

# LUDLOW-RENSSELAER VALVES

VALVE DIVISION

VALVES  
**LUDLOW-RENSSELAER**

AWWA C-500 LIST 13 & 14

Precision Valves for Trouble-free Service



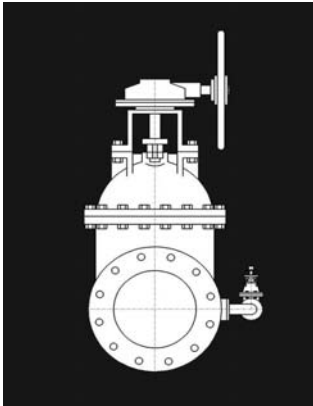
QUALITY

DURABILITY



# LUDLOW-RENSSELAER VALVES

## Ludlow-Rensselaer AWWA C-500 Double-Disc Gate Valves



### Operating Concepts

Double-disc gate valves—the double-disc gate valves continue to be the most commonly used control mechanisms for on-off service. They are used in the general waterworks service; water pollution control field; the chemical process industry; iron and steel mills, particularly blast furnace pipeline; and in coke oven and by-product plant pipelines - and for good reason.

When fully opened, double-disc gate valves offer unobstructed passage, straight-through flow that is equivalent to the inside diameter of the associated piping. The result is a lower pressure drop. Double-disc gate valves also utilize the contained pressures for tight shut-off. The internal forces of the medium work with the seating mechanisms. The double-disc gate valves manufactured by Ludlow-Rensselaer Valve Division utilize the bottom wedging principle, avoiding jamming or scoring due to premature wedging in the partially-open position. Further, double-disc gate valves offer a forgiving mechanism for rugged, long life, and will function for decades with low maintenance. The manufacturing tolerances and simple design, along with rugged construction, allow for easy installation and external stress and corrosion, while maintaining operating effectiveness. Double-disc gate valves lend themselves to part replacement and repair without removal from the pipeline. The Ludlow-Rensselaer type can be repacked under pressure.

### Methods of Operation

#### 1 Manual

Where intermittent operation is required, manual operation is recommended. Easily accessible valves under normal pressures, or under closely-controlled throttling conditions, also call for manual operation. Bevel gearing can be supplied, as required.

#### 2 Cylinder

L/R Recommends the use of hydraulic or pneumatic cylinders when: 1-High cycling frequency is expected, and threaded mechanisms would show excessive wear; 2-Fast opening or closing of the gate is required; 3-It is economical to use other hydraulic or pneumatic energy sources.

#### 3 Motor

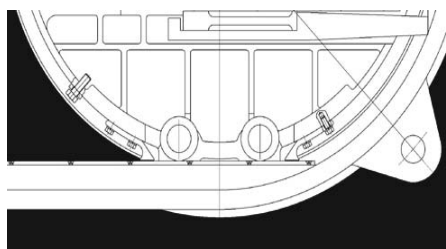
L/R recommends the use of electric gear operators in order to properly control the opening and closing of a gate valve. The torque limit switches and geared limit on the operators prevent damage to the seating areas from obstructions in the waterway, etc.

### Special Features Gates

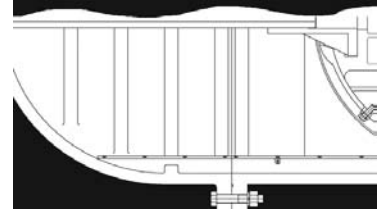
L/R gate valves are universally popular for both A.W.W.A. and industrial flow control services. Their simplicity and overall operating efficiency are not affected by modifications and their design made for specific flow control applications. A knowledge of the modifications available is needed before any particular design is selected.

#### 1 Horizontal Pipelines

Rollers, tracks and scrapers are furnished on L/R valves with stems in a horizontal position, and gates are on edge (or on side), in a horizontal pipeline. The rollers and track support both gates in the entire length of travel, and the scrapers attached ahead and behind the rollers clear the track of any obstruction or sediment.



#### 2 Vertical Pipelines



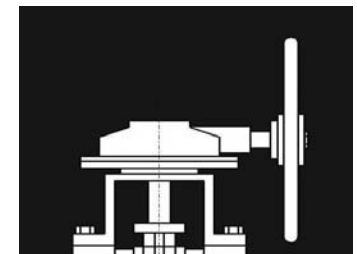
Face tracks are installed on L/R valves which are to operate with stems in a horizontal position, and gates are on their face in a vertical pipeline. The track supports the gate throughout the entire length of travel to prevent distortion, vibration, chatter and other movement, or ring scoring.

#### 3 Bypass Lines

Bypass arrangements are recommended on L/R valves 16 inches and larger to reduce the differential pressure on both sides of gates for ease in operation at high pressures, and for line draining. Also available on smaller sizes on request.

#### Gearing

L/R A.W.W.A. extended gearing is made of high-tensile alloy steel with precision-cut teeth completely enclosed in weatherproof, grease-filled case supplied with conventional packing ("O" ring on request), for repacking under pressure. The main stem on an NRS valve has a bronze brushing at all load-bearing surfaces—i.e. cover, stuffing box, follower and gear case. Pinion shaft and gear case are "O" ring sealed, and gasketed, to prevent loss of lubricant or contamination by foreign particles. Bevel Gearing is used for L/R valves installed on edge, and may be on side (or horizontal) in horizontal pipeline, or vertical in horizontal pipeline. Chainwheel and chain are required for groundline operation.



# LUDLOW-RENSELAER DOUBLE DISC GATE VALVES

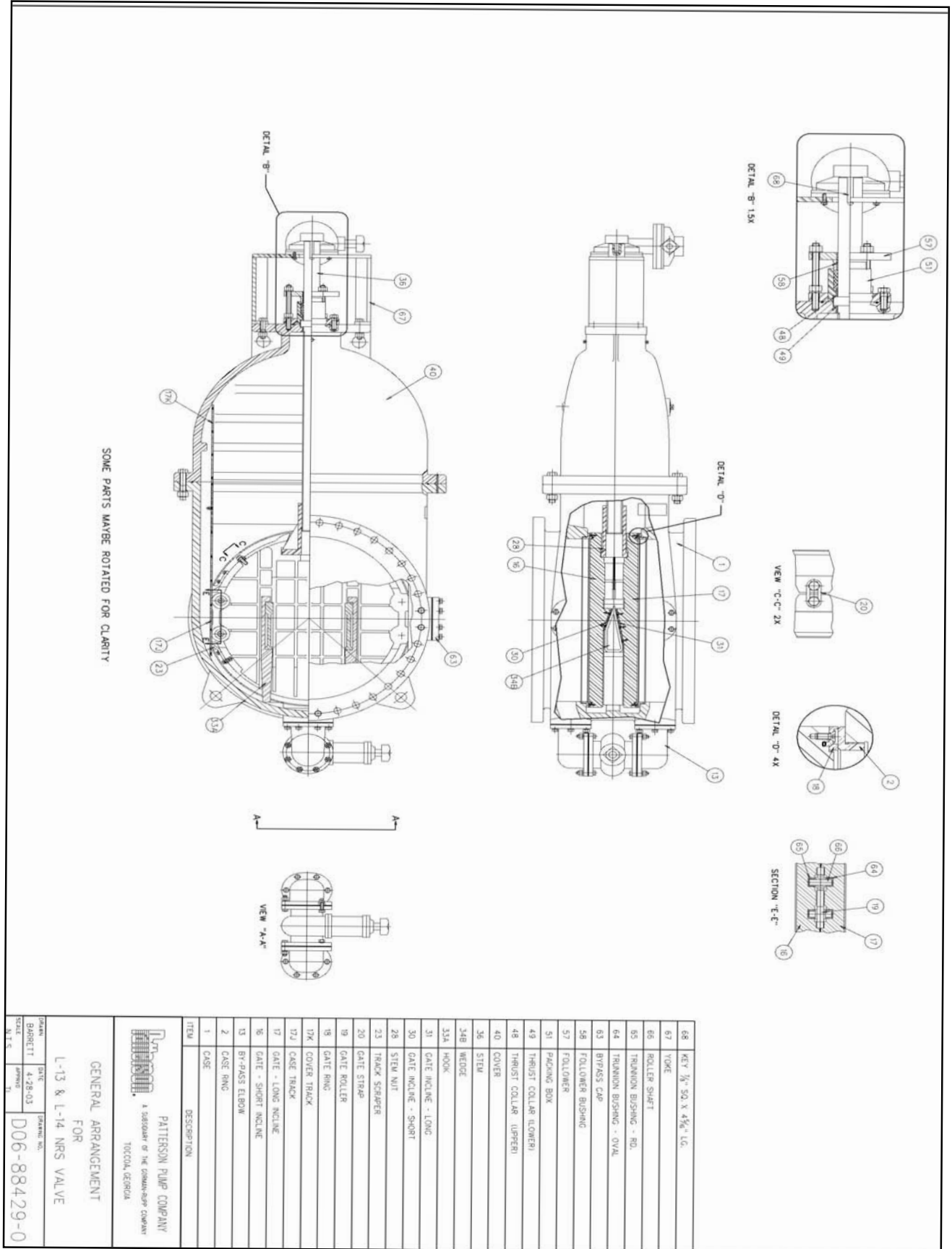
## STANDARD SPECIFICATION FOR AWWA C500 DOUBLE DISC GATE VALVES

### DOUBLE GATE VALVES 16" AND LARGER PER AWWA C-500

- A. The valves shall be cast iron body, double disc, with non-revolving parallel seats, internal wedging and bypass. The valves shall be equipped with a positive operating internal device which will press the disc seats firmly against the body seats when the valve is closed, and shall release the load before the disc starts to move when the valve is being opened. Valves shall have 3/4" NPT pipe plugs in each side of the bonnet.
- B. Valves shall be of the non-rising stem or rising type as required by the detailed valve schedule.
- C. Valves mounted horizontally in a horizontal line shall be equipped with rollers, tracks and scrappers.
- D. Valves mounted horizontally in a vertical line shall be equipped with rollers, face tracks, and scrappers.
- E. Valve construction shall meet or exceed the latest AWWA C500 standards. The valves shall be constructed with ASTM B505 bronze gate and case rings.
  - 1. Gate rings shall be provided with "O" ring seals between the gate and gate ring.
  - 2. The gates shall be cast from ASTM A126 class B cast iron.
  - 3. The valve stem shall be ASTM A479 type 304 stainless steel.
  - 4. The case and bonnet shall be of ASTM A126 Class B cast iron and sealed by and "O" rings.
  - 5. The valves shall be equipped with a packing box design for "V" ring type packing and sized to allow replacement of the packing without removal of the operator.
  - 6. Valves shall have ANSI B16.1 class 125 or 250 flat faced flanges as specified in the valve schedule.
  - 7. All valves shall be tested per the requirements of AWWA C500 test procedures.
  - 8. The valve shall be painted interior and exterior with Series 140 Pota-Pox Plus Tnemec epoxy, in accordance with AWWA C550. The paint shall be certified in accordance ANSI/NSF Std.61.
  - 9. The valve manufacturer shall be ISO 9001/2000 certified.
- F. Valves shall be Ludlow-Renesslaer or equal.

**All Ludlow-Rensselaer Double-Disc Gate Valves (List 13A, 14"-84") meet or exceed A.W.W.A. C-500-80 Specifications.**

# LUDLOW-RENSELAER DOUBLE DISC GATE VALVES



ITEM	DESCRIPTION
68	KEY 1/4" SQ. X 3/4" LG.
67	YOKER
66	ROLLER SHAFT
65	TRUNNION BUSHING - RD.
64	TRUNNION BUSHING - OVAL
63	BYPASS CAP
62	FOLLOWER BUSHING
61	FOLLOWER
60	PACING BOX
59	THRUST COLLAR (LOWER)
48	THRUST COLLAR (UPPER)
40	COVER
36	STEM
34B	WEDGE
33A	HOOK
31	GATE INCLINE - LONG
30	GATE INCLINE - SHORT
28	STEM NUT
23	TRACK SEPARATOR
20	GATE STRAP
19	GATE ROLLER
18	GATE RING
17J	COVER TRACK
17	GATE - LONG INCLINE
16	GATE - SHORT INCLINE
13	BY-PASS ELBOW
2	CASE RING
1	CASE

**PATTERSON PUMP COMPANY**  
 A DIVISION OF THE CONSUMERS COMPANY  
 TOCCOLA, GEORGIA

**GENERAL ARRANGEMENT**  
 FOR  
 L-13 & L-14 NRS VALVE

DRAWING NO. D06-88429-0  
 DATE 4-28-63  
 DESIGNED BY J. B. BRETHERTON  
 CHECKED BY J. B. BRETHERTON  
 SCALE 1" = 1"

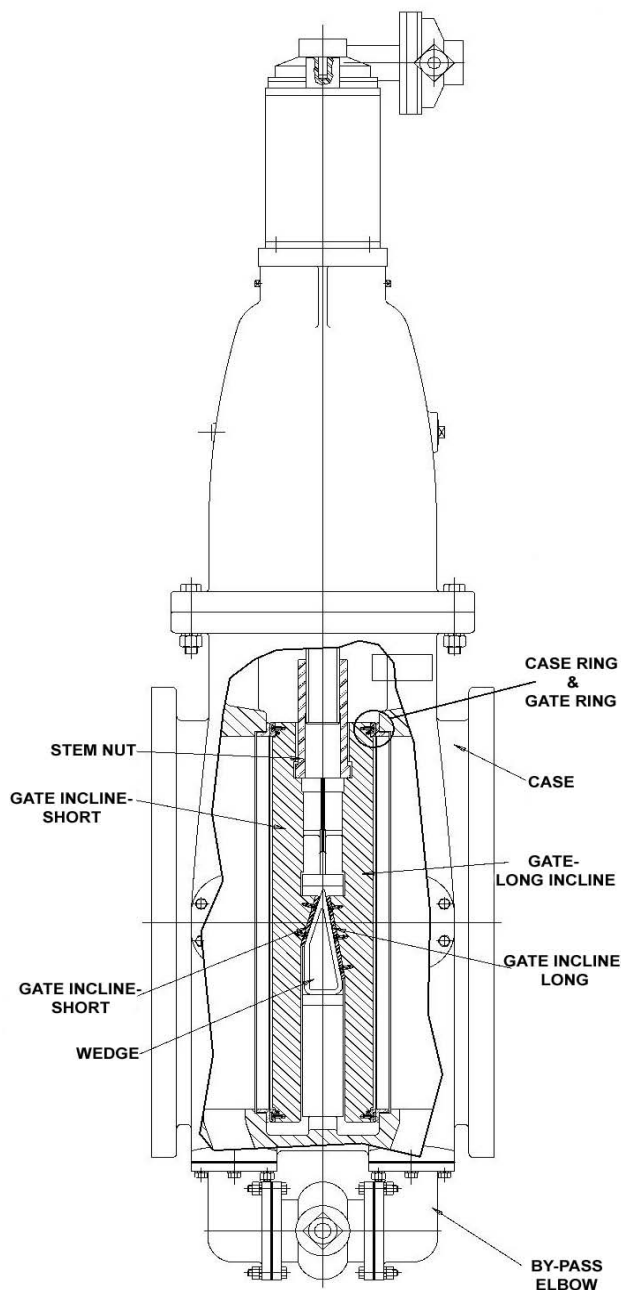
# LUDLOW-RENSELAER DOUBLE DISC GATE VALVES

List 13A/List 14

		Working Pressure psi										Test Pressure psi													
		List 13A					List 14					350					500								
		14	16	18	20	24	14	16	18	20	24	36	42	48	54	60	36	42	48	54	60	72			
	Size of Valve (inches)	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	E1	E2	G1	G2	H1	H2	H3	J1	J2	J3	J4	K1	K2	K3
<b>FLANGE ENDS</b>	Face to Face-No Bypass	18 1/2	21 1/2	22	22	26 1/2	28 1/4	30	35 3/4	42 1/2	52	57	62	70	88 1/2	99 1/2	116 1/2	128 1/2	134	144					
	Face to Face-with Bypass	18 1/2	21 1/2	22	22	26 1/2	28 1/4	30	35 3/4	42 1/2	52	57	62	70	88 1/2	99 1/2	116 1/2	128 1/2	134	144					
	Diameter of Bolt Circle	18 3/4	21 1/4	22 3/4	25	29 1/2	36	42 3/4	49 1/2	56	62 3/4	69 1/4	73	86 1/2											
	Number & Size of Bolts	12-1	16-1	16-1 1/8	20-1 1/8	20-1 1/4	28-1 1/4	28-1 1/4	32-1 1/2	36-1 1/2	44-1 1/2	44-1 1/2	52-1 3/4	60-1 3/4											
	Thickness of End Flange	1 3/8	1 7/8	1 8/16	1 11/16	1 7/8	2 1/8	2 3/8	2 5/8	2 3/4	3	3 1/8	4												
	Diameter of End Flange	21	23 1/2	25	27 1/2	32	38 3/4	46	53	59 1/2	66 1/4	73	86 1/2												
	Length of Throat Flange	23 3/4	25	28 1/2	32 1/4	38 3/4	46 1/2	55	59 1/2	71	79	86	98												
<b>WITHOUT GEARING</b>	Center of Port to top of Stem Max N.R.S.	35	37	43	48	54	58																		
	Center of Port to top of stem-OSY Close	50 3/4	56 1/2	63 3/4	71	81																			
	Center of Port to Top of Stem-OSY-Open	66	73 3/4	83 1/4	92 1/2	107																			
<b>TURNS TO OPEN</b>	Valves without Gears	46	52	59	65	77																			
	NRS Valves with Spur or Bevel Gears	92	104	118	130	232	385	455	408	448	500														
<b>WHEEL DIA</b>	Valves without Gears	20	20	20	24	24																			
	Valves with Spur or Beval Gears	18	18	20	24	24																			
<b>WITH SPUR GEARS</b>	Center of Port to Top of Spur Pinion Shaft w/o Indicator	46 1/2	49	52	57	65	88 1/2	99 1/2	116 1/2	128 1/2	134	144													
	Center of Port to Top of Spur Pinion Shaft w/Indicator	51 1/2	54	57	62	70	93 1/2	104 1/2	121 1/2	133 1/2	139	149													
	Center of Stem to Center of Spur Pinion Shaft	4 7/8	4 7/8	4 7/8	4 7/8	6 1/2	8 3/4	8 3/4	8 3/4	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	
<b>WITH BEVEL GEARS</b>	Center of Port to Top of Bevel Gear Case	43 1/2	46	49	54	61	82	93 1/2	110 1/2	122	128 5/8	138 1/4													
	Center of Port to Center of Bevel Pinion Shaft	39 1/2	42	45	50	57	77	88 1/2	103 1/2	115	121 3/4	131 3/8													
	Center of Stem to End of Bevel Pinion w/o Indicator	10 1/2	10 1/2	10 1/2	10 1/2	13	17	17	21 1/2	21 1/2	21 1/2	21 1/2													
	Center of Stem to End of Bev Pinion Shaft w/Indicator	13	13	13	13	15 1/2	19 1/2	19 1/2	24	24	24	24													
<b>WITH BYPASS</b>	Size of Bypass	2	3	3	3	4	4	6	6	8	12	12													
	Center of Main Valve to Outside of Bypass Valve	19	22 1/2	23 1/2	25 1/4	29 1/2	31 1/2	37 1/2	41	49 3/8	63 1/4	66 1/2	70 1/4												
	Center of Bypass Valve to Top of Bypass stem	8 1/2	12 3/4	12 3/4	12 3/4	14 5/8	14 5/8	17 1/8	17 1/8	21 5/8	29 1/2	29 1/2	29 1/2												

The above Dimensions are for Preliminary reference only  
For acutal Dimensional Layout, please consult factory

# LUDLOW-RENSELAER DOUBLE DISC GATE VALVES



## THE LUDLOW-RENSELAER VALVE

We use a double wedging principle, so that by placing the gate which has the short or abrupt wedge on the upstream side, advantage can be taken of the pressure or power contained within the water mains to assist in unlocking the wedges, thus allowing the water pressure to become equalized at once within the valve, producing bypass effects by means of this internal mechanism within the valve itself - an advantage attained by no others.

These results are accomplished as follows: The short side of the wedge is used only in the opening operation, and is made so abrupt or blunt that the greater the pressure of the stem-nut holding the gate in position is withdrawn. Then the thick side of the stem-nut, always acting independently upon the short wedge gate, completes the releasing of the entire wedging mechanism at the first movement of opening. This is usually accomplished without the aid of the lifting motion of the stem. The stem, therefore, has only to overcome the friction of the water in the mains, and as it can never be forced out of alignment nor bound in the stem-nut, which occurs when the stem-nut is attached to the wedges, very little power is required to be applied to the handwheel or nut. For convenience in setting, the gate which has the short or abrupt wedge is always painted red, and we recommend that the valve be placed with the red gate towards the pressure.

In the closing operation, the short side of the wedge quickly adjusts itself to its gate on a rocker bearing, and as the last turn of the stem acts only on the long or powerful side of the wedge, the gates are wedged powerfully with the application of very little force to the handwheel or nut.

Ludlow-Rensselaer gates may be placed in any position, and owing to the combination of the mechanical principles of the independently moving gate with the abrupt wedge, whereby the long and powerful wedge is used only for closing, and the short or abrupt wedge only for opening, we guarantee that Rensselaer valves may be operated in any position easier than valves of any other manufacturer, and if they can be placed with the short wedge gate toward the pressure, this additional advantage is gained over valves of other manufacturers, and the bother and expense of operating bypasses is avoided.

**Patterson**<sup>TM</sup>  
A Subsidiary of The Gorman-Rupp Company

PO Box 790 Toccoa, Georgia 30577

Phone: 706-886-2101 Fax: 706-886-0023

Email: [marketing@pattersonpumps.com](mailto:marketing@pattersonpumps.com)

[www.pattersonpumps.com](http://www.pattersonpumps.com)