



Nothart Engineered Sales

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Submittal Drawings **For Approval**

**City of Winnipeg Burrows Avenue Lift Station
Bid Opportunity 573-2016**

Supply and Delivery of Pumps and Valves including Initial Start-Up, and Commissioning

Attention : Blair Moore

**Project Name: Burrows Lift Station Upgrade
End User: City of Winnipeg Water & Waste**

Engineer: Dillon Consulting

Supplier: Nothart Engineered Sales Ltd.

Date: August 25, 2016

Product: Vertical Non-Clog Pumps
Location: Winnipeg, Canada
Project: Burrows Ave. LS
Purchaser: Nothart Engineered Sales LTD
New Serial Numbers: 19-02186-V, 19-02187-V & 19-02188-V
Date: 15-Aug-2016

To avoid any lengthy delays that resubmittals may cause, please contact Reginald de Leon at (913) 888-5201, ext. 414 to work out any discrepancies or questions on the submittals.

Equipment as covered by these documents will have a completion date 8-10 weeks after Smith and Loveless receives the approved documents and clarification of all details.

Smith & Loveless, Inc.
14040 Santa Fe Trail Drive
Lenexa, KS 66215-1284
United States of America

Phone: (913) 888-5201
Fax: (913) 888-2173
Parts: (800) 922-9408
www.smithandloveless.com

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Job Location: Winnipeg Manitoba, Canada

Job Serial No: 19-02186-V, 19-02187-V, 19-02188-V

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62L11B

SECTION III- DRAWINGS

Pump Outline

24538-19-001

Pump Assembly

61D1/N

To avoid any lengthy delays that resubmittals may cause, please contact Reggie de Leon at (913) 888-5201 ext. 414 to work out any discrepancies or questions on the submittals.



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Lenexa, Kansas 66215-1284
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An Introduction to Smith & Loveless

Located in Lenexa, Kansas, Smith & Loveless is a leading U. S. manufacturer of water and wastewater treatment and pumping equipment. With its equipment utilized by municipalities and industries in the U.S. and around the world, the Smith & Loveless product line includes:

Wastewater Pumping Equipment up to 100,000 GPM (6300 lps)

The Smith & Loveless Non-Clog Pump was the first wastewater pump to use a mechanical seal and a 100% factory-built pump station. Since its invention, the Smith & Loveless pump has proven its reliability in more than 21,000 separate pumping installations worldwide. Smith & Loveless also developed the station that mounts directly on top of a wet well, pumping up to 7,500 GPM (475 lps).

Pre-Engineered Treatment Plants

Smith & Loveless developed the market for smaller treatment plants designed for schools, subdivisions, hotels, hospitals, offshore drilling rigs, resorts, various industrial applications and municipalities. These plants have major advantages, which include proven design, lower cost installation and reduced construction time. Ranging in flow capacity of 1,000 GPD to 5 MGD (18,925 m³/day) in single units, with seven (7) separate product lines, the Model V and Model R Systems are specifically designed for export.

Wastewater Treatment Equipment

Smith & Loveless offers a complete line of wastewater treatment equipment for the larger component-type municipal and industrial systems. It is highlighted by the **PISTA**[®] Grit Removal System. Other well-known Smith & Loveless component products are the LOOP Brush Aerator, the Kraus-Fall peripheral-feed clarifier, the **PACE**[®] oil/water separator, the **DI-SEP**[®] SX Filter and the Marine **FAST**[®].

Water Treatment Equipment

Smith & Loveless also has a complete line of water treatment equipment. Included are the **FIBROTEX**[®], the **IMF PROTECTOR**[™] Ultrafiltration System, the **IRONMAN**[™] System, the **SCIENCO**[®] Brinemaker, the **DI-SEP**[®] Nitrate Removal Filter, the **SCIENCO**[®] Sodium Hypochlorite Generator, the **CLAR-I-VATOR**[®] and more. This line encompasses both component equipment and package treatment plants from 10 GPD (0.6 lps).

Company Profile

Smith & Loveless was founded in 1946 by B. Alden Smith and Compere Loveless as a Sales Engineering Firm representing several manufacturers in the wastewater industry. Early in their association, Smith & Loveless recognized the need for complete factory-built wastewater pump stations and began manufacturing this equipment. Their first three stations were built for the municipal wastewater system of Salina, Kansas. These units were fabricated in a converted barn less than three miles from the present plant location.

As demand for this equipment grew, Smith & Loveless built their first manufacturing plant – a modest structure a few miles from the present plant site. Sales increased rapidly and within a short time, Smith & Loveless had sales representatives throughout the United States and Canada. Because of this rapid growth, it was necessary to expand the plant five times in four years.

The present site in Lenexa, Kansas (a Kansas City suburb) was selected in 1957. By 1958, the new manufacturing facility was ready for production. This present plant has been expanded several times, more than tripling the original manufacturing and office space (over 100,000 square feet or 10,628 m² of manufacturing space).

Late in 1959, Smith & Loveless was acquired by Trans Union Corporation, which was based in Lincolnshire, Illinois. This acquisition complemented markets served by other divisions of that firm, as well as providing additional capital for expansion and research and development, ensuring Smith & Loveless' leadership in the wastewater industry.

In February 1981, Trans Union merged with the Marmon Group, a largely privately held corporation.

In October 1981, the management of the Smith & Loveless Division purchased the assets of the Division from the Marmon Group, and Smith & Loveless, Inc., was reborn. Smith & Loveless renewed its commitment to maintain its role as a leader in the water and wastewater treatment and pumping industry through the design and production of quality equipment, and by providing superior service.

To continue to strengthen its leadership position, Smith & Loveless, on October 1, 1984, purchased two firms: **SCIENCO**[®], Inc., St. Louis, Missouri and **DI-SEP**[®] Systems International, Inc., of Santa Fe Springs, California. On August 1, 1985, Smith & Loveless added another subsidiary by acquiring St. Louis Marine Systems, Inc., renamed **FAST**[®] Systems, Inc. – later **SCIENCO**[®], Inc., and **FAST**[®] Systems, Inc. were merged into **SCIENCO/FAST**[®] Systems, Inc. In 1987, Smith & Loveless made another step to provide additional capabilities in water treatment by acquiring K-W Industries. K-W was previously located in Omaha, Nebraska. In 1993, the above mentioned companies and their products were all absorbed into Smith & Loveless and its product line.

In a move to both strengthen Smith & Loveless, Inc.'s water product line and expand into the European marketplace, Smith & Loveless Limited, an affiliated company of Smith & Loveless, Inc., acquired the majority interest in Kalsep Limited of Camberley, England on March 29, 1995. Licenses granted allow Smith & Loveless products to be sold by Kalsep Limited and Kalsep Limited's water products to be sold in Smith & Loveless' markets.

In June 1996, in a move to specially develop, manufacture and market wastewater treatment systems for the on-site residential marketplace, an affiliated company, Bio-Microbics, Inc., was formed.

Further international expansion occurred on March 20, 1998, when Smith & Loveless New Zealand Ltd. Was granted licenses to market and sell Smith & Loveless, Inc. technology and equipment in New Zealand and Australia. And in a strategic move in August of 1999, Smith & Loveless Limited – UK began to more actively market and sell Smith & Loveless, Inc. technology in the UK.

On the domestic front, in June of 2000 Smith & Loveless Georgia Inc. was formed. This allows the Company to provide superior pump station sales and service for its Georgia customers.

Smith & Loveless actively pursues the patents of its inventions. The Company currently owns more than 50 active U.S. patents, holds foreign patents in 15 different countries, has several patent applications pending and has more than 25 domestic and foreign trademarks.

Smith & Loveless has actively engaged in R&D. Smith & Loveless' approach to research and development is both the search for new applications of existing product lines, as well as development of completely new concepts. Through these efforts, Smith & Loveless has been able to enter previously untapped markets. The Company's products are sold mainly through manufacturers' sales representative companies, with more than 150 such contract companies located worldwide.

Smith & Loveless employs approximately 250 people direct. Approximately 65 employees are represented by the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union Local No. 13-18. The total Lenexa, Kansas facility today encompasses 115,000 square feet (10,700 square meters) of manufacturing and office space. Smith & Loveless will continue to expand and offer new and better solutions for a world of water problems.



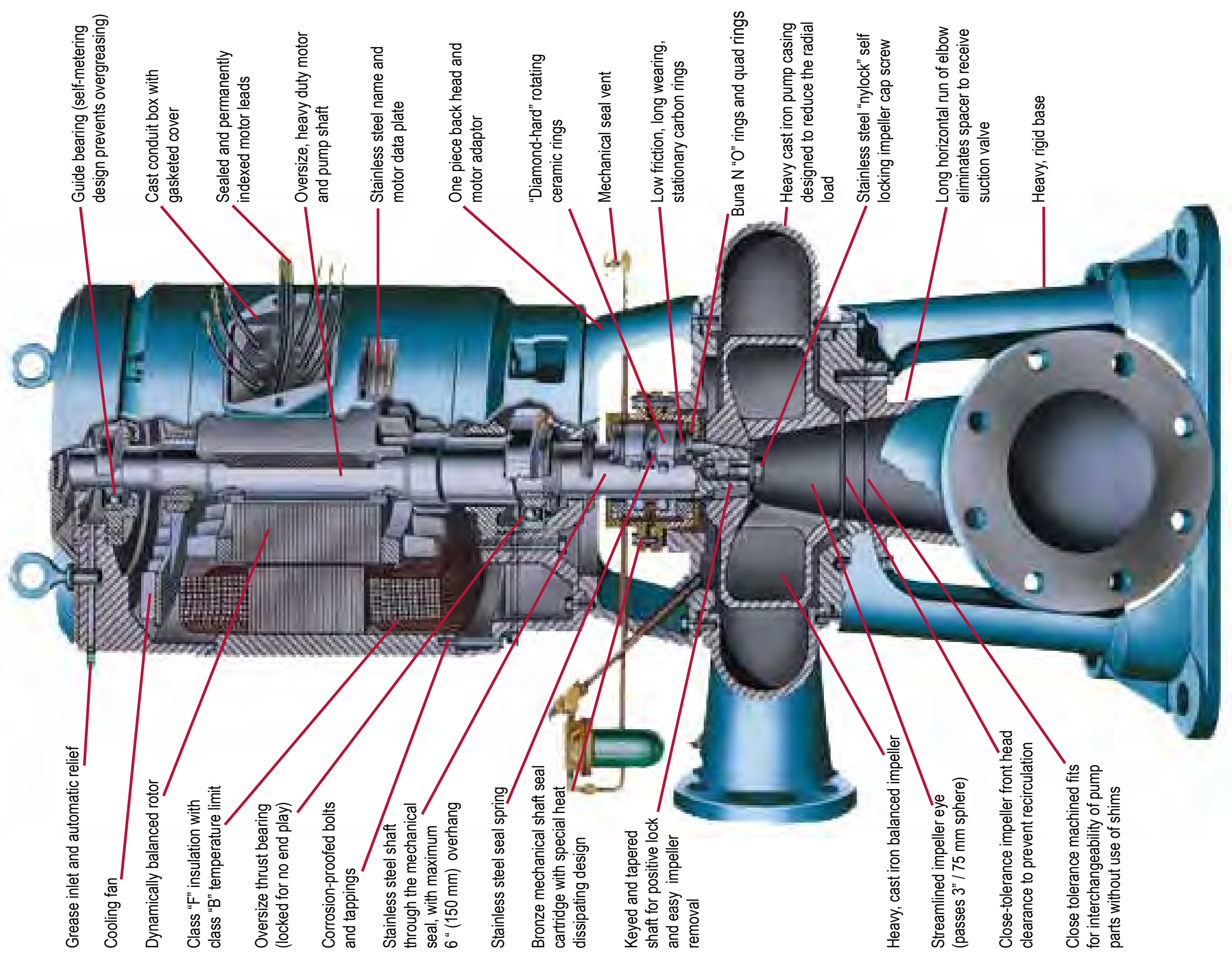
Smith & Loveless Inc.

Above All Others.™

**Smith & Loveless
Non-Clog Wastewater Pumps**



Smith & Loveless Flooded-Suction Non-Clog Pump



CUTAWAY VIEW

Easy Maintenance

Full access to the volute and suction elbow is possible by merely removing the capscrews and raising the entire rotating assembly. This design eliminates the necessity for cleanout ports in the volute and suction elbow. Hand cleanouts are normally not large enough to remove most objects that would clog a pump and in addition can cause raw sewage spillage or flooding.

Unique Volute Design

All Smith & Loveless pumps come standard with either a hybrid dual-curve volute design or a double-volute design to reduce the radial thrust loads produced inside a centrifugal pump. These designs, coupled with the Smith & Loveless pump's exclusive minimum shaft overhang, reduce shaft deflection. The resultant increased mechanical seal and bearing life and decreased shaft loadings will greatly reduce maintenance and repair costs.



Four Smith & Loveless Flooded Suction Non-Clog Pumps dutifully work, day-in and day-out in this **CAPSULAR®** Pump Station.

Features

Oversized Shaft - The oversized shaft minimizes shaft deflection, thus extending mechanical seal and bearing life.

Oversized Bearings - Because of the oversized shaft, oversized bearings are applied. Typically, bearings in the Smith & Loveless pump have a B10 bearing life of 30 years.

Bottom Thrust Bearing - The locked thrust bearing located at the bottom of the shaft prevents shaft expansion and increased clearances through the wet end of the pump.

Minimum Shaft Overhang - Minimizing the cantilevered portion of the shaft reduces pump height and provides the rigid construction necessary to prevent vibration and deflection from reducing seal life. Measurement from the lower bearing to the top of the impeller hub is less than 6" (150 mm) on all Smith & Loveless pumps.

Seal Lubrication - The Smith & Loveless pump draws cooling and lubrication water from the back head. This low pressure area prevents exposing the seal to pump shutoff pressure during start-up, which can prevent proper lubrication of the seal and cause the seal elements to slip on the shaft.

Impellers Trimmed Inside Shrouds - Impellers are designed for maximum efficiency. By trimming the impellers inside the shrouds, the Smith & Loveless pump leaves the back shroud full diameter to prevent stringy material from winding around the shaft.

Minimum Height - A minimum height pump provides a compact design that reduces vibration, extending seal and bearing life, and the vertical design provides more free floor area for maintenance than horizontal pump alternatives.

Solid Stainless Steel Shaft - Stainless steel shaft through the mechanical seal eliminates abrasive rust particles that can shorten seal life as well as eliminating corrosion that can weaken the shaft.

Close Impeller/Front Head Tolerance - To prevent recirculation of the pumped liquid, minimum clearance between impeller and front head must be maintained. The Smith & Loveless pump has 0.015" (0.38 mm) clearance which eliminates the need for shims to maintain minimum clearance between impeller and front head.

Shaft Movement - Shaft endplay is limited to bearing shake. Shaft runout is limited to 0.003" (.008 mm). These close tolerances are in all cases tighter than NEMA specifications and significantly increase both pump efficiency and mechanical seal life.

Bronze Seal Housing - The heavy bronze seal housing provides the best heat dissipation as well as preventing the formation of abrasive rust particles in the seal.

Class "F" Motor Insulation - Although Smith & Loveless limits motor temperature rise to a maximum of 80° C, all motors use Class F insulation which is suitable for a temperature rise of 105° C. This conservative design criteria translates directly into extended motor life.

Tapered Impeller Fit - The shaft and impeller bore are tapered allowing easy removal of the impeller. A nontapered shaft and impeller requires a wheel puller for removal, often resulting in broken impeller shrouds.

One Piece Back Head/Motor Adapter - The one piece back head and motor adapter provides more rigid construction, reduces the number of registered fits required, and minimizes the possibility of unbalancing the motor rotor in relation to the impeller and mechanical seal. By reducing the amount of vibration, the seal and bearing life are increased.

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INTERNATIONAL WARRANTY CERTIFICATE

SMITH & LOVELESS, INC.[®], Lenexa, Kansas, manufacturer of the wastewater treatment/transfer equipment, shall warrant for eighteen (18) months from date of shipment or one (1) year from date of start-up, whichever occurs first, that the structure and all equipment will be free from defects in materials and workmanship.

Warranties and guarantees by the suppliers of various components in lieu of a single source responsibility by the manufacturer are not provided. The manufacturer shall be solely responsible for the warranty of the equipment and all components.

During the warranty period, if any part is defective or fails to perform as specified when operating at design conditions and if the equipment has been protected prior to start-up and has been installed, operated and maintained all in accordance with the written instructions provided by SMITH & LOVELESS, SMITH & LOVELESS will repair or replace the defective part F.O.B. Lenexa, Kansas. Owner to furnish SMITH & LOVELESS, INC. a "no charge" Purchase Order to facilitate import/export requirements. Owner to pay all applicable import duties. Defective parts must be returned by the owner to SMITH & LOVELESS, if so requested. The cost of labor and any other expenses resulting from replacement of defective parts and from installation of parts furnished under this warranty shall be borne by the purchaser.

The replacement of those items normally consumed in service, such as seals, drive belts, light bulbs, filters, oil, grease, etc., shall be considered as part of the purchaser's routine maintenance and upkeep, and such parts are not eligible for repair or exchange free of charge under this warranty.

SMITH & LOVELESS makes no other warranty expressed or implied and SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY AS TO THE MERCHANTABILITY OF THE EQUIPMENT OR AS TO ITS FITNESS FOR ANY PARTICULAR PURPOSE. SMITH & LOVELESS is not responsible for consequential or incidental damages of any nature resulting from such things as, but not limited to, defects in design, material, workmanship, or delays in delivery, replacements or repairs.



Smith & Loveless, Inc.

Sewage Pump Order

Date EO Prepared: 08/15/16
Job Serial Number: 19-02186-00-V

Location: Winnipeg, CANADA	Engineer: Dillon Consulting Limited
Purchaser: Nothart Engineered Sales LTD	Project: Burrows Ave LS
Prepared By: Reggie de Leon	Job SN: 19-02186-00-V Config. Number:
Rep Firm: Nothart Engineered Sales, Ltd.	Companions: 19-02187, 19-02188

Electrical Service Data: 3 Phase 60 Cycle 575 Volts

PUMP DATA

Design Characteristics (GPM@TDH) 600 @ 24
 Pump Model 4B2*1
 Impeller Diameter 9 1/4
 Rotation CCW
 Mechanical Seal Size 1 7/8
 Suction Elbow Size 4" x 8"
 Suction Elbow Type S&L
 Pump Discharge Location 5
 Pump Serial Number

MOTOR DATA

Motor Horsepower 7.5
 Motor RPM 1200
 Electrical Data 3/60/575
 Conduit Box Location D
 Motor Serial Number Code

SPECIAL MODIFICATIONS - ADDITIONS - AUXILIARY EQUIPMENT

Item No.	Item Description
1.	Factory to perform certified pump test. Certified pump curves to be approved prior to shipment.
2.	Elevation: 784' (239m)
3.	Ship Loose: Two (2) volute gaskets. p/n: 60A26

O&M Manuals

Preliminary:	0	Marketing /Comm:	1	Start-Up:	1
With Equipment:	1	Rep:	1	Customer:	4
CD-ROM:	1			TOTAL:	9

Sewage Pump Order

Date EO Prepared: 08/15/16
 Job Serial Number: 19-02187-00-V

Location: Winnipeg, CANADA	Engineer: Dillon Consulting Limited
Purchaser: Nothart Engineered Sales LTD	Project: Burrows Ave LS
Prepared By: Reggie de Leon	Job SN: 19-02187-00-V Config. Number:
Rep Firm: Nothart Engineered Sales, Ltd.	Companions: 19-02186, 19-02188
Electrical Service Data: 3 Phase	60 Cycle 575 Volts

PUMP DATA		MOTOR DATA	
Design Characteristics (GPM@TDH)	600 @ 24	Motor Horsepower	7.5
Pump Model	4B2*1	Motor RPM	1200
Impeller Diameter	9 1/4	Electrical Data	3/60/575
Rotation	CCW	Conduit Box Location	D
Mechanical Seal Size	1 7/8	Motor Serial Number Code	
Suction Elbow Size	4" x 8"		
Suction Elbow Type	S&L		
Pump Discharge Location	5		
Pump Serial Number			

SPECIAL MODIFICATIONS - ADDITIONS - AUXILIARY EQUIPMENT

Item No.	Item Description
1.	Factory to perform certified pump test. Certified pump curves to be approved prior to shipment.
2.	Elevation: 784' (239m) ASL
3.	Ship Loose: Two (2) volute gaskets, p/n: 60A26

O&M Manuals

Preliminary:	0	Marketing /Comm:	0	Start-Up:	0
With Equipment:	0	Rep:	0	Customer:	4
CD-ROM:	0			TOTAL:	4

Sewage Pump Order

Date EO Prepared: 08/15/16
Job Serial Number: 19-02188-00-V

Location: Winnipeg, CANADA	Engineer: Dillon Consulting Limited
Purchaser: Nothart Engineered Sales LTD	Project: Burrows Ave LS
Prepared By: Reggie de Leon	Job SN: 19-02188-00-V Config. Number:
Rep Firm: Nothart Engineered Sales, Ltd.	Companions: 19-02186, 19-02187

Electrical Service Data: Phase Cycle Volts

PUMP DATA	MOTOR DATA
Design Characteristics (GPM@TDH)	600 @ 24 Motor Horsepower 7.5
Pump Model	4B2*1 Motor RPM 1200
Impeller Diameter	9 1/4 Electrical Data 3/60/575
Rotation	CW Conduit Box Location D
Mechanical Seal Size	1 7/8 Motor Serial Number Code
Suction Elbow Size	4" x 8"
Suction Elbow Type	S&L
Pump Discharge Location	5
Pump Serial Number	

SPECIAL MODIFICATIONS - ADDITIONS - AUXILIARY EQUIPMENT

Item No.	Item Description
1.	Factory to perform certified pump test. Certified pump curves to be approved prior to shipment.
2.	Elevation: 784' (239m) ASL
3.	Ship Loose: Two (2) volute gaskets, p/n: 60A26

O&M Manuals

Preliminary:	0	Marketing /Comm:	0	Start-Up:	0
With Equipment:	0	Rep:	0	Customer:	4
CD-ROM:	0	TOTAL:			4

ENGINEERING DATA



Smith &
Loveless, Inc.®

14040 West Santa Fe Trail Drive
Lenexa, Kansas 66215-1284

Flooded Suction
Non-Clog Pumps
Specification
June 2016
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SPECIFICATION SMITH & LOVELESS FLOODED SUCTION NON-CLOG PUMPS

LOCATION: WINNIPEG, CANADA S/N: 19-02186, 19-02187 & 19-02188

GENERAL

The contractor shall furnish and install 4B2*1 vertical, close-coupled, motor-driven, non-clog type pumps as manufactured by Smith & Loveless, Inc., Lenexa, Kansas.

OPERATING CONDITIONS

Each pump shall be capable of delivering 600 GPM (38 L/s) of raw water or wastewater against a total dynamic head of 24' (7.4m). The maximum allowable speed shall be 1200 RPM. The minimum rated horsepower of each pump motor shall be 7-1/2HP.

All openings and passages shall be large enough to permit the passage of a sphere 3" in diameter.

PUMPS

The pumps shall be 4" vertical, non-clog type of heavy cast iron construction, especially designed for the use of mechanical seals. In order to minimize seal wear caused by linear movement of the shaft, the shaft bearing nearest the pump impeller shall be locked in place so that end play is limited to the clearance within the bearing. To minimize seal wear resulting from shaft deflection caused by the radial thrust of the pump, the shaft from the top of the impeller to the lower bearing supporting the impeller shall have a minimum diameter of 1-7/8" for motor frame sizes 213 through 286. The dimension from the lowest bearing to the top of the impeller shall not exceed 6".

The bearing nearest the impeller shall be designed for the combined thrust and radial load. The upper bearing shall be free to move linearly with the thermal expansion of the shaft and shall carry only radial loads.

The shaft shall be solid stainless steel through the mechanical seal to eliminate corrosion and abrasive rust particles. Removable shaft sleeves will not be acceptable if the shaft under the sleeve does not meet the specified minimum diameter.

A. NON-CLOG TWO-PORT IMPELLER

The pump impeller shall be of the enclosed two-port type made of close-grained cast-iron and shall be balanced. The eye of the impeller as well as the ports shall be large enough to permit the passage of a sphere 3" in diameter in accordance with nationally recognized codes. The impeller shall be keyed with a stainless steel key and secured to the motor shaft by a stainless steel capscrew equipped with a Nylock or other suitable self-locking device. The impeller shall not be screwed or pinned to the motor pump shaft and shall be readily removable without the use of special tools. To prevent the buildup of stringy materials, grit and other foreign particles around the pump shaft, all impellers less than full diameter shall be trimmed inside the impeller shrouds. The shrouds shall remain full diameter so that close minimum clearance from shrouds to volute is maintained. Both the end of the shaft and the bore of the impeller shall be tapered to permit easy removal of the impeller from the shaft.

The motor shall be attached to the pump volute by a one-piece cast-iron adapter and backhead. The pump shall be arranged so that the rotating element can easily be removed from the volute without disconnecting the seal system or electrical wiring. The pump shall be arranged so that any foreign object may be removed from the pump or suction elbow without disassembling the motor, impeller, or backhead. Volute or suction elbow clean-outs will not be an acceptable substitute.

The pump shaft shall be sealed against leakage by a double mechanical seal installed in a bronze seal housing constructed in two sections with registered fit. The housing shall be recessed into the pump backhead and securely fastened thereto with stainless steel capscrews. The inside of the seal housing shall be tapered to facilitate the replacement of the seal parts. The seal shall be a double seal with the mating surfaces lapped to a flatness tolerance of one light band. The rotating member shall

ENGINEERING DATA



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Flooded Suction
Non-Clog Pumps
Specification
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be held in mating position with the stationary carbons by a stainless steel spring. The seal housing with assembled parts shall be so constructed as to be readily removable from the shaft as a unit and shall be provided with tapped jackscrew openings to assist in removing it from the backhead.

The seal shall be pressurized and lubricated by water taken directly from the pump backhead. The water shall pass through a filter to the seal housing and be introduced between the upper and lower sealing surfaces. The filter shall be of corrosion-resistant materials and shall screen out all solids larger than 50 microns. The seal system shall contain a brass valve connected near the top of the seal housing to permit the relief of any air trapped in the seal unit. A manually operated brass valve shall also be provided to vent the pump volute.

The pump volute shall be of heavy, cast iron construction, free from projections that might cause clogging or interfere with flow through the pump.

The pump shall be supported by a heavy base with four legs to provide maximum rigidity and balance. The height shall be sufficient to permit the use of an increasing suction elbow, which shall be provided when the nominal pump size is smaller than the suction line. The suction and discharge openings shall be flanged, faced and drilled 125-pound American Standard.

MOTORS

The pump motors shall be vertical, solid shaft, NEMA P-base, squirrel-cage induction type, suitable for 3 phase, 60 cycle, 575 volt electric current. They shall have Class F insulation, suitable for temperatures up to 105°C. Insulation temperature shall, however, be maintained below 80°C. The motors shall have normal starting torque and low starting current, as specified by NEMA Design B characteristics. They shall be open drip-proof design with forced air circulation by integral fan. Openings for ventilation shall be uniformly spaced around the motor frame. Leads shall be terminated in cast connection box and shall be clearly identified.

The motors shall have 1.15 service factor. The service factor shall be reserved for the owner's protection. The motors shall not be overloaded beyond their nameplate rating, at the design condition, nor at any head in the operating range as specified under Operating Conditions.

The motor-pump shaft shall be centered, in relation to the motor base, within .005". The shaft run-out shall be limited to .003".

The motor shaft shall equal or exceed the diameter specified under "Pumps", at all points from immediately below the top bearing to the top of the impeller hub.

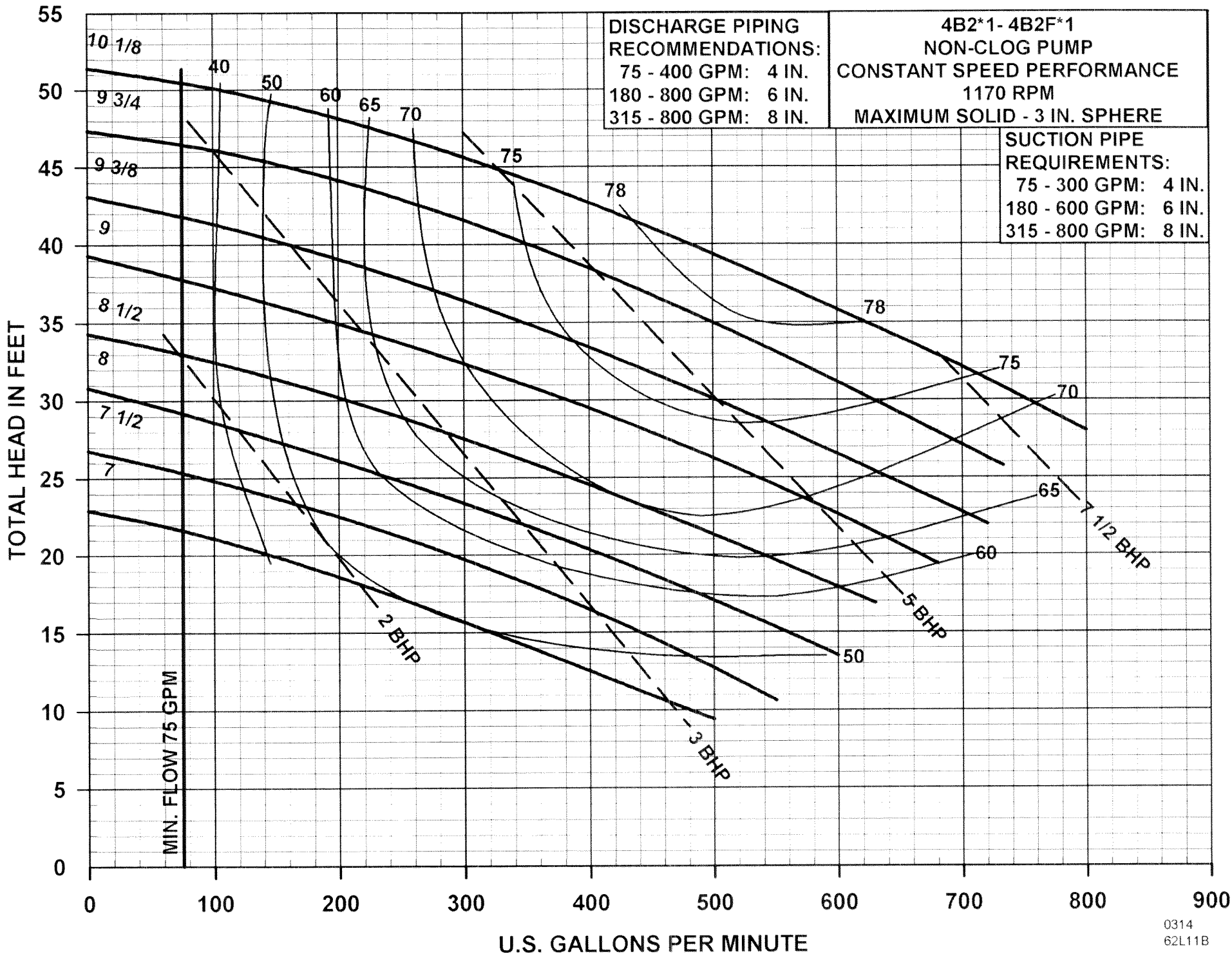
A bearing cap shall be provided to hold the bottom motor bearing in a fixed position. Bearing housings shall be provided with fittings for lubrication as well as purging old lubricant.

The motor shall be fitted with heavy lifting eyes or lugs, each capable of supporting the entire weight of the pump and motor.

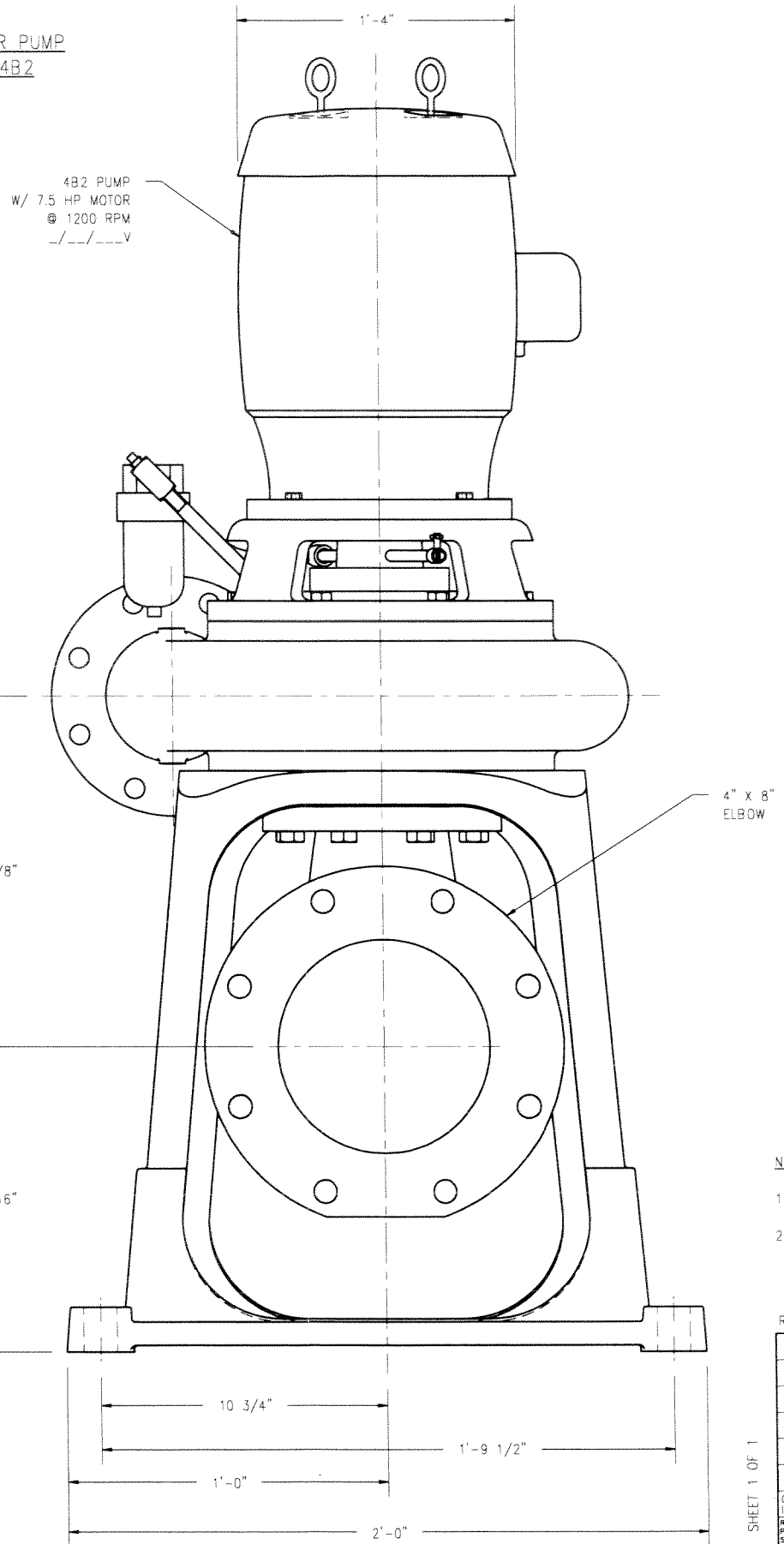
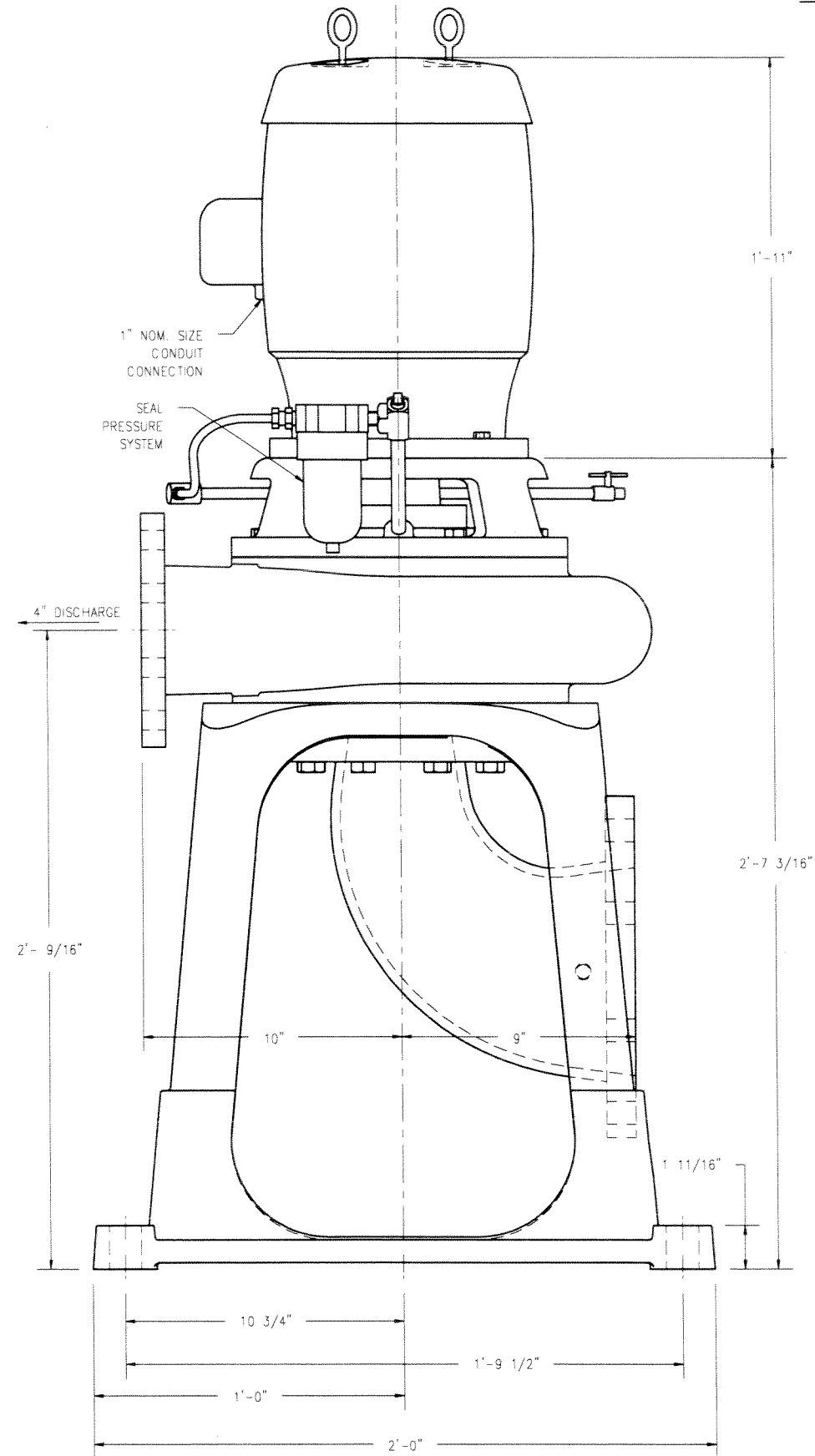
The pump motors shall be Premium Efficiency type, per NEMA MG-1 table 12-12, Inverter Ready per NEMA Part 31.4.4.2, with cast-iron frames, and be UL Recognized and CSA Approved. The motor windings shall be 200 C Inverter Spike-Resistant magnet wire and the rotors shall have an epoxy coating for corrosion protection.

SPARE PARTS

A spare volute gasket shall be provided.



WASTEWATER PUMP
MODEL 4B2



4B2 PUMP
W/ 7.5 HP MOTOR
@ 1200 RPM
-/-/-V

NOTES:

1. FLANGES ARE FACED AND DRILLED A.S.A. CLASS 125.
2. COPYRIGHT (c) 2016 SMITH & LOVELESS, INC.

REDRAWN PER REV. B

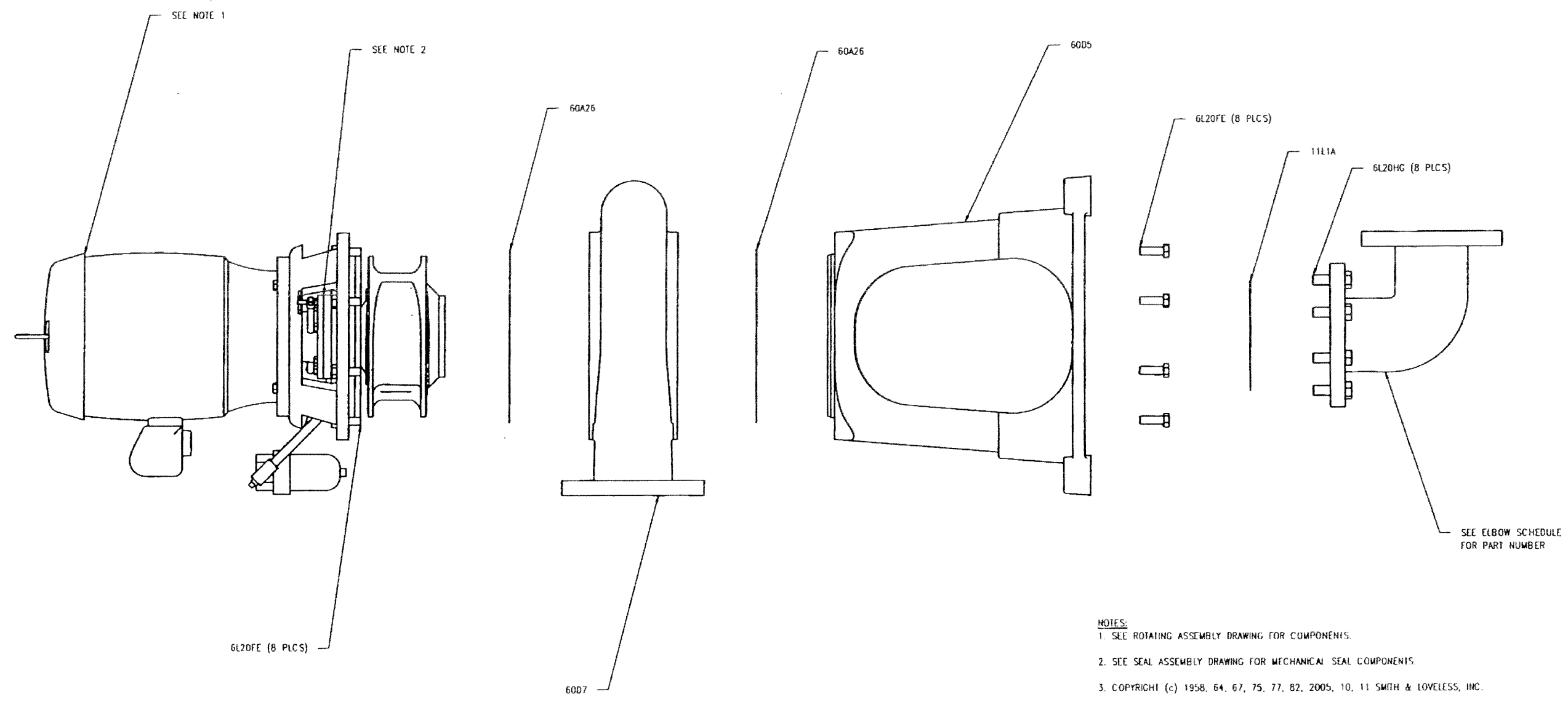
61C7/B

DRAWN BY: CAS		DATE: 7/20/2016	ALLOWABLE TOLERANCES: FRACTIONS ~	FOR WINNEPEG, CANADA		
CHECKED BY: HJM		DATE: 7/20/2016	DECIMALS ~	OUTLINE DIMENSIONS 4B2 PUMP		
APPROVED BY: PRH		DATE: 7/20/2016	ANGLES ~			
SCALE: NTS		CODE:		SIZE	U/M	EA
LET	ECN NO	DATE	BY APP'D	FILE NAME	DWG NO	PLOT SCALE
				24538-19-001.dwg	24538-19-001	1:1
ORIGINAL ISSUE				SERIAL NO	INQ24538	REV
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SHEET 1 OF 1



ELBOW SCHEDULE	
S & L NO.	ELBOW SIZE
28B651E	4" X 4" STD.
28A92	4" X 4" S&L
28C114	4" X 6" S&L
28A214B	4" X 8" STD.



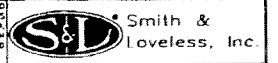
- NOTES:**
- SEE ROTATING ASSEMBLY DRAWING FOR COMPONENTS.
 - SEE SEAL ASSEMBLY DRAWING FOR MECHANICAL SEAL COMPONENTS.
 - COPYRIGHT (c) 1958, 64, 67, 75, 77, 82, 2005, 10, 11 SMITH & LOVELESS, INC.

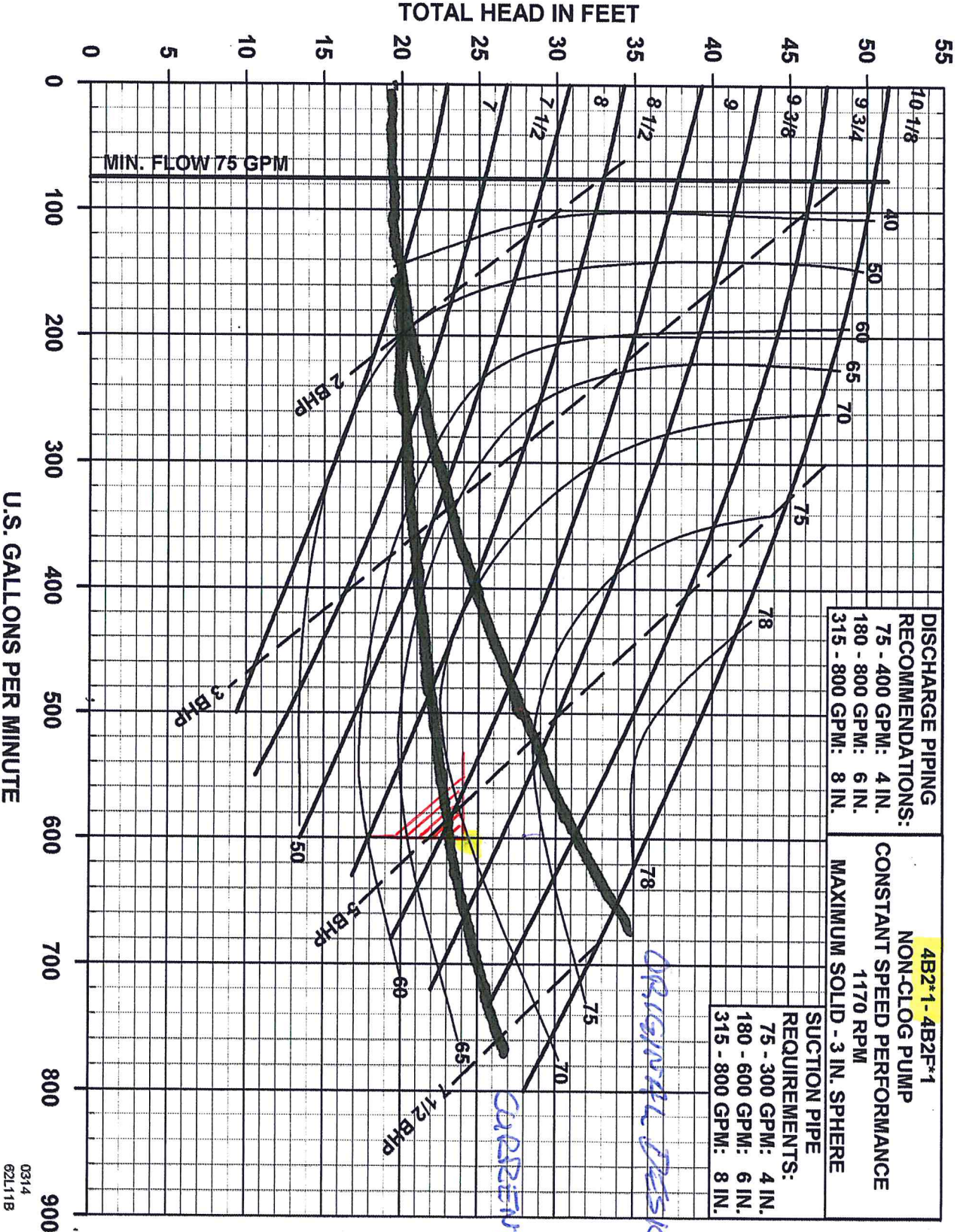
61D1/N

SHEET 1 OF 1

DRAWN BY: C. R. WELTY		DATE: 5/23/1958	ALLOWABLE TOLERANCES: FRACTIONS -	FOR
CHECKED BY: C. WAAGE		DATE: 5/1958	FRACTIONS -	PUMP ASSEMBLY 4B2, 4B2A, 4B2Y, 4C2, 4C2A, 4C2Y PUMPS
APPROVED BY:		DATE:	DECIMALS -	
N	N2010-74	1/2011	MIA ACW	SIZE
M	N2009-33	1/7/06	EWB ACW	U/M EA
LET	ECN NO	DATE	BY APPVD	WT
SCALE N.T.S.		CODE:	ANGLES	FILE NAME 61D1N.dwg
© Smith & Lovelless, Inc.		DES. 64, 67, 75, 77, 82	SERIAL NO.	PROJ. SCALE 1:1
DES. 18 11		REV N	DWG NO 61D1	REV N

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CLOW CANADA

50 - 300 R/W VALVE NRS FLANGED ENDS
GENERAL DIMENSIONS

PROJECT

OWNER

CONTRACTOR

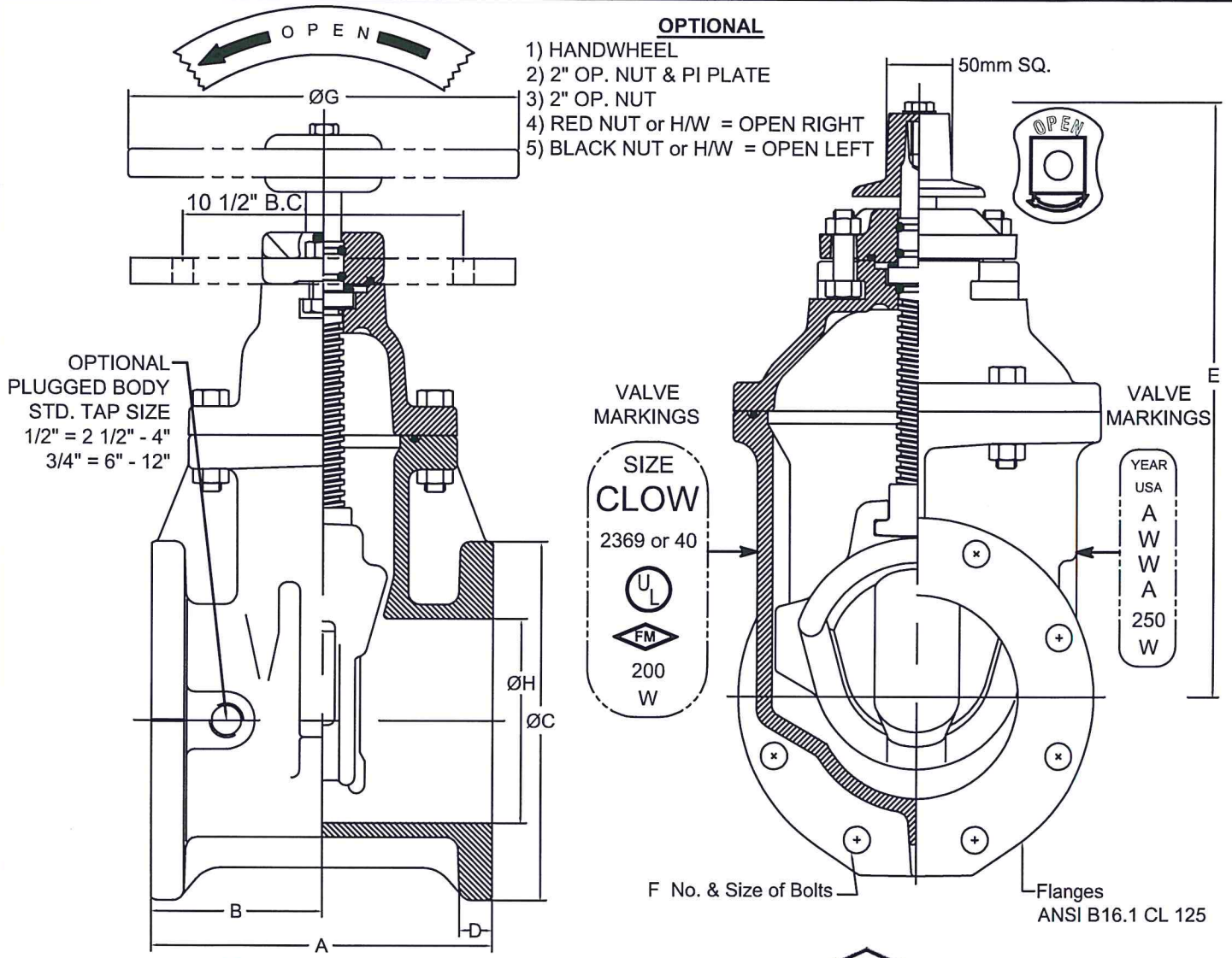
DISTRIBUTOR

CONSULTANT

CLOW FIGURE F6102

CLOW MODEL 2640 AWWA C509 FULL WALL CAST IRON

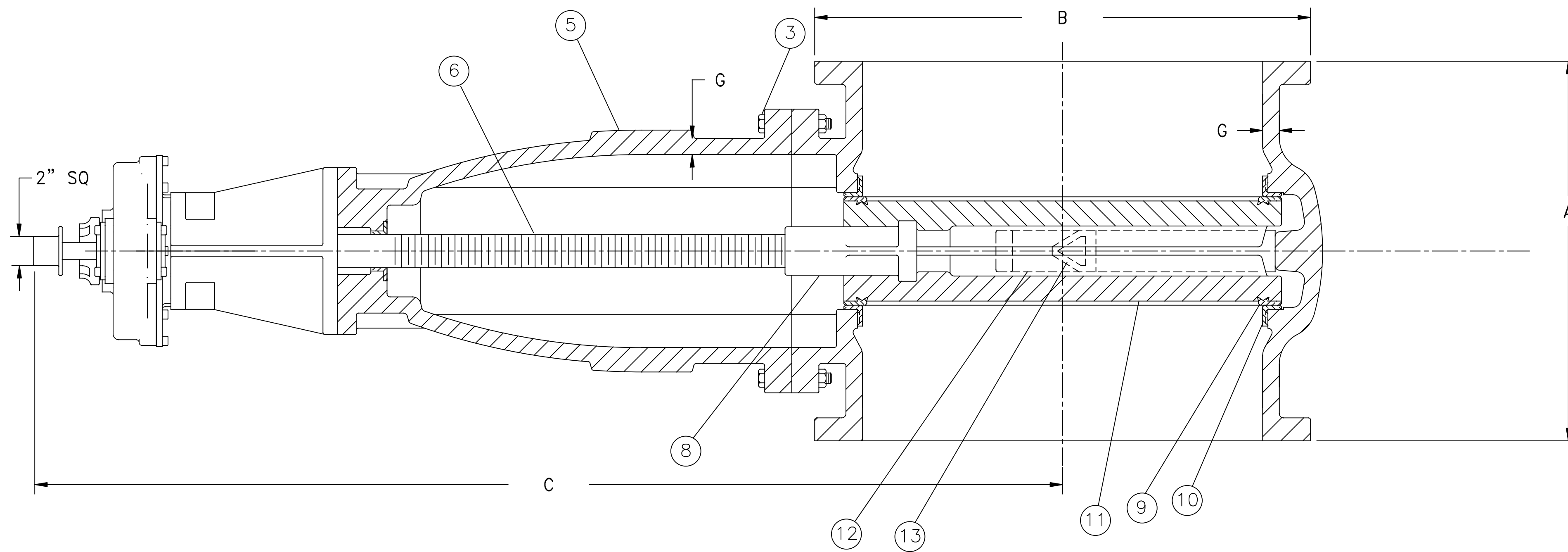
CLOW MODEL 2639 AWWA C509 FULL WALL DUCTILE IRON



75mm TO 300mm PORT DIAMETER

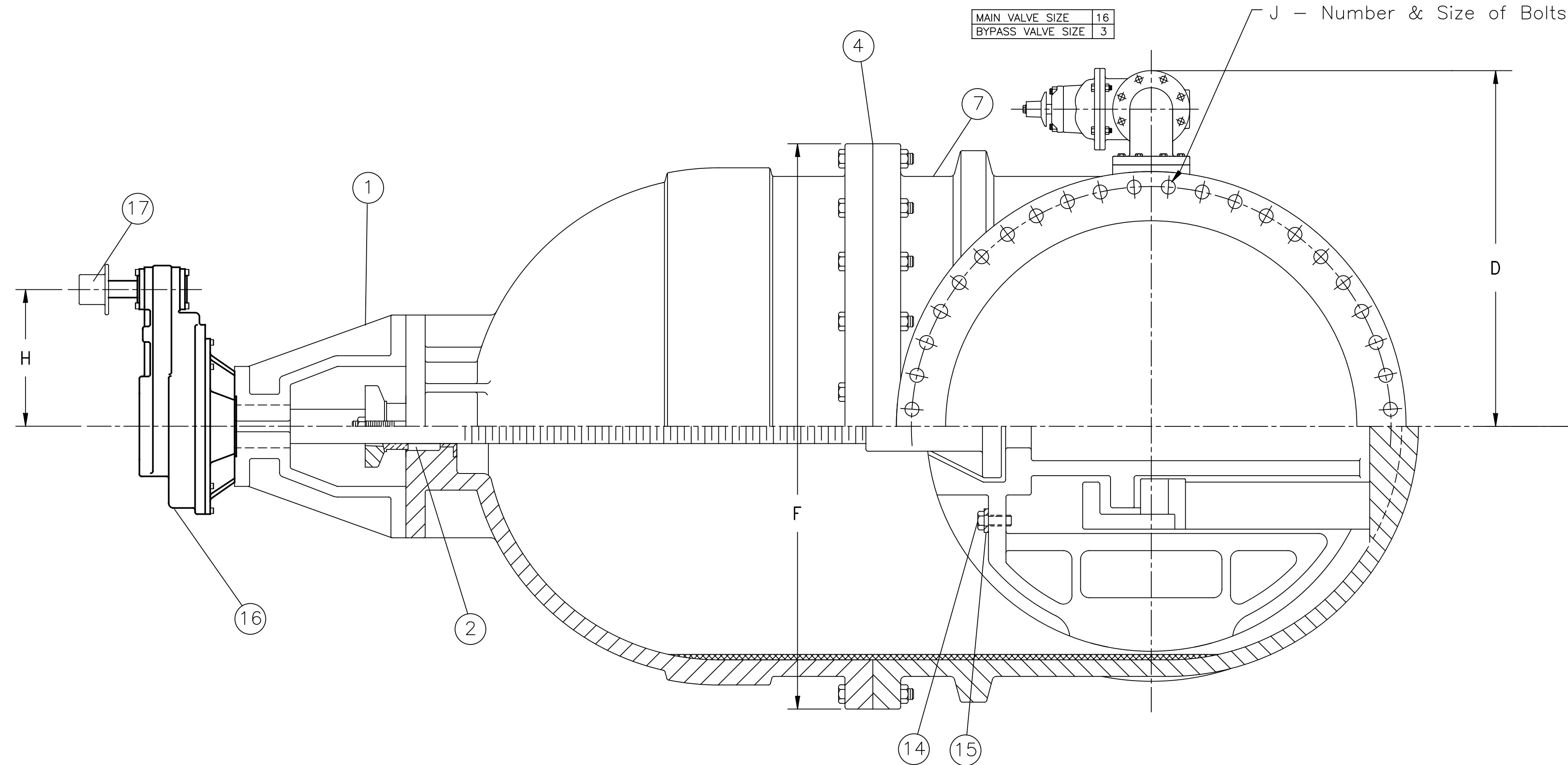
METRIC DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G	H	NUMBER OF TURNS	WEIGHT W/2" NUT	WEIGHT W/ HW	WEIGHT PI PLATE
50	180	90	150	16	275	4-5/8	185	50	6 1/2	39 lbs	43 lbs	N/A
62.5	190	95	180	18	290	4-5/8	185	62.5	8	51 lbs	56 lbs	N/A
75	200	100	190	19	315	4-5/8	250	75	10	62 lbs	68 lbs	78 lbs
100	230	115	230	23	375	8-5/8	250	108	13 1/2	87 lbs	93 lbs	103 lbs
150	265	130	280	25	480	8-3/4	300	160	19 1/2	134 lbs	143 lbs	150 lbs
200	290	145	340	28	570	8-3/4	350	210	25 1/2	212 lbs	224 lbs	228 lbs
250	330	165	400	30	670	12-7/8	450	260	31 1/2	369 lbs	388 lbs	385 lbs
300	350	180	480	32	750	12-7/8	450	310	37 3/4	523 lbs	542 lbs	539 lbs



VALVE SIZE	16
A	23
B	23 1/2
C	46 1/2
D	20 1/2
E*	1 7/8
F	25 3/4
G	7/8
H	8
J	16-1"

*STEM DIAMETER



DET	QTY	DESCRIPTION	MATERIAL
1	1	Extension	Cast Iron, ASTM A126 Class B
2	2	O-Ring	NBR
3	-	Bolts & Nuts	316 Stainless Steel
4	1	Neck Flange Gasket	NBR
5	1	Cover	Ductile Iron, ASTM A536 65-45-12
6	1	Stem	Brass, ASTM B763 C99500
7	1	Body	Ductile Iron, ASTM A536 65-45-12
8	1	Stem Nut	Brass, ASTM B584 C87610
9	2	Gate Ring	Brass, ASTM B584 C89836
10	2	Case Ring	Brass, ASTM B584 C89836
11	2	Gate	Cast Iron, ASTM A126 Class B
12	2	Hook & Wedge	Cast Iron, ASTM A126 Class B
13	2	Wedge Shoe	Brass, ASTM B584 C87850
14	4	Pegs	Brass, ASTM B584 C87850
15	2	Straps	Brass, ASTM B584 C87850
16	1	Spur Gear Operator	-----
17	1	Op Nut	Cast Iron, ASTM A126 Class B

VALVES COMPLY WITH AWWA C-500 STANDARD
 RATED WORKING PRESSURE IS 150 PSIG
 VALVES TO OPEN LEFT (COUNTERCLOCKWISE)
 VALVES WILL BE EPDXY COATED INSIDE & OUT
 VALVES WILL HAVE 316 STAINLESS STEEL NUTS & BOLTS

AUGUST 5TH 2016
 SUPPLY & DELIVERY OF PUMPS AND VALVES INCLUDING INITIAL STARTUP, AND COMMISSIONING
 BID OPPORTUNITY #573-2016
 NOTHART ENGINEERED SALES LIMITED
 171 SAMBORSKI DRIVE
 UNIT 100
 OAK BLUFF MB
 R4G 0B3
 QUANTITY 1 UNIT
 SPEC. REFERENCE
 SECTION 40 05 52 - 2.5

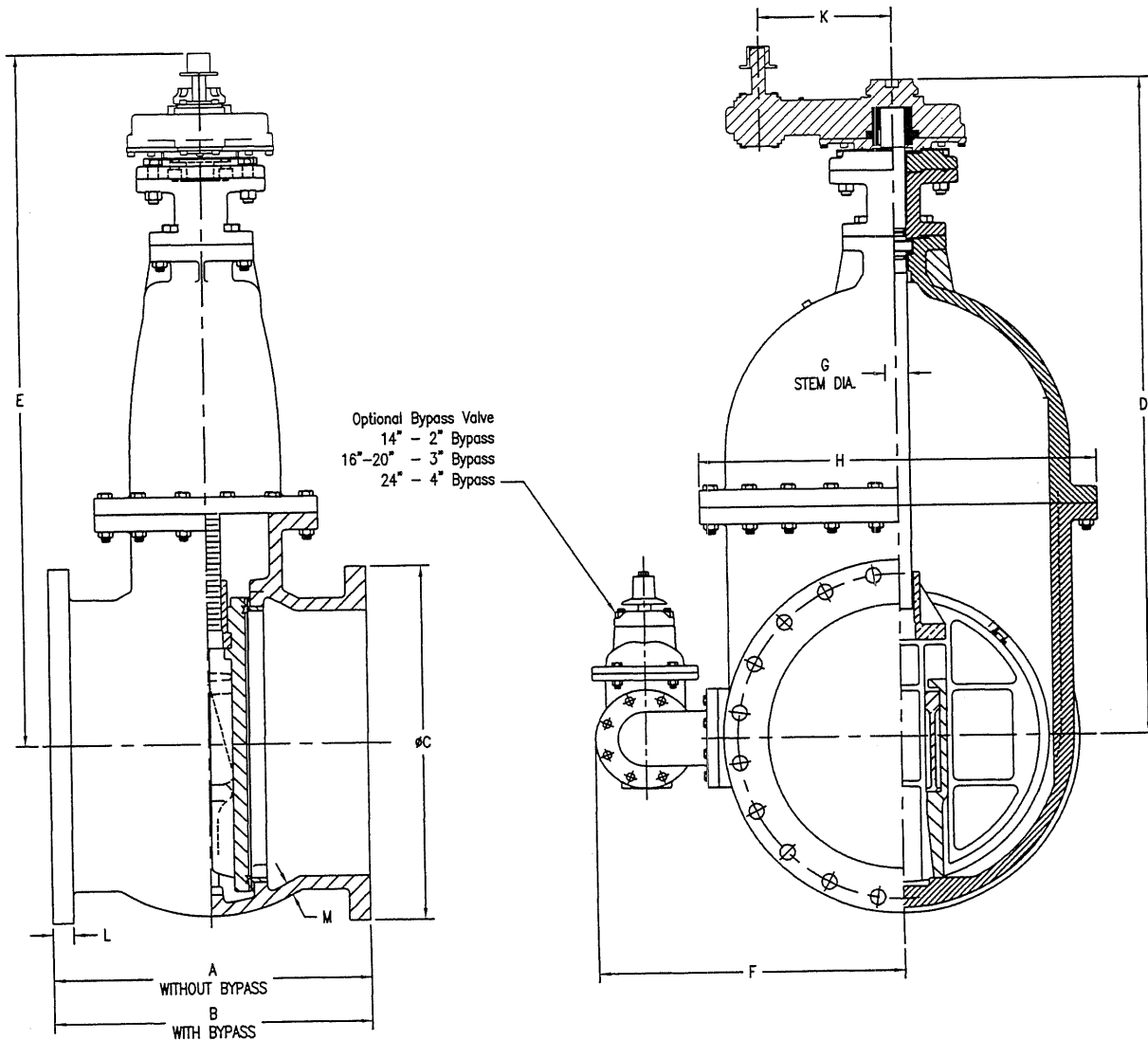
PART NO.	ROUGH	FINISHED	SYM.	REVISION RECORD	DR.	DATE
<p>TOLERANCES UNLESS OTHERWISE SPECIFIED</p> <p>MACHINED DIM. DECIMAL ± .005 FRACT. ± 1/64 ANGLES ± 1° SURF. FIN. 125/ RADII 1/32</p> <p>CASTING DIM. 0-4 ± 1/32 4-8 ± 3/64 8-12 ± 1/16 12-18 ± 3/32 18 UP ± 1/8 RADII 1/8 DRAFT 2°</p>						
<p>CLOW CLOW VALVE COMPANY OSKALOOSA, IOWA DIV. OF McWANE INC.</p>		<p>TITLE ASSEMBLY - 16" CLOW AWWA GATE VALVE NRS, FLANGE ENDS, SPUR GEAR OPERATOR, SIDE BYPASS</p>				
<p>THIS DWG. AND ALL INFORMATION THEREON IS OUR PROPERTY AND SHALL NOT BE USED, COPIED OR REPRODUCED WITHOUT WRITTEN CONSENT.</p>						
SCALE	DO NOT SCALE	PATTERN NO.	BILL MATL. NO.	ASSY. DWG.		
DATE	07/28/16	DR JJJ	CHKD	SUPERSEDES	DWG. NO.	
WEIGHT	TR	APPVD			D-23317	

14"-24" DOUBLE DISC SPUR GEAR
FLANGE END DIMENSIONAL LIST

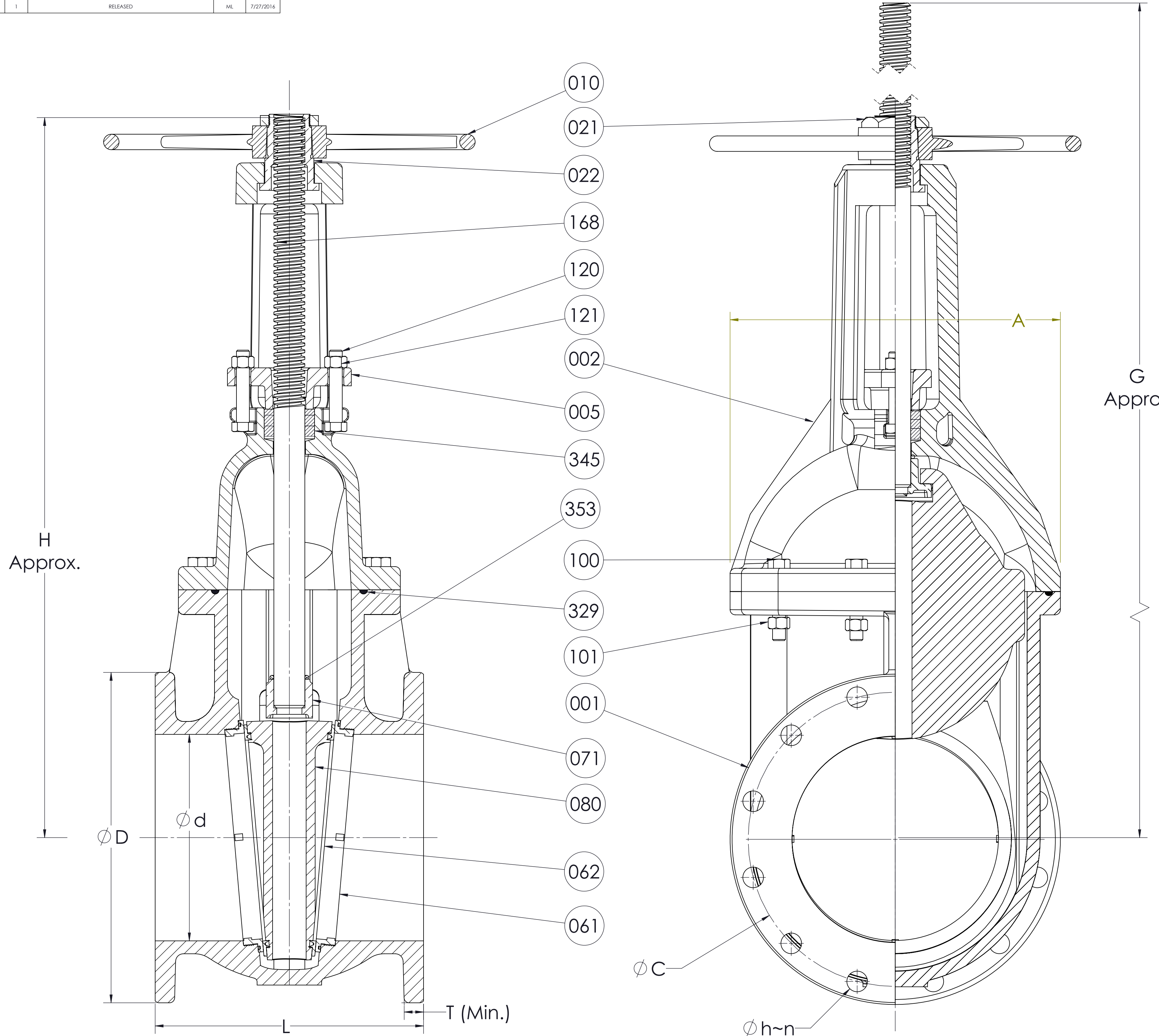
CLOW VALVE COMPANY

MODEL 2613

VALVE SIZE	14	16	18	20	24
A	15 $\frac{3}{4}$	17	19	20	23
B	23	23	24	24	28 $\frac{1}{2}$
C	21	23 $\frac{1}{2}$	25	27 $\frac{1}{2}$	32
D	38 $\frac{3}{4}$	42 $\frac{3}{4}$	48 $\frac{7}{8}$	52 $\frac{1}{2}$	59
E	42 $\frac{1}{2}$	46 $\frac{1}{2}$	52 $\frac{1}{2}$	56	62 $\frac{1}{2}$
F	19 $\frac{1}{4}$	20 $\frac{1}{2}$	22 $\frac{1}{2}$	24	28
G	1 $\frac{7}{8}$	1 $\frac{7}{8}$	2 $\frac{1}{8}$	2 $\frac{1}{8}$	2 $\frac{1}{2}$
H	23 $\frac{5}{8}$	25 $\frac{3}{4}$	27 $\frac{3}{4}$	32 $\frac{7}{8}$	35 $\frac{3}{4}$
K	8	8	12	12	12
L	1 $\frac{3}{8}$	1 $\frac{7}{16}$	1 $\frac{9}{16}$	1 $\frac{11}{16}$	1 $\frac{7}{8}$
M	$\frac{7}{8}$	$\frac{7}{8}$	1 $\frac{15}{16}$	1	1 $\frac{1}{8}$
URNS TO OPEN	90	104	174	192	228



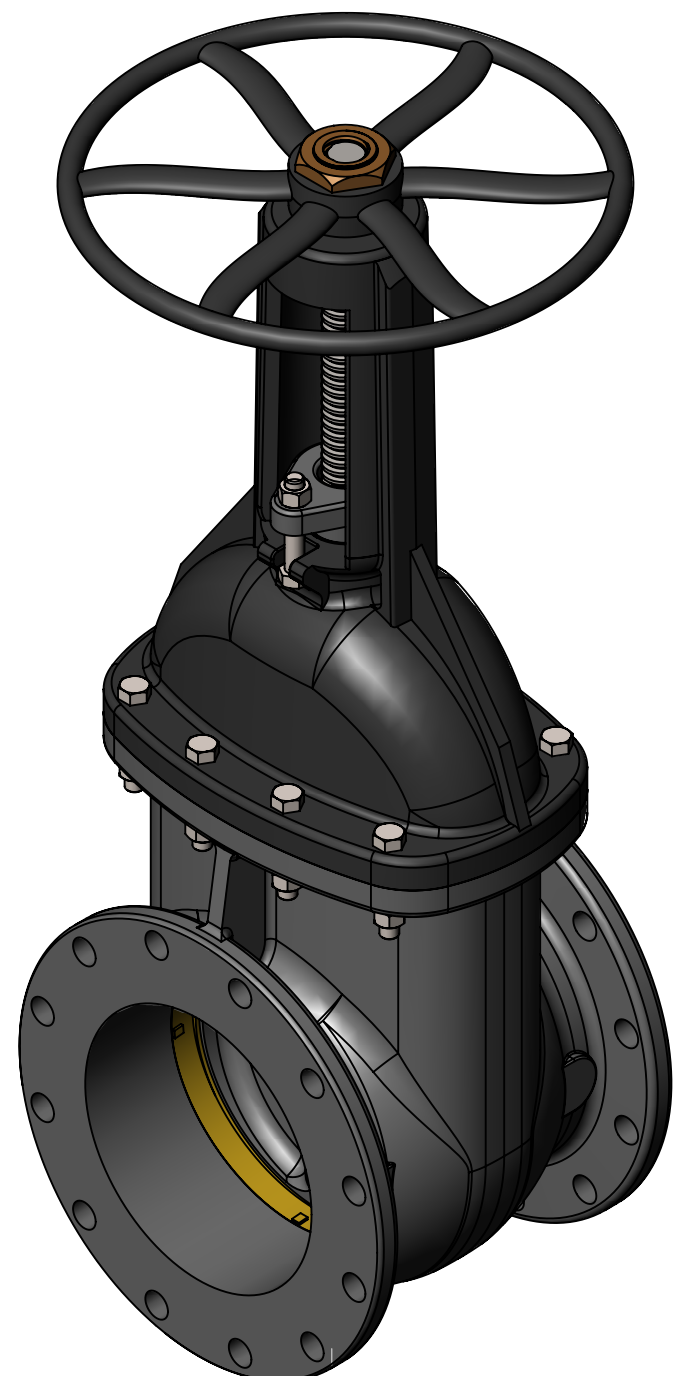
ZONE	REV.	DESCRIPTION	BY	DATE
	1	RELEASED	ML	7/27/2016



NO.	DESCRIPTION	MATERIAL	ASTM/DESIGNATION	QTY.
001	Body	Ductile Iron	A536 Grade 70-50-05 or 65-45-12	1
002	Bonnet	Ductile Iron	A536 Grade 70-50-05 or 65-45-12	1
005	Packing Gland	Ductile Iron	A536 Grade 70-50-05 or 65-45-12	1
010	Hand Wheel	Ductile Iron	A536 Grade 70-50-05 or 65-45-12	1
021	Wheel Nut	Bronze	A584 C83600	1
022	Yoke Nut	Bronze	B584 C86700	1
061	Body Ring	Bronze	B148 C95400	2
062	Seat Ring	Brass	B584 C89833	2
071	Stem Head	Bronze	B148 C95400	1
080	Wedge	Ductile Iron	A536 Grade 70-50-05 or 65-45-12	1
100	Body-Bonnet Bolt	Stainless Steel	F593 316	-
101	Body-Bonnet Nut	Stainless Steel	F594 316	-
120	Bonnet-Packing Gland Bolt	Stainless Steel	F593 316	2
121	Bonnet-Packing Gland Nut	Stainless Steel	F594 316	2
168	Stem	Stainless Steel	A276 304	1
329	O-Ring	Rubber (Buna)	D2000	5
353	O-Ring	Rubber (Buna)	D2000	1
345	Packing	Garlock	Style 18	-

AUGUST 5TH 2016
 SUPPLY & DELIVERY OF PUMPS AND VALVES INCLUDING INITIAL STARTUP, AND COMMISSIONING
 BID OPPORTUNITY #573-2016
 NOTHART ENGINEERED SALES LIMITED
 171 SAMBORSKI DRIVE UNIT 100
 OAK BLUFF MB R4G 0B3
 QUANTITY 3 150MM & 3 200MM UNITS SPEC. REFERENCE SECTION 40 05 52 - 2.3

- NOTE:
- COATING IS AMERLOCK 2
 - NSF-61 QUALIFIED EPOXY INT/EXT
 - AWWA RATED
 - ANSI B16.1 CLASS 125 FLANGE
 - VERTICAL IN HORIZONTAL PIPELINE
 - FLANGED
 - STANDARD 304 SS STEM
 - 316 SS FASTENERS
 - OPEN LEFT
 - HANDWHEEL BLACK



NPS	2.5-12"		
Rated Pressure	300 PSI		
Temperature Range °F	≤180 °F		
Test Pressure (Psi) (Hydrostatic)	Shell Test	600	
	Sealing Test (Both Sides)	Rated	300
		Lower	60-80
Suitable Medium	Water/Waste Water		

SIZE	Ø d	A	Ø C	Ø D	G	H	Ø h	n	L	T	TURNS	WEIGHT
6		11.38	9.50	11.00	30.1	23.4	.88	8	10.50	1.00	20	160 LBS
8		13.50	11.75	13.50	38.5	29.0	.88	8	11.50	1.13	26	250 LBS

UNLESS OTHERWISE SPECIFIED:	NAME	DATE	KENNEDY VALVE Division of McWane, Inc. 1021 EAST WATER STREET ELMIRA, NEW YORK 14901	
CASTING DIM: 0" - 4" +/- 1/32" 4" - 8" +/- 3/64" 8" - 12" +/- 1/16" 12" - 18" +/- 3/32" 18" - UP +/- 1/8" RADI: 1/8" DRAFT 2°	DRAWN	CAW		7/27/2016
MACHINING DIM: DUAL DIM. INCHES(MM) FRACTIONAL ± 1/64 ANGULAR ± .5 RADI ± 1/32" TWO PLACE DECIMAL ± .02 THREE PLACE DECIMAL ± .005	CHECKED	ML		7/27/2016
FINISH: N/A	APPROVED	ML	7/27/2016	
DO NOT SCALE DRAWING			TITLE:	
MATERIAL: SEE TABLE			2.5"-12" OS&Y SOLIDWEDGE FE	
Weight: SEE TABLE			CITY OF WINNIPEG	
			SIZE DWG. NO. REV	
			D SUB910336T 1	
PROPRIETARY AND CONFIDENTIAL <small>THE INFORMATION CONTAINED IS THE SOLE PROPERTY OF KENNEDY VALVE CO. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF KENNEDY VALVE CO. IS PROHIBITED. DESIGN & INVENTION RIGHTS RESERVED.</small>				
SHEET 1 OF 1				



KENNEDY AWWA DBL. DISC PARALLEL SEAT IBBM GATE VALVES

KENNEDY VALVE

KENNEDY VALVE AWWA Dbl. Disc Parallel Seat IBBM Gate Valves Meet or Exceed the Requirements of AWWA C500

Size Range	2"-48"	
	Water working Pressure psi	Hydrostatic Test psi
2"-12"	200	400
14"-48"	150	300

Available in either, NRS, or OS&Y.

Available End Connections & Size Range Figure No.

Fig.-NRS	2"-48"	F-5070
Fig.-OS&Y	14"-36"	F-5072
M.J.	2"-36"	F-5065
M J Cutting End	4"-12"	F-5067
Fig. & M.J.	4"-36"	F-5066
Push-on Ends for PVC	2"-10"	F-5085

Accessories

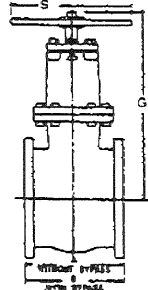
Floorstands (NRS & R.S.)	By-Pass Valves
Needle & Slot (Navy) Indicators	Enclosed Gearing(Grease Case)
Electric Motors	Position Indicators
2" Sq. Operating Nuts	Tracks, Rollers, & Scrapers for
Chainwheels	Valves 14" or larger
"T" Handles	Horizontal Position in Horizontal Line
Stem Guides	Handwheels
Indicator Posts	Extension Stems

Sept 2nd 2016
 Supply & Delivery of Pumps and Valves including initial startup and Commissioning.
 Bid Opportunity #573-2016
 Nothart Engineered Sales Limited
 171 Samborski Drive Unit 100
 Oak Bluff MB R4G 0B3
 Quantity 3
 Spec Reference Section 40 05 52 2.3

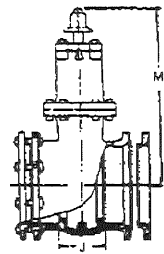
KENNEDY AWWA GATE VALVES UNDERGROUND AND PLANT PIPING SYSTEMS

KENNEDY VALVE

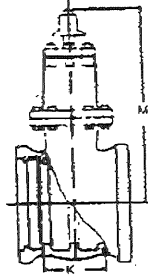
VALVE SIZE	A	B	G	J	K	M ₁	P	Q	R	S	U	Y	Z	AA	BB	DD	GG	HH	LL	Turns to Open	Diam. of Stem
2	7	—	10 ¹ / ₄	3 ¹ / ₄	—	10 ¹ / ₄	3	14	11 ¹ / ₂	7 ¹ / ₄	—	—	—	—	—	—	—	—	5 ¹ / ₈	5	7 ¹ / ₈
2 ¹ / ₄	7 ¹ / ₂	—	10 ¹ / ₄	3 ¹ / ₄	—	10 ¹ / ₄	—	—	—	7 ¹ / ₄	—	—	—	—	—	—	—	—	—	5	7 ¹ / ₈
2 ¹ / ₂	7 ¹ / ₂	—	11 ³ / ₈	—	—	11 ³ / ₈	3 ⁷ / ₈	20 ¹ / ₄	12 ¹ / ₂	7 ¹ / ₄	—	—	—	—	—	—	—	—	—	6	7 ¹ / ₈
3	8	—	12 ¹ / ₄	3 ¹ / ₂	—	12 ¹ / ₄	3 ¹ / ₈	20 ¹ / ₄	16 ³ / ₄	7 ¹ / ₄	—	—	—	—	—	—	—	—	5 ³ / ₄	7	7 ¹ / ₈
4	9	—	14	4 ³ / ₄	—	14	4 ¹ / ₂	24	19 ³ / ₄	10	—	—	—	—	—	—	—	—	6 ⁷ / ₈	15	1 ¹ / ₈
5	10	—	15 ¹ / ₂	—	—	15 ¹ / ₂	—	27 ¹ / ₄	21 ³ / ₄	10	—	—	—	—	—	—	—	—	—	18	1 ¹ / ₈
6	10 ¹ / ₂	—	18	5 ¹ / ₄	—	18	5 ¹ / ₄	31 ¹ / ₂	24 ³ / ₄	12	—	—	—	—	—	—	—	—	8	21	1 ¹ / ₄
8	11 ¹ / ₂	—	22	6 ¹ / ₂	7	22	6 ¹ / ₄	40 ¹ / ₂	31 ¹ / ₂	14	—	—	—	—	—	—	—	—	9	27	1 ³ / ₈
10	13	—	25 ³ / ₈	6 ³ / ₄	7 ¹ / ₄	25 ³ / ₈	6 ¹ / ₂	47 ¹ / ₄	36 ¹ / ₄	18	—	8	—	18	40 ³ / ₄	12	38 ¹ / ₂	31 ⁵ / ₈	10 ¹ / ₂	33	1 ¹ / ₂
12	14	—	29 ¹ / ₈	7	7 ³ / ₄	29 ¹ / ₈	—	58 ³ / ₈	45 ³ / ₈	18	—	8	—	18	45	12	42 ³ / ₄	35 ¹ / ₈	11 ¹ / ₂	39	1 ¹ / ₂
14	15 ³ / ₄	23	36 ¹ / ₂	7 ¹ / ₄	—	39 ³ / ₄	—	68	53	22	19 ¹ / ₄	8	31 ¹ / ₈	18	45	12	46 ³ / ₄	39 ³ / ₄	15 ³ / ₈	45	1 ¹ / ₈
16	17	23	40 ³ / ₄	9 ¹ / ₄	—	43 ¹ / ₂	—	75 ³ / ₄	58 ³ / ₄	22	20 ¹ / ₂	8	33 ³ / ₈	18	49	12	50	42 ¹ / ₄	16 ¹ / ₂	52	1 ¹ / ₈
18	19	24	43 ¹ / ₄	9 ¹ / ₄	—	46	—	82 ¹ / ₂	63 ¹ / ₂	26	22 ¹ / ₂	8	36 ³ / ₈	18	52 ¹ / ₈	12	53 ³ / ₈	46 ¹ / ₂	18 ¹ / ₂	58	2 ¹ / ₈
20	20	24	47 ¹ / ₄	10	—	50	—	90 ¹ / ₄	69 ¹ / ₄	26	24	8	40 ¹ / ₂	18	55 ³ / ₄	12	60	52 ¹ / ₈	22	64	2 ¹ / ₈
24	23	28 ¹ / ₂	55	16	—	56 ³ / ₄	—	107	82	30	28	8	46	18	62 ¹ / ₈	12	72 ¹ / ₈	66	—	76	2 ¹ / ₂
30	25	32 ¹ / ₂	64 ³ / ₄	12 ¹ / ₂	—	66 ¹ / ₂	—	128 ¹ / ₄	97	30	31 ¹ / ₂	10	54 ¹ / ₂	18	76 ³ / ₄	15 ¹ / ₂	81 ¹ / ₈	72 ³ / ₈	—	63	2 ¹ / ₄
36	27	36	75 ³ / ₈	23 ³ / ₄	—	77 ³ / ₈	—	147 ¹ / ₂	110	36	40	13 ³ / ₈	68 ¹ / ₈	22	88 ³ / ₈	21 ¹ / ₂	105 ¹ / ₂	97	—	75	3
42	34	34	—	—	—	—	—	—	—	30	47	10	77 ¹ / ₂	30	106 ³ / ₈	27	—	—	—	88	3 ¹ / ₂
48	45 ¹ / ₂	45 ¹ / ₂	—	—	—	—	—	—	—	30	54 ¹ / ₂	11 ¹ / ₄	87 ¹ / ₂	30	120 ⁵ / ₈	27	119	108	—	100	4



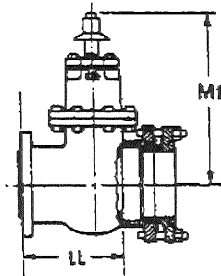
C561/F-5070
Flanged Ends



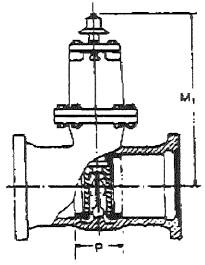
C571/F-5065
Mechanical Joint
C572/F-5066



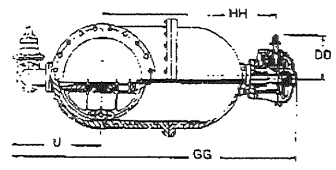
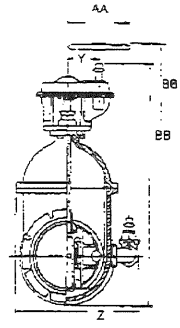
Push-On Ends
For Cast Iron Pipe
C950/F-5093



Mechanical Joint
Tapping Valve
C597/F-5085



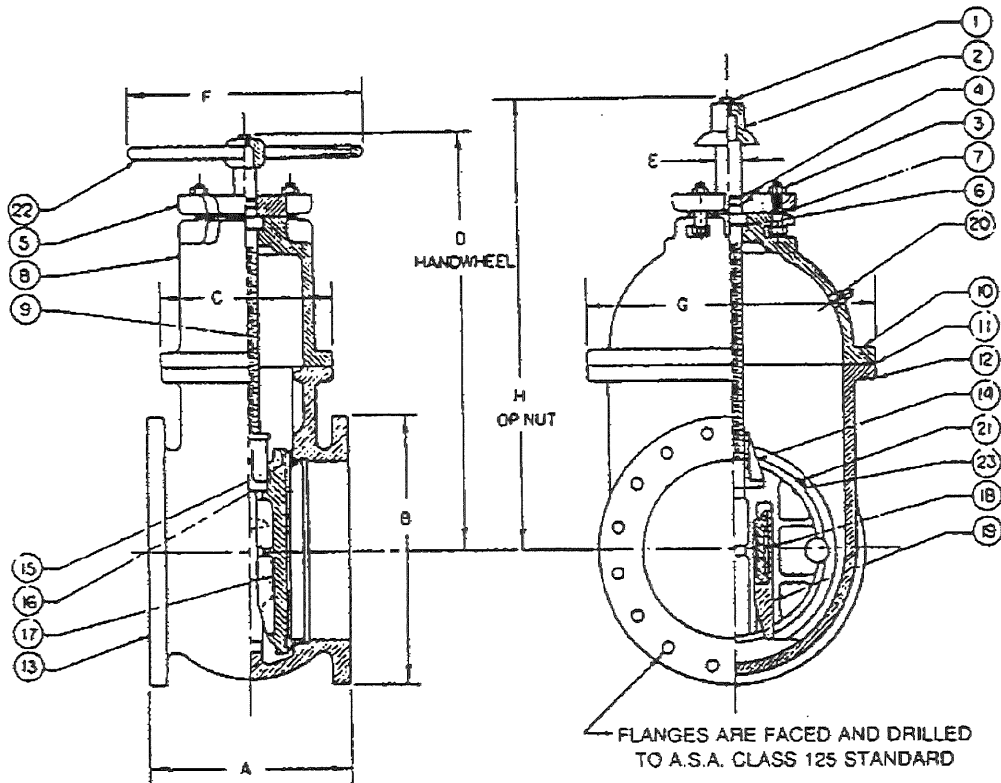
Push-On Ends
For PVC Pipe
C566/F-5072



URNS TO OPEN ARE FOR VALVES WITHOUT GEARING
DIMENSIONS-INCHES
FLANGES ARE FACED AND DRILLED TO ANSI 125 POUND
TEMPLATE, UNLESS OTHERWISE SPECIFIED

2"-12" FLANGED END C561/F-5070 GATE VALVE

KENNEDY VALVE



SEQ.	QTY.	DESCRIPTION	MATERIAL
1	1	Capscrew	Steel
2	1	Operating Nut	Cast Iron
3		Bolts & Nuts	Stainless Steel
4	2	O-Rings	Rubber
5	1	O-Ring Plate	Cast Iron
6	1	Low Torque Bearing	Delrin 1
7	1	Stuffing Box Gasket	Composition
8	1	Cover	Cast Iron
9	1	Non-Rising Stem	Bronze
10		Neck-Flange Bolts	Stainless Steel
11	1	Neck-Flange Gaskets	Composition
12		Neck-Flange Nuts	Stainless Steel
13	1	Body	Cast Iron
14	1	Gate Nut	Bronze
15	2	Gate Ring	Bronze
16	2	Case Ring	Bronze
17	2	Gate	Cast Iron
18	2	Wedge	Bronze
19	2	Hook	Cast Iron
20	1	Pipe Plug	Cast Iron
21	4	Pegs – On 10", 12" & 14" Valves	Bronze
22	1	Handwheel	Cast Iron
23	2	Straps – On 10", 12" & 14" Valves	Stainless Steel

VALVE SIZE	A	B	C	D	E	F	G	H	Weight	Turns to Open
2	7	6	5	11 ³ / ₄	⁷ / ₈	7 ¹ / ₄	5 ⁷ / ₈	11 ³ / ₄	30	5
2 ¹ / ₂	7 ¹ / ₂	7	5 ¹ / ₈	13	⁷ / ₈	7 ¹ / ₄	6 ³ / ₈	13	30	6
3	8	7 ¹ / ₂	5 ¹ / ₂	14	⁷ / ₈	7 ¹ / ₄	7 ¹ / ₈	14	50	7
4	9	9	7	15 ¹ / ₄	1 ¹ / ₈	10	9	15 ¹ / ₄	90	15
5	10	10	7 ³ / ₄	16 ³ / ₄	1 ¹ / ₈	10	10 ⁷ / ₈	16 ³ / ₄	120	18
6	10 ¹ / ₂	11	9	18 ¹ / ₂	1 ¹ / ₄	12	12 ⁵ / ₈	18 ¹ / ₂	166	21
8	11 ¹ / ₂	13 ¹ / ₂	10	21 ⁵ / ₈	1 ³ / ₈	14	15 ¹ / ₄	21 ⁵ / ₈	288	27
10	13	16	10 ⁵ / ₈	28 ¹ / ₄	1 ¹ / ₂	18	18 ¹ / ₄	28 ¹ / ₄	405	33
12	14	19	11 ¹ / ₄	30 ³ / ₄	1 ¹ / ₂	18	20 ¹ / ₄	30 ³ / ₄	565	39

KENNEDY VALVE AWWA DOUBLE DISC GATE VALVES IRON BODY, BRONZE MOUNTED, PARALLEL SEAT

KENNEDY VALVE

Description and Advantages

Kennedy Valve AWWA Gate Valves are designed primarily for flow control of water in underground pipe lines. They equal or exceed the requirements established by standards of the American Water Works Association and conform to Federal Specifications WW-V-58B, Type II, Class I.

Kennedy Valve AWWA Gate Valves are specifically designed for heavy pressure service. Neck, flanges, and bell are made extra heavy to withstand pipe strain and possible shifting. Body, cover, gates, and stem are built for extra strength, with clean and simple internal construction, to assure long service and low maintenance.

Operation of the Valve

Turning the stem releases the wedging pressure on the gates allowing them to move away from their seats before starting upward travel. Further turning of the stem raises the gates into the fully opened position.

When closing the valve, the gates move freely downward without friction, to a position opposite their seats.

As the gates approach the bottom of the valve, the iron hooks come into contact with stops which prevent further downward movement of the hooks. The bronze wedges riding on these hooks spread the gates apart and force them against their seats.

Construction

Body: Cast iron, bronze mounted. Sturdy proportions provide protection against damage.

Stem: Manganese bronze of high tensile and torsional strength, with accurate, perfectly machined threads. Ample diameters assure smooth valve movements.

Stem Nut: Solid bronze. Independent of hooks, gates, and wedges. Stem or stem nut will not bind or spring out of line, as can happen when stem nut is attached to wedges.

Wedges: Independent, solid bronze, 2"-3" valves have integral hook and wedge. 4"-8" have independent solid bronze wedges placed loosely in iron hooks, and are free

to adjust to varying positions of the gates. In 10" and larger valves, each wedge has one long and one short surface. The bottom of each wedge forms a rocker bearing on the iron hooks, letting wedges adjust to varying positions of the gates in closing. The long side is used in closing the valve and the short side in opening it.

Low Torque Thrust Bearing: Valves 4"-12" are fitted below the stem collar with an exclusive Low Torque Thrust Bearing which provides high load capacity and low friction. This bearing reduces operating torque up to 50% yet seals perfectly for repacking under pressure.

Gates and Gate Rings: Gates 3" and smaller are bronze. Gates 4" and larger are high strength cast iron with bronze gate rings rolled into machined and dovetailed grooves under pressure to make gate and ring one inseparable unit. After fitting, gate rings are accurately machined.

Case Rings. Bronze case rings are screwed into place and machined. They can be removed and replaced if necessary.

Packing: O-Ring packing is standard on all non-rising stem gate valves. Rising stem and geared valves are furnished with conventional packing.

Operating Nut and Handwheel: All valves except flanged valves and outside screw and yoke valves are supplied with 2" square operating nuts of high strength cast iron unless otherwise specified. Flanged valves and outside screw and yoke valves are supplied with handwheels of high strength cast iron unless otherwise specified. Direction of opening is indicated by arrow cast on operating nut skirt or on the rim of the handwheel.

Yoke: Yokes for outside screw and yoke valves are of rugged cast iron. Careful machining assures accurate stem alignment.

Accessories: Valves may be fitted with any large number of accessories: cylinders, electric motor operators, gearing, by-passes, etc.

Rollers, Tracks and Scrapers: Recommended for 14" and larger diameter valves carry weight of the gates for valves installed in a horizontal line in a vertical line.

NOTE: All valves open to the left (counter clockwise) unless otherwise specified.

**SAMPLE GATE VALVE SPECIFICATION
KENNEDY VALVE CAST IRON GATE VALVE**

KENNEDY VALVE

Gate Valves:

Valves shall be manufactured in accordance with AWWA Standard C500-93. Valves 12" and smaller shall be designed for 200 psi water working pressure and 150 psi for valves 14"-48" inclusive. Valves shall have (M/J, Flanged or as indicated on plans) ends and shall have clear waterway equal to the full nominal diameter of the valve. Valves shall be double disc parallel seat type with (non-rising, rising) stems, opening by turning (left, right) and provided with (2" square nuts, handwheel), with arrow cast in metal to indicate direction of opening.

Manufacturer of 2"-48" gate valves must have the full range of valves in both NRS and OS&Y styles.

Each manufacturer shall provide certification that they have manufactured 2" through 48" valves for a minimum of ten years.

Each valve shall have manufacturer's name, pressure rating and year in which manufactured cast on body. Prior to shipment from the factory each valve shall be hydrostatically shell tested at a pressure of 400 psig in sizes 12" and smaller and 300 psig in sizes 14" and larger. In addition each valve shall be hydrostatically seat tested at a pressure of 200 psig in sizes 12" and smaller and 150 psig in sizes 14" and larger. Valves shall be Kennedy Valve AWWA valves as furnished by Kennedy Valve, Elmira, New York.

Stuffing Boxes:

Stuffing Boxes shall be "O" ring seal type with two O-rings located in stem above thrust collar in valves without gearing. Sizes 14" through 48" there shall be a bronze bushing meeting ASTM B584.

Bolts and Nuts:

Body and cover bolts and nuts shall meet specification ASTM F593-304 Stainless Steel.

Wedging:

Valves will be bottom wedging type with two part floating wedge contact. The wedge and hook shall be separate coatings and not a one piece casting in valves 4" through 36". In valves 42" and 48" the hooks and wedges shall be one piece design with the outside of the wedge area covered with a bronze shoe. No side wedging will be acceptable.

Stems:

Stems shall be in full conformance with AWWA Specs. Sizes 14" through 36" bronze ASTM B584 with 80,000 tensile strength, and cast integral stem collar. 42" and 48" shall be type 304 stainless steel.

Stem Nuts:

Stem nuts shall be made of solid bronze independent of hooks, gates and wedges. No pins will be allowed to retain gates to stem nuts.

Gates and Gate Rings:

Gates shall be high strength cast iron, sturdily proportioned without pockets on backs. Cam surfaces shall open to bottom. Gate rings shall be rolled into dovetailed grooves under pressure to make one inseparable unit. The gate ring face shall be machined to a smooth finish.

Case Rings:

Bronze case rings shall be screwed into place and the contact face machined to a smooth finish. Use of screws, rivets or other means of retention will not be acceptable.

Valves 14" and Larger:

Valves installed with stem horizontal shall be equipped with bronze rollers, tracks, scrapers.

Bypasses:

Bypasses shall be provided on 16" and larger valves where indicated and mounted directly to valve body with cast iron flanged connections. Bypass valves shall be resilient seated AWWA and ULFM approved as furnished by Kennedy Valve for sizes through 36" and integral double disc type bypass valves for 42" and 48" sizes.

Gearing:

Enclosed spur or bevel gearing with extended type gear cases will be provided where indicated on plans. Side cover plates will be provided to completely enclose stem and stuffing box. Manufacturer must be able to supply open and enclosed gearing as standard.

KENNEDY VALVES ORDERING INFORMATION

KENNEDY VALVE

Use Figure Number wherever possible to identify product wanted.

When placing orders or making inquiries, please furnish the following information. This information will enable us to answer your questions, prepare quotations, and fill your order promptly. Lack of essential information is almost sure to cause delays.

1. **Quantity**
2. **Size**
3. **Working pressure:** Refer to tables of pressure ratings.
4. **End type or types:** Gate valves are furnished with many end types.
- 4A. **Flanged valves:** Furnished with ANSI 125 pound Standard flanges with bolt holes straddling center lines.
- 4B. **Mechanical Joint valves:** Normally furnished with standardized mechanical joints with plain rubber gaskets. Cutting-in type mechanical joints also available for use in existing cast iron pipe lines.
5. **Direction of opening:** Must be specified. Open left (counterclockwise); or open right (clockwise).
6. **Type of stem:** State whether non-rising stem or rising stem with outside screw and yoke.
7. **Installation position:** Indicate position in which valve will be installed (vertically, horizontally, or otherwise).
8. **Operating nut or handwheel:** All flanged valves and all rising stem valves with outside screw and yoke are furnished with handwheels unless otherwise specified. Other valves are furnished with a 2-inch square operating nut unless otherwise specified.
9. **Stuffing box:** Whether conventional or O-ring. Unless otherwise specified, we regularly furnish NRS valves with O-ring packing; other valves are regularly furnished with conventional stuffing box packing.
10. **Indicator posts and valves:** State depth of trench (distance from ground line to bottom of the pipe line); size and shape of operating nut, if other than standard. For valves already in place, state whether valve is equipped with a flange for post support; if so, give flange dimensions, and distance from centerline of valve to top of flange.
11. **By-pass Valves:** State location, whether manually operated by-pass will have handwheel or operating nut, and any special instructions necessary.
12. **Parts:** Always order parts by number.

SURGEBUSTER® SWING CHECK VALVE

SERIES NO. 7200 & 7200A ANSI CLASS 125

STANDARD MATERIALS OF CONSTRUCTION

<u>PART NO.</u>	<u>PART NAME</u>	<u>MATERIAL</u>
1	BODY BODY	DUCTILE IRON ASTM A536, GRADE 65-45-12 (250 CWP) CAST IRON ASTM A126, CLASS B (150 CWP)
2	COVER COVER	DUCTILE IRON ASTM A536, GRADE 65-45-12 (250 CWP) CAST IRON ASTM A126, CLASS B (150 CWP)
3	DISC	BUNA-N W/ ALLOY STEEL & NYLON REINFORCEMENT
4	COVER SEAL (4"-48") COVER SEAL (2"-3")	BUNA-N ASTM D2000 COMPRESSED NON-ASBESTOS FIBER.
5A	COVER BOLT	STAINLESS STEEL, TYPE 316
5B	COVER BOLT NUT (4"-12")	STAINLESS STEEL, TYPE 316
5C	WASHER	STAINLESS STEEL, TYPE 316
13	DISC ACCELERATOR	STAINLESS STEEL, TYPE 302

AUGUST 5TH 2016
SUPPLY & DELIVERY OF PUMPS AND VALVES INCLUDING INITIAL STARTUP, AND
COMMISSIONING
BID OPPORTUNITY #573-2016
NOTHART ENGINEERED SALES LIMITED
171 SAMBORSKI DRIVE UNIT 100
OAK BLUFF MB R4G 0B3
QUANTITY 3 UNITS SPEC. REFERENCE SECTION 40 05 52 - 2.4

MATERIALS OF CONSTRUCTION

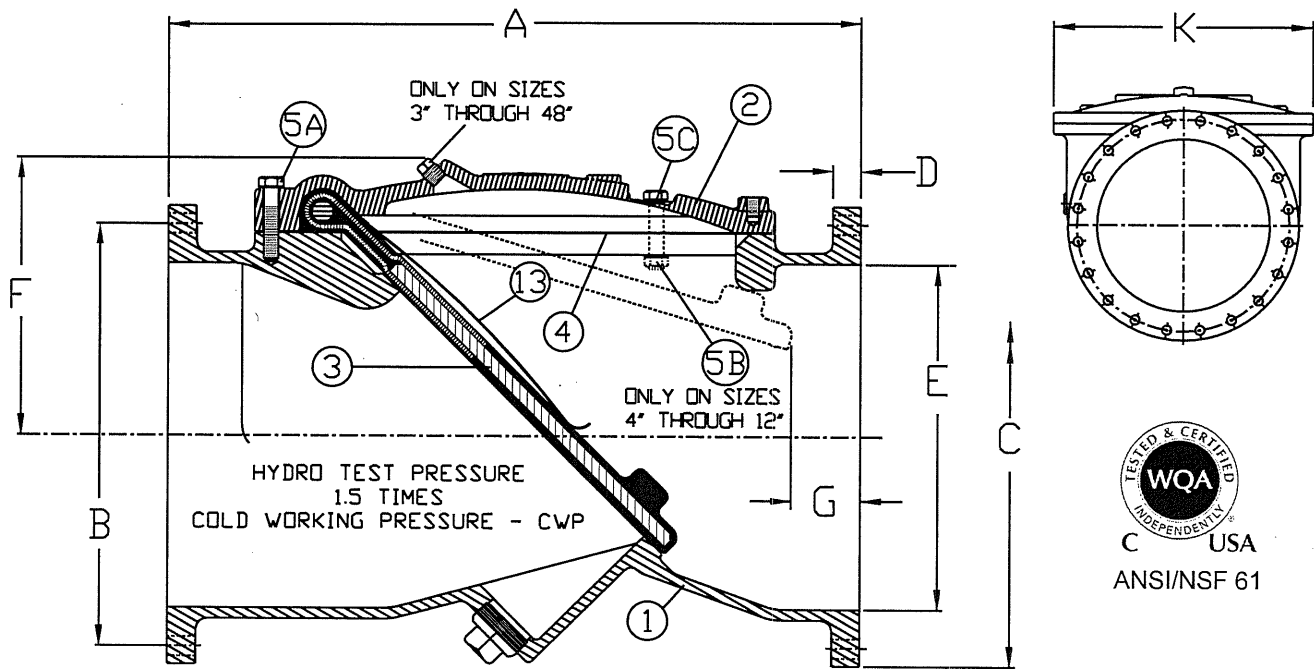
DATE 5/21/03

VAL-MATIC®

VALVE AND MANUFACTURING CORP.

DRWG. NO.

VM-7202-M



SEE DRAWING NO. VM-7202-M FOR STANDARD MATERIALS OF CONSTRUCTION.

DRAWING DEPICTS 24" SIZE TO SCALE.

ANSI CLASS 125												
VALVE SIZE	MODEL NO.	CWP (PSI)	A	B	C	D	E	F	G	K	BOLT SIZE	NO. OF BOLTS
2	7202	250	8.00	4.75	6.00	0.69	2.00	3.38	1.63	5.18	5/8	4
2 1/2	7225	250	8.50	5.50	7.00	0.75	2.50	3.38	1.63	5.18	5/8	4
3	7203	250	9.50	6.00	7.50	0.81	3.00	5.13	1.63	7.50	5/8	4
4	7204	250	11.50	7.50	9.00	0.75	4.00	5.75	2.13	8.25	5/8	8
6	7206C	250	14.00	9.50	11.00	0.75	6.00	6.88	1.63	11.13	3/4	8
8	7208	250	19.50	11.75	13.50	0.88	8.00	8.38	2.88	16.00	3/4	8
10	7210	250	24.50	14.25	16.00	1.18	10.00	10.75	3.13	21.00	7/8	12
12	7212	250	27.50	17.00	19.00	1.25	12.00	12.50	3.43	24.00	7/8	12
14	7214	250	31.00	18.75	21.00	1.38	14.00	13.00	3.63	23.25	1	12
16	7216C	250	36.00	21.25	23.50	1.43	16.00	14.25	5.25	25.25	1	16
18	7218C	250	40.00	22.75	25.00	1.56	18.00	15.25	5.13	28.25	1 1/8	16
20	7220	250	40.00	25.00	27.50	1.68	20.00	16.88	3.50	30.63	1 1/8	20
24	7224	250	48.00	29.50	32.00	1.88	24.00	19.25	5.00	36.00	1 1/4	20
30	7230	150	56.00	36.00	38.75	2.13	30.00	23.00	5.75	45.88	1 1/4	28
30	7230A	250	56.00	36.00	38.75	2.13	30.00	23.00	5.75	45.88	1 1/4	28
36	7236	150	63.00	42.75	46.00	2.38	36.00	27.38	3.88	55.00	1 1/2	32
36	7236A	250	63.00	42.75	46.00	2.38	36.00	27.38	3.88	55.00	1 1/2	32
42	7242	150	70.00	49.50	53.00	2.63	42.00	36.88	0.13	60.18	1 1/2	36
42	7242A	250	70.00	49.50	53.00	2.63	42.00	36.88	0.13	60.18	1 1/2	36
48	7248	150	76.00	56.00	59.50	2.75	48.00	40.66	0.13	68.00	1 1/2	44
48	7248A	250	76.00	56.00	59.50	2.75	48.00	40.66	0.13	68.00	1 1/2	44

Revised 9-10-14
(Rev 9)

SURGEBUSTER CHECK VALVE

DATE 10-17-08

VAL-MATIC

VALVE AND MANUFACTURING CORP.

DRWG. NO.

VMC-7202

SURGEBUSTER® SWING CHECK VALVE

Val-Matic® Specification

1 Scope

1.1 This specification covers the design, manufacture, and testing of 2 in. (50 mm) through 48 in. (1200 mm) Surgebuster® Swing Check Valves suitable for cold working pressures up to 250 psig (1725 kPa), in water, wastewater, abrasive, and slurry service.
1.2 The check valve shall be of the full flow body type, with a domed access cover and only two moving parts, the flexible disc and the Disc Accelerator™.

2. Standards and Approvals

2.1 The valves shall be designed, manufactured, tested and certified to American Water Works Association Standard ANSI/AWWA C508.
2.2 The valves used in potable water service shall be certified to NSF/ANSI 61 Drinking Water System Components – Health Effects, and certified to be Lead-Free in accordance with NSF/ANSI 372.
2.3 Manufacturer shall have a quality management system that is certified to ISO 9001 by an accredited, certifying body.

3. Connections

3.1 The valves shall have flanges with drilling to ANSI B16.1, Class 125.

4. Design

4.1 The valve body shall be full flow equal to nominal pipe diameter at all points through the valve. The 4 in. (100mm) valve shall be capable of passing a 3 in. (75mm) solid. The seating surface shall be on a 45 degree angle to minimize disc travel. A threaded port with pipe plug shall be provided on the bottom of the valve to allow for field installation of a backflow actuator or oil cushion device without special tools or removing the valve from the line.
4.2 The top access port shall be full size, allowing removal of the disc without removing the valve from the line. The access cover shall be domed in shape to provide flushing action over the disc for operating in lines containing high solids content. A threaded port with pipe plug shall be provided in the access cover to allow for field installation of a mechanical, disc position indicator.
4.3 The disc shall be of one-piece construction, precision molded with an integral O-ring type sealing surface and reinforced with alloy steel. The flex portion of the disc contains nylon reinforcement and shall be warranted for twenty-five years. Non-Slam closing characteristics shall be provided through a short 35 degree disc stroke and a disc accelerator to provide a cracking pressure of 0.3 psig.
4.4 The disc accelerator shall be of one piece construction and provide rapid closure of the valve in high head applications. The disc accelerator shall be enclosed within the valve and shall be field adjustable and replaceable without removal of the valve from the line. The disc accelerator shall be securely held in place captured between the cover and disc. It shall be formed with a large radius to allow smooth movement over the disc surface.
4.5 The valve disc shall be cycle tested 1,000,000 times in accordance with ANSI/AWWA C508 and show no signs of wear, cracking, or distortion to the valve disc or seat and shall remain drop tight at both high and low pressures.

5. Materials

5.1 The valve body and cover shall be constructed of ASTM A536 Grade 65-45-12 ductile iron or ASTM A126 class B gray iron for 30 in. (800mm) and larger. Optional body materials include ASTM A-351 Grade CF8M, stainless steel for sizes 3" (80 mm) through 12" (300 mm).
5.2 The disc shall be precision molded Buna-N (NBR), ASTM D2000-BG. Optional disc material includes Viton, EPDM, Hypalon.
5.3 The disc accelerator shall be Type 302 stainless steel.



7. Manufacture

7.1 Manufacturer shall demonstrate a minimum of five (5) years' experience in the manufacture of resilient, flexible disc check valves with hydraulic cushions.
7.2 All valves shall be hydrostatically tested and seat tested to demonstrate zero leakage. When requested, the manufacturer shall provide test certificates, dimensional drawings, parts list drawings, and operation and maintenance manuals.
7.3 The exterior and interior of the valve shall be coated with an NSF/ANSI 61 approved fusion bonded epoxy coating.
7.4 Surgebuster® Swing Check Valves shall be Series #7200 as manufactured by Val-Matic® Valve & Mfg. Corporation, Elmhurst, IL, USA or approved equal.

Revised 7-15-13 (Rev 11)

Surgebuster® Swing Check Valve Specifications

DATE 7-5-13

VALVE AND MANUFACTURING CORP.

DRWG. NO.

VM-7200-S