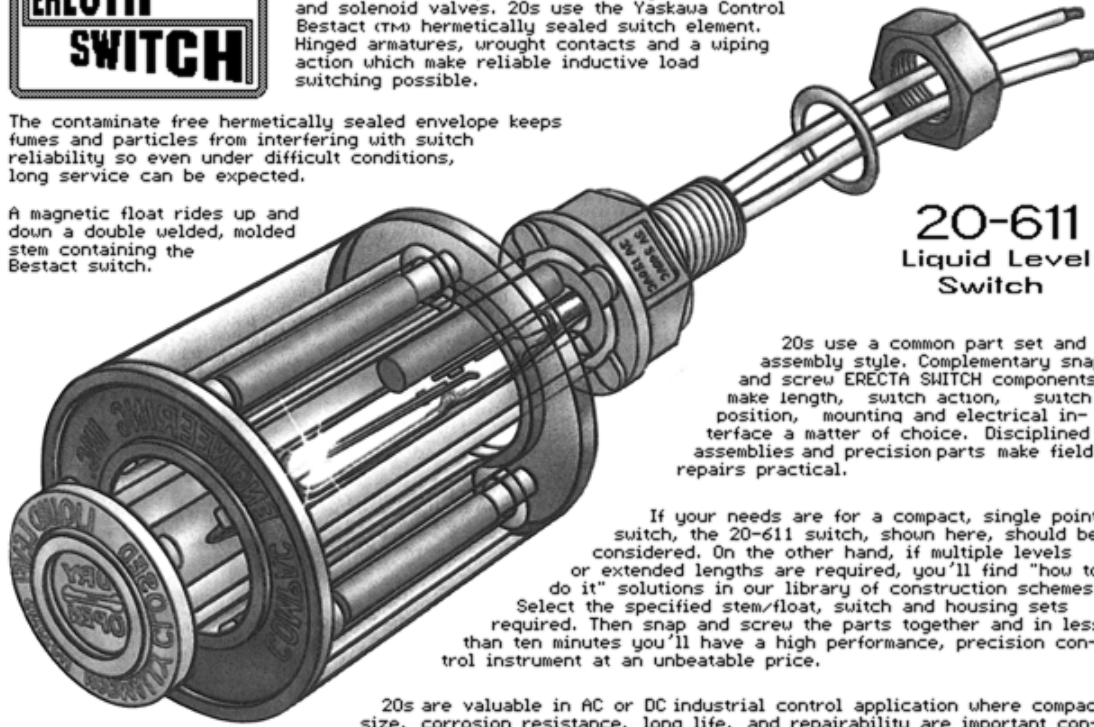




The Series 20 product group is designed to handle industrial control jobs like switching contactors and solenoid valves. 20s use the Yaskawa Control Bestact (TM) hermetically sealed switch element. Hinged armatures, wrought contacts and a wiping action which make reliable inductive load switching possible.

The contaminate free hermetically sealed envelope keeps fumes and particles from interfering with switch reliability so even under difficult conditions, long service can be expected.

A magnetic float rides up and down a double welded, molded stem containing the Bestact switch.



**20-611
Liquid Level
Switch**

20s use a common part set and assembly style. Complementary snap and screw ERECTA SWITCH components make length, switch action, switch position, mounting and electrical interface a matter of choice. Disciplined assemblies and precision parts make field repairs practical.

If your needs are for a compact, single point switch, the 20-611 switch, shown here, should be considered. On the other hand, if multiple levels or extended lengths are required, you'll find "how to do it" solutions in our library of construction schemes. Select the specified stem/float, switch and housing sets required. Then snap and screw the parts together and in less than ten minutes you'll have a high performance, precision control instrument at an unbeatable price.

20s are valuable in AC or DC industrial control application where compact size, corrosion resistance, long life, and repairability are important considerations. High-low pump control, electroplating, semiconductor processing, diesel day tanks . . .

G611-1A

MODES OF OPERATION

The 20-611 is offered as either a normally open or normally closed switch. Since the unit can be mounted "threads up" or "threads down", merely specifying NO or NC is insufficient because what is "your" normal is not known to us. The product is identified, at the end of the stem, "WET OPEN" or "DRY OPEN." This signifies behavior according to the following definition:

WET OPEN

Switch opens as float approaches the hex and closes as float approaches the stop ring at the opposite end.

DRY OPEN

Switch opens as float approaches the stop ring and closes as float approaches the hex at the opposite end.

You must specify the mode of operation desired according to the above definition.

DATA IN SPECIFICATION TABLES ARE APPLICABLE TO ALL SERIES 20 PRODUCTS

FLOAT BUOYANCY IN SPECIFIC GRAVITY 1.0							
Float	PP		AC		KR		Medium
	Inches	MM	Inches	MM	Inches	MM	
Exposed	1.0	25.4	0.65	16.5	0.30	7.6	air
Submerged	1.05	26.7	1.40	35.6	1.75	44.5	Water
Height	2.05	52.1	2.05	52.1	2.05	52.1	---

ELECTRICAL RATING	
Bestact™ Inductive load switching	
Contact life	240 VAC MAKE 5, BREAK .5 100K OPERATIONS 115 DC MAKE .3, BREAK .3 300K OPERATIONS
Contact rating	120 UA, 240 VAC Inductive Yaskawa Electric America Inc. Bestact model R25 Northbrook, IL 60062
UL file	E159361
Class 1, Division 2, Groups A,B,C,D.	
AC	240V .5 AMP, 10 AMP MAX MAKE, 24V 1 MA MIN
DC	115V .3 AMP, .5 AMP MAX BREAK, 24V 1 MA MIN

POINT OF OPERATION

The point at which the changing liquid level will cause the switch to actuate can be determined by the float buoyancy, stem dimensions and the switch trip point. You will find that this point is at the approximate center of the device.

TRIP POINT (DRY STATE BEHAVIOR)

WET OPEN

Contact closes when the gap between the float and the stop ring is not less than .35(8.9) and reopens when the gap is increased to not more than .75(19). The typical differential between open and closed states is .10 (2.54).

DRY OPEN

Contact closes when the gap between the float and the hex is not less than .35(8.9) and reopens when this gap is increased to not more than .8(20.3). The typical differential between open and closed states is .10 (2.54).

MATERIALS OF CONSTRUCTION	
20-611-PP	(Gray & black) Polypropylene
20-611-AC	(Red) Acetal
20-611-KR	(Natural) Kynar PUDF

APPLICATION ENVIRONMENT		
Pressure (Hollow float)	20 PSI MAX @ 20°C	Derate, Zero @ 90°C
Temperature	90°C MAX	---
Specific Gravity, PP	.80 MIN	Clear Liquid
Specific Gravity, AC	.75 MIN	Clear Liquid
Specific Gravity, KR	.95 MIN	Clear Liquid

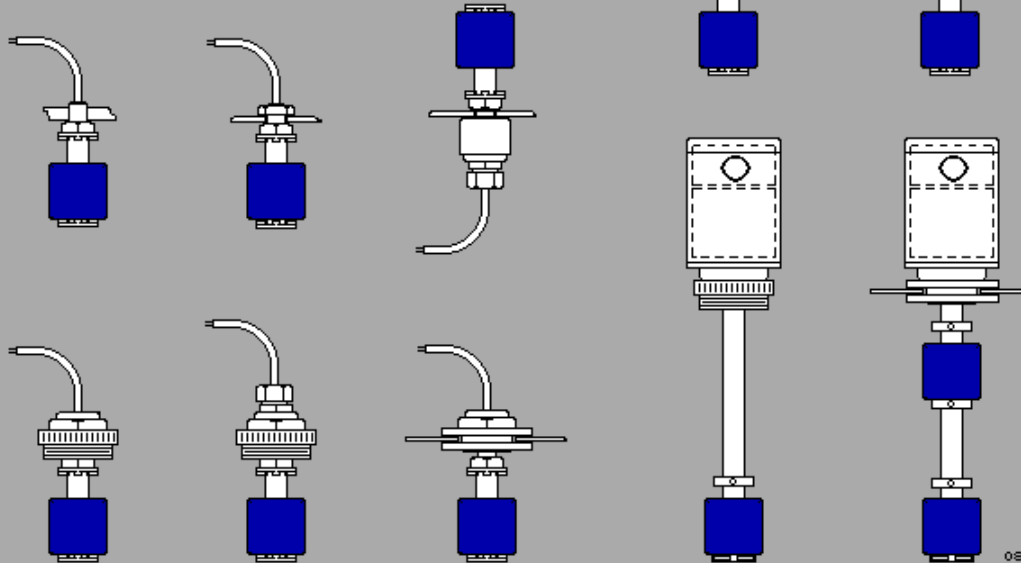
Dimensions, OEM pricing and other Series 20 products are included in this section. See the scheme library for solutions to mounting, length and multi-station applications.

G611-2

SERIES 20 PRODUCT GROUP

The product configurations pictured here show the ERECTA SWITCH system at work. These in-stock solutions are derived from a single system of parts. From the single station 20-611 (used alone or in combination with snap and screw hardware sets) to wide differential pump control, 20s are your quick, affordable source of reliable liquid level control products.

Dimensions, OEM pricing and complementary 20 products are included in this section. See the scheme and Tech Note library for stock solutions to mounting, length and multi-station applications.

08-28-97
G611-3

One way or another you probably already know about reed switch equipped liquid level switches. But you may not know that only 20s provide these valuable features:

INDUCTIVE LOAD SWITCHING

20s use the Bestact switch expressly created to switch inductive loads such as solenoid valves, contactors and starters. This is important because most industrial control circuits, switched by changes in liquid level, involve inductive loads.

EASY INSTALLATION

20s are available as standard devices with a variety of ways to attach the device to a tank structure. Threads, flanges and jam nut hardware provide a stock selection of adaptation choices.

NOTHING SPECIAL

20s consider virtually any switch position or stem length as being standard. That's because we don't use a threaded attachment to connect an extended stem/float assembly to the housing. Instead, we use set screws and seal the assembly with an o-ring. This permits the customer to cut the stem to the length required, at the assembly sight.

SPARE PARTS ARE NOW MEANINGFUL

No other product of the 20s class is designed with field assembly, disassembly or repair in mind. Custom 20s can be assembled in five or ten minutes. Part replacement repairs are equally fast.

GETTING STARTED WITH 20s

The application solutions shown in the diagrams of this section use standard, inexpensive, "out of the box" components and sets. You'll notice detailed specifications and dimensional diagrams provide complete information so it's usually unnecessary for either of us to prepare additional engineering documentation. (Many customers mark-up our diagrams for record purposes). These documents as well as pricing are available, within minutes, using our FAXCAT or BBSCAT catalogs.

Reading this page means your halfway there because getting started is basically a matter of using our on-line information system to get the details and make the necessary choices.

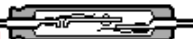
Specifications for the 20-611 are presented in this section and apply to all Series 20 switch and component products unless otherwise stated on a particular item's catalog page. Be on the lookout for components which may have a lower rating. This is particularly true of mechanical ratings such as pressure and force loads.

If your application can be satisfied by mounting the 20-611 single point switch directly or in conjunction with ERECTA SWITCH accessory hardware, then specify the items and place your order.

However, if the application requires a longer stem, two switch stations, control head or relay housing, then our scheme and tech note libraries will be helpful. For instance, say you want a switch that will start a pump at low level and stop it at high level. The distance between levels is 31" and the pump is rated 3/4 HP SP at 240 VAC. The switch will mount vertically to the tank's 1/4" thick PVC lid.

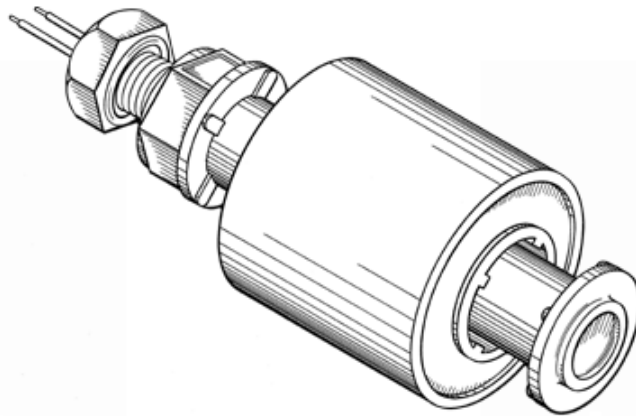
Go to the scheme library. You'll see SCE-428 showing a two station Hi - Low control. This page covers the external components and references SCE-429 which covers the internal components. The required components and sets are specified on scheme pages at the lower left hand corner. Noted items have their own catalog pages, specifications and price pages. So . . . several pages are involved and make up the documentation set.

Bestact™
Inductive Load Switching
TM - Yaskawa Electric America, Inc.

09-15-96
G611-4

LIQUID LEVEL SWITCH

20-611-□□-□□

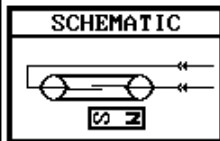
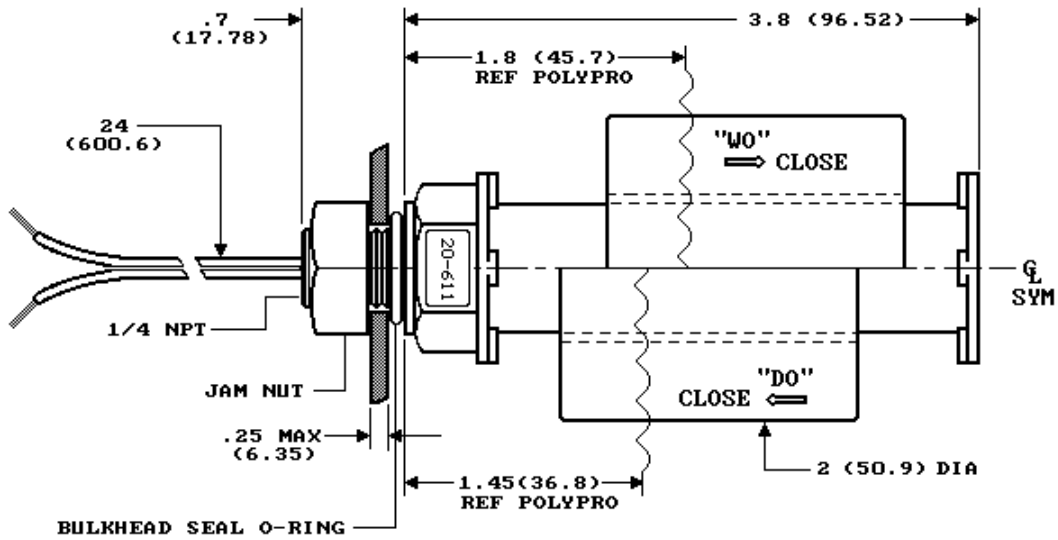


ORDER
 FAX CLUMP # 404



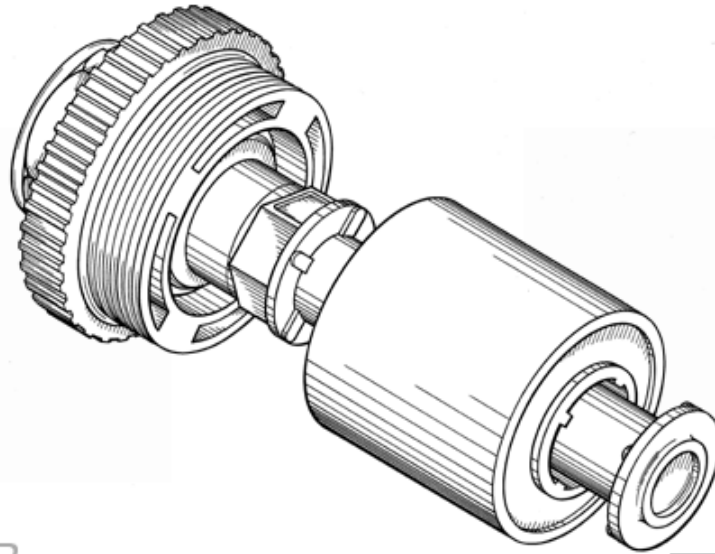
LIQUID LEVEL SWITCH

20-611-□□-□□



LP 2 TOP MTD RECEPT SWITCH SET

20-613-□□-□□

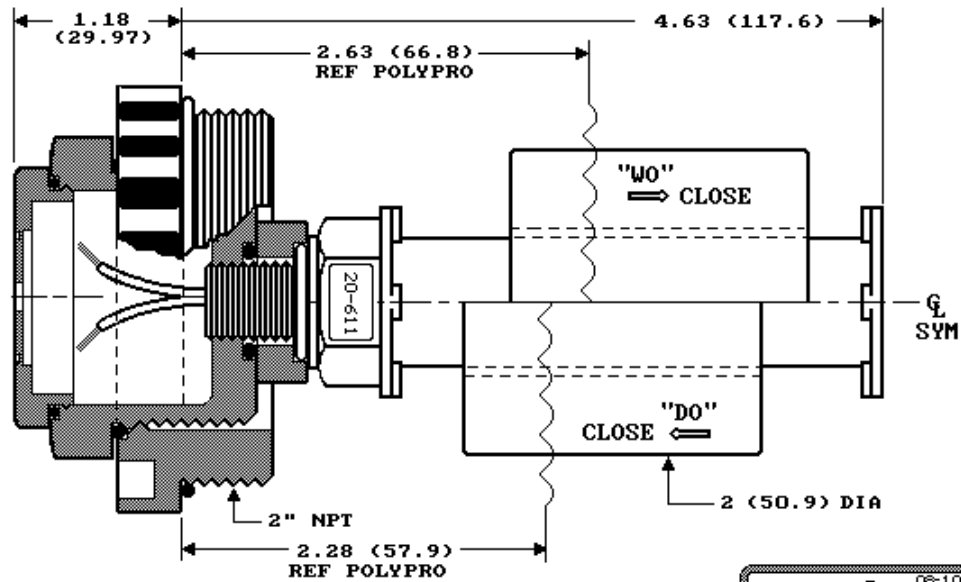


ORDER
FAX CLUMP # 405 & 450



LP 2 TOP MTD RECEPT SWITCH SET

20-613-□□-□□

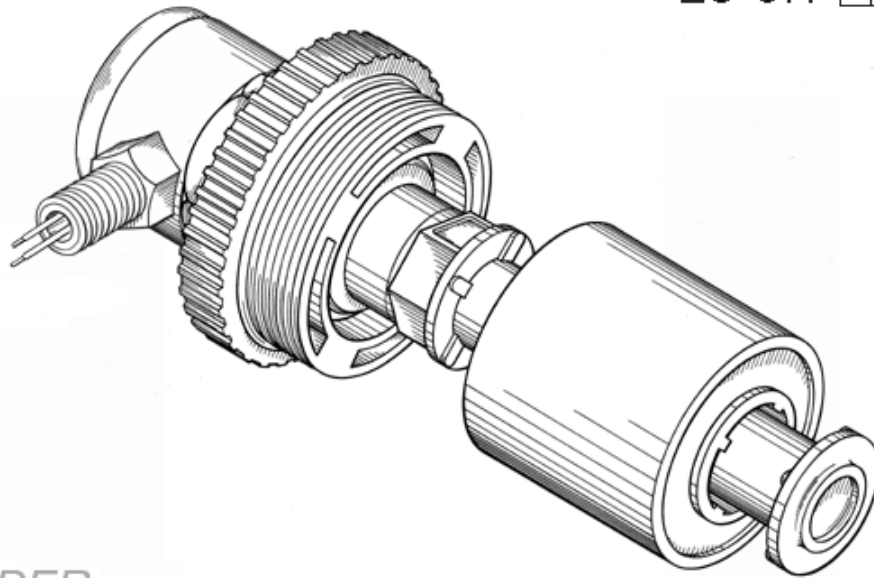


20-613-□□-□□	COMPONENTS
20-611-□□-□□	SWITCH
20-700-AS-□□	ADAPTER/SEAL SET
20-700-SP-□□	SPACER
20-700-RT-□□	RECEPTACLE



TOP MTD, LOW PROFILE RECEPT, SWITCH SET

20-614-□□-□□

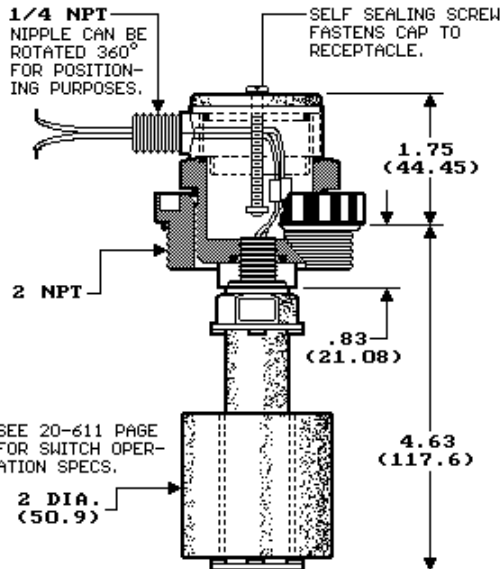


ORDER
FAX CLUMP # 406 & 451



TOP MTD, LOW PROFILE RECEPT, SWITCH SET

20-614-□□-□□



LEVEL SWITCH EQUIPPED WITH LOW PROFILE, RAIN TIGHT RECEPTACLE. RECEPTACLE ACCOMMODATES WIRE SPLICE WITH AWG 20 GAGE STRANDED WIRE. SEE 20-611 PAGE FOR SWITCH DETAILS.

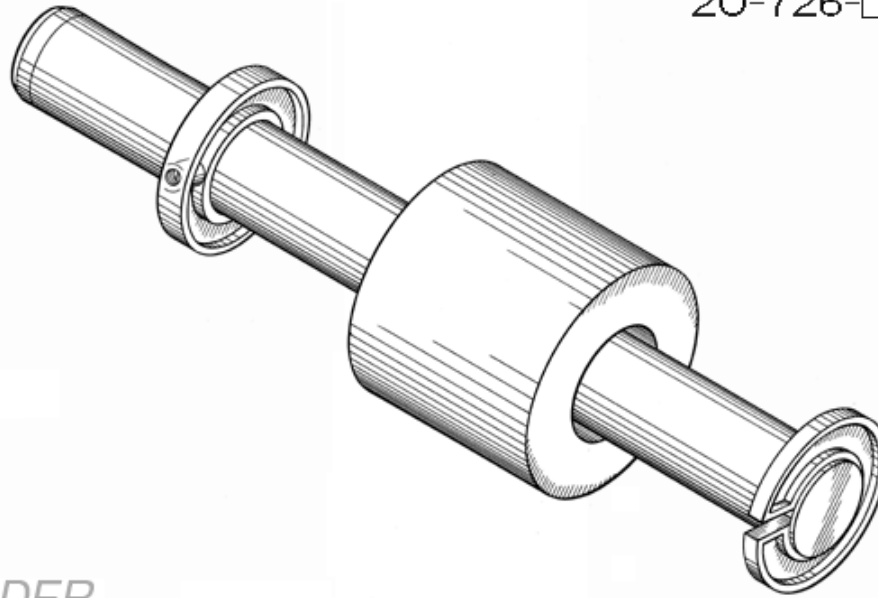
20-614-□□-□□	COMPONENTS
20-611-□□-□□	SWITCH
20-700-SP-□□	SPACER
20-705-RM-□□	HEX RECEPTACLE
20-700-AS-□□	ADAPT/SEAL SET
20-700-MS-□□	MID SECTION
20-703-CM-□□	CAP AND SCREW

PRESSURE RATING - 20 PSI @ 60°C. DERATE TO ZERO @ 90°C.



STEM SET

20-726-□□-□□



ORDER
FAX CLUMP # 407



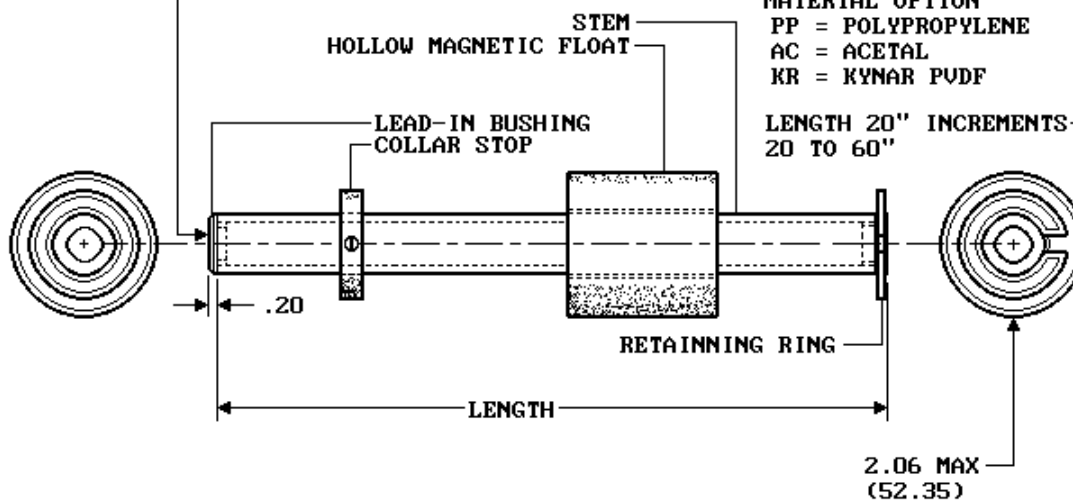
STEM SET

MATES WITH 20-725
CONTROL HEAD OR 20-725HS
HOUSING.

20-726-□□-□□

MATERIAL OPTION
PP = POLYPROPYLENE
AC = ACETAL
KR = KYNAR PUDF

LENGTH 20" INCREMENTS
20 TO 60"



20-726-□□-□□
SET COMPONENTS

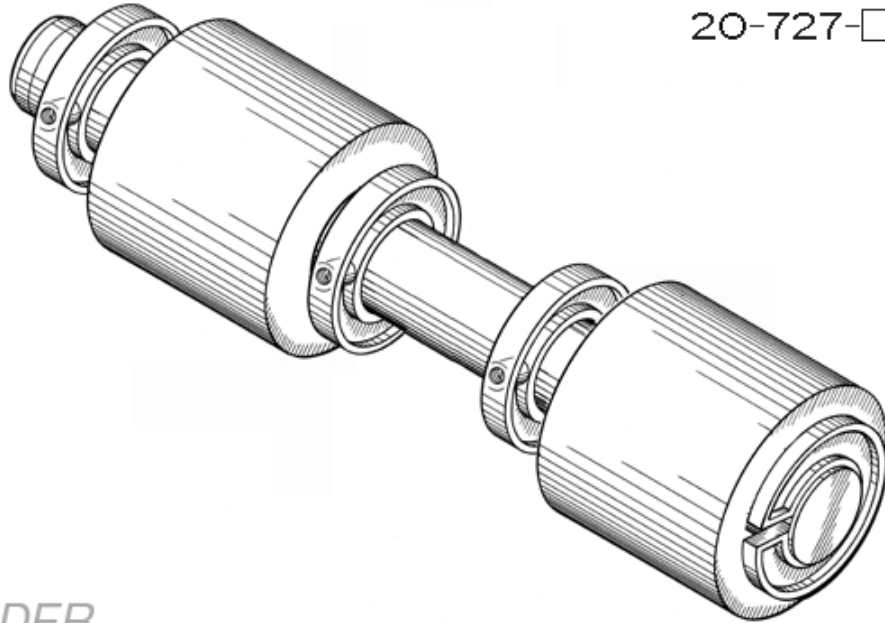
20-720-□□	HOLLOW MAG FLOAT
20-721-□□	COLLAR STOP
20-722-□□-□□	STEM
20-723-□□	LEAD-IN BUSHING
20-724-□□	RETAINING RING

NOTE:
EQUAL TO SCH 80 IPS PIPE.



STEM SET

20-727-□□-□□



ORDER
FAX CLUMP # 408



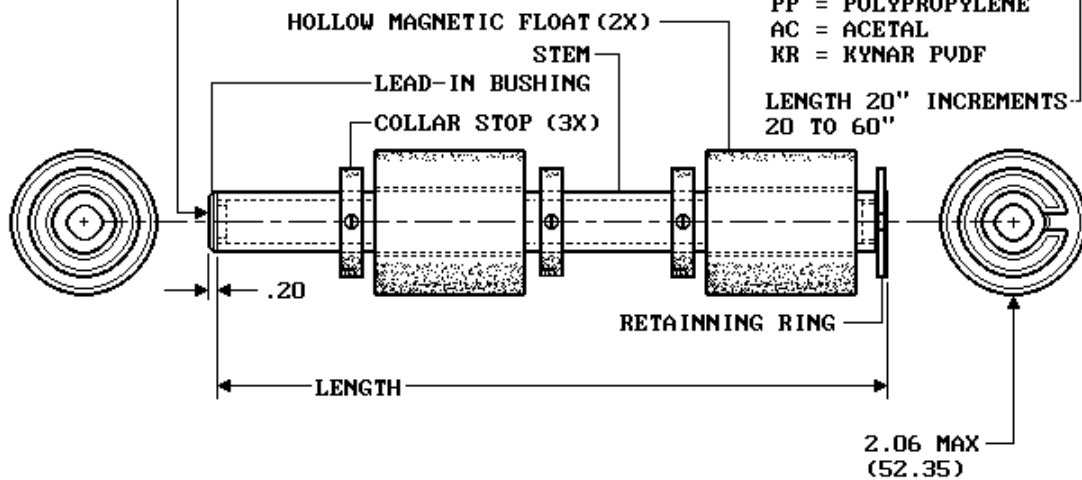
STEM SET

MATES WITH 20-725
CONTROL HEAD OR 20-725HS
HOUSING.

20-727-□□-□□

MATERIAL OPTION
PP = POLYPROPYLENE
AC = ACETAL
KR = KYNAR PUDF

LENGTH 20" INCREMENTS
20 TO 60"



20-727-□□-□□
STEM SET COMPONENTS

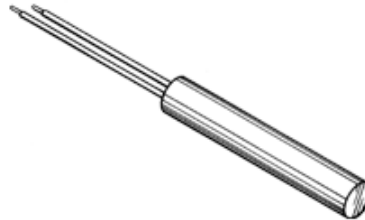
20-720-□□	HOLLOW MAG FLOAT
20-721-□□	COLLAR STOP
20-722-□□-□□	STEM
20-723-□□	LEAD-IN BUSHING
20-724-□□	RETAINING RING

NOTE:
EQUAL TO SCH 80 IPS PIPE.



2 STATION, 120 VA SWITCH ASSY SET

20-728-□

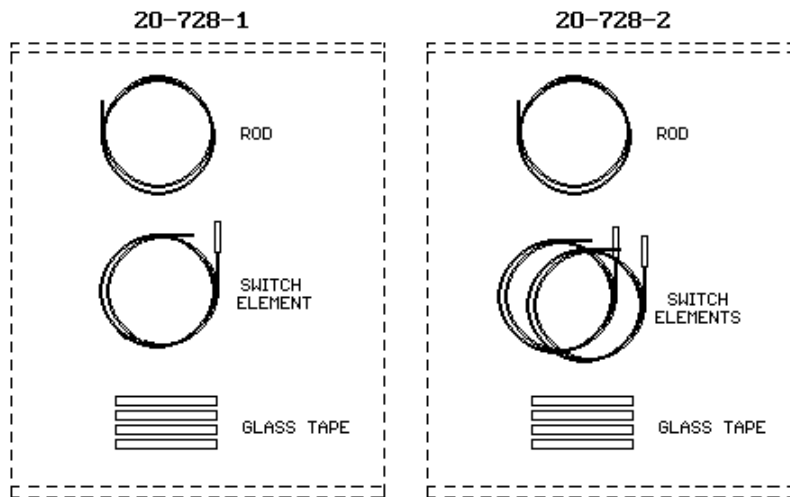


*ORDER
FAX CLUMP # 409*



2 STATION, 120 VA SWITCH ASSY SET

20-728-□



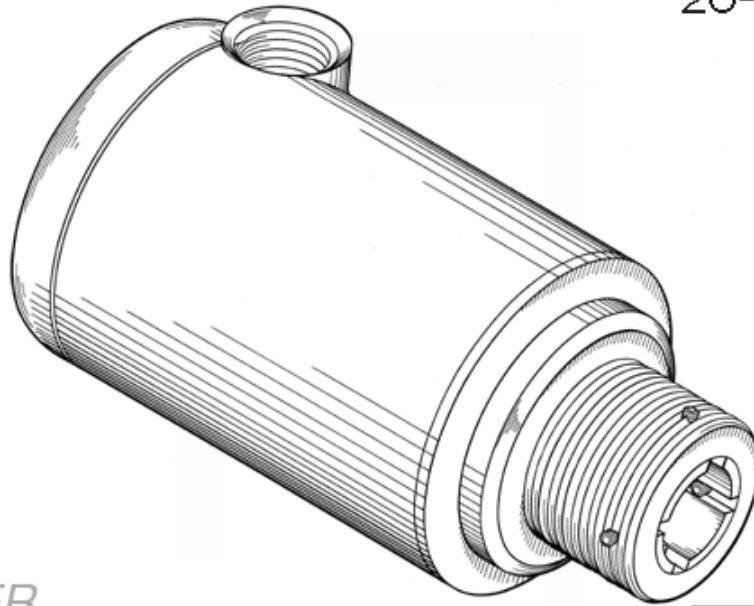
20-728 SET COMPONENTS

20-719	NO MAG SWITCH ELEMENT
20-900	1/2W GLASS TAPE STRIPS
20-901	1/8 DIA PUC ROD



CONTROL HEAD

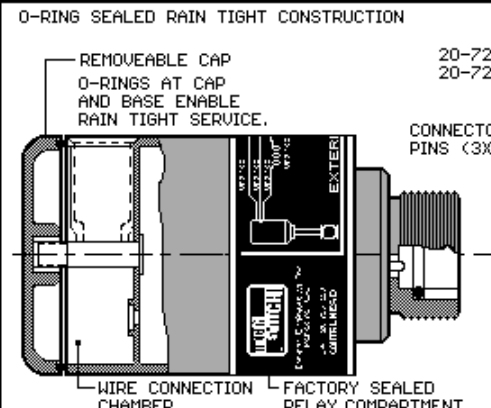
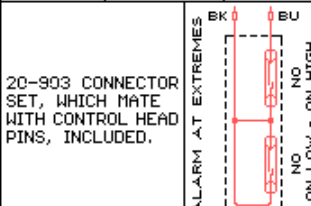
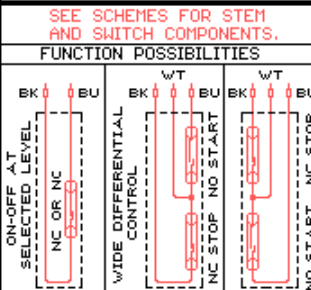
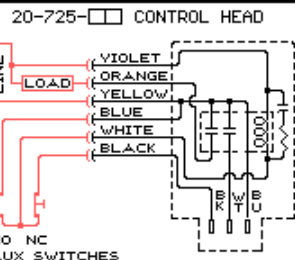
20-725-



ORDER
FAX CLUMP # 410

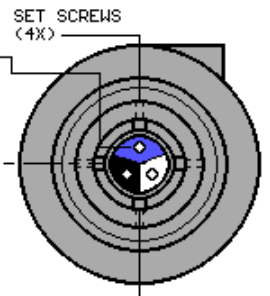
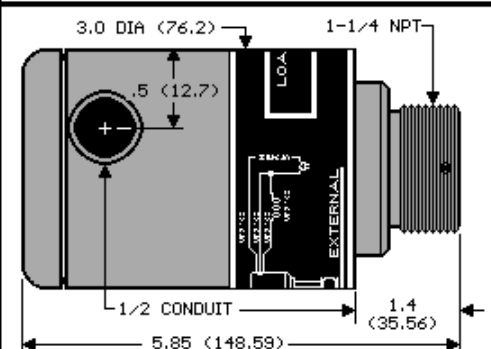


CONTROL HEAD



20-725-

20-725-120 - 3/4 HP SP, 20 AMPS
20-725-240 - 1-1/2 HP SP, 20 AMPS



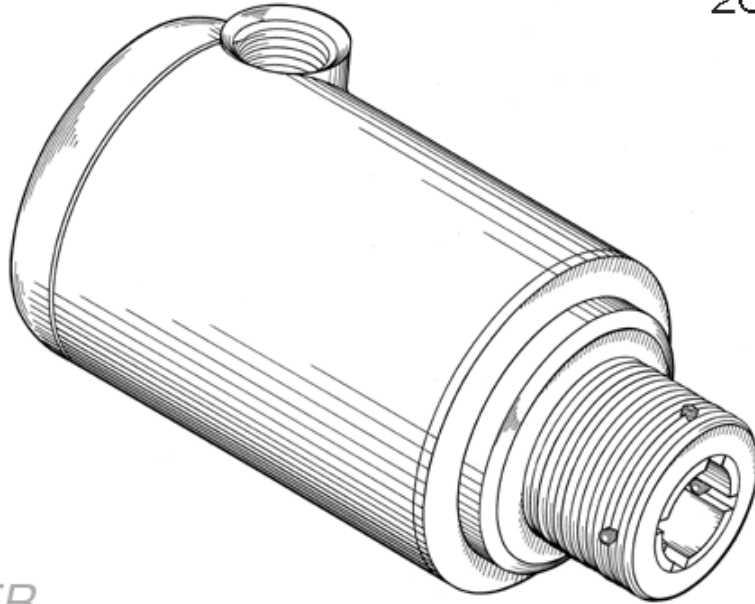
ACCEPTS 20-726 STEM SET. STEM FASTEN TO HEAD WITH SET SCREWS. STEM/HEAD INTERFACE O-RING SEALED.

MATERIAL:
CAP AND HOUSING INJECTION MOLDED
FIRE RETARDANT ABS.
AMBIENT TEMPERATURE: 130°C
PRESSURE: ATMOSPHERIC



1-1/4 RELAY HSG O-RING SEAL + SET SCREWS

20-725-HS

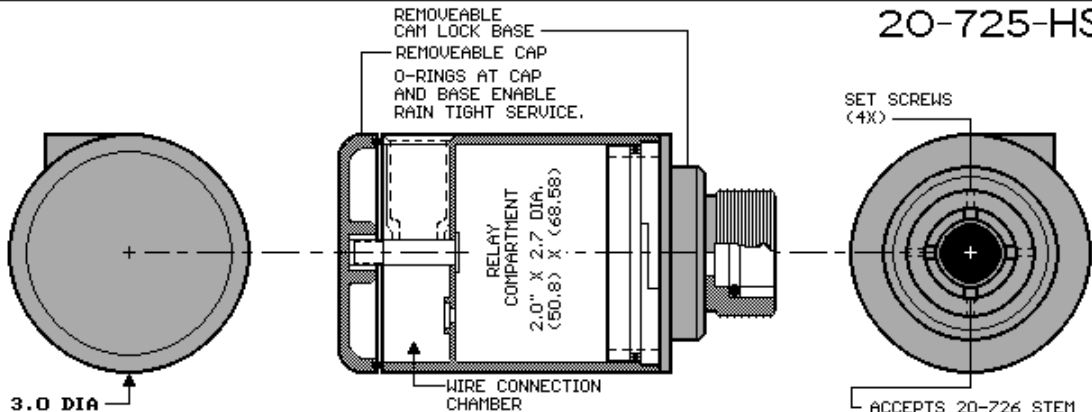


ORDER
FAX CLUMP # 411



1-1/4 RELAY HSG O-RING SEAL + SET SCREWS

20-725-HS



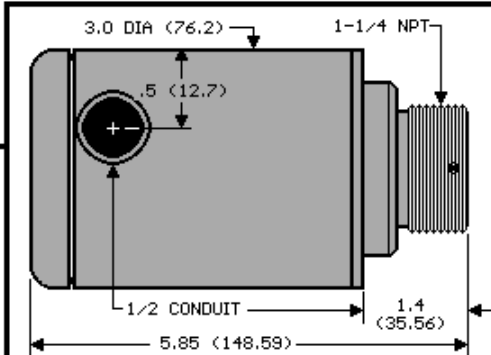
3.0 DIA (76.20)

ACCEPTS 20-726 STEM SET. STEM FASTEN TO HEAD WITH SET SCREWS. STEM/HEAD INTERFACE O-RING SEALED.

O-RING SEALED
RAIN TIGHT

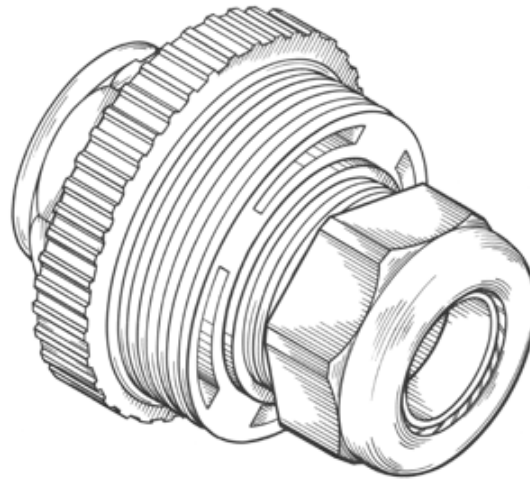
MATERIAL:
CAP AND HOUSING
INJECTION MOLDED
FIRE RETARDANT
ABS.

AMBIENT TEMPERATURE: 130°C
PRESSURE: ATMOSPHERIC



LP 2 TOP MTD RECEPT / 1/2 IPS STEM SET

20-730-R-



ORDER
FAX CLUMP # 412

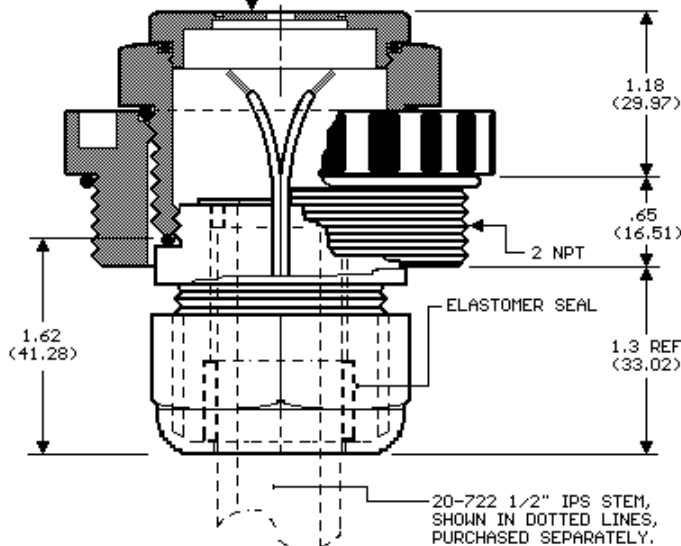


LP 2 TOP MTD RECEPT / 1/2 IPS STEM SET

20-730-R-

1/2 CONDUIT
KNOCKOUT
SEE 20-700-WC
LIQUID TIGHT
WIRING CONNECTOR

SELECT MTL: PP POLYPROPYLENE W/NYLON 1/2 IPS CONNECTOR.
AC ACETAL W/NYLON 1/2 IPS CONNECTOR.
KR PUDF W/PUDF 1/2 IPS CONNECTOR.



20-730-R- COMPONENTS

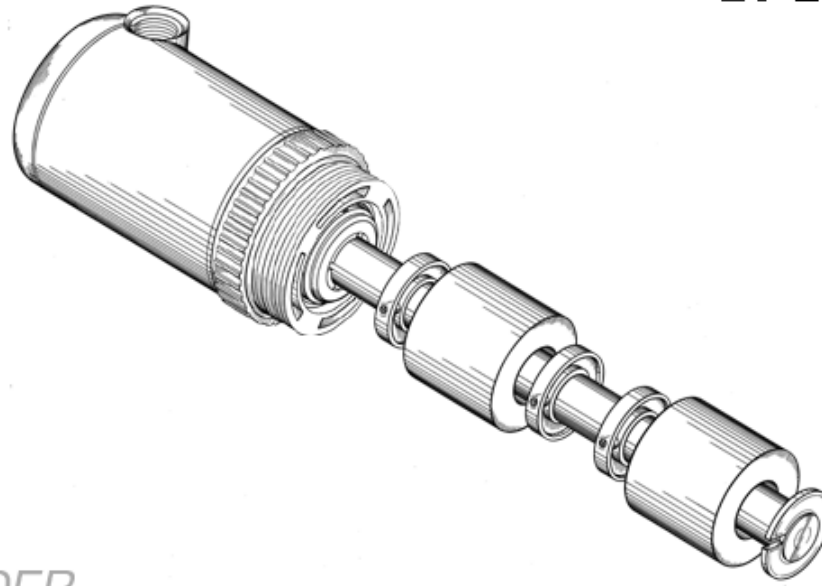
20-700-RP- <input type="checkbox"/> <input type="checkbox"/>	RECEPTACLE
20-706-WC- <input type="checkbox"/> <input type="checkbox"/>	CONNECTOR
20-700-AS- <input type="checkbox"/> <input type="checkbox"/>	ADAPTER/SEAL SET

PRESSURE RATING:
10 PSI @ 20°C. DERATE TO ZERO @ 90°C.



2 STATION HIGH - LOW CONTROL SET

20-202-



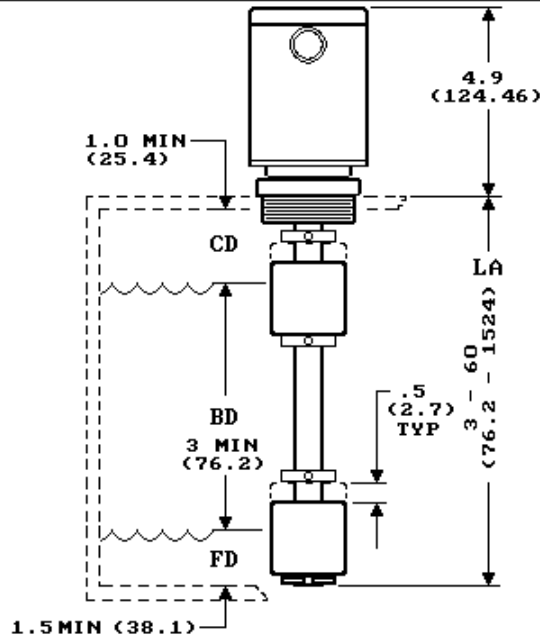
ORDER
FAX CLUMP # 413 & 414



2 STATION HIGH - LOW CONTROL SET

20-202-

20 AMP RELAY IN CONTROL HEAD RATED FOR MOTOR CONTROL.



- CD = APPROX MIN DISTANCE CEILING TO SWITCHING LEVEL.
- FD = MIN POSSIBLE DISTANCE FLOOR TO SWITCHING LEVEL.
- LA = LENGTH OF STEM AVAILABLE.
- BD = MIN POSSIBLE DISTANCE BETWEEN SWITCH LEVELS.

*INSTALLED "OUTSIDE -> IN".
 INTERNAL ACCESS REQUIRED
 WHEN FLANGE NUT IS USED.*

*LOCATE SWITCH STATION
 LEVELS AS REQUIRED.*

*START HIGH - STOP LOW
 OR VICE VERSA.*

SET COMPONENTS

20-727- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	-60 STEM SET
20-725- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	CTRL HEAD
20-728-2	SWITCH ASSY SET
20-700-AS- <input type="checkbox"/> <input type="checkbox"/>	ADAPTER

(INTERNAL COMPONENTS LISTED ON SCE-429)



