

# installation, operation and maintenance of Hy-Drop throttling valves figs. 5817 & 5827

Designed for high pressure, high temperature throttling service in modern steam power plants, Hy-Drop Valves are recommended for continuous blow down, sampling, high pressure vents, boiler feed pump by-pass relief, or any high pressure drop service in which erosive and wire drawing conditions are severe enough to destroy conventional globe or venturi valves.

## DESIGN FEATURES

- ❑ All working parts removable through yoke.
- ❑ Stellite disc, with separate surfaces for shut-off and control; spring-loaded stem connection; fully guided for perfect alignment, precise control and vibration reduction.
- ❑ One piece body construction.
- ❑ Interchangeable disc-stem assemblies available for quick conversion of nominal orifice sizes without removing valve from line.
- ❑ Micrometer dial assures accurate set and reset capability.
- ❑ Yarway reseating tools allow recutting of worn or damaged seats without removing the valve body from the line.

## INSTALLATION

Yarway Hy-Drop Valves are installed with flow entering above the seat.

Standard material for forged Hy-Drop Valves is ASME SA 182 Grade F22 steel. Suggested AWS-ASTM welding rod for F22 valve body material is AWS-ASTM E9018 B3. Since welding procedure is dependent upon various codes established by customers, contractors, and/or government rulings, qualification to the specific code involved should be followed.

## OPERATION

Hy-Drop Valves are designed for dual-range throttling through a primary range of six complete handle revolu-

tions, plus a super-capacity blast range on the seventh and eighth handle revolutions for purging foreign particles from the line or for accelerated drainage of a system during start-up or shut-down.

The first six turns provide linear throttling. The seventh and eighth turns elevate the disc above the primary throttling range to provide a "full-porting" high capacity delivery.

The Tee Handle provides ample closing force, and additional leverage is not recommended.



## CARE OF VALVE

Stem lubrication is not required due to the non-galling properties of the bronze yoke bushing and stainless steel stem.

Packing must be sufficiently compressed to prevent stem leakage. Excessive packing compression will shorten packing life and may cause abnormal operating torque. When packing adjustments are required, compression should be no more than that required to stop the leakage. When packing can no longer be adjusted, it must be replaced.

When it is necessary to remove all packing from the stuffing box proceed as outlined in "Disassembly".

## DISASSEMBLY

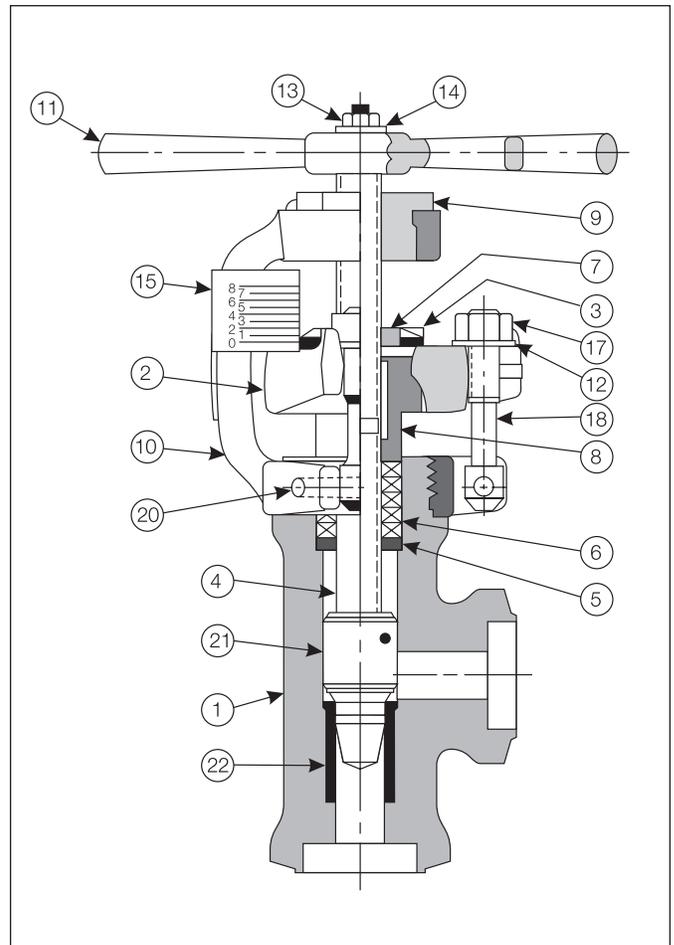
All internal parts of the Hy-Drop Valve can be removed without disconnecting the body from the line. Before attempting disassembly make certain that all line pressure is relieved and that the pipeline is secured against pressurization.

When the inside of the valve must be cleaned, or a foreign body lodged in the valve prevents proper seating of the disc, or the disc-stem assembly must be converted to another nominal orifice size:

1. Loosen the indicator set screw and indicator bushing set screws.
2. Remove the gland bolts and split gland bushing.
3. Turn the tee handle counter-clockwise past the fully open position to force the packing and stuffing box bushing out of the stuffing box.
4. Remove the tack weld on the yoke bushing and unscrew this bushing to remove all internal parts through the top of the yoke.
5. Disassemble the tee handle, yoke bushing, indicator bushing, packing and stuffing box bushing.

## PARTS

Item	Description
1	Body
2	Gland
3	Indicator and Set Screws
4	Stem
5	Stuffing Box Bushing
6	Packing
7	Indicator Bushing & Set Screws
8	Split Gland Bushing
9	Yoke Bushing
10	Yoke
11	Tee Handle
12	Washer
13	Hex Nut, Stem
14	Washer
15	Indicator Scale & Nameplate
17	Hex Nut, Gland
18	Swing Bolt
20	Pin, Swing Bolt
21	Disc
22	Seat



## INSPECTION AND REPAIR

It is good practice to replace the packing when the valve is completely disassembled.

Inspect the disc-stem assembly. Stem threads must be free of burrs to assure free operation. The stem shaft should be smooth and free of pit marks to prevent abnormal packing wear. The disc must retain a fine continuous finish free of gouges, grooves, or burrs for tight shut-off.

When the disc must be replaced, order the entire disc-stem assembly, noting nominal orifice size from the nameplate or previous ordering records if the nominal orifice size was changed after valve was installed.

Inspect the valve seat for damage and reseal if necessary using a Yarway seat repair tool.

## RESEATING

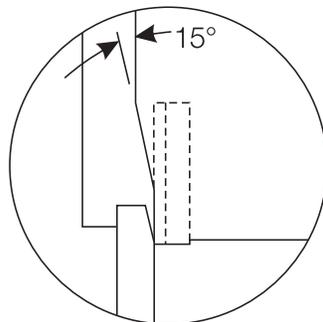
1. Make certain the reseating tool holder number and cutter number are as specified on the selector chart presented on the back of this sheet.
2. Insert tool assembly into valve and engage feed screw threads into yoke. Turn feed screw slowly until light contact with seat is made. *Tighten feed screw by hand using moderate force*, then tighten lock nut. Set-up as shown at right.

**CAUTION:** The stellite seat is extremely hard. Do not wrench the feed screw since jamming the cutter against the seat may rupture the valve seat or damage the carbide cutter.

**Note:** When feed screw has reached the clearance dimension, rotate hand wheel in a clockwise direction to prevent damage to seat and cutter. (Continue to turn feed screw until seat contact is made.)

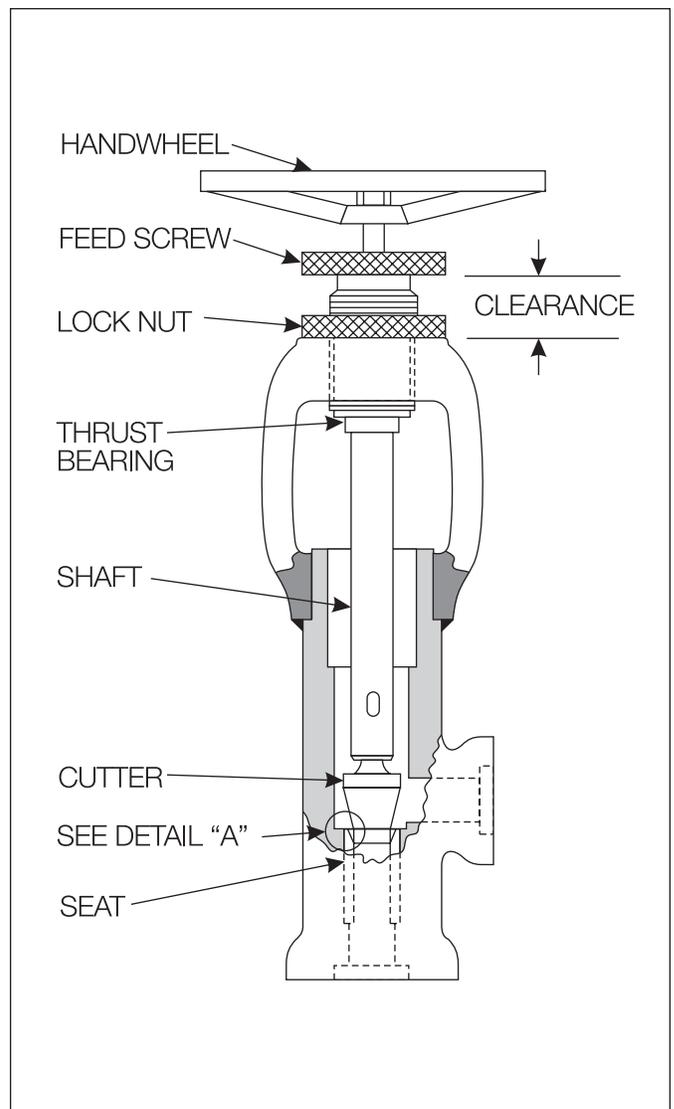
Cutter is designed to cut I.D. of seat to assure proper location of the tool prior to recutting 15° seat angle.

Care must be taken at start of cutting operation to resurface lower I.D. and prevent damage to cutter and/or seat.



DETAIL "A"

3. To cut seat, turn the hand wheel clockwise slowly with steady pressure. Turn the hand wheel only as far as smooth rotation can be easily maintained. Reposition hands on wheel and repeat the above procedure until at least three complete turns of the hand wheel have been made.
4. Back out feed screw, remove tool assembly and clean cutter of chips. Inspect seat and repeat steps 4 through 6 if necessary.



## REASSEMBLY

- Place the stuffing box bushing and indicator bushing on the disc-stem assembly.
- Position the gland and indicator in yoke; insert the disc-stem assembly through the yoke, indicator, and gland, and into the valve body.
- Repack the valve using the specific packing installation instructions supplied with the replacement packing.
- Install the split gland bushing, position the gland and tighten the gland swing bolts evenly to compress the packing. Refer to specific packing installation instructions supplied with the replacement packing.
- Assemble the yoke bushing and fasten the tee handle. Make certain the disc is clear of the valve seat before tack welding the yoke bushing to the yoke.
- Close the valve, fasten the indicator bushing on the stem threads and indicator to the bushing in the zero-zero position.

## RESEATING TOOL SELECTOR CHART

Valve Size, in.	Figure No.	ANSI Pressure Class	Orifice Size, in.	Tool	Cutter	Clearance, in.
1	5817	1700	1/8 to 5/8	#70 - P/N 963046	#30 - P/N 104015	1-3/8
	5827	2700				
1-1/2	5817	1700	1/8 to 5/8	#70 - P/N 963046	#30 - P/N 104015	1-3/8
	5827	2700				
1-1/2	5817	1700	3/4 to 1	#70 - P/N 963046	#31 - P/N 104016	1-3/8
	5827	2700				



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