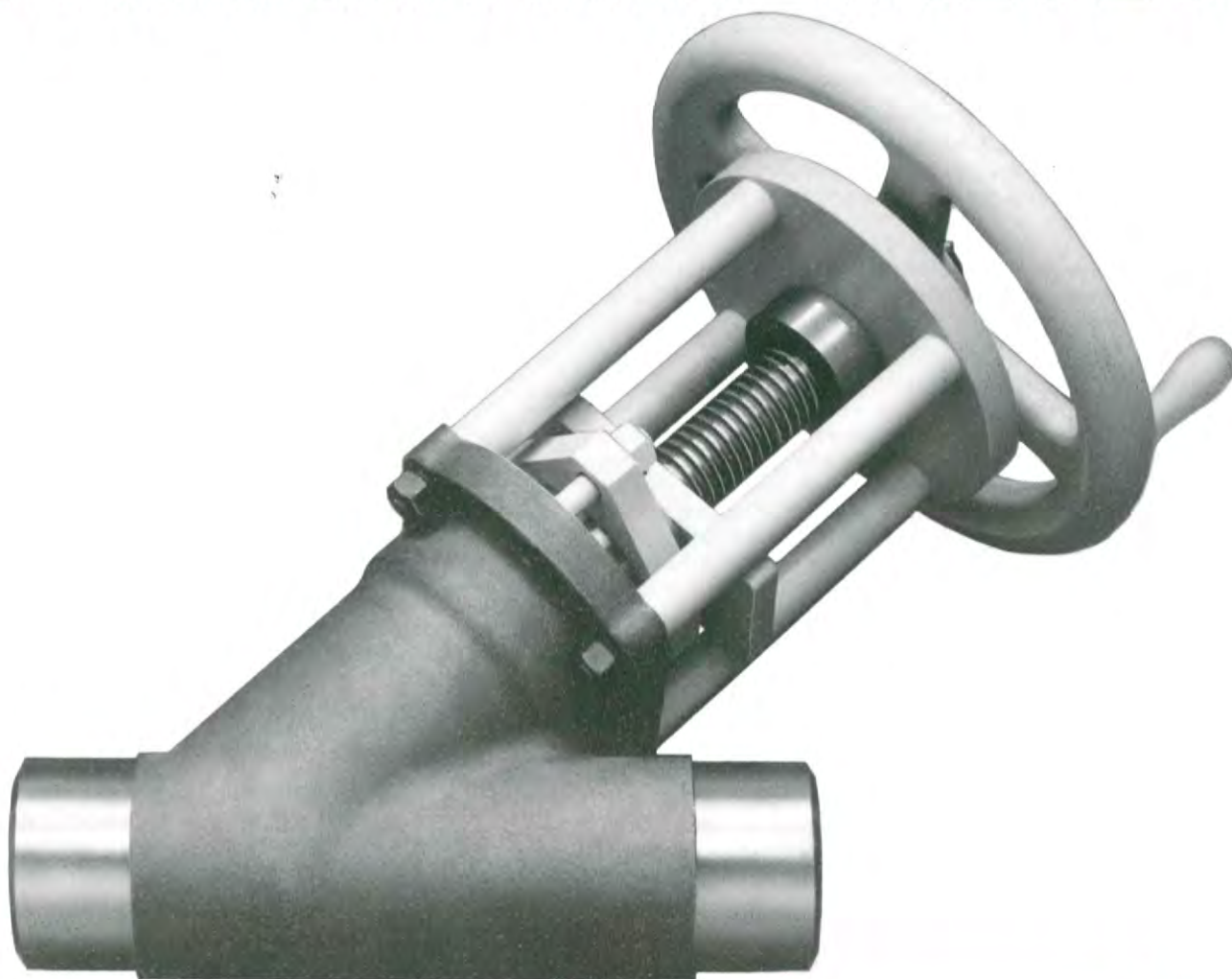


# ***RAM-SEAL***®

## **STRAIGHTWAY VALVES**



### **FEATURES**

- RAM TYPE DESIGN – NO LEAKAGE  
– NO CLOGGING
- OVERSIZED PORTS
- HIGH Cv VALUE
- TIGHT SHUT-OFF, VACUUM TO 6000 PSI
- NO LOW SPOTS FOR MATERIAL TO COLLECT
- JACKETED DESIGNS
- AUTOMATIC OPERATION AVAILABLE
- REPLACES LEAKAGE BALL AND PLUG VALVES

**FETTEROLF**

# FETTEROLF **RAM-SEAL**®

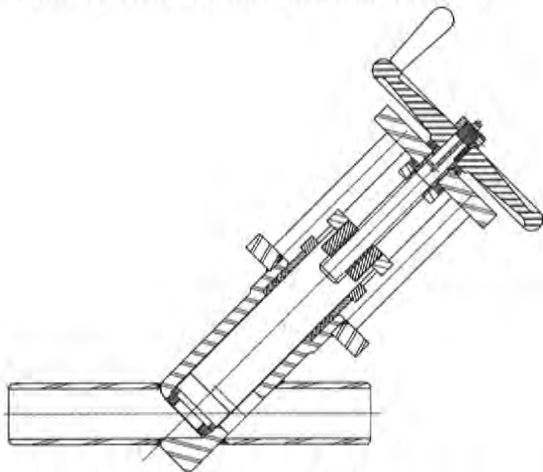
The **RAM-SEAL** Concept of absolute shut-off is the basis of many valves in the Fetterolf line. Over the years, the **RAM-SEAL** has developed an unequalled reputation for dependability in the most severe applications in the power and process industries. The original application was as a Flush Bottom Drain or Sampling Valve. Its positive sealing capabilities in viscous, abrasive, corrosive, erosive, slurry-type services has extended its use into many areas where standard gate, globe, ball, and plug valves are not equal to the challenging service.

The Fetterolf Straightway Valve Figure 9150, has become a standard, in-line, "WYE" Pattern Valve in severe applications. Certain applications require tight shut-off from full vacuum to 6000 psi or high flow capacity (Cv) and free draining with oversized ports without "Pockets" or low points where material may collect. Some applications require all three. This valve excels where high pressure polymer, gas, ultra-pure, erosive media are encountered.

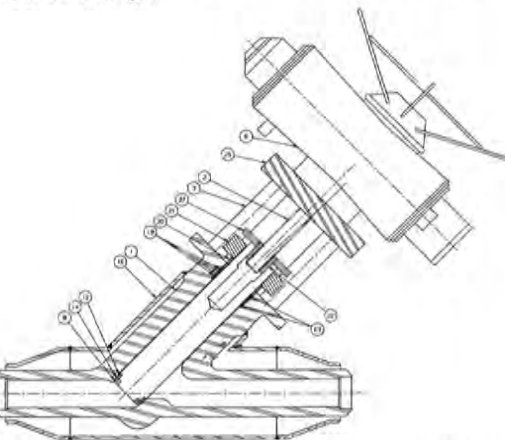
## OPERATION

The **RAM-SEAL** sealing/shut-off principle utilizes a metal seal plus synthetic seal ring (12) encircling a solid plunger. This seal ring is compressed and expanded in all directions against the valve body wall and the plunger when the plunger is closed and the free compression ring (14) is forced back against the seal ring. The seal ring in expanding under compression, forms a leak-tight second seal without complete dependence on metal-to-metal contact. In the open position, the plunger and seal ring are withdrawn from the flow area such that the seal ring is not exposed to the velocity of the flowing media, thus assuring long-life sealing capability. Low leakage is achieved in service that will erode or corrode traditional metal-to-metal seals.

The Plunger Head nut holds the free compression ring and seal ring in place on the end of the plunger. Total rebuilding of the sealing system in the event of damage consists of only replacing the seal ring and compression ring. No lapping, grinding, or cutting of metal surfaces is required, as these surfaces are not critical for tight shut-off.



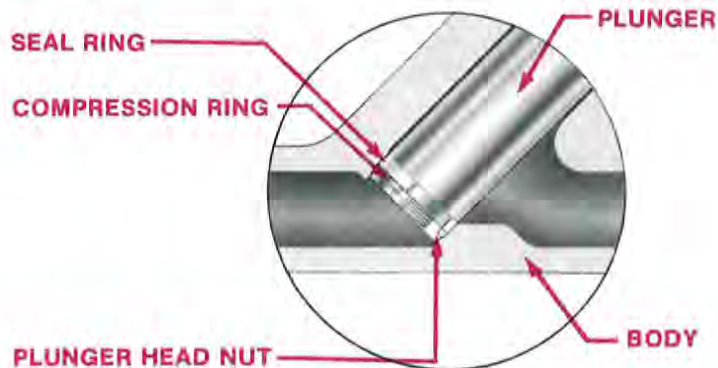
MANUAL STRAIGHTWAY BUTT WELD ENDS  
FIG. 9151



ELECTRIC MOTOR ACTUATED STRAIGHTWAY  
WITH INTEGRAL BODY JACKET  
FIG. 9151-JEM

## OPTIONS:

- Sizes:** ½" through 6"
- Materials:** 316SS, Alloy 20, Inconel, Titanium, Nickel, Hastelloy, Carbon Steel, Monel, All Stainless Grades
- Pressure Ratings:** All ANSI ratings, 150-2500 class
- End Connections:** Flanged, butt weld, socket weld, threaded
- Temperatures:** to 1000° F
- Operation:** Manual, Pneumatic, Hydraulic, Electric
- Accessories:** Heating jackets, Limit switches, Position indicators, Control systems, Fail safe modes, Lantern ring packing, Chain wheels, Flushing connections.



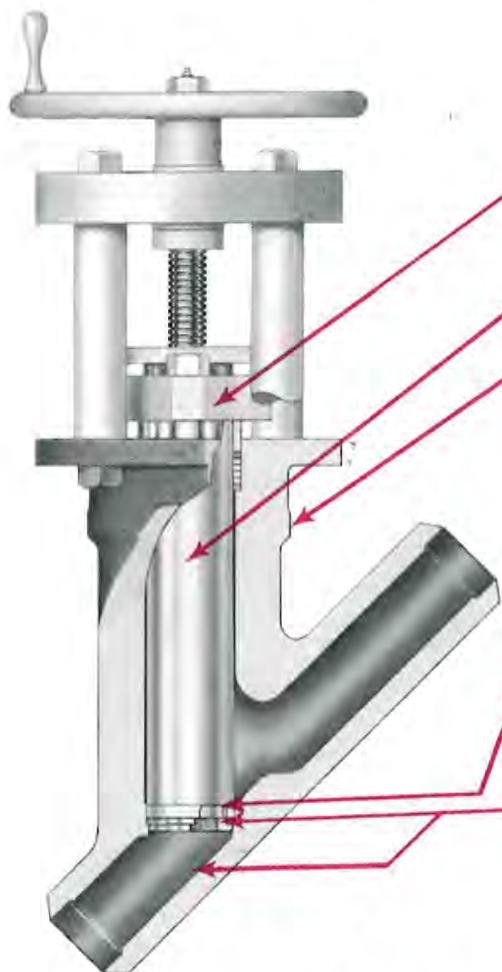
The flow area through the **RAM-SEAL** seating area is always larger than the pipeline flow area, thus assuring extremely low pressure drop so important in systems where pressure loss is critical such as molten polymer.

In closing, the flowing medium is forced out of the sealing area by the plunger. No fluid is entrapped as in ball, plug, and globe valves. Additionally the reduced sealing area of the **RAM-SEAL** compared to ball or plug sealing systems, assures that "set-up" or hardening of the flow media will not hamper operation or damage seals on opening. Integral, welded body jackets for heating and cooling provide maximum heat transfer for positive temperature control at minimum cost.

## SEALING CAPABILITY

The Fetterolf **RAM-SEAL** design will meet or exceed the Class V and VI requirements of ANSI B16.104 as well as ISA and API Standards for zero leakage. Leakage rates as low as  $1 \times 10^{-8}$  CC/SEC. Helium can be realized using the **RAM-SEAL** design.





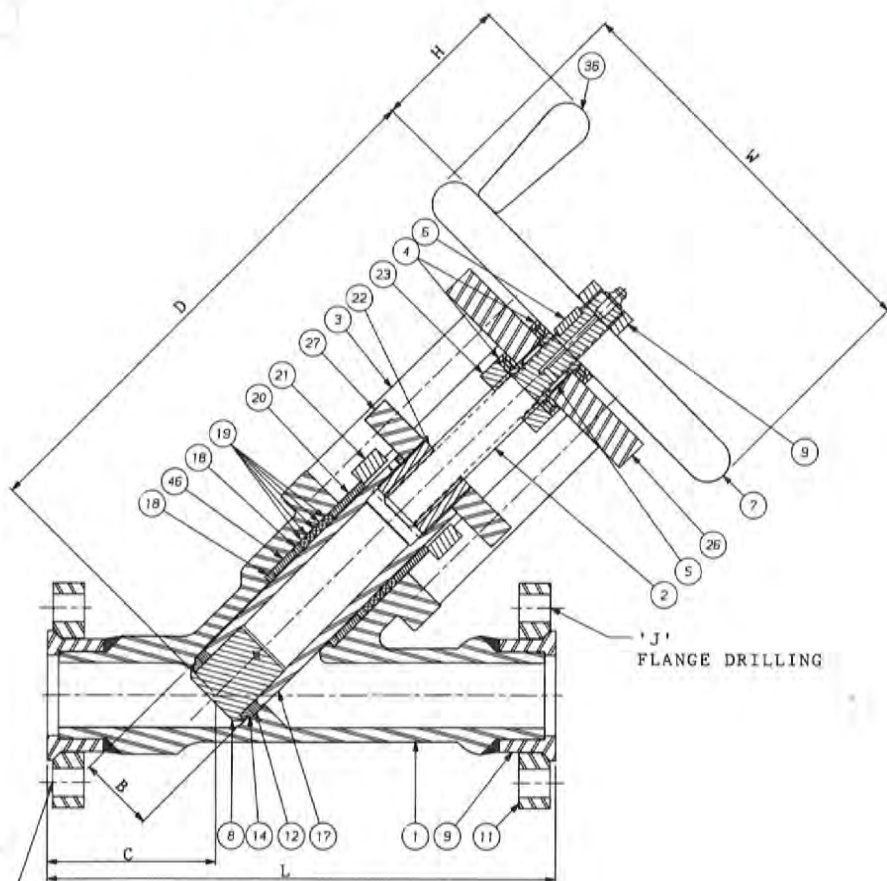
**ADJUSTABLE GLAND** sets and holds pressure on gland packing. Deep stuffing box controls leakage. Bellows stem seal is available.

**PLUNGER** is fully guided over its entire stroke. No voids for accumulation of product. No dead or stagnant areas in body.

**BODY** is type 316 Stainless Steel as standard. Other materials are available (Alloy 20, Hastelloy, Titanium.)

**SEAL RING** is PTFE (Standard) for service to 515°F. Other materials available for service to 1000°F. Seal ring is totally withdrawn from flow path when valve is open—excellent choice for abrasives and slurry service.

**COMPRESSION RING** exerts compressive force against polished surface in body. Drop tight seating when valve is closed. Streamlined, unobstructed flow area assures high Cv.



'J'  
FLANGE DRILLING

'K'  
FLANGE DRILLING

| NO. | DESCRIPTION            | MATERIAL                  |
|-----|------------------------|---------------------------|
| 1   | BODY                   | STAINLESS STEEL, TYPE 316 |
| 2   | STEM WITH LUBE FITTING | STAINLESS STEEL, TYPE 416 |
| 3   | YOKE POST (4)          | STAINLESS STEEL, TYPE 303 |
| 4/5 | BEARING SET            | THRUST/RADIAL             |
| 6   | KEY                    | CARBON STEEL              |
| 7   | HANDWHEEL              | MALLEABLE IRON            |
| 8   | PLUNGER HEAD NUT       | STAINLESS STEEL, TYPE 316 |
| 9   | FLANGE INSERT (BRANCH) | STAINLESS STEEL, TYPE 316 |
| 10  |                        |                           |
| 11  | BOLTING RING           | CARBON STEEL              |
| 12  | SEAL RING              | ▲ TFE                     |
| 13  |                        |                           |
| 14  | COMPRESSION RING       | STAINLESS STEEL, TYPE 316 |
| 15  |                        |                           |
| 16  |                        |                           |
| 17  | PLUNGER                | STAINLESS STEEL, TYPE 316 |
| 18  | GUIDE RING             | ▲ TFE                     |
| 19  | PACKING RING           | TFE-KEVLAR®               |
| 20  | GLAND BUSHING          | STAINLESS STEEL, TYPE 316 |
| 21  | GLAND FLANGE           | CARBON STEEL              |
| 22  | PLUNGER DRIVE BUSHING  | CARBON STEEL              |
| 23  | STEM NUT               | STAINLESS STEEL, TYPE 416 |
| 24  | CL. POS. IND. SWITCH   | (OPTIONAL)                |
| 25  | OP. POS. IND. SWITCH   | (OPTIONAL)                |
| 26  | YOKE DECK              | CARBON STEEL              |
| 27  | CROSS HEAD             | CARBON STEEL              |
| 36  | SPINNER                | STEEL                     |
| 46  | GUIDE CARRIER          | STAINLESS STEEL, TYPE 316 |

● RECOMMENDED SPARE PARTS

▲ TFE TO 510°F - OPTIONAL MATERIAL TO 1000°F

| SIZE  | B     | C      | D      | J | K | L      | W  | H |  |  |
|-------|-------|--------|--------|---|---|--------|----|---|--|--|
| 1/2   | 0.563 | 2-1/16 | 10-1/4 |   |   | 4-3/4  | 5  | 3 |  |  |
| 3/4   | 0.750 | 2      | 10-1/4 |   |   | 4-3/4  | 5  | 3 |  |  |
| 1     | 1.188 | 1-5/8  | 11     |   |   | 6      | 5  | 3 |  |  |
| 1-1/2 | 1.688 | 2-1/16 | 13     |   |   | 12     | 8  | 3 |  |  |
| 2     | 2.063 | 2-1/8  | 14-1/4 |   |   | 19     | 9  | 3 |  |  |
| 3     | 3.313 | 4      | 17     |   |   | 24     | 12 | 4 |  |  |
| 6     | 6.375 | 5-1/16 | 25     |   |   | 22-1/8 | 14 | 4 |  |  |