

INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

Series 2800

PRECISION GLOBE CONTROL VALVES

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PRODUCT OVERVIEW

This document covers the installation, operation and maintenance of the Series 2800 Precision Globe Control Valves presented in the "Series 2800 Product Specification", including the 2820 Two-Way Single Seat Valve, the 2828 Two-Way Single Seat Low Flow Valve, the 2830 Three-Way Mixing Valve, and the 2832 Three-Way Diverting/ Mixing Valve. Warren Controls Series 2800 Precision Globe Control Valves feature rugged bronze or stainless steel bodies with a variety of trim materials and port sizes. The equal percentage and linear plugs in the 2-way valves and linear plugs in the 3-way valves provide excellent modulating control of a wide variety of fluids for pressure, temperature, level, and flow applications from -20 to 500°F (dependent on construction). The Series 2800 is ideally suited where value and long life are important objectives for applications including but not limited to the Chemical, Food & Beverage, General Service, Refining, District Energy, and ideal for Pharmaceutical Industries.

GENERAL INFORMATION

The instructions given herein cover generally the operation and maintenance of subject equipment. Should any questions arise which may not be answered specifically by these instructions, they should be referred to Warren Controls Inc. for further detailed information and technical assistance. This manual cannot possibly cover every situation connected with the operation, adjustment, inspection, test, overhaul and maintenance of the equipment furnished. Every effort is made to prepare the text of this manual so that engineering and design data is transformed into the most easily understood wording. Warren Controls Inc., in furnishing this equipment and this manual, must presume that the operation and maintenance personnel assigned thereto have sufficient technical knowledge and experience to apply sound safety and operational practices which may not be covered herein. In applications where Warren Controls Inc. furnished equipment is to be integrated with a process or other machinery, these instructions should be thoroughly reviewed to determine the proper integration of the

equipment into the overall plant operational procedures. Warren Controls does not assume responsibility for the selection, use, or maintenance of any product. Responsibility for proper selection, use, and maintenance of any Warren Controls product remains solely with the purchaser and end-user

ACTUATORS AND ACCESSORIES

Series 2800 Precision Globe Control Valves are available with a variety of actuators and accessories. These actuators and accessories have separate instructions. For complete control valve installation, operation, and maintenance instructions see also the instructions for the actuator and accessories in use

VALVE IDENTIFICATION

To use these instructions it is necessary to identify the configuration of the valve. Factory assembled control valves have a nameplate mounted on the actuator. The valve's part number (P/N) is present on the plate. The part number represents the configuration of the control valve. To identify the valve's type, size, actuator, accessories, and other characteristics decode the part number using configuration table. If the information is incomplete, incorrect, or not present contact the factory with the valve serial number listed on the plate. (See Information Present on Control Valves section for location of part number, serial number, and other important information on valve.)

VALVE BODY								
Model	Valve Type	Size	Body Material	End Connection	Trim Style	Trim Material	Trim Cv	Packing Type
28N	20 2-Way Single Seat	050 1/2 inch	B Bronze	S Screwed	E Equal %	S 316SS *	F Full Port	T Teflon
		075 3/4 inch	F CF8M	B SCH 40	L Linear	B Bronze	1 1st Port Reduction	G Graphite
	28 2-Way Lo-Flow	100 1 inch		Buttweld End	M Mod Lin	6 Alloy 6	2 2nd Port Reduction	V Vacuum Service
	30 3-Way Mixing	125 1-1/4 inch			Types 30/32, Linear Only	H 17-4 PH	Reduction	L EPDM
	32 3-Way Diverting	150 1-1/2 inch			Types 28 Mod Lin Only	T Teflon	3 3rd Port Reduction	
		200 2 inch				P PEEK	4 4th Port Reduction	
						NOTE: * Type 28, 316SS trim uses a harder Nitronic 60 seat.		

ACTUATOR

Actuator Series	Action	Spring Range	Handwheel
00 None	O None	O None	O None
DIAPHRAGMS:	R Reverse Stem	L Low 4-10 PSI 49R ; 3-9 PSI 49D, 84R/D	R Reverse
49 DL49 (49 Sq.In.)	D Direct Stem	F Full 5-14 PSI 49R ; 4-13 PSI 49D; 3-15 PSI 84R/D	D Direct
4X DL49XR			
84 DL84 (84 Sq.In.)			
8X DL84XR (84 Ext. Rng.)		H High 9-15 PSI 84;115 10-14 PSI 49R 8-12 PSI 49D	
		X Xtra-High DL49XR, DL84XR	

FAILURE MODES:

MODE	VALVE TYPE	ACTUATOR ACTION
Closed	20/28	Reverse
Open	20/28	Direct
Upper Closed*	30/32	Direct
Upper Open	30/32	Reverse

*Standard

ACCESSORIES

Positioners, I/P's & Limit Switches	Air Filter Regulators	ASCO Solenoids	Special Options
0000 None	O None	O None	O None
POSITIONERS:	A Type 300, 0-30 PSI	120 VAC COILS	S Special Opts or Set-up
BxP BLX Pneumatic	B Type 300, 0-60 PSI	A 8320G184 3-Way Brass	T SS Tubing
BxE BLX ElectroPneumatic	D Type 350SS, 0-100 PSI	B 8320G202 3-Way SS	G SS Tagging
BxI BLX ElectroPneu. Intrn. Safe		L EF8320G184 3-Way EXP Br.	B SS Tubing and Tagging
BxX BLX ElectroPneu. Exp. Proof		M EF8320G202 3-Way EXP SS	
BxF BLX ElectroPneu. Fail Freeze		24 VDC COILS	
76P Moore760 Pneumatic		Z 8320G184 3-Way Brass	
76E Moore760 Electro-Pneumatic			
P24 Siemens PS2 Electro-Pneumatic			
P2H Siemens PS2 2,3,4 Wire HART			
P2P Siemens PS2 PROFIBUS PA			
P2F Siemens PS2 FOUND.FIELDBUS			
PROXIMITY SWITCHES:			
PX11 Mark 1 Series - 2 ea. SPDT			
PX12 Mark 1 Series - 2 ea. SPDT w/2k Pot.			
PX13 Mark 1 Series - 2 ea. SPDT w/4-20 Feedback			
PX14 Mark 1 Series - 4 ea. SPDT			
PX15 Mark 1 Series - 6 ea. SPDT			
I/P's Use with Diaphragm Only			
MAP1 Type 500X I/P, 3-9 PSI			
MAP2 Type 500X I/P, 9-15 PSI			
MAP3 Type 500X I/P, 3-15 PSI			
MAP4 Type 500X I/P, 1-17 PSI			
MAP5 Type 500X I/P, 6-30 PSI			
MAP6 Type 550X I/P, 0-30 PSI			
MAP9 Type 950X I/P, 3-15 EXP			

x digit spec.	4th digit spec.
F Full Range Signal, 3-15 PSI or 4-20mA	O No Additions
L Low of Split Range, 3-9 PSI or 4-12mA	L w/Mech. Lmt Switch's
H High of Split Range, 9-15 PSI or 12-20mA	F w/4-20 Feedback
	B w/Switch's & Feedback
	NOTE: L,F,B not available for BxI , BxX.

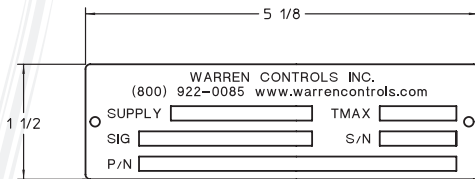
Note: Standard pneumatic tubing is copper. SS tubing "T" is optional.
SS tagging "G" (Two lines, 24 characters/line) is optional.
SS tubing and tagging together "B" is optional.

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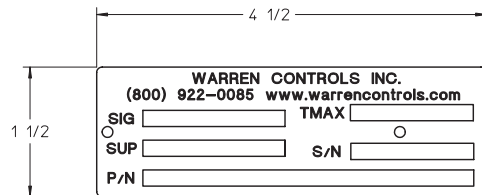
INFORMATION PRESENT ON CONTROL VALVES

There is a great deal of information present on each control valve ranging in importance from the part number and serial number to the color of the paint and casting numbers. This information is important for identifying the valve, installing it correctly, and obtaining parts. Examples of the current factory nameplates and flow arrow plates used on Series 2800 control valves are shown here. The accompanying table identifies the information present and where to find it on the control valve. There may also be other casting numbers and foundry marks present that do not provide useful information. Customer specific tagging may also present. The plates used, and information present, on Warren Controls other product lines or older valves may be different, contact the factory for details.

ACTUATOR NAMEPLATES

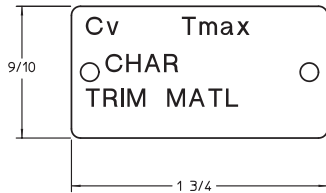


DL84

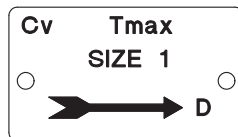


DL49

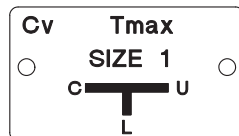
VBA NAMEPLATES



INDUSTRIAL VBA



2-WAY 1/2 THRU 1 INCH • 2800 S/S VBA




3-WAY MIXING 1/2 THRU 1 INCH • 2800 S/S VBA

INFORMATION PRESENT ON CONTROL VALVE SERIES 2800

Part Number & Serial Number

Information	Symbol(s)	Location	Notes
Part number (Configuration)	P/N	On actuator	<ul style="list-style-type: none"> On Actuator Nameplate attached to leg(s) of actuator.
Serial number	S/N	On actuator and valve body	<ul style="list-style-type: none"> On Actuator Nameplate attached to leg(s) of actuator. Number only stamped on valve body end connection (2800).* * Number stamped using approximately 1/8 inch tall characters

Flow Direction(s)

Information	Symbol(s)	Location	Notes
Flow direction through valve		On valve body	<ul style="list-style-type: none"> On 2800 S/S VBA Nameplate attached to mounting boss on valve body between the end connections (2800 S/S valves ½ thru 1 inch except 1 inch S/S 2832). Arrow cast on valve body between the end connections (2800 S/S 2-way 1-1/4 thru 2 inch).
Inlet location	INLET	On valve body	<ul style="list-style-type: none"> Stamped on valve body inlet end connection (2-way 2800 bronze valves ½ thru 2 inch & S/S valves 1-1/4 thru 2 inch).
Port locations for 3-way valves	U upper port, L lower port, C common port	On valve body	<ul style="list-style-type: none"> U, L, & C stamped on valve body end connections (3-way 2800 bronze valves ½ thru 2 inch & 3-way 2800 S/S valves 1-1/4 thru 2 inch & 1 inch S/S 2832).

Input Signal & Supply

Information	Symbol(s)	Location	Notes
Input signal	SIG	On actuator	<ul style="list-style-type: none"> On Actuator Nameplate attached to leg(s) of actuator.
Supply pressure	SUP or SUPPLY	On actuator	<ul style="list-style-type: none"> On Actuator Nameplate attached to leg(s) of actuator.

Valve Attributes

Information	Symbol(s)	Location	Notes
Maximum temperature rating of valve body	TMAX or Tmax	On actuator and valve body	<ul style="list-style-type: none"> On Actuator Nameplate attached to leg(s) of actuator. On Industrial VBA Nameplate wired to valve body between the end connections on side opposite flow arrow plate (2800 bronze valves ½ thru 2 inch & 2800 S/S valves 1-1/4 thru 2 inch, & 1 inch S/S 2832). On 2800 S/S VBA Nameplate attached to mounting boss on valve body between the end connections on side opposite flow arrow plate (2800 S/S valves ½ thru 1 inch except 1 inch S/S 2832).
Trim Cv (Flow coefficient)	Cv	On valve body	<ul style="list-style-type: none"> On Industrial VBA Nameplate wired to valve body between the end connections on side opposite flow arrow plate (2800 bronze valves ½ thru 2 inch & 2800 S/S valves 1-1/4 thru 2 inch, & 1 inch S/S 2832). On 2800 S/S VBA Nameplate attached to mounting boss on valve body between the end connections on side opposite flow arrow plate (2800 S/S valves ½ thru 1 inch except 1 inch S/S 2832).
Trim style (Characteristic)	CHAR	On valve body	<ul style="list-style-type: none"> On Industrial VBA Nameplate wired to valve body between the end connections on side opposite flow arrow plate (2800 bronze valves ½ thru 2 inch & 2800 S/S valves 1-1/4 thru 2 inch, & 1 inch S/S 2832).
Trim material	TRIM MATL	On valve body	<ul style="list-style-type: none"> On Industrial VBA Nameplate wired to valve body between the end connections on side opposite flow arrow plate (2800 bronze valves ½ thru 2 inch & 2800 S/S valves 1-1/4 thru 2 inch, & 1 inch S/S 2832).
Valve size	SIZE	On valve body	<ul style="list-style-type: none"> On 2800 S/S VBA Nameplate attached to mounting boss on valve body between the end connections on side opposite flow arrow plate (2800 S/S valves ½ thru 1 inch except 1 inch S/S 2832).
Valve body material		On valve body	<ul style="list-style-type: none"> If CF8M is cast on the valve the valve body material is 316 stainless steel.

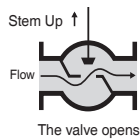
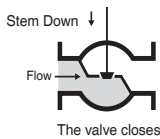
BODY STYLE VERSUS APPLICATION

2-Way Valves (Control of Liquids, Gases, and Steam)

2820 Two-Way Single Seat Unbalanced Valve

The most commonly applied solution with ANSI Class IV and VI shut-off.

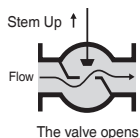
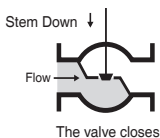
Sizes:	1/2, 3/4, 1, 1-1/4, 1-1/2, 2 inch
Body:	ANSI B16.15 Bronze 250LB Threaded (NPT), or 316 Stainless Steel 300LB Threaded (NPT), or 316 Stainless Steel 300LB SCH 40 Butt weld (BWE)
Trim:	EQ% or Linear, 316 Stainless Steel, Alloy 6, TFE, PEEK, or 17-4 PH Hardened Stainless Steel
Shut-off:	ANSI Class IV (Stainless Steel and Alloy 6 Trim), ANSI Class VI (TFE and PEEK Trim)
Packing:	Long-Life Multi-Stack EPDM Lip Packing (+32 to 350°F) Guided Low-Friction TFE V-Ring, Spring Loaded (+32 to 450°F), Adjustable Graphite Packing (+32 to 500°F)
Temperature:	+32 to 400°F (Bronze 250LB Threaded Body) +32 to 450°F (316 Stainless Steel 300LB Threaded or Butt weld Body w/ TFE or PEEK Trim) +32 to 500°F (316 Stainless Steel 300LB Threaded or Butt weld Body w/ Stainless Steel or Alloy 6 Trim)
Rangeability:	50:1



2828 Two-Way Single Seat Low Flow Unbalanced Valve

Low Flow Trim with ANSI Class IV and VI shut-off.

Sizes:	1/2, 3/4, 1 inch
Body:	ANSI B16.15 Bronze 250LB Threaded (NPT), 316 Stainless Steel 300LB Threaded (NPT), or 316 Stainless Steel 300LB SCH 40 Butt weld (BWE)
Trim:	Modified Linear, 316 Stainless Steel, TFE, or PEEK
Shut-off:	ANSI Class IV (Stainless Steel Trim), ANSI Class VI (TFE and PEEK Trim)
Packing:	Long-Life Multi-Stack EPDM Lip Packing (+32 to 350°F) Guided Low-Friction TFE V-Ring, Spring Loaded (+32 to 450°F), Adjustable Graphite Packing (+32 to 500°F)
Temperature:	+32 to 400°F (Bronze 250LB Threaded Body) +32 to 450°F (316 Stainless Steel 300LB Threaded or Butt weld Body w/ TFE or PEEK Trim) +32 to 500°F (316 Stainless Steel 300LB Threaded Body or Butt weld Body w/ Stainless Steel Trim)
Rangeability:	40:1 for Cv 1.00 and 0.50. 20:1 for Cv 0.25

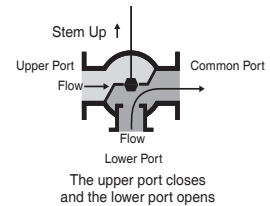
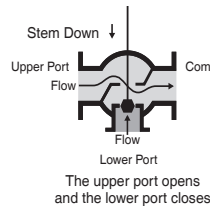


3-Way Valves (Control of Liquids)

2830 Three-Way Mixing Valve

This valve has two inlets and one outlet, and is the simplest solution for mixing or bypass applications with ANSI Class IV shut-off. In normal applications the inlet pressures are near equal and control is possible from 5% to 95% of travel with inlet pressures up to 100 PSI.

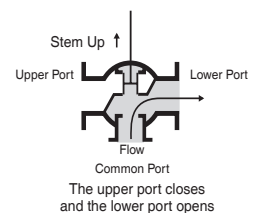
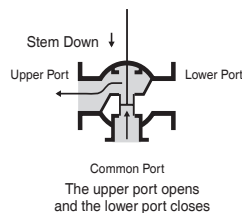
Sizes:	1/2, 3/4, 1, 1-1/4, 1-1/2, 2 inch
Body:	ANSI B16.15 Bronze 250LB Threaded (NPT), or 316 Stainless Steel 300LB Threaded (NPT), or 316 Stainless Steel 300LB SCH 40 Butt weld (BWE)
Trim:	Linear, 316 Stainless Steel
Packing:	Long-Life Multi-Stack EPDM Lip Packing (+32 to 350°F) Guided Low-Friction TFE V-Ring, Spring Loaded (+32 to 450°F), Adjustable Graphite Packing (+32 to 500°F)
Temperature:	+32 to 400°F (Bronze 250LB Threaded) +32 to 500°F (316 Stainless Steel 300LB Threaded or Butt weld)
Rangeability:	50:1



2832 Three-Way Diverting/Mixing Valve

Designed as a diverting valve with one inlet and two outlets with ANSI Class III shut-off. However, flow can be reversed for mixing if this port configuration is desirable. The difference between the upper port and lower port pressure must not exceed 50 PSID.

Sizes:	1, 1-1/2, 2 inch
Body:	ANSI B16.15 Bronze 250LB Threaded (NPT), or 316 Stainless Steel 300LB Threaded (NPT), or 316 Stainless Steel 300LB SCH 40 Butt weld (BWE)
Trim:	Linear, Bronze (Bronze 250LB Threaded), or 316 Stainless Steel (316 Stainless Steel 300LB Threaded or Butt weld)
Packing:	Long-Life Multi-Stack EPDM Lip Packing (+32 to 350°F) Guided Low-Friction TFE V-Ring, Spring Loaded (+32 to 450°F), Adjustable Graphite Packing (+32 to 500°F)
O-Ring:	EPR (Bronze 250LB Threaded), Fluoraz 797 (316 Stainless Steel 300LB Threaded or Butt weld)
Temperature:	+32 to 300°F (Bronze 250LB Threaded) +32 to 500°F (316 Stainless Steel 300LB Threaded or Butt weld)
Rangeability:	50:1



DIMENSIONS & WEIGHTS

Dimension (IN) 2820		Valve Size (IN)		
		1/2, 3/4, 1	1-1/4 & 1-1/2	2
A	250THD	4-7/8	5-3/4	6-1/2
	300THD	5	6-1/8	6-1/2
	300BWE	15-3/8	16-7/8	17
B	250THD	2-3/4	3-1/4	3-5/8
	300THD & BWE	3	3-1/2	3-7/8
C	250THD	2-7/8	3-1/2	3-3/4
	300THD & BWE	2-7/8	3-1/2	3-3/4
Weight (LB)	250THD	8-1/2	14-1/2	18-1/2
	300THD	8	15-1/2	19
	300BWE	9-1/2	18	22-1/2

Dimension (IN) 2828		Valve Size (IN)		
		1/2, 3/4, 1		
A	250THD	4-7/8		
	300THD	5		
	300BWE	15-3/8		
B	250THD	2-3/4		
	300THD & BWE	3		
C	250THD	2-7/8		
	300THD & BWE	2-7/8		
Weight (LB)	250THD	8-1/2		
	300THD	8		
	300BWE	9-1/2		

Dimension (IN) 2830		Valve Size (IN)		
		1/2, 3/4, 1	1-1/4 & 1-1/2	2
A	250THD	4-7/8	5-3/4	6-1/2
	300THD	5	6-1/8	6-1/2
	300BWE	15-3/8	16-7/8	17
B	250THD	2-23/32	3-13/16	4
	300THD	2-23/32	3-3/8	3-3/4
	300 BWE	8	8-3/4	9
C	250THD	2-7/8	3-1/2	3-3/4
	300THD & BWE	2-7/8	3-1/2	3-3/4
Weight (LB)	250THD	9	15-1/2	20
	300THD	8	15	18-1/2
	300BWE	10-1/2	19	23-1/2

Dimension (IN) 2832		Valve Size (IN)		
		1	1-1/2	2
A	250THD	4-7/8	5-3/4	6-1/2
	300THD	5	6-1/8	6-1/2
	300BWE	15-3/8	16-7/8	17
B	250THD	3-15/32	3-13/16	4
	300THD	2-23/32	3-3/8	3-3/4
	300 BWE	8	8-3/4	9
C	250THD	2-7/8	3-1/2	3-3/4
	300THD & BWE	2-7/8	3-1/2	3-3/4
Weight (LB)	250THD	9	16-1/2	21
	300THD	8	16	19-1/2
	300BWE	10-1/2	20	24-1/2

Face to face dimensions conform to Historical Warren Controls standard and are **NOT** ANSI/ISA compatible.

Actual shipping weights may vary.



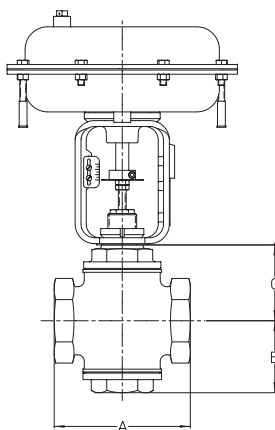
Pressure ratings are PSIG

For applications below 32° consult factory.

For applications above 375°, 300 THD Stainless Steel Body is recommended.

Body Pressure-Temperature Ratings:			
Temperature (F)	250 THD Bronze	300 THD & BWE SS	
+32° To 100°F	400	720	
150°	400	670	
175°	392	645	
200°	385	620	
225°	375	605	
250°	365	590	
275°	350	575	
300°	335	560	
325°	317	548	
350°	300	537	
375°	275	526	
400°	250	515	
450°	-	497	
500°	-	480	

Trim Materials	Flowing Differential Pressure Limit
Bronze	50 PSID
316 Stainless Steel	100 PSID
TFE	100 PSID
PEEK	100 PSID
17-4 pH	
Hardened Steel	200 PSID
Alloy 6	300 PSID



2-Way or 3-Way
w/ DL49 or 49XR

Valve shown with DL49 Actuator as typical.

For additional actuator information see [Series 2800 Product Specification](#) and the [Installation Operation and Maintenance Instructions](#) for the actuator in use.



Check valve for any damage due to improper storage or transportation. Immediately notify your sales organization of any damaged goods upon receipt. Do not attempt to move or disturb the valve further so photos may be taken. If the shipping container is noticeably damaged refuse receipt, as the shipping company should be held liable until a shipping representative is available to take photos.

INSTALLATION

See also separate actuator and accessory instructions for additional installation guidelines.

- Be sure that the flow medium, ambient temperature and the selected location will not exceed the maximum temperature of the valve, actuator, or accessories. Information can be found in the product specifications and on the nameplate(s) regarding these limits (See Information Present on Control Valves section for location of important information on valve).
- Follow good piping practices. Install a bypass around the valve. Install stop valves in inlet and outlet piping to provide means to isolate valve.
- A straight run of pipe is recommended for 10 pipe diameters upstream of the valve and 20 pipe diameters downstream of the valve.
- Protect valve and downstream equipment with a self-cleaning strainer.
- Provide proper inlet and outlet drainage in steam service to prevent water hammer or possible erosion in equipment.
- Install gauges in inlet and outlet piping to provide means for checking adjustment and operation.
- For maximum efficiency and minimum wear install valve in vertical position with the stem pointing upward.
- Actuators mounted in any position other than vertical must be supported independent of the valve. **DO NOT MOUNT DL115 ACTUATORS IN THE HORIZONTAL POSITION.**
- Be sure to leave clearance to allow for actuator removal (See Dimensions & Weights section of Product Specification for actuator removal clearance).
- Before installing, be sure valve and piping are clean inside and free of scale, chips, welding spatter, and foreign material. Thoroughly blow out or flush pipe lines.
- The valve must be installed with the fluid flowing in the correct direction(s). For proper operation in all applications, control valves must be piped according to the corresponding flow arrows, inlet markings, and port markings present on each valve (See Information Present on Control Valves section for location of important information on valve).

- Pipes must be aligned squarely with the valve at each connection.
- If the valve has screwed ends, do not apply pipe dope to the threads of the valve body or to the first two threads of the pipe.
- If the valve has flanged ends, tighten flange bolts evenly to prevent excessive stress and the possibility of cracking.
- If the valve has welded ends, prevent plug and cage distortion by keeping excess heat from the body.
- The valve, actuator, and accessories (if so equipped) are assembled, tested, and calibrated at the factory. The actuator nameplate specifies set-up parameters used (See *Information Present on Control Valves* section for location of important information on valve). Do not exceed the supply pressure listed on the actuator nameplate or you will damage the valve and void the warranty.
- Supply air or voltage, instrument signal, and accessories should be connected to ports or terminals as indicated on the control valve.
- Final tuning may be required under actual operating conditions.
- On critical or dangerous equipment, provide suitable safety and emergency systems to protect personnel and property from injury due to a valve malfunction. If the valve handles flammable, toxic, corrosive or explosive fluids, provide for safety in the event of valve leakage or malfunction.
- Do not obscure flow arrow plates or nameplates with paint. If flow arrow plates or nameplates will be covered with insulation, it is recommended the information on the plates be transcribed on the outside of the insulation in the same location as the plate.

OPERATION

- Close inlet and outlet stop valves.
- Check that valve responds through rated travel in relation to changes in input signal. Rated travel is shown by position of travel indicator on valve stem relative to travel indicator on yoke.
- For valves fitted with a handwheel, manually operate valve using handwheel through rated travel to check freedom of movement. Return handwheel to its standby position.
- Place valve in operation.

For proper operation in all applications, control valves must be piped properly. If you need detailed information, please refer to the "Heat Exchanger Bypass Piping Applications" document.

MAINTENANCE

Series 2800 Precision Globe Control

Valves are for the most part maintenance free when properly selected and installed. Rebuilding of these valves should not be necessary under normal operating conditions. For best operation follow installation guidelines (See [Installation](#) section); maintain the fluid pressure, temperature, flow, flowing differential pressure, and shut-off differential pressure within the limits of the valve (See Series 2800 Product Specification for details). In installations where high vibration exists, pneumatic and/or electrical connections should periodically be checked for integrity. In water or water and glycol applications, good water quality must be maintained or the service life

of the valve may be reduced (See [Water Quality Guidelines](#)). The valve stem must be kept free of debris, deposits, dirt, dust, and scratches or the packing parts may be damaged resulting in a packing leak. Control valve hunting will cause excessive stroking of the valve stem and result in premature failure of the packing seal. The system must be stabilized to prevent hunting to ensure reasonable packing life and optimal control performance. Oversizing of a control valve will result in an unstable condition, which can cause noise, vibration, and premature trim and packing seal failure. The use of Warren Controls ValveWorks sizing program will facilitate the selection of the optimum valve.

PACKING ADJUSTMENT

Series 2800 Precision Globe Control

Valves have either self-adjusting packing or adjustable packing. Valves with Body Material **B** Bronze and Packing Type **T** V-ring, **V** Vacuum Service, or **L** Lip Packing have self-adjusting packing and require no external adjustment. If the valve has self-adjusting packing and a packing leak is observed replace the packing and if necessary the stem and plug assembly.

Valves with Body Material **B** Bronze and Packing Type **G** Graphite have adjustable packing. Valves

with Body Material **S** CF8M and Packing Type **T** V-ring, **G** Graphite, or **V** Vacuum Service Packing also have adjustable packing. If the valve has adjustable packing and a packing leak is observed, tighten the packing nut $\frac{1}{4}$ turn and observe. If the leak continues tighten the packing nut another $\frac{1}{4}$ turn and observe. Repeat as necessary. If the leak continues and the packing nut cannot be tightened further with reasonable force replace the packing and if necessary the stem and plug assembly.

PARTS/ OVERHAUL

Damaged or worn parts can decrease performance and shorten valve life.

Damaged or worn packing parts including the packing, bearings, spring, and other bonnet parts can cause a packing leak resulting in damage to the actuator, accessories, and surrounding equipment. Damaged or worn packing parts can also cause increased hysteresis resulting in poor control.

Damaged or worn trim parts including the plug, stem, seat ring, piston, and o-ring can cause increased hysteresis, poor control, excessive internal leakage, and poor shut-off. Damaged or worn trim parts can also cause damage to the packing parts resulting in a packing leak.

Damaged or worn body gaskets or o-ring seals can cause external leakage resulting in damage to the actuator, accessories, and surrounding equipment.

Should parts become worn or damaged, parts kits are available. Repack Kits are available to replace the packing. Repack/Inspection Kits are available to allow the valve to be opened for inspection of its internal parts. Rebuild/Repack Kits are available to completely rebuild/ overhaul the valve. Parts kits come with complete step-by-step instructions. Each kit has its own part number. Please provide the valve's serial number to ensure getting the correct kit part number and correct parts.



DO NOT ATTEMPT TO SERVICE WITHOUT A
REPACK/INSPECTION KIT & SUPPLEMENTAL INSTRUCTIONS.

PARTS KITS

REPACK KIT

FOR 28N MODELS WITH BODY MATERIAL **B** BRONZE & PACKING TYPE **T** V-RING SEE DWG C3769950

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
2	1	RETAINER BEARING	7	1	PACKING SPRING
3	1	PACKING RETAINER	8	1	O-RING RETAINER
5	1	V-RING PACKING SET	9	1	O-RING
6	1	MALE ADAPTER	12	1	TUBE STEM LUBE

REPACK KIT

FOR 28N MODELS WITH BODY MATERIAL **F** CF8M & PACKING TYPE **T** V-RING SEE DWG C3760953

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
3	1	O-RING	7	1	V-RING PACKING SET
4	1	O-RING RETAINER	9	1	RETAINER BEARING
5	1	SPRING	10	1	PACKING RETAINER
6	1	MALE ADAPTER	12	1	TUBE STEM LUBE

REPACK KIT

FOR 28N MODELS WITH BODY MATERIAL **B** BRONZE & PACKING TYPE **G** GRAPHITE SEE DWG C3769952

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
2	1	PACKING RETAINER	5	1	PACKING CARTRIDGE
3	1	RETAINER BEARING	8	1	TUBE STEM LUBE

REPACK KIT

FOR 28N MODELS WITH BODY MATERIAL **F** CF8M & PACKING TYPE **G** GRAPHITE SEE DWG C3760955

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
3	1	PACKING CARTRIDGE	6	1	PACKING RETAINER
5	1	RETAINER BEARING	8	1	TUBE STEM LUBE

REPACK KIT

FOR 28N MODELS WITH BODY MATERIAL **B** BRONZE & PACKING TYPE **V** VACUUM SERVICE SEE DWG C3761956

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
2	1	PACKING RETAINER	8	1	PACKING SPRING
3	1	RETAINER BEARING	9	1	O-RING RETAINER
5	1	MALE ADAPTER	10	1	O-RING
6	1	V-RING PACKING SET	13	1	TUBE STEM LUBE
7	1	FEMALE ADAPTER			

REPACK KIT

FOR 28N MODELS WITH BODY MATERIAL **F** CF8M & PACKING TYPE **V** VACUUM SERVICE SEE DWG C3760961

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
2	1	PACKING RETAINER	8	1	SPRING
3	1	RETAINER BEARING	9	1	O-RING RETAINER
5	1	MALE ADAPTER	10	1	O-RING
6	1	V-RING PACKING SET	13	1	TUBE STEM LUBE
7	1	FEMALE ADAPTER			

REPACK KIT

FOR 28N MODELS WITH BODY MATERIAL **B** BRONZE & TYPE **L** LIP PACKING SEE DWG C3769956

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
2	1	RETAINER BEARING	5	3	LIP PACKING
3	1	PACKING RETAINER	8	1	TUBE STEM LUBE

PARTS KITS

REPACK / INSPECTION KIT

FOR MODEL **28N** VALVE TYPE **20** BODY MATERIAL **B** BRONZE

SEE DWG D3210959

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
13	1	TUBE PERMATEX #2		1	REPACK KIT
	1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)			

REBUILD / REPACK KIT

FOR MODEL **28N** VALVE TYPE **20** BODY MATERIAL **B** BRONZE

SEE DWG D3210959

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	VALVE STEM (Trim Material S, 6, or H)	13	1	TUBE PERMATEX #2
4	1	GROOVE PIN (Valve size 1-1/4, 1-1/2, & 2 in)	16	1	PLUG & STEM ASSEMBLY (Valve size 1/2, 3/4, & 1 in, Trim Material T or P)
5	1	PLUG (Trim Material S, 6, or H)	17	1	PLUG ASSEMBLY (Valve size 1-1/4, 1-1/2, & 2 in, Trim Material T or P)
6	1	SEAT RING		1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)
9	1	SELF LOCKING NUT (Valve size 1/2, 3/4, & 1 in, Trim Material S, 6, or H)		1	REPACK KIT
12	1	TRAVEL STOP (Valve size 1/2, 3/4, & 1 in)			

REPACK / INSPECTION KIT

FOR MODEL **28N** VALVE TYPE **20** BODY MATERIAL **F** CF8M

SEE DWG D3210961

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
9	2	O-RING		1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)
15	1	TUBE PST SEALANT		1	REPACK KIT
16	1	O-RING LUBE			

PARTS KITS

REBUILD / REPACK KIT					
FOR MODEL 28N VALVE TYPE 20 BODY MATERIAL F CF8M			SEE DWG D3210691		
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	VALVE STEM (Trim Material S, 6,or H)	14	1	TRAVEL STOP (Valve size ½, ¾, & 1 in)
5	1	GROOVE PIN (Valve size 1-1/4, 1-1/2, & 2 in)	15	1	TUBE PST SEALANT
6	1	PLUG (Trim Material S, 6,or H)	16	1	O-RING LUBE
7	1	SEAT RING	19	1	PLUG & STEM ASSEMBLY (Valve size ½, ¾, & 1 in, Trim Material T or P)
9	2	O-RING	20	1	PLUG ASSEMBLY (Valve size 1-1/4, 1-1/2, & 2 in, Trim Material T or P)
10	1	BOTTOM PLUG		1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)
11	1	SELF LOCKING NUT (Valve size ½, ¾, & 1 in, Trim Material S, 6,or H)		1	REPACK KIT

REPACK / INSPECTION KIT					
FOR MODEL 28N VALVE TYPE 28 BODY MATERIAL B BRONZE			SEE DWG D3210959		
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
13	1	TUBE PERMATEX #2		1	REPACK KIT
	1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)			

REBUILD / REPACK KIT					
FOR MODEL 28N VALVE TYPE 28 BODY MATERIAL B BRONZE			SEE DWG D3210959		
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
6	1	SEAT RING	19	1	SEAT RING ASSEMBLY (Trim Material T or P)
13	1	TUBE PERMATEX #2		1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)
18	1	PLUG, TRAVEL STOP, & STEM ASSEMBLY		1	REPACK KIT

REPACK / INSPECTION KIT					
FOR MODEL 28N VALVE TYPE 28 BODY MATERIAL F CF8M			SEE DWG D3210961		
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
9	2	O-RING		1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)
15	1	TUBE PST SEALANT		1	REPACK KIT
16	1	O-RING LUBE			

PARTS KITS

REBUILD / REPACK KIT					
FOR MODEL 28N VALVE TYPE 28 BODY MATERIAL F CF8M SEE DWG D3210961					
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
7	1	SEAT RING	21	1	PLUG, TRAVEL STOP, & STEM ASSEMBLY
9	2	O-RING	22	1	SEAT RING ASSEMBLY (Trim Material T or P)
10	1	BOTTOM PLUG			
15	1	TUBE PST SEALANT			
16	1	O-RING LUBE		1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)
				1	REPACK KIT

REPACK / INSPECTION KIT					
FOR MODEL 28N VALVE TYPE 30 BODY MATERIAL B BRONZE SEE DWG D3270957					
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
12	1	TUBE PERMATEX #2		1	REPACK KIT
	1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)			

REBUILD / REPACK KIT					
FOR MODEL 28N VALVE TYPE 30 BODY MATERIAL B BRONZE SEE DWG D3270957					
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	VALVE STEM	9	1	SELF LOCKING NUT (Valve size 1/2, 3/4, & 1 in)
7	2	SEAT RING	12	1	TUBE PERMATEX #2
5	1	GROOVE PIN (Valve size 1-1/4, 1-1/2, & 2 in)		1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)
6	1	PLUG		1	REPACK KIT

REPACK / INSPECTION KIT					
FOR MODEL 28N VALVE TYPE 30 BODY MATERIAL F CF8M SEE DWG D3270958					
ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
4	2	O-RING		1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)
14	1	TUBE PST SEALANT		1	REPACK KIT
15	1	O-RING LUBE			

PARTS KITS

REBUILD / REPACK KIT

FOR MODEL **28N** VALVE TYPE **30** BODY MATERIAL **F** CF8M SEE DWG **D3270958**

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	VALVE STEM	11	1	SELF LOCKING NUT (Valve size 1/2, 3/4, & 1 in)
4	2	O-RING	14	1	TUBE PST SEALANT
6	1	GROOVE PIN (Valve size 1-1/4, 1-1/2, & 2 in)	15	1	O-RING LUBE
7	1	PLUG		1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)
8	2	SEAT RING		1	REPACK KIT
10	1	BOTTOM PORT			

REPACK / INSPECTION KIT

FOR MODEL **28N** VALVE TYPE **32** BODY MATERIAL **B** BRONZE SEE DWG **C3270959**

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
9	1	TUBE PERMATEX #2		1	REPACK KIT
	1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)			

REBUILD / REPACK KIT

FOR MODEL **28N** VALVE TYPE **32** BODY MATERIAL **B** BRONZE SEE DWG **C3270959**

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	VALVE STEM	9	1	TUBE PERMATEX #2
5	4	JAMNUT	10	1	O-RING LUBE
6	1	O-RING		1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)
7	1	PISTON		1	REPACK KIT
8	1	BOTTOM PORT			

REPACK / INSPECTION KIT

FOR MODEL **28N** VALVE TYPE **32** BODY MATERIAL **F** CF8M SEE DWG **D3270963**

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
3	2	O-RING		1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)
10	1	O-RING LUBE		1	REPACK KIT
11	1	TUBE PST SEALANT			

PARTS KITS

REBUILD / REPACK KIT

FOR MODEL **28N** VALVE TYPE **32** BODY MATERIAL **F CF8M** SEE DWG D3270963

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	VALVE STEM	8	1	BOTTOM PORT
3	2	O-RING	10	1	O-RING LUBE
5	1	PISTON	11	1	TUBE PST SEALANT
6	1	O-RING		1	ADDITIONAL BONNET SUBASSEMBLY PARTS (SEE TABLE)
7	4	JAMNUT		1	REPACK KIT

ADDITIONAL BONNET SUBASSEMBLY PARTS IN REPACK/ INSPECTION KIT

FOR **28N** MODELS WITH BODY MATERIAL **B** BRONZE & PACKING TYPE **T** V-RING
SEE DWG C3769950

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
8	1	O-RING RETAINER	9	1	O-RING

FOR **28N** MODELS WITH BODY MATERIAL **F** CF8M & PACKING TYPE **T** V-RING
SEE DWG C3760953

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
3	1	O-RING	4	1	O-RING RETAINER

FOR **28N** MODELS WITH BODY MATERIAL **B** BRONZE & TYPE **G** GRAPHITE
SEE DWG C3769952

NONE

FOR **28N** MODELS WITH BODY MATERIAL **F** CF8M & TYPE **G** GRAPHITE
SEE DWG C3760955

NONE

FOR **28N** MODELS WITH BODY MATERIAL **B** BRONZE & PACKING TYPE **V** VACUUM SERVICE
SEE DWG C3761956

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
9	1	O-RING RETAINER	10	1	O-RING

FOR **28N** MODELS WITH BODY MATERIAL **F** CF8M & PACKING TYPE **V** VACUUM SERVICE
SEE DWG C3760961

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
9	1	O-RING RETAINER	10	1	O-RING

FOR **28N** MODELS WITH BODY MATERIAL **B** BRONZE & PACKING TYPE **L** LIP PACKING
SEE DWG C3769956

NONE

PARTS KITS

ADDITIONAL BONNET SUBASSEMBLY PARTS IN REBUILD/ REPACK KIT

FOR **28N** MODELS WITH BODY MATERIAL **B** BRONZE & PACKING TYPE **T** V-RING
SEE DWG C3769950

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
8	1	O-RING RETAINER	10	1	BONNET BEARING
9	1	O-RING	11	1	BONNET

FOR **28N** MODELS WITH BODY MATERIAL **F** CF8M & PACKING TYPE **T** V-RING
SEE DWG C3760953

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	BONNET	3	1	O-RING
2	1	BONNET BEARING	4	1	O-RING RETAINER

FOR **28N** MODELS WITH BODY MATERIAL **B** BRONZE & TYPE **G** GRAPHITE
SEE DWG C3769952

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
6	1	BONNET	7	1	BONNET BEARING

FOR **28N** MODELS WITH BODY MATERIAL **F** CF8M & TYPE **G** GRAPHITE
SEE DWG C3760955

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	BONNET	2	1	BONNET BEARING

FOR **28N** MODELS WITH BODY MATERIAL **B** BRONZE & PACKING TYPE **V** VACUUM SERVICE
SEE DWG C3761956

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
9	1	O-RING RETAINER	11	1	BONNET BEARING
10	1	O-RING	12	1	BONNET

FOR **28N** MODELS WITH BODY MATERIAL **F** CF8M & PACKING TYPE **V** VACUUM SERVICE
SEE DWG C3760961

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
9	1	O-RING RETAINER	11	1	BONNET BEARING
10	1	O-RING	12	1	BONNET

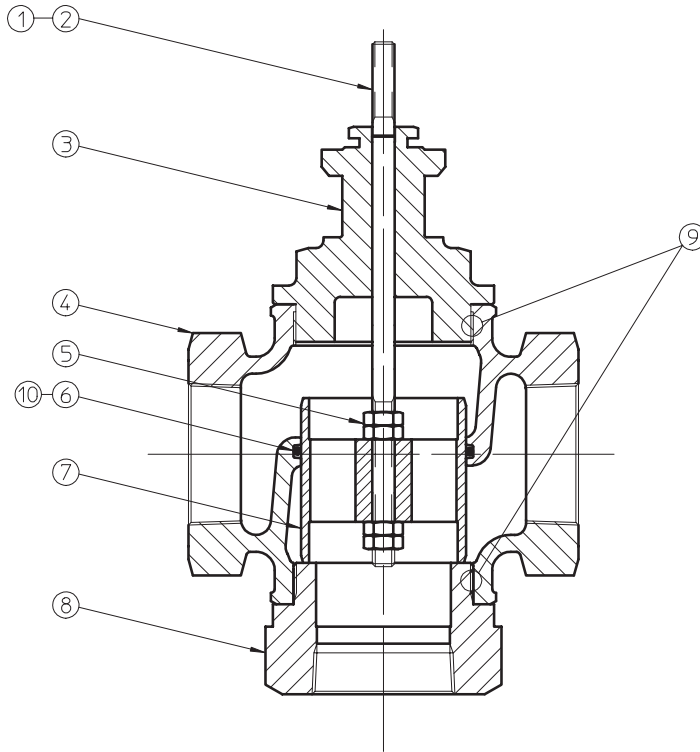
FOR **28N** MODELS WITH BODY MATERIAL **B** BRONZE & PACKING TYPE **L** LIP PACKING
SEE DWG C3769956

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
6	1	BONNET	7	1	BONNET BEARING

C3270959

1) STAMP CHARACTERS PER FLOW ARROW PLATES
SHOWN ON D3100018 ON 2 FLATS 180° APART
ON EACH HEX END CONNECTION.

NOTES:

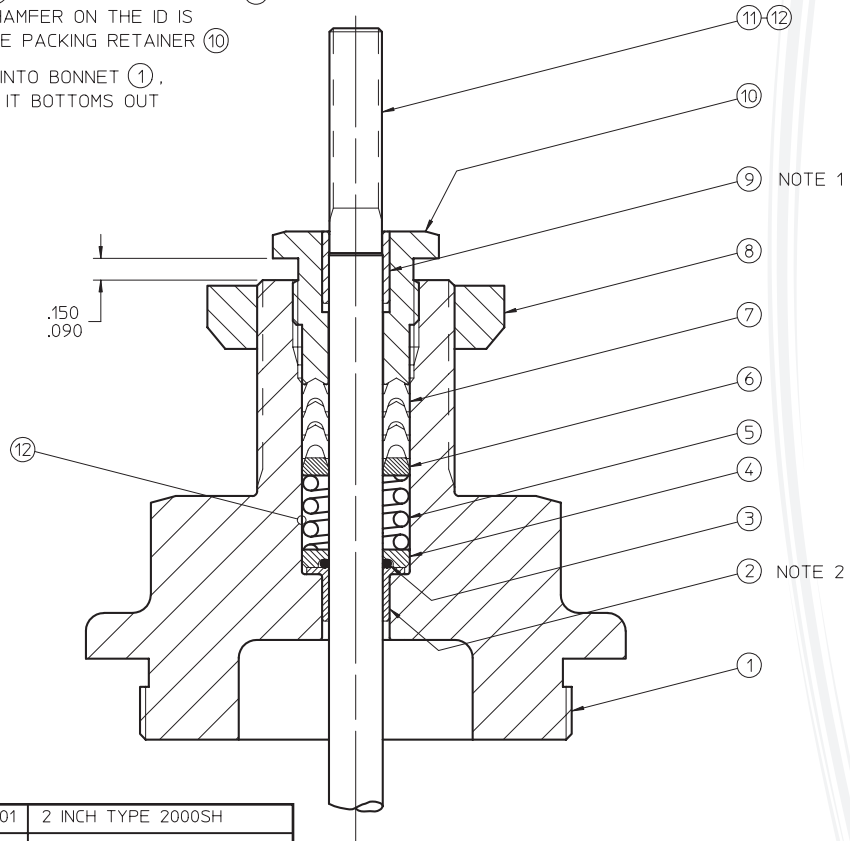


10	A/R	O-RING LUBE
9	A/R	PERMATEX #2
8	1	BOTTOM PORT
7	1	PISTON
6	1	O-RING
5	4	JAMNUT
4	1	VALVE BODY
3	1	BONNET SUBASSEMBLY SEE SEPARATE DWG
2	A/R	STEM LUBE
1	1	VALVE STEM
ITEM	QTY	DESCRIPTION
UNLESS OTHERWISE NOTED TOLERANCES ON		MATERIAL
DECIMAL .XXX	DECIMAL .XXX	
FRACTION 1/16	ANGLE 1/2	
REMOVE ALL SHARP EDGES AND BURRS		TREATMENT
NEXT ASSEMBLY		FINISH
DRAWN J.MARTOCCI		DATE 11/18/96
CHECKED		
APPROVED		
WARREN CONTROLS CORPORATION BROADWAY, NEW JERSEY 08808		
1-2 INCH TYPE 32 BRONZE VBA		
SIZE C	FSCM NO 03847	DWG NO C3270959
		REV

C3760953

NOTES:

- 1) RETAINER BEARING ⑨ IS NOT A SYMMETRICAL PART & SHOULD ONLY BE ASSEMBLED AS FOLLOWS.
PRESS RETAINER BEARING ⑨ INTO PACKING RETAINER ⑩ UNTIL THE END WITH THE CHAMFER ON THE ID IS FLUSH WITH THE TOP OF THE PACKING RETAINER ⑩
- 2) PRESS BONNET BEARING ② INTO BONNET ①, ORIENTED AS SHOWN, UNTIL IT BOTTOMS OUT IN PACKING GLAND



-03	C1180971-01	2 INCH TYPE 2000SH
-02	C1180867-01	1 1/2 INCH TYPE 2000SH
C3760953-01	C1180668-01	1/2 - 1 INCH TYPE 2000SH
PART NO	BONNET NO	USED ON

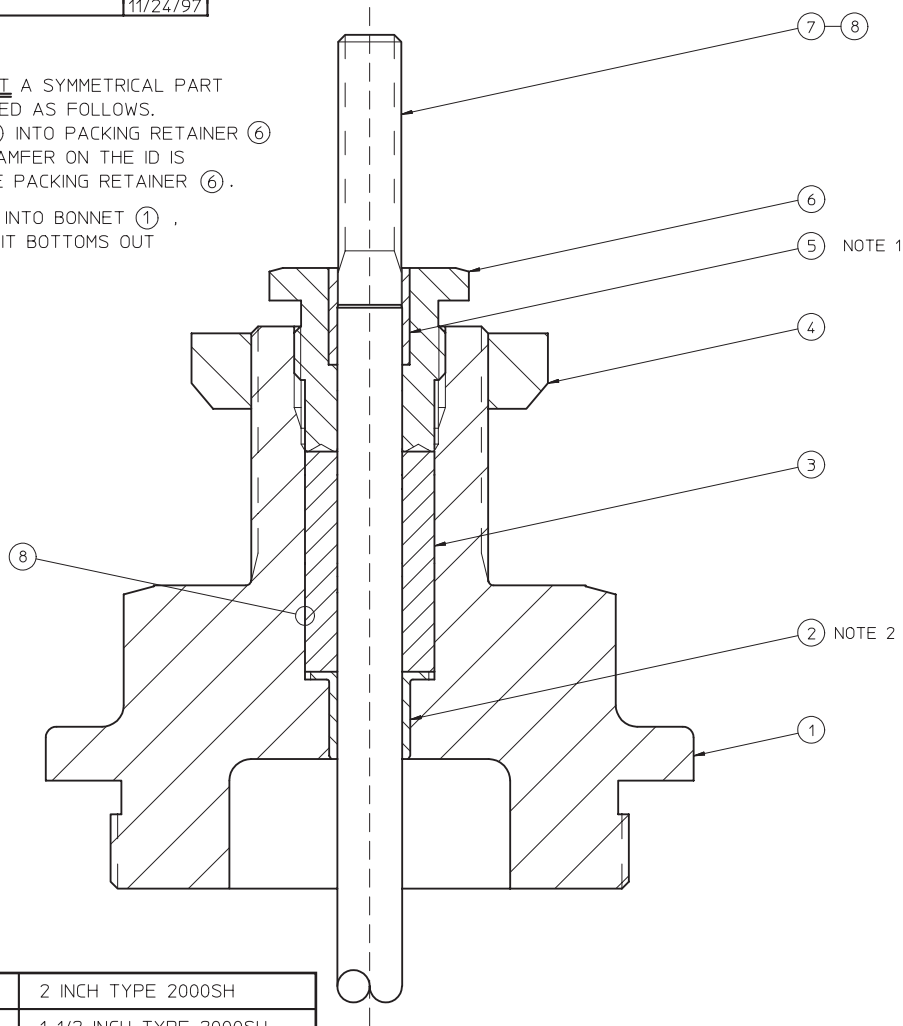
12	A/R	A0940021	DCIII LUBE	
11	1	AS REQD	VALVE STEM	ST STL TYPE 316
10	1	C1720057-02	PACKING RETAINER	ST STL 300 SERIES
9	1	B1060056	RETAINER BEARING	FIBER REINFORCED POLYETHERETHERKETONE
8	1	B1640034-01	YOKE LOCKNUT	STL PLTD
7	1	A1700054	V-RING PACKING SET	TEFLON
6	1	B1010050-04	MALE ADAPTER	ST STL 300 SERIES
5	1	B1820059	SPRING	ST STL TYPE 302
4	1	B1800050-03	O-RING RETAINER	ST STL 300 SERIES
3	1	04910012	O-RING -012	TEFLON
2	1	B1060055	BONNET BEARING	FIBER REINFORCED POLYETHERETHERKETONE
1	1	SEE OTHER TABLE	BONNET	CAST ST STL ASTM A351 CF8M
ITEM	QTY	PART NO	DESCRIPTION	MATL SPEC
UNLESS OTHERWISE SPECIFIED:		MATERIAL	DRAWN J.MARTOCCI	DATE 7/2/97
DECIMAL .XX	DECIMAL .XXX	SEE TABLE	CHECKED	
FRACTION 1/32	ANGLE 1/2	TREATMENT	APPROVED	
ALL FILLET RADI 1/32 MAX				
100% FINISH ON ALL MACHINED SURFACES				
FINISH			SIZE C	PSCH NO 03847
			DWG NO	C3760953-
			REV	

C3760955

REV	DESCRIPTION	DATE
A	ECN 1492	JAM 11/24/97

NOTES:

- 1) RETAINER BEARING (5) IS NOT A SYMMETRICAL PART & SHOULD ONLY BE ASSEMBLED AS FOLLOWS.
PRESS RETAINER BEARING (5) INTO PACKING RETAINER (6) UNTIL THE END WITH THE CHAMFER ON THE ID IS FLUSH WITH THE TOP OF THE PACKING RETAINER (6).
- 2) PRESS BONNET BEARING (2) INTO BONNET (1), ORIENTED AS SHOWN, UNTIL IT BOTTOMS OUT IN PACKING GLAND.



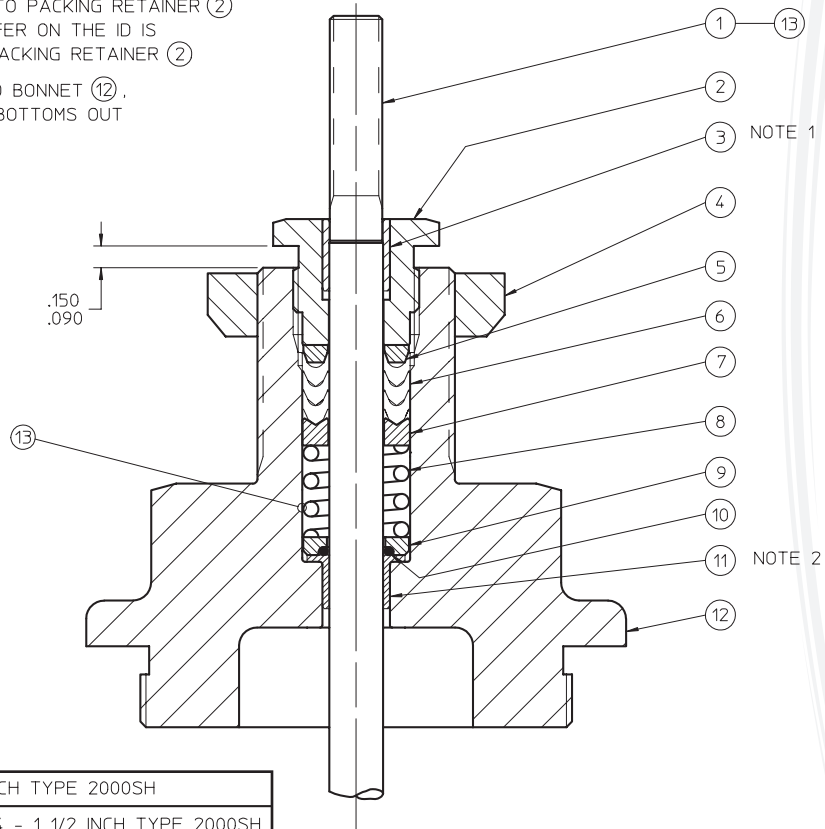
-03	C1180971-01	2 INCH TYPE 2000SH
-02	C1180867-01	1 1/2 INCH TYPE 2000SH
C3760955-01	C1180668-01	1/2 - 1 INCH TYPE 2000SH
PART NO	BONNET NO	USED ON

8	A/R	A0940021	DC111 LUBE	
7	1	AS REQD	VALVE STEM	ST STL TYPE 316
6	1	C1720057-02	PACKING RETAINER	ST STL 300 SERIES
5	1	B1060056	RETAINER BEARING	FIBER REINFORCED POLYETHERETHERKETONE
4	1	B1640034-01	YOKE LOCKNUT	STL PLTD
3	1	B1700056	PACKING CARTRIDGE	GRAPHITE
2	1	B1060055	BONNET BEARING	FIBER REINFORCED POLYETHERETHERKETONE
1	1	SEE OTHER TABLE	BONNET	CAST ST STL ASTM A351 CF8M
ITEM	QTY	PART NO	DESCRIPTION	MATL SPEC
UNLESS OTHERWISE SPECIFIED:		MATERIAL		
DECIMAL .XXX	DECIMAL .XXX	SEE TABLE		
FRACTION 1/16	ANGLE 1/2			
ALL FILLET RADI 1/32 MAX		TREATMENT		
125 FINISH ON ALL MACHINED SURFACES		FINISH		
		DRAWN J.MARTOCCI DATE 10/15/97		
		CHECKED		
		APPROVED		
		WARREN CONTROLS CORPORATION BROADWAY, NEW JERSEY 08808		
		SUBASSEMBLY 1/2-2 INCH TYPE SH BONNET & LOCKNUT W/AGP		
		SIZE C	FSCH NO 03847	DWG NO C3760955- REV A

C3760961

NOTES:

- 1) RETAINER BEARING (3) IS NOT A SYMMETRICAL PART & SHOULD ONLY BE ASSEMBLED AS FOLLOWS.
PRESS RETAINER BEARING (3) INTO PACKING RETAINER (2) UNTIL THE END WITH THE CHAMFER ON THE ID IS FLUSH WITH THE TOP OF THE PACKING RETAINER (2)
- 2) PRESS BONNET BEARING (11) INTO BONNET (12), ORIENTED AS SHOWN, UNTIL IT BOTTOMS OUT IN PACKING GLAND

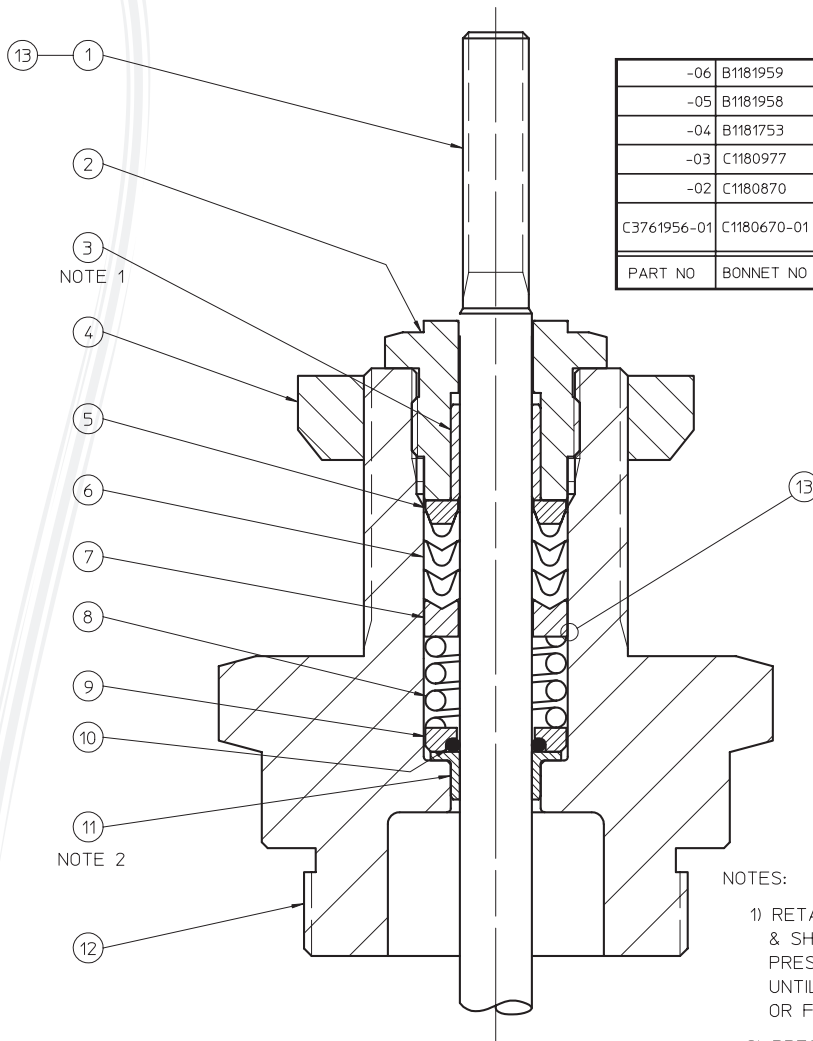


-03	C1180971-01	2 INCH TYPE 2000SH
-02	C1180867-01	1 1/4 - 1 1/2 INCH TYPE 2000SH
C3760961-01	C1180668-01	1/2 - 1 INCH TYPE 2000SH
PART NO	BONNET NO	USED ON

13	A/R	A0940021	DC111 LUBE	
12	1	SEE TABLE	BONNET	CAST ST STL ASTM A351 CF8M
11	1	B1060055	BONNET BEARING	FIBER REINFORCED POLYETHERETHERKETONE
10	1	04910012	O-RING -012	TEFLON
9	1	B1800050-03	O-RING RETAINER	ST STL 300 SERIES
8	1	B1820059	SPRING	ST STL TYPE 302
7	1	B1010066-02	FEMALE ADAPTER	ST STL 300 SERIES
6	1	A1700054	V-RING PACKING SET	TEFLON
5	1	B1010050-04	MALE ADAPTER	ST STL 300 SERIES
4	1	B1640034-01	YOKE LOCKNUT	STEEL PLATED
3	1	B1060056	RETAINER BEARING	FIBER REINFORCED POLYETHERETHERKETONE
2	1	C1720063-02	PACKING RETAINER	ST STL 300 SERIES
1	1	AS REQD	VALVE STEM	ST STL TYPE 316
ITEM	QTY	PART NO	DESCRIPTION	MATL SPEC
UNLESS OTHERWISE SPECIFIED:		MATERIAL	DRAWN	DATE
DECIMAL .XXX	DECIMAL .XXX	SEE TABLE	BLB	6/5/03
FRACTION 1/8	ANGLE 1/2		CHECKED	
ALL FILLET RADI 1/32 MAX		TREATMENT	APPROVED	
125 / FINISH ON ALL MACHINED SURFACES		FINISH		
			SIZE	FSCH NO
			C	03847
			DWG NO	C3760961-
			REV	
WARREN CONTROLS INCORPORATED BROADWAY, NEW JERSEY 08808				
BONNET SUBASSEMBLY AVP VACUUM SERVICE 1/2 -2 INCH TYPE 2000SH				

C3761956

REV	DESCRIPTION	DATE
A	REDRAWN WITH CHANGE ECN 2161	BLB 11/11/05



-06	B1181959	B1060057	10 INCH TYPE 22/72 250# FLG
-05	B1181958	B1060057	10 INCH TYPE 22/72 125# FLG
-04	B1181753	B1060057	8 INCH TYPE 22/72
-03	C1180977	B1060055	2 INCH TYPE 20/70, 30
-02	C1180870	B1060055	1 1/2 INCH TYPE 20/70, 30
C3761956-01	C1180670-01	B1060057	1/2 - 1 & 2 1/2 - 10 INCH TYPE 20/70, 30, 32 1 1/2 - 6 INCH TYPE 22/72
PART NO	BONNET NO	BONNET BEARING NO	USED ON

NOTE 1

NOTE 2

NOTES:

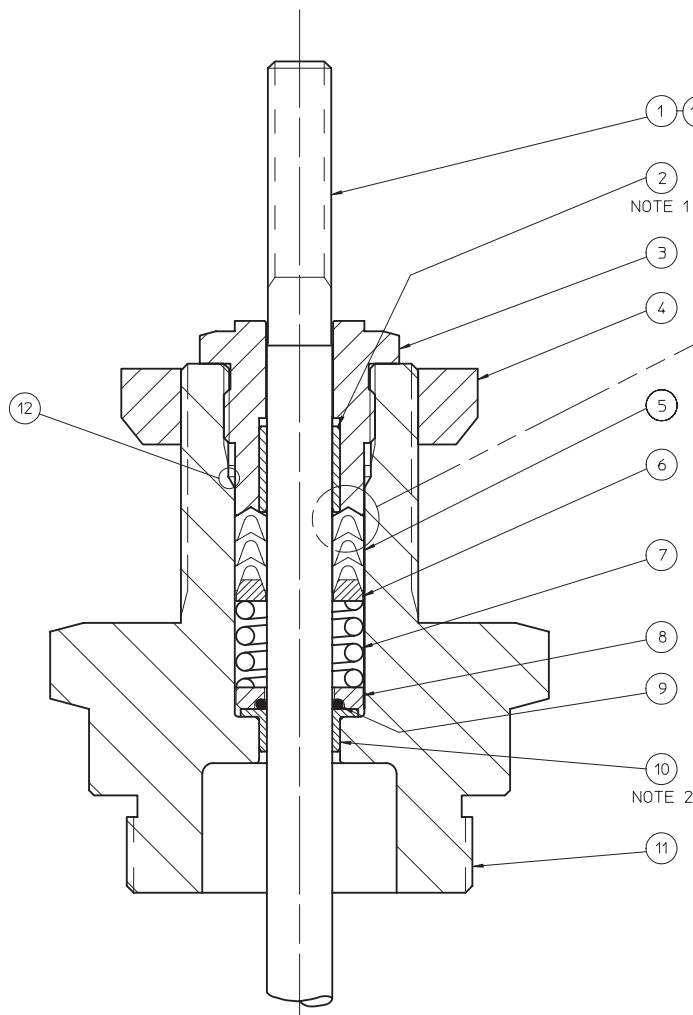
- 1) RETAINER BEARING (3) IS NOT A SYMMETRICAL PART & SHOULD ONLY BE ASSEMBLED AS FOLLOWS. PRESS RETAINER BEARING (3) INTO PACKING RETAINER (2) UNTIL THE END WITH THE CHAMFER ON THE ID IS ABOVE OR FLUSH WITH THE BOTTOM OF THE PACKING RETAINER (2)
- 2) PRESS BONNET BEARING (11) INTO BONNET (12), ORIENTED AS SHOWN, UNTIL IT BOTTOMS OUT IN PACKING GLAND

13	A/R	A0940021	DC111 LUBE				
12	1	SEE TABLE	BONNET	BRASS OR BRONZE			
11	1	SEE TABLE	BONNET BEARING	FIBER REINFORCED POLYETHERETHERKETONE			
10	1	04910012	O-RING -012	TEFLON			
9	1	B1800050-01	O-RING RETAINER	BRASS			
8	1	B1820059	SPRING	ST STL TYPE 302			
7	1	B1010066-01	FEMALE ADAPTER	BRASS			
6	1	A1700054	V-RING PACKING SET	TEFLON			
5	1	B1010050-03	MALE ADAPTER	BRASS			
4	1	B1640034-01	YOKE LOCKNUT	STEEL PLATED			
3	1	B1060056	RETAINER BEARING	FIBER REINFORCED POLYETHERETHERKETONE			
2	1	C1720062-03	PACKING RETAINER	BRASS			
1	1	AS REQD	VALVE STEM	ST STL TYPE 316			
ITEM	QTY	PART NO	DESCRIPTION	MATL SPEC			
UNLESS OTHERWISE SPECIFIED:			MATERIAL	DRAWN	DATE	WARREN CONTROLS INCORPORATED	
DECIMAL .001	DECIMAL .005		SEE TABLE	BLB	11/11/05	BETHLEHEM, PENNSYLVANIA 18020-8010	
FRACTION 1/64	ANGLE 1/2			CHECKED		BONNET SUBASSY VACUUM SERVICE	
ALL FILLET RADII 1/32 MAX			TREATMENT	APPROVED		GLFVP 1.376-18 W/ BEARINGS	
125 FINISH ON ALL MACHINED SURFACES			FINISH		SIZE C	PSCH NO 03847	DWG NO C3761956-
ALL DIMENSIONS ARE IN INCHES							

C3769950




REV	DESCRIPTION	DATE
A	REDRAWN WITH CHANGE ECN 2161	BLB 11/9/05

SEE NOTE 1



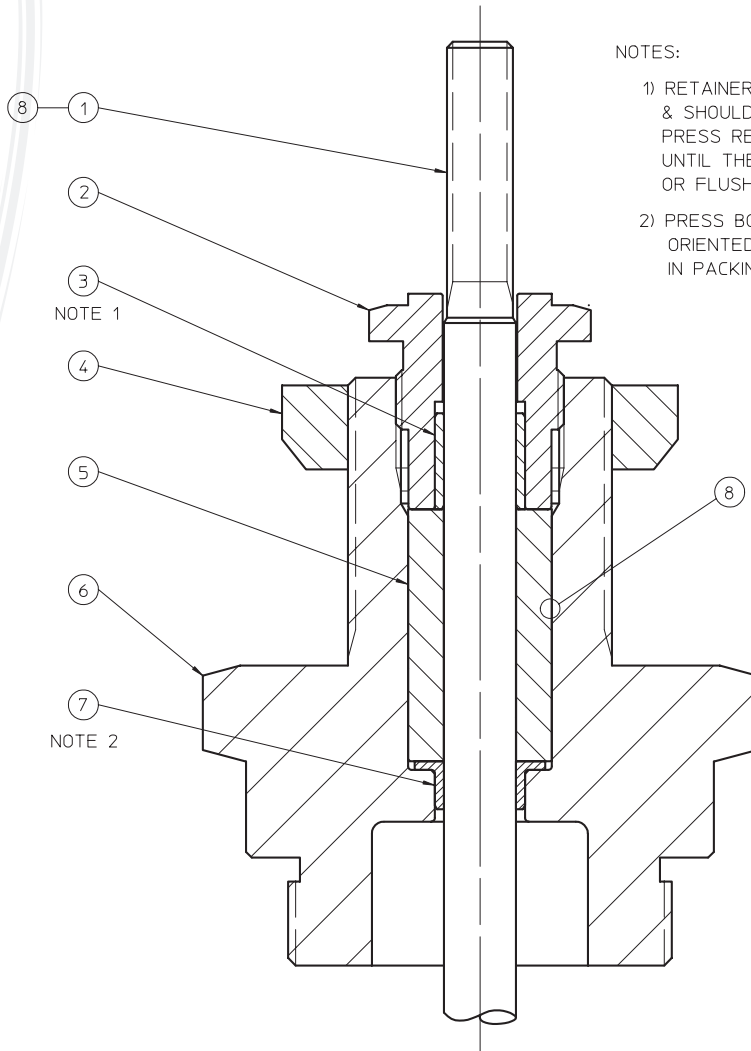
NOTES:

- 1) RETAINER BEARING ② IS NOT A SYMMETRICAL PART & SHOULD ONLY BE ASSEMBLED AS FOLLOWS. PRESS RETAINER BEARING ② INTO PACKING RETAINER ③ UNTIL THE END WITH THE CHAMFER ON THE ID IS ABOVE OR FLUSH WITH THE INSIDE EDGE OF THE V-NOTCH. THE BEARING MUST NOT EXTEND PAST THE V-NOTCH AND INTERFERE WITH THE V-RING PACKING.
- 2) PRESS BONNET BEARING ⑩ INTO BONNET ⑪, ORIENTED AS SHOWN, UNTIL IT BOTTOMS OUT IN PACKING GLAND.

12	A/R	A0940021	DC111 LUBE																																																				
11	1	C1180670-01	BONNET	BRASS																																																			
10	1	B1060057	BONNET BEARING	FIBER REINFORCED POLYETHERETHERKETONE																																																			
9	1	04910012	O-RING -012	TEFLON																																																			
8	1	B1800050-01	O-RING RETAINER	BRASS																																																			
7	1	B1820059	PACKING SPRING	ST STL TYPE 302																																																			
6	1	B1010050-03	MALE ADAPTER	BRASS																																																			
5	1	A1700054	V-RING PACKING SET	TEFLON																																																			
4	1	B1640034-01	YOKE LOCKNUT	STEEL PLATED																																																			
3	1	C1720060-03	PACKING RETAINER	BRASS																																																			
2	1	B1060056	RETAINER BEARING	FIBER REINFORCED POLYETHERETHERKETONE																																																			
1	1	AS REQD	VALVE STEM	ST STL TYPE 316																																																			
ITEM		QTY	PART NO	DESCRIPTION	MATL SPEC																																																		
<table><tr><td colspan="2">REMOVE ALL SHARP EDGES AND BURRS</td><td colspan="2">UNLESS OTHERWISE SPECIFIED:</td><td>MATERIAL</td><td>DRAWN</td><td>DATE</td><td colspan="2">WARREN CONTROLS INCORPORATED</td></tr><tr><td colspan="2" rowspan="3"> THIRD ANGLE PROJECTION NEXT ASSEMBLY</td><td>DECIMAL .XXX</td><td>DECIMAL .XXX</td><td rowspan="3">SEE TABLE</td><td>CHECKED</td><td rowspan="3"></td><td colspan="2">BETHLEHEM, PENNSYLVANIA 18020-8010</td></tr><tr><td>FRACTION 1/64</td><td>ANGLE 1°</td><td>APPROVED</td><td colspan="2">NONADJUSTABLE V-RING PACKING SUBASSY</td></tr><tr><td colspan="2">ALL FILLET RADIUS 1/32 MAX</td><td>TREATMENT</td><td colspan="2">BONNET 1.376-18, 2-18 W/BEARINGS</td></tr><tr><td colspan="2"></td><td colspan="2">125° FINISH ON ALL MACHINED SURFACES</td><td>FINISH</td><td colspan="2"></td><td>SIZE C</td><td>PSCH NO 03847</td><td>DWG NO C3769950</td><td>REV</td></tr><tr><td colspan="2"></td><td colspan="2">ALL DIMENSIONS ARE IN INCHES</td><td></td><td colspan="2"></td><td colspan="4"></td></tr></table>						REMOVE ALL SHARP EDGES AND BURRS		UNLESS OTHERWISE SPECIFIED:		MATERIAL	DRAWN	DATE	WARREN CONTROLS INCORPORATED		 THIRD ANGLE PROJECTION NEXT ASSEMBLY		DECIMAL .XXX	DECIMAL .XXX	SEE TABLE	CHECKED		BETHLEHEM, PENNSYLVANIA 18020-8010		FRACTION 1/64	ANGLE 1°	APPROVED	NONADJUSTABLE V-RING PACKING SUBASSY		ALL FILLET RADIUS 1/32 MAX		TREATMENT	BONNET 1.376-18, 2-18 W/BEARINGS				125° FINISH ON ALL MACHINED SURFACES		FINISH			SIZE C	PSCH NO 03847	DWG NO C3769950	REV			ALL DIMENSIONS ARE IN INCHES								
REMOVE ALL SHARP EDGES AND BURRS		UNLESS OTHERWISE SPECIFIED:		MATERIAL	DRAWN	DATE	WARREN CONTROLS INCORPORATED																																																
 THIRD ANGLE PROJECTION NEXT ASSEMBLY		DECIMAL .XXX	DECIMAL .XXX	SEE TABLE	CHECKED		BETHLEHEM, PENNSYLVANIA 18020-8010																																																
		FRACTION 1/64	ANGLE 1°		APPROVED		NONADJUSTABLE V-RING PACKING SUBASSY																																																
		ALL FILLET RADIUS 1/32 MAX			TREATMENT		BONNET 1.376-18, 2-18 W/BEARINGS																																																
		125° FINISH ON ALL MACHINED SURFACES		FINISH			SIZE C	PSCH NO 03847	DWG NO C3769950	REV																																													
		ALL DIMENSIONS ARE IN INCHES																																																					


C3769952

REV	DESCRIPTION	DATE
A	REDRAWN WITH CHANGE ECN 2161	BLB 11/10/05

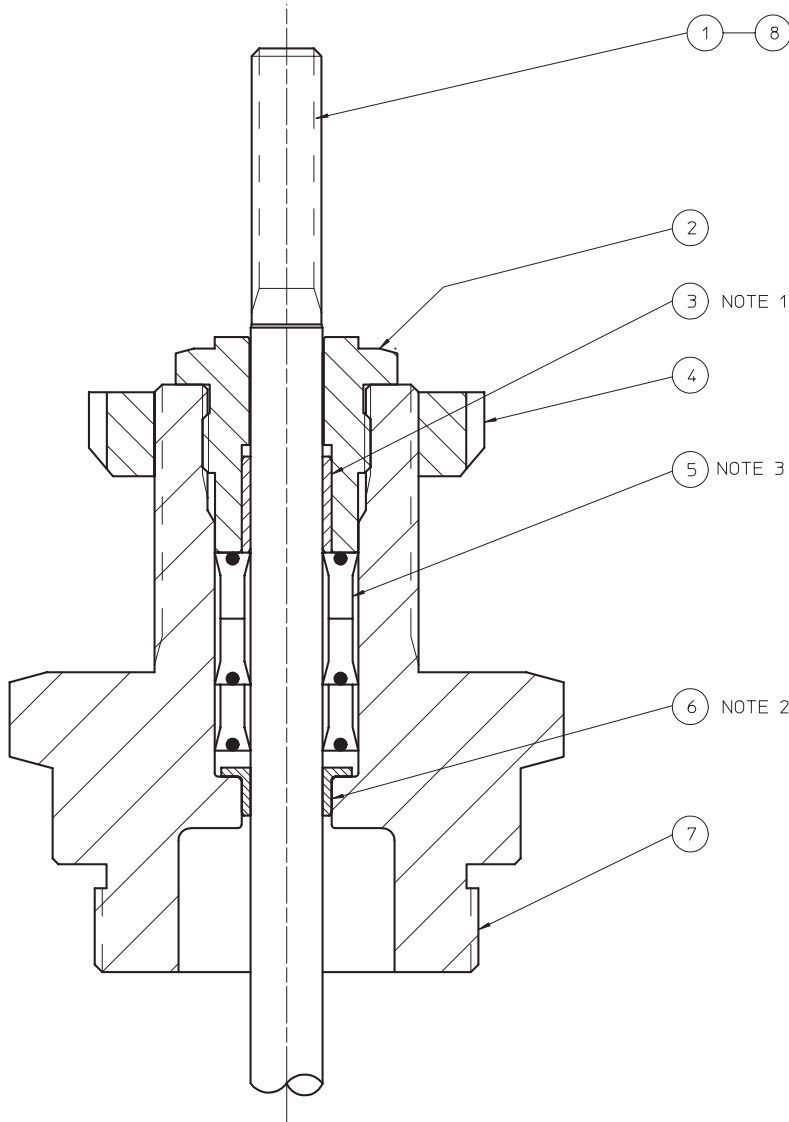


NOTES:

- 1) RETAINER BEARING (3) IS NOT A SYMMETRICAL PART & SHOULD ONLY BE ASSEMBLED AS FOLLOWS.
PRESS RETAINER BEARING (3) INTO PACKING RETAINER (2) UNTIL THE END WITH THE CHAMFER ON THE ID IS ABOVE OR FLUSH WITH THE BOTTOM OF THE PACKING RETAINER (2)
- 2) PRESS BONNET BEARING (7) INTO BONNET (6), ORIENTED AS SHOWN, UNTIL IT BOTTOMS OUT IN PACKING GLAND

8	A/R	A0940021	DC111 LUBE		
7	1	B1060057	BONNET BEARING	FIBER REINFORCED POLYETHERETHERKETONE	
6	1	C1180670-01	BONNET	BRASS	
5	1	B1700056	PACKING CARTRIDGE	GRAPHITE	
4	1	B1640034-01	YOKE LOCKNUT	STEEL PLATED	
3	1	B1060056	RETAINER BEARING	FIBER REINFORCED POLYETHERETHERKETONE	
2	1	C1720061-03	PACKING RETAINER	BRASS	
1	1	AS REQD	VALVE STEM	ST STL TYPE 316	
ITEM	QTY	PART NO	DESCRIPTION	MATL SPEC	
REMOVE ALL SHARP EDGES AND BURRS		UNLESS OTHERWISE SPECIFIED:		MATERIAL	
DIMENSIONED PER ASME Y14.5M-1994		DECIMAL .XX ±.010	DECIMAL .XXX ±.005	SEE TABLE	
		FRACTION ± 1/64	ANGLE ± °		
THIRD ANGLE PROJECTION		ALL FILLET RADI 1/32 MAX			TREATMENT
		125 ✓ FINISH ON ALL MACHINED SURFACES			APPROVED
NEXT ASSEMBLY		ALL DIMENSIONS ARE IN INCHES		FINISH	
		SIZE C	FSCH NO 03847	DWG NO C3769952	
				REV A	
WARREN CONTROLS INCORPORATED BETHLEHEM, PENNSYLVANIA 18020-8010 BONNET SUBASSY ADJUSTABLE GRAPHITE PACKING 1.376-18 2-18 W/ BEARINGS					

C3769956



REV	DESCRIPTION	DATE
A	REDRAWN WITH CHANGE ECN 2161	BLB 11/10/05

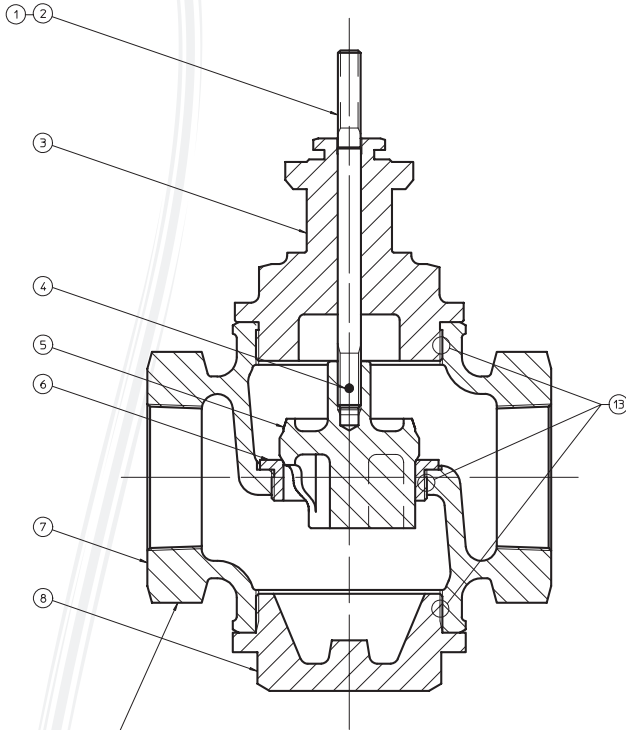
NOTES:

- 1) RETAINER BEARING (3) IS NOT A SYMMETRICAL PART & SHOULD ONLY BE ASSEMBLED AS FOLLOWS. PRESS RETAINER BEARING (3) INTO PACKING RETAINER (2) UNTIL THE END WITH THE CHAMFER ON THE ID IS ABOVE OR FLUSH WITH THE BOTTOM OF THE PACKING RETAINER (2).
- 2) PRESS BONNET BEARING (6) INTO BONNET (7), ORIENTED AS SHOWN, UNTIL IT BOTTOMS OUT IN PACKING GLAND.
- 3) PROTECT ID & OD SEALING LIPS OF PACKING FROM CUTS, NICKS OR SCRAPES DURING INSTALLATION. DO NOT FORCE SEALING LIPS PAST BONNET THREADS OR STEM THREADS. USE OF INSTALLATION SLEEVE IS RECOMMENDED. LUBRICATE PACKING ID & OD AND STEM BEFORE INSTALLATION. PACKING MUST BE ORIENTED AS SHOWN.

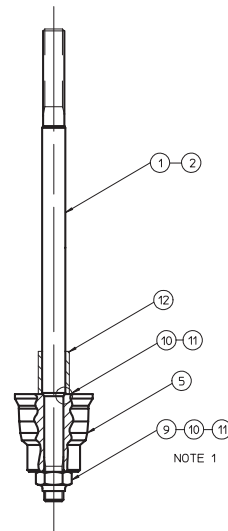
8	A/R	A0940021	DC111 LUBE			
7	1	C1180670-01	BONNET	BRASS ASTM B16 H02		
6	1	B1060057	BONNET BEARING	FIBER REINFORCED POLYETHERETHERKETONE		
5	3	4207-18700375-312	LIP PACKING	HIGH TEMP ETHYLENE PROPYLENE 90 DURO		
4	1	B1640034-01	YOKE LOCKNUT	STL PLTD		
3	1	B1060056	RETAINER BEARING	FIBER REINFORCED POLYETHERETHERKETONE		
2	1	C1720061-03	PACKING RETAINER	BRASS ASTM B16		
1	1	AS REQD	VALVE STEM	ST STL TYPE 316		
ITEM	QTY	PART NO	DESCRIPTION	MATL SPEC		
E SPECIFIED:		MATERIAL SEE TABLE	DRAWN BLB	DATE 11/10/05	WARREN CONTROLS INCORPORATED BETHLEHEM, PENNSYLVANIA 18020-8010	
DECIMAL XXX a.005	CHECKED					
ANGLE ° °				BONNET SUBASSEMBLY NLP PACKING 400°F EPDM 1.376-18 2-18 W/ BEARINGS		
RADI 1/32 MAX						
ALL MACHINED	TREATMENT	APPROVED				
ARE IN INCHES	FINISH		SIZE C	FSCH NO 03847	DWG NO C3769956	REV A

D3210959

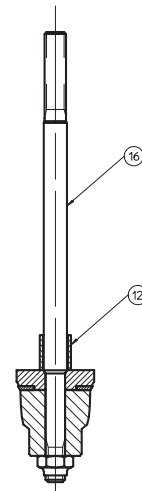
REV	DESCRIPTION	DATE
A	REDRAWN WITH CHANGE ECN 2284	BLB 6/29/07



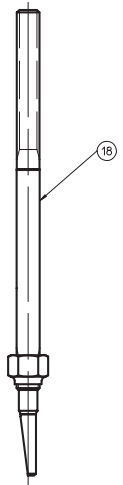
-STAMP "INLET" ON THIS HEX END CONNECTION
ON 2 FLATS 180° APART



1/2 - 1 INCH PORT
PLUG CONSTRUCTION



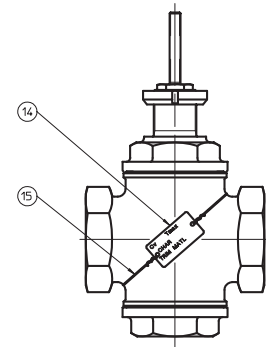
1/2 - 1 INCH PORT SOFT
SEAT PLUG CONSTRUCTION



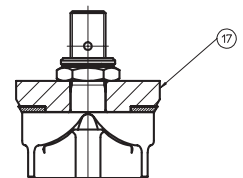
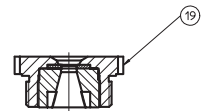
TYPE 2828 PLUG
CONSTRUCTION

2) ITEMS 16, 17, 18 & 19 ARE ONLY AVAILABLE AS INSEPARABLE ASSEMBLIES.
1) TORQUE ITEM 11 TO 120 INCH LBS.
NOTES:

19	A/R	TYPE 2828 SOFT SEAT SEAT RING ASSEMBLY - SEE NOTE 2
18	A/R	TYPE 2828 PLUG, TRAVEL STOP AND STEM ASSEMBLY - SEE NOTE 2
17	A/R	1 1/4 - 2 INCH PORT SOFT SEAT PLUG ASSEMBLY - SEE NOTE 2
16	A/R	1/2 - 1 INCH PORT SOFT SEAT PLUG & STEM ASSEMBLY - SEE NOTE 2
15	A/R	NAMEPLATE WIRE
14	A/R	NAMEPLATE
13	A/R	THD SEALANT
12	A/R	TRAVEL STOP
11	A/R	LOCTITE PRIMER T
10	A/R	LOCTITE 272
9	A/R	5/16-24 ALL METAL SELF LOCKING NUT
8	1	BOTTOM PLUG
7	1	VALVE BODY
6	1	SEAT RING
5	1	PLUG
4	A/R	GROOVE PIN
3	1	BONNET SUBASSEMBLY SEE SEPARATE DWG
2	A/R	STEM LUBE
1	1	VALVE STEM
ITEM	QTY	DESCRIPTION
<div> <div> REMOVE ALL SHARP EDGES AND BURRS DISMANTLED FOR ANNE YALSH-004 THIRD ANGLE PROJECTION NEXT ASSEMBLY </div> <div> USING OTHERWISE SPECIFIED FRACTIONS < 1/8" ALL FLAT SURFACES MAX FURRY ON ALL MACHINED SURFACES ALL DIMENSIONS ARE IN INCHES </div> <div> MATERIAL TREATMENT FINISH </div> </div>		
DESIGN	BLB	DATE 6/29/07
CHECKED		
APPROVED		
WARREN CONTROLS INCORPORATED	BETHLEHEM, PENNSYLVANIA 18020-8010	
	1/2 THRU 2 INCH TYPE 2820 & 2828 BRONZE VBA	
SIZE D	FIG NO 03847	DATE NO D3210959
REV A		



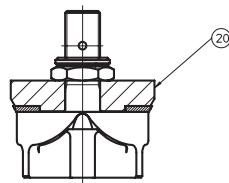
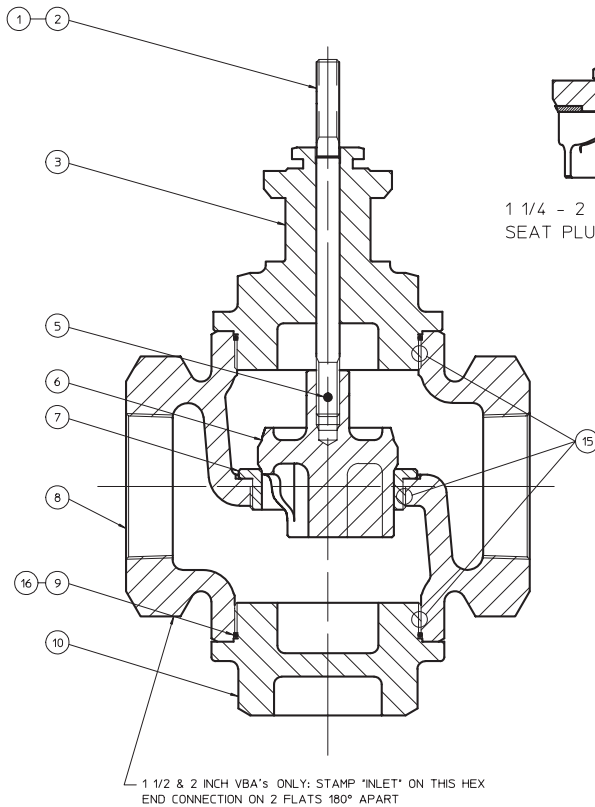
TYPE 2828 SOFT SEAT
SEAT CONSTRUCTION



1 1/4 - 2 INCH PORT SOFT
SEAT PLUG CONSTRUCTION

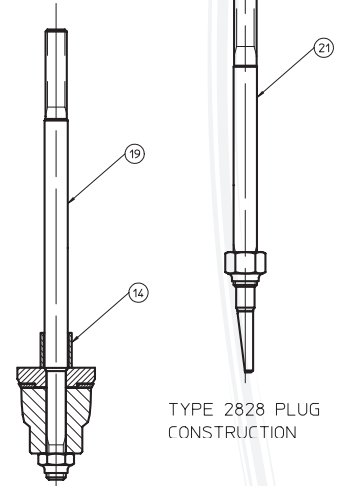
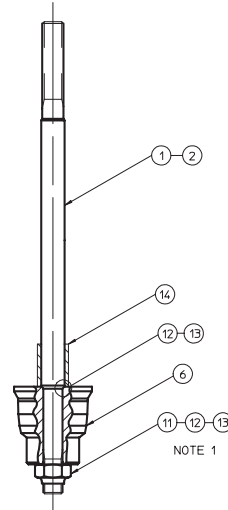
D3210961

REV	DESCRIPTION	DATE
B	REDRAWN WITH CHANGE ECN 2284	BLB 6/29/07

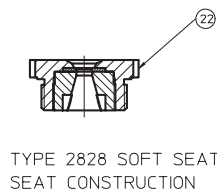
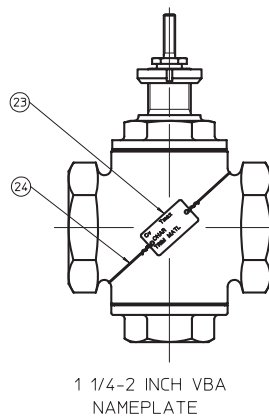
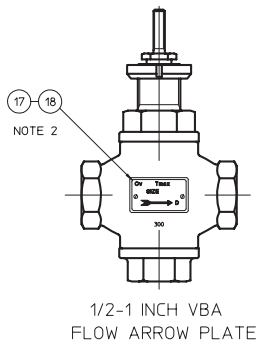


- 3) ITEMS 19, 20, 21 & 22 ARE ONLY AVAILABLE AS INSEPARABLE ASSEMBLIES.
2) 1/2-1 INCH VBA's ONLY; SECURE FLOW ARROW PLATE (ITEM 17) TO PAD ON SIDE OF VALVE BODY USING 2 DRIVE SCREWS (ITEM 18).
1) TORQUE ITEM 11 TO 120 INCH LBS.

NOTES:



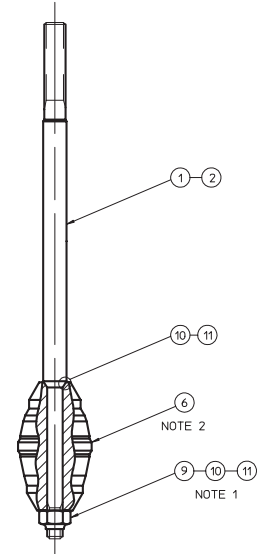
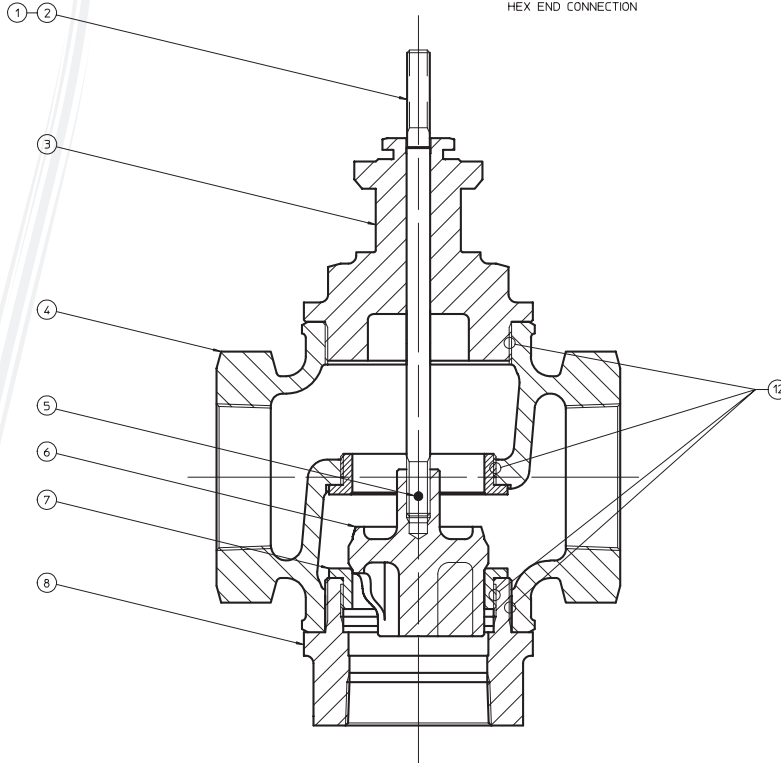
1/2 - 1 INCH PORT SOFT SEAT PLUG CONSTRUCTION



24	A/R	NAMEPLATE WIRE
23	A/R	NAMEPLATE
22	A/R	TYPE 2828 SOFT SEAT SEAT RING ASSEMBLY - SEE NOTE 3
21	A/R	TYPE 2828 PLUG, TRAVEL STOP AND STEM ASSEMBLY - SEE NOTE 3
20	A/R	1 1/4 - 2 INCH PORT SOFT SEAT PLUG ASSEMBLY - SEE NOTE 3
19	A/R	1/2 - 1 INCH PORT SOFT SEAT PLUG & STEM ASSEMBLY - SEE NOTE 3
18	A/R	DRIVE SCREW NO 4 x 1/4
17	A/R	FLOW ARROW PLATE
16	A/R	O-RING LUBE
15	A/R	THD SEALANT
14	A/R	TRAVEL STOP
13	A/R	LOCTITE PRIMER T
12	A/R	LOCTITE 272
11	A/R	5/16-24 ALL METAL SELF LOCKING NUT
10	1	BOTTOM PLUG
9	2	O-RING
8	1	VALVE BODY
7	1	SEAT RING
6	1	PLUG
5	A/R	GROOVE PIN
3	1	BONNET SUBASSEMBLY SEE SEPARATE DWG
2	A/R	STEM LUBE
1	1	VALVE STEM
ITEM	QTY	DESCRIPTION
<div> <div> SHOWING ALL SHARP EDGES AND ROUNDS EXEMPTED PER ASME Y14.19-2001 TYPED ANGLE PROJECTION NEXT ASSEMBLY </div> <div> LARGEST DIMENSIONS SPECIFIED DECIMAL JES FRACTION ± 1/64 ALL PLUGS MUST BE FINE FRESH ON ALL MACHINED SURFACES ALL DIMENSIONS ARE IN INCHES </div> <div> MATERIAL TREATMENT FINISH </div> </div>		
<div> <div> DRAWN BLB CHECKED APPROVED </div> <div> DATE 6/29/07 </div> <div> WARREN CONTROLS INCORPORATED BETHLEHEM, PENNSYLVANIA 18020-8010 1/2 THRU 2 INCH TYPE TYPE 2820 & 2828 STAINLESS STEEL VBA WITH BODY SEALS </div> </div>		
SIZE	PART NO	DWG NO
D	03847	D3210961
REV	B	

D3270957

- NOTES:
- 1) TORQUE ITEM 9 TO 80 INCH LBS
 - 2) CONTOURED PLUGS ARE NOT SYMMETRICAL AND MUST BE ASSEMBLED SO .289 DIA x 60° COUNTERSINK ON PLUG SEALS ON 64° ANGLE ON VALVE STEM
 - 3) STAMP CHARACTERS PER FLOW ARROW PLATES SHOWN ON D3100018 ON 2 FLATS 180° APART ON EACH HEX END CONNECTION

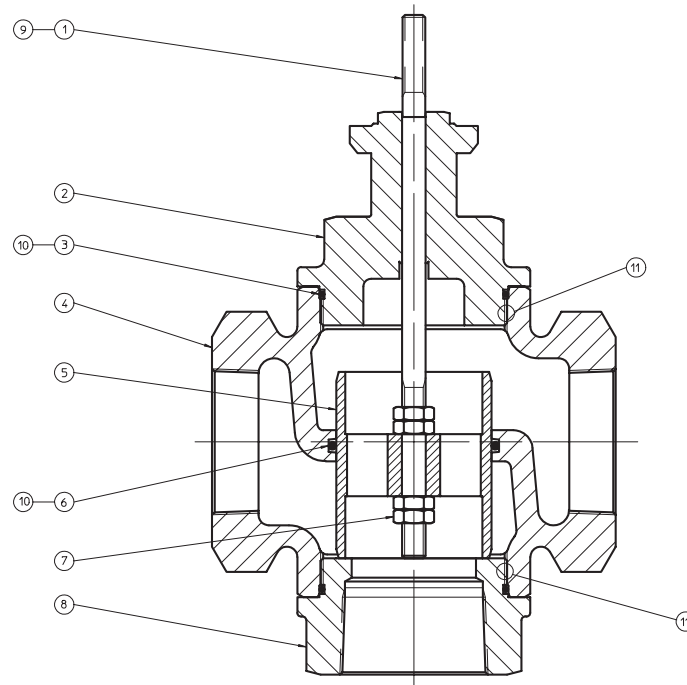


1/2 - 1 INCH
PLUG CONSTRUCTION

12	A/R	PERMATEX #2
11	A/R	LOCTITE PRIMER T
10	A/R	LOCTITE 272
9	A/R	1/4-28 ALL METAL SELF LOCKING NUT
8	1	BOTTOM PORT
7	2	SEAT RING
6	1	PLUG
5	A/R	GROOVE PIN
4	1	VALVE BODY
3	1	BONNET SUBASSEMBLY SEE SEPARATE DWG
2	A/R	STEM LUBE
1	1	VALVE STEM
ITEM	QTY	DESCRIPTION
UNLESS OTHERWISE NOTED TOLERANCES ON		MATERIAL
DECIMAL .001	DECIMAL .001	DRAWN J.MARTOCCI
FRACTION 1/32	ANGLE 1/2	DATE 10/24/96
REMOVE ALL SHARP EDGES AND BURRS	TREATMENT	CHECKED
EXT ASSEMBLY	FINISH	APPROVED
WARREN CONTROLS CORPORATION BROADWAY, NEW JERSEY 08808		
1/2 THRU 2 INCH TYPE 30 BRONZE VBA		
SIZE D	PART NO 03847	QTY NO D3270957
REV		




IOM2800 A 1209

D3270963



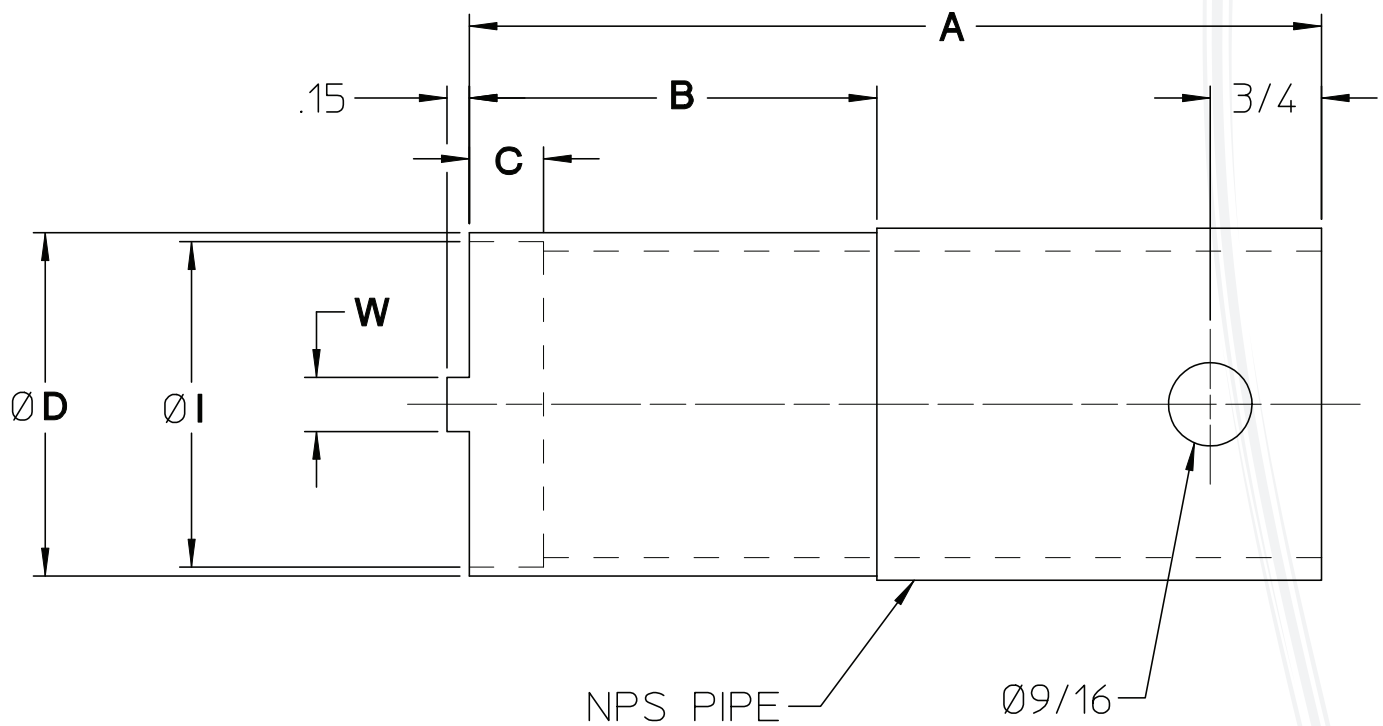
1) STAMP CHARACTERS PER FLOW ARROW PLATES
SHOWN ON D3100018 ON 2 FLATS 180° APART
ON EACH HEX END CONNECTION.

NOTES:

11	A/R	PST SEALANT																										
10	A/R	O-RING LUBE																										
9	A/R	STEM LUBE																										
8	1	BOTTOM PORT																										
7	4	HEX JAMNUT																										
6	1	O-RING																										
5	1	PISTON																										
4	1	VALVE BODY																										
3	2	O-RING																										
2	1	BONNET SUBASSEMBLY SEE SEPARATE DRAWING																										
1	1	VALVE STEM																										
ITEM	QTY	DESCRIPTION																										
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SEAT WRENCH

SEAT WRENCH FOR SLOTTED SEAT RINGS
0.5 TO 2.0 INCH TYPES 20, 70, 30 AND 26



SIZE	NPS	SCH	A	B	C	D	I	W
0.50-1.00	1 1/2	80	5 1/4	2 1/4	1/2	1.900	1.595	0.295
1.25-1.50	2	40	5 3/4	2 3/4	1/2	2.375	2.285	0.365
2.00	2 1/2	40	6	3	1/2	2.875	2.725	0.365



WARREN CONTROLS

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