



Herbert, Rowland & Grubic, Inc.
Engineering & Related Services

AN EMPLOYEE-OWNED COMPANY

SUBMITTAL COMMENTS

Project:	Houck Manor Sanitary Sewer Extension	To:	Mid Atlantic Pump and Equipment
Owner:	West Hanover Township Water and Sewer Authority	From:	HRG
Submittal No:	1.0		
Specification Section:	33 33 00 Low Pressure Grinder Pump Station	HRG Project Number:	001761.0427
Submittal Name:	(Simplex)	Contract:	

APPROVED

☐

APPROVED AS CORRECTED

☒

REVISE AND RESUBMIT

☐

NOT APPROVED

☐

Approval is only for conformance with the applicable plans, rules and regulations for the project. Contractor is responsible for dimensions to be confirmed and correlated at the job site; for information that pertains solely to the fabrication processes or to techniques of construction; and for compliance with the engineering design.

HERBERT, ROWLAND & GRUBIC, INC.

Date: 5/6/19

By _____

COMMENTS:

1. Equipment Listing: Spare grinder pump shall be Model VS20-21 supplied with the quick connect cord.
 2. Electrical Voltage Verification – 230 Volt, 1 phase, 60 Hz.
 3. The level of the discharge pipe shall be 48" from the top of the basin.
 4. Pump cut sheet: Pump shall be Model VS20, not Model VH20 as indicated.
 5. Ipex VXE True Union Ball Valve cut sheet indicates valve is for 2.5" through 4" pipe sizes. Station pipe size is only 1.25". Provide cut sheet for true union ball valve for a 1.25" pipe size.
 6. Control panel enclosure shall be pad lockable.
 7. Submit an O&M Manual with each grinder pump station.
 8. Provide warranty for 36 months post startup.
 9. All grinder pump stations shall be delivered prior to September 1, 2019. Delivery of grinder pump stations can occur beginning in mid-July 2019. Coordinate delivery with the Owner.
-

SUBMITTAL

JOB NAME:	West Hanover Township Water & Sewer Authority Houck Manor Extension Project
ENGINEER:	Herbert, Rowland & Grubic, Inc. Harrisburg, PA
EQUIPMENT:	Low Pressure Simplex Grinder Pump Stations
PUMP MANUFACTURER:	FE Myers Ashland, OH
DISTRIBUTOR:	Mid Atlantic Pump & Equip. Co. Berlin, New Jersey Phone: 856-768-3880

Simplex Pump Stations Equipment Includes

<u>Qty.</u>	<u>Description</u>
56	3' Diameter x 8' Deep Fiberglass Basins. Each basin to Include: Anti Floatation Collar Fiberglass Basin Cover Myers VS20-21 Submersible Grinder Pump 2 HP, 230/1/60 Electric Motor Quick Connect Cable Base elbow assembly with lift out check valve 1-1/4" sch 80 PVC discharge piping with shutoff valve with extension handle Anti Siphon Valve Stainless Steel Upper Guide Bracket Stainless Steel Guide Rails Stainless Steel Lifting Chain (3) Float Control Switch Stainless Steel Float Switch Bracket Junction Box 3' Stainless Steel Flexible Discharge Coupling
56	Simplex Float Control Panel Outdoor Rated Enclosure HOA Switch Indicating Lights Alarm Horn & Beacon External Seal Fail Indicator Light
56	4" Inlet Hub (shipped loose for field installation)
2	Spare VRS20-21 Pumps VS20-21 Pumps with Quick Connect Cable
1	36" x 12" Basin Extension

Voltage Verification

JOB NAME: Houck Manor Sanitary Sewer Extension

OWNER: West Hanover Township Water and Sewer Authority

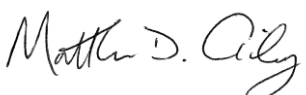
ENGINEER: Herbert, Rowland & Grubic, Inc.
~~CONTRACTOR.~~

I hereby certify that the following power supply is available at the project location for the equipment being supplied by Mid Atlantic Pump & Equipment Company on this project.

230 Voltage
 Phase
 Wire

If voltage is 3-phase, is there a high leg on the incoming power supply?

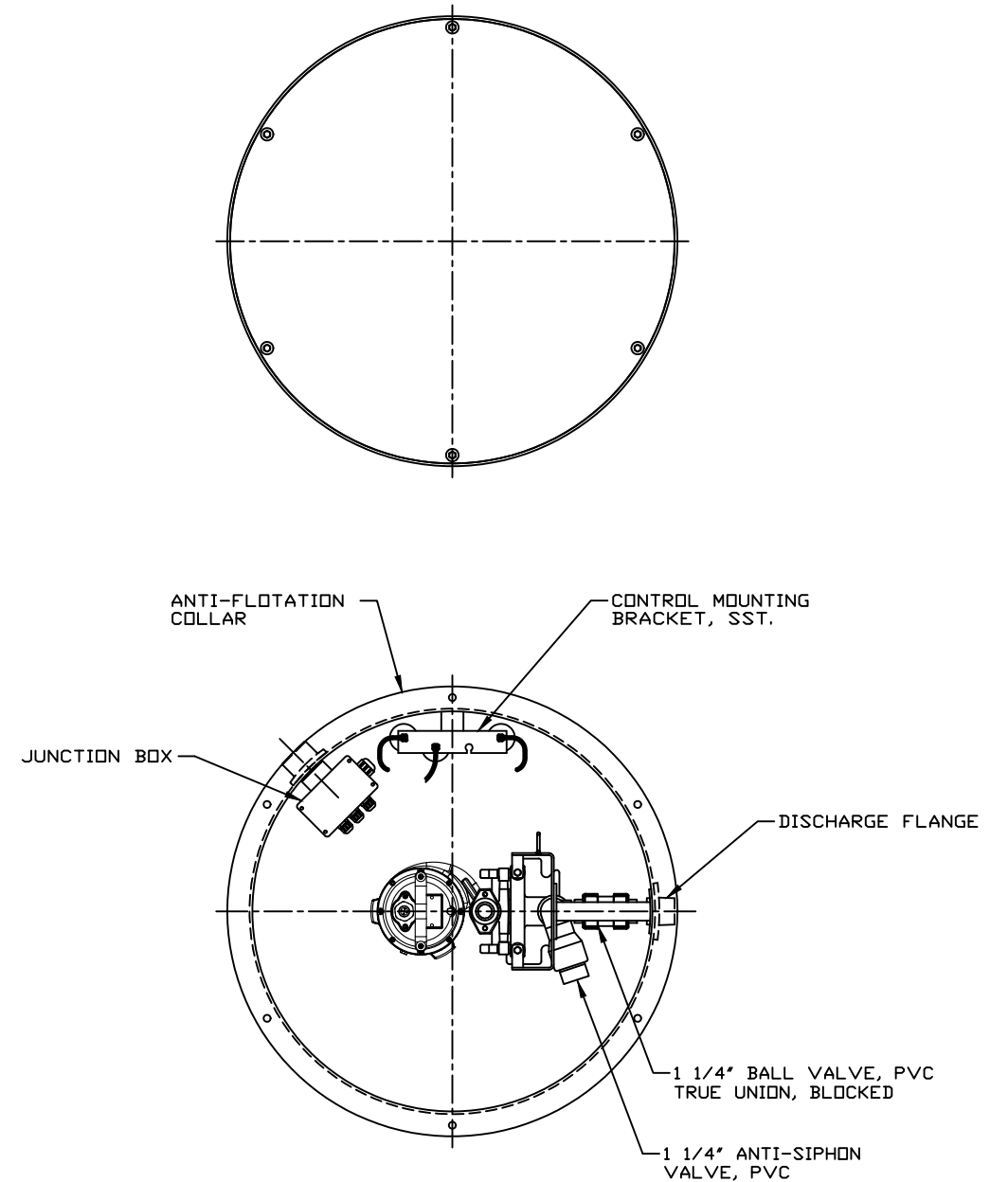
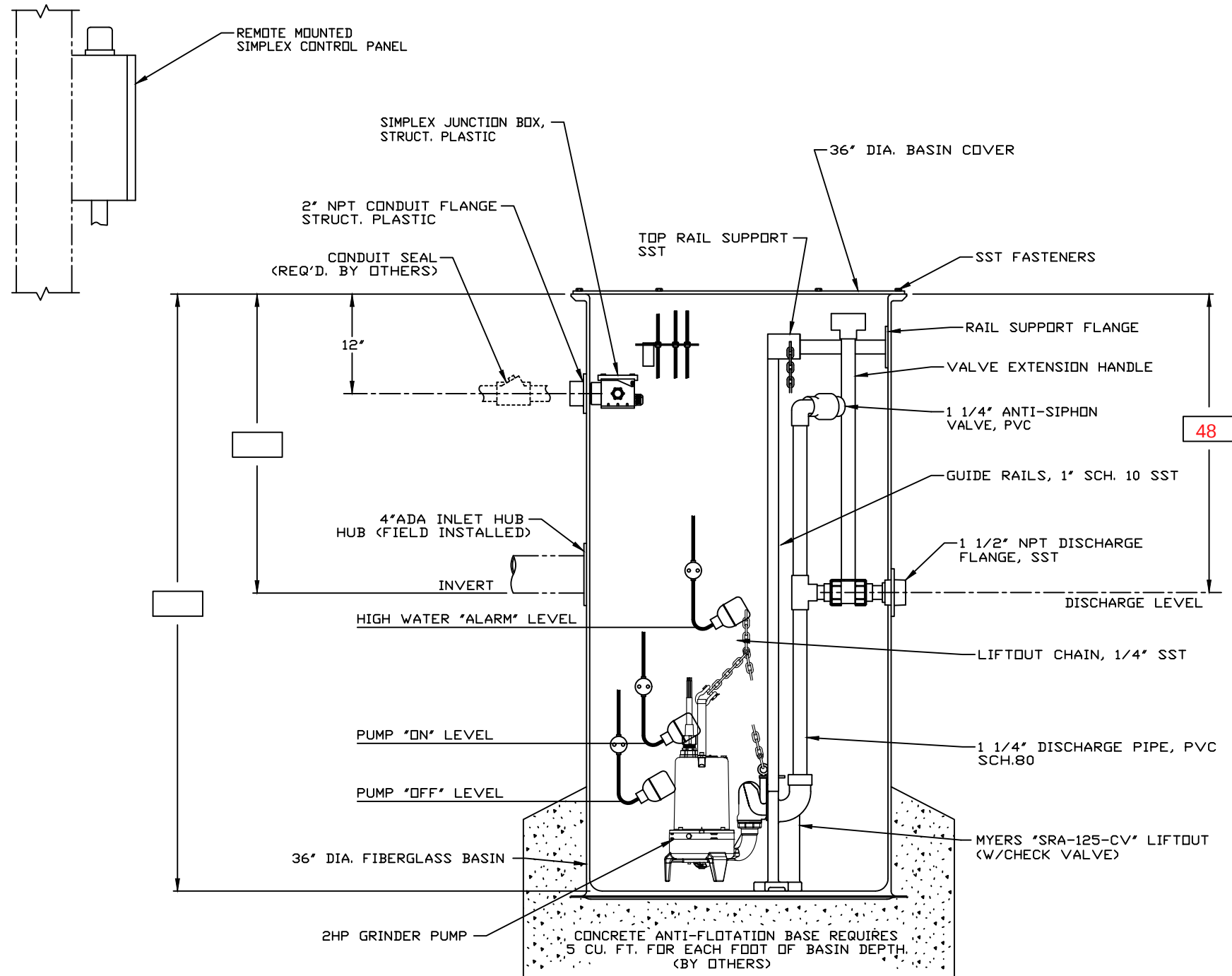
☐ Yes ☐ No


Signature

Matthew D. Cichy, P.E.
Print Name

5/1/19
Date

PUMP STATION



CHANGES		DO NOT SCALE DRAWING Tol. Unless Specified Angular $\pm 1/2^\circ$ Fractional $\pm 1/64$ Decimal $\pm .005$	MATERIALS SPEC.		SCALE	ES-3122D
G	R		DSGN	S. ETZEL	11 FEB 03	
F	P		CHK			
E	N		APP			
D	M					
C	L					
B	K					
A	H					

CONFIDENTIAL
PROPERTY OF
Myers
F.E. Myers
A Tennant Company
Ashland, Ohio

INSTALLATION, W/RAILS
36" X 72" BASIN, REMOTE PANEL

Filament Wound Basins

Diameters to 60"

Lengths to 20'

Unsurpassed Excellence that Meets Your Specifications

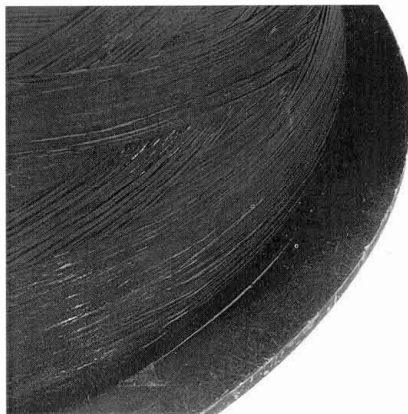
MYERS CONTINUOUS FILAMENT WOUND BASINS ARE THE STRONGEST BASINS IN THE MARKET. The extraordinary strength, consistent wall thickness and impact resistance provide structural integrity for various soil conditions and installation practices. For more information on Myers basins, contact your Myers distributor, or the Myers Ohio sales office at 419/289-1144.

- High strength to weight ratio
- 65% glass content
- Excellent impact resistance
- Directional strength
- No "creeping" under stress
- Even load distribution among filaments
- Superior tensile strengths (hoop & axial)
- Corrosion resistant



Anti-Flotation Base Plate

- Standard on all basins
- Fiberglass
- Corrosion resistant



WHERE INNOVATION MEETS TRADITION

Filament Wound Basins

Diameters to 60"

Lengths to 20'

Extraordinary Strength

Myers filament wound basins are manufactured with premium E-type continuous glass fibers maintained in high constant tension during the manufacturing process. The tensioned fibers squeeze out excess resin producing superior strength basins with 65% glass content.

Continuous filament wound basins are superior to chop spray basins.

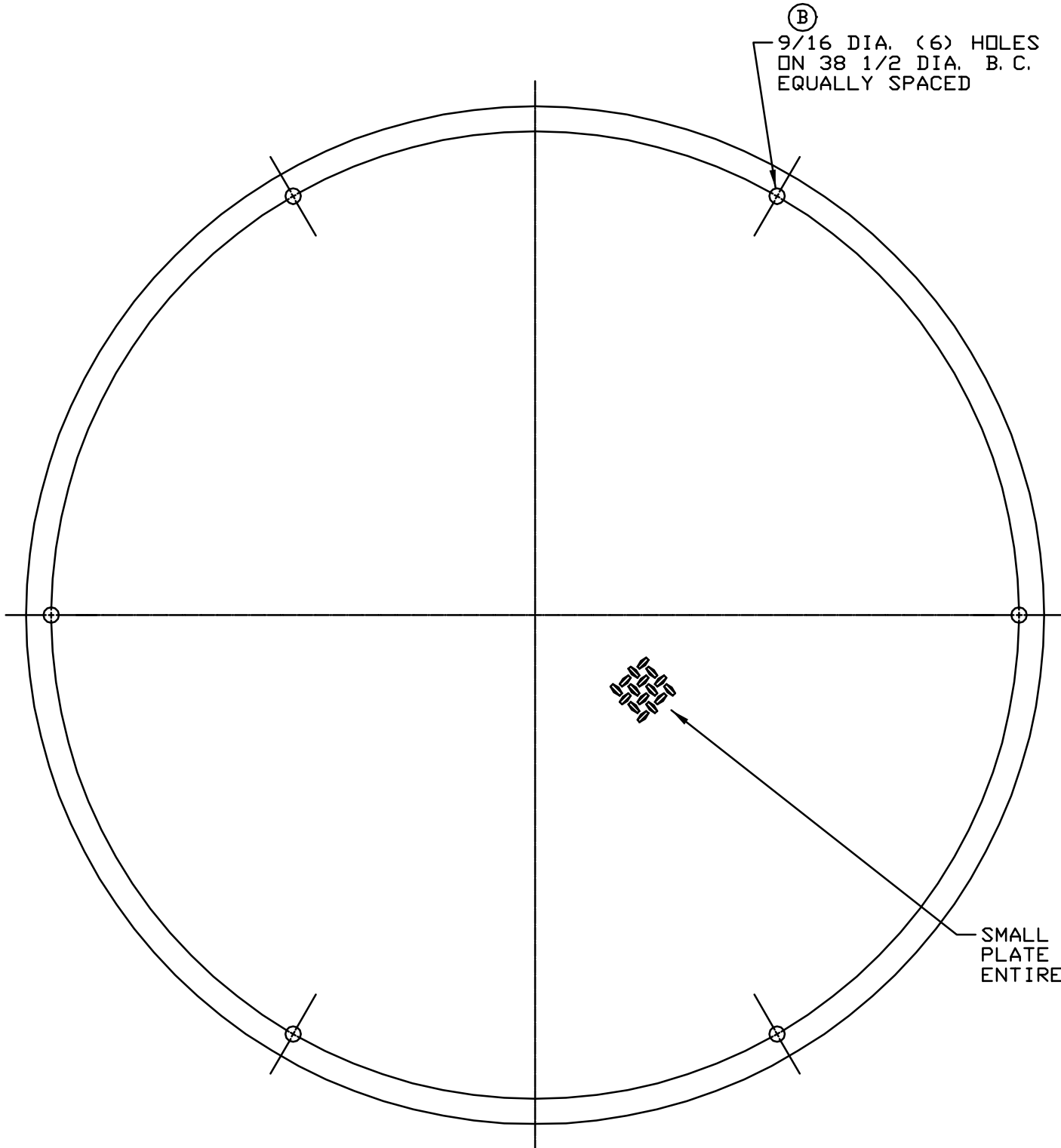
Basin Comparison

Physical Properties	Myers Filament Wound Helical & Hoop Wrap	Competition Chop Spray
% Glass	65 - 70%	20 - 30%
Tensile Strength	100,000 - 150,000 psi (axial & hoop directions)	15,000 - 30,000 psi
Modulus - Hoop Modulus - Axial	5,000,000 2,800,000	2,000,000 or less 2,000,000 or less
Density (lbs/cu in)	0.065	0.046
Maximum Applied Load (prior to buckling)	6 psi	2 psi
Wall Thickness (required to withstand same loads - i.e. 24" x 72" basin)	.1236 wall	.3300 wall

24951C036

69

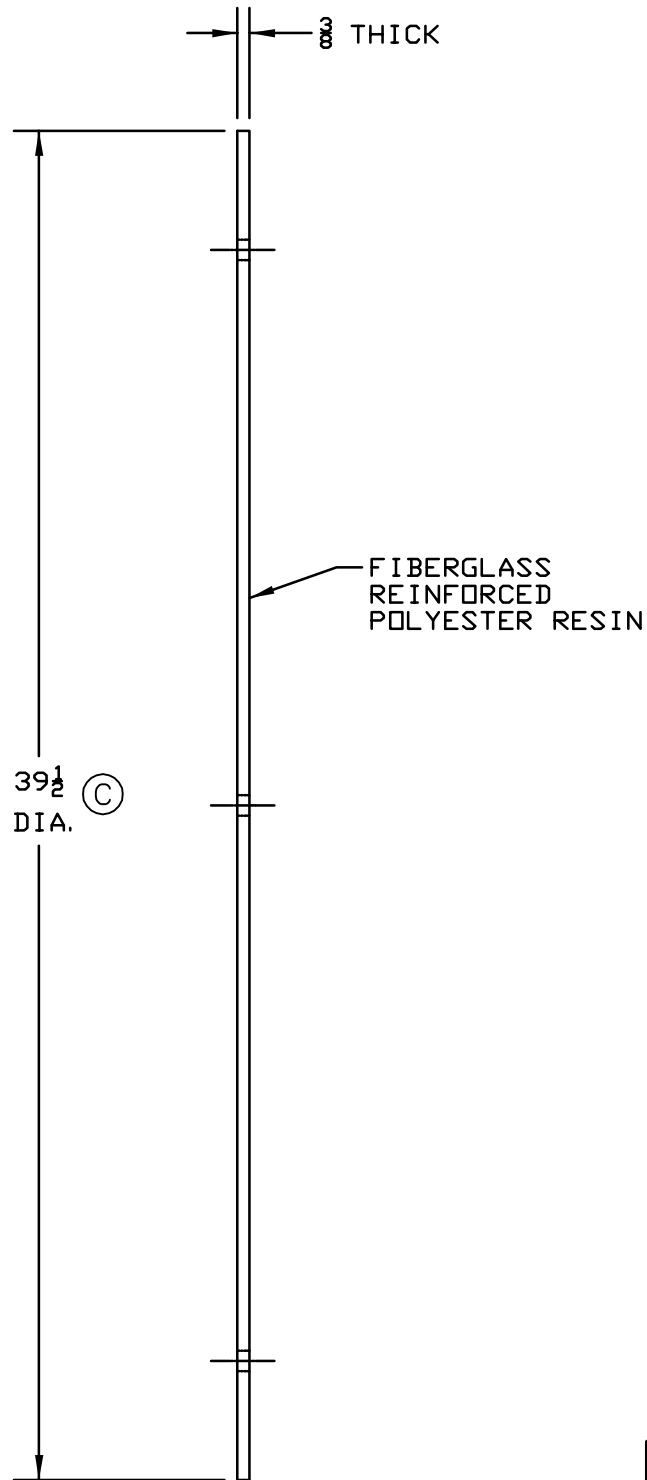
PRINT DISTRIBUTION CODE: 34 31A 21



Ⓑ
9/16 DIA. (6) HOLES
ON 38 1/2 DIA. B. C.
EQUALLY SPACED

SMALL OR MEDIUM TREAD
PLATE DESIGN (TO COVER
ENTIRE SIDE - TOP ONLY)

NOTE: RESIN MUST HAVE 'UV'
STABILIZATION IN IT.
COLOR: GRASS GREEN



EDGE MUST BE SANDED SMOOTH
& ROUNDED. SEAL W/ RESIN

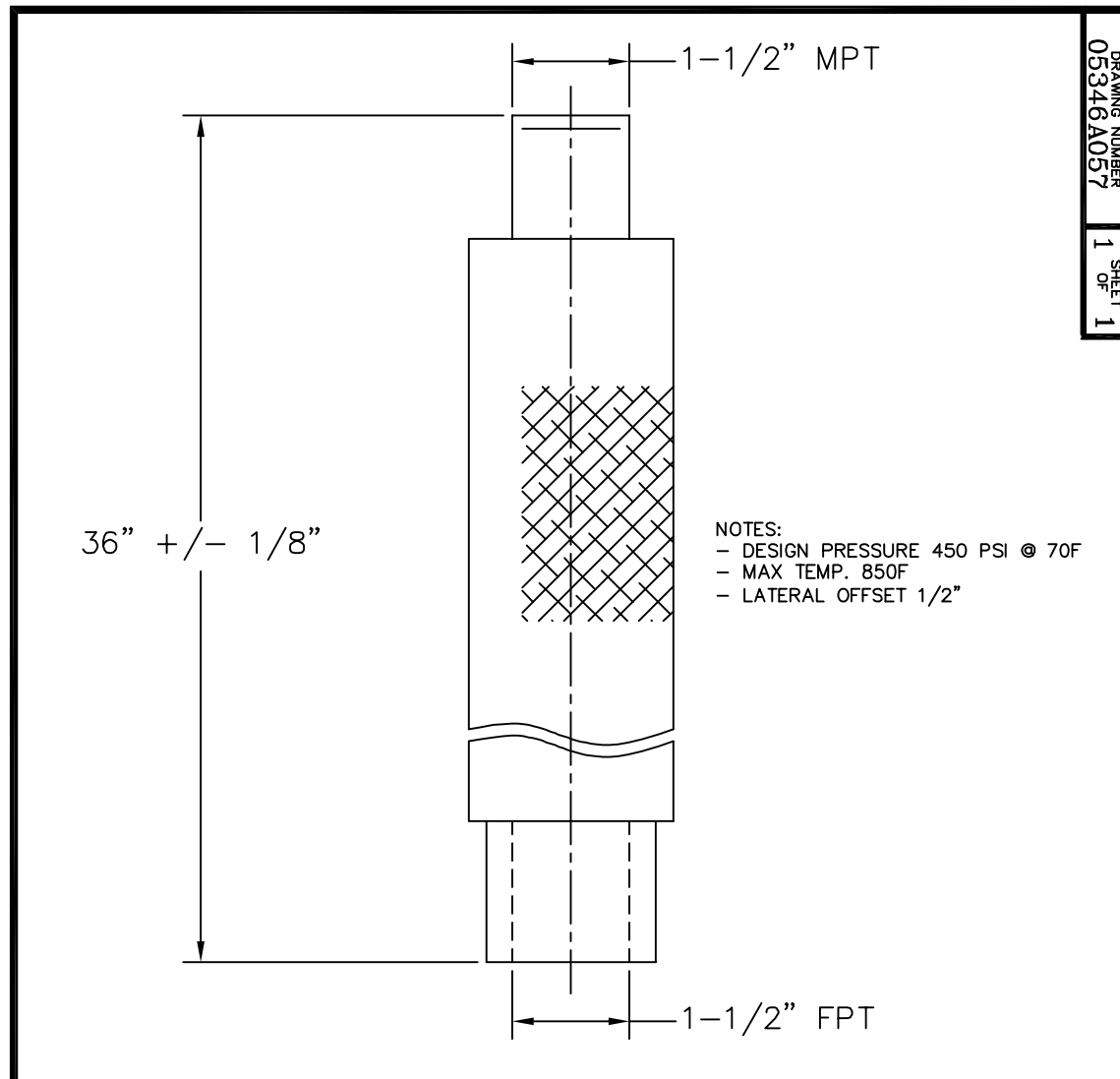
Ⓒ 39 1/2 DIA. WAS 40 1/2 DIA. UPDATED PER SUPPLIER (PCD17-0114)
Ⓑ 9/16\" DIA. BOLT HOLE WAS 5/8\" DIA. PER ECD 05-267
Ⓐ REDRAWN ON CAD, SHOWN WITH TREADPLATE (FLAT) DESIGN - NO ECN

COMP.		DWG.	PART #	REV.
CHANGES		DO NOT SCALE DRAWING		
G	R	Tol. Unless Specified		
F	P	1/2\" = 125 microinches max.		
E	N	Angular ± 1/2°		
D	M	Fractional ± 1/64		
C	L	Decimal .xx = ± .01		
B	K	.xxx = ± .005		
A	H	READ ALL NOTES		
		Break all corners .010 Max.		
		unless otherwise specified		
		DGSI	CHK	APP
		S. ETZEL	14 FEB 00	H. E.

CONFIDENTIAL
Myers
F. E. Myers
A Penbair Company
Ashland, Ohio

COVER, 36\" BASIN
FIBERGLASS

SCALE
1/4\"=1'
24951C036



DRAWING NUMBER
05346A057

SHEET
1 OF 1

- NOTES:
- DESIGN PRESSURE 450 PSI @ 70F
 - MAX TEMP. 850F
 - LATERAL OFFSET 1/2"

				MATERIAL: T-304 SST		Pentair Pump Group	
				HEAT TREAT:			
				COMPANY CONFIDENTIAL: INFORMATION CONTAINED HEREIN IS CONFIDENTIAL, IT IS THE PROPERTY OF PENTAIR PUMP GROUP, IT IS TO BE USED SOLELY FOR THE PURPOSE PROVIDED, AND IT IS NOT TO BE DISCLOSED TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF PENTAIR PUMP GROUP.			
A	REL12-0044	02/13/12	RELEASE FOR PRODUCTION	WRM	COUPLING, PIPE 1-1/2" MPT X 1-1/2" FPT, BRAIDED FLEX HOSE ASSEMBLY		
REV.	LOG NO.	DATE	REVISION DESCRIPTION	BY			
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES				DO NOT SCALE DRAWING			
● DECIMAL ●		● FRACTIONAL ●					
2 PLACE .XX ± .010"		UP TO 12" ± 1/32"					
3 PLACE .XXX ± .005"		12" & UP ± 1/16"					
ANGLES ± 0° 30'		ANGLES ± 2°					
FINISH = 125 RMS							
				PLOT SCALE HALF	PART NUMBER 05346A057	SIZE A	DRAWING NUMBER 05346A057
						CHECKED BY .	1 SHEET OF 1
							REV. A

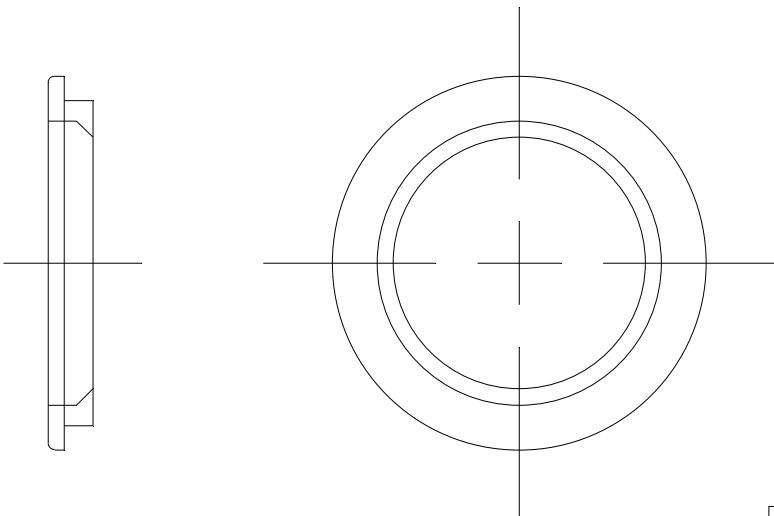
PRINT DISTRIBUTION CODE:

BOOK 21(3)

24335A000

MyersCADD

PAGE 1 OF 1

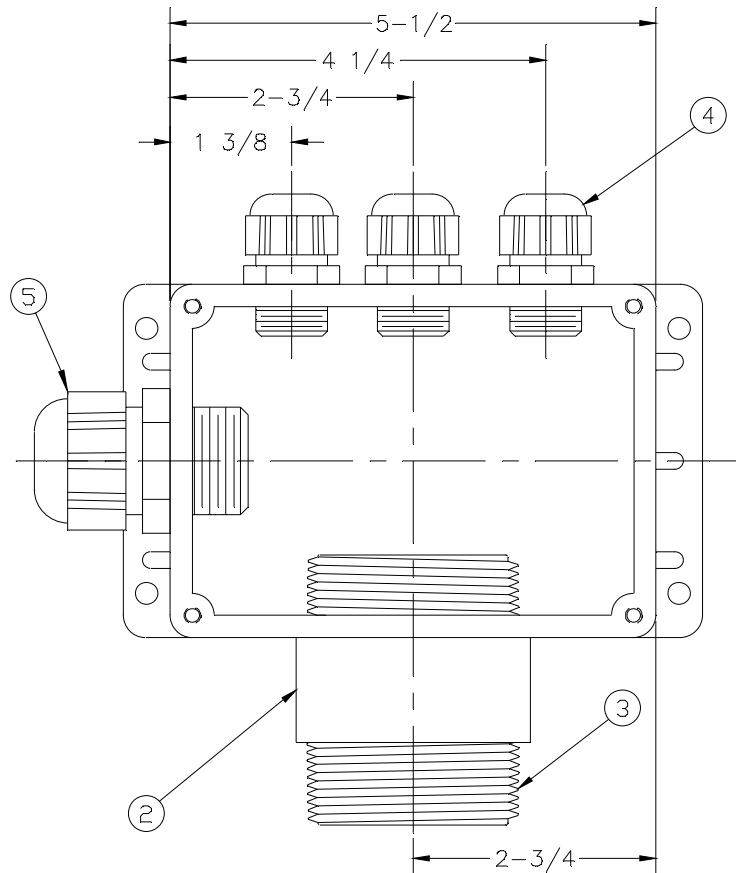
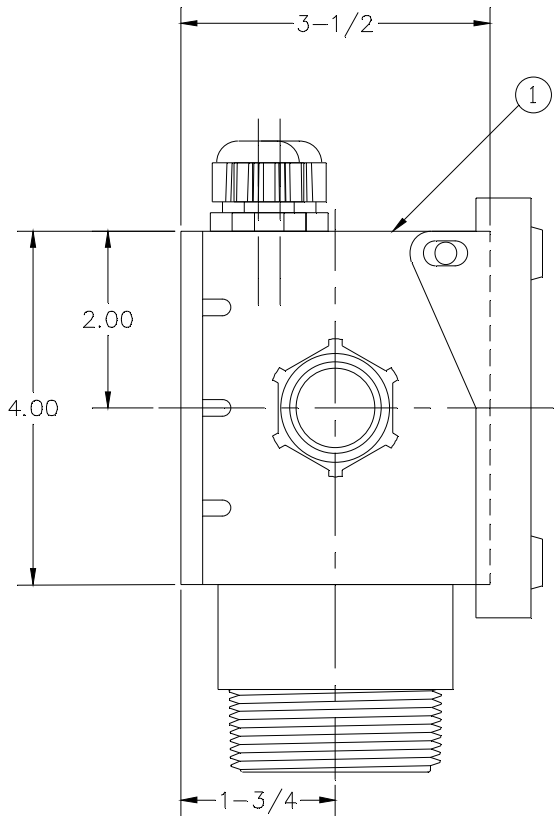
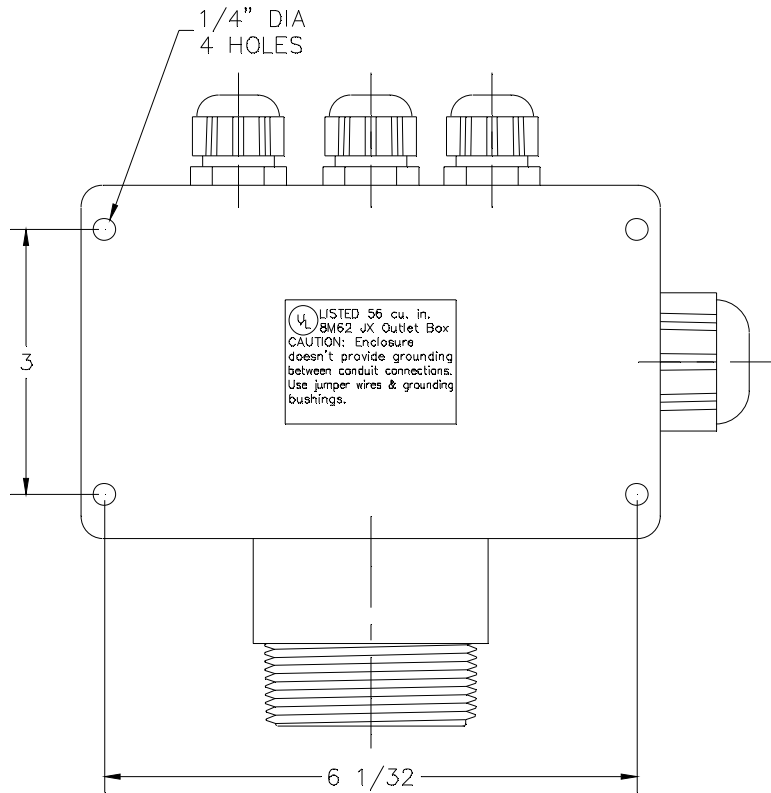


RUBBER
BASIN INLET
PIPE ADAPTER

PART NO.	FOR PIPE SIZE	MFGR. NO.	REMARKS	STORE DEPT.
24335A000	2	GA-2AAF	AK INDUSTRIES ADAPT-A-FLEX FOR PVC	20
24335A001	4		(WITH LABEL) PURCHASED AS 24335A101	20
24335A002	6		(WITH LABEL) PURCHASED AS 24335A102 (ECN 24335A001)	20
24335A003	3	GA-3AAF	AK INDUSTRIES ADAPT-A-FLEX FOR PVC	20
24335A004	4		(WITH LABEL) PURCHASED AS 24335A104 (ECN 24335A001)	20
24335A005	6		(WITH LABEL) PURCHASED AS 24335A105 (ECN 24335A001)	20
24335A006	1 1/2	GA-1-2AAF	AK INDUSTRIES ADAPT-A-FLEX FOR PVC	20
24335A007	1 1/4	GA-1-4AAF	AK INDUSTRIES ADAPT-A-FLEX FOR PVC	20
24335A101	4	GA-4AAF40	AK INDUSTRIES ADAPT-A-FLEX FOR PVC	20
24335A102	6	GA-6AAF40	AK INDUSTRIES ADAPT-A-FLEX FOR PVC	20
24335A104	4	GA-4AAF35	AK INDUSTRIES ADAPT-A-FLEX FOR SDR	20
24335A105	6	GA-6AAF35	AK INDUSTRIES ADAPT-A-FLEX FOR SDR	20

D ADDED -A007			CHANGES		DSGN			DATES
C ADDED -A006; REVISED MFGR. PART NUMBERS			D	13JUN97	SE	DWG	PHILIP MOTTER	
B 24335A001, 24335A101 WAS A104 IN ERROR			C	27SEP96	SE	CHK		
A REDRAWN, CHGD A1,A2,A4,A5 -- ADDED PURCH. PART NOS.			B	PM5FEB92		APP		
			A	PM 6FEB90		M. E.		

ITEM NO.	DESCRIPTION	QTY	12870-000-1	12870-001-1	12870-002-1
1	NORYL NEMA 6 JUNCTION BOX	1	ASI-JX	ASI-JX	ASI-JX
2	PVC MALE ADAPTER (CARLON)	1	2" (E943J)	2" (E943J)	2" (E943J)
3	PVC NIPPLE - THREADED ONE END	1	2" NPT	2" NPT	2" NPT
4	CORD GRIP 1/2" NPT (LAPP-NYLON)	3	.230-.354 (1/2" NPT #SLRN13)	.230-.354 (1/2" NPT #SLRN13)	.230-.354 (1/2" NPT #SLRN13)
5	CORD GRIP (HEYCO-NYLON)	1	.23-.55 (1/2" NPT #3200)	.45-.71 (3/4" NPT #3234)	.59-1.00 (1" NPT #8437)



- AUTHORIZED SUPPLIER:
ANCHOR SCIENTIFIC, INC.
- NOTES:
- ITEMS NOS. 2 & 3 ARE SOLVENT BONDED TO JUNCTION BOX
 - SILICON TO BE APPLIED TO CORD GRIP THREADS

E	06-575	03-05-07	REVISED (3) FLOAT GRIP SIZES	SE	MATERIAL: -----		HYDROMATIC PUMPS 			
D	03-454	11-4-03	REMOVED HOT STAMP NOTE	TSD						
C	97829	10-29-97	ADDED BOTTOM VIEW/CHANGED BOM	DLC						
B	97586	6-9-97	CHANGED PRINT	DLC						
A	97M52	4-9-97	RELEASE FOR PRODUCTION	WRM			J-BOX MTG ASSEMBLY TYPE 6 SIMPLEX, 3 FLOATS DRAWN BY WRM DATE 4-9-97 CHECKED BY 1 SHEET OF 1 PART NUMBER CHARTED SIZE B DRAWING NUMBER 12870-000-1 REV. E			
REV.	LOG NO.	DATE	REVISION DESCRIPTION	BY						
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES				DO NOT SCALE DRAWING						
● DECIMAL ● ● FRACTIONAL ●										
2 PLACE .XX ± .010" UP TO 12" ± 1/32"										
3 PLACE .XXX ± .005" 12" & UP ± 1/16"										
ANGLES ± 0° 30' ANGLES ± 2°										
FINISH = 125 RMS				PLOT SCALE 1 = 2						

PUMPING EQUIPMENT



V2 GRINDER SERIES

SHREDDING WASTEWATER CHALLENGES



PATENTED AXIAL
CUTTER TECHNOLOGY



ADVANCED HYDRAULICS



LEGENDARY SEAL
LEAK DETECTION

MYERS® V2 SERIES SUBMERSIBLE GRINDER PUMPS

The Myers V2 series grinder is engineered from the ground up, in order to overcome the increased debris and higher pressure required in today's wastewater environment. It features a patented axial cutter design and semi-open impeller to effectively macerate challenging sewage solids into a fine slurry.

Watch the video at www.Femyers.com



POLY ROPE



SHOP RAG



SWIFFERS®



MOP HEAD



PATENTED AXIAL CUTTER TECHNOLOGY

Easily slices through solids and trash found in domestic wastewater without roping or clogging.



ADVANCED HYDRAULICS

The only single stage 2 HP grinder that can deliver up to 185' of lift for superior performance and reliability.



LEGENDARY SEAL LEAK DETECTION

True early warning system for reduced downtime and maintenance costs.

A detailed cross-sectional diagram of a centrifugal pump assembly. The diagram shows the internal components, including the impeller mounted on a central shaft. The shaft is supported by bearings (D, E, H) and a coupling (I). The impeller is connected to the shaft via a coupling (F). The pump housing is shown in green, and the impeller is in red. Various components are labeled with letters A through I.

- NEW! Optional quick disconnect cord available for ease of maintenance
- Cable jacket sealed by compression fitting; individual wires sealed by compression grommet for double seal protection against water ingress
- Replace power cord without disturbing motor for ease of maintenance

- Maximizes heat dissipation; provides constant bearing lubrication for long life
- High torque start/run capacitor for single or three-phase motors, assured starting under heavy loads

- Corrosion resistant, reduces shaft deflection for long life

- Absorb both axial and radial loads for increased durability

- In oil-filled seal chamber for continuous lubrication, superior motor protection

- Located in seal chamber instead of motor area for true early warning of water leaks. Allows corrective action before costly motor or bearing failure occurs.
- Activates warning light in control panel

- Provides improved performance, resists clogging
- Pump-out vanes help keep trash from seal, reduces pressure at seal face for longer life

- Constructed of 440 SST hardened to 57-60Rc for long life
- Easily replaceable without dismantling pump

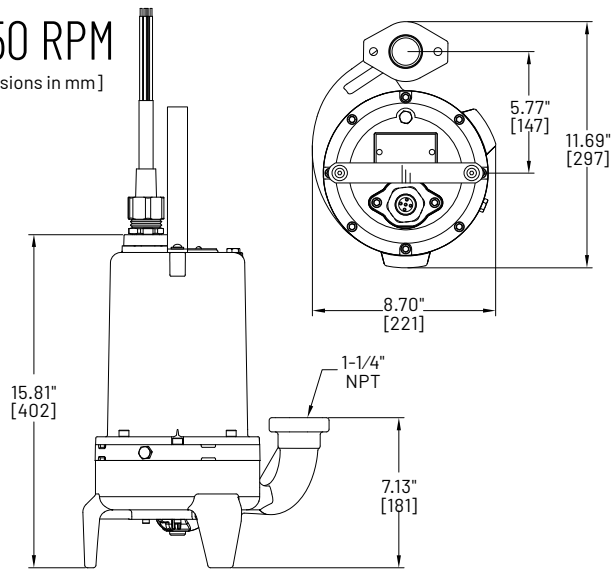
- Cast iron 1-1/4" NPT vertical flanged discharge

	V/Ph/Hz	HP	Start Amps	FL Amps	Full Load kW	Start KVA	FL KVA	NEC Code Letter	Service Factor	Model	Standard Cord	
											20'	35'
High Head	230/1/60	2	49	18.5	4.2	11.27	4.26	G	1	Catalog Eng	VH20-21-20 28148D000	VH20-21-35 28148D004
	200/3/60	2	53	12.5	3.9	18.3	4.33	L	1	Catalog Eng	VH20-03-20 28148D001	VH20-03-35 28148D005
	230/3/60	2	46	12	3.9	18.3	4.77	L	1	Catalog Eng	VH20-23-20 28148D002	VH20-23-35 28148D006
	460/3/60	2	23	6	3.9	18.3	4.77	L	1	Catalog Eng	VH20-43-20 28148D003	VH20-43-35 28148D007
	575/3/60	2	25	5	3.9	24.9	4.98	L	1	Catalog Eng	VH20-53-20 28148D020	VH20-53-35 28148D021
	200/1/60	2	66	16	3.2	13.2	3.2	G	1	Catalog Eng	VS20-01-20 28151D020	VS20-01-35 28151D021
	230/1/60	2	49	13.5	3.2	11.27	3.12	G	1	Catalog Eng	VS20-21-20 28151D000	VS20-21-35 28151D004
	200/3/60	2	53	10	3.2	18.3	3.46	L	1	Catalog Eng	VS20-03-20 28151D001	VS20-03-35 28151D005
	230/3/60	2	46	9	3.2	18.3	3.58	L	1	Catalog Eng	VS20-23-20 28151D002	VS20-23-35 28151D006
	460/3/60	2	23	4.2	3.2	18.3	3.35	L	1	Catalog Eng	VS20-43-20 28151D003	VS20-43-35 28151D007
575/3/60	2	25	5	3.9	24.9	4.98	L	1	Catalog Eng	VS20-53-20 28151D022	VS20-53-35 28151D023	
High Flow	200/1/60	2	66	16	3.2	13.2	3.2	G	1	Catalog Eng	VF20-01-20 28247D020	VF20-01-35 28247D021
	230/1/60	2	49	13.5	3.2	11.27	3.12	G	1	Catalog Eng	VF20-21-20 28247D000	VF20-21-35 28247D004
	200/3/60	2	53	10	3.2	18.3	3.46	L	1	Catalog Eng	VF20-03-20 28247D001	VF20-03-35 28247D005
	230/3/60	2	46	9	3.2	18.3	3.58	L	1	Catalog Eng	VF20-23-20 28247D002	VF20-23-35 28247D006
	460/3/60	2	23	4.2	3.2	18.3	3.35	L	1	Catalog Eng	VF20-43-20 28247D003	VF20-43-35 28247D007
	575/3/60	2	25	5	3.9	24.9	4.98	L	1	Catalog Eng	VF20-53-20 28247D022	VF20-53-35 28247D023

Performance Data and Dimensions

3450 RPM

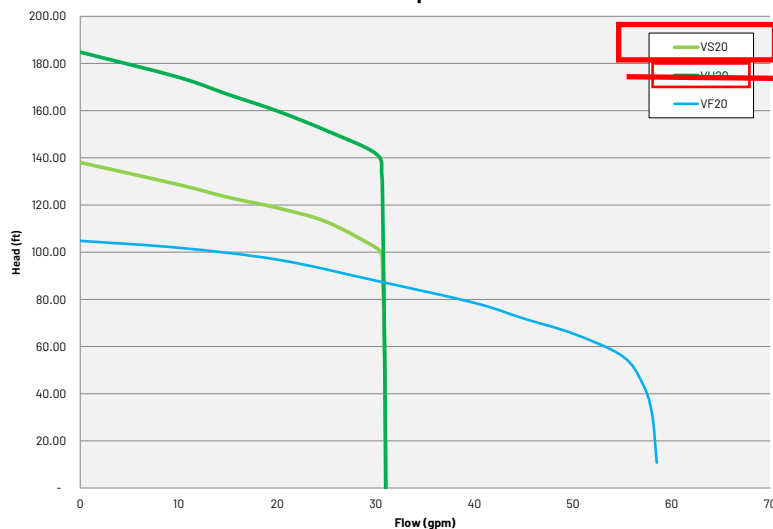
[Dimensions in mm]



Product Capabilities

Capacities To	58.5 gpm	221.4 lpm
Heads To	185 ft.	56.34 m
Liquids Handling	domestic raw sewage	
Intermittent Liquid Temp.	up to 140°F	up to 60°C
Winding Insulation Temp. (Class F)	311°F	155°C
Motor Electrical Data (Single phase motors are capacitor start type. Myers control panels or capacitor kits are recommended for proper operation and warranty.)	2 hp, 3450 rpm 1 ph - capacitor start/run. 230 volts; 60 Hz 3 ph - induction run 200, 230, 460 volts, 60 Hz	
Std. Third Party Approvals	CSA	
Acceptable pH Range	6 - 9	
Specific Gravity	.9 - 1.1	
Viscosity	28 - 35 SSU	
Discharge (Flange Dia.)	1-1/4 in.	31.75 mm
Min. Sump Diameter		
Simplex	24 in.	61.0 cm
Duplex	36 in.	91.4 cm

2HP Pump Curves



Construction Materials

Motor Housing, Seal Housing, Cord Cap and Volute Case	Cast Iron, Class 30, ASTM A48
Impeller	Semi-Open, Stainless Steel
Mechanical Seals: Standard Optional	Double Tandem Carbon and Ceramic Lower Tungsten Carbide
Pump, Motor Shaft	416 SST
Fasteners	300 Series SST
Rotating Cutter, Stationary Cutter	440 SST 57-60 Rockwell



1101 Myers Parkway | Ashland, OH 44805 | Ph: 855.274.8948 | pentair.com/pentair-myers

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APPURTENANCES



SRA-125-CV shown
(pump not included)

MYERS[®]
SRA SERIES
1¼" TO 3" LIFT-OUT PACKAGES
FOR GRINDER, SEWAGE AND
EFFLUENT PUMPS

MYERS® SRA SERIES

Lift-out Packages

Technical Information

Myers SRA Lift-out Package makes installation and service of grinder, sewage and effluent pumps safer and easier. The SRA adapts to nearly any vertical discharge wastewater pump from 1-1/4" to 3". Support brackets are stainless steel for sewage, dewatering or effluent pumping applications.

NOTE: SRAX-125 package available for Class 1, Division 1, Groups C & D installations.

For more information on safer, easier pump installation and service call your Myers distributor today, or the Myers Ashland sales office at 419-289-1144.

Lift-out Package Offers Ease of Service and Reinstallation.

- Fast and easy pump removal.
- No need for personnel to enter basin.
- Offered with or without check valve.
- Handles 1-1/4" to 3" discharge pumps.
- Heavy-duty cast iron construction.
- Stainless steel brackets ensure parts will not corrode.
- Positive machine fit with O-ring seal.

System includes:

- Mounting base.
- Lift-out elbow with check valve.
- Guide plate.
- Fasteners and O-rings.



Construction Materials					
	SRA-125	SRA-150	SRA-200	SRA-300	SRA-320
Elbow Size	1-1/4" x 2"	1-1/2" x 2"	2" x 2"	3" x 3"	2" x 3"
Guide Plate	SST	Galv/SST	Galv/SST	Galv/SST	Galv/SST
Lift-out Elbow w/check valve	Cast Iron**	Cast Iron	Cast Iron	Cast Iron	Cast Iron
Mounting Base	Cast Iron	Cast Iron	Cast Iron	Cast Iron	Cast Iron
Fasteners	SST	SST	SST	SST	SST
O-Ring	BUNA-N	BUNA-N	BUNA-N	BUNA-N	BUNA-N
Guide Rails*	1" SST	3/4" SST	3/4" SST	3/4" SST	3/4" SST
Top Rail Support*	TRS-100	TRS-75	TRS-75	TRS-75	TRS-75
Chain*	Galv/SST	Galv/SST	Galv/SST	Galv/SST	Galv/SST

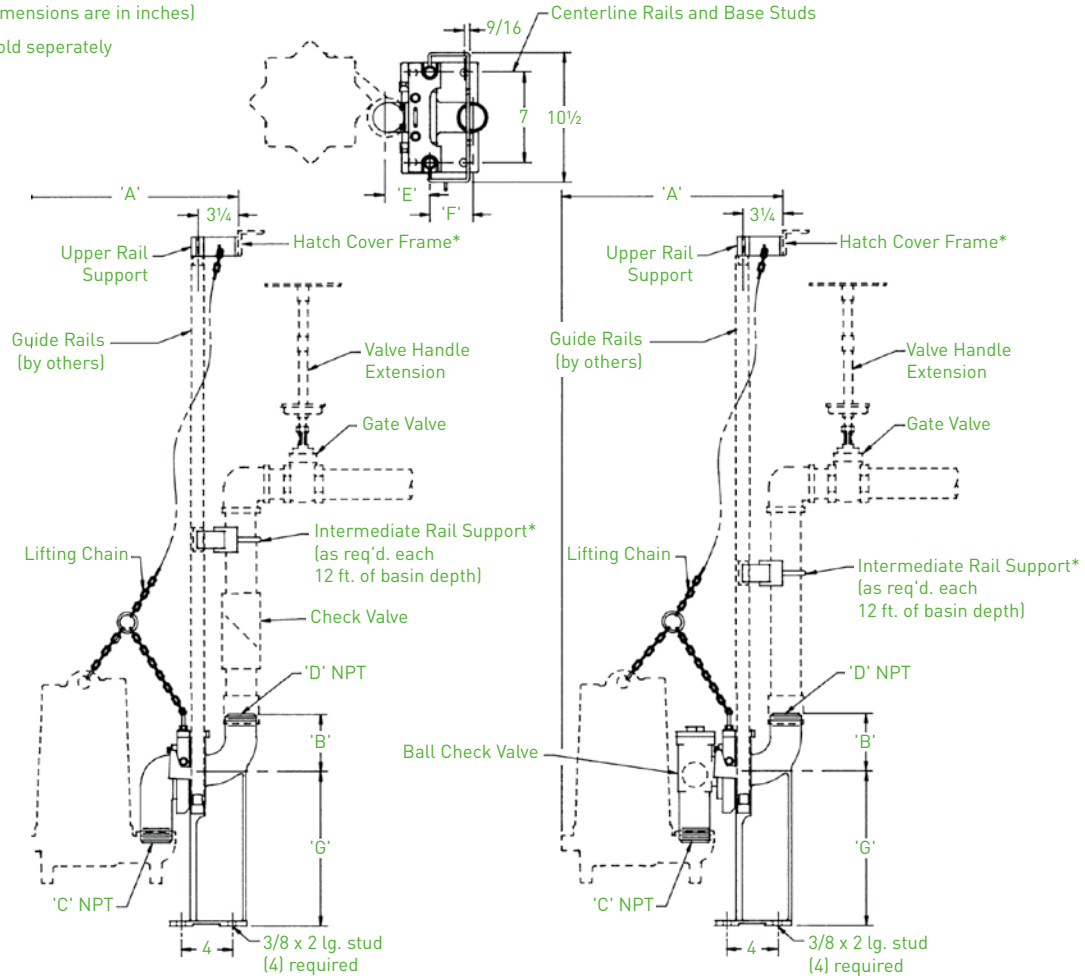
* Must be ordered separately.

**Bronze for hazardous locations.

Advantages by Design

[Dimensions are in inches]

*Sold separately



PUMP	'A'	LIFT-OUT
MG/MGH200	16-1/16"	SRA-125 SRA-125-CV
WGL20	15-3/8"	
WG20	15-3/8"	
P Series	17-3/8"	SRA-150 SRA-150CV
ME3F	16-1/8"	
ME3H	15-7/8"	
WHR	16-3/4"	SRA-200 SRA-200CV
WHRH	16-5/8"	
MWH/MW	18-1/8"	
SRM4	15-1/2"	SRA-300
ME Series	17-5/8"	
3MW (3450)	19-1/4"	
3MW (1750)	20-5/16"	

Lift-out	'B'	'C'	'D'	'E'	'F'	'G'
SRA-125	4-3/8"	1-1/4"	2"	2-15/16"	3-1/4"	9-11/16"
SRA-150	4-5/16"	1-1/2"	2"	3-1/4"	3-3/8"	12"
SRA-200	4-5/16"	2"	2"	3-1/4"	3-3/8"	12"
SRA-320	6-1/2"	2"	3"	3-1/4"	4-11/16"	12"
SRA-300	6-1/2"	3"	3"	4"	4-11/16"	12"
SRA-125-CV	4-3/8"	1-1/4"	2"	2-15/16"	3-1/4"	9-11/16"
SRA-150-CV	4-5/16"	1-1/2"	2"	3-1/4"	3-3/8"	12"
SRA-200-CV	4-5/16"	2"	2"	3-1/2"	3-3/8"	12"

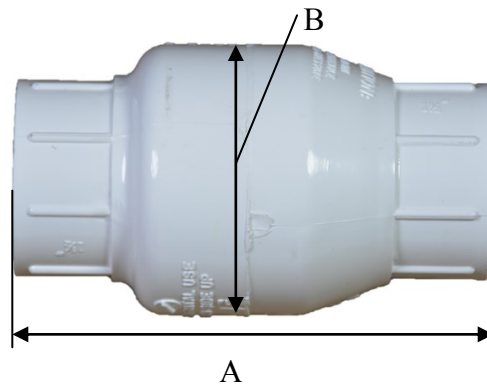
WHITE PVC SWING CHECK VALVE

RATED @125 PSI STATIC PRESSURE @ 72°F
MOLDED IN THE USA
MADE OF PVC TYPE I MATERIAL
EPDM FLAPPER

ALL PARTS ARE NSF/ANSI 61 + 372 LISTED
EXCEPT 1520V20

IPS SLIP X IPS SLIP

IPS—IRON PIPE SIZE
(SAME AS SCH. 40 PIPE)



PART NUMBER	A (INCHES)	B (INCHES)	WEIGHT (LBS)	IPS CONNECTION
1520-05	3.50	1.94	0.15	1/2" IPS
1520-07	3.50	1.94	0.20	3/4" IPS
1520-10	5.00	2.34	0.35	1" IPS
1520-12	5.32	3.16	0.55	1 1/4" IPS
1520-15	5.45	3.16	0.60	1 1/2" IPS
1520-20	6.14	4.23	0.95	2" IPS
1520-30	8.57	5.71	2.50	3" IPS
1520-40	9.60	6.35	3.30	4" IPS
1520V20*	6.14	4.23	0.95	2" IPS

*CONTAINS VITON FLAPPER

IPEX VXE TRUE UNION BALL VALVES

NEW PRODUCT SHOWCASE



The IPEX EasyFit large diameter VXE Series True Union Ball Valves represents the latest innovation in manufacturing technology. The VXE Series replaces the well received VX Series with new and cutting edge features and is designed for industrial, general purpose and O.E.M. applications. This valve features an ultra-compact double block design, and full port bi-directional operation up to 4". The true union design allows the valve to be easily removed from the piping system and be fully serviced. A threaded seat stop carrier provides improved seal integrity under tough service conditions. The EasyFit multifunction handle includes the EasyFit labeling system and doubles as a tool for ball seat adjustment, and for tightening union nuts precisely.

VXE ball valves are part of our complete system of IPEX pipe, valves, and fittings, engineered and manufactured to our strict quality, performance, and dimensional standards.

VALVE AVAILABILITY

Body Material	PVC, CPVC
Size Range	2-1/2" through 4", 6" venturied
Pressure	232 psi
Seats	Telfon® (PTFE)
Seals	EPDM or Fluoropolymer (FPM)
End Connections	Socket (IPS), Threaded (FNPT)

APPLICATIONS

Water treatment	✓
Plant water supply and distribution	✓
Wash-water and recovery systems	✓
Swimming pools	✓
Aquariums	✓
Irrigation	✓
Acid Products Handling for Refineries, Metal Works, etc.	✓
Deionized Water	✓
Alum and Ferric Chloride Handling	✓
Chlorine Injection Systems	✓
Bleach, Dye and Acid Lines	✓
Pulp and Chemical Recovery Systems	✓



IPEX USA LLC

Toll Free: (800) 463-9572

www.ipexamerica.com

NEW
FEATURE

TRANSPARENT PLUG WITH TAG HOLDER

The EasyFit VXE Handle contains a transparent PVC plug and tag holder with an IPEX logo that can be used with the EasyFit Labelling system.



NEW
FEATURE

EASYFIT CUSTOM LABELLING SYSTEM

The EasyFit Custom Labelling System is a complete product line created to customize individual EasyFit valves. This can be used to identify chemical service, tag number or pipeline contents.



NEW
FEATURE

HIGH FINISHING STEM & FLOATING BALL

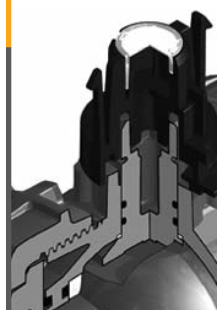
The VXE EasyFit valve stem and ball are fully machined after molding by automatic CNC tool machines, achieving high surface finishing, removing surface imperfections and giving accurate dimensional tolerances. A PTFE anti-friction ring is located at the base of the system to minimize friction and reduce operating torque by up to 25% compared to the previous VX model.



PTFE
Anti-Friction
Ring

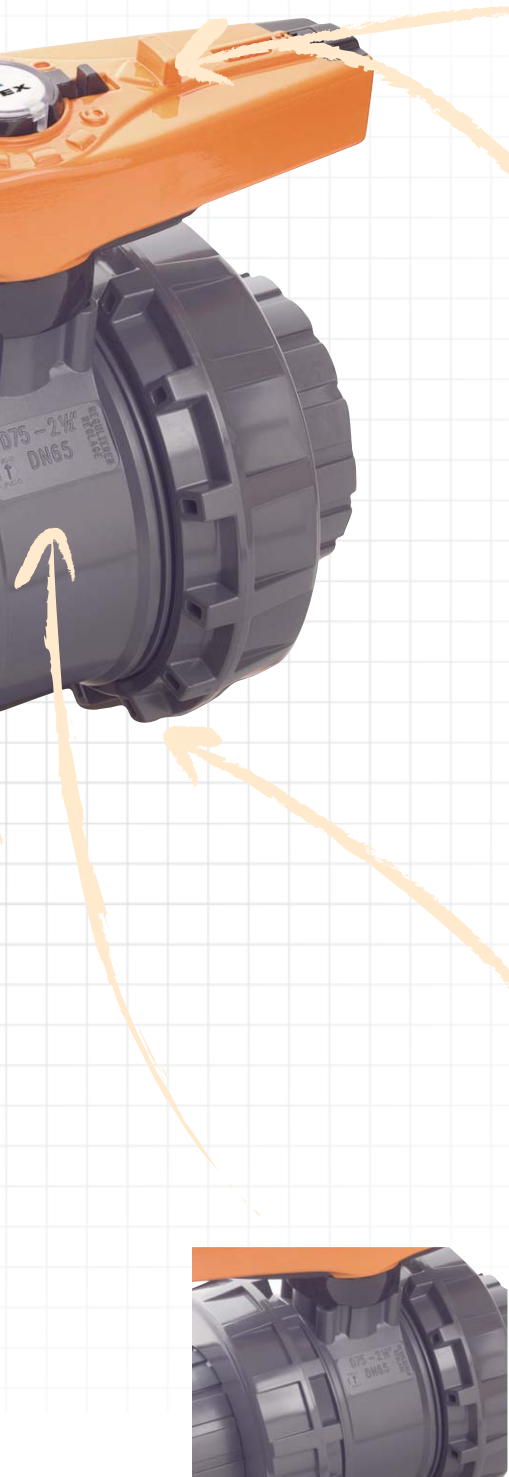
SAFE BLOCKED CARRIER

The VXE EasyFit ball valve is equipped with a safe blocked and adjustable ball seat carrier. During maintenance in depressurized pipelines, it is possible to unscrew one single union nut and disconnect the downstream or the upstream pipe end from the valve body with the valve in closed position, without fluid leakage.



TRUE UNION INSTALLATION

The VXE is the most compact true union ball valve in the industry.



NEW
FEATURE

EASYFIT MULTIFUNCTIONAL HANDLE

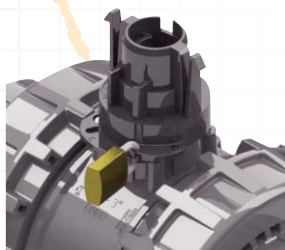
The new VXE EasyFit multifunction handle is designed for advanced service functions. The compact design handle provides very good maneuverability and is the best solution to carry out maintenance operations in restricted spaces.



NEW
FEATURE

OPTIMIZED HANDLE CONNECTION

The new PVC hub allows for a perfect coupling between valve and handle as well as a quick and easy release. The hub is also equipped with a locking mechanism that prevents unwanted cycling by using a padlock.



BALL SEAT CARRIER ADJUSTMENT

The VXE EasyFit handle is provided with molded inserts that allow the user to dismount, install or adjust the ball seat carrier into the valve body. There's no need for additional tools.



PATENTED
FEATURE

EASYFIT UNION NUT GEAR TIGHTENING

The handle can be removed from the valve stem and converted into a wrench key using the tool insert housed inside the handle body. The tool is extremely rugged, light and ergonomic. The tool is designed to engage the external profile of the union nut eliminating the possibility of damaging them.



VALVE BODY

The VXE EasyFit ball valve has been designed using finite element analysis (FEA) to optimize the design of models and reduce the weight up to 20% compared to the previous VX model for both PVC and Corzan® CPVC.

VXE 

EasyFit Union Nut Tool



1 Release Handle from Hub



2 Remove Handle



3 Turn Handle Over



4 Remove Wrench Key



5 Flip Key and Re-Install into Handle



6 Engage Wrench Key on Union Nut Groove to Tighten



CONTROLS

SCHEMATIC & SUBMITTAL DATA

SIMPLEX CONTROL PANEL

230V-1Ø-2HP

FOR

QUOTE #32740A

190208DS01A

PENTAIR

This submittal is based upon our interpretation of the specifications supplied,
and written and/or signed approval of this submittal will be required before
production can begin.

COMPANY: _____

DATE: _____

SIGNED: _____

SUBMITTED: 3-29-19

SPECIFICATIONS

ELECTRICAL NOTES:

INCOMING POWER: 230V - 1 ϕ - 3 WIRE SERVICE
CONTROL POWER: 115V - 1 ϕ , unless otherwise specified
MOTOR HORSEPOWER: 2 HP.
MOTOR FULL LOAD AMPS: 13.5 F.L.A.

CONTROL PANEL NOTES:

1. The control panel will be provided with a full aluminum inner-door, hinge mounted, brackets to mount disconnect switch operator, circuit breaker operators, indicator lights and selector switches.
2. The control panel will be provided with an aluminum back panel to mount disconnects, circuit breakers, contactors & overloads, fuses, relays, ground lugs and terminal blocks.
3. The alarm light will be mounted to the top of the control panel enclosure.
4. The alarm silence push button will be mounted to the right side of the control panel enclosure.
5. The SONALERT audible alarm will be mounted to the bottom of the control panel enclosure.
6. The control panel will be provided with plastic wireway for placing wire in neat bundles.
7. The control panel wire will be provided with numbered labels for easy identification in the field.
8. The control panel components, mounted on the inner door, will be labeled with engraved labels.
9. The control panel components will be labeled.

OPERATIONS

SPECIAL NOTES:

- The main disconnect switch shuts off all of the electrical power to the control and motor circuits.
- The alarm test switch, labeled "On-Off-Test", allows personnel to test the audible and visual exterior alarms when the switch is placed in the "test" position.

MOTOR CONTROL:

Manual Mode:

Place the Hand-Off-Auto selector switch in the "Hand" position. The pump motor will run.

Auto Mode:

1. Place the Hand-Off-Auto selector switch in the "Auto" position.
2. When the liquid level in the wet well rises to the "off" and "on" levels, the lead pump will run.
3. The pump will stop when the liquid level drops below the "off" level.

Alarm:

High Level: The liquid level rises above the "high" level.

- The audible exterior alarm will sound and can be shut off by pressing the silence push button.
- The visual exterior alarm will flash
- The audible and visual alarm will reset automatically when the liquid level falls below the "high" level.

Seal Fail: Moisture breaks through the lower seal. Probes in the motor detect the moisture.

***Note:** The seal fail condition can not be corrected without removing the motor from the wetwell and repaired.*

- The visual exterior alarm will illuminate.

Overtemperature: The thermostat in the motor senses motor winding high temperature.

- The starter circuitry is interrupted and the motor stops.

***Note:** The thermostat in the motor will automatically reset.*

Control Panel Customer Submittal Form

Quote Number: 190208DS01A
Company: Pentair
Contact Name: Roberto Garcia
Phone Number: 1-630-859-7036
Cell Number:
E-mail / Fax: roberto.garcia4@pentair.com
Job Name: Quote #32740A

Quoted By: Doug Shenberger

CONTROL PANEL SPECIFICATIONS:

Station Type: Simplex
Pump Model: VS20-21 2HP @ 13.5FLA
Panel Voltage: 230V, 1Ø
SCCR Minimum Rating: 5000 Amps
UL Listed: 508A
PDF Specs Attached: Yes

OTHER REQUIREMENTS:

Quantity	Part Number	Part Description	Construction Notes	Manufacturer
1.0	NOTE	NOTE: REVISION A	REMOVED FLASHER FOR SEAL FAIL LIGHT	OEC
1.0				
1.0	NOTE	SCHEMATIC	FULL SIZE SCHEMATIC DIAGRAM PROVIDED IN PRINT POCKET	OEC
1.0	NOTE	CUSTOMER SUPPLIED DEVICES	ALL CUSTOMER SUPPLIED ITEMS MUST MEET UL REQUIREMENTS OF THE PANEL	OEC
1.0	AH181610	ENCLOSURE	TYPE 4X POLYCARBON 18 X 16	ATTABOX
1.0	BP1816A	BACK PANEL		HARRIS WELDING
1.0	AH1816SPK	SUB DOOR	ALUMINUM FOR USE WITH ATTABOX ENCLOSURES	HARRIS
1.0	985GP3	POWER BLOCK	MAIN INCOMING POWER	MARATHON
2.0	1411400	POWER BLOCK	POWER DISTRIBUTION	MARATHON
1.0	985GP3	PUMP T-BLOCK		MARATHON
4.0	6G38TSF	PUMP SENSOR T-BLOCK	HEAT SENSOR/SEAL FAIL	MARATHON
6.0	6G38TSF	FLOAT T-BLOCK	3 FLOAT SYSTEM	MARATHON
1.0	NOTE	NOTE	- FLOAT SWITCHES ARE NOT INCLUDED IN PANEL PRICE	OEC
2.0	GL4717	GROUND BAR	5 POSITION FOR PUMPS	LUGS DIRECT
1.0	OT30F3	NON FUSIBLE DISCONNECT SWITCH 30A		ABB

1.0	OHB65L6	PISTOL HANDLE NEW STYLE, 2.6" 3 LOCKS, BLACK N4 NLA		ABB
1.0	OSP6X210	EXTENSION SHAFT FOR PISTOL HANDLE 6M X 210MM		ABB
1.0	QOU220	PUMP CB	CB1	SQUARE D
1.0	QOU110	CONTROL CB	CB2	SCHNEIDER
1.0	LC1D18G7	CONTACTOR IEC RATED	M1	SQUARE D
1.0	LRD21	OVERLOAD	OL1	SQUARE D
1.0	16104	START RELAY		MARS
1.0	11064	START CAPACITOR		MARS
1.0	12241	RUN CAPACITOR		MARS
2.0	MDL3R	CONTROL/ALARM FUSES	GLASS FUSE 250V 3AMP	BUSSMANN
2.0	MDL3R	GLASS FUSE 250V 3AMP	SPARE FUSES	BUSSMANN
2.0	S82021	FUSE BLOCK FOR GLASS FUSE		
1.0	RY2SUAC120	SEAL FAIL PROBE RELAY	R1	IDEC
1.0	RJ2SCA120	SILENCE RELAY	SR	IDEC
1.0	SJ2S05BW	RJ RELAY SOCKET		IDEC
1.0	SY2S05	RELAY SOCKET 2 POLE BLADE		IDEC
1.0	1187Q20B	HAND OFF AUTO SWITCH	TOGGLE TYPE MOUNTED IN SUB DOOR	SPEMCO
1.0	1187Q20B	ALARM ON OFF TEST SWITCH	TOGGLE TYPE MOUNTED IN SUB DOOR	SPEMCO
1.0	XB5AA21	SILENCE SWITCH	OIL TIGHT MOUNTED ON EXTERIOR RIGHT SIDE	SQUARE D
1.0	1052QC5	RUN LAMP	GREEN NEON MOUNTED IN SUB DOOR	CHICAGO MINIATUI
1.0	AL3KB	AMBER LIGHT KIT (SEAL FAIL)	MOUNTED ON TOP MIDDLE OF ENCLOSURE	OEC
1.0	RL3KB	ALARM LIGHT	MOUNTED ON TOP MIDDLE OF ENCLOSURE	OEC
1.0	TEKRU075CW	FLASHER		AIROTRONICS
1.0	MW09201Q	ALARM SONALERT	MOUNTED IN BOTTOM OF ENCLOSURE	FLOYD BELL
1.0	ECQE2823JF	CAP FILM 0.082UF 250VDC RADIAL	SONALERT SNUBBER	
1.0	508A	UL LABEL		UL
1.0	WW	WIRE WAY		PANDUIT
1.0	MISC SHOP MATERIALS	WIRING HARNESS		OEC



UL/cUL-508A
UL/cUL-50E

Type 3R, 4, 4X, 12
File: E319779

Rated IP68



*Made in the USA
With Texas Pride*

*-Protection from dust, rain, sleet, snow, splashing water, waves,
hose directed water with superior impact and flame protection!*

Polycarbonate Enclosures



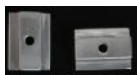
- Best NEMA 4X non-metallic enclosure available today
- Flat lid surface for easy HMI / pilot device mounting
- Latches and hinges do not penetrate enclosure
- Clear and opaque lids
- Easy to remove lid
- High performance inserts
- Integrated lock hasp
- Molded in bosses
- Multi-directional mounting feet

Rated
 IP68
 Type 3R, 4, 4X, 12
 F1 UV-light
 5VA flammability
 UL 1741 Compliant



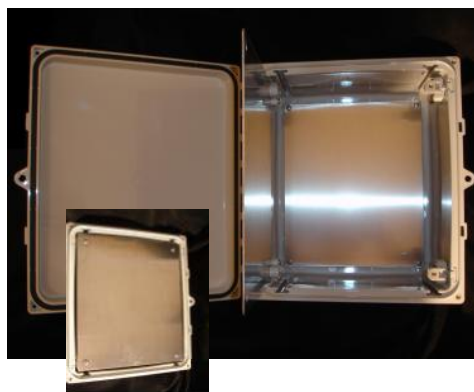
Side Mount Solutions

- Increases usable space
- Provides more mounting options
 - DIN rails
 - Side panels
 - Equipment
- Aluminum slot nuts
 - Variable mounting heights
 - 10/32 machine screw



Panel Systems

- Sub-panel mounting solution – Revolutionary design
 - Variable height mounting
 - Swings open from any side
 - Panel locks into open position
 - Mounting holes are standard JIC
- 0.08" Aluminum panels
- Back panels are standard JIC





Rated IP68

UL/cUL-508A

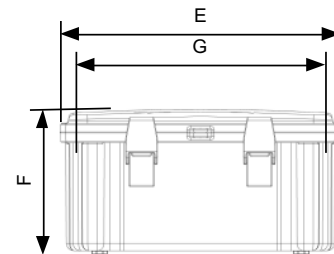
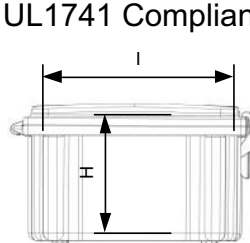
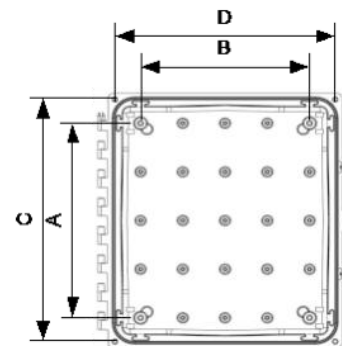
UL/cUL-50E

Type 3R,4,4X,12

File: E319779



UL1741 Compliant



Part #	Size	Description
--------	------	-------------

Opaque Cover Enclosures

AH664	6 x 6 x 4	Attabox™ Polycarbonate Enclosure with Opaque Cover
AH864	8 x 6 x 4	Attabox™ Polycarbonate Enclosure with Opaque Cover
AH1084	10 x 8 x 4	Attabox™ Polycarbonate Enclosure with Opaque Cover
AH12106	12 x 10 x 6	Attabox™ Polycarbonate Enclosure with Opaque Cover
AH14126	14 x 12 x 6	Attabox™ Polycarbonate Enclosure with Opaque Cover
AH16148	16 x 14 x 8	Attabox™ Polycarbonate Enclosure with Opaque Cover
AH181610	18 x 16 x 10	Attabox™ Polycarbonate Enclosure with Opaque Cover

**Clear Cover Enclosures**

AH664C	6 x 6 x 4	Attabox™ Polycarbonate Enclosure with Clear Cover
AH864C	8 x 6 x 4	Attabox™ Polycarbonate Enclosure with Clear Cover
AH1084C	10 x 8 x 4	Attabox™ Polycarbonate Enclosure with Clear Cover
AH12106C	12 x 10 x 6	Attabox™ Polycarbonate Enclosure with Clear Cover
AH14126C	14 x 12 x 6	Attabox™ Polycarbonate Enclosure with Clear Cover
AH16148C	16 x 14 x 8	Attabox™ Polycarbonate Enclosure with Clear Cover
AH181610C	18 x 16 x 10	Attabox™ Polycarbonate Enclosure with Clear Cover

**Back Panels**

BP66A	6 x 6	Aluminum Back Panel
BP86A	8 x 6	Aluminum Back Panel
BP108A	10 x 8	Aluminum Back Panel
BP1210A	12 x 10	Aluminum Back Panel
BP1412A	14 x 12	Aluminum Back Panel
BP1614A	16 x 14	Aluminum Back Panel
BP1816A	18 x 16	Aluminum Back Panel

Swing Panel Kits

AH66SPK	6 x 6	Attabox™ 6x6 Swing Panel Kit (comes with mounts, screws and panel)
AH86SPK	8 x 6	Attabox™ 8x6 Swing Panel Kit (comes with mounts, screws and panel)
AH108SPK	10 x 8	Attabox™ 10x8 Swing Panel Kit (comes with mounts, screws and panel)
AH1210SPK	12 x 10	Attabox™ 12x10 Swing Panel Kit (comes with mounts, screws and panel)
AH1412SPK	14 x 12	Attabox™ 14x12 Swing Panel Kit (comes with mounts, screws and panel)
AH1614SPK	16 x 14	Attabox™ 16x14 Swing Panel Kit (comes with mounts, screws and panel)
AH1816SPK	18 x 16	Attabox™ 18x16 Swing Panel Kit (comes with mounts, screws and panel)

DIN Rail Kits

AH6DRK	6" Din Rail Kit (includes two nuts, two screws, and din rail)
AH8DRK	8" Din Rail Kit (includes two nuts, two screws, and din rail)
AH10DRK	10" Din Rail Kit (includes two nuts, two screws, and din rail)
AH12DRK	12" Din Rail Kit (includes two nuts, two screws, and din rail)
AH14DRK	14" Din Rail Kit (includes two nuts, two screws, and din rail)
AH16DRK	16" Din Rail Kit (includes two nuts, two screws, and din rail)
AH18DRK	18" Din Rail Kit (includes two nuts, two screws, and din rail)

Accessories

AHSNK	Slot Nut Kit (includes two nuts & two screws)
AHSPM	Swing Panel Mounts (4 per kit)
AHLK	Latch kit (2 latches per kit) - replacement only
AHAK	Accessory kit (includes all screws, inserts, and mounting feet) - replacement only
4XGlands	Cable glands of all sizes

Custom Solutions

Attabox™ custom services - modification & component installations

Dimensions (inches)

Enclosure	A x B	C	D	E	F	G	H	I	Back Panel	Sub-Panel
6x6x4	4.25x4.25	6.75	6.75	5.7	5.7	6.3	5	6.3	4.75x4.75	5.625x5.625
8x6x4	6.25x4.25	8.75	6.75	9.4	5.7	8.3	5	6.3	6.75x4.75	7.625x5.625
10x8x4	8.25x6.25	10.75	8.75	11.4	6.2	10.3	5.5	8.3	8.75x6.75	9.625x7.625
12x10x6	10.25x8.25	12.75	10.75	13.4	7.7	12.3	7	10.3	10.75x8.75	11.625x9.625
14x12x6	12.25x10.25	14.75	12.75	15.4	7.7	14.3	7	12.3	12.75x10.75	13.625x11.625
16x14x8	14.25x12.25	16.75	14.75	17.4	9.7	16.3	9	14.3	14.75x12.75	15.625x13.625
18x16x10	16.25x14.25	18.75	16.75	19.4	11.7	18.3	11	16.3	16.75x14.75	17.625x15.625

Engineering Properties

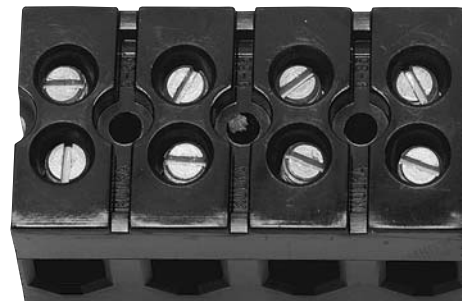
Typical Properties	Typical Values	Unit	Standard
Flammability (resin/component)	V-0 / 5V-A		UL 94
UV-light	F1		UL 746C
Enclosure Types	3R, 4, 4X, 12		UL 508A / UL 50E
Falling Dart Impact (D 3029), 73°F	1480	in-lb	ASTM D 3029
Izod Impact, unnotched, 73°F	60	ft-lb/in	ASTM D 4812
Tensile Impact, Type "S"	250	ft-lb/in²	ASTM D 1822
HDT, 264 psi, 0.250", unannealed	270	°F	ASTM D 648
CTE, flow, -40°F to 200°F	3.8E-05	1/°F	ASTM E 831
Flexural Stress, yld, 0.05 in/min, 2 in span	13100	psi	ASTM D 790
Normal Temperature Range	-40 – 260	°F	
Volume Resistivity	>1E+17	Ohm-cm	ASTM D 257



Heavy Duty Terminal Blocks

985 GP Series - Deadfront Type

600 Volts

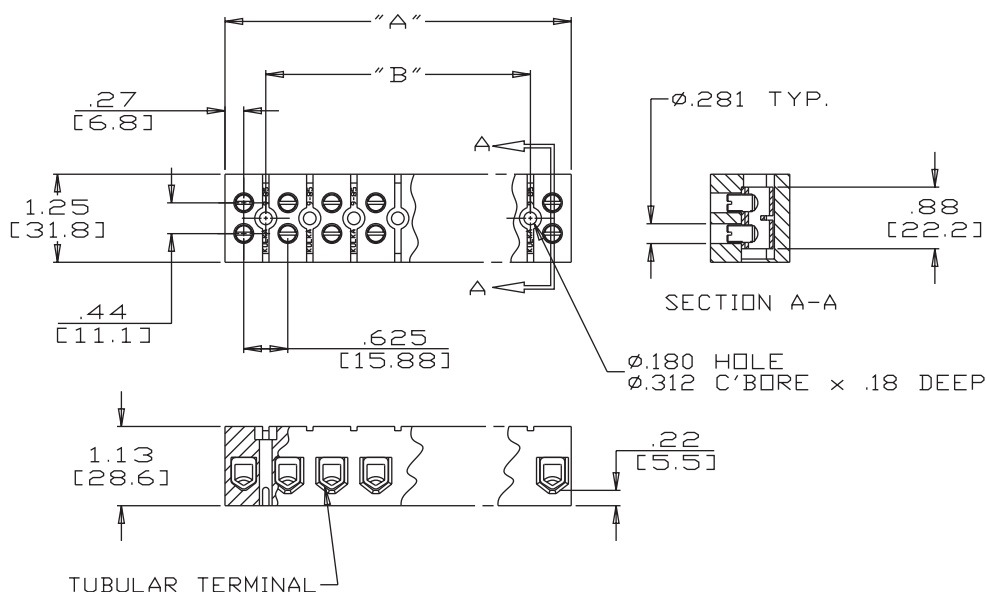


Specifications:

- Base, General Purpose Phenolic, 150° C
- Connector, Aluminum, Tin Plated
- Screws, Steel, Nickel Plated
- Wire Range #4-#18 Awg Copper Wire – 85 Amps
- Multiple Wire Combinations For Solid Or Stranded Copper Wire Are:
 - 1 #18 Awg to 1 #4 Awg
 - 2 #8 Awg
 - 2 to 4 #10 Awg
 - 2 to 4 #12 Awg
 - 2 to 6 #14 Awg
 - 2 to 6 #16 Awg
 - 2 to 8 #18 Awg
- .625 Center-Line Spacing
- UL Recognized File No. E47811
- CSA Certified File No. LR19766
- **CE** - Wire Range Reduced #6-#18 Awg

Catalog #	# of poles	Dimensions	
		A	B
985 GP 02	2	1.16	N/A
985 GP 03	3	1.78	0.63
985 GP 04	4	2.41	1.25
985 GP 05	5	3.03	1.88
985 GP 06	6	3.66	2.50
985 GP 07	7	4.28	3.13
985 GP 08	8	4.91	3.75
985 GP 09	9	5.53	4.38
985 GP 10	10	6.16	5.00
985 GP 11	11	6.78	5.63
985 GP 12	12	7.41	6.25

MM = Dim X 25.4



Power Distribution Blocks

600 Volts

Specifications:

- Connector, High Conductive Aluminum, Tin Plated
- Amp Rating Based on NEC Table 310-16 Using 75° C Copper Wire
- *Wire Connector Rated 90° C
- UL Recognized File No. E62806
- CSA Certified File No. LR19766
- CE



** Openings rated for #4-14 AWG are multiple wire rated:
(2) #10 CU Str, (2 to 4) #12 CU Str, and (2 to 4) #14 CU Str.

*** Openings rated for #2-14 AWG are multiple wire rated:
(2) #8 CU Str, (2) #10 CU Str, (2) #12 CU Str, And
(2) #14 CU Str

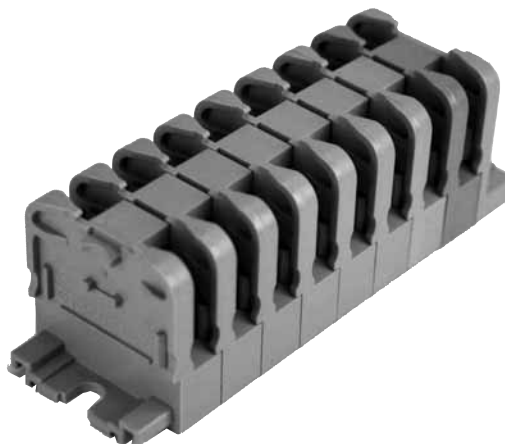
Catalog #	Poles	Amps	Material	Connector Configuration	Line Wire Range	Openings Per Pole	Connector Configuration	Load Wire Range	Openings Per Pole
1411403	1	60	Thermoplastic		#2-#14 AWG	1		#10-#18 AWG	2
1412403	2								
1413403	3								
1414403	4								
1411400	1	115	Thermoplastic		#2-#14 AWG	1		#10-#18 AWG	4
1412400	2								
1413400	3								
1414400	4								
1320570	Adder	175	Thermoplastic		2/0-#14 AWG	1		** #4-#14 AWG	4
1321570	1								
1322570	2								
1323570	3								
1421570	1	175	Phenolic		2/0-#14 AWG	1		** #4-#14 AWG	4
1422570	2								
1423570	3								
1424570	4								
1320580	Adder	175	Thermoplastic		2/0-#14 AWG	1		** #4-#14 AWG	6
1321580	1								
1322580	2								
1323580	3								
1402402	2	175	Phenolic		2/0-#14 AWG	1		** #4-#14 AWG	4
1403402	3								
1402401	2	175	Phenolic		2/0-#14 AWG	1		** #4-#14 AWG	6
1403401	3								
1402404	2	310	Phenolic		350 kcmil - #6 AWG	1		#2/0-#14 AWG	6
1403404	3								
1331554	1	310	Thermoplastic		350 kcmil - #6 AWG	1		#2/0-#14 AWG	2
1332554	2								
1333554	3								
1441401	1	335	Phenolic		400 kcmil - #6 AWG	1		#2-#14 AWG	6
1442401	2								
1443401	3								
1431552	1	335	Phenolic		400 kcmil - #6 AWG	1		#2-#14 AWG	4
1432552	2								
1433552	3								
1431553	1	335	Phenolic		400 kcmil - #6 AWG	1		#2-#14 AWG	6
1432553	2								
1433553	3								
1441560	1	335	Phenolic		400 kcmil - #6 AWG	1		#2-#14 AWG	8
1442560	2								
1443560	3								
1331552	1	335	Thermoplastic		400 kcmil - #6 AWG	1		*** #2-#14 AWG	4
1332552	2								
1333552	3								

3/8" Sectional - 600 Volts 32 Circuits Per Foot

Channel (C), Flat (F) & (DIN) Mount

Specifications:

- UL Recognized File No. XCFR2.E62806
- CSA Certified File No. LR 19766
- Wire termination torque 16 lb-in
- CE



Tubular Screw Connector (6G38 TS)

Materials:

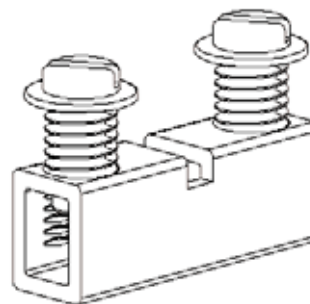
Base - Gray Thermoplastic, 125°C (RTI)
Tubular Screw Connector- Copper, Tin Plated
Screw - #10-32 Steel, Nickel Plated
50 Amps (40 Amps CSA)

Wire Ranges:

Single and Multiple Wire Combinations:

Stranded CU
(1) #8 - 18 AWG
(1-3) #12 AWG
(1-4) #14

Solid CU
(1) #10 - #16 AWG
(1-3) #12 AWG
(1-4) #14 or #16 AWG



Ordering Code:

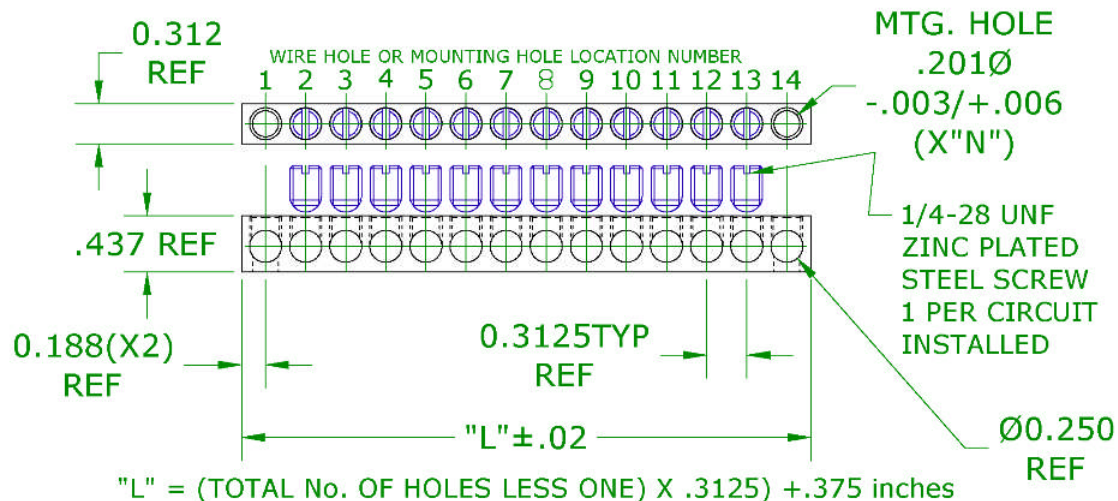
6G38 TS F
6G38 TS C
6G38 TS DIN

For flat mount block
For channel mount block
For DIN mount block

Std pk 100
Std pk 100
Std pk 25

See Figure 2 On Page 116
See Figure 1 On Page 116
See Figure 3 On Page 116

STANDARD STOCK NEUTRAL BARS WITH MOUNTING HOLES



[Back to Top](#)

UL & CSA AGENCY APPLICATION NOTES:

- UL Recognized ("UR" mark) Class ZMVV2 and "CSA" Certified (CSA mark)
- Installation must be carried out only by qualified electricians in accordance with all applicable NEC & UL/CSA standards for the approved application.
- Approved for 90 ° C Temperature Rating Wire, CU9AL
- Amp Rated at 85 Amps for Copper wire and 70 Amps for Aluminum wire
- Wire range, American Wire Gauge AWG 4-14 CU (copper wire), 4-12 AL (aluminum wire) Dual Rated, Solid & Stranded, industrial rigid stranding wire.
- Tightening torques, 4-6 AWG = 45 lb-in, 8 AWG = 40 lb-in, 10-14 AWG = 35 lb-in
- The bar shall be prevented from turning by close fitting walls, or other turn preventive features such as two mounting holes.
- The bar shall not be mounted to a bus bar to act as a power distribution means to or from that bar.
- The bar is designed to be used as a neutral bar for ground or power.
- The bar is for use only in complete equipment where the suitability of the combination is determined & approved by UL
- The mounting screw is to be size #10-32 UNF. The proper use of washers to distribute screw clamping forces on the aluminum should be employed. Bellevilles and lock nuts should be considered in case of vibration.
- The screw will hold the smaller wires when the appropriate torque for the small wire is fully applied
- Dry locations only.

CONSTRUCTION NOTES:

- The tolerance between mounting holes is +/- .015"
- The mounting hole is .201 +.006/- .003.
- The listed overall length of each bar is +/- .020
- Material is High Strength Tempered aluminum 6160 with conductivity approx. 43% IACS.
- Aluminum body is Tin Plated to resist oxidation and galvanic corrosion.
- Screws are Zinc Plated Steel with Trivalent (Cr+3) Chromate conversion top layer.

GL4717

Disconnect
switches
Non-fusible

General information

Selection guide

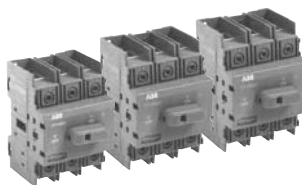
OT16F3 – OT160E3



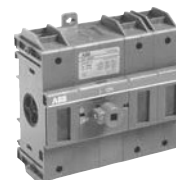
OT16F3 OT25F3 OT40F3



OT63F3 OT80F3



OT30F3 OT60F3 OT100F3



OT160E3

Catalog number	3 pole	OT16F3	OT25F3	OT40F3	OT63F3	OT80F3	OT30F3	OT60F3	OT100F3	OT160E3
General purpose amp rating	A	16	25	40	60	80	30	60	100	125
Approvals ①										
	2 pole	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	UL98
	3 pole	UL508	UL508	UL508	UL508	UL508	UL98	UL98	UL98	UL98
	4 pole	UL508	UL508	UL508	UL508	UL508	UL98	UL98	UL98	UL98
Technical ratings – UL, CSA ②										
Max operating voltage	V	600	600	600	600	600	600	600	600	600
Max horsepower rating										
Three phase										
240V	HP	5	7,5	10	15	20	10	20	30	40
480V	HP	10	15	20	30	40	20	40	50	75
600V	HP	10	20	25	30	40	30	40	50	100
Single phase										
120V	HP	1	1,5	2	2	2	2	3	5	7,5
240V	HP	2	3	5	5	5	5	7,5	15	20
Technical ratings – IEC ②										
Rated insulation and operational voltage, AC20 and DC20	V	750	750	750	750	750	750	750	750	750
Rated thermal current, I _m										
AC 20/DC 20 open	A	25	32	40	63	80	40	63	115	200
AC 20/DC 20 enclosed	A	25	32	40	63	80	40	63	115	160
AC 21A ≤500V	A	16	25	32	63	80	40	63	100	160
AC 21A ≤690V	A	16	25	32	63	80	40	63	100	160
Rated operational power AC23										
400/415V	kW	7,5	9	11	22	37	15	18,5	37	75
690V	kW	7,5	9	11	15	18,5	15	15	37	75
Physical characteristics										
Weight ③	3 pole	lb	0,24	0,24	0,24	0,59	0,59	0,79	0,79	2,42
Dimension	3 pole									
	H	in	2,68	2,68	2,68	3,60	3,60	3,94	3,94	5,00
	W	in	1,38	1,38	1,38	2,07	2,07	2,76	2,76	4,96
	D	in	2,20	2,20	2,20	2,85	2,85	2,95	2,95	2,93
Accessories										
Terminal lug kit		Integral	Integral	Integral	Integral	Integral	Integral	Integral	Integral	Integral
Terminal shroud		•	•	•	•	•	•	•	•	—
Auxiliary contact		•	•	•	•	•	•	•	•	•
Shaft/handle diameter		6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm	6mm
		,24" x ,24"	,24" x ,24"	,24" x ,24"	,24" x ,24"	,24" x ,24"	,24" x ,24"	,24" x ,24"	,24" x ,24"	,24" x ,24"
Handle UL/NEMA type		•	•	•	•	•	•	•	•	•
Type 1, 3R, 12		•	•	•	•	•	•	•	•	•
Type 1, 3R, 4, 4X, 12		•	•	•	•	•	•	•	•	•
Handle type		•	•	•	•	•	—	—	—	—
Selector		•	•	•	•	•	•	•	•	•
Pistol		•	•	•	•	•	•	•	•	•
Recommended pistol handle length		45 - 65mm	45 - 65mm	45 - 65mm	45 - 65mm	45 - 65mm	45 - 65mm	45 - 65mm	45 - 65mm	65 - 80mm
Maximum recommended shaft length		290mm	290mm	290mm	290mm	290mm	290mm	290mm	290mm	290mm
Conversion kits										
6 pole		•	•	•	•	•	•	•	•	•
Transfer		•	•	•	•	•	•	•	•	•
Bypass		•	•	•	•	•	•	•	•	•
Mechanical interlock		•	•	•	•	•	•	•	•	•
Electrical interlock		—	—	—	—	—	—	—	—	—

• = Available
— = Not available

- ① UL listed switches are also CSA approved.
② For complete technical information please see page 18.38 – 18.70.
③ Switch only.

Disconnect
switches
Non-fusible

Standard handles & shafts ①②



OHBS2AJ1



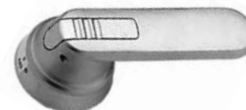
OHB_J6



OHY_J6



YASDA-8



OHM125L12

Recommended handles & shafts

Switch	Shaft diameter	Recommended standard pistol handle length	Maximum recommended shaft length
OT16 - 100	6x6 mm - .24 x .24"	45 - 65 mm	290 mm
OT160 - 200	6x6 mm - .24 x .24"	65 - 80 mm	290 mm
OT400 - 600	12x12 mm - .47 x .47"	125 - 175 mm	595 mm
OETL-NF800 - 3150	12x12 mm - .47 x .47"	125 - 175 mm	595 mm

Selector handles — for use with .24 x .24" (6mm) OXS6X shafts

UL/NEMA Type	IEC type	Color	Marking	Defeatable	Padlockable	Weight (lbs)	Catalog number	List price
1	IP54	Black	O/I & Off/On	—	—	0.09	OHBS1AH1 ③	\$ 22
					Yes	0.12	OHBS3AH1 ③	24
1, 3R, 12	IP65	Black	O/I & Off/On	—	Yes	0.16	OHBS2AJ1	28
				Yes	Yes	0.16	OHBS2AJ	30

Pistol handles — for use with .24 x .24" (6mm) OXP6X shafts

UL/NEMA Type	IEC type	Color	Marking	Length in/mm	Defeatable	Padlockable	Weight (lbs)	Catalog number	List price
1, 3R, 12	IP65	Black	O/I & Off/On	2.6/65	Yes	Yes	0.29	OHB65J6	\$ 80
				3.1/80	Yes	Yes	0.30	OHB80J6	90
1, 3R, 12, 4, 4X	IP66	Black	O/I & Off/On	2.6/65	Yes	Yes	0.29	OHB65L6	120
				3.1/80	Yes	Yes	0.30	OHB80L6	130
1, 3R, 12, 4, 4X	IP66	316L Stainless steel	O/I & Off/On	2.6/65	Yes	Yes	1.60	OHM65L6	750
1, 3R, 12	IP65	Black w/ 316 stainless hasp	O/I & Off/On	2.6/65	Yes	Yes	0.31	OHB65J6EH	250
1, 3R, 12, 4, 4X	IP66	Black w/ 316 stainless hasp	O/I & Off/On	2.6/65	Yes	Yes	0.31	OHB65L6EH	290

Pistol handles — for use with .47 x .47" (12mm) OXP12X shafts

UL/NEMA Type	IEC type	Color	Marking	Length in/mm	Defeatable	Padlockable	Weight (lbs)	Catalog number	List price
1, 3R, 12	IP65	Black	O/I & Off/On	4.9/125	Yes	Yes	0.39	OHB125J12	\$ 90
				5.7/145	Yes	Yes	0.39	OHB145J12	90
				6.9/175	Yes	Yes	0.41	OHB175J12	100
1, 3R, 12, 4, 4X	IP66	Black	O/I & Off/On	4.9/125	Yes	Yes	0.39	OHB125L12	130
				5.7/145	Yes	Yes	0.39	OHB145L12	130
				6.9/175	Yes	Yes	0.41	OHB175L12	140
1, 3R, 12, 4, 4X	IP66	Metal	Off/On	8.7/220	--	Yes	1.50	YASDA-8	190
1, 3R, 12, 4, 4X	IP66	316L Stainless steel	O/I & Off/On	4.9/125	Yes	Yes	1.70	OHM125L12	900
				6.9/175	Yes	Yes	1.80	OHM175L12	1,100
				275	Yes	Yes	2.10	OHM275L12	1,200
1, 3R, 12	IP65	Black w/ 316 stainless hasp	O/I & Off/On	4.9/125	Yes	Yes	0.44	OHB125J12EH	280
				6.9/175	Yes	Yes	0.46	OHB175J12EH	330
1, 3R, 12, 4, 4X	IP66	Black w/ 316 stainless hasp	O/I & Off/On	4.9/125	Yes	Yes	0.44	OHB125L12EH	330
				6.9/175	Yes	Yes	0.46	OHB175L12EH	390

Direct mount handle

Description	For use on	Color	Padlockable	Weight	Catalog number	List price
Mounts directly on switch. No shaft necessary	OT16-40	Black	Yes	0.05	OHBS12 ④	\$ 17
	OT63-80				OHBS2 ④	
	OT30-100					
Mounts directly on switch. No shaft necessary	OT160	Black	Yes	0.05	OHB13	22
Up to 3 padlocks in OFF-position, includes shaft and mechanism	OT200	Black	Yes	0.22	OTV250EK	105
	OT400	Black	Yes	0.44	OTV400EK	130
	OT600	Black	Yes	0.66	OTV800EK	155
Mounts on shaft	OT400-OETL NF800	Metal	No	0.78	YASDA-33	155
	OETL-NF1200-OETL-NF3150	Metal	No	0.80	YASDA-34	180

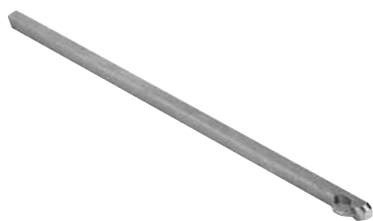
① Red/Yellow handles are available by substituting the OHB prefix with OHY.

② All handles are plastic unless otherwise noted as metal or stainless steel.

③ Not recommended for use on OT30-100.

④ Suitable for 3 & 4 pole versions only. Not for use with 6 or 8 pole or double throw configurations.

Standard handles & shafts



OXS6X_



OXP6X
OXP12X_

Shafts for use with selector handles – .24 x .24" (6x6 mm)

Shaft length (in/mm)	Maximum Mounting Depth (inches) ①						
	OT16F3, OT25F3, OT40F3		OT63F3, OT80F3		OS30 ②	Weight	Catalog number
	OH_1_ & OH_3_	OH_2_	OH_1_ & OH_3_	OH_2_			
3,3/85	5,0	4,3	5,6	5,0	—	0,07	OXS6X85
4,1/105	5,8	5,1	6,4	5,8	—	0,07	OXS6X105
4,7/120	6,4	5,8	7,0	6,4	—	0,08	OXS6X120
5,1/130	6,7	6,1	7,4	6,8	5,6	0,08	OXS6X130
7,1/180	8,7	8,1	9,4	8,7	6,1	0,11	OXS6X180
9,8/250	11,5	10,8	12,1	11,5	10,3	0,13	OXS6X250
13/330	14,6	14,0	15,3	14,7	13,4	0,17	OXS6X330

Shafts for use with pistol handles – .24 x .24" (6x6 mm)

Shaft length (in/mm)	Maximum Mounting Depth (inches)								Weight	Catalog number
	OT16F3 - OT40F3	OT63F3 - OT80F3	OT30F3/60F3/100F3	OT200	OS30	OS60	OS100	OS200		
5,2/130	5,9	6,4	6,7	6,5	–	–	–	–	0,08	OXP6X130
5,9/150	6,7	7,4	7,0	7,2	8,9	9,7	9,8	9,9	0,09	OXP6X150
8,3/210	9,1	9,7	9,8	9,6	9,7	12,1	12,2	13,0	0,13	OXP6X210
11,4/290	12,2	12,8	12,9	12,7	13,4	15,2	15,3	–	0,18	OXP6X290
14,2/360	14,9	13,8	15,6	15,5	18,7	12,9	18,0	–	0,23	OXP6X360
16,9/430	17,6	18,3	18,3	18,2	22,6	20,6	20,7	–	0,27	OXP6X430

Shafts for use with pistol handles – .47 x .47" (12x12 mm)

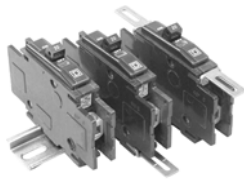
Shaft length (in/mm)	Maximum Mounting Depth (inches)						Weight	Catalog number
	OT400	OT600	OT800 - OT1200	OETL-NF1600 - OETL-NF3150	OS400	OS600 - OS1200		
11,0/280	13,3	14,6	14,5	–	13,8	14,9	0,77	OXP12X280
12,8/325	15,0	16,4	16,3	20,9	15,6	16,7	0,90	OXP12X325
15,6/395	20,5	19,1	19,1	23,6	18,3	19,4	1,10	OXP12X395
18,3/465	21,9	21,8	21,9	26,3	21,0	22,1	1,32	OXP12X465
21,1/535	22,8	24,6	24,6	29,1	23,8	24,8	1,54	OXP12X535

① Mounting depth is distance from the outside of the door to the disconnect switch mounting plate. Shaft can be cut to desired length.

② Selector handles and shafts are not recommended for use with fusible switches over 30A.

QOU and QYU Unit Mount Miniature Circuit Breakers Class 720

SQUARE D
www.SquareD.com
For the most up-to-date information



Low Ampere QOU Miniature Circuit Breakers

General Specifications Common to All Low Ampere QOU Circuit Breakers

- For convenient flush mount, surface mount or DIN mount (symmetrical rail 35 x 7.5 DIN/EN 50 022)
- Single handle with internal common trip
- Terminal lug wire size (1) #14–#2 AWG Cu or Al
- Reversible line and load lugs
- Field-installable quick connectors
- UL Listed 48 Vdc (5,000 AIR)
- UL Listed as HACR Type—10–70 A



High Ampere QOU Circuit Breakers

General Specifications Common to All High Ampere QOU Circuit Breakers

- Flush mount, surface mount, and DIN rail mount
- Internal common trip
- Lugs supplied in standard position only
- Terminal lug wire size (1) #12–#2/0 AWG Cu or Al
- UL Listed 60 Vdc per pole (5000 AIR)—
Note: except switches
- UL Listed as HACR
type—80–125 A

QOU Miniature Circuit Breakers

QOU unit mount miniature circuit breakers (cable-in/cable-out) are ideal for OEM applications. They have Square D's unique Visi-Trip feature and can be DIN rail-mounted or surface- or flush-mounted using mounting feet.

Ampere Rating	1-pole 1 20 Vac	Price	2-pole 120/240 Vac	Price	2-pole 240 Vac	Price	3-pole 240 Vac	Price
	Catalog No.		Catalog No.		Catalog No.		Catalog No.	
10,000 AIR								
10	QOU110	\$26.80	QOU210	\$ 58.00	QOU210H	\$112.00	QOU310	\$190.00
15	QOU115		QOU215		QOU215H		QOU315	
20	QOU120		QOU220		QOU220H		QOU320	
25	QOU125		QOU225		QOU225H		QOU325	
30	QOU130		QOU230		QOU230H		QOU330	
35	QOU135		QOU235		....		QOU335	
40	QOU140	QOU240	....	QOU340				
45	QOU145	QOU245	....	QOU345				
50	QOU150	QOU250	....	QOU350				
60	QOU160	QOU260	....	QOU360				
70	QOU170	52.00	QOU270	114.00	....	...	QOU370▲	242.00
80	QOU180▲	117.00	QOU280▲	164.00	....	...	QOU380▲	277.00
90	QOU190▲		QOU290▲		....	QOU390▲		
100	QOU1100▲		QOU2100▲		....	QOU3100▲		
125	....	...	QOU2125▲	301.00	....	...	....	...

22,000 AIR

15	QOU115VH	67.00	QOU215VH	126.00	....	...	QOU315VH	284.00
20	QOU120VH		QOU220VH		....	...	QOU320VH	
25	QOU125VH		QOU225VH		....	...	QOU325VH	
30	QOU130VH		QOU230VH		....	...	QOU330VH	
35	QOU135VH	126.00	QOU235VH	....	....	...	....	...
40	QOU140VH		QOU240VH		....	...	....	...
45	QOU145VH		QOU245VH		....	...	....	...
50	QOU150VH		QOU250VH		....	...	....	...
60	QOU160VH		QOU260VH		....	...	....	...

QOU-HM

High magnetic trip circuit breakers are recommended for applications where high initial inrush may occur and for individual dimmer applications.

15	QOU115HM	26.80	....	...	....	...	....	...
20	QOU120HM		....	...	....	...	....	...

QYU UL1077 Recognized Supplementary Protectors (5,000 AIR)

1-pole 277 Vac								
15	QYU115	81.00	....	...	....	...	....	...
20	QYU120		....	...	....	...	....	...
25	QYU125		....	...	....	...	....	...
30	QYU130		....	...	....	...	....	...

QOU Non-Automatic Switches

Non-automatic switches have the same physical packaging as miniature circuit breakers, but provide no overcurrent or short circuit protection. They are UL Listed per UL1087 and are CSA certified.

60	....	...	....	...	QOU200	58.00	QOU300	190.00
100	....	...	....	...	QOU2000	164.00	QOU3000	277.00
125	....	...	....	...	QOU20001	301.00	QOU30001	477.00

▲ High-ampere QOUs use appropriately sized terminal lugs and accessories.

Table 18.3: TeSys D Contactors—3 or 4 Pole, Screw Terminal Connections

Maximum Horsepower Ratings						Maximum Current Utilization Categories		No. of Poles		Instantaneous Auxiliary Contacts		Catalog Number ▲	\$ Price	
Single-Phase		Three-Phase				Inductive AC3 (A)	Resistive AC1 (A)	N.O.	N.C.	N.O.	N.C.		AC Coils	DC Coils
115 V hp	230 V hp	200 V hp	230 V hp	460 V hp	575 V hp									
0.5	1	2	2	5	7.5	9		3	0			LC1D09 ♦♦♦	94.00	119.00
—	—	—	—	—	—	—	20	4	0	1	1	LC1DT20 ♦	94.00	119.00
—	—	—	—	—	—	—	—	2	2			LC1D098 ♦	94.00	119.00
1	2	3	3	7.5	10	12	—	3	0			LC1D12 ♦♦♦	119.00	149.00
—	—	—	—	—	—	—	25	4	0	1	1	LC1DT25 ♦	119.00	149.00
—	—	—	—	—	—	—	—	2	2			LC1D128 ♦	119.00	149.00
1	3	5	5	10	15	18	—	3	0			LC1D18 ★	136.00	160.00
—	—	—	—	—	—	—	32	4	0	1	1	LC1DT32 ♦	149.00	183.00
—	—	—	—	—	—	—	—	2	2			LC1D188 ♦	149.00	183.00
2	3	7.5	7.5	15	20	25	—	3	0			LC1D25 ♦♦	151.00	181.00
—	—	—	—	—	—	—	40	4	0	1	1	LC1DT40 ♦	193.00	240.00
—	—	—	—	—	—	—	—	2	2			LC1D258 ♦	193.00	240.00
2	5	10	10	20	30	32	50	3	0	1	1	LC1D32 ♦♦	172.00	213.00
3	5	10	10	30	30	40	—	3	0	1	1	LC1D40A ♦	218.00	275.00
—	—	—	—	—	—	—	60	4	0	0	0	LC1DT60A ♦	296.00	353.00
3	7.5	15	15	40	40	50	—	3	0	1	1	LC1D50A ♦	234.00	291.00
5	10	20	20	40	50	65	80	3	0			LC1D65A ♦	322.00	379.00
—	—	—	—	—	—	—	—	4	0	0	0	LC1DT80A ♦	446.00	503.00
7.5	15	25	30	60	60	80	—	3	0	1	1	LC1D80	363.00	420.00
—	—	—	—	—	—	—	125	4	0			LC1D80004 ■	489.00	524.00
—	—	—	—	—	—	—	—	2	2	0	0	LC1D80008 ■	489.00	524.00
—	—	30	40	75	100	115	—	3	0			LC1D115	479.00	479.00
—	—	40	50	100	125	150	200	3	0	1	1	LC1D150	696.00	696.00
—	—	—	—	—	—	—	—	4	0	0	0	LC1D115004	630.00	630.00

- ▲ Complete the catalog number by adding the coil voltage code from Table 18.11 on page 18-6 (for example, LC1D09G7).
- For DC version of these devices, replace the **C** with a **P** (for example, LC1D80004** becomes LP1D80004**). This applies only to 80 A, 4-pole devices.
- ♦ For ring tongue versions of LC1D09–LC1D65A and LC1DT20–LC1DT80A, add 6 to the catalog number prior to adding the voltage code (for example, LC1D09G7 becomes LC1D096G7 and LC1D50AG7 becomes LC1D50A6G7). There is no charge for this modification.
- ★ For spring terminals versions of LC1D09–LC1D65A, add 3 to the catalog number prior to adding the voltage code (for example, LC1D12G7 becomes LC1D123G7 and LC1D40AG7 becomes LC1D40A3G7. Note that 40–65 A spring terminals are only on the control terminations and not on power terminations). Ring tongue terminations have a 10% adder to list price.
- ▼ For slip-on connector versions of LC1D09 and LC1D12 only, add 9 to the catalog number prior to adding the voltage code (for example, LC1D09G7 becomes LC1D099G7). There is no charge for this modification.

Table 18.4: TeSys D Overload Relays—Ambient Compensated, Bimetallic, Direct Mounting

Current Setting Range (A)	For Direct Mounting to LC1...	Class 10 with Single-Phase Sensitivity	Class 10 without Single-Phase Sensitivity	Class 20 with Single-Phase Sensitivity	Class 20 without Single-Phase Sensitivity	\$ Price
0.10–0.16		LRD01	LR3D01	—	—	60.00
0.16–0.25		LRD02	LR3D02	—	—	
0.25–0.40		LRD03	LR3D03	—	—	
0.40–0.63		LRD04	LR3D04	—	—	
0.63–1	D09–D32	LRD05	LR3D05	—	—	
1–1.6		LRD06	LR3D06	—	—	
1.6–2.5		LRD07	LR3D07	—	—	
2.5–4		LRD08	LR3D08	LRD1508	LR3D1508A1	
4–6		LRD10	LR3D10	LRD1510	LR3D1510A1	
5.5–8	D09–D32	LRD12	LR3D12	LRD1512	LR3D1512A1	62.00
7–10	D09–D32	LRD14	LR3D14	LRD1514	LR3D1514A1	
9–13	D12–D32	LRD16	LR3D16	LRD1516	LR3D1516A1	
12–18	D18–D32	LRD21	LR3D21	LRD1521	LR3D1521A1	
16–24	D25–D32	LRD22	LR3D22	—	—	
17–25	D25–D32	—	—	LRD1522	LR3D1522A1	
23–32	D25–D32	LRD32	LR3D32	—	—	73.00
23–28	D25–D32	—	—	LRD1530	LR3D1530A1	
25–32	D25–D32	—	—	LRD1532	LR3D1532A1	
30–38	D32	LRD35	LR3D35	—	—	
9–13	D40A–D65A Δ	LRD313	LR3D313	LRD313L	—	107.00
12–18	D40A–D65A Δ	LRD318	LR3D318	LRD318L	—	
16–25	D40A–D65A Δ	LRD325	LR3D325	LRD325L	—	
23–32	D40A–D65A Δ	LRD332	LR3D332	LRD332L	—	
30–40	D40A–D65A Δ	LRD340	LR3D340	LRD340L	—	
37–50	D40A–D65A Δ	LRD350	LR3D350	LRD350L	—	
48–65	D40A–D65A Δ	LRD365	LR3D365	LRD365L	—	107.00
17–25	D40–D80 □	LRD3322	LR3D3322	LRD23522	LR3D3522	
23–32	D40–D80 □	LRD3353	LR3D3353	LRD23553	LR3D3553	
30–40	D40–D80 □	LRD3355	LR3D3355	LRD23555	LR3D3555	
37–50	D50–D80 □	LRD3357	LR3D3357	LRD23557	LR3D3557	
48–65	D50–D80 □	LRD3359	LR3D3359	LRD23559	LR3D3559	
55–70	D65–D80	LRD3361	LR3D3361	LRD23561	LR3D3561	127.00
63–80	D65–D80	LRD3363	LR3D3363	LRD23563	LR3D3563	
80–104	D80	LRD3365	—	—	—	
80–104	D115–D150	LRD4365	—	—	—	362.00
95–120	D115–D150	LRD4367	—	—	—	
110–140	D150	LRD4369	—	—	—	

- Δ Overload relays with Everlink termination—direct mount to D40A to D65A only.
- Direct mount to old D2 style D40 to D65 (no Everlink terminations) and to D80 only.

TeSys D contactor accessories pages 18-8 to 18-11
TeSys D overload relay accessories page 18-16
TeSys D replacement coils page 18-19
Dimensions pages 18-40 to 18-46
TeSys T pages 16-91

M1



E164862
CCN NLDX

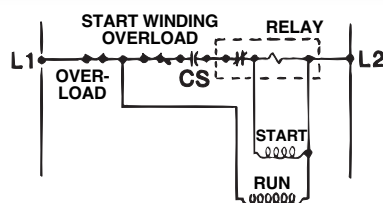


LR43364
Class 3211 04





19550



For Submersible Pump Applications

The MARS 550 and 551 relays were specifically developed for submersible pump and other motor starting applications in high moisture environments. Because the control panels for these are often located in areas of high humidity, the components on them must resist the effects of moisture. Chrome plating on the core and armature and the relatively small area of contact eliminates armature sticking due to organic contaminants which was the number one cause of relay failure.

Features:

- Used on F.E. Meyers, Franklin Electric, Jacuzzi, Red Jacket, Sta-Rite, and Tait
- 2 relays replace over 25 O.E.M. relays
- Universal break-off bracket on each relay. Simply snap off parts not needed
- UL and CSA listings available

MARS NO.	MARS MODEL NO.	CONTINUOUS COIL VOLTAGE	PICK-UP		DROP-OUT	
			MIN.	MAX	MIN.	MAX
19550	MARS 550	130	111	134	15	40
19551	MARS 551	332	244	270	40	90

Cross Reference Information

MANUFACTURER	OEM NO.	GE CATALOG NO.	MARS REPLACEMENT	MANUFACTURER	OEM NO.	GE CATALOG NO.	MARS REPLACEMENT
F.E. Myers	13178-A	3ARR3D7J4	19550	Jacuzzi	23-1308-26	3ARR3EA9V5	19551
	13179-A	3ARR3D3V4	19551		23-1308-00	3ARR3EA7J5	19550
	13180-A	3ARR3D3A4	19551		23-1308-18	3ARR3EA7BB5	19550
	17891-A	3ARR3EA3A4	19551		23-1308-34	3ARR3EA5U5	19551
	17890-A	3ARR3EA3V4	19551		23-1308-42	3ARR3EA7M5	19550
	17889-A	3ARR3EA7J4	19550		23-1308-49	3ARR3EA5C5	19551
Franklin Electric	155031-101	3ARR3J7J4	19550	Red Jacket	71-69	3ARR3EA7M5	19550
	155031-102	3ARR3J9V4	19551		71-70	3ARR3EA5B5	19551
	155031-104	3ARR3J2P3	19550		71-47	3ARR3J3V2	19551
	155031-103	3ARR3J9U4	19551	Sta-Rite	U18-325	3ARR3J3V3	19551
	155031-105	3ARR3J7M1	19550		U18-665	3ARR3J3A3	19551
					U18-810	3ARR3J2P3	19550
					U18-811	3ARR3J5V3	19551
				Tait	A124P2	3ARR3EA5A5	19551
					A124P1	3ARR3EA7K5	19550

MARS NO.	G.E. NO.	USED BY
16104	3ARR3J3G3	Barnes [Burks, Decator] & Myers



Motor Start Capacitors

MARS SERIES **110**



Electrolytic Capacitors for Motor Starting Applications

Start capacitor case dimensions chart. Capacitor accessories on page C9.

MARS Blue Box™

Features:

- The largest assortment of replacements in the industry!
- Smallest dimensions for general replacements.
- Hermetically sealed black Bakelite case permanently protects the capacitor from oil, dirt, grease or moisture.
- New and improved terminal construction capable of withstanding increased heat. This terminal will generate less heat when applied under severe hot humid environment.
- 50/60 Hz

110/125 Dual Voltage AC		
MARS NO.	MICROFARAD Min - Max.	CASE SIZE
11002	21-25	1
11003	25-30	1
11004	30-36	1
11005	36-43	1
11006	43-56	1
11007	56-72	1
11008	72-88	1
11009	88-108	1
11010	108-130	1
11112	124-156	1
11011	130-156	1
11013	145-175	1
11014	161-193	1
11015	189-227	1
11016	200-240	1
11017	216-259	1
11018	233-292	1
11019	270-324	1
11020	300-360	1
11021	324-388	1
11022	340-408	2
11023	378-440	2
11024	400-480	2
11071	430-516	2
11025	460-552	2
11026	540-648	4
11027	590-708	4
11047	645-774	4
11028	708-850	4
11072	815-970	4
11029	829-995	4
11073	850-1020	4
11030	1000-1200	7
11074	1290-1548	7

165 Volts AC		
MARS NO.	MICROFARAD Min - Max.	CASE SIZE
11075	72-88	1
11076	88-108	1
11077	108-130	1
11031	124-149	1
11032	145-175	1
11033	161-193	1
11034	189-227	1
11078	216-259	4
11035	233-292	4
11036	270-324	4
11079	340-408	4
11080	378-455	4
11037	400-480	4
11081	540-648	4
11082	710-850	7
11083	810-972	7

220/250 Dual Voltage AC		
MARS NO.	MICROFARAD Min - Max.	CASE SIZE
11038	21-25	1
11039	25-30	1
11040	30-36	1
11041	36-43	1
11042	43-56	1
11043	56-72	1
11084	59-71	1
11137	64-77	4
11044	72-88	4
11045	88-108	4
11046	108-130	4
11148	124-156	4
11049	145-175	4
11050	161-193	6
11051	189-227	6
11052	216-259	6
11053	233-292	6
11054	270-324	6
11085	280-336	7
11086	320-384	7
11087	340-408	7
11088	378-455	7
11089	400-480	7
11090	430-516	7
11091	630-750	8

330 Volts AC		
MARS NO.	MICROFARAD Min - Max.	CASE SIZE
11055	21-25	2
11056	25-30	2
11057	30-36	2
11058	36-43	2
11059	43-56	4
11060	56-72	4
11160	64-77	4
11061	72-88	4
11062	88-108	4
11063	108-130	7
11064	130-156	7
11065	124-156	7
11092	135-162	7
11066	145-175	7
11067	161-193	7
11068	189-227	7
11069	216-259	7
11070	270-324	7
11093	300-360	7

MARS suggests applying a bleed resistor (MARS PN 93007) on start capacitors used in conjunction with starting relays

*Capacitors may be put in different case sizes occasionally, but will not be larger than those stated.

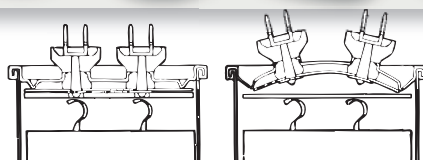




Motor Run Capacitors

MARS SERIES **120**

COMPONENT



NORMAL

FAIL SAFE MODE

PHYSICAL INTERRUPTER

Single Section Run Capacitors

Capacitor accessories on page C9.

Features:

- MARS offers the widest selection of ratings in the industry
- Non-PCB capacitors. Physical interrupter makes our capacitors safe
- Perfect for general replacements—smallest dimensions available
- UL and CSA listings available
- 50/60 Hz

Single Section 370 Volt Oval			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12002	2	A	1.500
12003	3	A	1.500
12004	4	A	1.500
12005	5	A	1.500
12006	6	A	1.500
12007	7.5	A	2.375
12008	10	A	2.625
12009	12.5	A	3.000
12010	15	A	3.750
12012	17.5	A	3.750
12014	20	C	2.375
12015	25	C	2.625
12017	30	C	2.625
12018	35	C	3.000
12021	40	C	3.750
12023	45	C	3.750
12025	50	C	3.750
12024	55	C	4.250
12087	60	C	4.750
12011	65	C	4.750
12089	70	C	4.750
12090	80	D	3.750

Single Section 370 Volt Round			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12092	2	M	2.000
12093	3	M	2.000
12094	4	M	2.000
12095	5	M	2.000
12096	6	M	2.000
12097	7.5	M	2.000
12098	10	M	2.000
12099	12.5	M	2.000
12210	15	M	2.375
12211	16	M	2.375
12212	17.5	M	2.375
12214	20	M	2.625
12215	25	M	3.000
12217	30	M	3.000
12218	35	M	3.750
12221	40	M	3.750
12223	45	N	3.375
12225	50	N	3.750
12226	55	N	3.750
12227	60	N	4.750
12128	65	N	4.750
12229	70	N	4.750
12199	80	N	4.750
12116	100	P	4.750

Single Section 440 Volt Oval			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12026	2	A	1.500
12019	2.5	A	1.500
12027	3	A	2.000
12028	4	A	2.000
12029	5	A	2.375
12030	6	A	2.375
12031	7.5	A	2.625
12032	10	A	3.750
12033	12.5	A	3.750
12034	15	C	2.375
12036	17.5	C	2.375
12037	20	C	2.625
12040	25	C	3.000
12041	30	C	3.750
12043	35	C	3.750
12045	40	C	4.750
12048	45	C	4.750
12049	50	C	4.750
12050	55	C	4.750
12051	60	D	3.750
12052	65	D	3.750
12130	70	D	3.750
12135	75	D	3.750
12140	80	D	4.750

Single Section 440 Volt Round			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12102	2	M	2.000
12103	3	M	2.000
12104	4	M	2.000
12105	5	M	2.000
12106	6	M	2.000
12107	7.5	M	2.000
12232	10	M	2.375
12233	12.5	M	2.375
12234	15	M	2.625
12236	17.5	M	2.750
12237	20	M	3.000
12240	25	M	3.750
12241	30	N	3.375
12243	35	N	3.750
12245	40	N	3.750
12248	45	N	4.750
12251	50	P	3.375
12252	55	P	3.750
12254	60	P	3.750
12357	65	P	3.750
12258	70	P	4.750
12259	80	P	4.750
12068	90	P	4.750

*Capacitors may be put in different case sizes occasionally, but will not be larger than those stated.

Base Dimensions on p.C7



The largest selection of motors, components, and accessories for the HVAC/R Industry

C-5

1/4" x 1 1/4" Time-Delay, Glass Tube Fuses MDL Series

Description

- Time-delay
- Optional axial leads available
- 1/4" x 1 1/4" (6.4 x 31.7mm) physical size
- Glass tube, nickel-plated brass endcap construction
- UL Listed product meets standard 248-14



Electrical Characteristics		
Rated Current	% of Amp Rating	Opening Time
1/16 - 30A	100%	None
	135%	60 minutes maximum
	200%	120 seconds maximum
1/16 - 3A	200%	5 seconds minimum
3-2/10 - 8A	200%	12 seconds minimum

Agency Information

- UL Listed Card: MDL 1/16 - 8A (Guide JDYX, File E19180)
- UL Recognized Card: MDL 9 - 30A (Guide JDYX2, File E19180)
- CSA Certification Card: MDL 1/16 - 8A (Class No. 1422-01)
- CSA Component Acceptance: MDL 9-30A (Class No. 1422-30)
- CE

Environmental Data

- Shock: 1A thru 30A – MIL-STD-202, Method 207, (HI Shock)
- Vibration: 1/4A thru 30A – MIL-STD-202, Method 204, Test Condition C (Except 5g, 500HZ)

Ordering

Specify packaging code

- Insert packaging code prefix before part number. E.g., BK (or BK1)-MDL-5-R

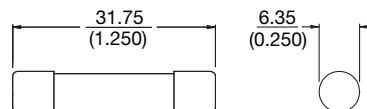
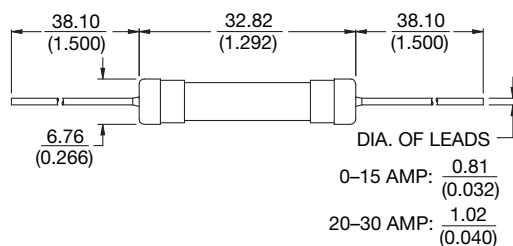
Specify option codes if desired

- For axial leads, insert "V" between catalog series and amp rating. E.g., BK-MDL-V-5-R

- For board washable, insert "B" between catalog series and amp rating. E.g., BK-MDL-B-5-R
- For axial leads and board washable, insert "B" then "V" between catalog series and amp rating. E.g., BK-MDL-BV-5-R

Dimensions - mm (in)

Drawing Not to Scale



Specifications

Part Number	Voltage Rating Vac	AC Interrupting Rating* (amps)@			Typical DC Cold Resistance** (Ω)	Typical Melting I ² t† AC	Typical Voltage Drop‡
		250Vac	125Vac	32Vac			
MDL-1/16-R	250	35	10000	-	45.6	0.0046	2.79
MDL-1/10-R	250	35	10000	-	15.68	0.0420	1.95
MDL-1/8-R	250	35	10000	-	12.238	0.0422	1.52
MDL-3/16-R	250	35	10000	-	4.81	0.116	1.05
MDL-2/10-R	250	35	10000	-	5.234	0.314	0.972
MDL-1/4-R	250	35	10000	-	3.208	0.447	0.965
MDL-3/10-R	250	35	10000	-	2.046	0.412	0.808
MDL-3/8-R	250	35	10000	-	1.567	0.982	1.46
MDL-1/2-R	250	35	10000	-	0.943	1.656	1.27
MDL-3/4-R	250	35	10000	-	0.397	4.343	1.01
MDL-1-R	250	35	10000	-	0.273	11.498	0.995
MDL-1-1/4-R	250	100	10000	-	0.205	86.2	0.722
MDL-1-1/2-R	250	100	10000	-	0.156	22.7	0.721
MDL-2-R	250	100	10000	-	0.116	62.3	0.644
MDL-2-1/4-R	250	100	10000	-	0.096	49.6	0.535
MDL-2-1/2-R	250	100	10000	-	0.081	63.1	0.410
MDL-3-R	250	100	10000	-	0.057	67.5	0.345
MDL-4-R	250	200	10000	-	0.038	19.3	0.187
MDL-5-R	250	200	10000	-	0.025	32.0	0.160
MDL-6-R	250	200	10000	-	0.022	37.4	0.155
MDL-6-1/4-R	250	200	10000	-	0.02	38.7	0.152
MDL-7-R	250	200	10000	-	0.018	42.7	0.140
MDL-8-R	250	200	10000	-	0.015	47.8	0.119
MDL-9-R	32	-	-	1000	0.012	51.5	0.124
MDL-10-R	32	-	-	1000	0.01	64.4	0.114
MDL-15-R	32	-	-	1000	0.005	354.0	0.130
MDL-20-R	32	-	-	1000	0.004	2914.0	0.530
MDL-25††	32	-	-	1000	0.01225	15221.0	0.30
MDL-30††	32	-	-	1000	0.0011	15581.0	0.40

* Interrupting Ratings (Interrupting ratings were measured at 70% - 80% power factor on AC)

** DC Cold Resistance (Measured at ≤10% of rated current)

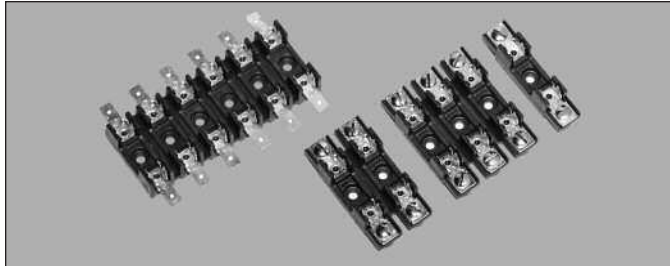
† Typical Melting I²t (A²Sec) (I²t was measured at listed interrupting rating and rated voltage.)

‡ Typical Voltage Drop (Voltage drop was measured at 25°C±3°C ambient temperature at rated current)

†† MDL-25 & MDL-30 not available in RoHS compliant construction.

S-8000 Series

1/4" x 1 1/4" Fuse Blocks



Description

- For 1/4" x 1 1/4" (6.3 x 32mm) fuses
- Bolt-in and snap-in mounting available
- Tight cluster mounting
- All types of terminal configurations
- Clips made of spring-bronze
- Anti-rotational pin provided
- Flame retardant thermoplastic meets UL 94V0

Environmental Data

- Relative Temperature Index (RTI)
 - Bolt-in 130°C
 - Snap-in 110°C

Agency Information

- UL Recognized: E14853
- CSA Certified: 47235

RoHS
2002/95/EC

Specifications

Series	Volts	UL Max Amps	CSA Max. Amps
S-8000	300Vac/dc	25	21
S-8100	300Vac/dc	20	13
S-8200	300Vac/dc	20	16
S-8300	300Vac/dc	30	25

Dimensions - mm/in.

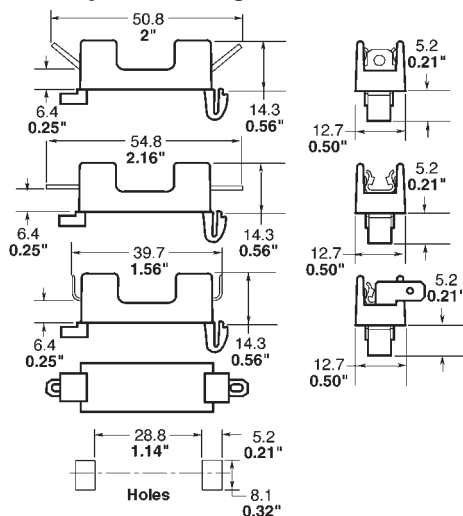
S-8000 Single-Pole Snap-In Mounting Series

40° Terminal

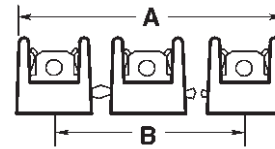
0°
Terminal

Side
Terminal

Mounting



Multiple Pole



Mounting Dimensions

No. of Poles	Inches		Millimeters	
	A	B	A	B
1	—	—	—	—
2	1 1/8"	5/8"	28.6	15.9
3	1 3/4"	1 1/4"	44.4	31.8
4	2 3/8"	1 7/8"	60.3	47.6
5	3"	2 1/2"	76.2	63.5
6	3 5/8"	3 1/8"	92.1	79.4
7	4 1/4"	3 3/4"	108.0	95.2
8	4 7/8"	4 3/8"	123.8	111.1
9	5 1/2"	5"	139.7	127.0
10	6 1/8"	5 5/8"	155.6	142.9
11	6 3/4"	6 1/4"	171.4	158.8
12	7 3/8"	6 7/8"	187.3	174.6

Dimensions - mm/in.

S-8000 Single-Pole Bolt-In Mounting Series

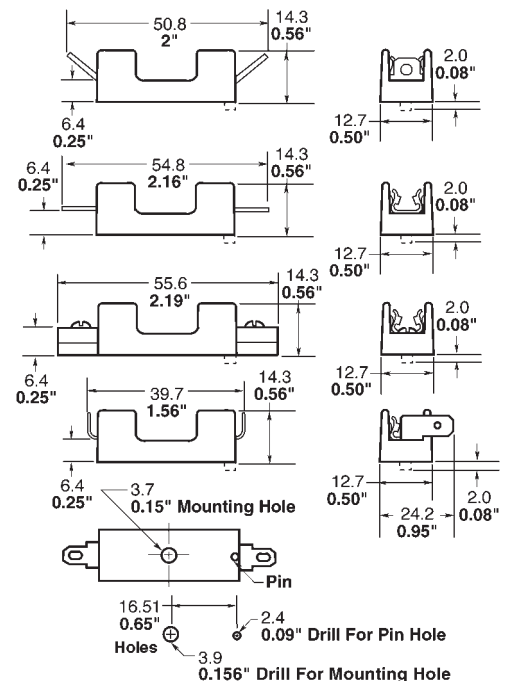
40° Terminal

0°
Terminal

Screw
Terminal

Side
Terminal

Mounting



Component	Material
Clip	Spring-Bronze, Bright Tin-Plate
Body	Thermoplastic

RY/RM Series — General Purpose Miniature Relays

Key features of the RY series include:

- Compact miniature size saves space
- 2PDT and 4PDT models, available with bifurcated crossbar contacts, ensure reliable low-current switching for dry circuit applications
- Choice of plug-in/solder or PCB type terminals
- Options include check button for test operation and indicator lights
- DIN rail, surface, panel, and PCB type sockets available for a wide range of mounting applications



Specifications	Contact Material	RY2, RY4: Silver (Ag), gold-plated RY22, RY42: Ag-Pd alloy RM: Silver (Ag)
	Contact Resistance	RY2, RY4: 50mΩ maximum RY22, RY42: 100mΩ maximum RM: 30mΩ maximum
	Minimum Applicable Load	RY2, RY4: 5V DC, 10mA/24V DC, 5mA RM2: 24VDC/10mA, 5VDC/20mA (reference value) Bifurcated contacts: RY22, RY42: 1V DC, 100μA (reference value)
	Operating Time	20ms maximum
	Release Time	20ms maximum
	Maximum Continuous Applied Voltage (AC/DC) at 20°C	110% of the rated voltage
	Minimum Operating Voltage (AC/DC) at 20°C	80% of the rated voltage
	Drop-Out Voltage (AC)	30% or more of the rated voltage
	Drop-Out Voltage (DC)	10% or more of the rated voltage
	Power Consumption	RY2, RY22: DC: approximately 0.8W AC: approximately 1.1VA (50Hz), 1VA (60Hz) RY4, RY42, RM2: DC: approximately 0.9W AC: approximately 1.4VA (50Hz), 1.2VA (60Hz)
	Insulation Resistance	100MΩ minimum (measured with 500V DC megger)
	Dielectric Strength	RY2, RY22: Between live and dead parts: 1,500V AC, 1 minute; Between contact and coil: 1,500V AC, 1 minute; Between contacts of different poles: 1,500V AC, 1 minute; Between contacts of the same pole: 1,000V AC, 1 minute RY4, RY42, RM2: Between live and dead parts: 2,000V AC, 1 minute; Between contact and coil: 2,000V AC, 1 minute; Between contacts of different poles: 2,000V AC, 1 minute; Between contacts of the same pole: 1,000V AC, 1 minute
	Frequency Response	1,800 operations/hour
	Temperature Rise	Coil: 85°C maximum Contact: 65°C maximum
	Vibration Resistance	0 to 6G (55Hz maximum)
	Shock Resistance	RY2, RY22: 100N (approximately 10G) RY4, RY42, RM2: 200N (approximately 20G)
	Life Expectancy	RY2, RY4: over 200,000 operations (120V, 3A) RY22, RY42: over 200,000 operations (120V AC, 1A) RM2: over 500,00 operations (240V AC, 5A)
		Mechanical over 50,000,000 operations
	Operating Temperature	-30 to +70°C
	Weight	DPDT: 23g; 4PDT: 34g (approximately)


 UL Recognized
Files No. E55996

 CSA Certified
File No. LR35144


File No. B020813332452


Ordering Information

Order standard voltages for fastest delivery. Allow extra delivery time for non-standard voltages.

Basic Part No.

RY4S-U

Coil Voltage:

AC110-120V
E

Relays

Part Numbers

Part Numbers: RY/RM Series with Options

Termination	Contact Configuration	Basic Part No.	Indicator Light	Check Button	Indicator Light and Check Button	Top Bracket
S Solder/plug-in	DPDT small footprint	RY2S-U	RY2S-UL	RY2S-UC	RY2S-ULC	RY2S-UT
	DPDT (bifurcated contacts)	RY22S-U	RY22S-UL	RY22S-UC	RY22S-ULC	RY22S-UT
	DPDT wide footprint	RM2S-U	RM2S-UL	RM2S-UC	RM2S-ULC	RM2S-UT
	4PDT	RY4S-U	RY4S-UL	RY4S-UC	RY4S-ULC	RY4S-UT
	4PDT (bifurcated contacts)	RY42S-U	RY42S-UL	RY42S-UC	RY42S-ULC	RY42S-UT
V PCB 0.031" (0.8mm) wide	DPDT small footprint	RY2V-U	RY2V-UL	RY2V-UC	RY2V-ULC	—
	DPDT (bifurcated contacts)	RY22V-U	RY22V-UL	RY22V-UC	RY22V-ULC	—
	DPDT wide footprint	RM2V-U	RM2V-UL	RM2V-UC	RM2V-ULC	—
	4PDT	RY4V-U	RY4V-UL	RY4V-UC	RY4V-ULC	—
	4PDT (bifurcated contacts)	RY42V-U	RY42V-UL	RY42V-UC	RY42V-ULC	—

R1

Ratings

Coil Ratings

Rated Voltage (V)		Rated Current ±15% at 20°C				Coil Resistance ±10% at 20°C		Coil Inrush (60Hz)		Coil Inductance			
		60Hz		50Hz						Energizing		De-Energizing	
AC		RY2, RY22	RM2, RY4, RY42	RY2, RY22	RM2, RY4, RY42	RY2, RY22	RM2, RY4, RY42	RY2, RY22	RM2, RY4, RY42	RY2, RY22	RM2, RY4, RY42	RY2, RY22	RM2, RY4, RY42
	6V	150mA	200mA	170mA	240mA	18.8Ω	9.4Ω	250mA	340mA	0.09H	0.08H	0.06H	0.04H
	12V	75mA	100mA	86mA	121mA	76.8Ω	39.3Ω	120mA	170mA	0.37H	0.30H	0.22H	0.16H
	24V	37mA	50mA	42mA	60.5mA	300Ω	153Ω	56mA	85mA	1.5H	1.2H	.9H	0.63H
	120V*	7.5mA	11mA	8.6mA	13.1mA	7,680Ω	4,170Ω	12mA	16mA	37H	33H	22H	15H
	240V †	3.2mA	5.5mA	3.7mA	6.6mA	31,200Ω	15,210Ω	7mA	8mA	130H	130H	77H	62H
DC		RY2, RY22		RM2, RY4, RY42		RY2, RY22	RM2, RY4, RY42	N/A					
	6V	128mA		150mA		47Ω	40Ω						
	12V	64mA		75mA		188Ω	160Ω						
	24V	32mA		36.9mA		750Ω	650Ω						
	48V	18mA		18.5mA		2,660Ω	2,600Ω						
	110V‡	—		9.1mA		—	12,100Ω						

* For RY4/RY42/RM2 relays = AC110/120V AC.

† For RY4/RY42/RM2 relays = 220/240V AC.

‡ For RY4/RY42/RM2 relays = 100/110V DC.

Contact Ratings (gold plated) RY4, RY2

Voltage	Contact	Resistive		Inductive	
		UL	CSA	UL	CSA
30V DC	DPDT	3A	3A	3A	1.5A
	4PDT	5A	5A	5A	1.5A
100V DC	DPDT	0.2A	—	0.2A	0.2A
	4PDT	0.2A	—	0.2A	0.2A
120V AC	DPDT	3A	3A	1.5A	1.5A
	4PDT	5A	5A	5A	5A
240V AC	DPDT	3A	3A	0.8A	0.8A
	4PDT	5A	5A	5A	5A

Contact Ratings (bifurcated) RY42, RY22

Voltage	Resistive UL/CSA	Inductive UL/CSA
30V DC	1A	0.5A
120V AC	1A	0.5A
240V AC	0.8A	0.4A

Contact Ratings RM2

Voltage	Resistive			Inductive		
	Nominal	UL	CSA	Nominal	UL	CSA
30V DC	5A	5A	5A	2.5A	—	2.5A
110V DC	0.4A	0.4A	—	0.4A	—	0.4A
120V AC	5A	5A	5A	2.5A	2.5A	2.5A
240V AC	5A	5A	5A	2A	2A	2A

Applicable Sockets

RY4Part Numbers: Sockets

Relay	Standard DIN Rail Mount	Finger-Safe DIN Rail Mount	Panel Mount	PC Mount
RY2S RY22S	SY2S-05	SY2S-05C	SY2S-51	SY2S-61
RM2	SM2S-05	SM2S-05C	SM2S-51	SY4S-61 SY4S-62
RY4S RY42S	SY4S-05	SY4S-05C	SY4S-51	



See Section F for details on sockets. All DIN rail mount sockets shown above can be mounted using DIN rail BNDN1000.

Spring (optional)	
Part Number	Use With
SY2S-02F1③ SFA-101① SFA-202②	SY2S-05, -05C
SFA-301① SFA-302② SY4S-51F1③	SY2S-51, -61
SY4S-02F1③ SFA-101① SFA-202②	SY2S-05, -05C
SFA-301① SFA-302② SY4S-51F1③	SY4S-51, -61



- ① Top latch
- ② Side latch
- ③ Pullover spring

Internal Circuits

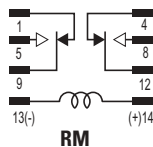
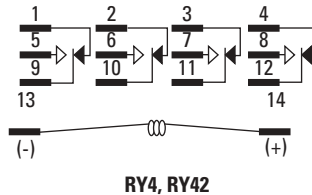
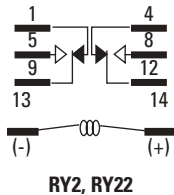


Image as viewed from bottom of relay. Refer to socket for exact wiring layout (Section F).

RJ Series Slim Power Relays

Key features:

- Compact and rugged power relays. Large switching capacity
- Compact housing only 12.7-mm wide.
Large contact rating
RJ1 (1-pole): 16A (UL general use rating @250V AC)
RJ2 (2-pole): 8A
- Non-polarized LED indicator available on blade type. IDEC's unique light guide structure enables high visibility of coil status from any direction.
- The smallest width for 2-pole/bifurcated contact relay
- Excellent electrical and mechanical life.
Electrical life: 200,000 operations (AC load)
Mechanical life: 30 million operations (AC coil)
- RoHS directive compliant (EU directive 2002/95/EC). Contains no lead, cadmium, mercury, hexavalent chromium, PBB or PBDE.
- Diode model:
Diode reverse withstand voltage: 1000V
- UL recognized, CSA certified, EN compliant.



Switches & Pilot Lights

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers



UL508
UL File No. E55996



CSA C22.2 No. 14
1608322
CSA File No. LR35144

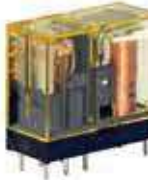


EN61810-1
VDE (REG.-Nr B312)



EN61810-1
EC Low Voltage Directive

Part Number Selection

Style	Terminal	Contact	Model	Part Number	Coil Voltage Code (Standard Stock in bold)
	Blade	SPDT	Standard	RJ1S-C-□	A24 , A110, A120 , A220, A240 , D12, D24 , D48, D100
			with LED	RJ1S-CL-□	
			with Surge Suppresion Diode	RJ1S-CD-□	D12, D24 , D48, D100
			with LED & Surge Suppresion Diode	RJ1S-CLD-□	
		DPDT	Standard	RJ2S-C-□	A24 , A110, A120 , A220, A240 , D12, D24 , D48, D100
			with LED	RJ2S-CL-□	
			with Surge Suppresion Diode	RJ2S-CD-□	D12, D24 , D48, D100
			with LED & Surge Suppresion Diode	RJ2S-CLD-□	
			Standard Bifurcated contacts (without LED indicator)	RJ22S-C-□	A12, A24 , A120 , A240 , D5, D12, D24 , D100
			Bifurated contacts (with LED indicator)	RJ22S-CL-□	
			Bifurcated contacts diode (without LED indicator)	RJ22S-CD-□	D5, D12, D24 , D48, D100
			Bifurcated contacts diode (with LED indicator)	RJ22S-CLD-□	
	PCB	SPDT	Standard	RJ1V-C-□	
			High Capacity	RJ1V-CH-□	
		SPST-NO	Standard	RJ1V-A-□	A24 , A110, A120 , A220, A240 , D5, D6, D12, D24 , D48, D100
			High Capacity	RJ1V-AH-□	
		DPDT	Standard	RJ2V-C-□	
		DPST-NO	Standard	RJ2V-A-□	
		DPDT	Bifurcated contacts	RJ22V-C-□	A12, A24 , A120 , A240 , D5, D12, D24 , D48, D100
		DPST-NO	Bifurcated contacts	RJ22V-A-□	

Ordering Information

When ordering, specify the Part No. and coil voltage code:

(example) **RJ1S-C-** **A120**
Part No. Coil Voltage Code

Coil Voltage Table

Coil Voltage Code	A12	A24	A110	A120	A220	A240	D5	D6	D12	D24	D48	D100
Coil Rating	12V AC	24V AC	110V AC	120V AC	220V AC	240V AC	5V DC	6V DC	12V DC	24V DC	48V DC	100-110V DCV DC

Sockets

	Relays	Standard DIN Rail Mount	Finger-safe DIN Rail Mount	PCB Mount
Blade Models	RJ1S (Std)	SJ1S-05BW	SJ1S-07LW	SJ1S-61
	RJ2S (Std)/RJ22S	SJ2S-05BW	SJ2S-07LW	SJ2S-61
PCB Models	RJ1V (Std)	—	SQ1V-07B*	SQ1V-63*
	RJ1V (HC) RJ2V/RJ22V	—	SQ2V-07B*	SQ2V-63*
				
	Shown with optional marking plate.			



*Hold-down clip or spring must be removed to use with RJ PCB relays.

Replacement Hold Down Springs

Part Number	Used With Socket
SJ9Z-CM	SJ1S-05BW, SJ1S-07LW, SJ2S-05BW, SJ2S-07LW
SQ9Z-C	SQ1V-07B, SQ2V-07B
SQ9Z-C63	SQ1V-63, SQ2V-63

Jumpers for SJ Sockets

Poles	Part Number	Quantity
2	SJ9Z-JF2	Must purchase in quantities of 10.
5	SJ9Z-JF5	
8	SJ9Z-JF8	
10	SJ9Z-JF10	

Accessories

Item	Appearance	Use with	Part No.	Remarks
Aluminum DIN Rail (1 meter length)		All DIN rail sockets	BNDN1000	The BNDN1000 is designed to accommodate DIN mount sockets. Made of durable extruded aluminum, the BNDN1000 measures 0.413 (10.5mm) in height and 1.37 (35mm) in width (DIN standard). Standard length is 39" (1,000mm).
DIN Rail End Stop		DIN rail	BNL5	9.1 mm wide.
Marking Plate		Finger safe sockets (ONLY)	SJ9Z-PWPN10	10 pieces per pack



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SPEMCO Switches

1187-Q/20B

Item Number :

1187-Q/20B

 Cut Sheets : [PDF](#)


HAND OFF
AUTO

ON OFF TEST

SPDT ON-OFF-ON, 20Amp-125v, .250Q.C. Terminals

Type	Toggle Switch
Amps @ 125 VAC	20
Amps @ 250 VAC	10
Maximum HP	3/4
Contact Form	SPDT
Switch Function	ON-OFF-ON
Number of Connections	3
Terminals	.250 Q.C. Terminals
Mounting Type	Panel
Mounting Hole (Inches)	15/32
Bat Toggle Length (Inches)	.65
Stem Length (Inches)	.47
Stem Diameter (Inches)	
Application	
RoHS	Yes
Approvals	U.L. & CSA

(Required Field denoted by *)

Order Quantity :

*

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NOTE: () Around a function denotes a MOMENTARY function.

Not all Spemco products are displayed on website. Be sure to contact a salesperson if you do not see what you are looking for. **Click "notes" to view Cut Sheets.** Prices quoted on this website are our "Suggested List Price". To receive a price quote tailored to your specific needs, please contact one of our sales representatives or "Request Quote" from the shopping cart of this site.

Product data sheet

Characteristics

SILENCE

XB5AA21

black flush complete pushbutton Ø22 spring
return 1NO unmarked

Product availability : Stock - Normally stocked in distribution facility

Price* : 38.50 USD



Main

Range of product	Harmony XB5
Product or component type	Complete push-button
Device short name	XB5
Bezel material	Plastic
Fixing collar material	Plastic
Mounting diameter	0.87 in (22 mm)
Sale per indivisible quantity	1
Shape of signaling unit head	Round
Type of operator	Spring return
Operator profile	Black flush unmarked
Contacts type and composition	1 NO
Contacts operation	Slow-break
Connections - terminals	Screw clamp terminals: $\leq 2 \times 1.5 \text{ mm}^2$ with cable end conforming to EN/IEC 60947-1 Screw clamp terminals: $1 \times 0.22...2 \times 2.5 \text{ mm}^2$ without cable end conforming to EN/IEC 60947-1

Complementary

Height	1.65 in (42 mm)
Width	1.18 in (30 mm)
Depth	2.05 in (52 mm)
Terminals description ISO n°1	(13-14)NO
Product weight	0.08 lb(US) (0.037 kg)
Resistance to high pressure washer	1015.26 psi (7000000 Pa) at 131 °F (55 °C), distance: 0.1 m
Contacts usage	Standard contacts
Positive opening	Without positive opening
Operating travel	0.1 in (2.6 mm) (NO changing electrical state) 0.17 in (4.3 mm) (total travel)

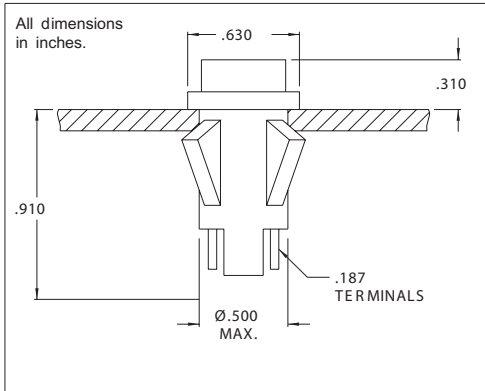


Chicago Miniature Lighting, LLC

Lighting the world since 1910

1050QC, 1051QC, 1052QC, 1053QC and 1090QC Series Non-Relampable Neon-Incandescent Indicator Lights

DESCRIPTION AND FEATURES



Mounting: Will snap-fit into Ø.500/.505 hole in panels .020/.100 thick. Push-on speednut SN0461 also available.

Mounting hole pattern on page SP2.

Terminals: Tinned brass

Lens: Polycarbonate

Bezel: Polished stainless steel.
For black finish add "X" after the series letter(s).

Housing: White Nylon

Lens Color	Neon		Incandescent	
	Model No. (105-125VAC)	Model No. (208-250V)	Model No. (12V)	Model No. (28V)
Red	1050QC1	1051QC1	1090QC1-12V	1090QC1-28V
Clear	1050QC2	-	-	-
Amber	1050QC3	1051QC3	1090QC3-12V	1090QC3-28V
White	1050QC4	1051QC4	1090QC4-12V	1090QC4-28V
Green	1052QC5*	1053QC5*	1090QC5-12V	1090QC5-28V
Lamp used	C2A+Resistor	C2A+Resistor	#2162	#2187

PUMP 1 RUN

* Incorporates G2B lamp and resistor.

Underwriters Laboratories (UL) File No. E20325

Canadian Standards Association (CSA) File No. LR13346

1050QC, 1051QC, 1052QC, 1053QC and
1090QC Series Non-Relampable
Neon-Incandescent Indicator Lights

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Hackensack, NJ 07601
Phone: (201) 489-8989
Fax: (201) 489-6911

18703 Dix Toledo Road
Brownstown, MI 48193

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Chicago Miniature Lighting, LLC reserves the right to make specification revisions that enhance the design and/or performance of the product

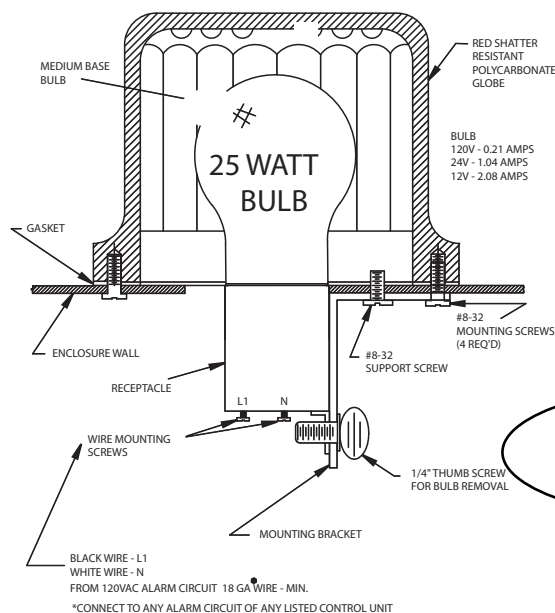


OHIO ELECTRIC
CONTROL, INC.

ACCESSORIES

Alarm Light RL-3 High Intensity

- Lexan lens magnifies and intensifies light
- Available in 4 colors: Red, Blue, Amber, and Green
- Flanged lens base and gasket creates watertight seal on enclosure
- Interior mounting screws require no sealing
- Easy bulb replacement
- Rugged lens resists damage
- Low profile design
- UL Type 4X recognized
- Medium base socket with screw terminal
- Fast and simple mounting
- Available in kit form: including 4 self-tapping screws, a nylon thumbscrew, light bulb, socket, light mounting bracket, and rubber gasket. Add (K) to part number when ordering a kit.



Part Number

RL - 3 (Lens Color) (Kit)
Example: RL-3K

INSTALLATION - ALL MODELS ARE SUITABLE FOR EITHER INDOOR OR OUTDOOR TYPE 2, 3, 3S, 3R, 4, 4X, OR 12 USE.

LIGHT COMES COMPLETE WITH:
RED POLYCARBONATE LENS
CLOSED CELL NEOPRENE GASKET
BULB SOCKET
CLEAR INTENSITY BULB
NYLON SCREW
LOCKNUT

QUICK SIMPLE BULB REPLACEMENT
REMOVE NYLON SCREW FROM BASE
AND LOWER BULB

ONLY ONE PUNCHED HOLE REQUIRE FOR MOUNTING
1 - 15/16" DIA. PUNCH OR A
1 - 1/2" CONDUIT PUNCH

AL3KB - SEAL FAIL
RL3KB - HIGH
LEVEL

Accessories

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Timing Mode: **REPEAT CYCLE**

Category: **FLASHER**

Series: **TEKR**

ROUND SOLID STATE FLASHER, UNIVERSAL AC/DC WIDE VOLTAGE



TEKR Flashers

These are an ideal substitute for mechanical flashers. The primary design benefits are small size and ease of installation and hook-up.

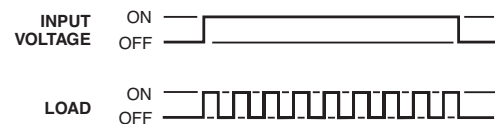
The CMOS timing provides excellent accuracy and repeatability.

Timing Mode

Application of input voltage to the timer starts the time delay.

At the end of the delay period the load is energized.

To reset, remove the input voltage to the flasher.

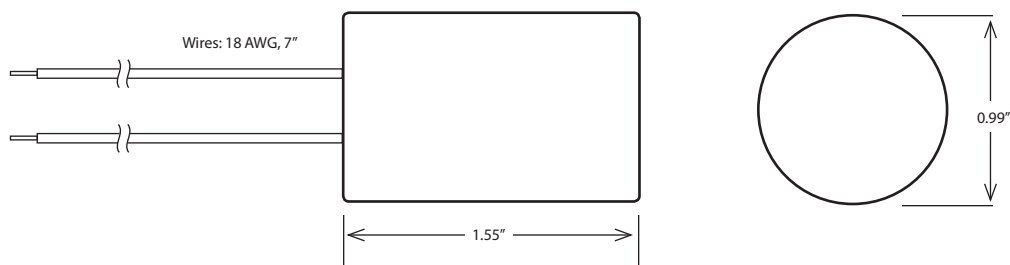


FEATURES

- Digital timing, solid state output
- Up to 1 Amp current load handling
- 10 Amps single cycle surge handling
- Wide voltage range from 24 to 240VAC and 12 to 48VDC
- $\pm 0.5\%$ Repeat accuracy
- No moving parts
- Totally encapsulated for protection from harsh environments
- Surface mount with bracket
- Standard wire leads
- 100% operational testing before shipping
-  RoHS compliant

011311

BASIC WIRING AND DIMENSIONS



SPECIFICATIONS

Input Voltage: *Universal:* 12–48VDC, 24–240VAC

Repeat Accuracy: $\pm 0.5\%$ under fixed conditions

Flashes per Minute: Factory fixed at 60, 75, 90 or 120fpm

Tolerances: Fixed at 10% of nominal time

Temperature Ranges: *Storage:* -40°C to +85°C
Operating: -25°C to +65°C

Life Expectancy: No predictable failure if used within operating parameters

Protection: Internal MOV

Solid State Output: N.O.

Load Current: 1 amp switching,
10 amps single-cycle surge

Time Cycle Interrupt: Input voltage break resets flasher to original state

OPTIONS SELECTION

Mode of Operation	Series	Universal Input Voltage	Factory Fixed Flashes per Minute	Time Adjustment Method	Options
Repeat Cycle Flasher	TEKR	U 12–48VDC 24–240VAC	060 60 fpm 075 75 fpm 090 90 fpm 120 120 fpm	C Fixed, internal, factory set	W Wires

EXAMPLE **TEKR U 075 C W** is a universal voltage TEKR series flasher factory set at 75 fpm.

AudioLarm II

MW-09-201-Q



More Information

Warble Tone



[Spec Sheet](#)



[UL Recognized](#)



RoHS Compliant

Specifications

Revision: 10.14

Medium Loud Warble Tone; Extra Fast Rate; Panel Mount Case and Quick Connect Blades Termination

Mounting:

Panel Mount

Operating Mode:

Medium Loud Extra Fast Warble Tone

Operating Voltage:

30-120 Vac

Operating Frequency:

5 mA at 30 Vac

20 mA at 120 Vac

Typical Sound Pressure:

85±5 dB(A), at 30 Vac, at 24 inches (61 cm), at 25°C

95±5 dB(A), at 120 Vac, at 24 inches (61 cm), at 25°C

Termination:

Quick Connect Blades

Pull test with a maximum of 22 pounds (10 kg) load

Operating Temperature:

-20_C to +65_C

Storage Temperature:

-40_C to +85_C

20% over maximum rated voltage for less than 5 minutes

To the maximum operating voltage

Reverse Voltage Protection:

Internal Circuit- Audio-oscillator and piezoelectric driver

Potting- 2 parts epoxy resin or silicone, black

Diaphragm- Stainless Steel 304

Gasket:

Environmental Durability:

ASTM B117 Certified - Withstands exposure to salt spray for 300 hours

IP 68 Certified - Withstands water submergence and dust exposure

Humidity- 95% relative humidity at +40_C continuously for 100 hours.

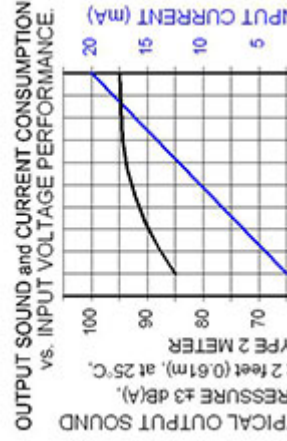
Vibration- Withstands vibration between 0 and 55 Hz. on all axes.

10 years under normal operating conditions.

For a period of two years from the date of manufacture under normal operating conditions.

Life Expectancy:

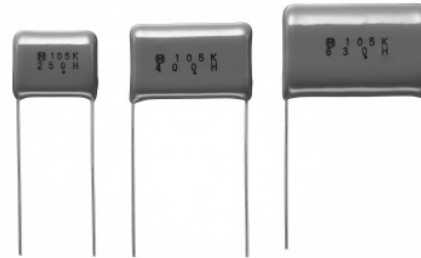
Warranty:



Metallized Polyester Film Capacitor

Type: **ECQE(F)**

Non-inductive construction using metallized Polyester film with flame retardant epoxy resin coating



■Features

- Self-healing property
- Excellent electrical characteristics
- Flame retardant epoxy resin coating
- RoHS directive compliant

■Recommended Applications

- General purpose usage
- ※Please contact us when applications are CD I , ignitor etc.

■Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	C	Q	E							F	
Product code		Dielectric & construction		Rated volt.		Capacitance		Cap. Tol.		Suffix	Suffix
				1	100 VDC	10	1000 VDC	J	±5 %	Suffix	Lead Form
				2	250 VDC	12	1250 VDC	K	±10 %	Blank	Straight
				4	400 VDC	1A	125 VAC			B	Crimped lead
				6	630 VDC	2A	250 VAC			Z	Cut lead
										3	Crimped taping (Ammo)
										6	Crimped taping (Ammo)

●Explanation of Part Number for Odd Size Taping

1	2	3	4	5	6	7	8	9	10	11	12
E	C	Q	E						R		F
Product code		Dielectric & construction		Rated volt.		Capacitance		Cap. Tol.		Suffix	Suffix

■Specifications

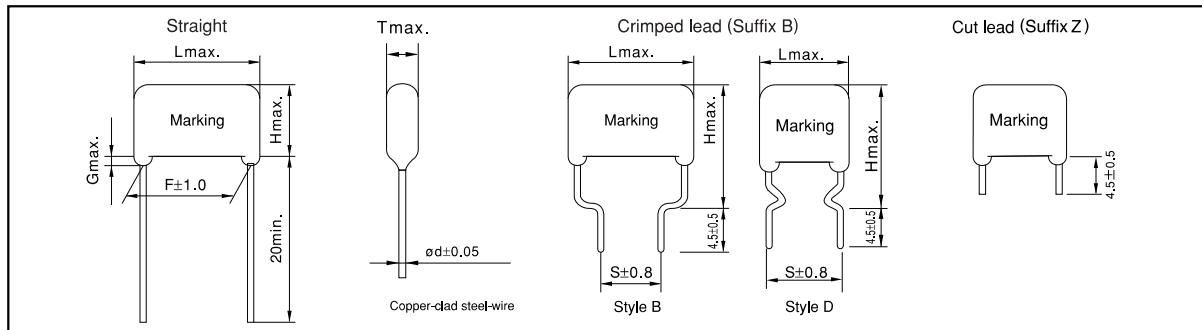
Category temp. range (Including temperature-rise on unit surface)	100 VDC, 250 VDC, 400 VDC, 630 VDC, 1000 VDC, 1250 VDC, 125 VAC, 250 VAC	-40 °C to +105 °C -40 °C to +105 °C
Rated voltage	100 VDC, 250 VDC, 400 VDC, 630 VDC, 1000 VDC, 1250 VDC, (Derating of rated voltage by 1.25 %/°C at more than 85 °C) 125 VAC, 250 VAC	
Capacitance range	0.0010 μF to 10 μF (E12)	
Capacitance tolerance	±5 % (J), ±10 % (K)	
Dissipation factor (tanδ)	tanδ ≤ 1.0 % (20 °C, 1 kHz)	
Withstand voltage	●Rated volt. 100 V to 630 VDC Between terminals : Rated volt.(VDC)×150 % 60 s	
	●Rated volt. 1000 VDC, 1250 VDC Between terminals : Rated volt. (VDC)×175 % 2 s to 5 s or 1000 VAC 60 s Between terminals to enclosure : 1500 VAC 60 s	
	●Rated volt. 125 VAC, 250 VAC Between terminals : Rated volt.(VAC)×230 % 60 s Between terminals to enclosure : 1500 VAC 60 s	
Insulation resistance (IR)	100 V to 630 VDC:	C ≤ 0.33 μF : IR ≥ 9000 MΩ (20 °C, 100 VDC, 60 s) C > 0.33 μF : IR ≥ 3000 MΩ · μF
	1000 VDC, 1250 VDC:	IR ≥ 10000 MΩ (20 °C, 100 VDC, 60 s) IR ≥ 2000 MΩ (20 °C, 500 VDC, 60 s)
	125 VAC, 250 VAC:	C ≤ 0.47 μF : IR ≥ 2000 MΩ (20 °C, 500 VDC, 60 s) C > 0.47 μF : IR ≥ 3000 MΩ · μF (20 °C, 100 VDC, 60 s)

※ In case of applying voltage in alternating current (50 Hz or 60 Hz sine wave) to a capacitor with DC rated voltage, please refer to the page of "Permissible voltage (R.M.S) in alternating current corresponding to DC rated voltage".

※ Voltage to be applied to ECQE1A (F) & ECQE2A (F) is only sine wave (50 Hz or 60 Hz).

Design, Specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.
Whenever a doubt about safety arises from this product, please inform us immediately for technical consultation without fail.

■Dimensions in mm (not to scale)

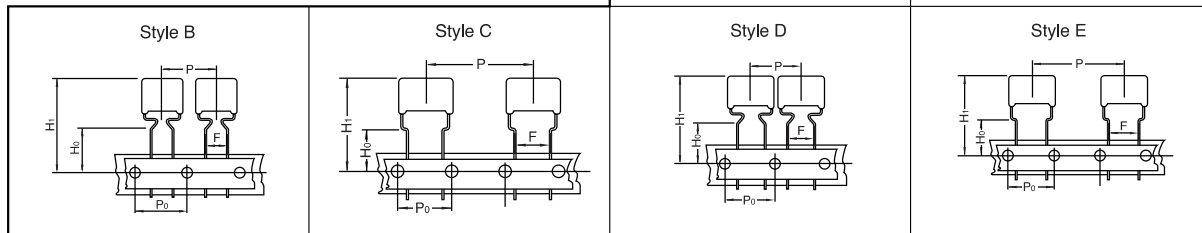


■Packaging Specifications for Bulk Package

Packing quantity: 100 pcs./bag

■Taping Specifications for Automatic Insertion

●Taping style



*Refer to the page of taping specifications.

●Packaging Specifications

Type	Rated volt.	Cap. range (μF)	Taping style							Packing	suffix	
			AD	AS	AB	B	C	D	E			
ECQE (F)	100 VDC	0.56 to 0.68	○								Ammo	() F3
		0.82 to 1.0				○					Ammo	() F3
		1.2 to 3.3					○				Ammo	() F3
		1.2 to 3.3							○		Ammo	R() F
	250 VDC	0.010 to 0.27	○								Ammo	() F3
		0.33				○					Ammo	() F3
		0.39 to 1.5					○				Ammo	() F3
		0.010 to 0.33						○			Ammo	R() F
		0.39 to 1.5							○		Ammo	R() F
		0.010 to 0.10	○								Ammo	() F3
	400 VDC	0.12 to 0.47					○				Ammo	() F3
		0.010 to 0.10						○			Ammo	R() F
		0.12 to 0.47							○		Ammo	R() F
		0.0010 to 0.033	○								Ammo	() F3
	630 VDC	0.039 to 0.047				○					Ammo	() F3
		0.056 to 0.22					○				Ammo	() F3
		0.0010 to 0.047						○			Ammo	R() F
		0.056 to 0.22							○		Ammo	R() F
	1000 VDC	0.010 to 0.10							○		Ammo	R() F
	1250 VDC	0.0010 to 0.022							○		Ammo	R() F
	125 VAC	0.010 to 0.068			○						Ammo	() F6
		0.010 to 0.068						○			Ammo	R() F
	250 VAC	0.010 to 0.033			○						Ammo	() F6
		0.010 to 0.047						○			Ammo	R() F
0.056 to 0.22								○		Ammo	R() F	

●Lead Spacing

Style	Lead Spacing
AD	5.0 mm
AB	5.0 mm
B	5.0 mm
C	5.0 mm
D	7.5 mm
E	7.5 mm

*See the column "Rating, Dimensions & Quantity Box" for packing quantity.

■Rating, Dimensions & Quantity/Ammo Box

●Rated voltage : 100 VDC, Capacitance tolerance : $\pm 5\%$ (J), $\pm 10\%$ (K)

Part No.	Cap. (μF)	Dimensions (mm)								Min. order Q'ty			
		L _{max.}	T _{max.}	H _{max.}		F	S	G _{max.}	ø d	Taping			Bulk
				Straight	Crimped lead	Straight	Crimped lead	Straight		Standard 5 mm	Odd size 5 mm	Odd size 7.5 mm	
ECQE1564□F()	0.56	12.0	5.5	10.9	15.9	10.0	10.0	1.0	0.60	500	—	—	500
ECQE1684□F()	0.68	12.0	6.0	11.9	16.9	10.0	10.0	1.0	0.60		—	—	
ECQE1824□F()	0.82	12.0	6.0	13.5	18.5	10.0	10.0	1.0	0.60	1,000	—	—	
ECQE1105□F()	1.0	12.0	6.7	14.0	19.0	10.0	10.0	1.0	0.60		—	—	
ECQE1125□F()	1.2	18.5	5.5	12.8	17.8	15.0	10.0	1.0	0.60	500	600	—	
ECQE1155□F()	1.5	18.5	6.0	13.4	18.4	15.0	10.0	1.0	0.80		500	500	
ECQE1185□F()	1.8	18.5	6.5	14.4	19.4	15.0	10.0	1.0	0.80		400	400	
ECQE1225□F()	2.2	18.5	7.0	15.0	20.0	15.0	10.0	1.0	0.80	400	—	—	
ECQE1275□F()	2.7	18.5	8.0	15.8	20.8	15.0	10.0	1.0	0.80		—	—	
ECQE1335□F()	3.3	18.5	8.5	16.5	21.5	15.0	10.0	1.0	0.80	—	—	—	
ECQE1395□F()	3.9	26.0	7.0	16.4	21.4	22.5	15.0	1.0	0.80		—	—	
ECQE1475□F()	4.7	26.0	7.5	17.0	22.0	22.5	15.0	1.0	0.80		—	—	
ECQE1565□F()	5.6	26.0	8.3	17.5	22.5	22.5	15.0	1.0	0.80		—	—	
ECQE1685□F()	6.8	26.0	9.0	18.5	23.5	22.5	15.0	1.0	0.80		—	—	
ECQE1825□F()	8.2	26.0	10.0	20.0	25.0	22.5	15.0	1.5	0.80		—	—	
ECQE1106□F()	10.0	26.0	11.5	21.0	26.0	22.5	15.0	1.5	0.80		—	—	

↑ Suffix for lead crimped or taped type
 — Cap. tol. code

style D: 0.056 μ F to 1.0 μ F
 style B: 1.2 μ F to 10.0 μ F

■Rating, Dimensions & Quantity/Ammo Box

●Rated voltage : 250 VDC, Capacitance tolerance : $\pm 5\%$ (J), $\pm 10\%$ (K)

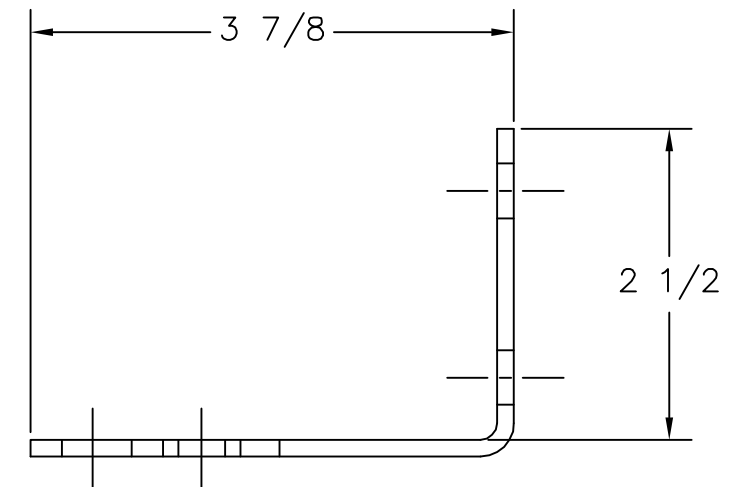
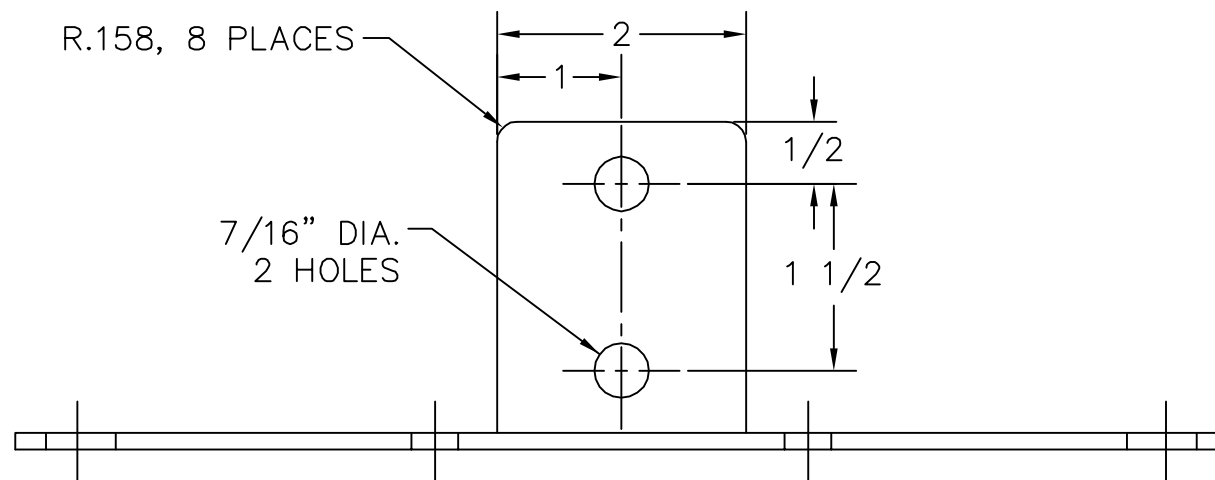
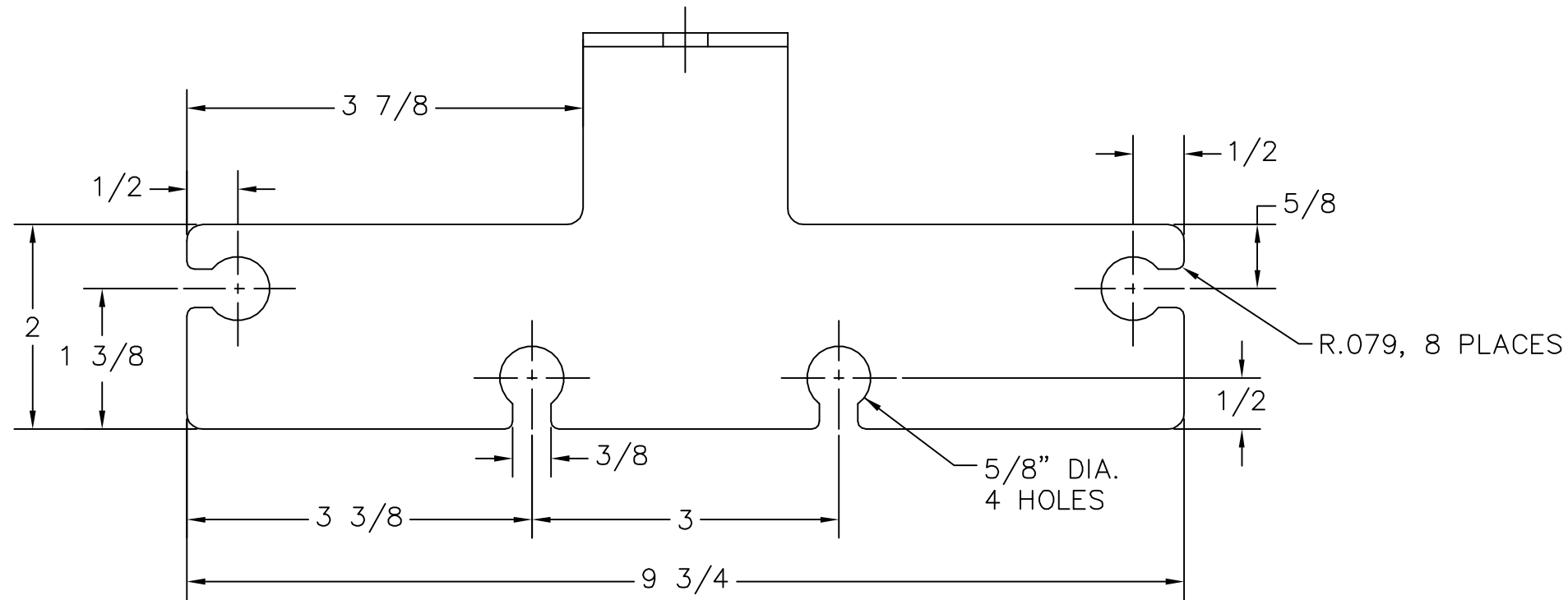
Part No.	Cap. (μF)	Dimensions (mm)								Min. order Q'ty				
		L _{max.}	T _{max.}	H _{max.}		F		S	G _{max.}	ø d	Taping			Bulk
				Straight	Crimped lead	Straight	Crimped lead	Straight	Standard 5 mm		Odd size 5 mm	Odd size 7.5 mm		
ECQE2103□F()	0.010	10.3	4.3	7.4	12.4	7.5	7.5	1.0	0.60	1000	—	1000	500	
ECQE2123□F()	0.012	10.3	4.4	7.5	12.5	7.5	7.5	1.0	0.60					
ECQE2153□F()	0.015	10.3	4.4	7.5	12.5	7.5	7.5	1.0	0.60					
ECQE2183□F()	0.018	10.3	4.4	7.5	12.5	7.5	7.5	1.0	0.60					
ECQE2223□F()	0.022	10.3	4.4	7.5	12.5	7.5	7.5	1.0	0.60					
ECQE2273□F()	0.027	10.3	4.4	7.5	12.5	7.5	7.5	1.0	0.60					
ECQE2333□F()	0.033	10.3	4.5	7.5	12.5	7.5	7.5	1.0	0.60					
ECQE2393□F()	0.039	10.3	4.5	7.5	12.5	7.5	7.5	1.0	0.60					
ECQE2473□F()	0.047	10.3	4.5	7.5	12.5	7.5	7.5	1.0	0.60					
ECQE2563□F()	0.056	10.3	4.8	7.9	12.9	7.5	7.5	1.0	0.60					
ECQE2683□F()	0.068	10.3	4.5	7.5	12.5	7.5	7.5	1.0	0.60	500	—	500		
ECQE2823□F()	0.082	10.3	4.9	8.0	13.0	7.5	7.5	1.0	0.60					
ECQE2104□F()	0.10	10.3	5.8	8.4	13.4	7.5	7.5	1.0	0.60					
ECQE2124□F()	0.12	10.3	6.0	9.0	14.0	7.5	7.5	1.0	0.60					
ECQE2154□F()	0.15	10.3	6.0	10.8	15.8	7.5	7.5	1.0	0.60					
ECQE2184□F()	0.18	12.0	5.0	10.3	15.3	10.0	10.0	1.0	0.60					
ECQE2224□F()	0.22	12.0	5.5	10.5	15.5	10.0	10.0	1.0	0.60					
ECQE2274□F()	0.27	12.0	6.0	11.5	16.5	10.0	10.0	1.0	0.60					
ECQE2334□F()	0.33	12.0	6.5	12.0	17.0	10.0	10.0	1.0	0.60					
ECQE2394□F()	0.39	18.5	4.9	12.0	17.0	15.0	10.0	1.0	0.60					—	500	500
ECQE2474□F()	0.47	18.5	5.3	12.5	17.5	15.0	10.0	1.0	0.60					
ECQE2564□F()	0.56	18.5	5.5	13.0	18.0	15.0	10.0	1.0	0.60					
ECQE2684□F()	0.68	18.5	6.0	13.5	18.5	15.0	10.0	1.0	0.80					
ECQE2824□F()	0.82	18.5	6.5	14.5	19.5	15.0	10.0	1.0	0.80					
ECQE2105□F()	1.0	18.5	7.4	15.0	20.0	15.0	10.0	1.0	0.80					
ECQE2125□F()	1.2	18.5	8.0	15.9	20.9	15.0	10.0	1.0	0.80					
ECQE2155□F()	1.5	18.5	9.0	16.8	21.8	15.0	10.0	1.0	0.80					
ECQE2185□F()	1.8	26.0	7.5	15.5	20.5	22.5	15.0	1.0	0.80					
ECQE2225□F()	2.2	26.0	8.5	16.3	21.3	22.5	15.0	1.0	0.80					
ECQE2275□F()	2.7	26.0	9.4	17.0	22.0	22.5	15.0	1.0	0.80	—	—	—		
ECQE2335□F()	3.3	26.0	10.3	18.0	23.0	22.5	15.0	1.5	0.80					
ECQE2395□F()	3.9	26.0	11.0	20.5	25.5	22.5	15.0	1.5	0.80					
ECQE2475□F()	4.7	26.0	12.0	21.5	26.5	22.5	15.0	1.5	0.80					
ECQE2565□F()	5.6	31.0	11.8	21.0	26.0	27.5	22.5	1.5	0.80					
ECQE2685□F()	6.8	31.0	13.0	22.4	27.4	27.5	22.5	1.5	0.80					
ECQE2825□F()	8.2	31.0	14.3	23.5	28.5	27.5	22.5	1.5	0.80					
ECQE2106□F()	10.0	31.0	15.9	25.8	30.8	27.5	22.5	1.5	0.80					

↑ Suffix for lead crimped or taped type
 — Cap. tol. code

Style D: 0.010 μ F to 0.33 μ F
 Style B: 0.39 μ F to 10.0 μ F

Design, Specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use. Whenever a doubt about safety arises from this product, please inform us immediately for technical consultation without fail.

LEVEL DEVICES



						MATERIAL:		10 GA. 304SST		 Pentair Pump Group		
						COMPANY CONFIDENTIAL: INFORMATION CONTAINED HEREIN IS CONFIDENTIAL. IT IS THE PROPERTY OF PENTAIR PUMP GROUP. IT IS TO BE USED SOLELY FOR THE PURPOSE PROVIDED, AND IT IS NOT TO BE DISCLOSED TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF PENTAIR PUMP GROUP.						
D	PC010-0224	7-19-10	ADDED R.158 & R.079 TO PRINT			WRM						
C	EC005-181	5-26-05	REDRAWN/CHANGED DESIGN			WRM						
REV.	LOG NO.	DATE	REVISION DESCRIPTION			BY						
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES						DO NOT SCALE DRAWING						
● DECIMAL ●						● FRACTIONAL ●						
2 PLACE .XX ± .010"						UP TO 12" ± 1/32"						
3 PLACE .XXX ± .005"						12" & UP ± 1/16"						
ANGLES ± 0° 30'						ANGLES ± 2°						
FINISH = 125 RMS						PLOT SCALE 1=1.5						
						DRAWN BY WRM		DATE 5-26-05		CHECKED BY	1 SHEET OF 1	
						PART NUMBER 22470B005			SIZE B	DRAWING NUMBER 22470B005		REV. D

MYERS® SERIES

Mercury* Level Float Switch

FLOAT SWITCH – CONTROL DUTY

Mercury Series – Narrow Angle Float Switch

GENERAL

Designed for accurate liquid level control in many applications including sewage environments. The float switch can be used to signify specific water levels or for direct alarm actuation.

SWITCH VARIATIONS

Normally Open (N/O) SMNO – 10', 20', 25', 30' cord lengths. The contacts are open (or off) in the hanging position. As the float rises 1" (5°) above horizontal, the contacts become closed and actuate (turn on) the switch. This float is generally used in pump-down applications.

Normally Closed (N/C) SMNC – 25' cord length.

The contacts are closed (or on) in the hanging position. As the float rises 1" (5°) above horizontal, the contacts become open and actuate (turn off) the switch. This float is generally used in pump-up applications.

Single Pole, Double Throw (SPDT)

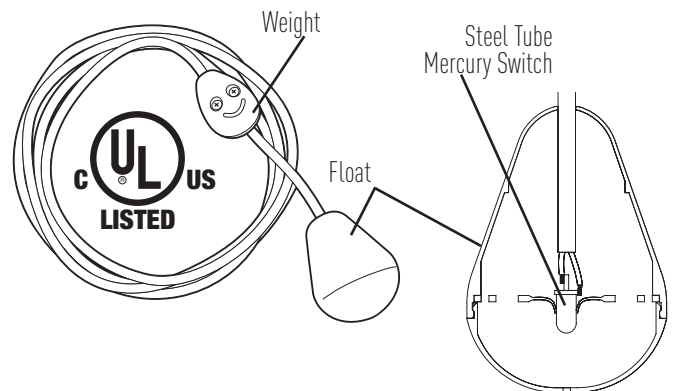
A variation of the previously listed switches. This float switch can be wired to operate as either (not both) a normally open or normally closed switch based on the user's need.

FLOAT SPECIFICATIONS

Durable polypropylene material construction. Solid polyurethane foam interior. Leak proof, shock proof and impact resistant. Resistant to sewage and wastewater applications. For use with intrinsically safe circuits.

CORD WEIGHT

Zinc plated cast iron (1.22 lbs.). Split weight design allows for easy adjustment. Design allows for secure and permanent attachment to cord.



SWITCH SPECIFICATIONS

The Myers mercury float switches are designed to operate under the following parameters:

Minimum operating temperature	32°F
Maximum operating temperature	170°F
Electrical rating	10 A–120 vac, 3 A–240 vac
Actuation point	1" above / below horizontal

POWER CORD SPECIFICATIONS

Conductor cord – physical	Chlorinated polyethylene
Electrical for N/O or N/C	18 awg 2, type SJOOW, 300 V
Electrical for SPDT switch	18 awg 3, type SJOOW, 300 V

* This product contains mercury and must be disposed of according to local and federal codes.



740 EAST 9TH STREET,
ASHLAND, OHIO 44805
WWW.FEMYERS.COM

269 TRILLIUM DRIVE, KITCHENER,
ONTARIO, CANADA N2G 4W5
WWW.FEMYERS.COM

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