EXCEL FLUID GROUP, LLC

Excel Fluid Group • 5350 W 137th Street • Brook Park, OH 44142

ZEMBA BROS INC.
APPROVED FOR SUBMITTAL
Project #: 2301-054
By: JES
Specification Reference:
Date: 04-19-24

Response to Engineer's Comments:

Project #: Q14618 – 58030P
Project Name: Licking View
Response Date: 4/18/24

Comment #:	Page #	Excel Response:
Comment #1:		
Cover Sheet Edits	4	Confirmed, cover sheet updated
Comment #2:		
Flexible plastic rope (Kent Seal)	9	confirmed, Conseal will be used.
Comment #3:		
Where is note?	9	N/A, "See Note" referred to note on quote pertaining to need for wet well to be cleaned prior to OBIC coating application and has been removed.
Comment #4:		
3" Discharge	9	Confirmed, discharge size has been updated to 3" for Knox Road PS on the Scope of Supply
Comment #5:		
50' TDH	9	Confirmed, TDH change has been noted
Comment #6:		
Lever Operated Plug Valve	10	Confirmed, wrench is provided for plug valve nut operation
Comment #7:		
Provide shop dwg for meter	10	Flow meter is provided by Micro-Comm, not Excel Fluid Group
Comment #8:		
Yaskawa GA800 "?"	10	Yaskawa GA500 VFDs have been confirmed as applicable and will be provided.
Comment #9:		
Pump Station has moved, need to evaluate in regards to shop dwg.	11	Submittal drawings have been updated.
Comment #10:		
Flexible plastic rope	11	Confirmed
Comment #11:		
Where is note?	11	N/A, comment has been removed
Comment #12:		
Wire for hoist??	12	Confirmed, wire rope will be provided.
Comment #13:		
May need longer to wind up on hoist winch	12	Confirmed, 30' wire rope will be provided.
Comment #14:		
Lever Operated Plug Valve	12	Confirmed, wrench is provided for plug valve nut operation
Comment #15:		

2 ea – 4" 1 ea – 3" (bypass)	12	Confirmed, Scope of Supply has been updated to reflect two (2) 4" plug valves, and one (1) 3" plug valve.
Comment #16:		
Provide shop dwg for meter.	12	Flow meter is provided by Micro-Comm, not Excel Fluid Group.
Comment #17:		
Yaskawa GA800 "?"	12	Yaskawa GA500 VFDs have been confirmed as applicable and will be provided.
Comment #18:		
Valve Vault not per plans	14	Confirmed, design has been updated to include separate air release vault.
Comment #19:		
86"	14	Confirmed, distance from surface to discharge centerline has been included.
Comment #20:		
?	14	Vertical distance between discharge centerline and drain line centerline at the wet well is 18 -1/2" for Knox Rd and 18-3/4" for Greif Rd.
Comment #21:		
1'-6" per plans	14	Confirmed, dimension is 1'-6".
Comment #22:		
8'-8"	14	Confirmed, vault dimension has been updated.
Comment #23:		
Proper scale	14	Confirmed, proper scale has been used.
Comment #24:		
Valve Vault not per plans	15	Confirmed, design has been updated to include separate air release vault.
Comment #25:		
86"	15	Confirmed, distance from top of lid to discharge centerline has been included.
Comment #26:		
1'-6" per plans	15	Confirmed, dimension has been included.
Comment #27:		
8'-8"	15	Confirmed, vault dimension has been updated
Comment #28:		
This station has been moved to another location. Will need to confirm layout for new location.	15	Submittal drawings have been updated.
Comment #29:		
Aluminum Hatch	24	Confirmed, submittal has been updated to reflect aluminum construction of hatch.
Comment #30:		
Flat Surface	25	Confirmed, ladder will be mounted in flat-walled valve vault.
Comment #31:		

Valve Vault	25	Confirmed, ladder will be mounted in flat-walled valve vault.
Comment #32:		
Change to 90gpm @ 50'TDH	30	Confirmed, TDH change has been noted and pump impeller has been updated to 200 mm.
Comment #33:		
2" SS Pipe	37	Confirmed, SS pipe is 2".
Comment #34:		
Wire rope for hoist not chain	37	Confirmed, wire rope will be provided, not chain.
Comment #35:		
Two coats coal tar epoxy, exterior	N/A	Confirmed, DIP exterior will be coated with coal tar epoxy.
Comment #36:		
Two coats coal tar epoxy on piping	N/A	Confirmed, DIP exterior will be coated with coal tar epoxy.
Comment #37:		
Lever Operator	48	Confirmed, wrench is provided for plug valve nut operation.
Comment #38:		
Air Vacuum Valve Reject	50-54	Confirmed, A.R.I. D-025 will be supplied.
Comment #39:		
No Air Release	N/A	Confirmed, gate valve is not applicable and has been removed.
Comment #40:		
Gauges require diaphragm protection seal.	56-57	The isolation ring pressure sensor provides separation between the fluid stream and the gauge, protecting the gauge. Additional diaphragm protection would be redundant.
Comment #41:		
The GA800 series has many features that will not be used in this application	67-68, 71-77	Yaskawa GA500 VFDs have been confirmed as applicable and will be provided.
Comment #42:		
The specified V1000 was designed for this application which only requires phase conversion. The V100 is being phased out and replaced with the GA500 Series. The GA800 series is not needed for this application. Same comments for Knox Rd Station.	67-68, 71-77	Yaskawa GA500 VFDs have been confirmed as applicable and will be provided.

EXCEL

EXCEL FLUID GROUP, LLC

Project Submittal

Licking View Sanitary Improvements
Muskingum County, OH

Contractor:

Zemba Bros., Inc.
3401 East Pike
Zanesville, OH 43701

Jason Smock
jasonsmock@zembainc.com
(740) 624-3867

Engineer:

Vaughn Coast and Vaughn, Inc.
154 South Marietta Street
St. Clairsville, OH 43950

Morgan Coast
(740) 695-7256

Owner:

Muskingum County Water and Sewer District
375 Richards Road
Zanesville, OH 43701

Stan Lucas
sdlucas@muskingumcounty.org
(740) 452-4940

Excel Reference Number: Q14618-58030P

EXCEL FLUID GROUP, LLC

LETTER OF TRANSMITTAL

Customer: Zemba Bros., Inc.
Job Name: Licking View - Muskingum County, OH
QT/SO#: Q14618-58030P

Please check the box below to indicate this submittal is approved or needs changes made and return to Excel Fluid Group. Thank You.

We are sending you the following items:

☑ Submittals ☑ Shop Drawings ❒ Print(s) ❒ Plan(s) ❒ Other_____

QUANTITY	DESCRIPTION
1	Electronic Submittal Package

These are transmitted as checked below:
☑ For Your Approval
❒ For Your Use
☑ As Requested
❒ Other

Items will be put into production:
❒ Immediately
☑ After receipt of purchase order, shop drawings, prints etc…

This submittal is:

❒ Approved as Submitted
❒ Approved as Noted
❒ Revise & Resubmit

Engineer's Stamp Here

Signed:_____

Printed:_____

Date:_____

EXCEL

EXCEL FLUID GROUP, LLC

Submittal Table of Contents

Job Reference # Q14618 - 58030P

Excel Fluid Group, LLC • 5350 West 137th St. Brook Park, OH 44142 • sales@excelfluidgroup.com

www.excelfluidgroup.com • Phone: (216) 941-1500 • Fax: (216) 941-9916

EXCEL

EXCEL FLUID GROUP, LLC

Meet Your Team

Sale Manager

Derek Wootten
216-658-7679
derek.wootten@excelfluidgroup.com

- Project Quotes
- Estimating
- Order Entry
- Change Orders

Project Manager

Mike Coleman
216-658-7632
mike.coleman@excelfluidgroup.com

- Internal Project Setup
- Submittal Requests
- Submittal Follow-Up
- Submittal Approvals
- Release Equipment
- Track Shipping Schedules
- Coordinate Delivery
- Invoice Management

Operations Manager

Glen Wyman
216-296-1856
glen.wyman@excelfluidgroup.com

- Oversee Equipment Installation
- Prestart-up Instructions
- Start-up Planning & Scheduling
- Commissioning Assistance
- Start-up Reports

Our Process

#1 Submittal Preparation

Sale & Project Manager

#2 Submittal Status

Follow up and Resubmittal Process

Project Manager

#3 Release Equipment

Once Submittal is Approved

Project Manager

#4 Build Equipment

EXCEL FLUID GROUP, LLC Team

#5 Coordinate the Delivery

Project Manager

#6 Equipment Installation

Operations Manager

#7 Start Up

Operations Manager

#8 Project Close Out

Project Manager

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EXCEL

EXCEL FLUID GROUP, LLC

Pump Station Section

- Scope of Supply
- Station Drawing
  - Knox Rd PS
  - Greif Rd PS
- OBIC Coating
- Hatch & Safety Grate
- Ladder

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Knox Rd. Pump Station

PUMP STATION WET WELL & HATCH	QTY
Concrete Wet Well 6' Diameter x 15' Deep Concrete Wet Well w/ Extended Base, Joint Sealant (Conseal), Interior OBIC Coating, External Coal Tar Coated, Pipe Penetration Compression Gaskets for (1) Influent Pipe, (2) 4" Discharge Piping	1
Wetwell Hatch 300PSF Duty Rated Aluminum Lockable Wetwell Access Hatch, 36" x 48" w/ Double Door	1
Wet Well Vent 4" Mushroom Vent w/ Insect Screen	1
PUMP STATION VALVE VAULT & HATCH	
Concrete Valve Vault w/ Air Release 7'-0" W x 7'-0" L x 8'-0" Deep Concrete Valve Vault w/ Pipe Penetration Boots for (2) 3" Discharge Pipes & PVC Drain Back to Wetwell with Air Release	1
Valve Vault Hatch 300PSF Duty Rated Aluminum Lockable Wetwell Access Hatch, 48" x 66" w/ Double Door	1
Valve Vault Drain Line 2" Sch40 PVC Drain Line w/ P-Trap & Rubber Check Valve	1
Portable Hoist Socket *Hoist Supplied By Owner*	1
Aluminum Ladder w/ Ladder Extension	1
SUBMERSIBLE PUMPS & PUMP MOUNTING HARDWARE	
Submersible Chopper Pumps BARNES 3" Submersible Explosion Proof Chopper Pumps, 5 HP, Model #3XSCMPA50N4, 230V, 3 Ph, 1750 Rpm, 416SS Shaft, Moisture Sensor & Temperature Sensor, 200 mm Impeller, Designed to Deliver: 90 GPM @ 50' TDH	2
Submersible Pump Power Cord Barnes Pump Power Cord, 30ft Long	2
Pump Mounting & Removal Assembly Pump Base Elbow, 3" x 3" Discharge w/ Stainless Steel Guide Pipe, Upper Guide Rail Brackets & Stainless Concrete Anchors	2
Pump Lifting Assembly Stainless Steel Pump Lifting Wire, 750lb WLL, 20' Long with Stainless Steel Shackles	2

PUMP STATION WET WELL PIPING	
Pump Discharge Pipe & Fittings ADDER FOR AIS PIPING 3" D.I Pipe/Fittings for Each Pump Discharge w/ Gaskets & Stainless Steel Fasteners	1
PUMP STATION VALVE VAULT PIPING, VALVES & FLOW METER	
Valve Vault Piping Header 3" D.I Pipe/Fittings for Each Pump Discharge, Gaskets & Stainless Steel Fasteners	1
Pipe Support Stands Stainless Steel Pipe Support Stand, Saddle Style	6
Restraint Coupling 3" HYMAX Grip Restraint Coupling	4
Check Valves 3" Milliken Lever & Weight Swing Check Valves	2
Plug Valves 3" Plug Valve, Nut Operated with wrench, one for bypass	3
Flowmeter - By Micro-comm	0
Air Release Valve	1
PUMP STATION CONTROL PANEL & LEVEL CONTROL EQUIPMENT	
Pump Station Control Panel - By Micro-comm	0
Yaskawa GA500 VFD sized for the above pumps but with a single phase feed	2
NEMA 3R Stainless steel Enclosure, Heater & Thermostat	1
Level Control Assembly (4) Back-Up Level Control Floats with 50' Long Float Cords, Stainless Steel Float Bracket & Stainless Steel Mounting Hardware	1
Pump Junction Box (JB1) NEMA 4X Stainless Steel Enclosure, With Terminal Blocks	1
Level Control Junction Box (JB2) NEMA 4X Stainless Steel Enclosure, For Pass-Thru Wiring	1
Pressure Transducer - By Micro-comm	0
ADMINISTRATIVE & PROJECT MANAGEMENT SERVICES	
Detailed Product Submittals, Drawings & Bill of Materials	1
IOM Manuals & As-Built Drawings	1

Pump Station Start-Up & Training Services	1

Grief Rd. Pump Station

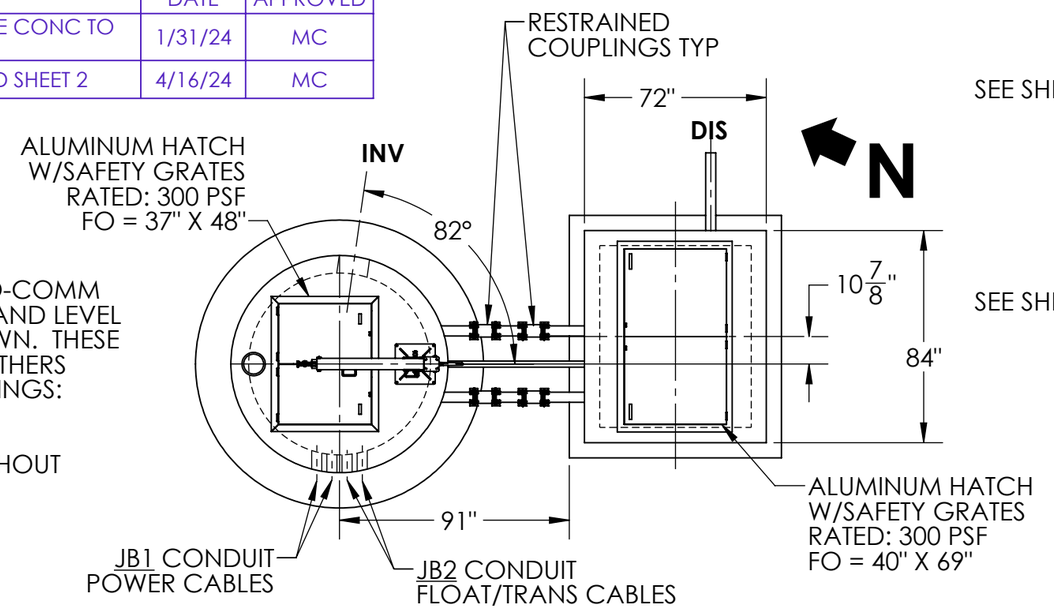
PUMP STATION WET WELL & HATCH	QTY
Concrete Wet Well 6' Diameter x 17.5' Deep Concrete Wet Well w/ Extended Base, Joint Sealant (Conseal), Interior OBIC Coating, External Coal Tar Coated, Pipe Penetration Compression Gaskets for (1) In uent Pipe, (2) 4" Discharge Piping	1
Wetwell Hatch 300PSF Duty Rated Aluminum Lockable Wetwell Access Hatch, 36" x 48" w/ Double Door	1
Wet Well Vent 4" Mushroom Vent w/ Insect Screen	1
PUMP STATION VALVE VAULT & HATCH	
Concrete Valve Vault w/ Air Release 7'-0" W x 7'-0" L x 8'-0" Deep Concrete Valve Vault w/ Pipe Penetration Boots for (2) 4" Discharge Pipes & PVC Drain Back to Wetwell with Air Release	1
Valve Vault Hatch 300PSF Duty Rated Aluminum Lockable Wetwell Access Hatch, 48" x 66" w/ Double Door	1
Valve Vault Drain Line 2" Sch40 PVC Drain Line w/ P-Trap & Rubber Check Valve	1
Portable Hoist Socket *Hoist Supplied By Owner*	1
Aluminum Ladder w/ Ladder Extension	1
SUBMERSIBLE PUMPS & PUMP MOUNTING HARDWARE	
Submersible Chopper Pumps BARNES 3" Submersible Explosion Proof Chopper Pumps, 7.5 HP, Model #3XSCMPA75N4, 230V, 3 Ph, 1750 Rpm, 416SS Shaft, Moisture Sensor & Temperature Sensor, Designed to Deliver: 170 GPM @ 47' TDH	2
Submersible Pump Power Cord Barnes Pump Power Cord, 30ft Long	2

Pump Mounting & Removal Assembly Pump Base Elbow, 3" x 3" Discharge w/ Stainless Steel Guide Pipe, Upper Guide Rail Brackets & Stainless Concrete Anchors	2
Pump Lifting Assembly Stainless Steel Pump Lifting Cable, 750lb WLL, 30' Long with Stainless Steel Shackles	2
PUMP STATION WET WELL PIPING	
Pump Discharge Pipe & Fittings ADDER FOR AIS PIPING 4" D.I Pipe/Fittings for Each Pump Discharge w/ Gaskets & Stainless Steel Fasteners	1
PUMP STATION VALVE VAULT PIPING, VALVES & FLOW METER	
Valve Vault Piping Header 4" D.I Pipe/Fittings for Each Pump Discharge, Gaskets & Stainless Steel Fasteners	1
Pipe Support Stands Stainless Steel Pipe Support Stand, Saddle Style	6
Restraint Coupling 4" HYMAX Grip Restraint Coupling	4
Check Valves 4" Milliken Lever & Weight Swing Check Valves	2
Plug Valves Plug Valves, Nut Operated with wrench, 2 each 4" & 1 each 3", one for bypass	3
Flowmeter - By Micro-comm	0
Air Release Valve	1
PUMP STATION CONTROL PANEL & LEVEL CONTROL EQUIPMENT	
Pump Station Control Panel - By Micro-comm	0
Yaskawa GA500 VFD sized for the above pumps but with a single phase feed	2
NEMA 3R Stainless steel Enclosure, Heater & Thermostat	1
Level Control Assembly (4) Back-Up Level Control Floats with 50' Long Float Cords, Stainless Steel Float Bracket & Stainless Steel Mounting Hardware	1
Pump Junction Box (JB1) NEMA 4X Stainless Steel Enclosure, With Terminal Blocks	1
Level Control Junction Box (JB2) NEMA 4X Stainless Steel Enclosure, For Pass-Thru Wiring	1

Pressure Transducer - By Micro-comm	0
ADMINISTRATIVE & PROJECT MANAGEMENT SERVICES	
Detailed Product Submittals, Drawings & Bill of Materials	1
IOM Manuals & As-Built Drawings	1
Pump Station Start-Up & Training Services	1

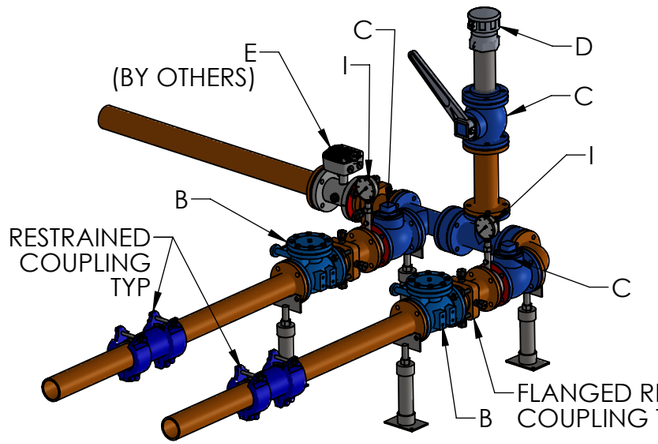
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
2	ADD HOIST SOCKET DETAILS & NOTE 4, UPDATE CONC TO MATCH SUPPLIER	1/31/24	MC
3	REDESIGN PS & LAYOUT, UPDATE BOM, ADD SHEET 2	4/16/24	MC

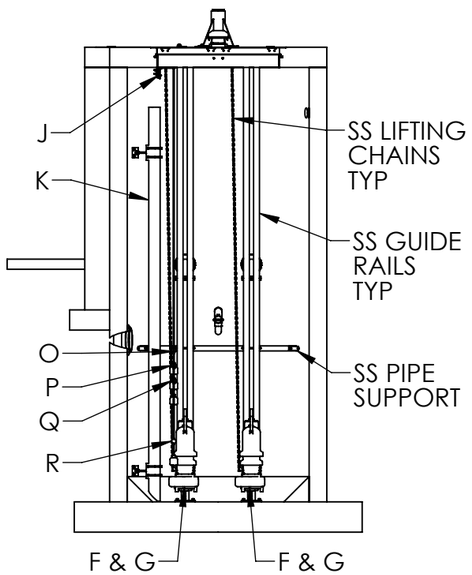
NOTES:
1) PUMP STATION ALSO INCLUDES MICRO-COMM CONTROL PANEL, PUMP J-BOX (JB1) AND LEVEL CONTROL J-BOX (JB2), ALL NOT SHOWN. THESE ITEMS TO BE REMOTE MOUNTED BY OTHERS
2) WELL TO HAVE THE FOLLOWING COATINGS:
INTERIOR = OBIC COATING
EXTERIOR = COAL TAR COATING
3) 3" DIP AND FITTINGS TYPICIAL THROUGHOUT
4) STATION INCLUDES HOIST SOCKET:
THERN SOCKET: 5BP20
HOIST POSITION:
B-1 = 2000 LB
REACH X HGT = 37" X 61"

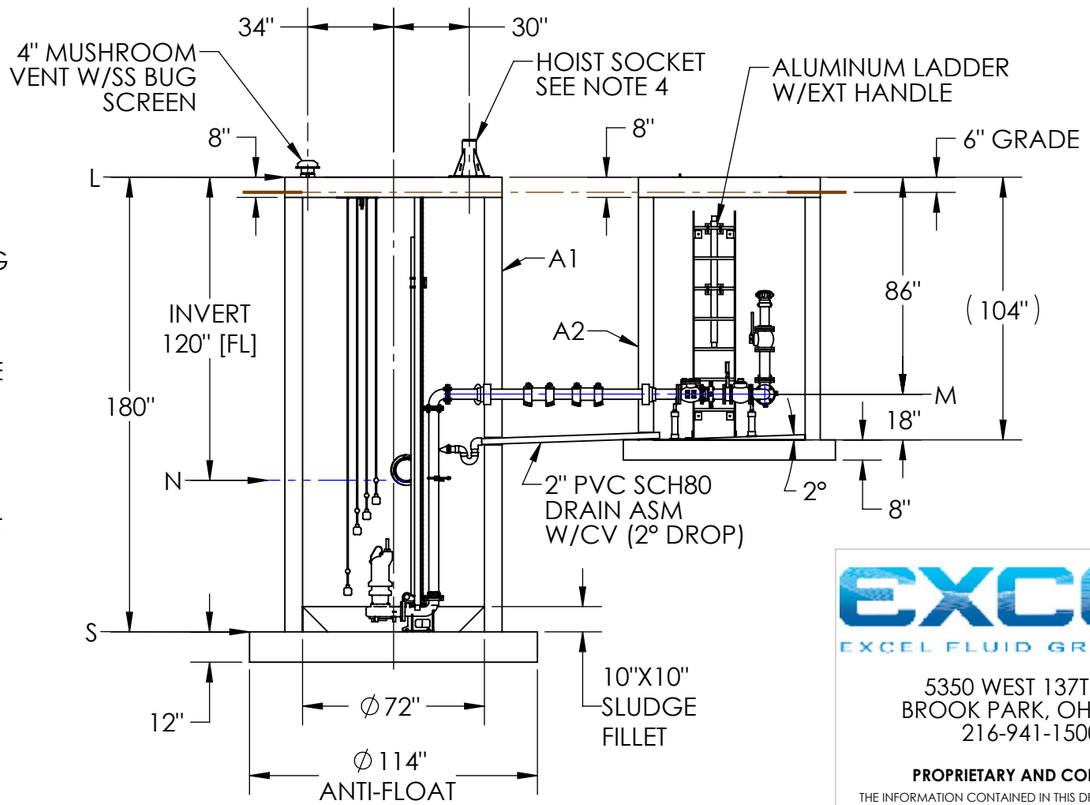


EXCEL FLUID GROUP PUMP STATION		
ITEM:	DESCRIPTION:	QTY:
A1	CONCRETE WET WELL, Ø6' X 15'	1
A2	CONCRETE VAULT (VALVE), 7'L X 6'W X 8.6'H	1
A3	CONCRETE VAULT (AIR RELEASE), Ø5' X 6'	1
B	3" CHECK VALVE	2
C	3" PLUG VALVE	3
D	3" BYPASS W/CAM LOCK	1
E	3" FLOWMETER (BY MICRO-COMM)	1
F	3XSCMPA50N4 BARNES CHOPPER PUMP	2
G	3X3 BASE ELBOW	2
H	AIR RELEASE VALVE W/SHUT-OFF VALVE	1
I	PRESSURE GAUGE	2
J	4-FLOAT BRACKET ASM	1
K	STILLING TUBE ASM (TRANS BY MICRO-COMM)	1

SEE SHEET 2 — A3
SEE SHEET 2 — H







STATION ELEVATION TABLE		
ITEM:	DESCRIPTION:	ELEVATION
L	TOP OF STATION	716.50
M	DISCHARGE (3" DIP)	709.33
N	INVERT (8" SDR35)	706.50
O	HIGH WATER ALARM FLOAT	706.50
P	LAG PUMP ON FLOAT	706.00
Q	LEAD PUMP ON FLOAT	705.50
R	PUMPS OFF FLOAT	703.50
S	FLOOR OF BASIN	701.50

EXCEL FLUID GROUP, LLC
5350 WEST 137TH ST.
BROOK PARK, OH 44142
216-941-1500

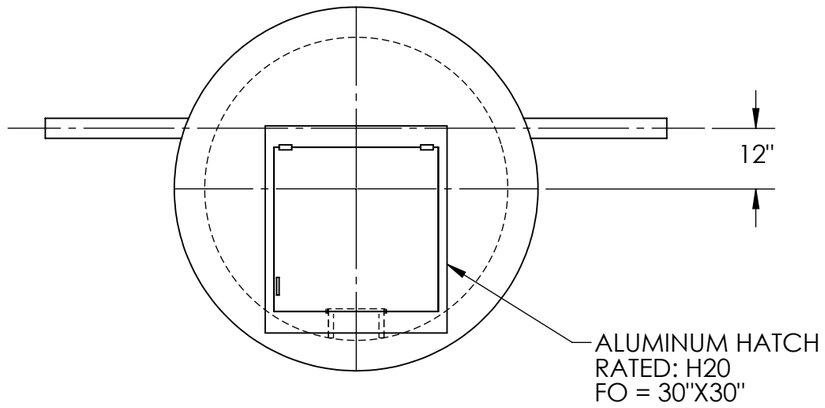
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/16"
ANGULAR: ±0.5°
DECIMAL: ±.06

DRAWN BY: BP
DATE: 1/18/24
SCALE: 1:60
DO NOT SCALE DRAWING

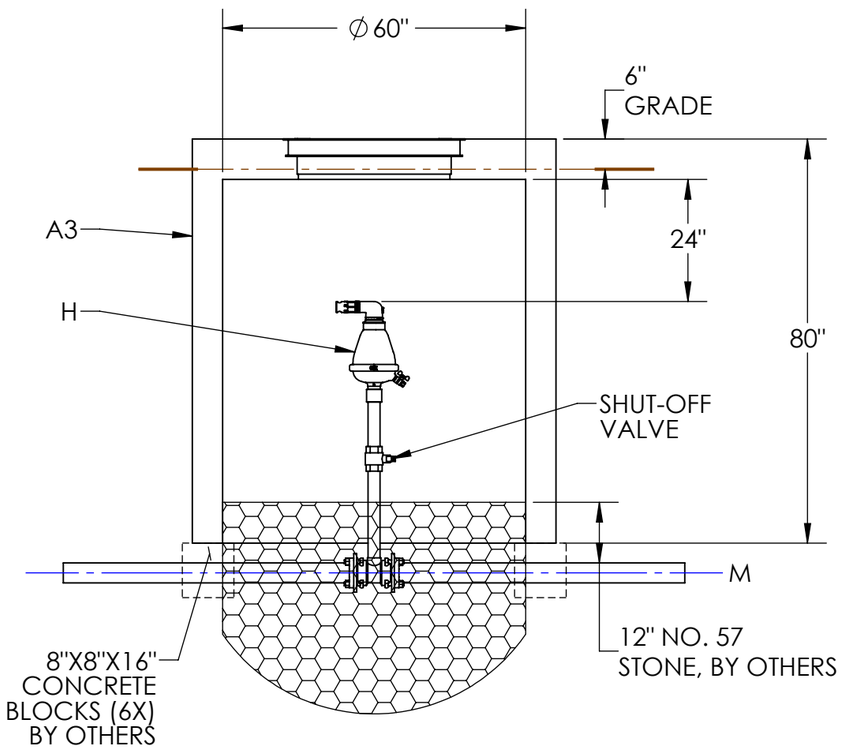
TITLE:
ZEMBA BROS, MUSKINGUM COUNTY - KNOX RD, PUMP STATION

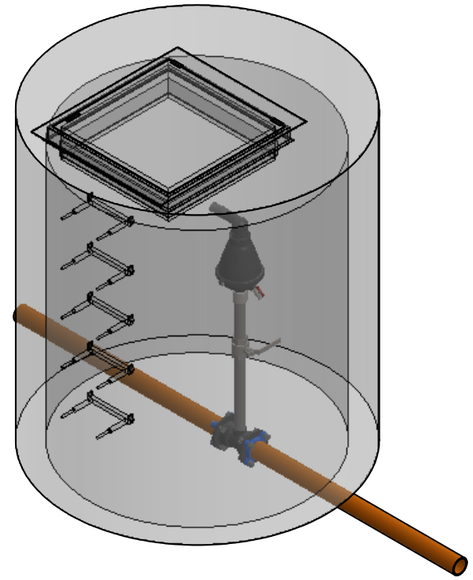
DWG. NO. Q14618-1
SIZE: B | REV: 3 | SHEET: 1 of 2

SEWAGE COMBINATION AIR RELEASE VAULT DETAILS



NOTE: MAINLINE AND VALVE SHALL BE OFFSET FROM CENTER OF MANHOLE TO ALLOW ACCESS





EXCEL FLUID GROUP, LLC
5350 WEST 137TH ST.
BROOK PARK, OH 44142
216-941-1500

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/16"
ANGULAR: ±0.5°
DECIMAL: ±.06

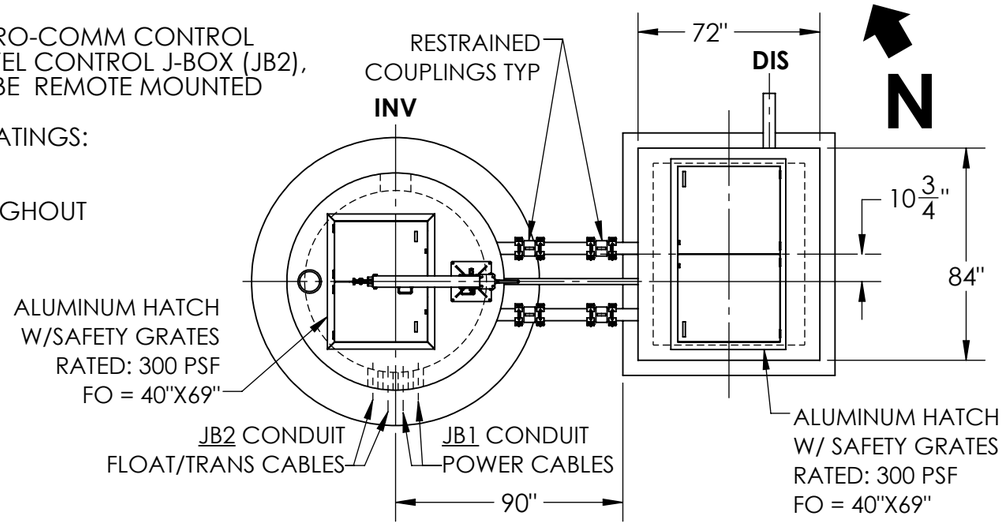
DRAWN BY: BP
DATE: 1/18/24
SCALE: 1:30
DO NOT SCALE DRAWING

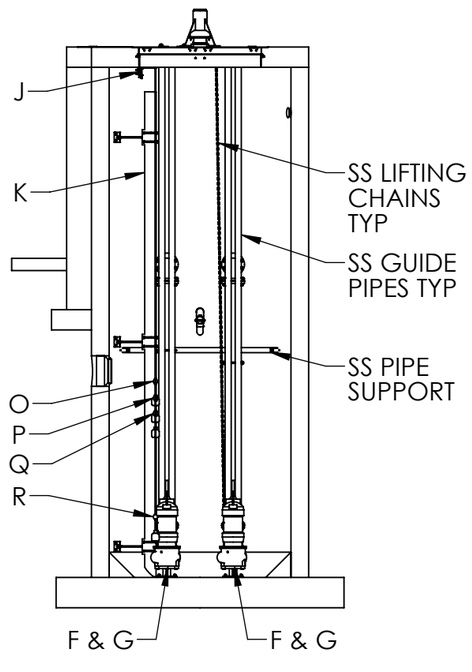
TITLE:
ZEMBA BROS,
MUSKINGUM COUNTY -
KNOX RD, PUMP STATION

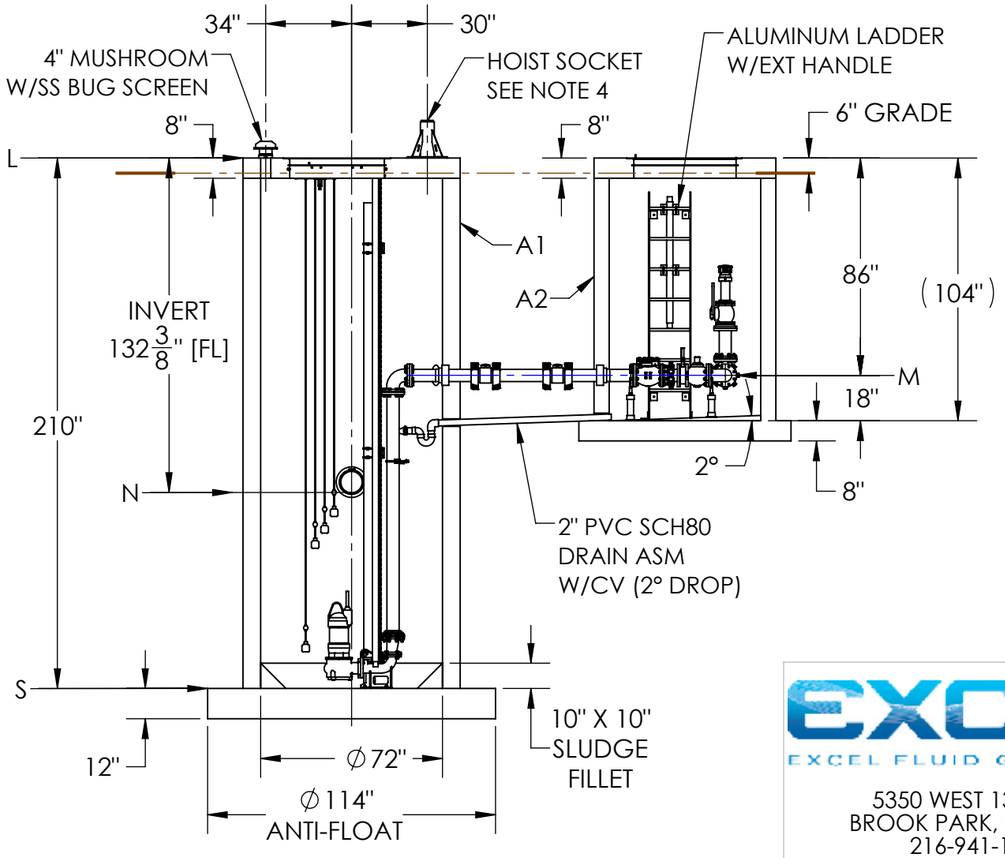
DWG. NO.
Q14618-1

SIZE: B | REV: 3 | SHEET: 2 of 2

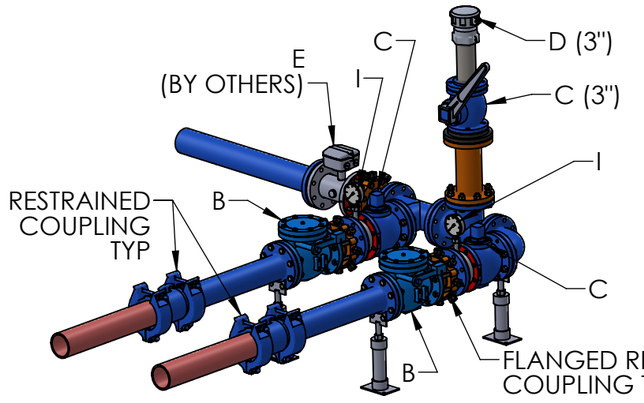
NOTES:
1) PUMP STATION ALSO INCLUDES MICRO-COMM CONTROL PANEL, PUMP J-BOX (JB1) AND LEVEL CONTROL J-BOX (JB2), ALL NOT SHOWN. THESE ITEMS TO BE REMOTE MOUNTED BY OTHERS
2) WELL TO HAVE THE FOLLOWING COATINGS:
INTERIOR = OBIC COATING
EXTERIOR = COAL TAR COATING
3) 4" DIP AND FITTINGS TYPICIAL THROUGHOUT
4) STATION INCLUDES HOIST SOCKET:
THERN SOCKET: 5BP20;
HOIST POSITION: B-1 = 2000 LB
REACH X HGT = 37" X 61"







EXCEL FLUID GROUP PUMP STATION		
ITEM:	DESCRIPTION:	QTY:
A1	CONCRETE WET WELL, Ø6' X 17.5'	1
A2	CONCRETE VAULT (VALVE), 7'L X 6'W X 8.6'H	1
SEE SHEET 2 A3	CONCRETE VAULT (AIR RELEASE), Ø5' X 6'	1
B	4" CHECK VALVE	2
C	4" PLUG VALVE/3" PLUG VALVE	2/1
D	3" BYPASS W/CAM LOCK	1
E	4" FLOWMETER (BY MICRO-COMM)	1
F	3XSCMPA75N4 BARNES CHOPPER PUMP	2
G	3X3 BASE ELBOW	2
SEE SHEET 2 H	AIR RELEASE VALVE W/SHUT-OFF VALVE	1
I	PRESSURE GAUGE	2
J	4-FLOAT BRACKET ASM	1
K	STILLING TUBE ASM (TRANS BY MICRO-COMM)	1



STATION ELEVATION TABLE		
ITEM:	DESCRIPTION:	ELEVATION
L	TOP OF STATION	702.00
M	DISCHARGE (3" DIP)	694.83
N	INVERT (8" SDR35)	690.97
O	HIGH WATER ALARM FLOAT	690.97
P	LAG PUMP ON FLOAT	690.47
Q	LEAD PUMP ON FLOAT	689.97
R	PUMPS OFF FLOAT	686.50
S	FLOOR OF BASIN	684.50

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
1	ADD HOIST SOCKET DETAILS & NOTE 4, UPDATE CONC TO MATCH SUPPLIER	1/31/24	MC
2	REDESIGN PS & LAYOUT, UPDATE BOM, ADD SHEET 2	4/15/24	MC

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BROOK PARK, OH 44142
216-941-1500

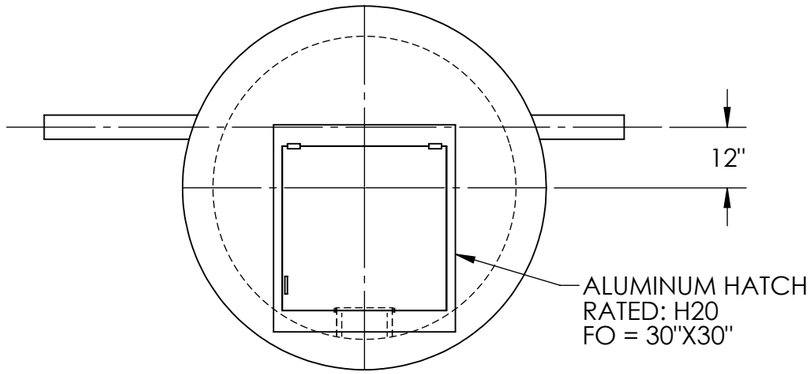
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/16"
ANGULAR: ±0.5°
DECIMAL: ±.06

DRAWN BY: BP
DATE: 1/19/24
SCALE: 1:60
DO NOT SCALE DRAWING

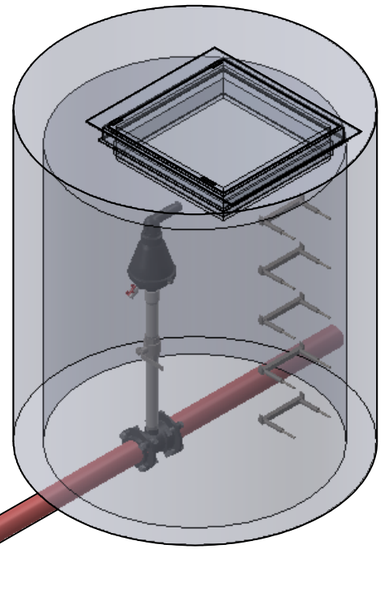
TITLE:
ZEMBA BROS, MUSKINGUM COUNTY - GRIEF RD, PUMP STATION

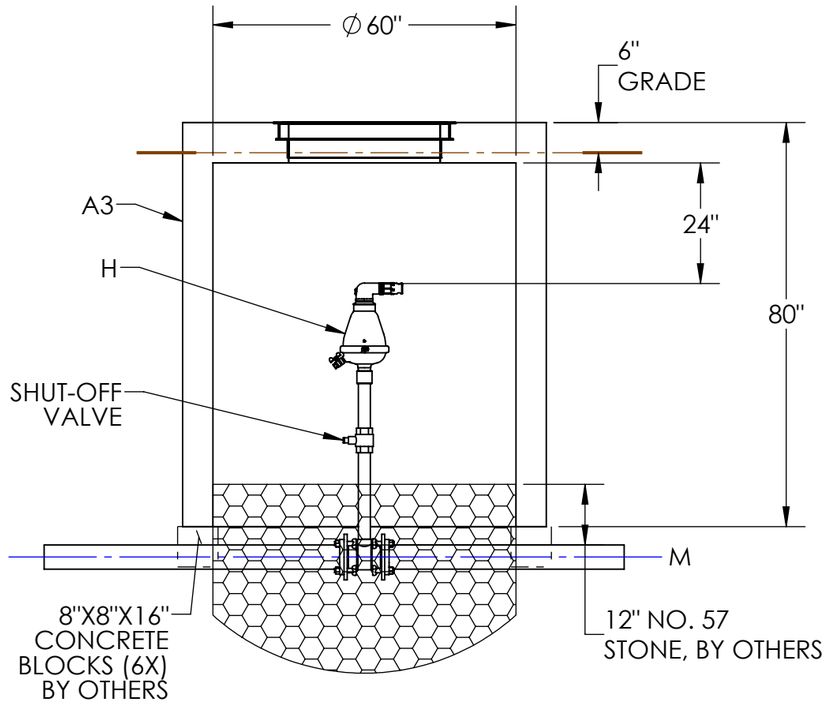
DWG. NO. Q14618-2
SIZE: B REV: 2 SHEET: 1 of 2

SEWAGE COMBINATION AIR RELEASE VAULT DETAILS



NOTE: MAIN LINE AND VALVE SHALL BE OFFSET FROM CENTER OF MANHOLE TO ALLOW ACCESS





EXCEL FLUID GROUP, LLC
5350 WEST 137TH ST.
BROOK PARK, OH 44142
216-941-1500

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/16"
ANGULAR: ±0.5°
DECIMAL: ±.06

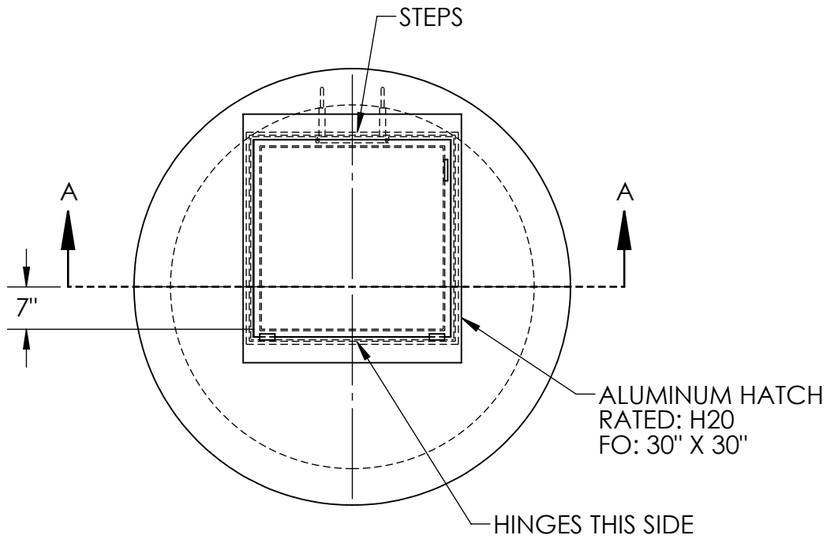
DRAWN BY: BP
DATE: 1/19/24
SCALE: 1:30
DO NOT SCALE DRAWING

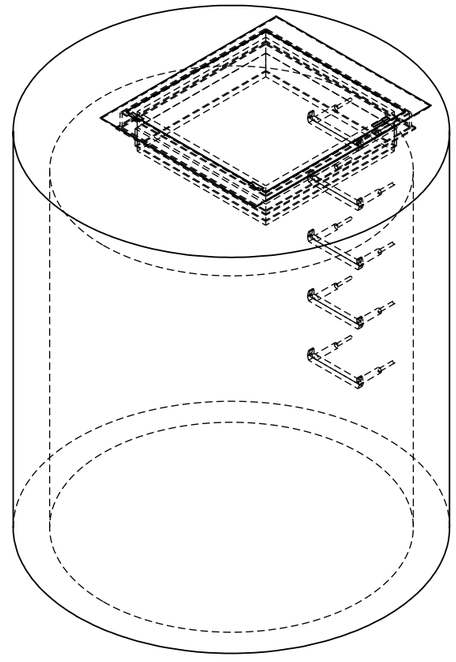
TITLE:
ZEMBA BROS,
MUSKINGUM COUNTY -
GRIEF RD, PUMP STATION

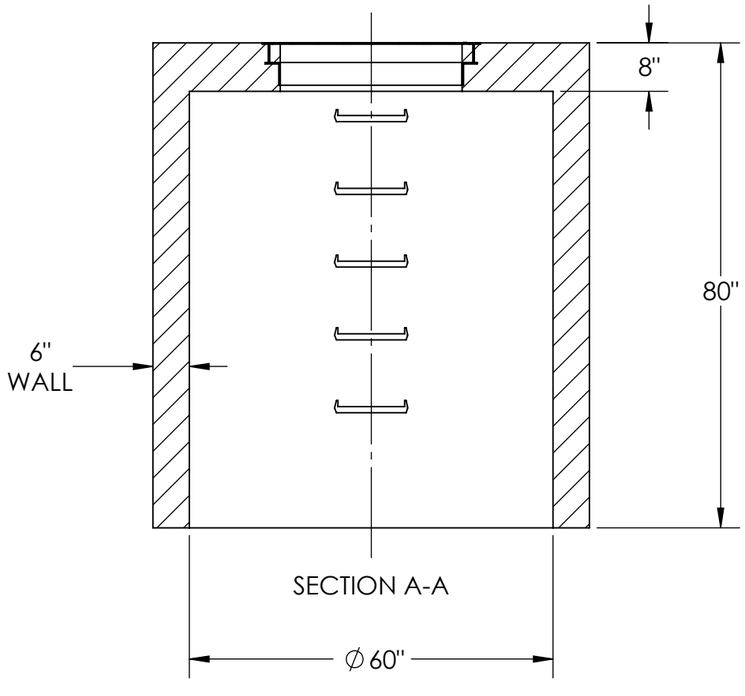
DWG. NO.
Q14618-2

SIZE: B | REV: 2 | SHEET: 2 of 2

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
0	CREATED DRAWING	4/9/24	MC







EXCEL
EXCEL FLUID GROUP, LLC
5350 WEST 137TH ST.
BROOK PARK, OH 44142
216-941-1500

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/16"
ANGULAR: ±0.5°
DECIMAL: ±.06

DRAWN BY:

DATE:

SCALE: 1:25

DO NOT SCALE DRAWING

TITLE:
ASM, MANHOLE AIR-RELEASE

DWG. NO.
Q14618 ASM MH AR

SIZE: B | REV: 0 | SHEET: 1 of 1

TECHNICAL DATA SHEET

OBIC 1000

Aromatic Polyurea Coating

Description

OBIC 1000 is a fast-set, spray applied, two component polyurea that is 100% solids and contains Zero VOC's. It is highlighted by:

- Excellent corrosion protection and chemical
- resistance
- Excellent impact resistance even in sub-freezing weather
- High abrasion resistance for harsh environments
- Seamless monolithic waterproof membrane that is tough and durable
- Odorless, 100% Solid

Application Recommendations

OBIC 1000 adheres extremely well to properly prepared metal, wood, concrete, fiber glass, and other various metal surfaces. Ideal for:

- Manhole, Wet Wells and Pump Stations
- Secondary containment
- Waterproofing
- Industrial coatings
- Potable water containment
- Water Treatment
- Industrial facilities
- Food Processing Plant
- Bridge Deck

OBIC 1000 must be applied through a two component, high pressure proportioning unit.

- Installation Temp 0°F to 150°F
- Mix Ratio 1:1
- VOC 0
- Color Bright Orange / Light Tan

Component Properties

Property	A Side	B Side
Viscosity	350 cps	650 cps
Gel Time	11-15 seconds	
Tack Free Time	20-30 seconds	
Return To Service	60 minutes	

Physical Properties

Property	Value
Hardness, D-2240	D 48
Tensile Strength, D-412	3,315 psi
100% Modulus, D-412	1,668 psi
200% Modulus, D-412	1,960 psi
300% Modulus, D-412	2,650 psi
Tear Resistance	417 pli
Ultimate Elongation, D-412	395%
Taber Abrasion, mg loss CS17	15 mg
Flexibility, 1/8 mandrel	Pass
SWAT, ASTM G210-13	Pass

*Values obtained in laboratory setting for comparison purposes only and should not be considered specifications.

Mixing Instructions: Agitate resin blend (B) component thoroughly with a drum mixer before use to disperse pigment and assure homogeneity. Do not thin. Do not agitate in air and moisture.

Consult a Technical Representative regarding specific metal/steel surface preparation and priming requirements. For concrete applications, we recommend OBIC Prime 1500CP or OBIC Prime 1500CP-F.

TECHNICAL DATA SHEET

OBIC 1000

Aromatic Polyurea Coating

Surface Preparation

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion. Minimum recommended surface preparation:

Steel: Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (3 mils / 75 microns). Prime any bare steel the same day as it is cleaned or before flash rusting occurs, as required.

Concrete & Masonry: SSPC-SP13/NACE 6 or ICRI No. 310.2R-2013, CSP 3-5. Surfaces should be thoroughly clean and dry. Concrete and mortar must be cured at least 28 days @ 75°F (24°C). Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, form release agents, moisture curing membranes, loose cement and hardeners. Fill bug holes, air pockets and other voids with recommended repair material.

Testing: If required, holiday test in accordance with ASTM D5162 for steel, or ASTM D4787 for concrete.

Equipment Recommendations

Hose Temp	150-165° F, Set even with Side A
A Side Heater	150-165° F (160° F)
B Side Heater	150-165° F (160° F)
Spray Gun	Fusion, P2 Elite, Gx7 DI
Module	01,1.5, 02 with appropriate Pump
Pump	HXP2, EXP2, PHX25, PHX41
Dynamic Pressure	>2000 psi
Static Pressure	2200 - 2400 psi

Packaging, Storage & Shelf Life

OBIC 1000 is available in 55 gallon drums, and 275 gallon totes. It should be stored in sealed containers between 60ºF and 90ºF. Shelf life is 12 months under normal conditions in factory sealed containers.

Safety

Read and Review entire SDS prior to use. Basic safety for personal protection: avoid contact with eyes and skin, long sleeve overalls or disposable overalls, rubber gloves, splash shield or safety glasses with splash guard, do not inhale or ingest, wear respirator or fresh air hood, and spraying indoor requires forced ventilation.

Warranty— OBIC LLC will warranty product only or refund the price of material it finds to be defective that has been installed properly. Except as stated above, the company makes no warranty of any kind, either express or implied, including warranties of merchantability of fitness for a particular purpose, nor does it make any warranty, expressed or implied, of any nature whatsoever with respect to the product or its use. In no event shall the company be liable for delay caused by defects, for loss of use, for indirect, special or consequential damages, or for any changes or expenses of any nature incurred without its written consent.

OBIC Guard 1306

Polyurethane Surface Material
Technical Data Sheet

Description

OBIC Guard 1306 is a spray applied, two component polyurethane backing material or primary surface material.

- Excellent for stabilizing masonry surfaces
- High closed cell content
- Seamless rigid polyurethane for rehabilitation of concrete and steel structures.

Application Recommendations

OBIC Guard 1306 adheres extremely well to polyurea and polyurethane application in addition to properly prepared metal, concrete, fiber glass, and other various surfaces. Used to fill and surface the following typical installations:

- Manhole, Wet Wells and Pump Stations
- Masonry stabilization of block and brick for crack filling and surface enhancement
- Industrial coatings
- Tank Lining

OBIC Guard 1306 must be applied through a two component, high pressure proportioning unit. Material and hoses should be heated to 120°F to 140°F, with dynamic pressure at 800 psi.

- Installation Temperature range 0°F to 150°F
- 1: 1 Mix Ratio
- Max pass thickness 2-inches
- Color: Grey

Consult a Technical Representative regarding specific installation, surface preparation and priming requirements.

Application Properties

Property	Value
Cream time	6 seconds
Tack free time	13 seconds
Rise Time	22 seconds

Physical Properties

Property	Value
Density (ASTM D – 1622)	6—8 pcf
Compressive Strength (ASTM D—1621)	130– 180 psi
Closed cell content	> 94%
Water Absorption	< 0.03 lbs/sqft
Maximum service temp	180 deg
Viscosity (A side) @ 72 deg F	675 cps
Viscosity (B side) @ 72 deg F	200 cps
S.W.A.T (ASTM G210-13)	Pass

Equipment Recommendations

A Side Hose Temp	120– 140 F
B Side Hose Temp	120 - 140 F
Static Pressure	1000 psi
Dynamic Pressure (spray)	800 psi

Values obtained in laboratory setting for comparison purposes only and should not be considered specifications.

OBIC Guard 1306 is available in 55 gallon drums, and 250 gallon totes. It should be stored in sealed containers between 50°F and 100°F. Shelf life is 6 months under normal conditions, in factory sealed containers.

MADE IN THE USA

Revised 09/2020

OBIC LLC • 525 Winzeler Drive • Bryan, OH 43506 • Phone: (866) 636-4854

When it absolutely, positively must last.

TEN YEAR LIMITED WARRANTY

Owner Name: _____ Date _____

Address: _____

Project Name, Description & Location _____

OBIC, LLC. (manufacturer) and certified installer, _____ (contractor) joint warranty the installation of the Multi-Layer Lining System material against failure for a period of 10 years. "Failure" will be deemed to have occurred if the protective liner fails to (a) prevent the internal deterioration or corrosion of the structure (b) protect the substrate and environment from contamination by exfiltration or (c) prevent groundwater infiltration. "Failure" does not include damage resulting from mechanical or chemical abuse or by an act of God. Mechanical or chemical abuse means exposing the coated surfaces of the structure to any mechanical force or chemical substance not customarily present or used in connection with structures of the type involved. If any such failure occurs within 10 years of initial completion of OBIC Lining System with installation being completed by an OBIC certified installer, manufacturer will warrant material during Warranty Period. Manufacturer will, at its expense, supply sufficient material to the certified installer to make repair to coating system where failure has occurred to prevent deterioration or corrosion, protect substrate or prevent infiltration for the remaining portion of Warranty period. Notice must be made in writing within thirty (30) days of the occurrence whereas manufacturer and installer are afforded the opportunity to inspect any such areas at such time as OBIC LLC may reasonably request. Certified Installer shall have the responsibility for providing all labor and equipment necessary to properly install OBIC lining system to damaged area of failure.

WARRANTY DISCLAIMER:

OBIC, LLC makes no warranties express or implied other than those specifically stated in this Ten-Year Warranty. In no event will manufacture make a guarantee or warranty of any kind where any failure results from excessive structural movement, cracks or defects, or from faulty construction design, misuse of the structure, settlement or expansion of the structure. OBIC warranty does not cover damage to its coatings or failure due to disintegration of the substrate, mechanical damage caused by individuals, tools, or other outside agents or any change in the appearance of the coating from accumulated dirt or other contaminants deposited on the coating.

LIMITATION OF LIABILITY:

Any liability for consequential and incidental damages is expressly disclaimed. Manufacturer's liability in all events is limited to, and shall not exceed, the purchase price paid.

This warranty effective _____, 20___. This is to certify that the above name product has been applied to the structure in compliance with manufacturer installation policy and procedures and is entitled to the Warranty set forth.

Dustin Schlachter
_____ By:_____

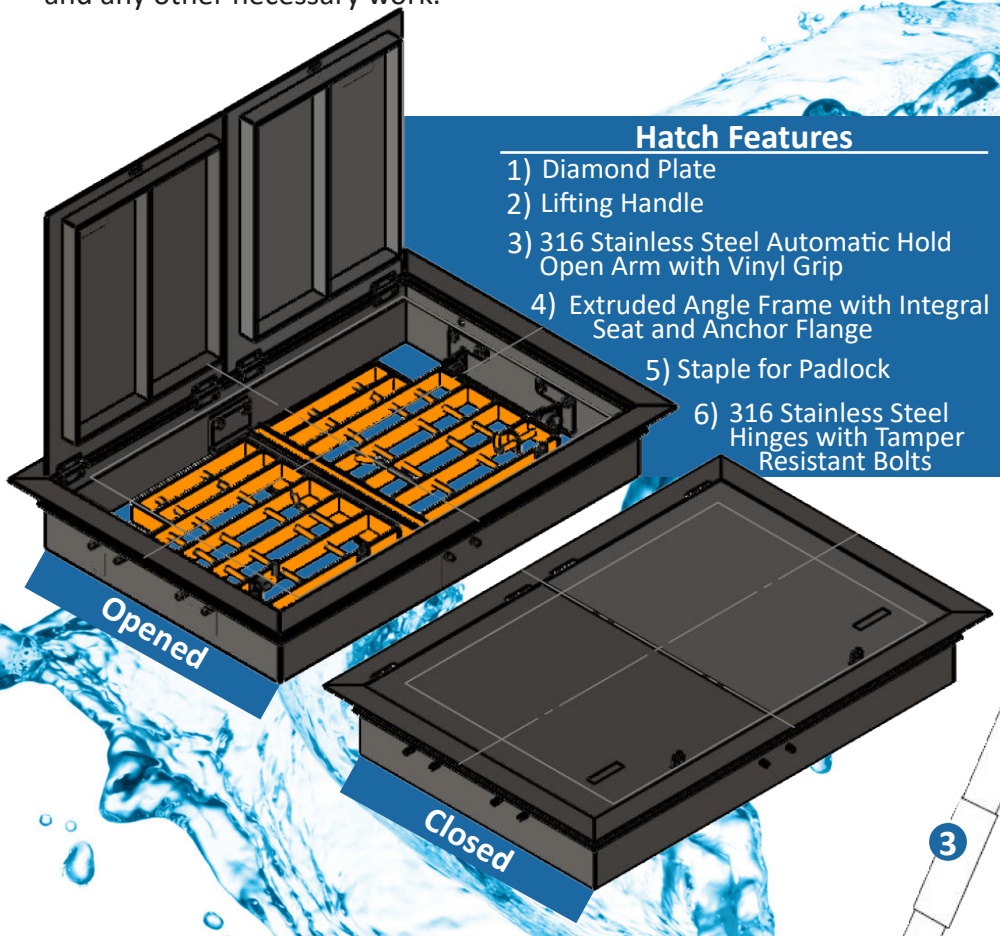
OBIC, LLC Dustin Schlachter - Member Certified Installer:

EXCEL

EXCEL FLUID GROUP, LLC

Hatch with Safety Grate

Hatches with safety grates in a pump station are important, not only for safe working conditions but for ease of use as well. Our hatches are all Pedestrian Load Rated hatches with safety grates rated for 300 lbs. This allow workers to also place pumps on the grates to complete maintenance checks and any other necessary work.



Hatch Features

1) Diamond Plate
2) Lifting Handle
3) 316 Stainless Steel Automatic Hold Open Arm with Vinyl Grip
4) Extruded Angle Frame with Integral Seat and Anchor Flange
5) Staple for Padlock
6) 316 Stainless Steel Hinges with Tamper Resistant Bolts

Available Sizes

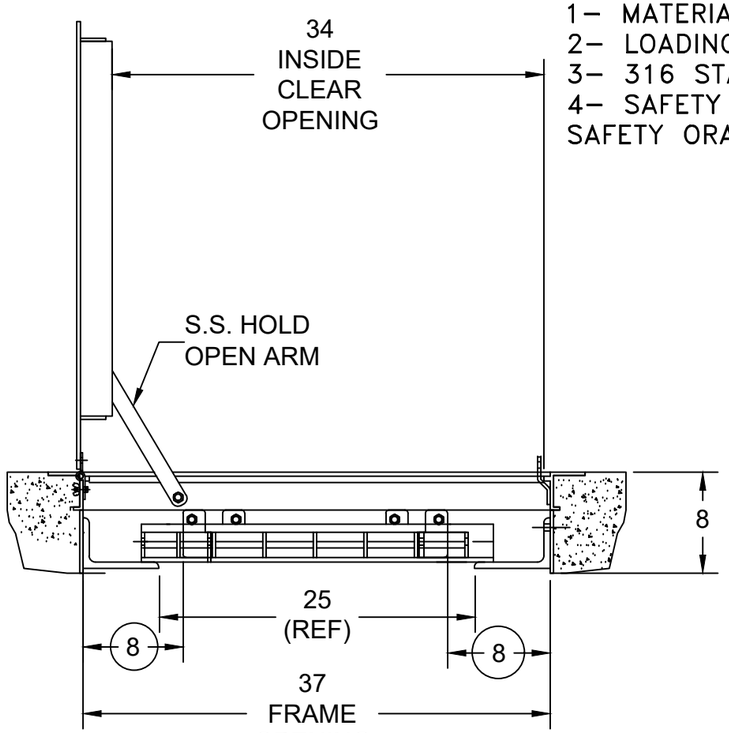
31 in. x 48 in. x 8 in.	#2000000
37 in. x 48 in. x 8 in.	#2000002
40 in. x 69 in. x 8 in.	#2000016

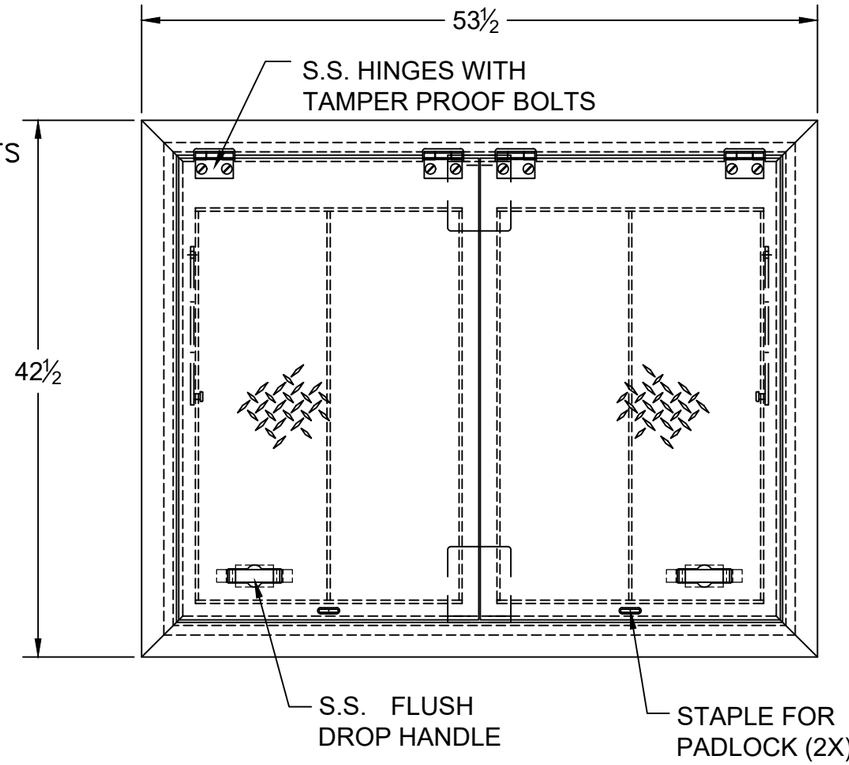
Custom sizes and traffic rated hatches available upon request

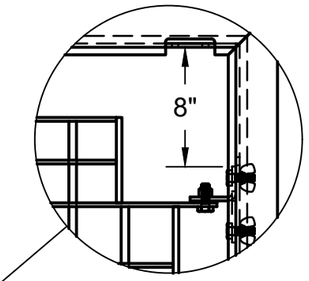
Hatch with Safety Grate in a NoVault™ Pump Station

Excel Fluid Group, LLC ● 5350 West 137th St. Brook Park, OH 44142 ● sales@excelfluidgroup.com
www.excelfluidgroup.com ● Phone: (216) 941-1500 ● Fax: (216) 941-9916

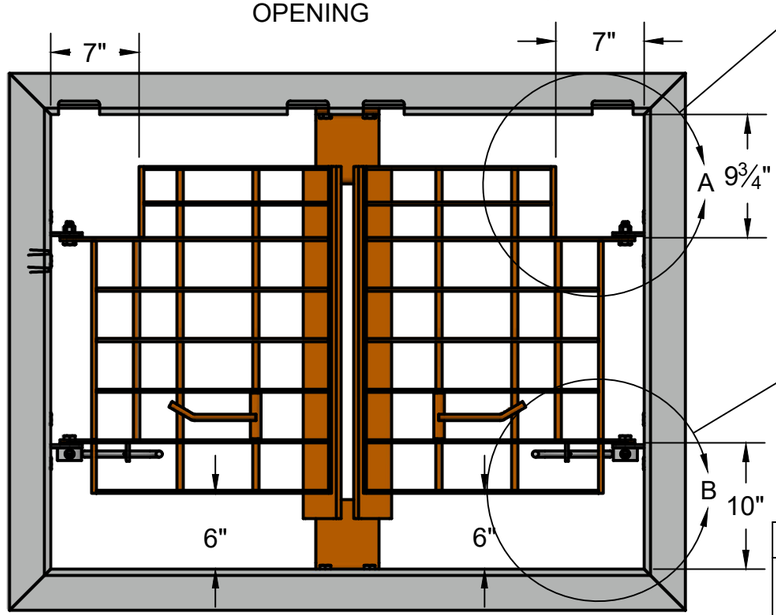
NOTES:
1– MATERIAL: ALUMINUM
2– LOADING: 300 LBS. PER SQ. FT.
3– 316 STAINLESS STEEL NUTS & BOLTS
4– SAFETY GRATE TO BE PAINTED WITH SAFETY ORANGE POWDER COAT

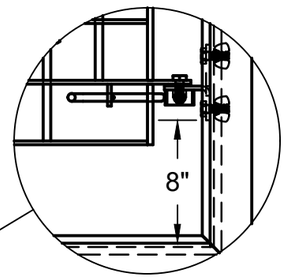




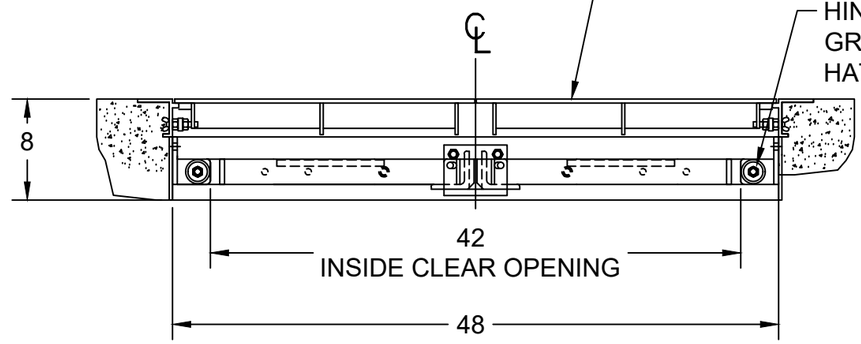


DETAIL A
SCALE 1:10





DETAIL B
SCALE 1:10



TOLERANCES UNLESS OTHERWISE SPECIFIED:
INCHES = ± 1/16
1/16 = ± 1/32
1/32 = ± 1/64

USS US SUPPLIES , INC.

Designed by	Checked by	Date	Scale
NF	NF	06/23/21	1–16

1	07/23/21	NF	SAFETY GRATE HINGE MOVES FOR 8" CLEAR & SKIRT FOR 8" OF SLAB WAS 6"

HATCH PAD 37 X 48 ALUMINUM
W/HINGED SAME SIDE, INDEPENDENT DOOR, DUAL GRATE & STAPLE

DWG. NO	rev	Sheet
10413	1	1 of 4

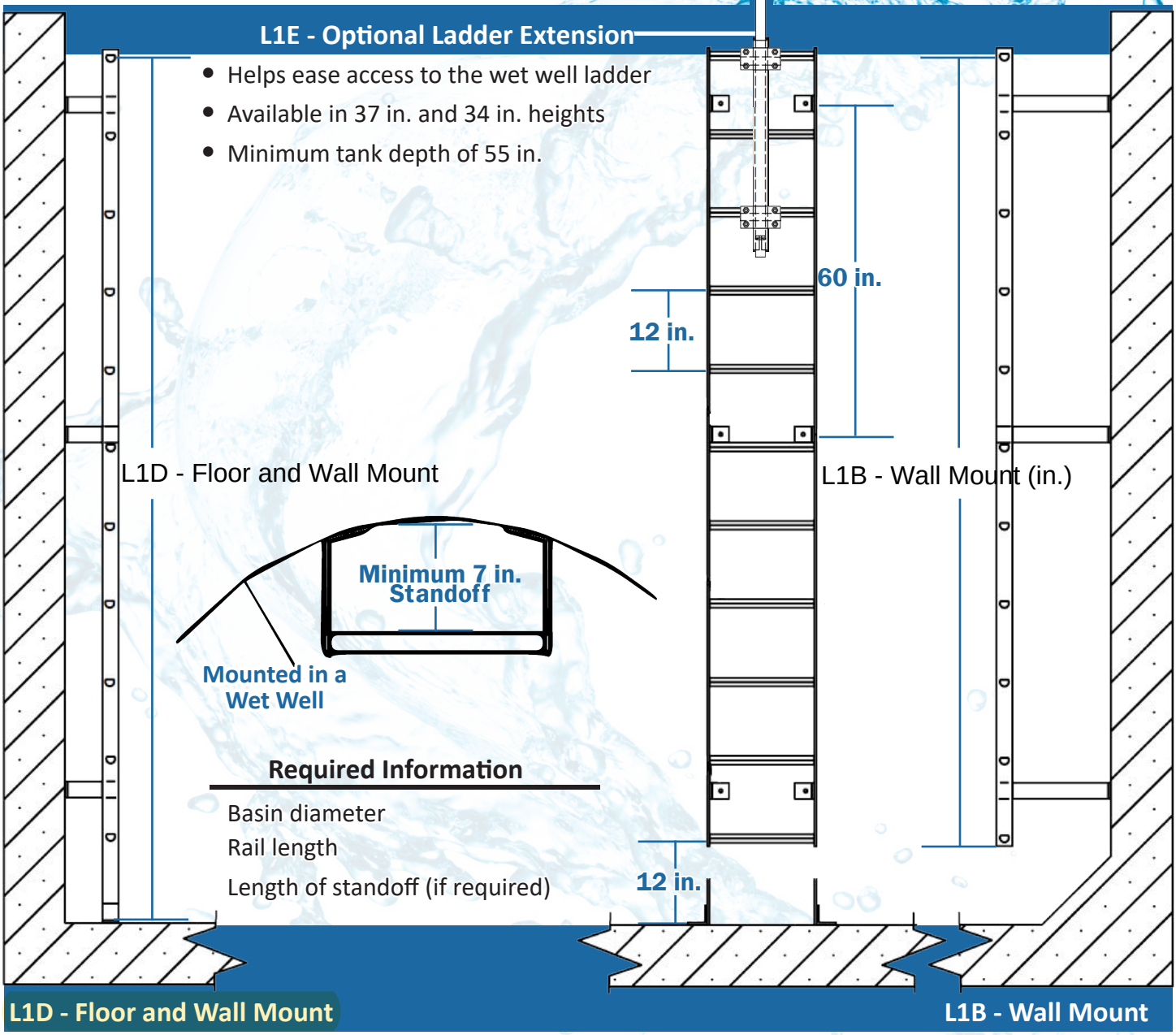
EXCEL FLUID GROUP, LLC

Wet Well Ladders

- All aluminum welded construction
- 1 3/8 in. diameter type 'D" rung with flat slip resistant ribbed rung design
- Custom fit wall mounted standoffs
- Available in welded stainless steel construction
- Other sizes available

L1E - Optional Ladder Extension

- Helps ease access to the wet well ladder
- Available in 37 in. and 34 in. heights
- Minimum tank depth of 55 in.



Required Information

Basin diameter
Rail length
Length of standoff (if required)

L1D - Floor and Wall Mount

L1B - Wall Mount

Excel Fluid Group, LLC ● 5350 West 137th St. Brook Park, OH 44142 ● sales@excelfluidgroup.com
www.excelfluidgroup.com ● Phone: (216) 941-1500 ● Fax: (216) 941-9916

EXCEL

EXCEL FLUID GROUP, LLC

Pumps Section

- Knox Pump Station
  - Pump Specifications
  - Pump Curve
- Greif Pump Station
  - Pump Specifications
  - Pump Curve
- Break-Away Fitting Data
- Guide Pipe & Lifting Chain
- Cable Support Grips

Excel Fluid Group, LLC • 5350 West 137th St. Brook Park, OH 44142 • sales@excelfluidgroup.com
www.excelfluidgroup.com • Phone: (216) 941-1500 • Fax: (216) 941-9916

I&O Manual

X-Pruf® Solids Handling Submersible Pumps

Specifications:

DISCHARGE	3", 125 lb. Horizontal Flange Slotted to accommodate 80mm ISO Flanges
LIQUID TEMPERATURE	104°F (40°C) Continuous
VOLUTE	Cast Iron ASTM A-48, Class 30
STRIKER PLATE	440C Stainless Steel Heat Treated to 53-60 HRC Hole Pattern to Accomodate 4" 125 # Flange
WEAR RING	C954 Lead-Free Bronze
MOTOR HOUSING	Cast Iron ASTM A-48, Class 30
SEAL PLATE	Cast Iron ASTM A-48, Class 30
IMPELLER:	
Design	Enclosed Monovane, With Pump Out Vanes on Back Side. Dynamically Balanced ISO G6.3
Material	Ductile Iron ASTM A-536, 65-45-12
SLICING BLADE	440C Stainless Steel Heat Treated to 53-60 HRC
SHAFT	416 Stainless Steel
"O" RINGS	Buna-N
HARDWARE	300 Series Stainless Steel
LIFTING BAIL	300 Series Stainless Steel
PAINT	Epoxy Dupont Corlar® Amine Epoxy, Two Coats
SEAL: *Design*	Tandem Mechanical, Oil Filled Reservoir.
Material: Inboard	Rotating Faces - Carbon Stationary Faces - Ceramic
Material: Outboard	Rotating Faces - Silicon Carbide Stationary Faces - Silicon Carbide Elastomer - Buna-N Hardware - 300 Series Stainless
CORD ENTRY	Custom Molded, Quick Connected for Sealing and Strain Relief
POWER CORD	CSA Certified Submersible Power Cable 2000V - Ordered Separately
SPEED	1750 RPM (Nominal)
UPPER BEARING:	
Design	Single Row, Ball, Oil Lubricated
Load	Radial
LOWER BEARING:	
Design	Double Row, Ball, Oil Lubricated
Load	Radial & Thrust
MOTOR: *Design*	NEMA B - Three Phase Torque Curve Oil-Filled, Squirrel Cage Induction, Inverter Duty rated per NEMA MG1
Insulation	Class H Varnish & Magnet Wire
THREE PHASE	Requires overload protection to be included in control panel.
MOISTURE SENSOR	Normally Open (N/O), Requires Relay in Control Panel
TEMPERATURE SENSOR	Three Normally Closed (N/C). To be wired in series with control circuit.
OPTIONAL EQUIPMENT	White Iron Impeller, Seal Material, Impeller Trims, Cord Length
MARKINGS	CSA, CE
WEIGHT	252 lbs (115 Kg)
NOISE EMISSION MAX	In-Air 65 dB-A
SUBMERGENCE	Max Depth 66ft (20m)

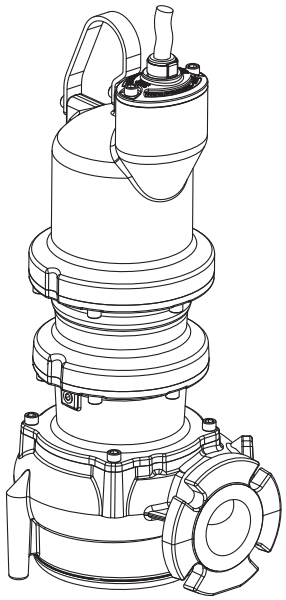
RECOMMENDED:

Accessories	Break Away Fitting (BAF) Control Panel Pump Monitor Relay Leg Kit

LR16567

SWPA MEMBER

HYDRAULIC INSTITUTE PROUD MEMBER



SITHE

Series: 3XSCM
3 - 7.5HP, 1750RPM, 60Hz

Explosion Proof, Class I, Division 1, Groups C & D, T4

Sample Specification

This product may be covered by one or more of the following patents and other patent(s) pending: US Patent 7,931,473, NZ DSN NO. 424412, NZ DSN NO. 424413, AUS DSN NO. 201812608, AUS DSN NO. 201812609 EU Design Reg. 005293040-0001

DESCRIPTION:

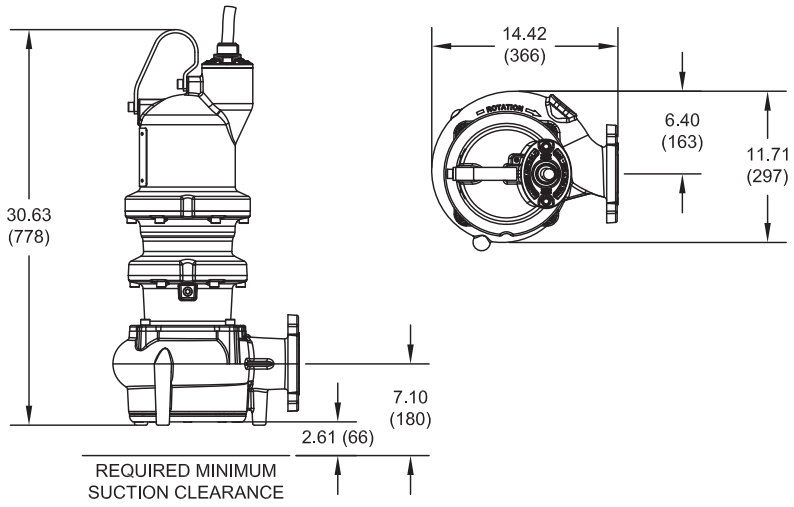
SUBMERSIBLE CHOPPER PUMP DESIGNED FOR RAW SEWAGE APPLICATIONS.

WARNING:
CANCER AND REPRODUCTIVE HARM - WWW.P65WARNINGS.CA.GOV

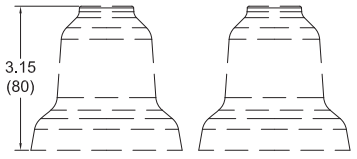
X-Pruf® Solids Handling Submersible Pumps

18 Frame Driver

inches
(mm)



Optional Leg Kit - p/n 125506



IMPORTANT !

1.) MOISTURE AND TEMPERATURE SENSORS MUST BE CONNECTED TO VALIDATE THE CSA LISTING.
2.) A SPECIAL MOISTURE SENSOR RELAY IS REQUIRED IN THE CONTROL PANEL FOR PROPER OPERATION OF THE MOISTURE SENSORS. CONTACT BARNES PUMPS FOR INFORMATION CONCERNING MOISTURE SENSING RELAYS FOR CUSTOMER SUPPLIED CONTROL PANELS.
3.) THESE PUMPS ARE CSA LISTED FOR PUMPING WATER AND WASTEWATER. **DO NOT USE TO PUMP FLAMMABLE LIQUIDS**. NOT SUITABLE FOR ENVIRONMENTS CONTAINING GASOLINE OR HEXANE.
4.) INSTALLATIONS SUCH AS DECORATIVE FOUNTAINS OR WATER FEATURES PROVIDED FOR VISUAL ENJOYMENT MUST BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE ANSI/NFPA 70 AND/OR THE AUTHORITY HAVING JURISDICTION. THIS PUMP IS NOT INTENDED FOR USE IN SWIMMING POOLS, RECREATIONAL WATER PARKS, OR INSTALLATIONS IN WHICH HUMAN CONTACT WITH PUMPED MEDIA IS A COMMON OCCURRENCE.

X-Pruf® Solids Handling Submersible Pumps

MODEL NO	HP	VOLT	PH	Hz	RPM (Nom)	NEMA START CODE	FULL LOAD AMPS	SERVICE FACTOR	SERVICE FACTOR AMPS	LOCKED ROTOR AMPS	DRIVER FRAME	CORD P/N ▲	CORD SIZE
3XSCMPA30N4*	3	208	3	60	1750	K	9.7	1.2	11.4	58.2 / 65.8	18	125496	12/4 - 18/4
		230					9.2	1.2	10.6				
		460					4.6	1.2	5.3	32.9	18	125497	
3XSCMPA3054*	3	575	3	60	1750	N	4.5	1.2	4.9	37.0	18	125497	12/4 - 18/4
3XSCMPA50N4	5	208	3	60	1750	J	15.8	1.2	18.7	82.4 / 92.4	18	125496	12/4 - 18/4
		230					15.0	1.2	17.2				
		460					7.5	1.2	8.6	46.2	18	125497	
3XSCMPA5054	5	575	3	60	1750	J	6.0	1.2	6.9	37.0	18	125497	12/4 - 18/4
3XSCMPA75N4	7.5	208	3	60	1750	H	23.8	1.2	28.5	105.9 / 123.6	18	125496	12/4 - 18/4
		230					23.7	1.2	27.2				
		460					11.9	1.2	13.6	61.8	18	125497	
3XSCMPA7554	7.5	575	3	60	1750	H	9.5	1.2	10.9	49.4	18	125497	12/4 - 18/4

IMPORTANT !
Moisture and Temperature sensor leads are integral to power cord.
Pump rated for operation at ± 10% voltage at motor.
▲ Cord Suffix: XC - 30 Feet, XF - 50 Feet, XJ - 75 Feet, or XL - 100 Feet.
▲ Cord sold separately.
* Select impeller diameter when ordering.

Pump Data Sheet - Crane Barnes.60

Company: Excel Fluid Group
Name: Licking View - Knox PS
Date: 04/12/2024

KNOX RD

BARNES

Pump:

Size:	3SCMPA / 3XSCMPA	Dimensions:	
Type:	SC 3" Sub. Chopper	Suction:	---
Synch Speed:	1800 rpm	Discharge:	3 in
Dia:	200 mm		
Curve:	---		

Fluid:

Name:	Water		
SG:	1	Vapor Pressure:	0.256 psi a
Density:	62.4 lb/ft³	Atm Pressure:	14.7 psi a
Viscosity:	1.1 cP		
Temperature:	60 °F	Margin Ratio:	1

Search Criteria:

Flow:	90 US gpm	Near Miss:	---
Head:	50 ft	Static Head:	0 ft

Pump Limits:

Temperature:	104 °F	Sphere Size:	---
Wkg Pressure:	---		

Motor:

Motor is integral to the pump except in 4A, 4B, and 5B catalog sections.

Pump Selection Warnings:

None

--- Duty Point ---

Flow:	92.1 US gpm
Head:	52.3 ft
Eff:	25.9%
Power:	4.69 hp
NPSHr:	---
Speed:	1750 rpm

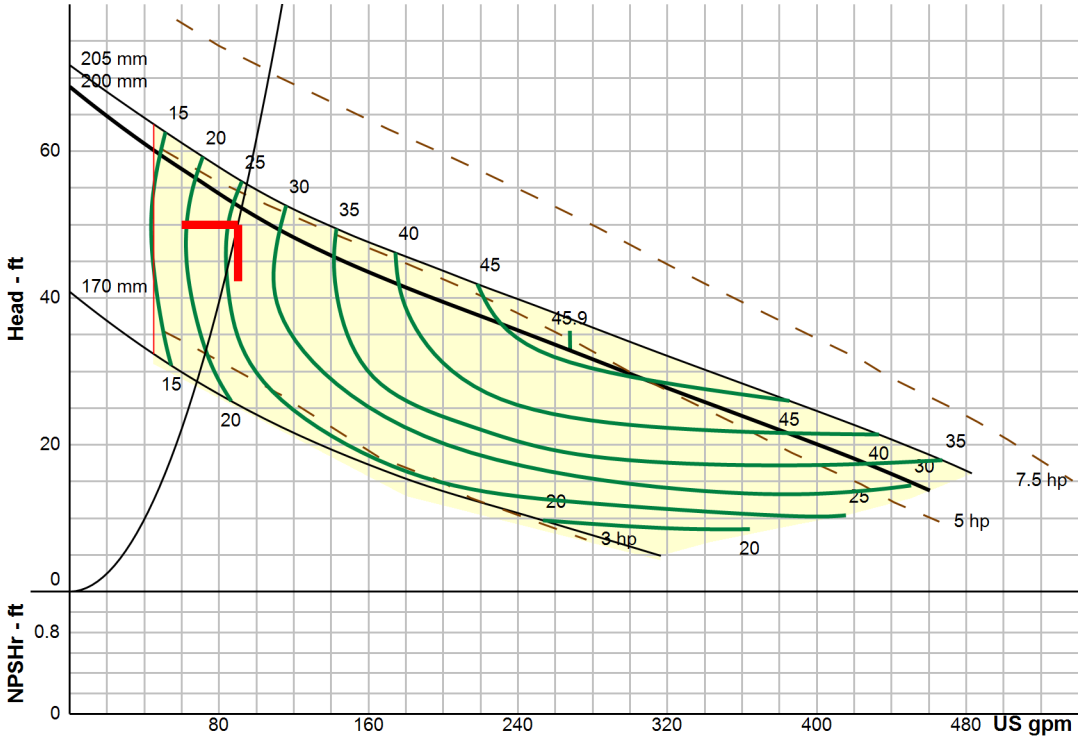
--- Design Curve ---

Shutoff Head:	68.8 ft
Shutoff dP:	29.8 psi
Min Flow:	45 US gpm

BEP: 45.9% @ 268 US gpm
NOL Power:
5.51 hp @ 461 US gpm

--- Max Curve ---

Max Power:
6.14 hp @ 483 US gpm



Performance Evaluation:

Flow	Speed	Head	Efficiency	Power	NPSHr
US gpm	rpm	ft	%	hp	ft
108	1750	49.9	29	4.67	---
90	1750	52.6	25	4.69	---
72	1750	55.6	21	4.77	---
54	1750	58.6	16	4.83	---
36	1750	---	---	---	---

I&O Manual

X-Pruf® Solids Handling Submersible Pumps

Specifications:

DISCHARGE	3", 125 lb. Horizontal Flange Slotted to accommodate 80mm ISO Flanges
LIQUID TEMPERATURE	104°F (40°C) Continuous
VOLUTE	Cast Iron ASTM A-48, Class 30
STRIKER PLATE	440C Stainless Steel Heat Treated to 53-60 HRC Hole Pattern to Accomodate 4" 125 # Flange
WEAR RING	C954 Lead-Free Bronze
MOTOR HOUSING	Cast Iron ASTM A-48, Class 30
SEAL PLATE	Cast Iron ASTM A-48, Class 30
IMPELLER:	
Design	Enclosed Monovane, With Pump Out Vanes on Back Side. Dynamically Balanced ISO G6.3
Material	Ductile Iron ASTM A-536, 65-45-12
SLICING BLADE	440C Stainless Steel Heat Treated to 53-60 HRC
SHAFT	416 Stainless Steel
"O" RINGS	Buna-N
HARDWARE	300 Series Stainless Steel
LIFTING BAIL	300 Series Stainless Steel
PAINT	Epoxy Dupont Corlar® Amine Epoxy, Two Coats
SEAL: *Design*	Tandem Mechanical, Oil Filled Reservoir.
Material: Inboard	Rotating Faces - Carbon Stationary Faces - Ceramic
Material: Outboard	Rotating Faces - Silicon Carbide Stationary Faces - Silicon Carbide Elastomer - Buna-N Hardware - 300 Series Stainless
CORD ENTRY	Custom Molded, Quick Connected for Sealing and Strain Relief
POWER CORD	CSA Certified Submersible Power Cable 2000V - Ordered Separately
SPEED	1750 RPM (Nominal)
UPPER BEARING:	
Design	Single Row, Ball, Oil Lubricated
Load	Radial
LOWER BEARING:	
Design	Double Row, Ball, Oil Lubricated
Load	Radial & Thrust
MOTOR: *Design*	NEMA B - Three Phase Torque Curve Oil-Filled, Squirrel Cage Induction, Inverter Duty rated per NEMA MG1
Insulation	Class H Varnish & Magnet Wire
THREE PHASE	Requires overload protection to be included in control panel.
MOISTURE SENSOR	Normally Open (N/O), Requires Relay in Control Panel
TEMPERATURE SENSOR	Three Normally Closed (N/C). To be wired in series with control circuit.
OPTIONAL EQUIPMENT	White Iron Impeller, Seal Material, Impeller Trims, Cord Length
MARKINGS	CSA, CE
WEIGHT	252 lbs (115 Kg)
NOISE EMISSION MAX	In-Air 65 dB-A
SUBMERGENCE	Max Depth 66ft (20m)

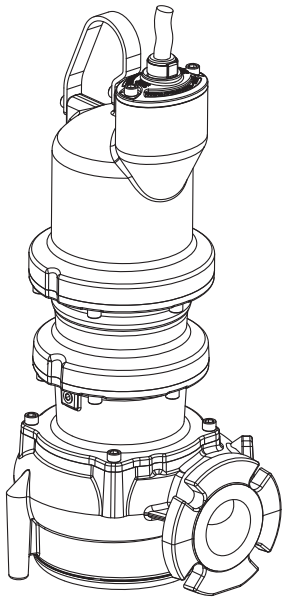
RECOMMENDED:

Accessories	Break Away Fitting (BAF) Control Panel Pump Monitor Relay Leg Kit

LR16567

SWPA MEMBER

HYDRAULIC INSTITUTE PROUD MEMBER



SITHE

Series: 3XSCM
3 - 7.5HP, 1750RPM, 60Hz

Explosion Proof, Class I, Division 1, Groups C & D, T4

Sample Specification

This product may be covered by one or more of the following patents and other patent(s) pending: US Patent 7,931,473, NZ DSN NO. 424412, NZ DSN NO. 424413, AUS DSN NO. 201812608, AUS DSN NO. 201812609 EU Design Reg. 005293040-0001

DESCRIPTION:

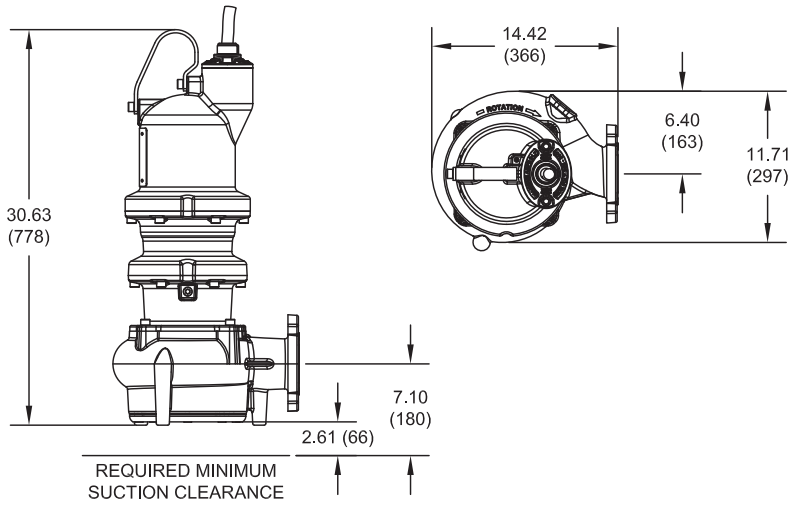
SUBMERSIBLE CHOPPER PUMP DESIGNED FOR RAW SEWAGE APPLICATIONS.

WARNING:
CANCER AND REPRODUCTIVE HARM - WWW.P65WARNINGS.CA.GOV

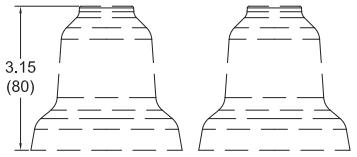
X-Pruf® Solids Handling Submersible Pumps

18 Frame Driver

inches (mm)



Optional Leg Kit - p/n 125506



IMPORTANT !

1.) MOISTURE AND TEMPERATURE SENSORS MUST BE CONNECTED TO VALIDATE THE CSA LISTING.
2.) A SPECIAL MOISTURE SENSOR RELAY IS REQUIRED IN THE CONTROL PANEL FOR PROPER OPERATION OF THE MOISTURE SENSORS. CONTACT BARNES PUMPS FOR INFORMATION CONCERNING MOISTURE SENSING RELAYS FOR CUSTOMER SUPPLIED CONTROL PANELS.
3.) THESE PUMPS ARE CSA LISTED FOR PUMPING WATER AND WASTEWATER. **DO NOT USE TO PUMP FLAMMABLE LIQUIDS**. NOT SUITABLE FOR ENVIRONMENTS CONTAINING GASOLINE OR HEXANE.
4.) INSTALLATIONS SUCH AS DECORATIVE FOUNTAINS OR WATER FEATURES PROVIDED FOR VISUAL ENJOYMENT MUST BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE ANSI/NFPA 70 AND/OR THE AUTHORITY HAVING JURISDICTION. THIS PUMP IS NOT INTENDED FOR USE IN SWIMMING POOLS, RECREATIONAL WATER PARKS, OR INSTALLATIONS IN WHICH HUMAN CONTACT WITH PUMPED MEDIA IS A COMMON OCCURRENCE.

X-Pruf® Solids Handling Submersible Pumps

MODEL NO	HP	VOLT	PH	Hz	RPM (Nom)	NEMA START CODE	FULL LOAD AMPS	SERVICE FACTOR	SERVICE FACTOR AMPS	LOCKED ROTOR AMPS	DRIVER FRAME	CORD P/N ▲	CORD SIZE
3XSCMPA30N4*	3	208	3	60	1750	K	9.7	1.2	11.4	58.2 / 65.8	18	125496	12/4 - 18/4
		230					9.2	1.2	10.6				
		460					4.6	1.2	5.3	32.9	18	125497	
3XSCMPA3054*	3	575	3	60	1750	N	4.5	1.2	4.9	37.0	18	125497	12/4 - 18/4
3XSCMPA50N4	5	208	3	60	1750	J	15.8	1.2	18.7	82.4 / 92.4	18	125496	12/4 - 18/4
		230					15.0	1.2	17.2				
		460					7.5	1.2	8.6	46.2	18	125497	
3XSCMPA5054	5	575	3	60	1750	J	6.0	1.2	6.9	37.0	18	125497	12/4 - 18/4
3XSCMPA75N4	7.5	208	3	60	1750	H	23.8	1.2	28.5	105.9 / 123.6	18	125496	12/4 - 18/4
		230					23.7	1.2	27.2				
		460					11.9	1.2	13.6	61.8	18	125497	
3XSCMPA7554	7.5	575	3	60	1750	H	9.5	1.2	10.9	49.4	18	125497	12/4 - 18/4

IMPORTANT !
Moisture and Temperature sensor leads are integral to power cord.
Pump rated for operation at ± 10% voltage at motor.
▲ Cord Suffix: XC - 30 Feet, XF - 50 Feet, XJ - 75 Feet, or XL - 100 Feet.
▲ Cord sold separately.
* Select impeller diameter when ordering.

Pump Data Sheet - Crane Barnes.60

Company: Excel Fluid Group
Name: Licking View - Greif PS
Date: 01/15/2024

GREIF RD

BARNES

Pump:

Size:	3SCMPA / 3XSCMPA	Dimensions:	
Type:	SC 3" Sub. Chopper	Suction:	---
Synch Speed:	1800 rpm	Discharge:	3 in
Dia:	205 mm		
Curve:	---		

Fluid:

Name:	Water		
SG:	1	Vapor Pressure:	0.256 psi a
Density:	62.4 lb/ft³	Atm Pressure:	14.7 psi a
Viscosity:	1.1 cP		
Temperature:	60 °F	Margin Ratio:	1

Search Criteria:

Flow:	170 US gpm	Near Miss:	1% of Head
Head:	47 ft	Static Head:	0 ft

Pump Limits:

Temperature:	104 °F	Sphere Size:	---
Wkg Pressure:	---		

--- Duty Point ---

Flow:	169 US gpm
Head:	46.7 ft
Eff:	39.2%
Power:	5.09 hp
NPSHr:	---
Speed:	1750 rpm

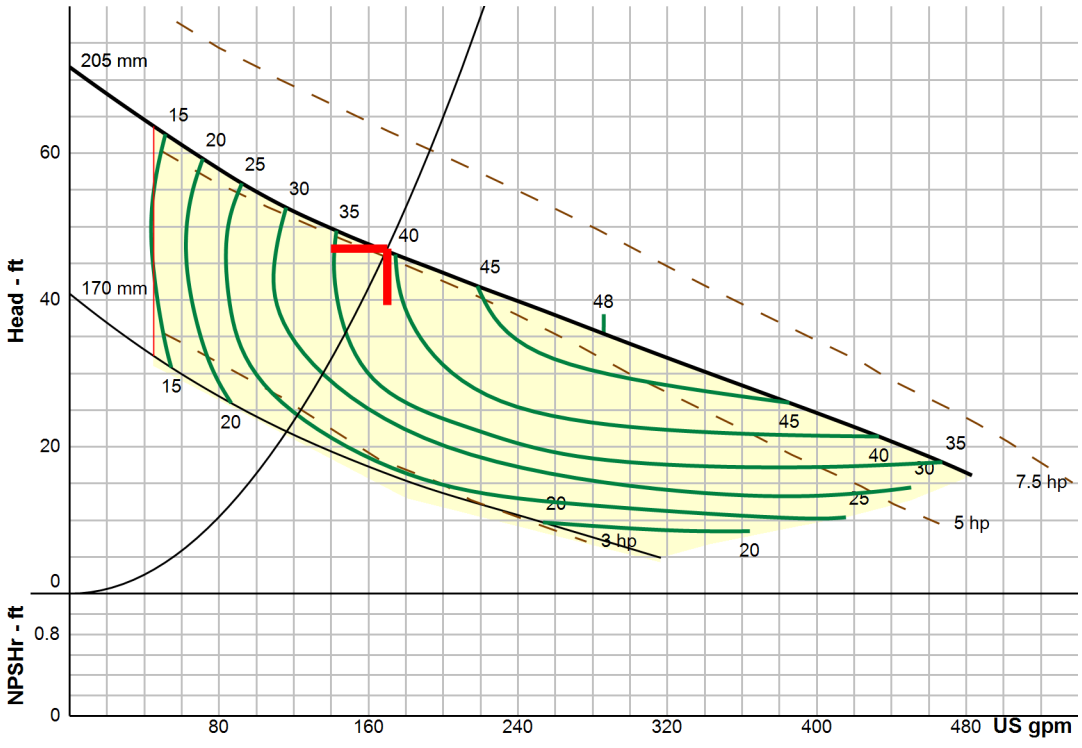
--- Design Curve ---

Shutoff Head:	71.7 ft
Shutoff dP:	31.1 psi
Min Flow:	45 US gpm

BEP: 48% @ 286 US gpm
NOL Power:
6.14 hp @ 483 US gpm

--- Max Curve ---

Max Power:
6.14 hp @ 483 US gpm



Performance Evaluation:

Flow	Speed	Head	Efficiency	Power	NPSHr
US gpm	rpm	ft	%	hp	ft
204	1750	43.3	44	5.12	---
170	1750	46.6	39	5.09	---
136	1750	50.2	34	5.1	---
102	1750	54.5	27	5.19	---
68	1750	59.8	19	5.35	---

3", 4" & 6" Break Away Fitting

Models: BAF 3x3, 4x4, 4x6, 6x6

I&O Manual

Break Away Fittings

Specifications:

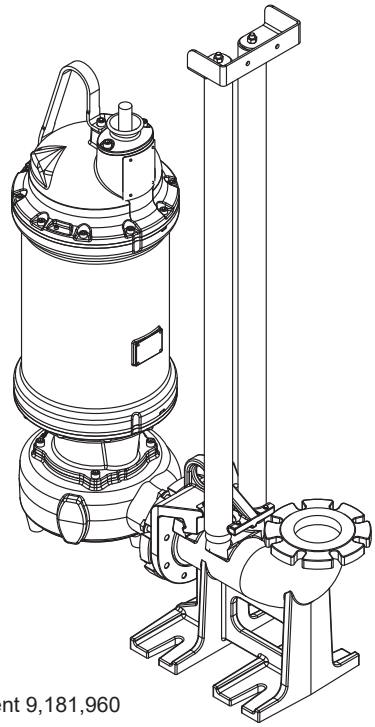
BAF 3x3, 4x4, 4x6, 6x6: Non-Sparking

The stationary portion of the BAF consists of a specially designed cast iron base elbow which is bolted to the floor of the wet well. The pump bolts to the cast iron moveable portion which is free to ride up and down the guide rails. A gasket is installed into the moveable. The elastomer to cast iron contact assures a complete and positive seal which allows pumps to operate without hydraulic leakage, over a wide range of discharge pressures.

The guide rails are attached to the base elbow at one end and to a stainless steel Guide Cap which is attached to the underside of the wet well cover at the other end. The Guide Cap assembly has elastomer plugs which aid in locating the guide rails and in reducing noise and vibration of the guide rails. The guide rails serve only to guide, they carry none of the pump weight. 2" (48mm) schedule 40 pipe should be used for guide rails. An intermediate guide pipe bracket should be used for depths of 13 feet (4M) or more.

For OPTIONAL information see Intermediate Rail Supports Section.

NOTE: A 3" Pipe Spool Kit is recommended for use of a 3x3 BAF with 18 frame NGVH, NGVHH, XGVH, XGVHH.



US Patent 9,181,960

Model: BAF 3x3
P/N: 134202

Model: BAF 4x4
P/N: 128281

Model: BAF 4x6
P/N: 128280

Model: BAF 6x6
P/N: 139202

DESCRIPTION:

THE BREAK AWAY FITTING IS DESIGNED TO ALLOW THE SUBMERSIBLE PUMP TO BE INSTALLED OR REMOVED WITHOUT REQUIRING PERSONNEL TO ENTER THE WET WELL.

WARNING:
CANCER AND REPRODUCTIVE HARM - WWW.P65WARNINGS.CA.GOV

3", 4" & 6" Break Away Fitting

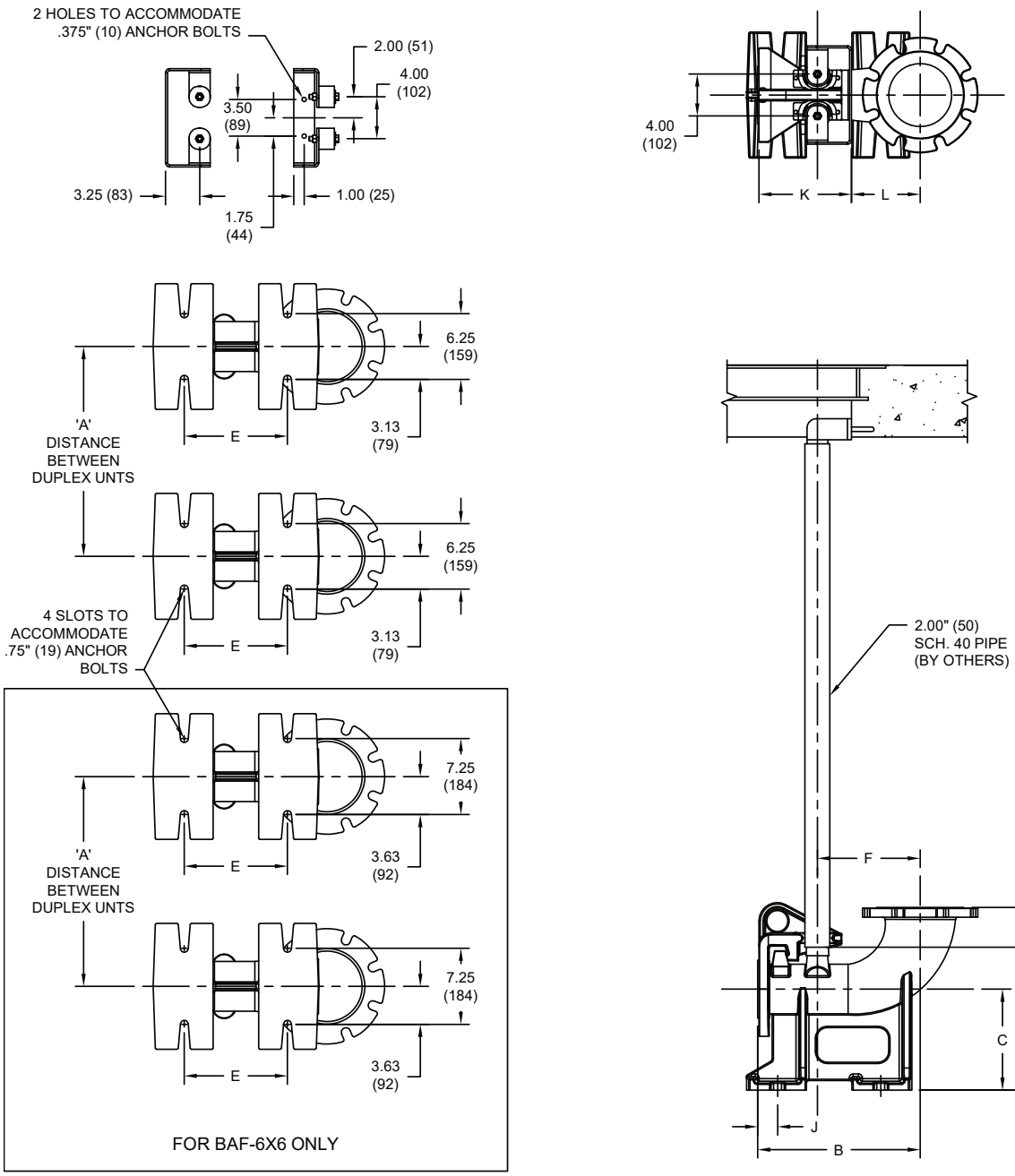
Models: BAF 3x3, 4x4, 4x6, 6x6

BARNES®

www.cranepumps.com

Break Away Fittings

I&O Manual



DIMENSIONS IN INCHES (MM)

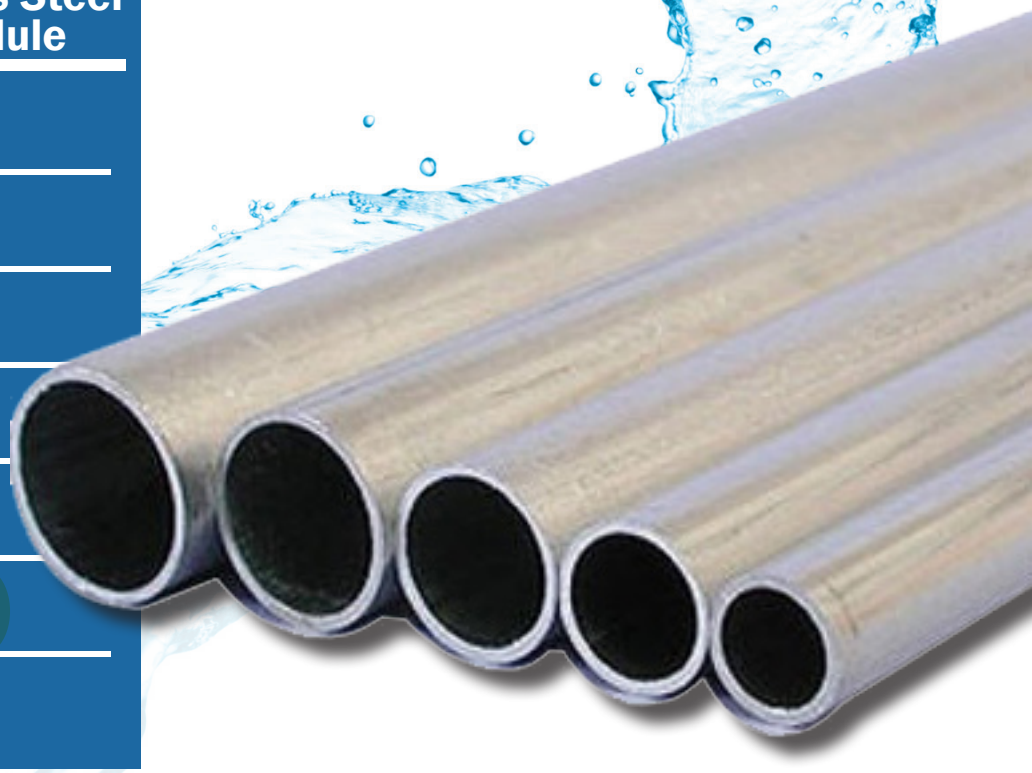
MODEL NO.	PART NO.	A	B	C	D	E	F	J	K	L	M
BAF - 3x3	134202	22.20 (564)	12.10 (308)	8.00 (203)	10.63 (270)	8.50 (216)	6.44 (164)	1.48 (38)	8.76 (223)	3.19 (81)	13.38 (340)
BAF - 4x4	128281	26.13 (664)	15.50 (394)	9.62 (244)	13.62 (346)	9.84 (250)	9.80 (249)	1.90 (49)	8.82 (224)	6.55 (167)	17.43 (443)
BAF - 4x6	128280	32.13 (816)									
BAF - 6x6	139202	32.13 (816)	15.87 (403)	10.00 (254)	14.13 (359)	11.00 (280)	10.08 (256)	2.29 (58)	9.04 (230)	6.82 (173)	19.92 (506)

EXCEL

EXCEL FLUID GROUP, LLC

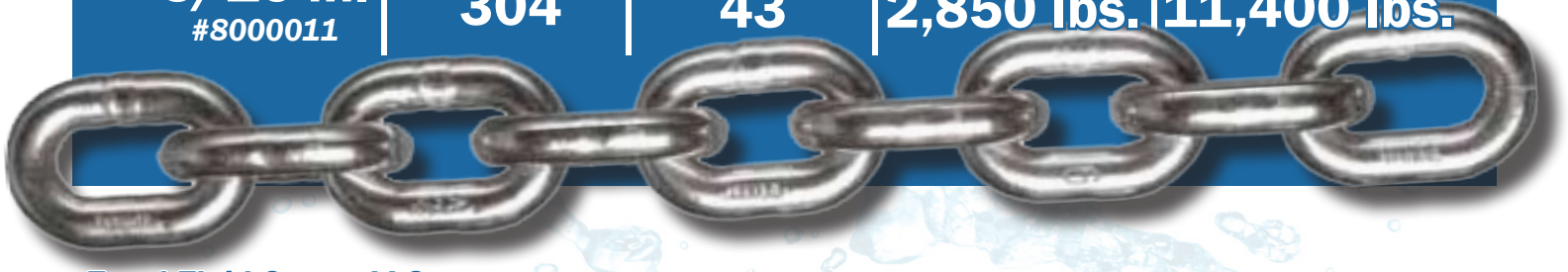
304 Stainless Steel Piping

Steel Pipe Size	Stainless Steel Schedule
1/2 in. #8000054	40
3/4 in. #8000055	40
1 in. #8000056	40
1 1/4 in. #8000058	40
1 1/2 in. #8000057	40
2 in. #8000059	40
3 in. #8000060	40



Stainless Steel Lifting Chain

Chain Thickness	Stainless Steel Type	ASTM Grade	Working Load	Breaking Strength
3/16 in. #8000010	316	43	1,200 lbs.	4,800 lbs.
1/4 in. #8000009	316	43	2,000 lbs.	8,000 lbs.
5/16 in. #8000011	304	43	2,850 lbs.	11,400 lbs.



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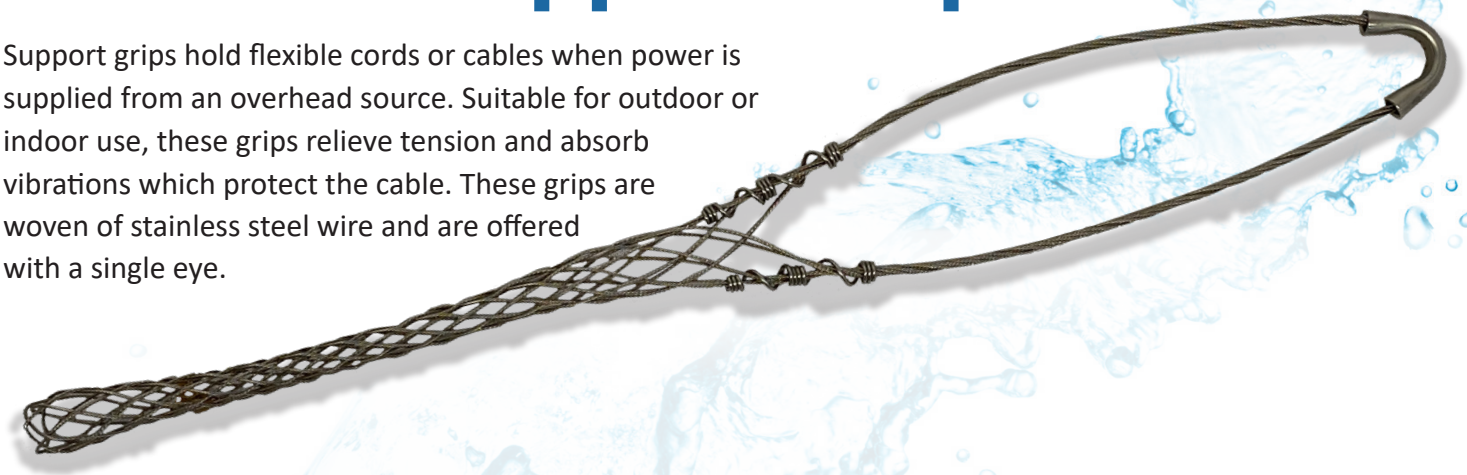
EXCEL

EXCEL FLUID GROUP, LLC

Stainless Steel Cable Support Grip

Support grips hold flexible cords or cables when power is supplied from an overhead source. Suitable for outdoor or indoor use, these grips relieve tension and absorb vibrations which protect the cable. These grips are woven of stainless steel wire and are offered with a single eye.



Single Eye-Wide Range Options

Cable Range	Eye Length	Mesh Length
0.220 in. → 0.320 in. #7000071	3 in.	3 1/2 in.
0.300 in. → 0.430 in. #7000225	4 in.	4 in.
0.410 in. → 0.560 in. #7000073	6 in.	4 3/4 in.
0.530 in. → 0.730 in. #7000076	7 in.	6 in.
0.700 in. → 0.850 in. #7000070	7 in.	6 3/4 in.
0.820 in. → 1.000 in. #7000074	8 in.	8 in.
0.960 in. → 1.250 in. #7000075	9 in.	9 1/2 in.
1.220 in. → 1.500 in. #7000072	10 in.	10 1/2 in.

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EXCEL

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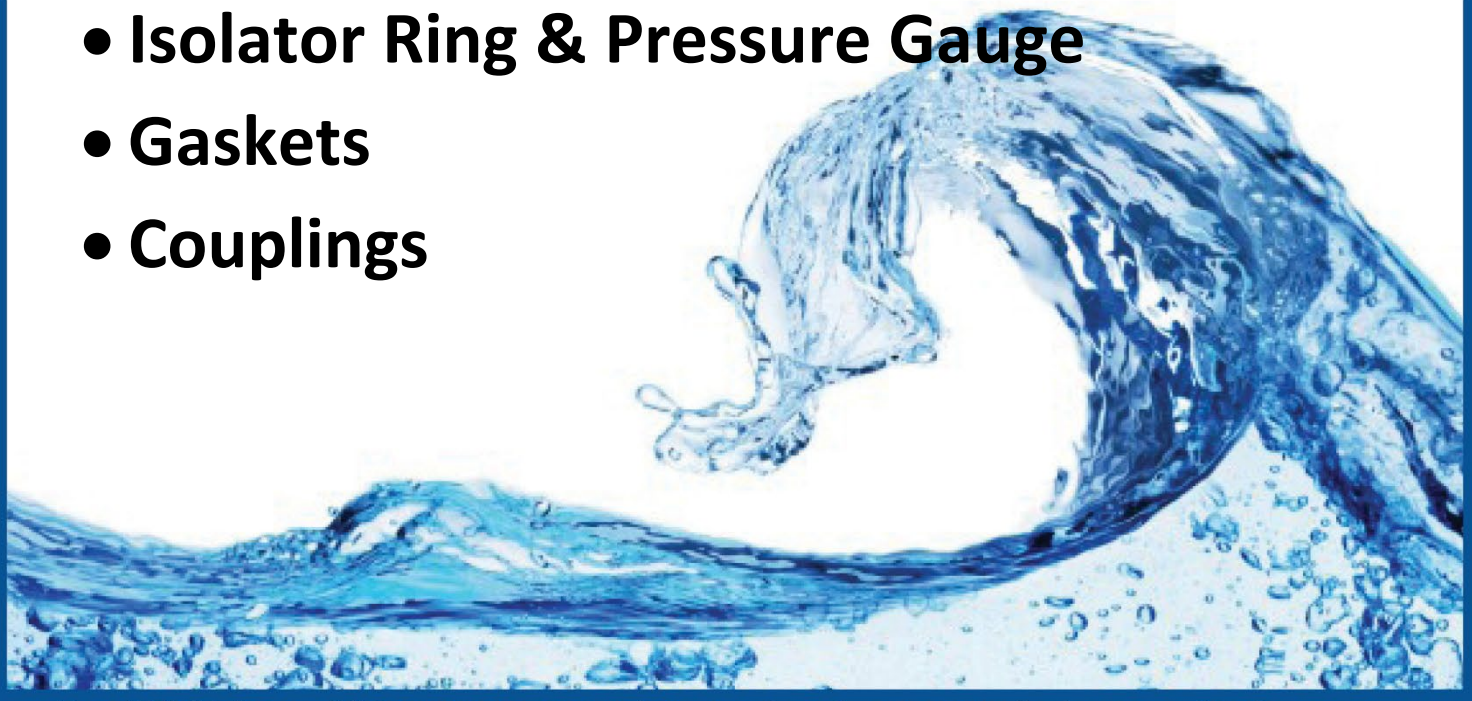
Piping and Valves Section

- **Piping Data**
  - **Ductile Iron Pipe & Fittings**
  - **PVC Pipe**
- **Valve Data**
  - **Plug Valves**
  - **Swing Check Valves**
  - **Air Release Valve**
  - **Duckbill Check Valve**
- **Isolator Ring & Pressure Gauge**
- **Gaskets**
- **Couplings**



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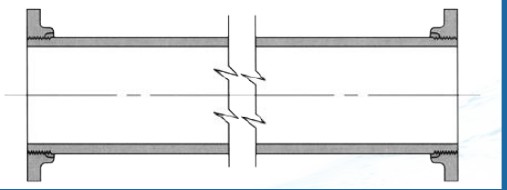
EXCEL

EXCEL FLUID GROUP, LLC

Ductile Iron Piping



Pipe Sizing	Flange Pipe			
	OD)	Min. Wall Thickness	Pressure Rating	Weight w/Flange
3 in.	3.96 in.	0.31 in.	250 PSI	221 lbs.
4 in.	4.80 in.	0.32 in.	250 PSI	300 lbs.
6 in.	6.90 in.	0.34 in.	250 PSI	462 lbs.
8 in.	9.05 in.	0.36 in.	250 PSI	652 lbs.
10 in.	11.10 in.	0.38 in.	250 PSI	852 lbs.
12 in.	13.20 in.	0.40 in.	250 PSI	1,086 lbs.
14 in.	15.30 in.	0.42 in.	250 PSI	1,310 lbs.
16 in.	17.40 in.	0.43 in.	250 PSI	1,541 lbs.
18 in.	19.50 in.	0.44 in.	250 PSI	1,750 lbs.

Engineering Data

Pipe: ANSI/AWWA C115/A21.10
Flange: ANSI/AWWA C110/A21.10
ANSI B16.1, Class 125
Hydrostatically tested at 1.5x the rated working pressure
Minimum Wall Thickness Class 53
Specially Available in Classes 54, 55, and 56

Mechanical Properties

Cast Iron to ASTM A48
Minimum Tensile Strength: 31,000 PSI

Ductile Iron to ASTM A 536
Minimum Tensile Strength: 70,000 PSI
Yield Strength: 50,000 PSI
Elongation: 5%

Water Working Pressure

Gray Cast Iron
2 - 12 in. Fittings: 250 PSI
14 - 18 in. Fittings: 150 PSI

Coatings & Linings*

Interior Linings: ANSI/AWWA C104/A21.4
Exterior Coatings: Red epoxy primer or tar coated
*All in full accordance with ANSI/NSF 61

Domestic **Import**

Other sizes and materials available upon request.

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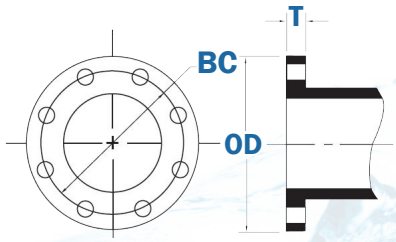
EXCEL FLUID GROUP, LLC

Ductile Iron Pipe Flange Joint and Bases



Pipe Sizing	Flange Joint - ANSI/AWWA C110/A21.10						Bases		
	OD)	BC)	T) Thickness	Hole Diameter	Bolt Size	# of Bolts	BC)	Hole Diameter	# of Bolts
3 in.	7.5 in.	6 in.	0.75 in.	0.75 in.	5/8 x 2-1/4	4	3.88 in.	0.62 in.	4
4 in.	9 in.	7.5 in.	0.94 in.	0.75 in.	5/8 x 3	8	4.75 in.	0.75 in.	4
6 in.	11 in.	9.5 in.	1.00 in.	0.88 in.	3/4 x 3-1/2	8	5.50 in.	0.75 in.	4
8 in.	13.5 in.	11.75 in.	1.12 in.	0.88 in.	3/4 x 3-1/2	8	7.50 in.	0.75 in.	4
10 in.	16 in.	14.25 in.	1.19 in.	1.00 in.	7/8 x 4	12	7.50 in.	0.75 in.	4
12 in.	19 in.	17 in.	1.25 in.	1.00 in.	7/8 x 4	12	9.50 in.	0.88 in.	4
14 in.	21 in.	18.75 in.	1.38 in.	1.12 in.	1 x 4-1/2	12	9.50 in.	0.88 in.	4
16 in.	23.5 in.	21.25 in.	1.44 in.	1.12 in.	1 x 4-1/2	16	9.50 in.	0.88 in.	4
18 in.	25 in.	22.75 in.	1.56 in.	1.25 in.	1-1/8 x 5	16	11.75 in.	0.88 in.	4

Other sizes and materials available upon request.

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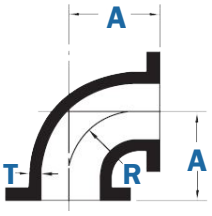
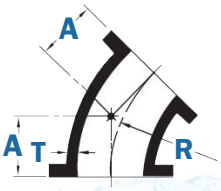
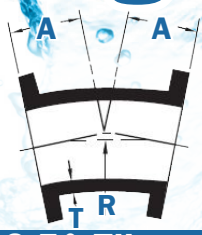
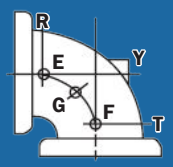
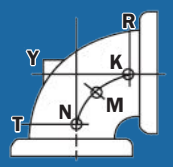
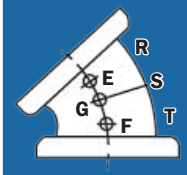
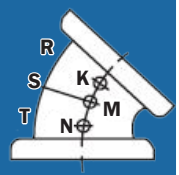
EXCEL

EXCEL FLUID GROUP, LLC

Ductile Iron Pipe and Fittings

Pipe Sizing	90° Elbows				45° Elbows				22.5° Elbows			
												
	A)	R)	T) Thickness	Weight	A)	R)	T) Thickness	Weight	A)	R)	T) Thickness	Weight
3 in.	5.5 in.	4 in.	0.48 in.	25 lbs.	3 in.	3.62 in.	0.48 in.	20 lbs.	3 in.	7.56 in.	0.48 in.	20 lbs.
4 in.	6.5 in.	4.5 in.	0.52 in.	45 lbs.	4 in.	4.81 in.	0.52 in.	40 lbs.	4 in.	10.06 in.	0.52 in.	40 lbs.
6 in.	8 in.	6 in.	0.55 in.	65 lbs.	5 in.	7.25 in.	0.55 in.	55 lbs.	5 in.	15.06 in.	0.55 in.	55 lbs.
8 in.	9 in.	7 in.	0.60 in.	105 lbs.	5.5 in.	8.44 in.	0.60 in.	90 lbs.	5.5 in.	17.62 in.	0.60 in.	90 lbs.
10 in.	11 in.	9 in.	0.68 in.	165 lbs.	6.5 in.	10.88 in.	0.68 in.	130 lbs.	6.5 in.	22.62 in.	0.68 in.	135 lbs.
12 in.	12 in.	10 in.	0.75 in.	235 lbs.	7.5 in.	13.25 in.	0.75 in.	195 lbs.	7.5 in.	27.62 in.	0.75 in.	205 lbs.
14 in.	14 in.	11.5 in.	0.66 in.	290 lbs.	7.5 in.	12.06 in.	0.66 in.	220 lbs.	7.5 in.	25.12 in.	0.66 in.	225 lbs.
16 in.	15 in.	12.5 in.	0.70 in.	370 lbs.	8 in.	13.25 in.	0.70 in.	280 lbs.	8 in.	27.62 in.	0.70 in.	285 lbs.
18 in.	16.5 in.	14 in.	0.75 in.	450 lbs.	8.5 in.	14.50 in.	0.75 in.	325 lbs.	8.5 in.	30.19 in.	0.75 in.	335 lbs.
Optional Locations of Tapped Holes for Drains When Specified	 				 				N/A			

Other sizes and materials available upon request.

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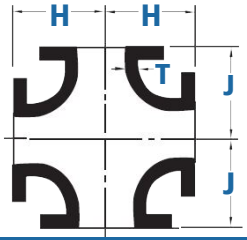
EXCEL

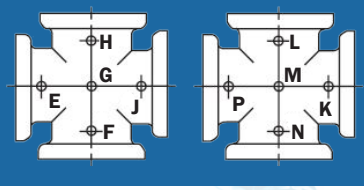
EXCEL FLUID GROUP, LLC

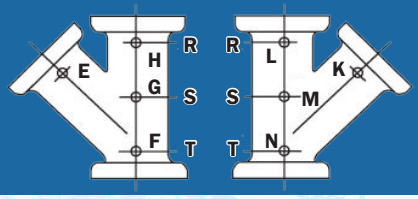
Ductile Iron Pipe and Fittings



Pipe Sizing	Crosses				45° Lateral Wyes				
	H)	J)	T) Thickness	Weight	H)	J)	I)	T) Thickness	Weight
3 in.	5.5 in.	5.5 in.	0.48 in.	50 lbs.	10 in.	3 in.	10 in.	0.48 in.	45 lbs.
4 in.	6.5 in.	6.5 in.	0.52 in.	80 lbs.	12 in.	3 in.	12 in.	0.52 in.	75 lbs.
6 in.	8 in.	8 in.	0.55 in.	120 lbs.	14.5 in.	3.5 in.	14.5 in.	0.55 in.	120 lbs.
8 in.	9 in.	9 in.	0.60 in.	195 lbs.	17.5 in.	4.5 in.	17.5 in.	0.60 in.	200 lbs.
10 in.	11 in.	11 in.	0.80 in.	330 lbs.	20.5 in.	5 in.	20.5 in.	0.80 in.	335 lbs.
12 in.	12 in.	12 in.	0.87 in.	460 lbs.	24.5 in.	5.5 in.	24.5 in.	0.87 in.	515 lbs.
14 in.	14 in.	14 in.	0.66 in.	530 lbs.	27 in.	6 in.	27 in.	0.66 in.	605 lbs.
16 in.	15 in.	15 in.	0.70 in.	665 lbs.	30 in.	6.5 in.	30 in.	0.70 in.	805 lbs.
18 in.	16.5 in.	16.5 in.	0.75 in.	795 lbs.	32 in.	7 in.	32 in.	0.75 in.	980 lbs.

Optional Locations of Tapped Holes for Drains When Specified





Other sizes and materials available upon request.

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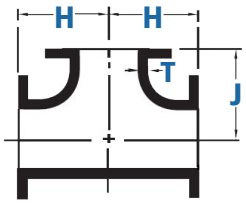
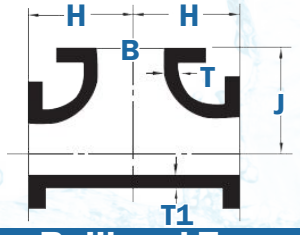
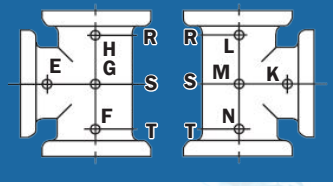
EXCEL

EXCEL FLUID GROUP, LLC

Ductile Iron Pipe and Fittings





Pipe Sizing	Tees				Bullhead Tees					
	H)	J)	T) Thickness	Weight	B)	H)	J)	Thickness T)	Thickness T_1)	Weight
3 in.	5.5 in.	5.5 in.	0.48 in.	40 lbs.	4 in.	6.5 in.	6.5 in.	0.52 in.	0.48 in.	49 in.
4 in.	6.5 in.	6.5 in.	0.52 in.	65 lbs.	6 in.	8 in.	8 in.	0.55 in.	0.52 in.	88 lbs.
6 in.	8 in.	8 in.	0.55 in.	95 lbs.	8 in.	9 in.	9 in.	0.60 in.	0.55 in.	142 lbs.
8 in.	9 in.	9 in.	0.60 in.	155 lbs.	10 in.	11 in.	11 in.	0.68 in.	0.60 in.	240 lbs.
10 in.	11 in.	11 in.	0.80 in.	270 lbs.	12 in.	12 in.	12 in.	0.87 in.	0.80 in.	340 lbs.
12 in.	12 in.	12 in.	0.87 in.	385 lbs.	16 in.	15 in.	15 in.	0.75 in.	0.75 in.	425 lbs.
					24 in.	22 in.	22 in.	0.89 in.	0.75 in.	845 lbs.
14 in.	14 in.	14 in.	0.66 in.	435 lbs.						
16 in.	15 in.	15 in.	0.70 in.	550 lbs.	24 in.	22 in.	22 in.	0.89 in.	0.70 in.	993 lbs.
18 in.	16.5 in.	16.5 in.	0.75 in.	665 lbs.						
Optional Locations of Tapped Holes for Drains When Specified					N/A					

Other sizes and materials available upon request.

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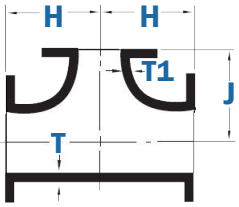
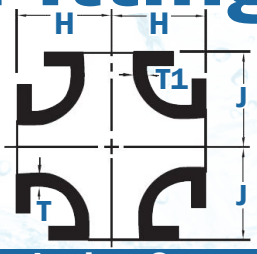
EXCEL

EXCEL FLUID GROUP, LLC

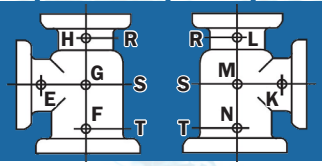
Ductile Iron Pipe and Fittings

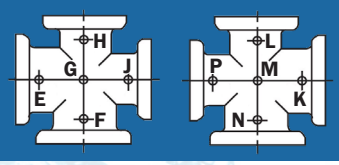




Pipe Sizing	Reduced Pipe Sizing	Reducing Tees					Reducing Crosses				
		H)	J)	Thickness T)	Thickness T_1)	Weight	H)	J)	Thickness T)	Thickness T_1)	Weight
4 in.	3 in.	6.5 in.	6.5 in.	0.52 in.	0.48 in.	60 lbs.	6.5 in.	6.5 in.	0.52 in.	0.48 in.	70 lbs.
6 in.	3 in.	8 in.	8 in.	0.55 in.	0.48 in.	85 lbs.	8 in.	8 in.	0.55 in.	0.48 in.	95 lbs.
	4 in.	8 in.	8 in.	0.55 in.	0.52 in.	90 lbs.	8 in.	8 in.	0.55 in.	0.52 in.	110 lbs.
8 in.	3 in.	9 in.	9 in.	0.60 in.	0.48 in.	135 lbs.					
	4 in.	9 in.	9 in.	0.60 in.	0.52 in.	140 lbs.	9 in.	9 in.	0.60 in.	0.55 in.	155 lbs.
	6 in.	9 in.	9 in.	0.60 in.	0.55 in.	145 lbs.	9 in.	9 in.	0.60 in.	0.52 in.	165 lbs.
10 in.	3 in.	11 in.	11 in.	0.68 in.	0.48 in.	200 lbs.					
	4 in.	11 in.	11 in.	0.68 in.	0.52 in.	205 lbs.	11 in.	11 in.	0.68 in.	0.52 in.	220 lbs.
	6 in.	11 in.	11 in.	0.68 in.	0.55 in.	215 lbs.	11 in.	11 in.	0.68 in.	0.55 in.	240 lbs.
	8 in.	11 in.	11 in.	0.68 in.	0.60 in.	225 lbs.	11 in.	11 in.	0.68 in.	0.60 in.	265 lbs.
12 in.	3 in.	12 in.	12 in.	0.75 in.	0.48 in.	280 lbs.					
	4 in.	12 in.	12 in.	0.75 in.	0.52 in.	290 lbs.	12 in.	12 in.	0.75 in.	0.52 in.	310 lbs.
	6 in.	12 in.	12 in.	0.75 in.	0.55 in.	295 lbs.	12 in.	12 in.	0.75 in.	0.55 in.	320 lbs.
	8 in.	12 in.	12 in.	0.75 in.	0.60 in.	310 lbs.	12 in.	12 in.	0.75 in.	0.60 in.	345 lbs.
	10 in.	12 in.	12 in.	0.87 in.	0.80 in.	360 lbs.	12 in.	12 in.	0.87 in.	0.80 in.	415 lbs.
14	4 in.	14 in.	14 in.	0.66 in.	0.52 in.	365 lbs.					

Optional Locations of Tapped Holes for Drains When Specified





Other sizes and materials available upon request.

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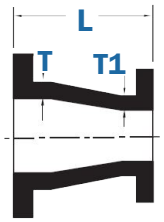
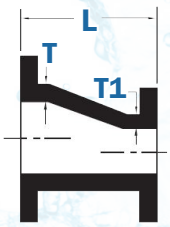
EXCEL

EXCEL FLUID GROUP, LLC

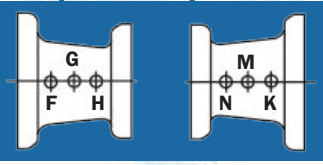
Ductile Iron Pipe and Fittings

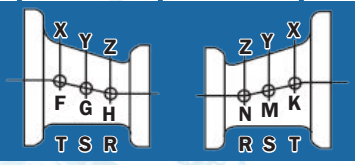




Pipe Sizing	Reduced Pipe Sizing	Concentric Reducers				Eccentric Reducers			
		L)	Thickness T)	Thickness T_1)	Weight	L)	Thickness T)	Thickness T_1)	Weight
4 in.	3 in.	7 in.	0.52 in.	0.48 in.	30 lbs.	7 in.	0.52 in.	0.48 in.	30 lbs.
6 in.	3 in.	9 in.	0.55 in.	0.48 in.	40 lbs.	9 in.	0.55 in.	0.48 in.	40 lbs.
	4 in.	9 in.	0.55 in.	0.52 in.	45 lbs.	9 in.	0.55 in.	0.52 in.	45 lbs.
8 in.	3 in.	11 in.	0.60 in.	0.48 in.	60 lbs.				
	4 in.	11 in.	0.60 in.	0.52 in.	65 lbs.	11 in.	0.60 in.	0.52 in.	65 lbs.
	6 in.	11 in.	0.60 in.	0.55 in.	75 lbs.	11 in.	0.60 in.	0.55 in.	75 lbs.
10 in.	4 in.	12 in.	0.68 in.	0.52 in.	85 lbs.	12 in.	0.68 in.	0.52 in.	85 lbs.
	6 in.	12 in.	0.68 in.	0.55 in.	90 lbs.	12 in.	0.68 in.	0.55 in.	90 lbs.
	8 in.	12 in.	0.68 in.	0.60 in.	110 lbs.	12 in.	0.68 in.	0.60 in.	110 lbs.
12 in.	4 in.	14 in.	0.75 in.	0.52 in.	120 lbs.	14 in.	0.75 in.	0.52 in.	120 lbs.
	6 in.	14 in.	0.75 in.	0.55 in.	130 lbs.	14 in.	0.75 in.	0.55 in.	130 lbs.
	8 in.	14 in.	0.75 in.	0.60 in.	145 lbs.	14 in.	0.75 in.	0.60 in.	145 lbs.
	10 in.	14 in.	0.75 in.	0.68 in.	170 lbs.	14 in.	0.75 in.	0.68 in.	170 lbs.
14 in.	4 in.	16 in.	0.66 in.	0.52 in.	150 lbs.				
	6 in.	16 in.	0.66 in.	0.55 in.	155 lbs.	16 in.	0.66 in.	0.55 in.	155 lbs.

Optional Locations of Tapped Holes for Drains When Specified





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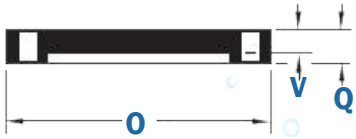
EXCEL FLUID GROUP, LLC

Ductile Iron Pipe Flanges

Pipe Sizing	 Blind Flanges				 Flat Blind Flanges				 Blind Flanges w/ 2 in. Tap			
	O)	Q)	V)	Weight	O)	Q)	V)	Weight	O)	Q)	V)	Weight
3 in.	7.5 in.	0.75 in.	0.69 in.	9 lbs.	7.5 in.	0.75 in.	0.69 in.	9 lbs.	7.5 in.	0.75 in.	0.69 in.	9 lbs.
4 in.	9 in.	0.94 in.	0.88 in.	16 lbs.	9 in.	0.94 in.	0.88 in.	16 lbs.	9 in.	0.94 in.	0.88 in.	16 lbs.
6 in.	11 in.	1.00 in.	0.94 in.	25 lbs.	11 in.	1.00 in.	0.94 in.	25 lbs.	11 in.	1.00 in.	0.94 in.	25 lbs.
8 in.	13.5 in.	1.12 in.	1.06 in.	42 lbs.	13.5 in.	1.12 in.	1.06 in.	42 lbs.	13.5 in.	1.12 in.	1.06 in.	42 lbs.
10 in.	16 in.	1.19 in.	1.12 in.	63 lbs.	16 in.	1.19 in.	1.12 in.	63 lbs.	16 in.	1.19 in.	1.12 in.	63 lbs.
12 in.	19 in.	1.25 in.	0.81 in.	85 lbs.	19 in.	1.25 in.	1.25 in.	85 lbs.	19 in.	1.25 in.	0.81 in.	85 lbs.
14 in.	21 in.	1.38 in.	0.88 in.	120 lbs.	21 in.	1.38 in.	1.38 in.	120 lbs.	21 in.	1.38 in.	0.88 in.	120 lbs.
16 in.	23.5 in.	1.44 in.	1.00 in.	145 lbs.	23.5 in.	1.44 in.	1.44 in.	155 lbs.	23.5 in.	1.44 in.	1.00 in.	145 lbs.
18 in.	25 in.	1.56 in.	1.06 in.	185 lbs.	25 in.	1.56 in.	1.56 in.	190 lbs.	25 in.	1.56 in.	1.06 in.	185 lbs.
Specifiable Options	12 in. and Larger				10 in. and Smaller				12 in. and Larger			
	Can be provided tapped according to customer's requirements				N/A				Can be provided tapped according to customer's requirements			

Other sizes and materials available upon request.

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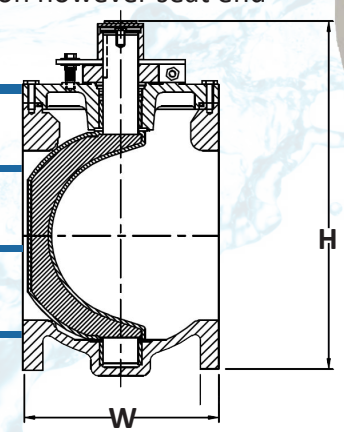
EXCEL FLUID GROUP, LLC

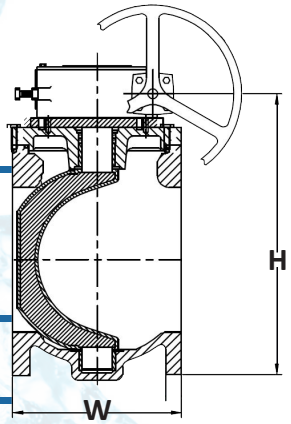
Eccentric Plug Valves

Eccentric Plug Valves are manufactured in accordance with **ANSI B16.1 Class 125/150** standards. The valve bodies are **ASTM A-126 Class B** cast iron or ductile iron and the valves comply with **AWWA-C517-09**. The plugs are one piece solid construction with PTFE thrust bearings which reduces torque and prevents dirt and grit from entering the bearing and seal area. Valves are available with wrench operator handles or worm gear operator handles (6 in. and above) and the valves are suitable for flow and shut-off in either direction however seat end downstream is the preferred orientation.

Size	Height	Width
2 in.	Nut Operated: #5000084 9.69 in.	7.5 in.
2.5 in.	Nut Operated: #5000118 9.82 in.	7.75 in.
3 in.	Nut Operated: #5000013 9.94 in.	8 in.
4 in.	Nut Operated: #5000000 11.75 in. With 6in. Handwheel: #5000050 10.81 in.	9 in.
6 in.	Nut Operated: #5000051 14.13 in. With 6in. Handwheel: #5000142 13.31 in.	10.5 in.
8 in.	Nut Operated: #5000009 18.32 in. With 12in. Handwheel: #5000006 17.26 in.	11.5 in.
10 in.	With 12in. Handwheel: #5000010 20.01 in.	13 in.
12 in.	With 12in. Handwheel: #5000074 22.81 in.	14 in.



2 in. - 8 in. Nut Operated Valves



2 in. - 12 in. Valves with Handwheel


Nut Operated Valve


Valve with Handwheel

Features Included

- Plug rotates away for the seat for instant opening.
- Ideally suited for balancing service.
- Standard rotary valve provides control and tight shut off in one valve.
- Plug is out of flow path when fully open.
- Straight through uninterrupted smooth flow.
- Round port reduced turbulence and erosion, lowers pumping costs and can be “pigged” to clean the pipeline.

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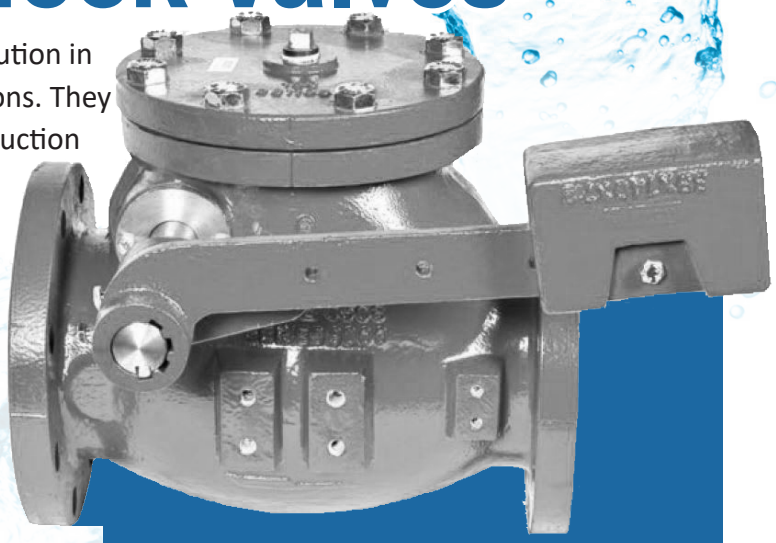
EXCEL

EXCEL FLUID GROUP, LLC

OSLW Swing Check Valves

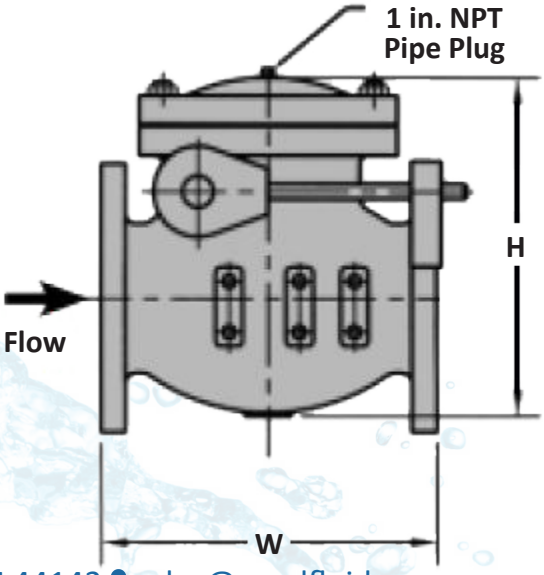
Our OSLW Swing Check Check Valves are the perfect solution in all of your water, wastewater, and raw sewage applications. They meet or exceed **AWWA C508** design, materials of construction and testing requirements. This check valve is designed with a non-slam operation for all your applications. It features a stainless steel body seat, stainless steel shaft and a rubber-faced ductile iron disc for drop tight shut-off. In accordance with **ANSI B16.1 Class 125** standards, a heavy duty high-strength ductile iron body **rated at 250 PSI**, will provide you with long-term dependability. Our valves are **NSF-61** certified, epoxy line and coated to conform to **AWWA C550**, and built to withstand the beating of everyday use.



Size	Length	Height	Weight
2 in. *Left: #5000086* *Right: #5000085*	8 in.	8 in.	70 lbs.
3 in. *Left: #5000059* *Right: #5000058*	9.5 in.	9.75 in.	85 lbs.
4 in. *Left: #5000061* *Right: #5000060*	11.5 in.	11.25 in.	100 lbs.
6 in. *Left: #5000063* *Right: #5000062*	14 in.	14 in.	170 lbs.
8 in. *Left: #5000065* *Right: #5000064*	19.5 in.	16.25 in.	300 lbs.
10 in. *Left: #5000067* *Right: #5000066*	24.5 in.	19.25 in.	510 lbs.
12 in. *Left: #5000069* *Right: #5000068*	27.5 in.	23 in.	820 lbs.

Materials of Construction

Body, Cover Disc and Disc Arm	Ductile Iron ASTM A536 Grade 65-45-12
Body Seat	300 Series Stainless Steel
Resilient Key	Nutrile (Buna-N)
Shaft, Key	399 Series Stainless Steel
Cover Gasket	Graphite
Exterior Studs, Bolts, and Nuts	A307 Carbon Steel



Excel Fluid Group, LLC ● 5350 West 137th St. Brook Park, OH 44142 ● sales@excelfluidgroup.com
www.excelfluidgroup.com ● Phone: (216) 941-1500 ● Fax: (216) 941-9916

A.R.I. D-025

Aquestia
Directing the Flow

Wastewater

Combination Air Valve for Wastewater - Short Version

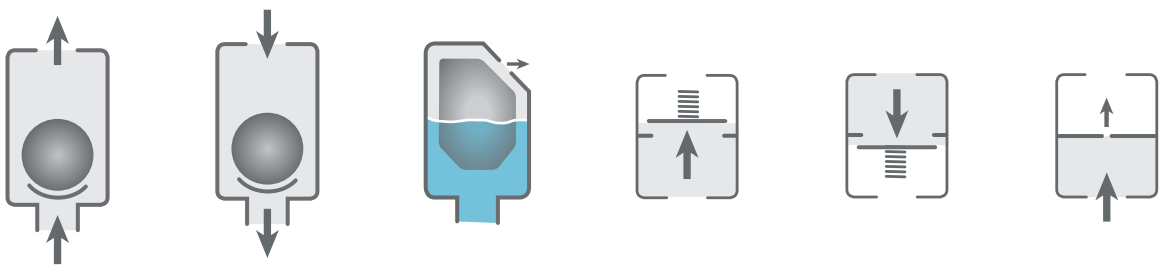
Description

A.R.I. D-025 Series is a reduced bore, Combination Air Valve installed on a wastewater transmission systems. The Air Valve is designed to improve hydraulic operation by protecting the pipeline, increasing pipeline efficiency, and reducing energy requirements. The unique body shape of the valve, enables a continuous air gap that separates the wastewater from the sealing mechanism and helps to avoid deposits or blockage.

Installation

- Wastewater & water treatment plants
- Wastewater and effluent water transmission lines

Operation



Air Discharge | Air Intake | Automatic Air Release | One Way out | One Way In | Non Slam

A.R.I. D-025

Aquestia
Directing the Flow

Features and Benefits

Conical body shape & unique design	maximum air gap / minimum body length
Continuous air gap	separates the liquid from the sealing mechanism
Float assembly and sealing mechanism linkage	free movement, turbulence will not unseal the sealing mechanism
Funnel-shaped lower body	residue matter falls back into the system pipeline
Rolling seal mechanism	leak-free sealing over wide range of pressure differentials
All parts - high-strength UV resistant reinforced composite and rubber materials	non-corrosive and durable
Screened threaded outlet	compatible for vent pipe connection, prevents insect intrusion
Dynamic design	high capacity air discharge, no premature closure
Tap	releases pressure and drains valve prior to maintenance

Technical Specifications

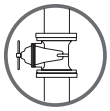
Size Range	2" - 4""
Sealing pressure range	0.05 - 10 bar (PN10) Testing pressure: 1.5 times maximum working pressure
Temperature	Maximum working temperature: 60° C Maximum intermittent temperature: 90° C
Upon ordering, please specify: model, size, working pressure, thread / flange standard and type of liquid	

Valve Selection Options

Valve connection	Threaded BSP/NPT or Flanged ends to meet various requested standard
Standard materials	Reinforced nylon body, optional: stainless steel
Optional add-on components	One-way, Out-only attachment, allows for air discharge only, prevents air intake Vacuum Breaker, In-only attachment, allows for air intake only, prevents air discharge Non-Slam discharge-throttling attachment, allows for free air intake, throttles air discharge
Additional product configurations	SB Underground Air Valve System ARISENSE Air Valve Monitoring System
ATEX certified air valves	certification is conditional on the customer connecting the designated part on the product to a dedicated ground connection point.

The valve installed under the air valve must be fully open to prevent damage or malfunction and ensure performance within the specifications of the air valve.

For complete installation instructions, please refer to the IOM document.



A.R.I. D-025

Aquestia
Directing the Flow

Non-Slam Add-on Component Data Table for Variable Orifices

Size	Discharge orifice (mm)	Total NS area (mm^2)	NS orifice (mm)	Switching point (bar)	Flow at 0.4 bar (m^3/h)
2" (50mm)	37.5	12.6	4	Spring loaded normally closed	23
3" (80mm)					
4" (100mm)					

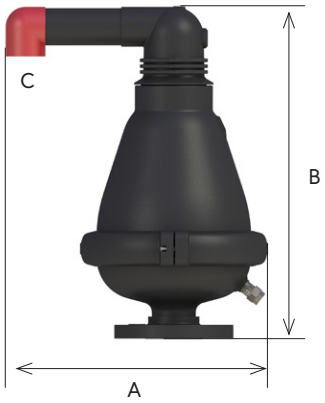
Dimensions and Weight

Size	Dimensions (mm)		Connections	Weight (kg)		Orifice Area (mm^2)	
	A	B	C	RN	ST ST	A / V	Auto.
2" (50mm) THR	370	455	1½" BSP F	3.8	14.4	804	12
2" (50mm) FL	370	460	1½" BSP F	4.2	16.2	804	12
3" (80mm) THR	370	455	1½" BSP F	3.8	14.7	804	12
3" (80mm) FL	370	460	1½" BSP F	5.4	16.5	804	12
4" (100mm) THR	370	455	1½" BSP F	3.9	16.6	804	12
4" (100mm) FL	370	460	1½" BSP F	6.0	18.4	804	12

THR - Threaded
FL - Flanged

NOTE

All product weights and dimensions are approximate,
due to the differences in flange standards, materials and variable accessories.

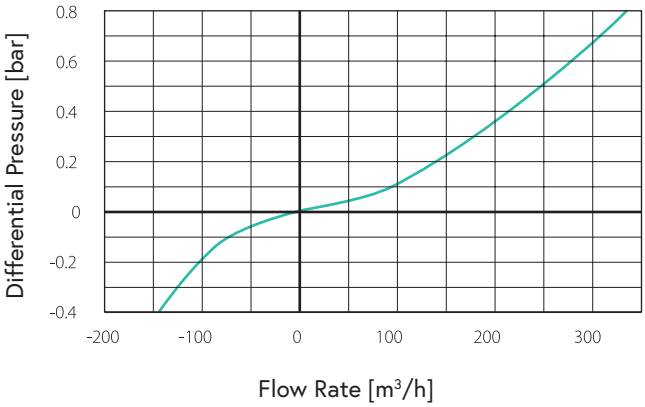


A.R.I. D-025

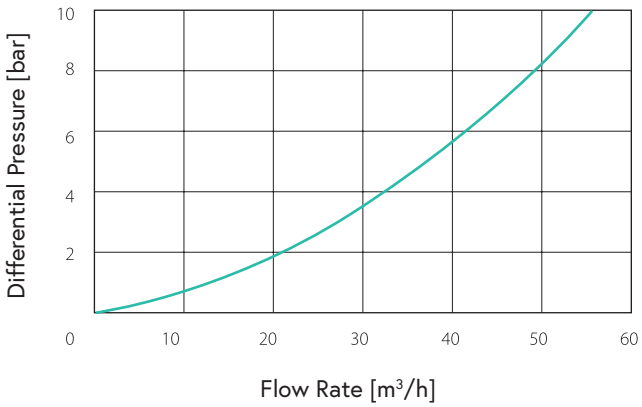
Aquestia
Directing the Flow

Flow Charts

Air & Vacuum Flow Rate

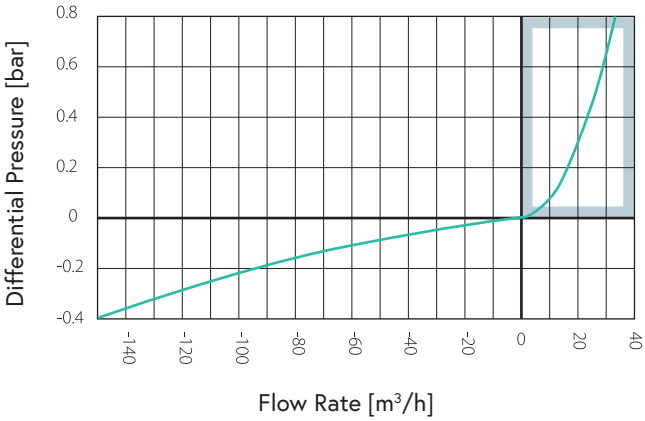


Automatic Air Release Flow Rate

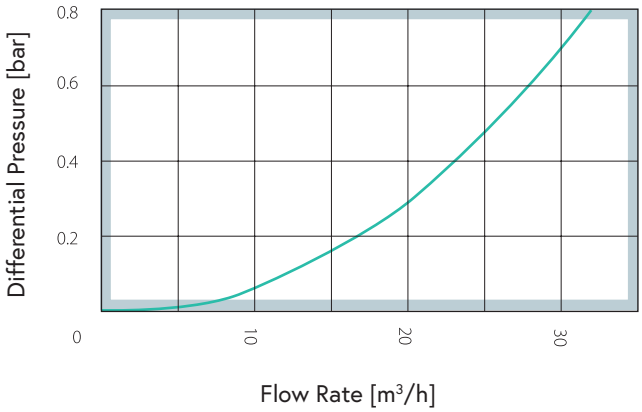


D-025 NS

Air & Vacuum Flow Rate



Air Discharge Flow Rate



A.R.I. D-025

Aquestia
Directing the Flow

Parts List and Specification

Part	Material
1. Air Valve Body Assembly	
1a. Body	Reinforced Nylon / Stainless Steel 316
1b. Extension	Polypropylene
1c. Discharge Elbow	Polypropylene
1d. Non-Slam Component (Optional)	Reinforced Nylon / Polypropylene + Acetal + Stainless Steel
2. Seal Assembly	
2a. Rolling Seal Assembly	Nylon + EPDM + Stainless Steel
2b. Float Connector	Foamed Polypropylene
2c. Clamping Stem	Reinforced Nylon
3. Body Assembly	
3a. O-Ring	BUNA-N
3b. Body	Reinforced Nylon / Stainless Steel 316
4. Float Assembly	
4a. Domed Nut	Stainless Steel 316
4b. Stopper	Polypropylene
4c. Spring	Stainless Steel 316
4d. Float & Rod	Foamed Polypropylene + Stainless Steel 316
5. Base Assembly	
5a. O-Ring	BUNA-N
5b. Clamp Assembly	Reinforced Nylon + Stainless Steel 316
5c. Base	Reinforced Nylon / Stainless Steel 316
5d. Tap	Brass / Stainless Steel
5e. Flange (Optional)	Reinforced Nylon / Ductile Iron / Stainless Steel 316

www.aquestia.com
info@aquestia.com

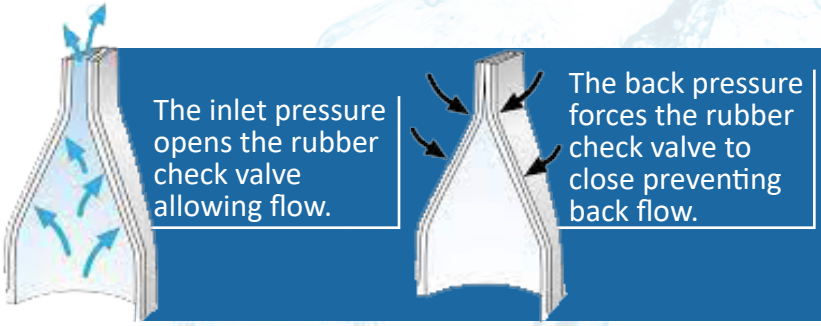
EXCEL

EXCEL FLUID GROUP, LLC

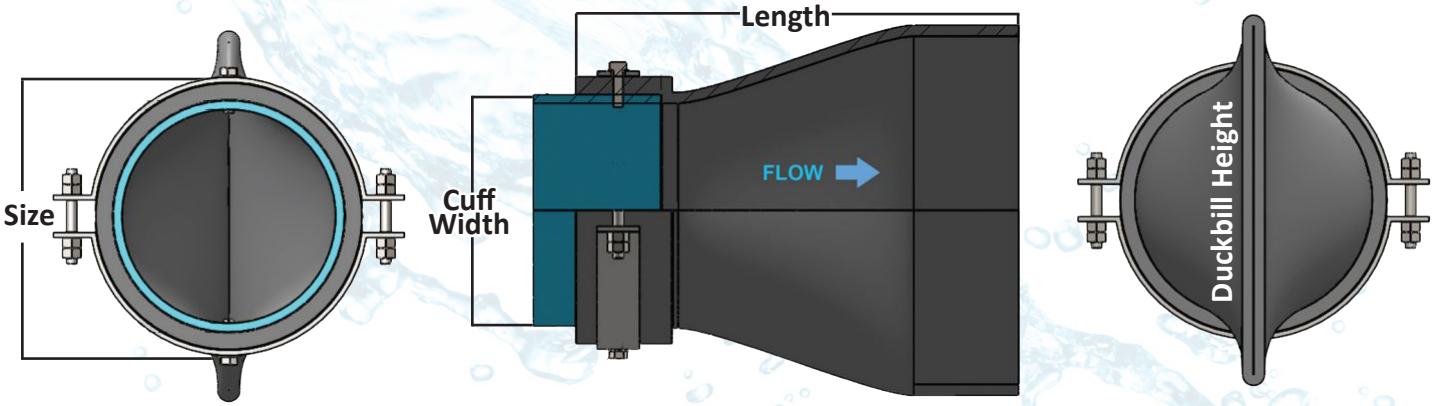
Duckbill Rubber Check Valves

700 Series Rubber check valves are an effective way to control back pressure from sewage plants. With no maintenance, the rubber check valve will handle large objects without jamming, freezing or deforming. The 700 Series are made with NSF/ANSI 1 certified material.

- Designed to easily slip over an existing pipe, and fastened by stainless steel clamps
- Can be installed either vertical or horizontal
- All rubber construction



Size	Length	Cuff Width	Duckbill Height	Weight
1 in. #5000143	4 in.	1 in.	2.6 in.	0.5 lbs.
2 in. #5000072	6 in.	2 in.	3.9 in.	2.5 lbs.
3 in. #5000123	10 in.	3 in.	5.5 in.	5 lbs.
4 in. #5000096	12 in.	3 in.	7.4 in.	7 lbs.



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ONYX VALVE

835 Industrial Hwy, Cinnaminson, NJ 08077 phone: 856-829-2888 | Fax: 856-829-3080 | onyxvalve.com

PSW

The Onyx Isolator Ring provides a simple, method to measure pressure of slurries and corrosive fluids. The PSW series is compatible with flanged pipe connections. Nesting inside the bolt circle of mating flanges provides accurate alignment and minimum weight at the lowest installed cost.

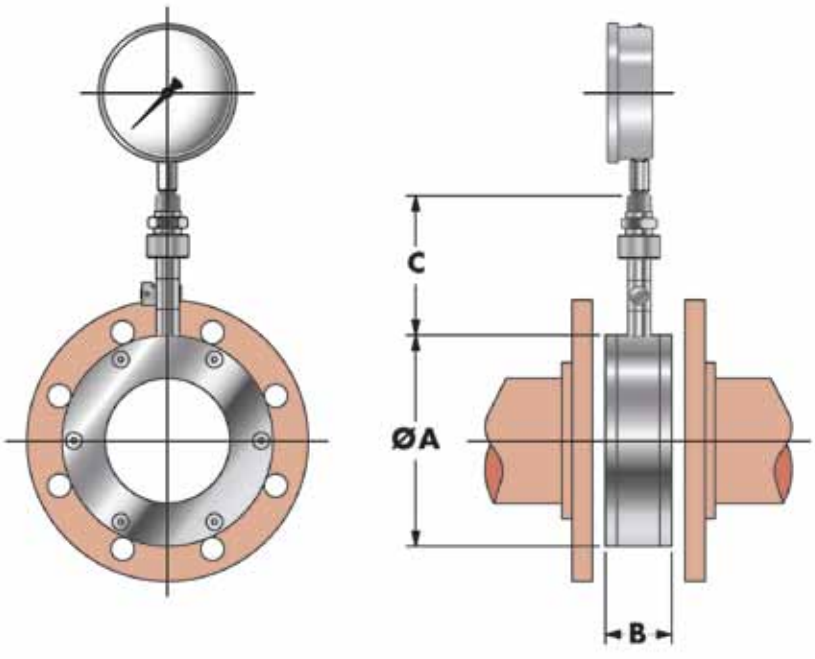
The inside diameter of the PSW precisely matches standard pipe for smooth, unobstructed flow, self-cleaning operation, and minimum turbulence and friction. Onyx ultra-deep vacuum filling insures the highest accuracy in the industry. The patented "Module Seal" - standard on all Onyx Isolator Rings - allows instruments to be or replaced or calibrated with minimum down time.

Materials of Construction

Center Section:	Carbon Steel	Carbon-Kynar Coat	316 Stainless Steel
End Plates:	Acetal (Standard) 316 Stainless Steel Teflon	Kynar Titanium	UHMW-PE Carpenter-20
Elastomer: (Available with optional Teflon coatings)	Nitrile (Buna-N) EPDM* (Nordel*) Neoprene Viton Hypalon	-30°F →220°F -40°F →300°F -20°F →220°F -15°F →375°F -10°F →250°F	
Fill Fluid:	Silicone Fluid Food Grade Silicone	-40°F →400°F -20°F →400°F	
Module Seal Stinger Fitting:	Brass	316 Stainless Steel	
Pipe Fittings:	Carbon Steel	316 Stainless Steel	
Pressure Range:	Vacuum to +1,000 psi	The Onyx Isolator ring has been tested by an independent lab to 1,500 psi.	

Benefits:

- Absolute immunity to clogging
- Combines accurate alignment, reduced weight, and maximum economy
- Mates with 150# flanges, compatible with 300# or 600# flanges with adapters
- Superior accuracy compared to diaphragm seals
- No tools required to change pressure instrument
- High displacement design can operate up to three instruments on one ring



Size	ØA	B	C
1	2.50	1.87	4.50
1 ½	3.25	1.87	4.50
2	4.00	1.87	4.50
2 ½	4.75	1.87	4.50
3	5.25	1.87	4.50
4	6.75	2.12	4.50
5	7.62	2.25	4.50
6	8.62	2.25	4.50
8	10.87	2.25	4.50
10	13.25	2.81	4.50
12	16.00	3.12	4.50
14	17.62	3.12	4.50
16	20.12	3.12	4.50
18	21.50	3.12	5.37
20	23.75	3.12	5.37
24	28.12	3.12	5.37
28	32.62	3.12	5.37
30	34.62	3.12	5.37
36	41.12	4.00	5.37

EXCEL FLUID GROUP, LLC

Liquid-Filled Case Pressure Gauge

Features Included

- Excellent load-cycle stability and shock resistance
- All stainless steel construction
- Positive pressure ranges to 15,000 psi (1,000 bar)
- Operates within -40°F to 140°F dry ambient temperature

Applications

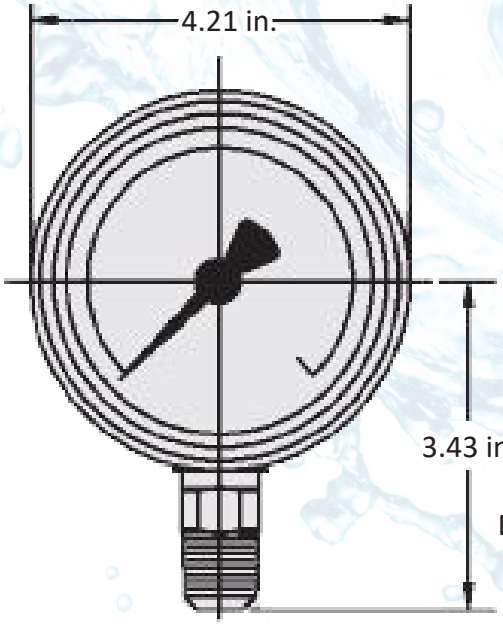
- With liquid filled case for applications with high dynamic pressure pulsations or vibration
- Suitable for corrosive environments and gaseous or liquid media that will not obstruct the pressure system
- Process Industry:
  - Chemical/Petrochemical
  - Power Stations
  - Environmental Technology
  - Mechanical Engineering
  - Plant Construction

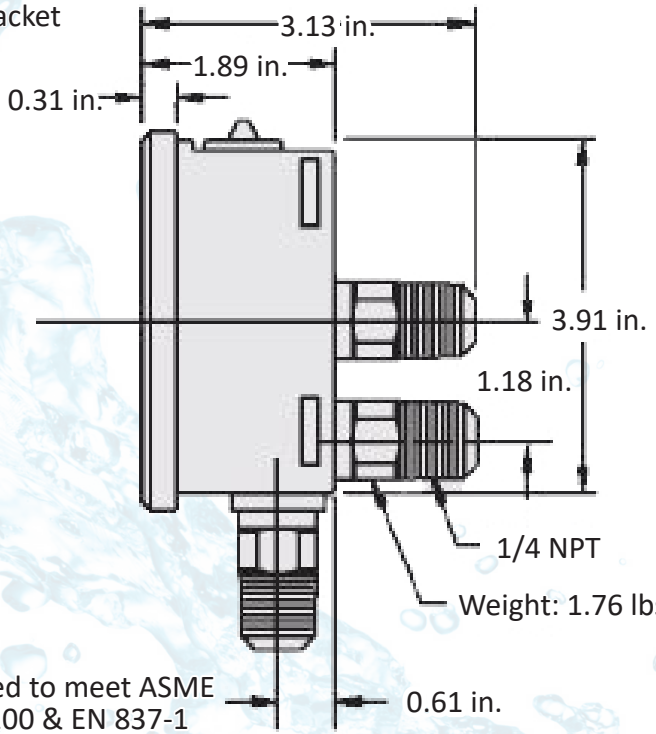
4 in. Dial Gauge Setup

0 to 30 PSI - #5000126	-30 to +30 PSI - #5000172
0 to 60 PSI - #5000127	-30 to +60 PSI - #5000173
0 to 100 PSI - #5000128	-30 to +100 PSI - #5000174
0 to 160 PSI - #5000129	

Optional Features

- Stainless steel restrictor, front flange, or rear flange
- Zinc-plated steel or stainless steel U-clamp bracket
- Red drag pointer or mark pointer
- Silicone or Halocarbon Oil case filling
- Additional optional pressure connections





Other sizes and setups available upon request.

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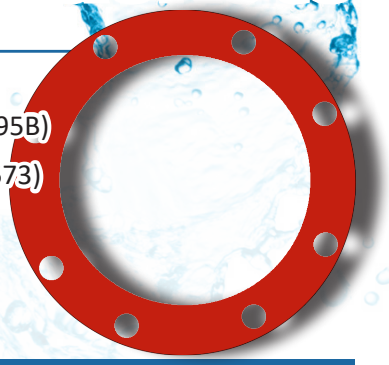
EXCEL FLUID GROUP, LLC

Rubber 150# Full Face Gaskets



Gasket Specifications

Material:	Red Rubber	Elongation:	250% (ASTM D412)
Size:	1/2 in. to 42 in. Pipe	Compression Set:	22 Hours at 158°F (ASTM D395B)
Thickness:	1/16 in. to 1/8 in.	Heat Aging:	70 Hours at 158°F (ASTM D573)
Minimum Temperature:	-20°F	Changed Hardness:	4 Points
Hardness:	80 Shore A (ASTM D2240)	Changed Tensile:	-14%
Tensile:	500 PSI (ASTM D412)	Changed Elongation:	-76%

Pipe Size	Flange Size	Thickness	Holes	Hole Diameter	Diameter of Bolts
1 1/4 in. #6000056	4 5/8 in.	1/2 in.	4	5/8 in.	1/2 in.
1 1/2 in. #6000462	5 in.	9/16 in.	4	5/8 in.	1/2 in.
2 in. #6000183	6 in.	5/8 in.	4	3/4 in.	5/8 in.
2 1/2 in. #6000184	7 in.	11/16 in.	4	3/4 in.	5/8 in.
3 in. #6000185	7 1/2 in.	3/4 in.	4	3/4 in.	5/8 in.
3 1/2 in. #6000186	8 1/2 in.	13/16 in.	8	3/4 in.	5/8 in.
4 in. #6000001	9 in.	15/16 in.	8	3/4 in.	5/8 in.
5 in. #6000187	10 in.	15/16 in.	8	7/8 in.	3/4 in.
6 in. #6000031	11 in.	1 in.	8	7/8 in.	3/4 in.
8 in. #6000023	13 1/2 in.	1 1/3 in.	8	7/8 in.	3/4 in.
10 in. #6000086	16 in.	1 3/16 in.	12	1 in.	7/8 in.
12 in. #6000025	19 in.	1 1/4 in.	12	1 in.	7/8 in.
14 in. #6000714	21 in.	1 3/8 in.	12	1 1/8 in.	1 in.
16 in. #6000082	23 1/2 in.	1 7/16 in.	16	1 1/8 in.	1 in.
18 in. #6000702	25 in.	1 9/16 in.	16	1 1/4 in.	1 1/8 in.
20 in. #6000366	27 1/2 in.	1 11/16 in.	20	1 1/4 in.	1 1/8 in.
24 in. #6000741	32 in.	1 7/8 in.	20	1 3/8 in.	1 1/4 in.

Rubber 300# Full Face Gaskets available upon request

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EXCEL

EXCEL FLUID GROUP, LLC

Grip Coupling

Our grip couplings have a lightweight construction that enables for a fast and easy installation process, with minimum manpower, and time in the ditch. This comes from a ready to use, push lock design that eliminates the need for extensive under-pipe digging and a unique top-facing bolt for ease of access.

Features Included	
Bridge	ANSI 304 Stainless Steel
Coating	Fusion Bonded Epoxy
Average Thickness	14mil
Standards	Meets **NSF-61** & **NSF-372**
Working Pressure	260 PSI
Rated Pressure	390 PSI
Working Temperature	-20°F to 125°F

Size	Height	Length	Overall Range
1.5 /2 in. *#6000600*	5.7 in.	6.8 in.	2.10 - 3.03 in.
2.5 in. *#6000601*	6.4 in.	6.8 in.	2.78 - 3.68 in.
3 in. *#6000602*	7.1 in.	8.8 in.	3.46 - 4.33 in.
4 in. *#6000603*	9.3 in.	8.8 in.	4.25 - 5.63 in.
6 in. *#6000604*	11.3 in.	10.8 in.	6.42 - 7.68 in.
8 in. *#6000605*	13.1 in.	10.8 in.	8.54 - 9.84 in.
10 in. *#6000606*	15.8 in.	10.8 in.	10.96-12.26 in.
12 in. *#6000607*	18.1 in.	10.8 in.	13.15-13.78 in.

Flexible Connections

- During installation, allows for us to 4° angular deflection on each end, as well as for misaligned pipes.
- Absorbs post-installation dynamic pipe deflections of up to 4° on each end, reducing the risk of damage and cracking due to ground shifts and temperature changes.
- Adapts to out-of-round pipe shape (up to 0.51 in.), for optimum fit on both ends.

High Durability

- Two-stage sealing: mechanical sealing that is effective under vacuum or non-pressure; and self-inflated gasket using water pressure.
- Fusion-bonded epoxy coating enables an insulated product and prevents corrosion.
- Nuts, bolts, and other components are made of stainless steel.
- Innovative radial closing design and sealing systems eliminate installation errors.

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EXCEL

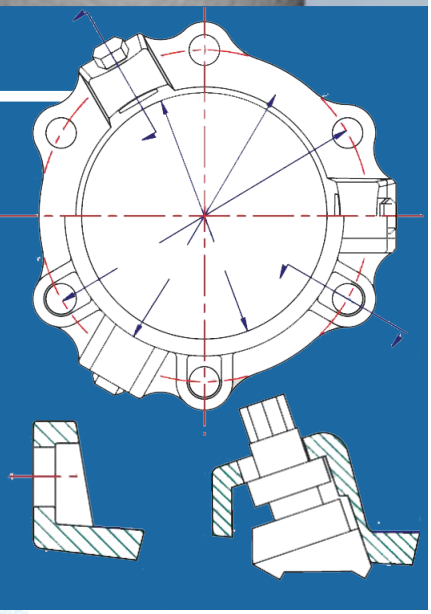
EXCEL FLUID GROUP, LLC

Mechanical Joint Restraint for Ductile Iron Pipe

Specifications

- Constructed of ASTM A536 Ductile Iron
- Pressure rating (PSI) of 350
- Post Assembly Deflection of 3°
- Torque Limiting Twist-Off Nuts
- Heavy Duty thick wall design
- For use on water or wastewater pipelines subject to hydrostatic pressure and tested in accordance with either AWWA C600 or ASTM D2774
- Mechanical Joint Follower Gland is incorporated into the restraint
- Can be furnished as a packaged accessories complete with appropriate restraint, gasket, lubrication, and bolting hardware or with resilient wedge gate valves

Size Options	I.D.	O.D.	Wedge Quantity	Bolt Quantity	Weight
3 in. #6000234	4.06 in.	6.19 in.	2	4	6.1 lbs.
4 in. #6000005	4.90 in.	7.50 in.	2	4	7.6 lbs.
6 in. #6000032	7.00 in.	9.50 in.	3	6	11.8 lbs.
8 in. #6000026	9.15 in.	11.75 in.	4	6	14.9 lbs.
10 in. #6000087	11.20 in.	14.00 in.	6	8	23.9 lbs.
12 in. #6000261	13.30 in.	16.25 in.	8	8	31.2 lbs.
14 in. #6000715	15.30 in.	21.00 in.	8	12	70.4 lbs.



Other sizes and materials available upon request.

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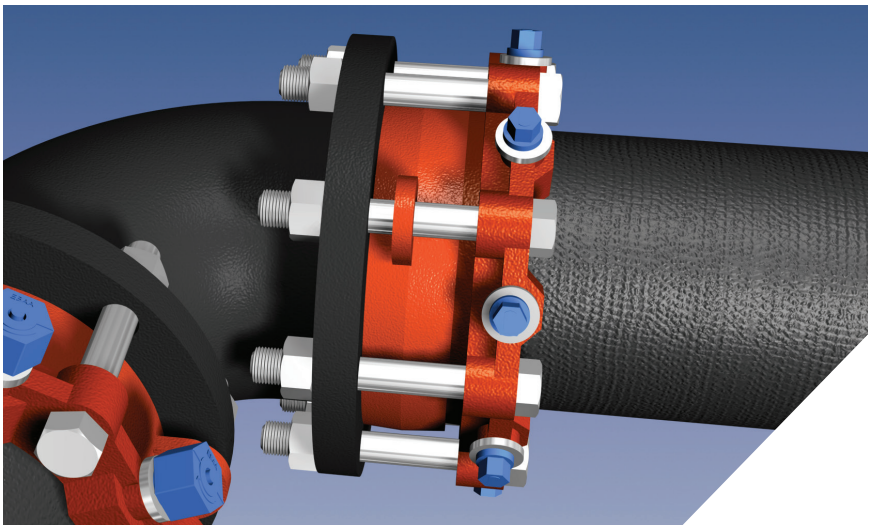
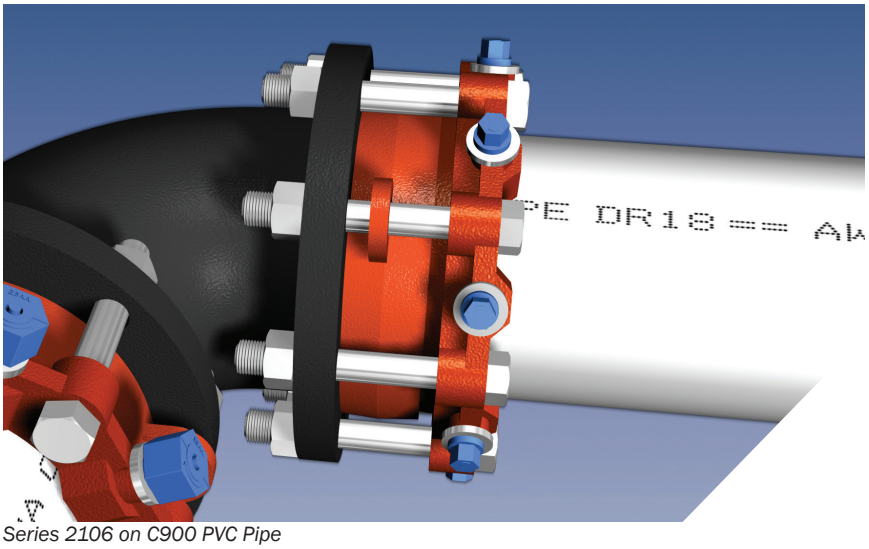
Series 2100

MEGAFLANGE®
Restrained Flange Adapter
U.S. Patent Nos. 4627774 and 5071175

All EBAA products intended for installation on ductile iron pipe are designed for and limited to use on ductile iron pipes that comply with the requirements of ANSI/AWWA C151/A21.51 and have a Brinell Hardness or equivalent measurement value that does not exceed 230BHN. **These requirements apply to the entire pipe wall profile at all restraining wedge engagement points and to the full penetration depth of each restraining wedge.***



Series 2106 on Ductile Iron Pipe



Series 2106 on C900 PVC Pipe

Features and Applications:

- MEGAFLANGE adapts and restrains plain end Ductile Iron, PVC, Carbon Steel and HDPE pipe to flanged pipe or fittings, where the flange conforms to ANSI/AWWA C111/A21.11 with flange surface facing in accordance with ANSI/AWWA C207 of the latest revision.
- Meets ANSI B16.5 Class 150/125 drilling pattern.
- Flange Bolts are zinc coated, fastener class coated bolts or stainless steel bolts are available
- Not for use on plain end fittings
- MEGA-BOND® Restraint Coating System
- For more information regarding MEGA-BOND, refer to our web site @ www.ebaa.com
- Minimum 2 to 1 Safety Factor
- Fully Restrained
- Constructed of ASTM A536 Ductile Iron
- UL listed on sizes 3 inch through 12 inch
- FM approved on sizes 4 inch through 12 inch on C900 Class 150 and Class 200 PVC Pipe
- Pipe can be cut to length in the field
- Joint deflection up to 5°
- Easy dismantling allows fast removal of valves, meters or fittings for replacement or repair

For use on water or wastewater pipelines subject to hydrostatic pressure and tested in accordance with either AWWA C600, C605 or ASTM D2774.

Sample Specification

Restrained flange adapters shall be used in lieu of threaded or welded flanged spool pieces. Flanged adapters shall be made of ductile iron conforming to ASTM A536 and have flange bolt circles that are compatible with ANSI/AWWA C110/A21.10 (125#/Class 150 Bolt Pattern).

Restraint for flange adapter shall consist of a plurality of individual actuated gripping wedges to maximize restraint capability. Torque limiting actuating screws shall be used to insure proper initial set of gripping wedges.

The flange adapters shall be capable of deflection during assembly or permit lengths of pipe to be field cut to allow a minimum 0.6 inch gap between the end of the pipe and the mating flange without affecting the integrity of the seal.

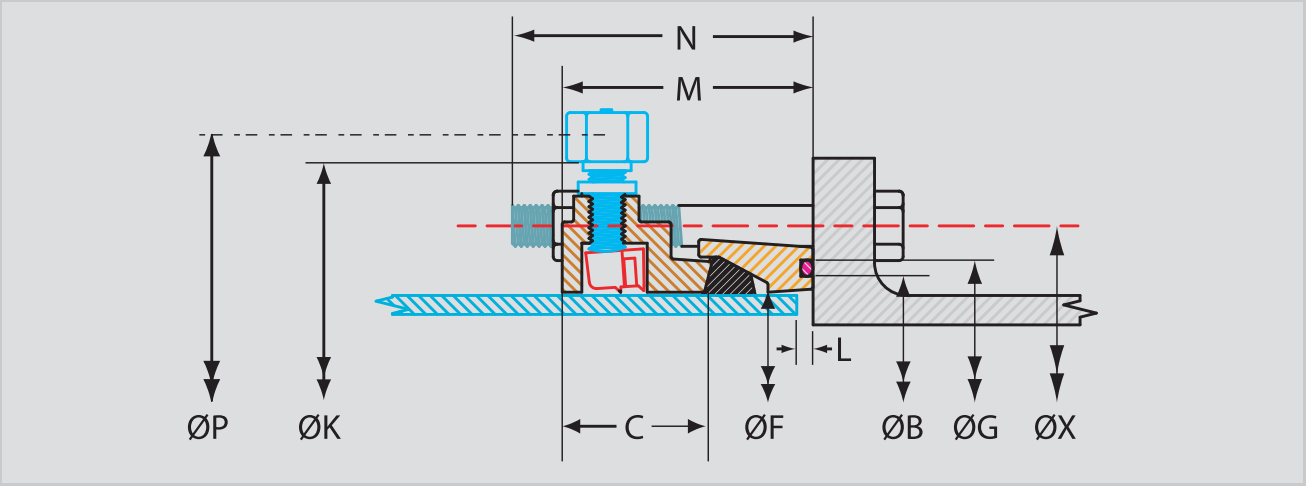
All internal surfaces of the gasket ring (wetted parts) shall be lined with a minimum of 15 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C213. The coating shall meet ANSI/NSF-61. Exterior surfaces of the gasket ring shall be coated with a minimum of 6 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C116/A21.16.

Restraint Ring coated with MEGA-BOND® Restraint Coating System, More information regarding MEGA-BOND can be found at www.ebaa.com.

Pressure ratings shall be a minimum of those shown in the table within current brochure.

The flange adapter shall be the Series 2100 MEGAFLANGE® Restrained Flange Adapter as produced by EBAA Iron, Inc. or approved equal.

Series 2100 Submittal Reference Drawing



Nominal Pipe Size	Series Number	Restraint Ring K	Restraint Ring F	Restraint Ring C	Gasket Ring F	Gasket Ring B	Gasket Ring G	Bolts No.	Bolts Dia.	Bolts Length	Bolts X	L MAX.	Assembly Deflection Degrees	M	P*	Ship Weight (lbs.)
3	2103	7.5	4.1	2.2	4.1	4.3	4.9	4	⅝	5½	6.00	0.7	5.0	4.0	9.2	14
4	2104	9.0	4.9	2.2	4.9	5.4	6.0	8	⅝	5½	7.50	0.6	5.0	4.0	10.0	20
6	2106	11.0	7.0	2.3	7.0	7.5	8.1	8	¾	6	9.50	0.8	5.0	4.3	12.1	32
8	2108	13.5	9.2	2.4	9.2	9.8	10.4	8	¾	6	11.75	0.9	5.0	4.5	14.3	38
10	2110	16.0	11.2	2.5	11.2	11.8	12.4	12	⅞	7½	14.25	1.0	3.0	4.7	16.3	65
12	2112	19.0	13.3	2.5	13.3	13.8	14.4	12	⅞	7½	17.00	1.0	3.0	4.8	18.4	73
14	2114	21.0	15.5	2.5	15.5	16.1	16.9	12	1	8	18.75	1.3	2.0	5.0	20.6	89
16	2116	23.5	17.6	2.5	17.6	18.2	19.0	16	1	8	21.25	1.3	2.0	5.0	22.6	109
18	2118	25.0	19.7	2.6	19.7	20.2	21.0	16	1⅛	8½	22.75	1.3	1.5	5.1	24.7	134
20	2120	27.3	21.8	2.6	21.8	22.4	23.2	20	1⅛	8½	25.00	1.3	1.5	5.1	26.8	157
24	2124	32.0	26.0	2.6	26.0	26.7	27.5	20	1¼	8½	29.50	1.3	1.0	5.1	31.0	192
30	2130	38.5	32.2	3.3	32.2	32.9	34.1	28	1¼	11	36.00	2.0	1.0	6.0	38.8	296
36	2136	45.5	38.5	3.3	38.5	39.2	40.4	32	1½	11	42.75	2.0	1.0	6.0	44.6	426
42	2142	52.3	44.7	4.1	44.7	45.8	47.0	36	1½	14**	49.50	2.0	1.0	8.0	50.8	642
48	2148	58.8	51.0	4.1	51.0	52.1	53.3	44	1½	14**	56.00	2.0	1.0	8.0	57.1	797

* The "P" dimensions is measured with torque-limiting nuts twisted off.
** Double ended rod in lieu of bolt

Nominal Pipe Size	Minimal Distance Required To Install N
3	4.75
4	4.56
6	5.00
8	4.88
10	6.31
12	6.25
14	6.62
16	6.56
18	6.94
20	6.81
24	6.62
30	8.88
36	8.63
42	11.25
48	11.38

MEGAFLANGE TESTING RESULTS

PVC TESTING

- Quick Burst Test
- DR18 tested to 755 PSI
- DR14 tested to 985 PSI
- Long Term Pressure Test
- On DR18 PVC pipe at 615 PSI for 1000 hours without failure
- Cyclic Pressure Test
- DR18 tested from 94 to 188 PSI for over 1,000,000 cycles

FM APPROVED

DUCTILE IRON AND CARBON STEEL TESTING

- Leakage Test (one minute required)
- Tested to twice rated pressure without leakage
- Hydrostatic Test (one minute required)
- 3 inch though 6 inch sizes tested to 5 times rated pressure
- 8 inch and 10 inch sizes tested to 4 times rated pressure
- 12 inch size tested to 3 times rated pressure
- Flexural Test
- Tested to withstand a bending moment based on requirements of NFPA 12-1991 "Standard for Installation of Sprinkler Systems"

UL®

Note: Dimensions are in inches and are subject to change without notice. All Dimensions are ± 1%.

Pipe Size	Ductile Iron Pipe Pressure (PSI)	Carbon Steel Pipe* Pressure (PSI)	C900 PVC Pipe DR14 Pressure (PSI)	C900 PVC Pipe DR18 Pressure (PSI)	C900 PVC Pipe DR25 Pressure (PSI)	C900 PVC Pipe DR32.5 Pressure (PSI)	IPS PVC Pipe* SDR17 Pressure (PSI)	IPS PVC Pipe* SDR21 Pressure (PSI)	IPS PVC Pipe* SDR26 Pressure (PSI)
3	350	350	-	-	-	-	250	200	160
4	350	350	305	235	165	-	250	200	160
6	350	350	305	235	165	-	250	200	160
8	350	350	305	235	165	-	250	200	160
10	350	350	305	235	165	-	250	200	160
12	350	350	305	235	165	-	250	200	160
14	350	-	-	235	165	125	-	-	-
16	350	-	-	235	165	125	-	-	-
18	300	-	-	235	165	125	-	-	-
20	250	-	-	235	165	125	-	-	-
24	200	-	-	150	165	125	-	-	-
30	150	-	-	-	-	-	-	-	-
36	150	-	-	-	-	-	-	-	-
42	150	-	-	-	-	-	-	-	-
48	150	-	-		-	-	-	-	-

*Transition Gasket Required
NOTE: For Application on HDPE pipe see EBAA's HDPE Restraint Catalog Sheet.

MEGAFLANGE Components

The Series 2100 MEGAFLANGE restrained flange adapter is comprised of two rings. The first is the restraint ring which incorporates wedges around the circumference of the ring to grip the pipe firmly and securely. The wedge style restraint offers enormous pullout strength when compared to set screw restraints. The resiliency of the wedge style restraint allows the MEGAFLANGE to withstand severe moment loads. The restraint ring and it's sub-components are protected from corrosion by the MEGA-BOND® Restraint Coating System. For more information regarding MEGA-BOND see our MEGA-BOND Brochure found at www.ebaa.com.

The second ring is the gasket ring which separates the seals dedicated to each sealing surface. This ring allows pipe to be cut to lengths in the field at a tolerance of 0.6 inch or more. In addition, the gasket ring also enables the joint to deflect during assembly. The gasket ring is coated with a NSF 61 approved Fusion Bonded Epoxy (FBE) so that it may be utilized on potable drinking water systems.

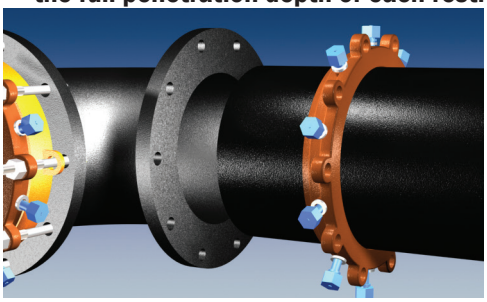
DEFLECTION

Traditional flanged joint connections require a tremendous amount of torque on the bolts to achieve a good seal. The pipe layout must be precisely planned to avoid misalignment errors due to deviations in appurtenances of pipe fabrication.

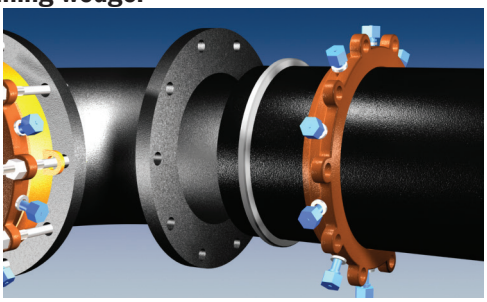
The Series 2100 MEGAFLANGE is a speedy, on-site fabrication tool which is generous in its deflection limits, from 0.5° to 5° depending on pipe size. The deflection capabilities provided by the gasket ring allow offset of almost nineteen inches of an eighteen foot length of pipe through the eight inch size.

1. Identify the pipe. The MEGAFLANGE 2100 Flange Adapter, sizes 3 inch through 12 inch, is designed for use on ductile iron pipe, PVC (C900 & IPS O.D. (ASTM D2241)) pipe, HDPE pipe, and carbon steel pipe. Check to see if the spacers under the screws are in place. If the pipe is ductile iron or C.I. O.D. PVC (C900) DO NOT REMOVE THE SPACERS. If the pipe is carbon steel or IPS O.D. PVC, REMOVE THE SPACERS (sizes 4-inch through 12-inch). The 3-inch size is designed for use on ductile iron, IPS O.D. PVC pipe. Sizes 30-inch and larger are designed for ductile iron pipe only. There are no spacers on the 3 inch and the 14 inch and larger sizes.

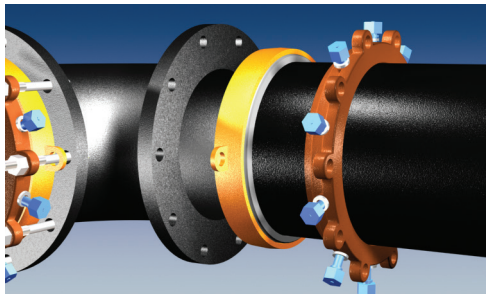
   All EBAA products intended for installation on ductile iron pipe are designed for and limited to use on ductile iron pipes that comply with the requirements of ANSI/AWWA C151/A21.51 and have a Brinell Hardness or equivalent measurement value that does not exceed 230BHN. **These requirements apply to the entire pipe wall profile at all restraining wedge engagement points and to the full penetration depth of each restraining wedge.***



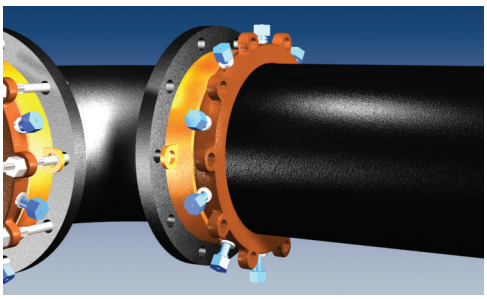
2. Cut the pipe to the required length. Clean the end of the pipe for a length approximately one foot using a wire brush if needed, removing all excess paint and foreign material. Also clean the opposing flange to be connected to the 2100. Place the 2100 restraint ring on the clean pipe with the lip facing the plain end.



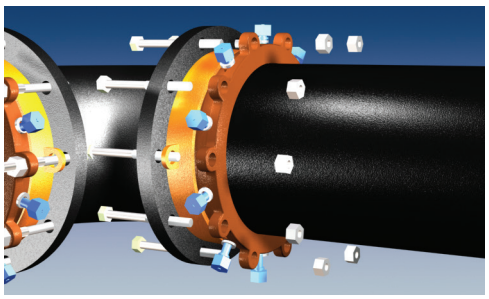
3. Lubricate and place the EBAA-Seal™ Gasket on the clean pipe following the restraint ring. (USE A TRANSITION GASKET IN PLACE OF THE EBAA-SEAL GASKET FOR CARBON STEEL AND IPS. O.D. PVC PIPE.)



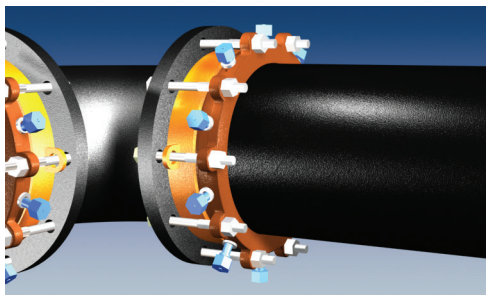
4. Place the O-ring into the groove of the 2100 Gasket Ring. (This step may have been completed at the factory, check Gasket Ring to see if O-ring is already in place.) Place the Gasket Ring on the pipe with the O-ring facing the pipe end and the gasket recess facing the EBAA-Seal (or transition) Gasket and restraint ring.



5. Bring the pipe and flanges together within the maximum assembled deflection and maximum allowable gap “L” to the flange face. Slide the gasket ring, gasket and restraint ring until contact is made with the opposing flange.



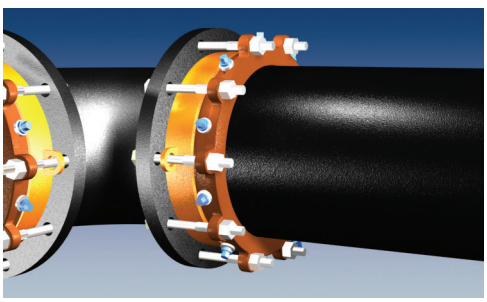
6. Insert and tighten all flange bolts. Torque all flange bolts an alternating manner to the value listed in Table 1.1. Be sure to make any necessary joint deflection before tightening the actuating screws. Joint deflection should not exceed the maximum allowable deflection. Be sure that deflection of the joint does not cause the end of the pipe to be separated from the opposing flange more than the maximum allowable gap “L”.



7. Tighten the actuating screws in an alternating manner until all wedges touch the pipe. Continue tightening the nuts in an alternating pattern until all the torque-limiting nuts have been twisted off.

Table 1.1 Flange Bolt Torques

Nominal Pipe Size	Bolt Torque (ft-lbs.)
3	45 - 60
4 - 6	75 - 90
8 - 24	90 - 110
30 - 48	110 - 130



8. If removal is necessary, utilize the ⅝ inch hex head provided. For reinstallation, repeat steps 2 through 7, torqueing the actuating screws to 70 ft.-lbs. or until the hex heads bottom out on the spacers or gland.

***To learn more about this addendum, please visit:**
https://ebaa.com/spec/dip

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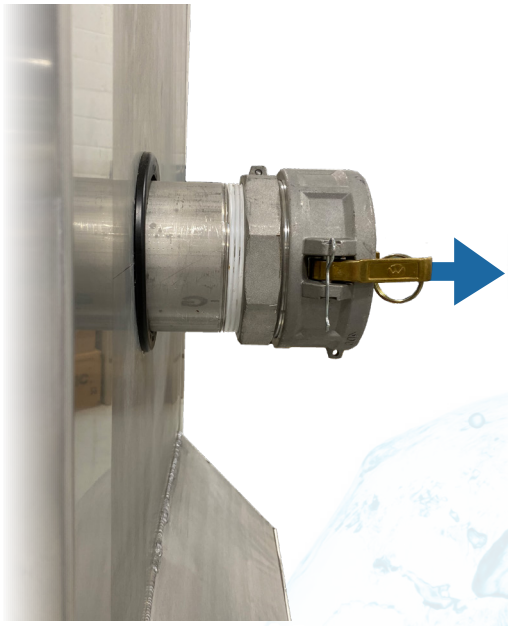
contact@ebaa.com
www.ebaa.com

EXCEL

EXCEL FLUID GROUP, LLC

Camlock Fittings for Bypass



Connected to a NoVault™ Enclosure

Aluminum Male Adaptor x Female NPT Camlock Fitting

Aluminum Dust Cap

Size	Camlock Fitting		Dust Cap	
	Part Number	Weight	Part Number	Weight
1 1/4 in.	#6000046	0.20 lbs.	#6000044	0.58 lbs.
1 1/2 in.	#6000050	0.28 lbs.	#6000048	0.64 lbs.
2 in.	#6000063	0.38 lbs.	#6000060	0.80 lbs.
3 in.	#6000089	0.70 lbs.	#6000090	1.44 lbs.
4 in.	#6000015	1.58 lbs.	#6000008	2.34 lbs.
6 in.	#6000091	2.95 lbs.	#6000092	4.66 lbs.

***Additional sizes available upon request**

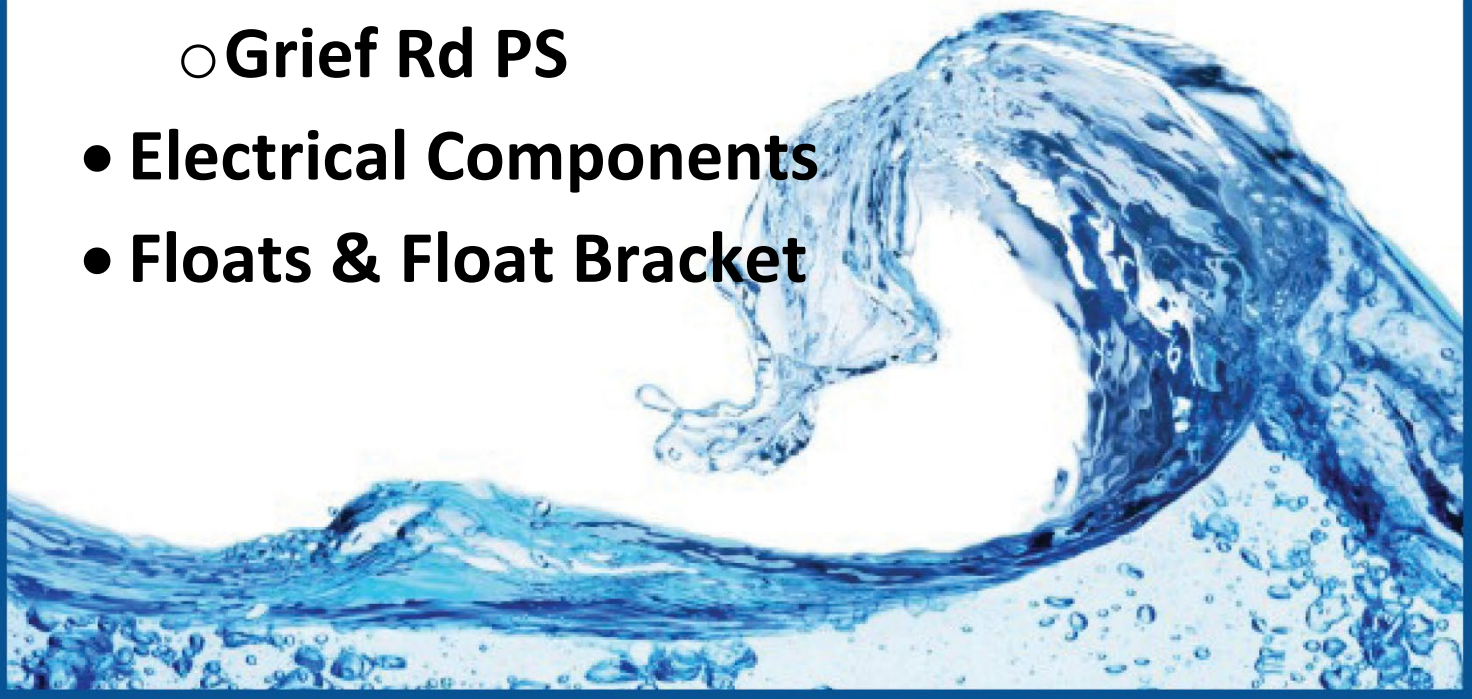
Excel Fluid Group, LLC ● 5350 West 137th St. Brook Park, OH 44142 ● sales@excelfluidgroup.com
www.excelfluidgroup.com ● Phone: (216) 941-1500 ● Fax: (216) 941-9916

EXCEL

EXCEL FLUID GROUP, LLC

Electrical Section

- VFD Enclosure Layout
  - Knox Rd PS
  - Greif Rd PS
- Pump Junction Box (JB1) Layout
- Level Control Junction Box (JB2) Layout
- VFD Data & Specs
- Line Reactors
  - Knox Rd PS
  - Grief Rd PS
- Electrical Components
- Floats & Float Bracket



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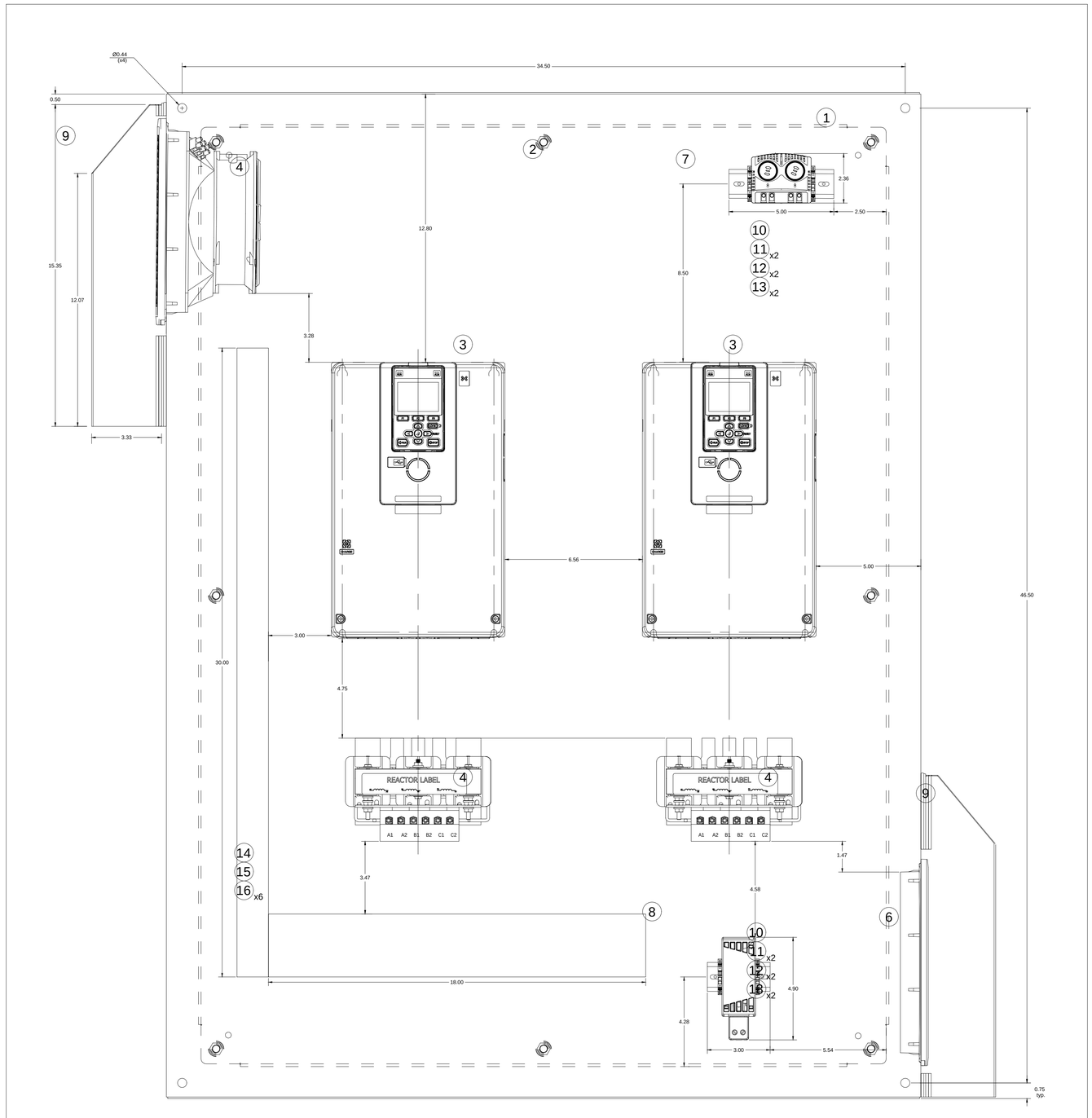


Item	Component	Quantity	Description	Vendor	Vendor Part #
1	Enclosure	1	48H x 36W x 12D 304 SS	Saginaw	SCE-48EL3612SSLPPL
2	Back Panel	1	Sub Panel, Bent	Saginaw	SCE-48P36
3	VFD	2	Yaskawa GA50 Single Phase Drive, 200-240V	Yaskawa	GA50UB018ABA
4	Line Reactor	2	208/240V, 600V Max, Low Z, Impedance.	TCI	KCRC22L
5	Fan	1	230V	Saginaw	SCE-N12FA66-230
6	Vent	1	Filter & Grille	Saginaw	SCE-N12FGA66
7	Thermostat	1	120-250VAC, Dual	Saginaw	SCE-TEMD
8	Heater	1	25W, 110-240V AC or DC	Saginaw	SCE-TSH25
9	Protection Hood	2	Hose-Proof NEMA 4X	Saginaw	SCE-RH6N4XSS
10	Din Rail	8"	Slotted, 35X7.5MM	Machine Pro	DR3575ST-1
11	10-32 X 3/8 HDMS	4	Machine Screw, Zinc Plated	Zeigler Bolt	10F37MCP0Z/FINE
12	#10 Internal Tooth	4	Lock Washer, Zinc Plated	Zeigler Bolt	10NLIT0Z
13	End Brakcet	4	ClipFix 35-5, Snap On	Phoenix Contact	3022276
14	1X3 Wire Duct	30"	Wide Finger W/CVR	Machine Pro	WD1X3SG
15	2X3 Wire Duct	18"	Wide Finger W/CVR	Machine Pro	WD2X3SG
16	Wireway Rivet	6	Fastening Clip, 1.5...6mm	Phoenix Contact	3240499

EXCEL FLUID GROUP, LLC

5350 W. 137th St,
Brook Park, OH 44142
216-941-1500

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL: ±1/16"
ANGULAR: ±0.5°
DECIMAL: ±.06

TITLE: Licking View - Zemba Bros

Q14618-58030P

VFD Enclosure Layout, Knox Rd.

DRAWN BY: ES

APPROVED BY: MC

DRAWING NO.: 14618B-2

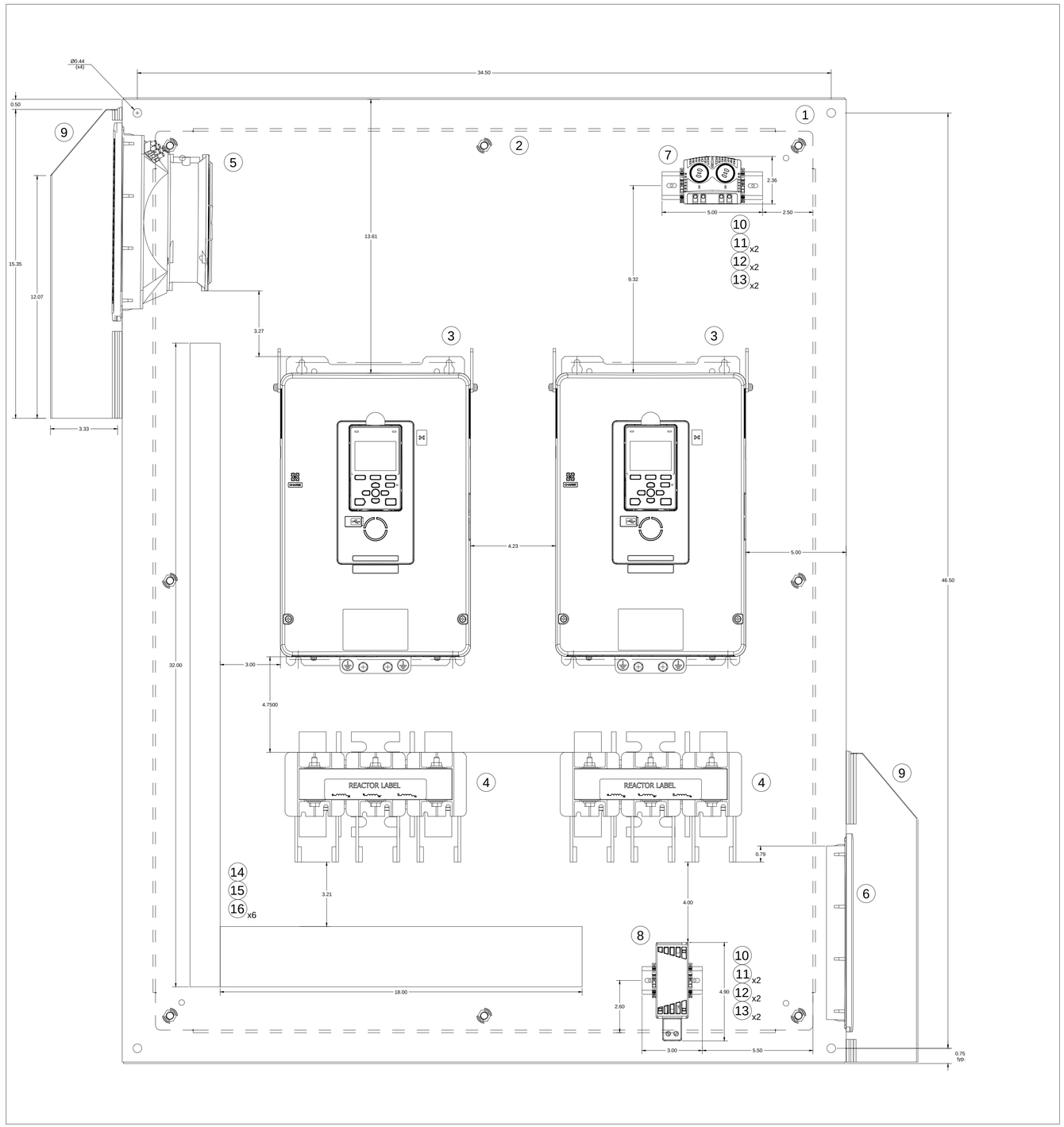
DATE: 02/0124

SCALE: 1:6

SIZE: B

REV: 1

SHEET: 1 of 1



Item	Component	Quantity	Description	Vendor	Vendor Part #
1	Enclosure	1	48H x 36W x 12D 304 SS	Saginaw	SCE-48EL3612SSLPPL
2	Back Panel	1	Sub Panel, Bent	Saginaw	SCE-48P36
3	VFD	2	Yaskawa GA50 Single Phase Drive, 200-240V	Yaskawa	GA50U2082
4	Line Reactor	2	208/240V, 600V Max., Low Z, Impedance.	TCI	KDRF24L
5	Fan	1	230V	Saginaw	SCE-N12FA66-230
6	Vent	1	Filter & Grille	Saginaw	SCE-N12FGA66
7	Thermostat	1	120-250VAC, Dual	Saginaw	SCE-TEMD
8	Heater	1	25W, 110-240V AC or DC	Saginaw	SCE-TSH25
9	Protection Hood	2	Hose-Proof NEMA 4X	Saginaw	SCE-RH6N4XSS
10	Din Rail	8"	Slotted, 35X7.5MM	Machine Pro	DR3575ST-1
11	10-32 X 3/8 HDMS	4	Machine Screw, Zinc Plated	Zeigler Bolt	10F37MCP0Z/FINE
12	#10 Internal Tooth	4	Lock Washer, Zinc Plated	Zeigler Bolt	10NLIT0Z
13	End Brakcet	4	ClipFix 35-5, Snap On	Phoenix Contact	3022276
14	1X3 Wire Duct	32"	Wide Finger W/CVR	Machine Pro	WD1X3SG
15	2X3 Wire Duct	18"	Wide Finger W/CVR	Machine Pro	WD2X3SG
16	Wireway Rivet	6	Fastening Clip, 1.5...6mm	Phoenix Contact	3240499

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216-941-1500

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DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL: ±1/16"
ANGULAR: ±0.5°
DECIMAL: ±.06

TITLE: Licking View - Zemba Bros

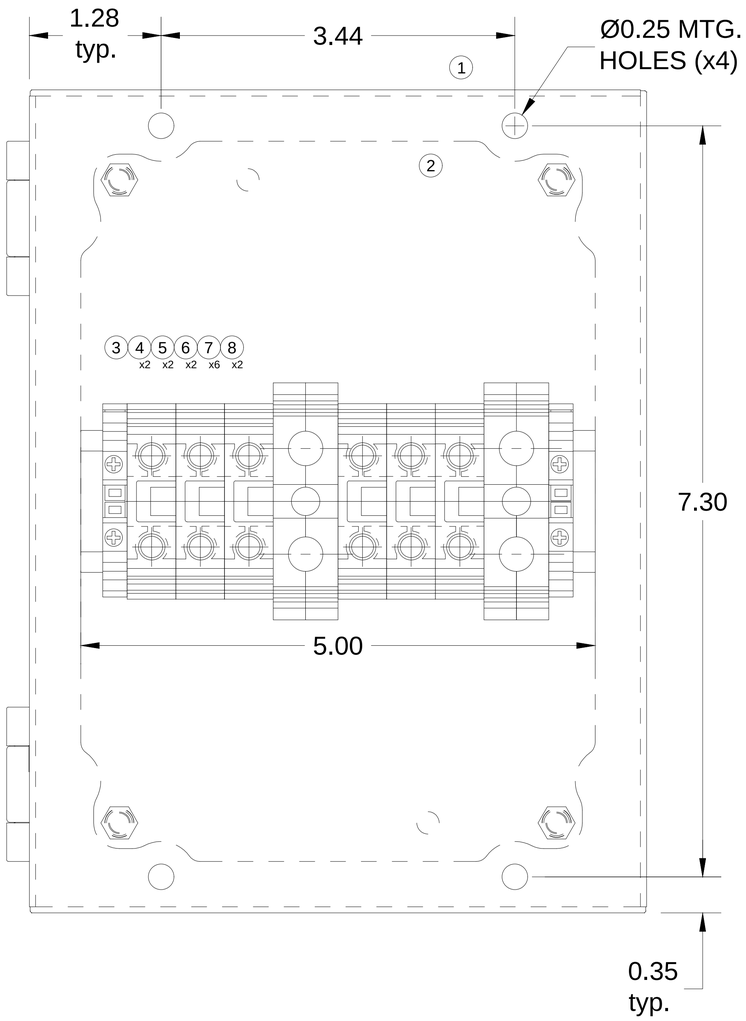
Q14618-58030P

VFD Enclosure Layout, Grief Rd.

DRAWN BY:	ES
APPROVED BY:	MC
DATE:	02/01/24
SCALE:	1:6

DRAWING NO.: 14618B-1

SIZE:	REV:	SHEET:
B	1	1 of 1



Item	Component	Quantity	Description	Vendor	Vendor Part #
1	Enclosure	1	8H x 6W x 6D 304 SS	Saginaw	SCE-8066ELJSS
2	Back Panel	1	Sub Panel, Flat	Saginaw	SCE-8P6
3	Din Rail	5"	Slotted, 35X7.5MM	Machine Pro	DR3575ST-1
4	10-32 X 3/8 HDMS	2	Machine Screw, Zinc Plated	Zeigler Bolt	10F37MCP0Z/FINE
5	#10 Internal Tooth	2	Lock Washer, Zinc Plated	Zeigler Bolt	10NLIT0Z
6	End Brakcet	2	ClipFix 35-5, Snap On	Phoenix Contact	3022276
7	Terminal Block	6	14-3 AWG, 115A 600V	C3 Controls	WTB2-W25
8	Ground Block	2	8-2 AWG, DIN Rail Ground	C3 Controls	WTB2-W16/35G

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5350 W. 137th St,
Brook Park, OH 44142
216-941-1500

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL: ±1/16"
ANGULAR: ±0.5°
DECIMAL: ±.06

DRAWN BY: ES

APPROVED BY: MC

DATE: 02/01/24

SCALE: 1:1.5

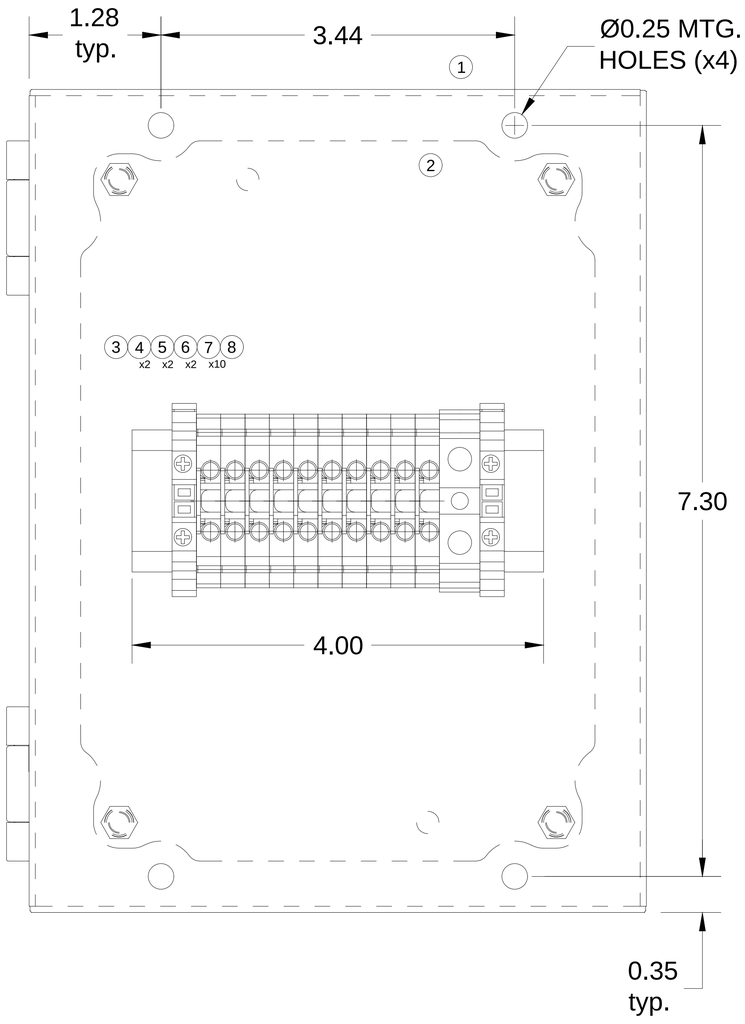
TITLE: Licking View - Zemba Bros
Q14618-58030P
Junction Box 1 Layout

DRAWING NO.: 14618B-3

SIZE: B

REV: 0

SHEET: 1 of 1



Item	Component	Quantity	Description	Vendor	Vendor Part #
1	Enclosure	1	8H x 6W x 6D 304 SS	Saginaw	SCE-8066ELJSS
2	Back Panel	1	Sub Panel, Flat	Saginaw	SCE-8P6
3	Din Rail	4"	Slotted, 35X7.5MM	Machine Pro	DR3575ST-1
4	10-32 X 3/8 HDMS	2	Machine Screw, Zinc Plated	Zeigler Bolt	10F37MCP0Z/FINE
5	#10 Internal Tooth	2	Lock Washer, Zinc Plated	Zeigler Bolt	10NLIT0Z
6	End Brakcet	2	ClipFix 35-5, Snap On	Phoenix Contact	3022276
7	Terminal Block	10	22-10 AWG, 35A 600V	C3 Controls	WTB2-W4
8	Ground Block	1	16-6 AWG, DIN Rail Ground	C3 Controls	WTB2-W6/10G

EXCEL FLUID GROUP, LLC

5350 W. 137th St,
Brook Park, OH 44142
216-941-1500

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL: ±1/16"
ANGULAR: ±0.5°
DECIMAL: ±.06

TITLE: Licking View - Zemba Bros
Q14618-58030P
Junction Box 2 Layout

DRAWN BY: ES

APPROVED BY: MC

DRAWING NO.: 14618B-4

DATE: 02/01/24

SCALE: 1:1.5

SIZE: B

REV: 0

SHEET: 1 of 1

YASKAWA

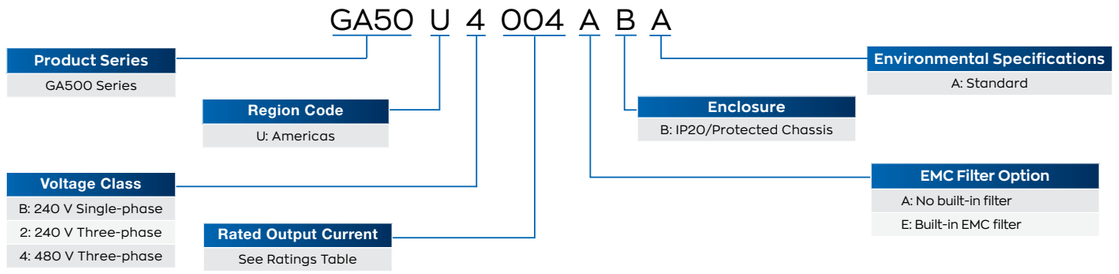
GA500

AC MICRODRIVE FOR INDUSTRIAL APPLICATIONS

IT'S PERSONAL

SPECIFICATIONS

Catalog Code Designation



RATINGS

Power Output (HP)		240 V Models								480 V Models			
		Single-Phase				Three-Phase				Three-Phase			
Normal Duty (ND)	Heavy Duty (HD)	Catalog Code	Output Amps ND	Output Amps HD	Frame	Catalog Code	Output Amps ND	Output Amps HD	Frame	Catalog Code	Output Amps ND	Output Amps HD	Frame
1/6	1/6	GA50UB001ABA	1.2	0.8	1.1	GA50U2001ABA	1.2	0.8	1.1				
1/4	1/4	GA50UB002ABA	1.9	1.6	1.1	GA50U2002ABA	1.9	1.6	1.1				
1/2	1/2									GA50U4001ABA	1.2	1.2	2.1
3/4	1/2	GA50UB004ABA	3.5	3	1.3	GA50U2004ABA	3.5	3	1.2				
1	3/4									GA50U4002ABA	2.1	1.8	2.2
1.5	1	GA50UB006ABA	6	5	2.4	GA50U2006ABA	6	5	1.4				
2	2									GA50U4004ABA	4.1	3.4	2.4
3	2	GA50UB010ABA	9.6	8	2.5	GA50U2010ABA	9.6	8	2.3				
3	3	GA50UB012ABA	12.2	11	3.2					GA50U4005ABA	5.4	4.8	2.5
4	3					GA50U2012ABA	12.2	11	2.4	GA50U4007ABA	7.1	5.6	2.5
5	4									GA50U4009ABA	8.9	7.3	2.5
N/A	5	GA50UB018ABA	N/A	17.6	4								
7.5	5					GA50U2021ABA	21	17.6	3.1	GA50U4012ABA	11.9	9.2	3.1
10	7.5					GA50U2030ABA	30	25	5				
10	10									GA50U4018ABA	17.5	14.8	5
15	10					GA50U2042ABA	42	33	5	GA50U4023ABA	23.4	18	5
20	15					GA50U2056ABA	56	47	6	GA50U4031ABA	31	24	6
25	20					GA50U2070ABA	70	60	7	GA50U4038ABA	38	31	6
30	25					GA50U2082ABA	82	75	7	GA50U4044ABA	44	39	8
40	30									GA50U4060ABA	60	45	8

APPROXIMATE DIMENSIONS

Frame Size	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	2.5	3.1	3.2	4	5	6	7	8
Height	5.04 (128)												10.24 (260)	11.81 (300)	13.78 (350)	
Width	2.68 (68)				4.25 (108)					5.51 (140)		6.69 (170)	5.51 (140)	7.09 (180)	8.66 (220)	7.48 (190)
Depth	2.99 (76)	4.25 (108)	4.65 (118)	5.04 (128)	3.19 (81)	3.90 (99)	5.08 (129)	5.41 (137)	6.06 (154)	5.63 (143)	6.42 (163)	7.09 (180)	5.51 (140)	5.63 (143)	7.36 (187)	8.03 (204)

Dimensions shown in inches (mm).
Information on this page represents IP20/Protected Chassis type enclosures without the built-in EMC filter.
For other enclosure types and enclosure adapters, please visit yaskawa.com.

SPECIFICATIONS

Operating Environment	
Ambient Temperature	-10 to +50°C (IP20/Protected Chassis), -10 to +40°C (IP20/UL Type 1), up to +60°C with derating
Storage Temperature	-40 to +70°C (short-term temperature during transportation)
Humidity	95% RH or less (non-condensing)
Altitude	Up to 1000 m without derating, up to 4000 m with derating
Shock	10 to 20 Hz: 9.8 m/s²
	20 to 55 Hz: 5.9 m/s²
Protection Design	IP20/Protected Chassis (Standard), IP20/UL Type 1 kit (Optional)
Mounting	Side-by-side, DIN rail, external heatsink
Conformal Coating (PCBs)	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles)
Standards	CE, UL, cUL, KC, RCM, EAC, RoHS
Functional Safety	IEC/EN 61800-5-2: STO, IEC/EN 61508: SIL3, EN ISO 13849-1: PLe
Power Ratings	
Overload Capacity	110%/1 min. (Normal Duty) or 150%/1 min. (Heavy Duty)
Rated Voltage	200 to 240 V, -15 to +10%
	380 to 480 V, -15 to +10%
Capacity Range	240 V, Single-phase: 1/6 to 5 HP (0.1 to 3.7 kW)
	240 V, Three-Phase: 1/6 to 30 HP (0.1 to 22 kW)
	480 V, Three-Phase: 1/4 to 40 HP (0.2 to 30 kW)
Input Frequency	50/60 Hz, +/-5%
Output Voltage Accuracy	+/-5%
Output Frequency	0 to 590 Hz (special software for up to 1000 Hz)
Control Method	V/f, Open Loop (IM/PM), Advanced Open Loop (PM), EZ Open Loop Vector
Motor Control	Induction Motor (IM), Interior or Surface Permanent Magnet Motor (IPM/SPM), Synchronous Reluctance Motor (SynRM)
Standard I/O	(7) multi-function digital inputs (24 VDC)
	(2) multi-function analog inputs (0 +/-10 VDC, 4-20 mA)
	(1) multi-function pulse input
	(2) Safe Torque Off (STO) inputs
	(1) fault relay output (form C)
	(2) multi-function photocoupler outputs
	(1) multi-function analog output (0 - 10 VDC, 4-20 mA)
	(1) multi-function pulse output
	(1) RS-485 (Modbus RTU)
Additional Functions	Integrated PID controller with sleep function, automatic load distribution for multiple axes (droop control), automatic main power loss ride through, speed search function for smooth start of coasting motors, braking with over-magnetization for fast stop without braking resistors, energy-saving function, automatic restart after failure, overvoltage suppression, virtual input/output custom configuration, application presets, vibration suppression
Options	
Communications (Requires Additional Mounting Kit)	CANopen®, CC-Link, DeviceNet™, EtherCAT®, Ethernet/IP™, Ethernet/IP Dual Port, MECHATROLINK-II, MECHATROLINK-III, Modbus/TCP, Modbus/TCP dual port, PROFIBUS-DP®, PROFINET®, LONWORKS
Additional Options	Bluetooth keypad, LCD keypad, Attachment for external heatsink, External EMC filters, AC reactors, DC chokes, Network communications adapter, LCD keypad attachment, braking resistors

To learn more about the GA500 and see how it can make your day-to-day life easier, please visit https://www.yaskawa.com/ga500.

YASKAWA

GA500 Selection Guide

AC MICRODRIVE FOR INDUSTRIAL APPLICATIONS
1/6 to 40 HP

IT'S PERSONAL

Single-Phase Input Derate

Table 6: 240 V, Single-Phase Input, Three-Phase Output

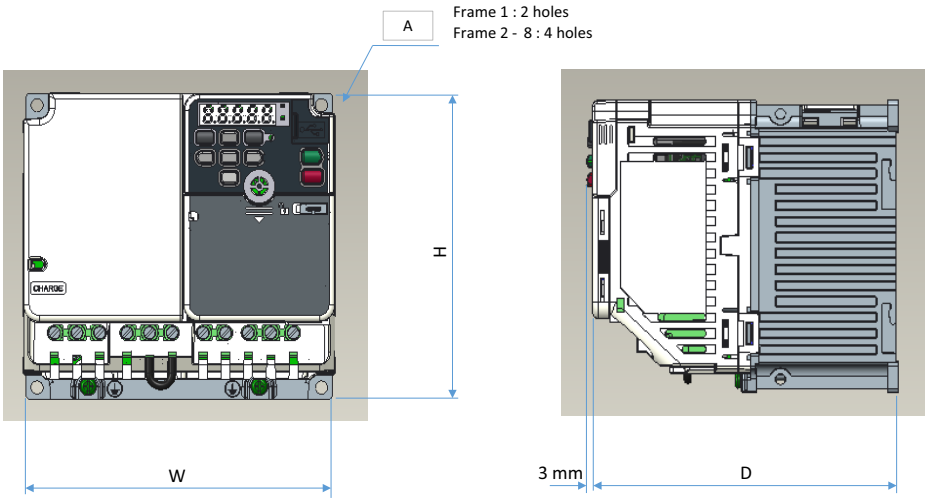
GA50U..[1,2]	No Reactor		With Reactor					
	Drive Output Capacity		Drive Output Capacity		AC Input Type		DC Bus Type	
					Open	UL Type 1 Enclosed	Open	UL Type 1 Enclosed
	Motor Power (HP)	Motor FLA	Motor Power (HP)	Motor FLA	Catalog Code	Catalog Code	Catalog Code	Catalog Code
2001	-	-	1/8	0.61	URX000283	URX000652	URX000033	URX000215
2002	1/8	0.61	1/4	1.16	URX000291	URX000651	URX000036	URX000207
2004	1/4	1.16	1/3	1.52	URX000295	URX000409	05P00608-3007	URX000208
2006	1/3	1.52	1/2	2.20	URX000299	URX000410	05P00608-3007	URX000208
2010	1/2	2.2	1	4.20	URX000303	URX000411	URX000043	N/A
2012	1	4.2	1.5	6.00	URX000307	URX000413	05P00620-0113	URX000435
2021	1.5	6	3	9.60	URX000315	URX000418	05P00620-0115	URX000259
2030	1.5	6	3	9.60	URX000315	URX000418	05P00620-0115	URX000259
2042	3	9.6	5	15.20	URX000323	URX000422	05P00620-0120	URX000261
2056	3	9.6	5	15.20	URX000323	URX000422	05P00620-0120	URX000261
2070	5	15.2	10	28.00	URX000329	URX000501	URX000064	URX000213
2082	7.5	22	10	28.00	URX000329	URX000501	URX000063	URX000264

1. This information reflects derating of three phase drives for single-phase input applications. See Single-Phase Converter to achieve full power with no derating on some drives.
2. Select partial catalog code from this single-phase table. Then get complete catalog code from the Drive tables based on drive type.

Dimensions & Weights

IP20/Protected Chassis Dimensions

Figure 1: Drive Dimensions



IP20/Protected Chassis Drive Without EMC Filter

Table 8: Dimensions without EMC Filter

Dimensions in (mm)			
Frame	**Height**	**Width**	**Depth**
1.1	5.04 (128)	2.68 (68)	2.99 (76)
1.2	5.04 (128)	2.68 (68)	4.25 (108)
1.3	5.04 (128)	2.68 (68)	4.65 (118)
1.4	5.04 (128)	2.68 (68)	5.04 (128)
2.1	5.04 (128)	4.25 (108)	3.19 (81)
2.2	5.04 (128)	4.25 (108)	3.90 (99)
2.3	5.04 (128)	4.25 (108)	5.08 (129)
2.4	5.04 (128)	4.25 (108)	5.41 (138)
2.5	5.04 (128)	4.25 (108)	6.06 (154)
3.1	5.04 (128)	5.51 (140)	5.63 (143)
3.2	5.04 (128)	5.51 (140)	6.42 (163)
4	5.04 (128)	6.69 (170)	7.09 (180)
5	10.24 (260)	5.51 (140)	5.51 (140)
6	11.81 (300)	7.09 (180)	5.63 (143)
7	13.78 (350)	8.66 (220)	7.36 (187)
8	13.78 (350)	7.48 (190)	8.03 (204)

Table 9: Dimensions with EMC Filter

Dimensions in (mm)			
Frame	**Height**	**Width**	**Depth**
1.1	5.04 (128)	2.68 (68)	4.57 (116)
1.2	5.04 (128)	2.68 (68)	5.83 (148)
1.3	5.04 (128)	2.68 (68)	6.22 (158)
1.4	5.04 (128)	2.68 (68)	6.61 (168)
2.1	5.04 (128)	4.25 (108)	4.96 (126)
2.2	5.04 (128)	4.25 (108)	5.67 (144)
2.3	5.04 (128)	4.25 (108)	6.85 (174)
2.4	5.04 (128)	4.25 (108)	7.19 (183)
2.5	5.04 (128)	4.25 (108)	7.83 (199)
3.1	5.04 (128)	5.51 (140)	7.60 (193)
3.2	5.04 (128)	5.51 (140)	7.99 (203)
5	10.24 (260)	5.51 (140)	7.72 (196)
6	11.81 (300)	7.09 (180)	7.72 (196)
7	13.78 (350)	8.66 (220)	8.50 (216)
8	13.78 (350)	7.48 (190)	9.88 (251)

Table 10: 240 V, Single-Phase Drives

Normal Duty (ND)	Heavy Duty (HD)	Catalog Code GA50U...	Output Amps		Weight lb (kg)	Frame
			ND	HD		
1/6	1/6	B001ABA	1.2	0.8	1.1 (0.5)	1.1
1/4	1/4	B002ABA	1.9	1.6		1.1
3/4	1/2	B004ABA	3.5	3	1.8 (0.8)	1.3
1.5	1	B006ABA	6	5	3.3 (1.5)	2.4
3	2	B010ABA	9.6	8		2.5
3	3	B012ABA	12.2	11	4.6 (2.1)	3.2
N/A	5	B018ABA	N/A	17.6	6.4 (2.9)	4

Table 11: 240 V, Three-Phase Drives

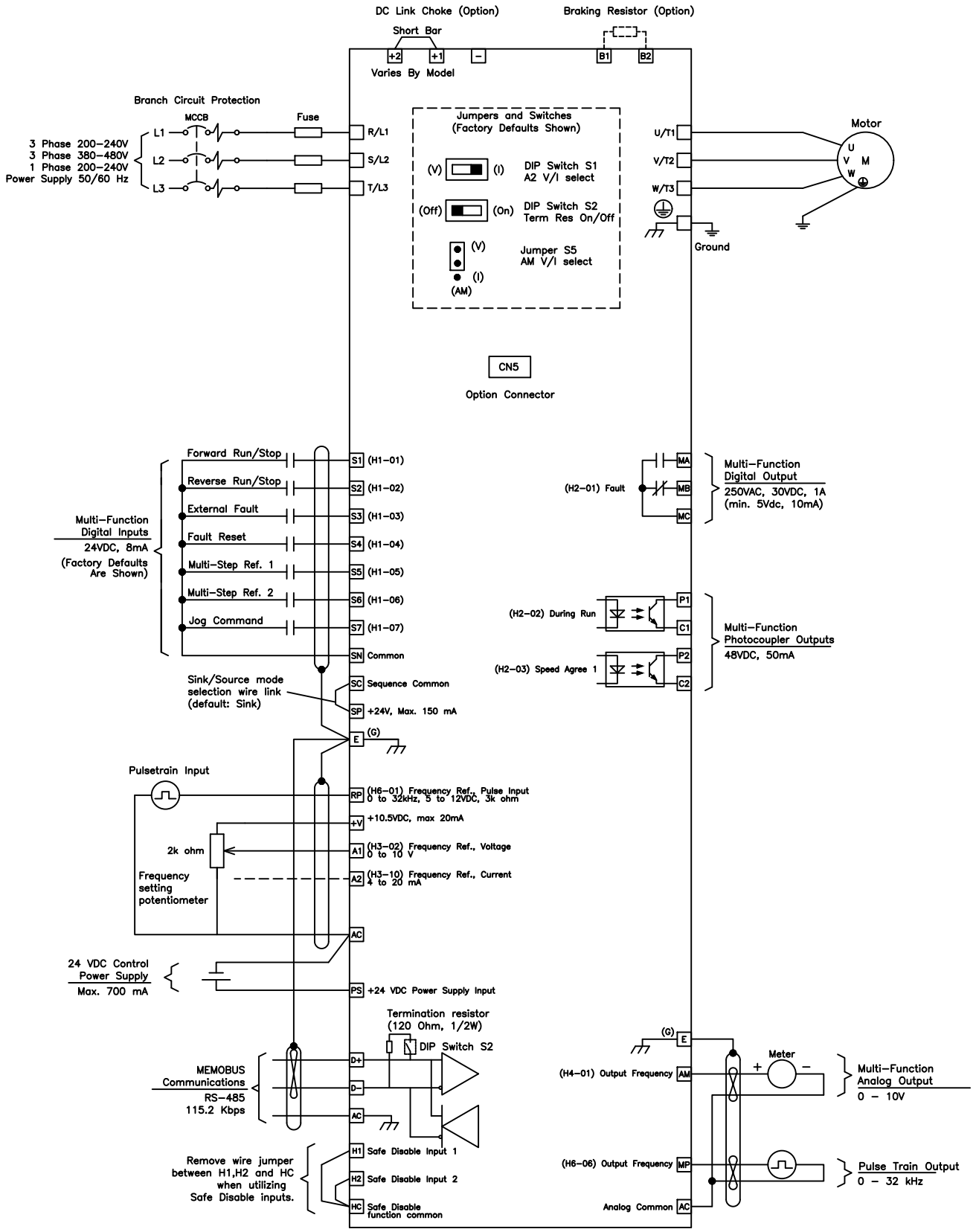
Normal Duty (ND)	Heavy Duty (HD)	Catalog Code GA50U...	Output Amps		Weight (kg)	Frame
			ND	HD		
1/6	1/6	2001	1.2	0.8	1.1 (0.5)	1.1
1/4	1/4	2002	1.9	1.6		1.1
3/4	1/2	2004	3.5	3.0	1.8 (0.8)	1.2
1.5	1	2006	6	5.0	2.0 (0.9)	1.4
3	2	2010	9.6	8.0	3.3 (1.5)	2.3
4	3	2012	12.2	11.0		2.4
7.5	5	2021	21	17.6	4.4 (2.2)	3.1
10	7.5	2030	30	25.0	7.5 (3.4)	5
15	10	2042	42	33.0	7.9 (3.6)	5
20	15	2056	56	47.0	12.1 (5.5)	6
25	20	2070	70	60.0	16.5 (7.5)	7
30	25	2082	82	75.0	17.6 (8.0)	7

Drive Specifications

Power Ratings	
Item	**Specification**
Overload Capacity	110%/1 min. (Normal Duty) or 150%/1 min. (Heavy Duty)
Rated Voltage	200 to 240 VAC, -15 to +10%
	380 to 480 VAC, -15 to +10%
Capacity Range	240 V, Single-Phase: 1/6 to 5 HP (0.1 to 3.7 kW)
	240 V, Three-Phase: 1/6 to 30 HP (0.1 to 22kW)
	480 V, Three-Phase: 1/2 to 40 HP (0.2 to 30kW)
Input Frequency	50/60 Hz +/-5%
Output Voltage Accuracy	+/-5%
Output Frequency	0 to 590 Hz (*special software for up to 1000 Hz)
Control Method	V/f, Open Loop (IM/PM), Advanced Open Loop (IM/PM), EZ Open Loop Vector
Motor Control	Induction Motor (IM), Permanent Magnet Motor, Synchronous Reluctance Motor (SynRM)

Operating Environment	
Item	**Specification**
Ambient Temperature	-10 to +50 °C (IP20/Protected Chassis), -10 to +40 °C (IP20/UL Type 1), up to +60 °C with derating
Storage Temperature	-40 to +70 °C (short-term temperature during transportation)
Humidity	95% RH or less (non-condensing)
Altitude	Up to 1000 meters without derating, up to 4000 m with derating
Shock	10 to 20 Hz: 9.8 m/s^2
	20 to 55 Hz: 5.9 m/s^2
Protection Design	IP20/Protected Chassis Standard, IP20/UL Type 1 kit optional
Mounting	Side-by-side, DIN rail, external heatsink
Conformal Coating (PCB's)	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles)
Standards	CE, UL, cUL, KC, RCM, EAC, RoHS
Functional Safety	IEC/EN61508 SIL3 (STO), PLe

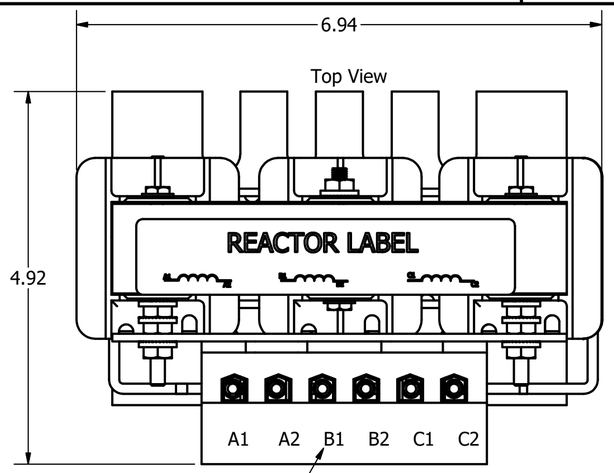
GA500



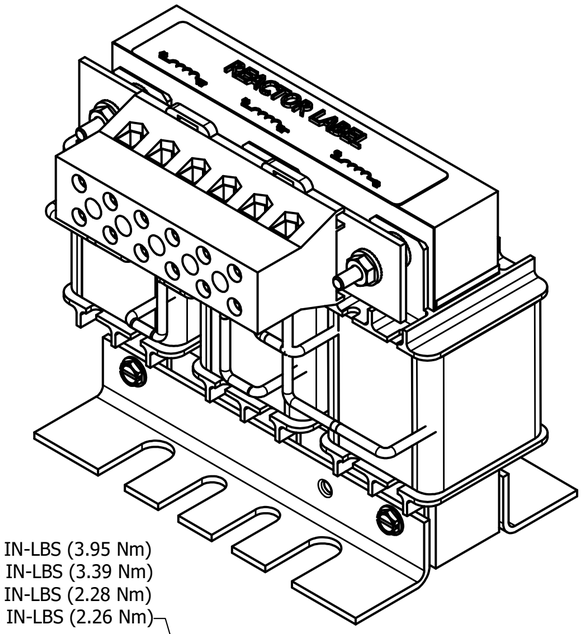
Note: Refer to technical manual for further details.

YASKAWA	DRWN.	J. MATTAS	5-20-19	TITLE	SIZE A	PAGE 1 OF 1
	CHKD.	J. PIOTROWSKI	5-21-19	GA500 DRIVE STANDARD CONNECTION DIAGRAM	DWG.NO. DS.GA50.01	REV 0
UNITS -	TECH.	T. UCHINO	5-22-19			
SCALE -	APRV.	J. CAIRO	6-13-19			

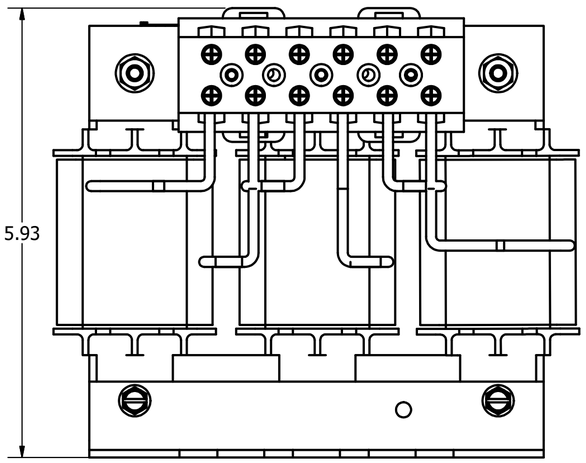
208/240 Rated Voltage, 600 Max Voltage, Low Z, Impedance.						
Part Number	Horsepower (HP)	Motor Amps (A)	Maximum Amps (A)	Inductance (uH)	Weight (LBS)	Losses (W)
KDRC22L	25	74.8	80	138	15	114

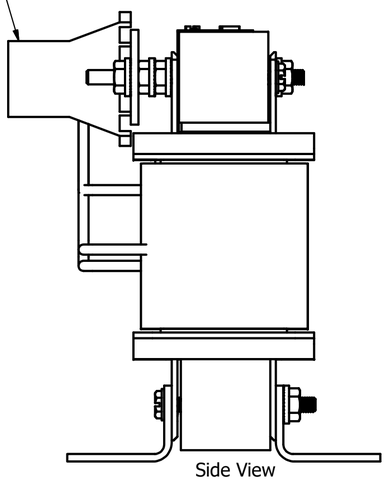


(Customer Connections)
Markings On Terminal Block
For Reference Only.

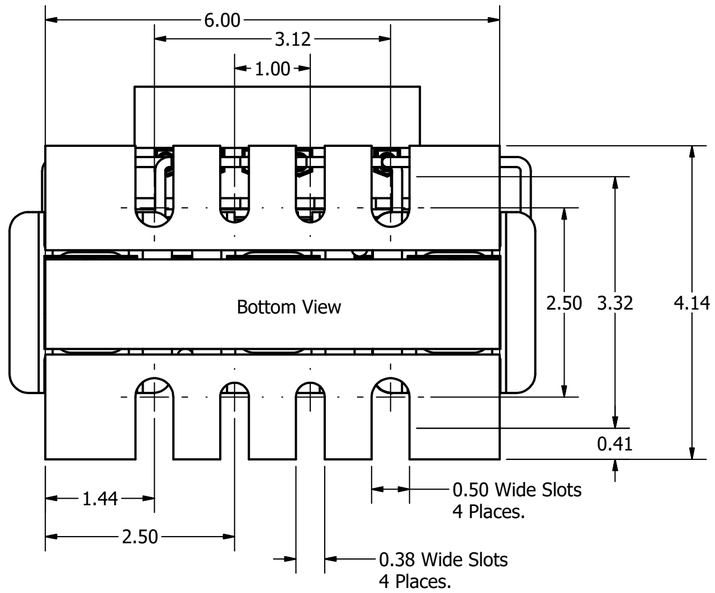


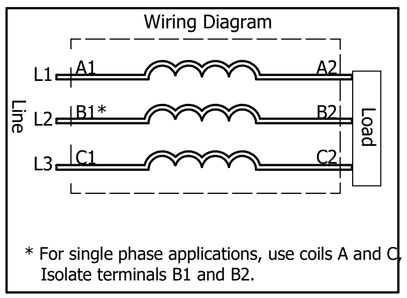
Wire Range: 1- 4 AWG. Torque : 35 IN-LBS (3.95 Nm)
6- 14 AWG. Torque : 30 IN-LBS (3.39 Nm)
16- 20 AWG. Torque : 25 IN-LBS (2.28 Nm)
22 AWG. Torque : 20 IN-LBS (2.26 Nm)



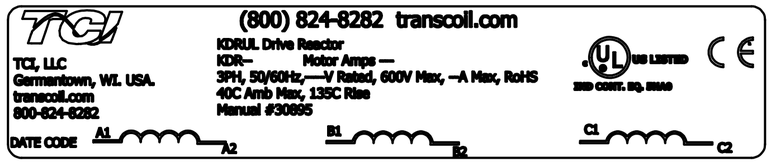


KNOX RD PS





* For single phase applications, use coils A and C. Isolate terminals B1 and B2.



Notes:

1. UL file number: cULus Listed File E116124.
2. KDR Drive Reactors Comply With The Thermal and Altitude Standards Set Forth by NEMA ST20-1992.
3. KDR IOM Manual Part Number 30895
4. NEC Current For 208/240 Volts, Horsepower Based On 208 Volts.
5. Material(s) Shall be RoHS Compliant
6. Customer Is Responsible For Installation To Meet All National And Local Electrical Codes.

NO	REVISION	DATE	BY
A	Combined Drawings	1/22/18	DSW

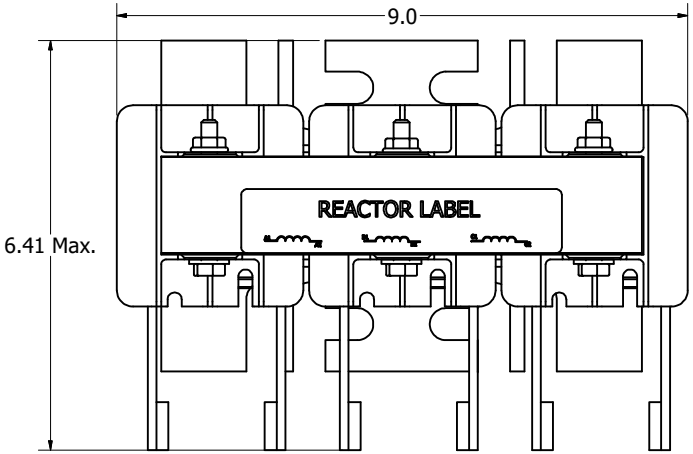
TOLERANCES (EXCEPT AS NOTED)
DECIMAL
.XX ± .25
.XXX ± .10
FRACTIONAL
± 1/16
ANGULAR
± 1°

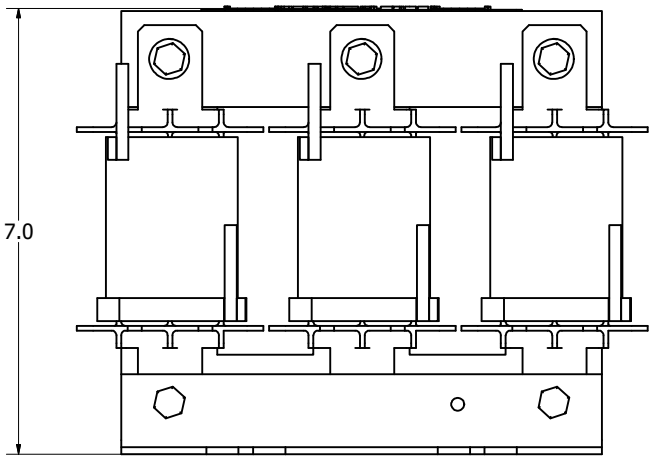
W132 N10611 Grant Drive
Germantown, WI 53022

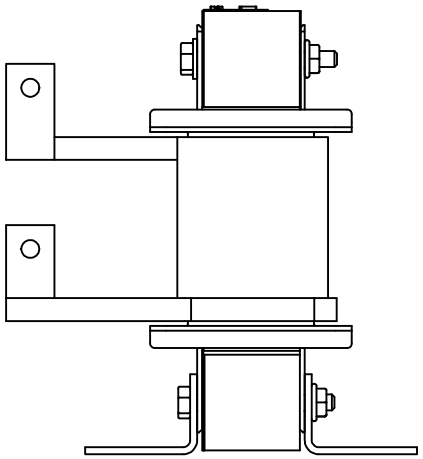
KDR C Frame, Terminal Block
Reactor Drawing

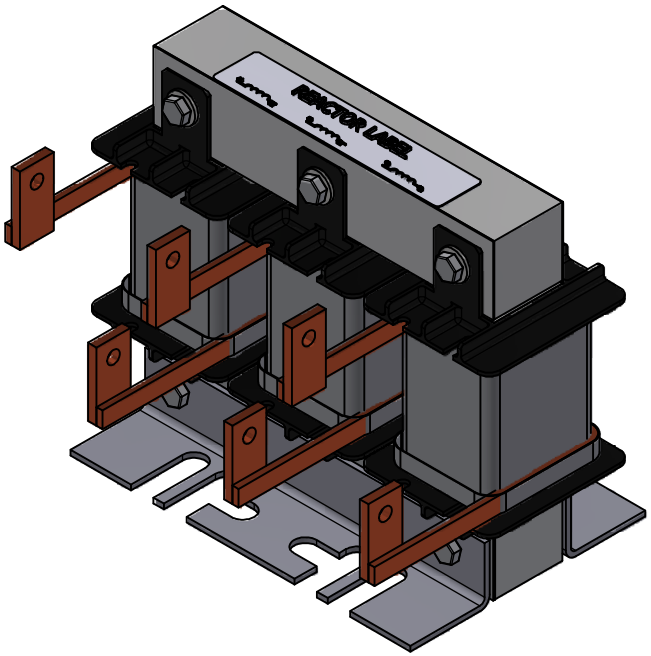
DRN. BY: DSW | DATE: 1/22/18 | 107512DG
SCALE: 1/1.5 | APRVD: | SIZE: C
SHT 3 OF 4

208/240 Rated Voltage, 600 Max Voltage, Low Z, Impedance.								
Part Number	Horsepower (HP)	Motor Amps (A)	Maximum Amps (A)	Inductance (uH)	Losses (W)	Weight (LBS)	Available Lug Kit	Terminal Hole Size (Inches)
KDRF24L	30	88	100	116	135	29	SLK10	0.28
KDRF25L	40	114	118	88.6	149	29	SLK10	0.28
KDRF26L	50	143	152	69.9	154	29	SLK21	0.28

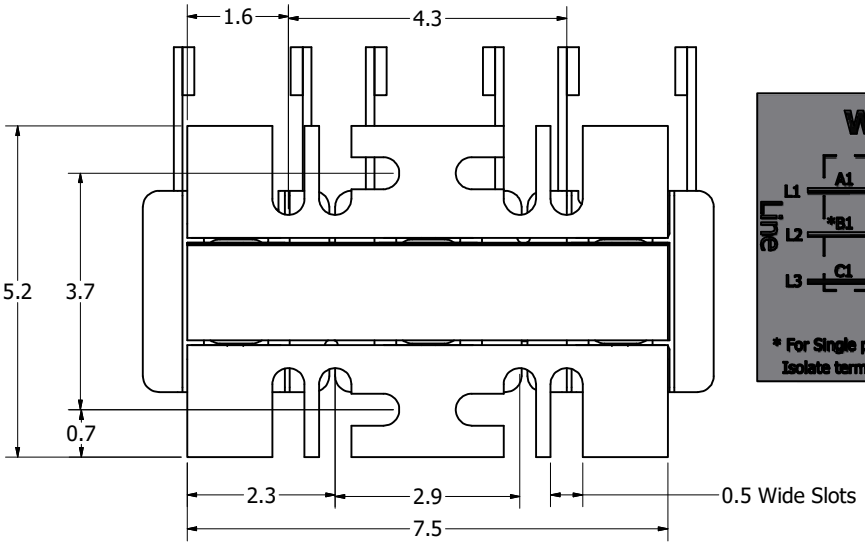


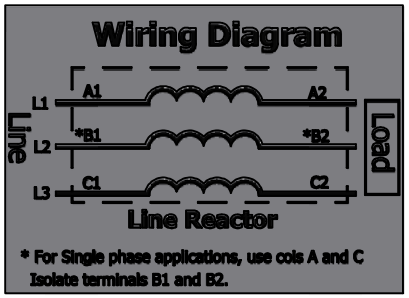






GREIF RD PS





Notes:

1. KDR Lug Kits sold separately. Contact TCI.
2. UL file number: cULus Listed File E116124.
3. KDR Drive Reactors Comply With The Thermal and Altitude Standards Set Forth by NEMA ST20-1992.
4. KDR IOM Manual Part Number 30895
5. NEC Current For 208/240 Volts, Horsepower Based On 208 Volts.
6. Material(s) Shall be RoHS Compliant
7. Customer Is Responsible For Installation To Meet All National And Local Electrical Codes.

NO	REVISION	DATE	BY
B	6516, Copper bus to Flag	12/13/2023	DSW

TOLERANCES (EXCEPT AS NOTED)
DECIMAL
.XX ± .25
.XXX ± .10
FRACTIONAL
± 1/32
ANGULAR
± 1°

TCI
An Allied Motion Company
W132N10611 Grant Drive
Germantown, WI 53022

KDR F Frame, (Flag)
Inductor Drawing

DRN. BY: DSW | DATE: 12/13/2023 | 107573-4DG
SCALE: 1:1.5 | APRVD: | SIZE: C | SHT. OF 1

Saginaw Control and Engineering
95 Midland Road Saginaw, MI 48638-5770
(800) 234-6871 - Fax: (989) 799-4524
SCE@SaginawControl.com

SCE-48EL3612SSLPPL

Product Specifications:

Part Number: SCE-48EL3612SSLPPL
Description: S.S. LPPL Enclosure
Height: 48.00"
Width: 36.00"
Depth: 12.00"
Est. Ship Weight: 131.00 lbs

Construction
- 0.075 In. stainless steel Type 304.
- Seams continuously welded and ground smooth.
- Flange trough collar around all sides of door opening.
- Collar studs 3/8-16 provided for mounting optional panels.
- Mounting holes in back of the enclosure for wall mounting.
- Mounting hardware, sealing washers and hole plugs included.
- Stainless steel concealed hinges.
- Removable and interchangeable doors.
- Black zinc die cast keylocking/padlocking handles.
- 3-point latching mechanism.
- Removable print pocket.
- Pour in place oil & water resistant gasket
- Ground stud on door and body.

Application
Designed to house electrical and electronic controls, instrumentation and components in indoor or outdoor locations. For outdoor application a drip shield and drain vent is recommended.

For details about the design, performance expectations, applications and design suggestions - See Design Considerations www.saginawcontrol.com/instman/considerations.pdf

Finish
#4 Brushed finish on all exterior surfaces. Optional sub-panels are powder coated white.

Industry Standards - (IS6)
- NEMA Type 3R, 4, 4X, 12 and Type 13
- UL Listed Type 3R, 4, 4X and 12
- CSA Type 4, 4X and 12
- IEC 60529
- IP 66

Notes
Special Instructions apply for IS3, IS4 and IS6 to maintain the environmental rating of Type 3R for these parts. Instructions are located on the enclosure door. Drip shield is required on IS3, drip shield is recommended on IS4 and IS6. Drain holes are required on all.

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SCE-8066ELJSS

Product Specifications:

Part Number: SCE-8066ELJSS
Description: S.S. ELJ Enclosure
Height: 8.00"
Width: 6.00"
Depth: 6.00"

Construction
- 0.063 In. stainless steel Type 304.
- Seams continuously welded and ground smooth.
- Flange trough collar around all sides of door opening.
- Pour in place oil & water resistant gasket
- 10-32 Standoffs provided for mounting optional panels.
- Removable hinges.
- Doors open 180 degrees.
- Black mini quarter turn latches.
- Latches are opened or closed with a screwdriver.
- Sealing washers and hole plugs included.
- Ground stud on door and body.
- Mounting feet included.
- Optional latches available.

Application
Designed to house electrical controls, instruments and components in areas which may be regularly hosed down or are in very wet or oily conditions. Provides protection from dust, dirt, oil, and water. For outdoor application a drip shield and drain vent is recommended.

For details about the design, performance expectations, applications and design suggestions - See Design Considerations www.saginawcontrol.com/instman/considerations.pdf

Finish
#4 brushed finish on all exterior surfaces. Optional sub-panels are powder coated white.

Industry Standards - (IS6)
- NEMA Type 3R, 4, 4X, 12 and Type 13
- UL Listed Type 3R, 4, 4X and 12
- CSA Type 4, 4X and 12
- IEC 60529
- IP 66

Notes
Special Instructions apply for IS3, IS4 and IS6 to maintain the environmental rating of Type 3R for these parts. Instructions are located on the enclosure door. Drip shield is required on IS3, drip shield is recommended on IS4 and IS6. Drain holes are required on all.

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SCE-N12FA66-230

Product Specifications:

Part Number: SCE-N12FA66-230
Description: Filter Fan. (230v)
Height: 9.84"
Width: 9.84"
Depth: 4.40"
Model: 4620A4033-S
Voltage: 50/60hz
CFM: 135.4/158.9

Application
Easy to install snap fit design for use in enclosures that require cooling but have limited space in NEMA 1 and 12 applications. Housing and grille are made of black heat resistant (ABS-FR), self-extinguishing material. Fans are available in 115 or 230 volt AC, 60/50 Hertz (HZ) single phase or 24 volt DC. Filter Class G3 EN 779 - Filter Fire Class F1 DIN 53438 Self-extinguishing.

Industry Standards - (IS24)
- UL Component Recognized

Notes
Type 12 - IEC 60529 IP 54
cULus Listed E498756
cULus File Component Recognized E358386
Motor w/ Thermal Protection

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SCE@SaginawControl.com

SCE-TSH25

Product Specifications:

Part Number: SCE-TSH25
Description: Heater - 25W
Height: 4.92"
Width: 1.61"
Depth: 1.61"
Est. Ship Weight: 0.35 lbs
Max. Current : 2.5

Application
PTC (Positive Temperature Coefficient)
Din rail clip design for 35mm Din Rail. Designed for protection from low temperatures, condensation and corrosion. Touch Safe with 2 screw terminal for standard AWG 14 wire. 110-240V AC or DC.

For low temperatures management use with thermostat

For condensate management no thermostat is necessary - continuous heat is most effective see installaton Instruction for sizing.

Industry Standards - (IS24)
- UL Component Recognized

Notes
UL File #E358386

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SCE@SaginawControl.com

SCE-TEMD

Product Specifications:

Part Number: SCE-TEMD
Description: Thermostat (Dual)
Height: 2.00"
Width: 2.00"
Depth: 2.00"
Est. Ship Weight: 0.25 lbs

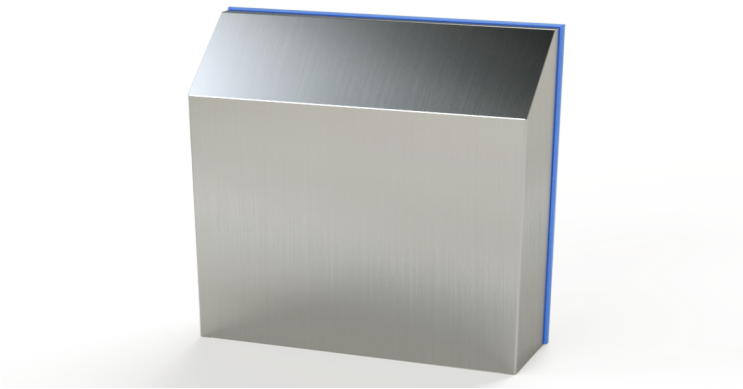
Application
Designed to regulate air temperature in enclosures that operate with heaters or fans. This mechanical bi-metallic thermostat has a set point range of 30° to 140° F and is easily installed on 35mm mounting rail. Dual functions as (NC) contact normally closed, or (NO) contact normally open, switch capacity 10 amp 120-250VAC Resistive load and 1 amp 120-250VAC Inductive load, 1.25 amp 24VDC.

Industry Standards - (IS24)
- UL Component Recognized

Notes
UL File # E164102

Saginaw Control and Engineering
95 Midland Road Saginaw, MI 48638-5770
(800) 234-6871 - Fax: (989) 799-4524
SCE@SaginawControl.com

SCE-RH6N4XSS



Product Specifications:

Part Number: SCE-RH6N4XSS
Description: Protection Hood. Hose-proof
Height: 15.40"
Width: 11.10"
Depth: 3.30"
Est. Ship Weight: 4.10 lbs

Application
Designed for use in conjunction with the Type 12 Fan and Filter Packages to increase the ingress protection rating of the assembly to a 4X.
Sanitary FDA compliant gaskets that make it easy to detect contamination.
Removable rain hood for maintenance and replacement of filter without tools.
Protect devices and ventilation against wind blown dust, rain, splashing water, hose direct water and corrosion.

Finish
Type 304 stainless with #4 brushed finish

Industry Standards - (IS6)
- NEMA Type 3R, 4, 4X, 12 and Type 13
- UL Listed Type 3R, 4, 4X and 12
- CSA Type 4, 4X and 12
- IEC 60529
- IP 66

Notes
UL Listed Type 3, 3R, 4, 4X and 12
File number E498756
IEC IP 65

EXCEL FLUID GROUP, LLC

Control Floats

Physical Properties	
Float Size:	2.74 in. x 4.83 in.
Cord:	18/2 SOW 125V
Float Material:	Polypropylene
Temperature Rating:	140 ^{0}F (60 ^{0}C)

Normally Opened

Mount Type	Length Options	
Suspended	25 ft.	#4000020
	30 ft.	#4000000
	40 ft.	#4000019
	50 ft.	#4000018
	100 ft.	#4000038
Pipe	15 ft.	#4000034
	25 ft.	#4000023
	30 ft.	#4000021
	40 ft.	#4000035

Normally Closed

Mount Type	Length Options	
Suspended	15 ft.	#4000036
	30 ft.	#4000039
	40 ft.	#4000040
	50 ft.	#4000037
Pipe	25 ft.	#4000024

Excel Fluid Group, LLC ● 5350 West 137th St. Brook Park, OH 44142 ● sales@excelfluidgroup.com
www.excelfluidgroup.com ● Phone: (216) 941-1500 ● Fax: (216) 941-9916

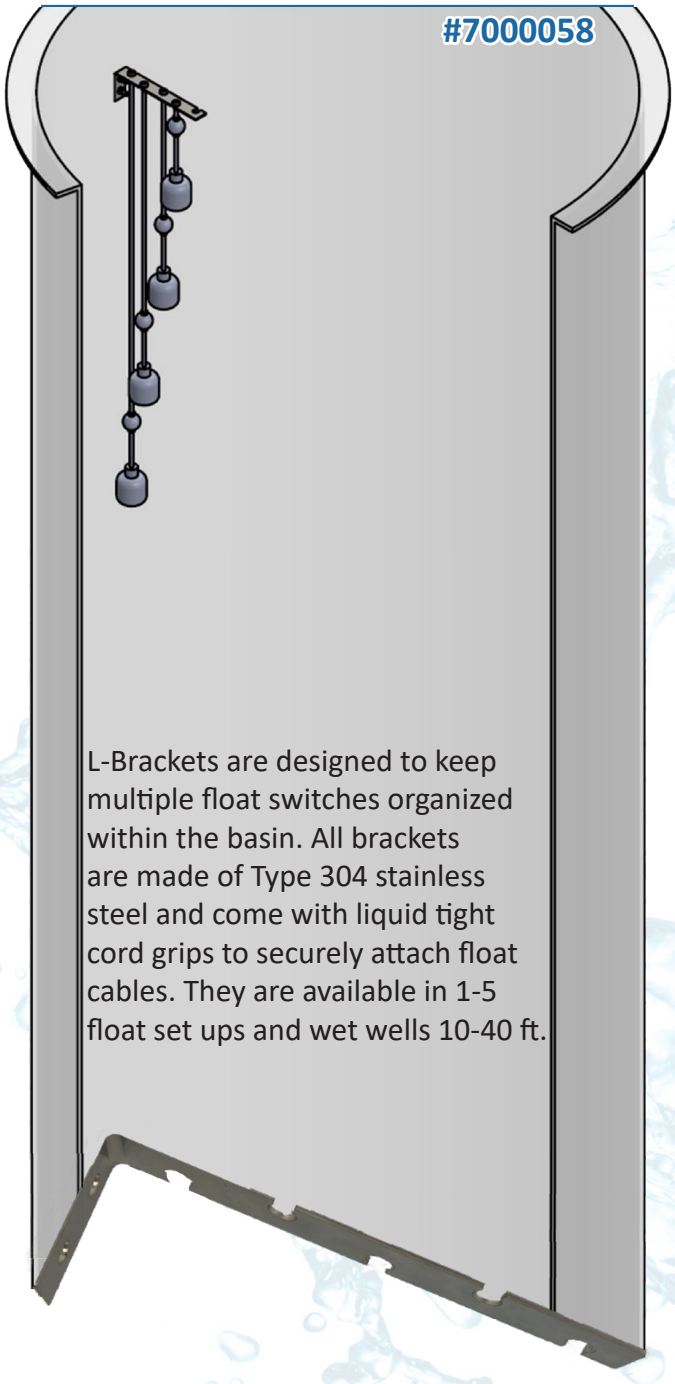
EXCEL

EXCEL FLUID GROUP, LLC

Cable Rack Brackets

L-Bracket

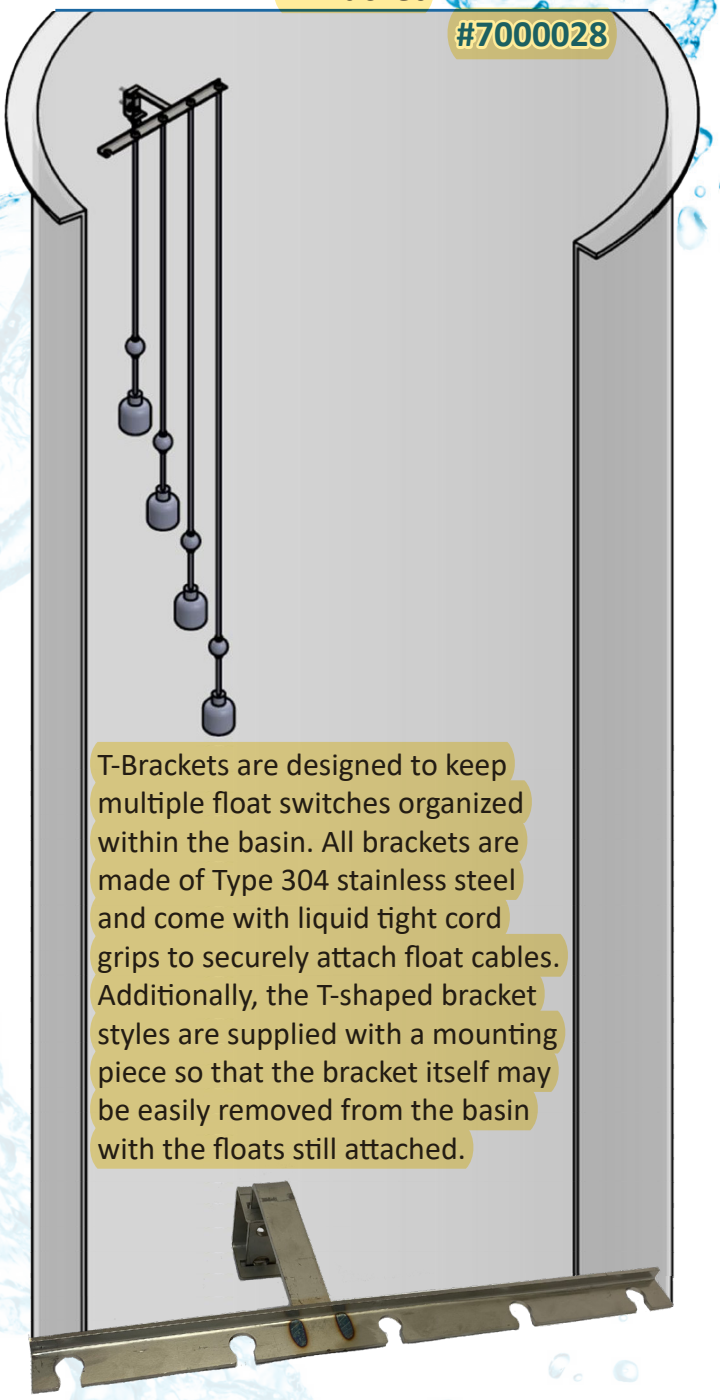
#7000058



L-Brackets are designed to keep multiple float switches organized within the basin. All brackets are made of Type 304 stainless steel and come with liquid tight cord grips to securely attach float cables. They are available in 1-5 float set ups and wet wells 10-40 ft.

T-Bracket

#7000028



T-Brackets are designed to keep multiple float switches organized within the basin. All brackets are made of Type 304 stainless steel and come with liquid tight cord grips to securely attach float cables. Additionally, the T-shaped bracket styles are supplied with a mounting piece so that the bracket itself may be easily removed from the basin with the floats still attached.

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