

SHARPE[®] VALVES

A Division of Smith-Cooper International, LLC

**INSTALLATION, OPERATIONS
AND MAINTENANCE FOR
SHARPE[®] 66/84/88/99 SERIES
3 PIECE BALL VALVES**

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INSTALLATION

SHARPE® BALL VALVES HAVE BEEN DESIGNED AND ENGINEERED TO PROVIDE LONG LASTING AND TROUBLE-FREE SERVICE WHEN USED IN ACCORDANCE WITH THE INSTRUCTIONS AND SPECIFICATIONS HEREIN.

• General

THE FOLLOWING INSTRUCTIONS ONLY REFER TO SHARPE® STANDARD VALVES AS DESCRIBED IN THE CURRENT CATALOG.

KEEP PROTECTIVE COVER IN PLACE UNTIL MOMENT OF INSTALLATION. VALVE PERFORMANCE DEPENDS UPON PREVENTION OF DAMAGE TO BALL SURFACE. UPON REMOVAL OF COVER, MAKE SURE THAT THE VALVE IS COMPLETELY OPEN AND FREE OF OBSTRUCTION.

WHEN SHIPPED, VALVES CONTAIN A SILICON BASED LUBRICANT WHICH AIDS THE ASSEMBLY OF THE VALVE; THIS MAY BE REMOVED WITH A SOLVENT IF FOUND OBJECTIONABLE, ALTERNATIVELY, VALVES CAN BE ORDERED FREE OF LUBRICANTS.

CERTAIN FERROUS VALVES ARE PHOSPHATED AND OIL DIPPED DURING THE COURSE OF MANUFACTURE, BUT THE PROCESSES USED ARE COMPLETELY NON-TOXIC AND THE VALVES ARE QUITE SAFE TO USE FOR EDIBLE OR POTABLE PRODUCTS.

SEE OUR WELDING INSTRUCTIONS - SEE PAGE 7.

OPERATION

SHARPE® VALVES PROVIDE TIGHT SHUT OFF WHEN USED UNDER NORMAL CONDITIONS AND IN ACCORDANCE WITH SHARPE® VALVES PUBLISHED PRESSURE/TEMPERATURE CHART.

IF THESE VALVES ARE USED IN A PARTIALLY OPEN (THROTTLED) POSITION, SEAT LIFE MAY BE REDUCED.

ANY MEDIA WHICH MIGHT SOLIDIFY, CRYSTALLIZE OR POLYMERIZE SHOULD NOT BE ALLOWED TO STAND IN THE BALL VALVE CAVITIES UNLESS REGULAR MAINTENANCE IS PROVIDED. IF MINIMAL MAINTENANCE IS PERFORMED, SHARPE® VALVES OFFERS CAVITY FILLED AND/OR STEAM JACKETED BALL VALVES.

• Manual Operation

THE BASIC TYPE OF WRENCH WHICH IS FITTED TO ALL SIZES OF VALVE IS SHEET STEEL WITH INTEGRAL STOP.

SHARPE® VALVES HAVE 1/4 TURN OPERATION CLOSING IN A COUNTER-CLOCKWISE DIRECTION. IT IS POSSIBLE TO SEE WHEN THE VALVE IS OPEN OR CLOSED BY THE POSITION OF THE WRENCH HANDLE. WHEN THE WRENCH IS ACROSS THE PIPELINE, THE VALVE IS CLOSED, UNLESS USING A REVERSE HANDLE.

- **Remote Operation**

WHERE MANUAL OPERATION IS NOT REQUIRED, VALVES MAY BE AUTOMATED FOR REMOTE OPERATION, INSTRUMENT CONTROL, ETC. A RANGE OF SHARPE® VALVES PNEUMATIC AND ELECTRIC ACTUATORS ARE AVAILABLE.

NO STOP PLATE IS FITTED TO THE VALVE, SINCE THE OPERATION IS NORMALLY PART OF THE ACTUATOR, UNLESS REQUIRED.

OPERATION WILL BE IN ACCORDANCE WITH SHARPE® VALVES INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS FOR RELEVANT ACTUATOR.

MAINTENANCE

- **General**

WITH SELF-WIPE BALL/SEATS AND PRESSURE EQUALIZING SLOTS, SHARPE® VALVES HAVE A LONG, TROUBLE-FREE LIFE, AND MAINTENANCE IS SELDOM REQUIRED. WHEN NECESSARY, VALVES MAY BE REFURBISHED, USING A SMALL NUMBER OF COMPONENTS, NONE OF WHICH REQUIRE MACHINING. SHARPE® VALVES ARE DESIGNED FOR EASY SERVICE AND ASSEMBLY IN THE FIELD. THE FOLLOWING CHECKS SHOULD, HOWEVER, HELP TO EXTEND VALVE LIFE OR REDUCE PLANT PROBLEMS.

- **Stem Leakage 1/4"-2-1/2" Valves**

EXAMINE THE DISK SPRINGS FOR DAMAGE. IF IN GOOD CONDITION, TIGHTEN THE PACKING NUT UNTIL DISK SPRINGS ARE FIRMLY COMPRESSED, THEN BACK NUT OFF 1/16TH OF A TURN. IF DAMAGED, DISMANTLE THE STEM DOWN TO THE GLAND, FIT NEW DISK SPRINGS WITH THEIR OUTER EDGES TOUCHING. FURTHER MAINTENANCE NECESSITATES DISMANTLING OF THE VALVE.

- **Leakage At Body Joint**

CHECK FOR TIGHTNESS IN THE BODY CONNECTOR BOLTS. IF LOOSE, TIGHTEN BODY BOLTS. STANDARD WRENCHES SHOULD ONLY BE USED. EXCESSIVE FORCE WILL ONLY STRETCH OR STRIP THE BOLTS.

IF THERE IS STILL LEAKAGE, THIS WILL BE DUE TO DAMAGE TO BODY SEAL, AND IT WILL BE NECESSARY TO DISMANTLE THE VALVE.

- **In-Line Leakage**

CHECK THAT THE VALVE IS FULLY CLOSED. IF IT IS, LEAKAGE WILL BE DUE TO DAMAGED SEAT OR BALL SEALING SURFACES, AND IT WILL BE NECESSARY TO DISMANTLE THE VALVE.

NOTE: STEM LEAKAGE AND LEAKAGE AT BODY JOINT, IF NOT CURED BY SIMPLE MEANS DESCRIBED ABOVE, NECESSITATE DISMANTLING VALVE. IF THERE IS NOT STEM LEAKAGE, THE STEM ASSEMBLY SHOULD NOT BE TOUCHED.

- **Leakage at Pipeline Joint**

SCREWED VALVES: TEST FOR TIGHTNESS OF SCREWED THREAD. IF LOOSE, TIGHTEN WITH STANDARD WRENCH - EXCESSIVE FORCE WILL ONLY SPLIT THE CONNECTOR. NORMAL JOINTING MATERIAL SHOULD BE USED IN THE CORRECT QUANTITY.

WELDED VALVES: EXAMINE WELDS FOR LEAKAGE POINT.

REFURBISHING

TO DISMANTLE STEM ASSEMBLY, FIRST REMOVE THE HANDLE NUT, AND HANDLE FROM STEM. USING WRENCH TO PREVENT THE STEM FROM TURNING, REMOVE THE PACKING NUT, DISK SPRINGS AND GLAND, IT IS NOT NORMALLY POSSIBLE TO REMOVE GLAND PACKING AT THIS STAGE. WITHDRAW STEM THROUGH BODY CAVITY AND REMOVE STEM THRUST SEAL FROM STEM OR BODY RECESS. GLAND PACKING MAY NOW BE REMOVED.

CLEAN ALL COMPONENTS THOROUGHLY AND EXAMINE ALL SEATING/SEALING SURFACES.

IF THERE IS BUILD-UP OF SOLIDS WHICH CLEANING FLUIDS WILL NOT REMOVE, USE A BOARD, FLAT OR BLUNT TOOL (DO NOT SCRATCH THE MACHINED SURFACES).

NO ERODED OR CORRODED LEAK PATHS ARE PERMISSABLE. IF ANY ARE FOUND, THE PART MUST BE REPLACED. THE BALL MUST HAVE NO SCRATCHES ACROSS ITS SEATING SURFACES AND ANY DAMAGE TO THE PORT LIP WILL DESTROY THE NEW SEATS - A DAMAGED BALL MUST NOT BE RE-USED--INSTALL A NEW BALL.

- **Rebuilding**

BEFORE REBUILDING, CHECK THAT ALL THE CORRECT COMPONENTS ARE AVAILABLE AND THAT THEY ARE FIT FOR RE-ASSEMBLING. WHEN REBUILDING, CLEANLINESS IS ESSENTIAL TO ALLOW LONG VALVE LIFE AND PROVIDE COST-EFFECTIVE MAINTENANCE.

FIT INNER SEAT RING BEFORE STEM ASSEMBLY.

FIT STEM THRUST BEARING TO STEM AND INSERT STEM THROUGH BODY CAVITY INTO STEM HOLE AND FULLY UP INTO BODY RECESS. FIT GLAND PACKING AND DISK SPRINGS. DISK SPRINGS ARE CONCAVE. USING WRENCH TO PREVENT STEM FROM TURNING, FIT NUT AND SCREW DOWN UNTIL DISK SPRINGS ARE FIRMLY COMPRESSED. BACK OFF 1/16TH OF A TURN. OPERATE STEM SEVERAL TIMES AND READJUST. OVERTIGHTNING WILL ONLY REDUCE THE LIFE OF THE STEM ASSEMBLY. NOW FIT HANDLE NUT TO STEM ASSEMBLY AND MOVE STEM INTO CLOSED POSITION - HANDLE ACROSS THE PIPELINE.

WITH THE STEM STILL IN THE CLOSED POSITION, THE BALL MAY BE INSERTED INTO THE BODY CAVITY BY SLIDING THE BALL SLOT OVER THE STEM TANG. OPEN THE VALVE.

NOTE: THE BALL MUST BE IN THE OPEN POSITION, SINCE THE CLOSED BALL PROTRUDES BEYOND THE BODY CAVITY AND BALL WILL BE DAMAGED AGAINST BODY CONNECTORS WHEN BODY IS REMOVED OR ROTATED. ALSO, WITH THE VALVE IN THE OPEN POSITION, THE BALL IS RETAINED BY THE STEM TANG AND CANNOT FALL OUT OF THE BODY CAVITY.

THE SECOND SEAT RING AND BODY SEALS MAY NOW BE FITTED.

NOTE: A TRACE OF SILICON BASED LUBRICANT OR CLEAN GREASE (SUCH AS PETROLEUM JELLY), IF COMPATIBLE WITH THE FUTURE PIPELINE MEDIA, WILL EASE THE REBUILDING BY HOLDING THE SEAT RINGS AND BODY CONNECTOR SEALS IN PLACE. USE NO GREASE WITH ABRASIVE ADDITIVES.

THESE VALVES, AFTER INITIAL INSTALLATION, HAVE BODY ENDS WHICH FORM INTEGRAL PART OF THE PIPELINE, AND CANNOT BE REBUILT WITHOUT REPLACING THEM BACK INTO THE PIPELINE.

THE VALVE MUST BE INSTALLED BACK INTO THE PIPELINE BY SLIDING THE BODY IN BETWEEN THE BODY ENDS. THE PIPELINE SHOULD, HOWEVER, BE SPRUNG APART SUFFICIENTLY TO CLEAR VALVE BODY AND AVOID DAMAGE TO SEAT RINGS, BODY SEALS AND BODY CONNECTOR SEALING FACE.

LOCATE BODY ON CENTER LINE OF PIPEWORK, FIT BODY CONNECTOR BOLTS AND NUTS, AND BY TIGHTENING, PULL TOGETHER BODY AND BODY CONNECTORS. CONNECTOR FLANGES WILL BE METAL TO METAL, STANDARD WRENCHES SHOULD ONLY BE USED - EXCESSIVE FORCE WILL ONLY STRETCH OR STRIP THE BOLTS.

• **Test**

IF PRACTICAL, LEAK TIGHTNESS AND BODY TORQUE SHOULD BE CHECKED.

MAINTENANCE KITS ARE AVAILABLE FROM SHARPE® VALVES AND CONSIST OF THE FOLLOWING:

- 1) 2 SEAT RINGS, 2 BODY CONNECTOR SEALS FOR 1/4"-4" VALVES
- 2) 1 STEM THRUST SEAL, 1 PACKING GLAND FOR 1/4"-2-1/2" VALVES, 1 BELLEVILLE WASHER.
- 3) 1 STEM THRUST SEAL, 3 GLAND PACKING RINGS FOR 3" AND 4" VALVES

WHEN ORDERING MAINTENANCE KITS, PLEASE BE SURE TO SPECIFY TYPE AND SIZE OF VALVE AND SEATING MATERIAL REQUIRED.

WHERE A VALVE NEEDS REPAIRING, RATHER THAN MAINTANING, IT MUST BE NOTED THAT ONLY SHARPE® VALVES AUTHORIZED SPARE PARTS SHOULD BE USED, AND THESE INCLUDE BASIC COMPONENTS SUCH AS BOLTS, SCREWS AND NUTS, ETC. IN ADDITION TO MAINTENANCE KITS, SPARE PARTS AVAILABLE FROM SHARPE® VALVES ARE BALLS, STEMS, GLANDS. IF ADDITIONAL PARTS ARE REQUIRED, IT IS NORMALLY RECOMMENDED THAT THE COMPLETE VALVE BE REPLACED.

PARTS FROM DIFFERENT VALVE SERIES SHOULD NOT BE INTERCHANGED.

THIS IS TO ENSURE, SO FAR AS IS REASONABLY PRACTICABLE, THAT THE VALVE REMAINS CAPABLE OF BEING USED FOR THE PURPOSE FOR WHICH IS WAS DESIGNED AND CONSTRUCTED, WITHOUT RISK TO HEALTH AND SAFETY OF PLANT PERSONNEL.

HOWEVER, IF THE VALVE IS ALTERED IN ANY WAY, NO LIABILITY CAN BE ACCEPTED BY SHARPE® VALVES.

• **Safety Precautions**

BEFORE REMOVING VALVE FROM PIPELINE: MEDIA FLOWING THROUGH A VALVE MAY BE CORROSIVE, TOXIC, FLAMMABLE, OR OF A CONTAMINANT NATURE. WHERE THERE IS EVIDENCE OF HARMFUL FLUIDS HAVING FLOWED THROUGH THE VALVE, THE UTMOST CARE MUST BE TAKEN. IT IS SUGGESTED THAT THE FOLLOWING SAFETY PRECAUTIONS SHOULD BE TAKEN WHEN HANDLING VALVES:

- 1) ALWAYS WEAR EYE SHIELDS
- 2) ALWAYS WEAR GLOVES AND OVERALLS
- 3) WEAR PROTECTIVE FOOTWEAR
- 4) WEAR PROTECTIVE HEADGEAR
- 5) ENSURE THAT RUNNING WATER IS EASILY AVAILABLE
- 6) HAVE SUITABLE FIRE EXTINGUISHER READY IF MEDIA IS FLAMMABLE

BY CHECKING LINE GUAGES, ENSURE THAT NO PRESSURE EXISTS ON EITHER THE UPSTEAM OR THE DOWNSTREAM SIDES OF THE VALVE.

ENSURE THAT ANY MEDIA IS RELEASED BY OPERATING VALVE SLOWLY TO HALF-OPEN POSITION.

IDEALLY, THE VALVE SHOULD BE DECONTAMINATED WHEN THE BALL IS IN THE HALF-OPEN POSITION. LEAVE VALVE IS FULLY OPEN POSITION.

THESE VALVES, WHEN INSTALLED, HAVE BODY CONNECTORS WHICH FORM AN INTEGRAL PART OF THE PIPELINE, AND THE VALVE CANNOT BE REMOVED FROM THE PIPELINE WITHOUT BEING DISMANTLED.

SEE DISMANTLING - SEE PAGE 6.

- **Tools**

NO SPECIAL TOOLS ARE REQUIRED FOR MAINTENANCE OF SHARPE® VALVES.

- **Dismantling**

IF THE VALVE IS CLOSED, AND NOT IN FULLY OPEN POSITION AS SUGGESTED, REFER TO SAFETY PRECAUTIONS BEFORE PROCEEDING FURTHER.

DURING DISMANTLING, DO NOT ASSUME THAT THE VALVE IS TOTALLY DECONTAMINATED - HARMFUL FLUID, ETC., MAY STILL BE TRAPPED IN CREVICES.

TO REMOVE VALVE FROM PIPELINE, EXTRACT BODY CONNECTOR BOLTS AND SLIDE THE BODY OUT FROM BETWEEN THE BODY CONNECTORS. IT IS IN MOST CASES UNNECESSARY TO REMOVE THE BODY COMPLETELY AWAY FROM THE PIPELINE. REMOVE ALL BUT ONE OF THE BODY CONNECTOR BOLTS, AND WITH THIS REMAINING BOLT SLACKENED, THE BODY MAY BE ROTATED OUT FROM THE LINE USING THE REMAINING BOLT AS A HINGE.

**INSTALLATION OF SHARPE®
WELDED END VALVES, SERIES 66/84/88/99**

SHARPE® CARBON AND STAINLESS STEEL VALVES WITH ENCAPSULATED PTFE OR GRAPHOIL BODY SEALS ARE DESIGNED TO BE WELDED IN-LINE WITHOUT DISASSEMBLY.

- 1) PUT VALVE IN OPEN POSITION.
(If valve is pneumatically actuated to the fail close position, remove the 4 bolts that attach the actuator to the mounting bracket. while leaving the actuator on the bracket, rotate the actuator 90°, so the valve is now in the open position. Place actuator in a safe and clean place until the valve is completely installed.)

- 2) ALIGN THE VALVE BETWEEN THE PIPE ENDS AND TACK WELD IN ACCORDANCE WITH PROPER WELDING PROCEDURES.

- 3) COMPLETE WELD BY MAKING ALTERNATE PASSES ON EACH VALVE END. ALLOW VALVE AND WELD JOINT TO COOL BETWEEN WELD PASSES.

- 4) DO NOT ROTATE THE VALVE HANDLE OR ACTUATOR UNTIL THE VALVE HAS COMPLETELY COOLED.

- 5) WHEN VALVE HAS COOLED DOWN, CHECK BODY BOLTS TO ENSURE THEY ARE TIGHTENED TO THE PROPER TORQUE REQUIREMENTS.

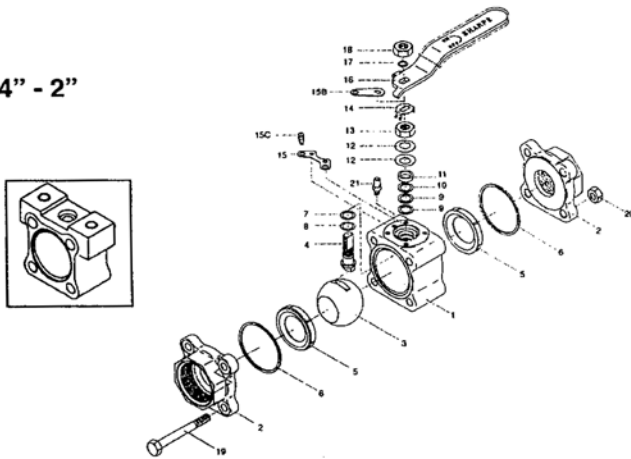
SHARPE® VALVES

BALL VALVE REPAIR KIT

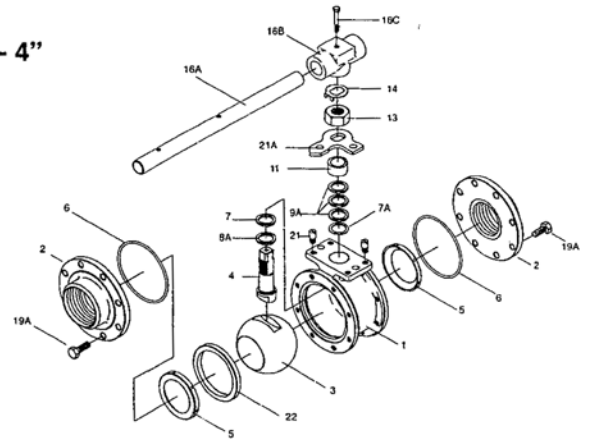
| | |
|------------|--|
| DESIGN | 66 84 88 99 |
| VALVE SIZE | 1/2", 3/4", 1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 4" |
| SEATS | T R N D U P |
| SEALS | B N V T U G E |

| VALVE SIZE | ITEM NO. | QUANTITY | DESCRIPTION |
|---------------|----------|----------|-------------------|
| 1/4" - 2-1/2" | 5 | 2 | Seats |
| | 10 | 1 | Seal Protector |
| | 9 | 2 | Stem Packing |
| | 8 | 2 | Stem Thrust Ring |
| | 12 | 2 | Belleville Washer |
| 3" - 4" | 5 | 2 | Seats |
| | 6 | 2 | Seals |
| | 8A | 2 | Thrust Bearing |
| | 9A | 3 | Stem Packing |

1/4" - 2"



2-1/2" - 4"



| PART NO. | PART | QTY. | MATERIAL |
|----------|------------------------------|------|--|
| 1 | Body | 1 | 316 Stainless Steel Alloy 20 Carbon Steel |
| 2 | Pipe Ends | 2 | 316L Stainless Steel Alloy 20 Carbon Steel |
| 3 | Ball | 1 | 316 Stainless Steel Monel |
| 4 | Stem | 1 | 316 Stainless Steel Monel |
| 5 | Valve Seat | 2 | TFE Nova* UHMWPE |
| 6 | Body Seal | 2 | TFE Graphoil Buna |
| 7 | Thrust Bearing | 1 | Nova* (UHMWPE with UHMWPE Seats) |
| 7A | Stem Location Ring (3" & 4") | 1 | Stainless Steel |
| 8 | Thrust Bearing | 1 | Peek (UHMWPE with UHMWPE Seats) |
| 8A | Thrust Bearing | 1 | Nova* (UHMWPE with UHMWPE Seats) |
| 9 | Stem Packing | 2 | Nova* (UHMWPE with UHMWPE Seats) |
| 9A | Stem Packing (3" & 4") | 3 | Nova* (UHMWPE with UHMWPE Seats) |
| 10 | Seal Protector | 1 | Peek |
| 11 | Gland Packing | 1 | Stainless Steel |
| 12 | Belleville Washer | 2 | Stainless Steel |

| PART NO. | PART | QTY. | MATERIAL |
|----------|-----------------------|------|---------------------------------|
| 13 | Packing Nut | 1 | Stainless Steel |
| 14 | Lock Tab | 1 | Stainless Steel |
| 15 | Lower Lock Latch | 1 | Stainless Steel |
| 15B | Upper Lock Latch Bolt | 1 | Stainless Steel |
| 15C | Latch Bolt | 1 | Stainless Steel |
| 16 | Handle (1/4"-2") | 1 | Stainless Steel |
| 16A | Wrench (3" & 4") | 1 | Cad Plate Carbon Steel |
| 16B | Wrench Block | 1 | Stainless Steel |
| 16C | Hex Head Bolt | 1 | Stainless Steel |
| 17 | Lock Washer | 1 | Stainless Steel |
| 18 | Handle Nut (1/4"-2") | 1 | Stainless Steel |
| 19 | Body Bolts | 4 | Stainless Steel |
| 19A | Body Connector Nut | 8 | Stainless Steel |
| 20 | Nuts | 4 | Stainless Steel |
| 21 | Stop Pin (1/4"-1/2") | 1 | Stainless Steel |
| 21A | Stopper | 1 | Stainless Steel |
| 22 | Seat Retainer | 1 | Stainless Steel Carbon Steel |

* Nova: Carbon and Graphite Filled Teflon

SHARPE® VALVES

TORQUE REQUIREMENTS

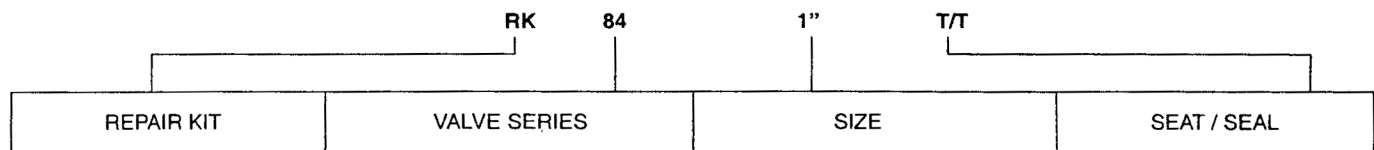
STEM NUT

| VALVE SIZE | THREAD | TORQUE N.M. | TORQUE IN LB. |
|-------------|------------|-------------|---------------|
| 1/2" - 3/4" | 3/8" - 24 | 4.0 | 35.0 |
| 1" - 1-1/4" | 7/16" - 20 | 9.0 | 80.0 |
| 1-1/2" - 2" | 9/16" - 18 | 13.0 | 115.0 |
| 2-1/2" | M20 x 2.5 | 30.0 | 265.0 |
| 3" - 4" | 1" - 14 | 60.0 | 530.0 |

BODY BOLTS 66/84/99/88

| VALVE SIZE | BOLT SIZE | N.M. | TORQUE - S/S | IN lb. |
|-------------|-----------|------|--------------|--------|
| 1/2" - 3/4" | M6 | 9.0 | | 80.0 |
| 1" - 1-1/4" | M8 | 19.0 | | 168.0 |
| 1-1/2" - 2" | M10 | 39.0 | | 345.0 |
| 2-1/2" - 3" | M10 | 39.0 | | 345.0 |
| 4" | M12 | 65.0 | | 576.0 |

HOW TO ORDER



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