inattention might cause personal injury or damage to equipment.

- Make sure of the correct input voltage. Incorrect input voltage may cause blown fuses, fuming, or fire. Make sure of correct polarity of input and output terminals before supplying power to the switching power supply.
- Mounting the switching power supply, make sure that the body has been securely fixed.
- Do not touch any part inside the switching power supply. Prevent foreign objects from entering into the housing of the switching power supply. If the internal parts are touched by hand or foreign objects such as a paper clip or screw entering into the housing, accidents or damage may occur.
- Observe the temperature derating. The operating temperature is the temperature around the switching power supply. Use the switching power supply within the temperature derating curve. Otherwise, the internal temperature will rise and damage may be caused.
- For DC input, make sure to install an external fuse.
- Do not turn the output voltage adjustment beyond the limits. Otherwise, the switching power supply may be deteriorated and damage may be caused.
- When damage or malfunction should occur during operation, immediately turn power off and stop the switching power supply. Contact IDEC.
- Do not use or store the switching power supply in environments subjected to a large amount of vibrations or shocks. Otherwise, damage may be caused.
- Do not install the switching power supply in environments exposed to direct sunlight, iron particles, oil splashes, chemicals, and hydrogen sulfide. Do not use the switching power supply in humid places such as basements or greenhouses or in low-temperature places such as in freezers or in front of cooler outlet.

1 Safety Standard Conditions

Applicable standards:

PS5R-SB05, -SB12, -SB24	PS5R-SC12, -SC24, -SD24	PS5R-SE24, -SF24, -SG24
UL508 Listing ANSI/ISA 12.12.01 UL1310 Class 2 CSA C22.2 No.14 EN60950-1,EN50178	UL508 Listing ANSI/ISA 12.12.01 UL1310 Class 2 CSA C22.2 No.14 EN60950-1,EN50178	UL508 Listing ANSI/ISA 12.12.01 CSA C22.2 No.14 EN60950-1,EN50178

EMC: EN61204-3 Class B

2 Type No. Guide

PS5R-S□□
- Output Voltage Code
- Wattage Code

Output Voltage Code	Wattage Code	
05: 5V (PS5R-SB only)	B: 10W, 15W	E: 90W
12:12V (PS5R-SB, -SC only)	C: 30W	F:120W
24:24V	D: 60W	G:240W

3 Conditions

Operating temperature: PS5R-SB : -10 to +65°C
PS5R-SC,-SD,-SE,-SF,-SG : -10 to +60°C
(without freezing, see output derating)

Storage temperature: -25 to +75°C (without freezing)

Operating/storage humidity: 20 to 90% RH (without condensation)

Altitude: Up to 2000m above sea level

Pollution degree: 2

4 Rating

Use the switching power supply with the output wattage within the values shown below.
Leakage current: 0.75 mA max.(PS5R-SB, -SC, -SD, -SE), 1.0mA max (PS5R-SF, -SG)

Type No.	Input Voltage V AC	Input Current A	Input Frequency Hz	Output Voltage V DC	Output Current Max. A	Output Wattage Max. W
PS5R-SB05	100-240	0.45	50-60	4.5-5.5	2.0	10
PS5R-SB12				10.8-13.2	1.2	14.4
PS5R-SB24				21.6-26.4	0.65	15.6
PS5R-SC12		0.9		10.8-13.2	2.5	30
PS5R-SC24				21.6-26.4	1.3	31.2
PS5R-SD24		1.7		21.6-26.4	2.5	60
PS5R-SE24		2.3			3.75	90
PS5R-SF24		1.8			5.0	120
PS5R-SG24		3.5			10.0	240

5 Allowable Input Range

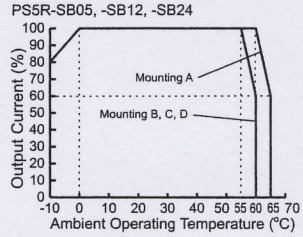
Use the switching power supply within the input voltage range shown below. (Not compliant with safety standards) For DC input, make sure to install an external fuse.

PS5R-SB, -SC, -SD, -SE:
85 to 264VAC/100 to 370VDC (At 100 to 105VDC, the rated power is 80% maximum.)

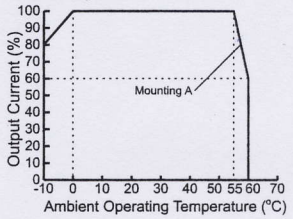
PS5R-SF, -SG:
85 to 264VAC/100 to 350VDC (At 100 to 110VDC, the rated power is 80% maximum.)

6 Output Derating

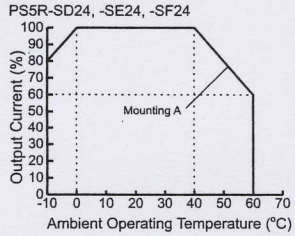
PS5R-SB05, -SB12, -SB24



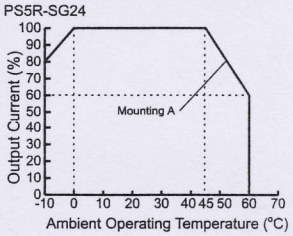
PS5R-SC12, -SC24



PS5R-SD24, -SE24, -SF24



PS5R-SG24

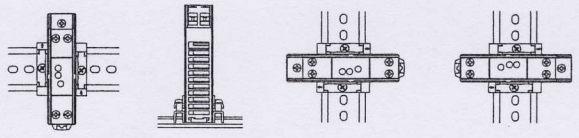


Note: In order to comply with UL508, EN60950-1, EN50178 standards,the ambient operating temperature is as below.

Type No.	UL508		EN60950-1, EN50178	
	Mounting A	Mounting B, C, D	Mounting A	Mounting B, C, D
PS5R-SB05, -SB12, -SB24	55	55	60	55
PS5R-SC12, -SC24	55	N/A	55	N/A
PS5R-SD24, -SE24, -SF24	40	N/A	40	N/A
PS5R-SG24	45	N/A	45	N/A

7 Mounting

Mounting B, C and D : PS5R-SB□ only.



Mounting A　Mounting B　Mounting C　Mounting D

<Mounting on 35mm-wide DIN Rail>

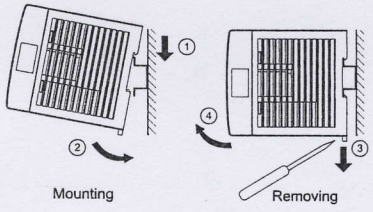
(1) Fasten the DIN rail to a panel firmly.

(2) Put the groove(①) of the switching power supply on the DIN rail, with the input terminal si up, press the switching power supply to the panel(②). Make sure that the switching pow supply is fixed to the DIN rail securely.

(3) Use BNL6 mounting clips on both the sides of the switching power supply to prevent fro moving sideways.

<Removing from DIN Rail>

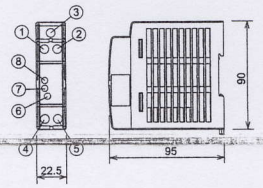
Insert a flat screw driver into the slot in the clamp. Pull the clamp out until the clamp clicks, a turn the switching power supply bottom out.



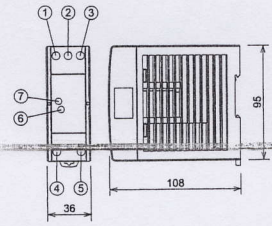
8 Terminal Marking and Description

①(L) AC Input Terminal
②(N) AC Input Terminal
③(⏚) Ground Terminal
(Protective earthing terminal)
④(–V) DC Output Terminal
⑤(+V) DC Output Terminal
⑥(VR.ADJ) Output Voltage Adjustment
⑦(ON), (DC ON) Operation Indicator
⑧(LOW),(DC LOW) Output Low Indicator
※When the AC input terned on or off, the LED terns on temporarily, causing no problem.

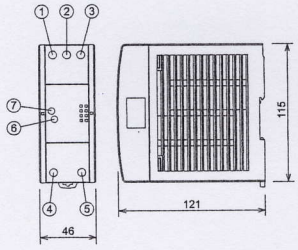
PS5R-SB□



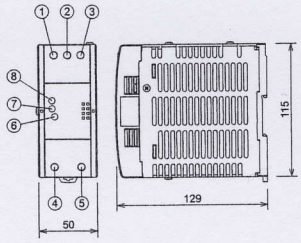
PS5R-SC□, -SD24



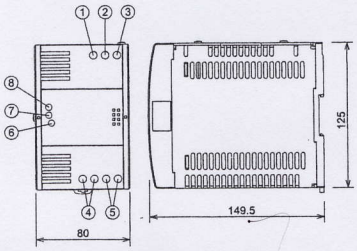
PS5R-SE24



PS5R-SF24



PS5R-SG24



9 Power Supply Installation

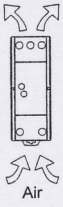
① Make sure of sufficient convection in consideration of heat radiation.
Do not block the opening of the switching power supply.

② Keep at least 20mm clearance around the switching power supply, except for the opening.

③ When the derating is in question, provide forced air-cooling.

④ Connect ground terminal to a proper ground completely.

⑤ Use minimum 60°C wire, copper wire only.
Recommended wire type: AWG18 to 14 (Cross section 0.75 to 2.0 mm²)



⑥ Terminal tightening torque 0.8 N·m.

⑦ Adjusting the Output Voltage
The output voltage can be adjusted within ±10% of the rated output voltage using the VR.ADJ (output voltage adjustment). Note that the overvoltage protection may work when the output voltage is raised.

⑧ Overcurrent Protection
When an overcurrent flows due to an overload, the output voltage drops. When the load is reduced to a normal level, the normal output voltage is restored. Note that an overload or short-circuit condition continuing for an extended period of time will deteriorate or damage internal elements.

⑨ Overvoltage Protection
The PS5R-S uses a manual reset method after power shutdown. To recover from output voltage drop due to an overvoltage, turn off the AC input, and turn on the AC input after approximately 1 minute.

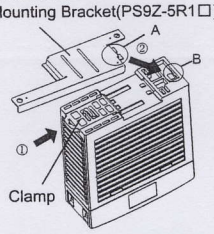
⑩ Series Operation
Two PS5R-S switching power supplies can be connected in series. When connecting the switching power supplies in series, insert a Schottky diode in the output line of each switching power supply. (UL1310 Class 2 does not allow series connection.)

⑪ Parallel Operation
The PS5R-S cannot be connected in parallel. If connected in parallel, internal elements and loads may be damaged.

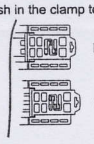
⑫ Insulation Resistance and Dielectric Strength Tests
When making these tests, connect the AC input terminals together and the output + and - terminals together. Rapid application and interruption of the test voltage will generate a surge voltage, which may damage the switching power supply.

10 Mounting Bracket (Option)

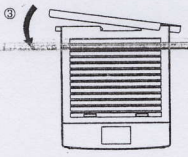
< PS9Z-5R1□ >
Mounting Bracket(PS9Z-5R1□)



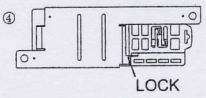
① Push in the clamp to the LOCK position.



②Insert A part of the Mounting Bracket into position B on the bottom of the switching power supply housing.

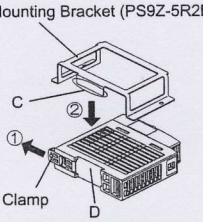


③Press down the Mounting Bracket toward the switching power supply housing.



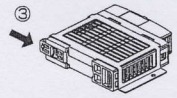
④Confirm the Mounting Bracket is locked by the clamp.

< PS9Z-5R2B >
Mounting Bracket (PS9Z-5R2B)

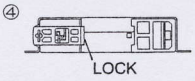


①Push in the clamp to the UNLOCK position.

②Insert C part of the Mounting Bracket into position D on the bottom of the switching power supply housing.



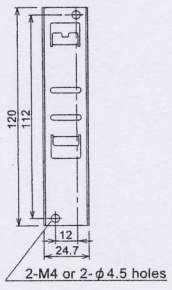
③Push in the clamp to the LOCK position.



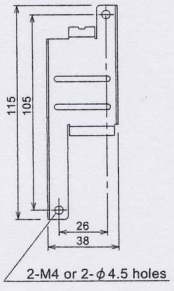
④Confirm the Mounting Bracket is locked by the clamp.

Mounting holes layout is shown below.

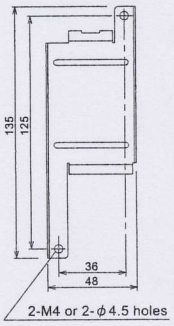
PS9Z-5R1B
(For PS5R-SB□)



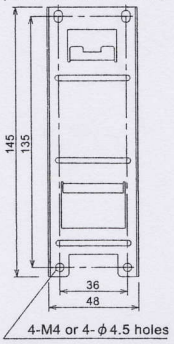
PS9Z-5R1C
(For PS5R-SC□, -SD24)



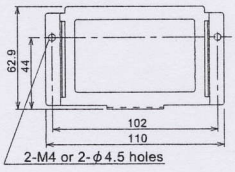
PS9Z-5R1E
(For PS5R-SE24)



PS9Z-5R1G
(For PS5R-SF24, -SG24)



PS9Z-5R2B
(For PS5R-SB□)



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MNR 9037783 - 04 2010-06-16

DE Einbauanweisung für den Elektroinstallateur
EN Installation note for electrical personnel
FR Instructions d'installation pour l'électricien
IT Istruzioni di montaggio per l'elettricista
PT Instrução de montagem para o eletricista

STEP-PS/1AC/24DC/4.2 **2868664**

Primary-switched power supply unit

Safety notes and warning instructions
Only qualified specialist personnel may install and start up the device. Regulations specific to the country must be observed. For additional information, please refer to the corresponding data sheet at www.phoenixcontact.net/catalog.

- Establish mains connection correctly and ensure protection against electric shock.
- The device must be switched off outside the power supply in accordance with the regulations of EN 60950 (e.g., by means of line protection on the primary side).
- Ensure supply lines are the correct size and have suffic. fuse protection.
- Ensure cables on the secondary side are the correct size for the maximum output current and have separate fuse protection.
- Following installation, cover the terminal area to prevent accidental contact with live parts (e.g., installation in a control cabinet).

Note: Electrical damage
Connect a thermomagnetic fuse for device protection.
Horizontal mounting (Input AC terminal block at the top).
Minimum gap for convection: 3 cm above and below.

Caution: Risk of electric shock
Never carry out work when voltage is present.

508:

Copper cable; operating temperature > 75°C (ambient temperature < 55°C) and > 90°C (ambient temperature < 75°C).

ANSI/ISA 12.12.01:

A Note: The power supply unit is suitable for use in Class I, Division 2, Groups A, B, C, and D or in non-potentially explosive areas.

B Note - Explosion hazard - Substitution of components may impair suitability for use in potentially explosive areas (CLASS 1; DIVISION 2).

C Note - Explosion hazard - Only remove equipment when the power is disconnected or the equipment is not in a potentially explosive area.

60950:

Use ferrules for flexible cables.

Seal unused clamping spaces.

1. Installation: See Fig. 1

- Input voltage: Input AC L(+)/N(-)
- Output voltage: Output DC +/+/-/-
- Green LED: DC OK
- Potentiometer: 22.5 V DC ... 29.5 V DC
- Universal snap-on foot: 35 mm DIN rails according to EN 60715 and panel mounting See Fig. 1

1.1 Connecting cable: See Fig. 6

2. Input:

The device can be connected to single-phase DC and AC systems or to two of the phase conductors of three-phase systems. See Fig. 4
The input voltage is connected via the Input AC L(+)/N(-) screw connections. See Fig. 5

If an internal fuse is triggered, there is a device malfunction. In this case, the device must be inspected in the factory.

3. Output:

The output voltage is connected via the Output DC +/+ and -/- screw connections See Fig. 4
If an output voltage 24 V DC is set at the potentiometer, the device operates at constant capacity.

Technical data

Input data		
Nominal input voltage		100 V AC ... 240 V AC
Input voltage range (for DC, connect a suitable fuse)		85 V AC ... 264 V AC / 95 V DC ... 250 V DC
AC/DC frequency		45 Hz ... 65 Hz / 0 Hz
Current consumption (for nominal values)	Typ.	0,8 A (230 V AC) / 1,3 A (120 V AC)
Inrush current limitation (at 25°C)/I^2t	Typ.	< 15 A / < 1 A^2s
Mains buffering	Typ.	> 100 ms (230 V AC) / > 20 ms (120 V AC)
Input fuse , Internal (device protection) , Slow-blow		4 A
Permissible backup fuse : 1 x Miniature circuit breaker		B6 / B10 / B16
Output data		
Nominal output voltage U_N / Range		24 V DC ±1 % / 22,5 V DC ... 29,5 V DC
Nominal output current I_N		4,2 A
Limit current I_1 / I_{Max}		4,4 A / 6,5 A
Derating		55 °C ... 70 °C (2,5 % / K)
Max. power dissipation (idling/nominal load)		< 0,7 W / 13,2 W
Efficiency (for 230 V AC and nominal values)		> 88 %
Residual ripple / Peak switching voltages		< 40 mV_{SS} / < 30 mV_{SS} (20 MHz)
Protection against internal surge voltages		≤ 35 V DC
General data		
Insulation voltage (Input/Output)		
Degree of protection		IP20
Class of protection		II
Pollution degree		2
Ambient temperature (operation)		-25 °C ... 70 °C
Ambient temperature (storage/transport)		-40 °C ... 85 °C
Humidity at 25°C, no condensation		≤ 95 %

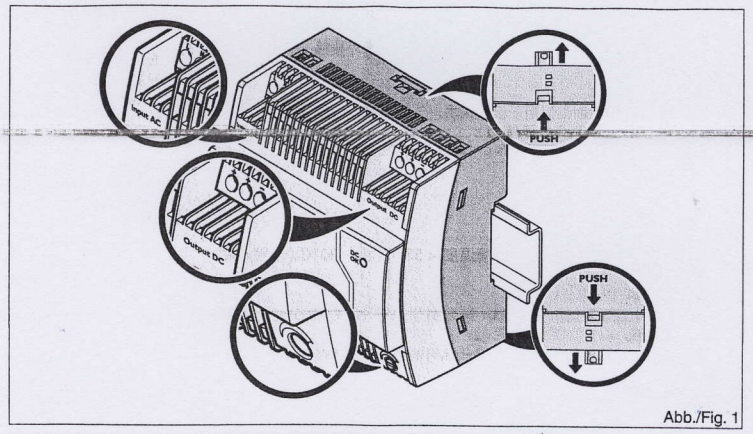


Abb./Fig. 1

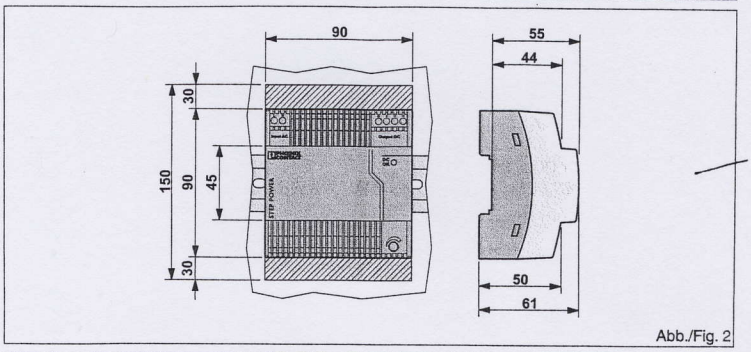


Abb./Fig. 2

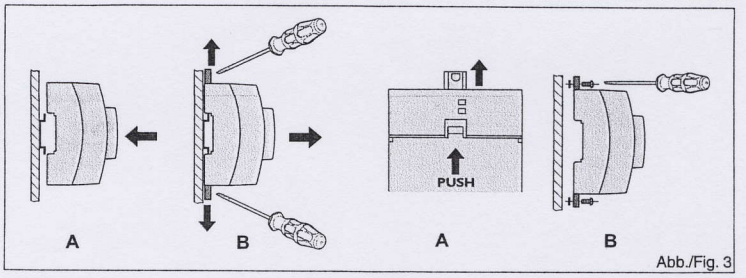


Abb./Fig. 3

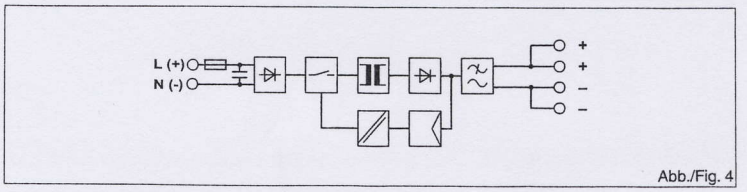


Abb./Fig. 4

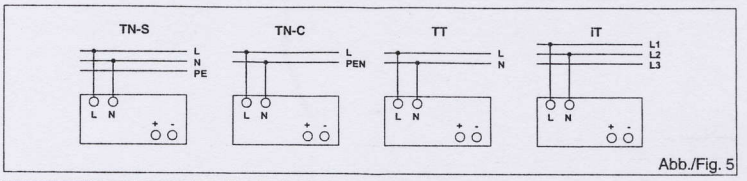
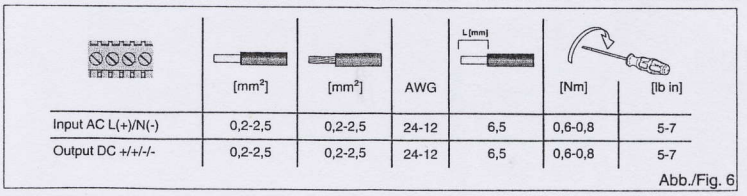


Abb./Fig. 5



	[mm²]	[mm²]	AWG	L[mm]	[Nm]	[lb in]
Input AC L(+)/N(-)	0,2-2,5	0,2-2,5	24-12	6,5	0,6-0,8	5-7
Output DC +/+/-/-	0,2-2,5	0,2-2,5	24-12	6,5	0,6-0,8	5-7

Abb./Fig. 6

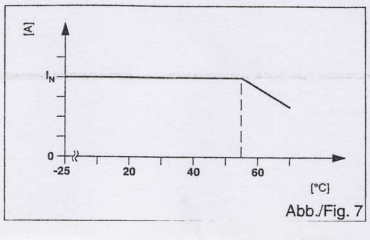


Abb./Fig. 7

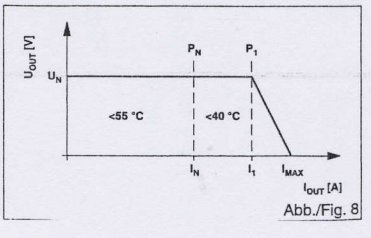


Abb./Fig. 8