



Form Title:

INSTALLATION AND MAINTENANCE MANUAL

Document #:

MM-HY001

(Form: DEF-006A-1)

Revision:

1

Document Title:

QUICK RELEASE BONNET HYDROLETS

Date:

Sept. 21, 2017

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PART NUMBERS (Including, but not inclusive)

| | | | | |
|----------|----------|----------|----------|----------|
| QC703SST | QR70_SST | QY70_SST | JQ70_SST | JY70_SST |
| QC713SST | QR71_SST | QY71_SST | JQ71_SST | JY71_SST |
| QC763SST | QR72_SST | QY72_SST | JQ72_SST | JY72_SST |
| QC773SST | QR73_SST | QY73_SST | JQ73_SST | JY73_SST |
| | QR76_SST | QY76_SST | JQ76_SST | JY76_SST |
| | QR77_SST | QY77_SST | JQ77_SST | JY77_SST |

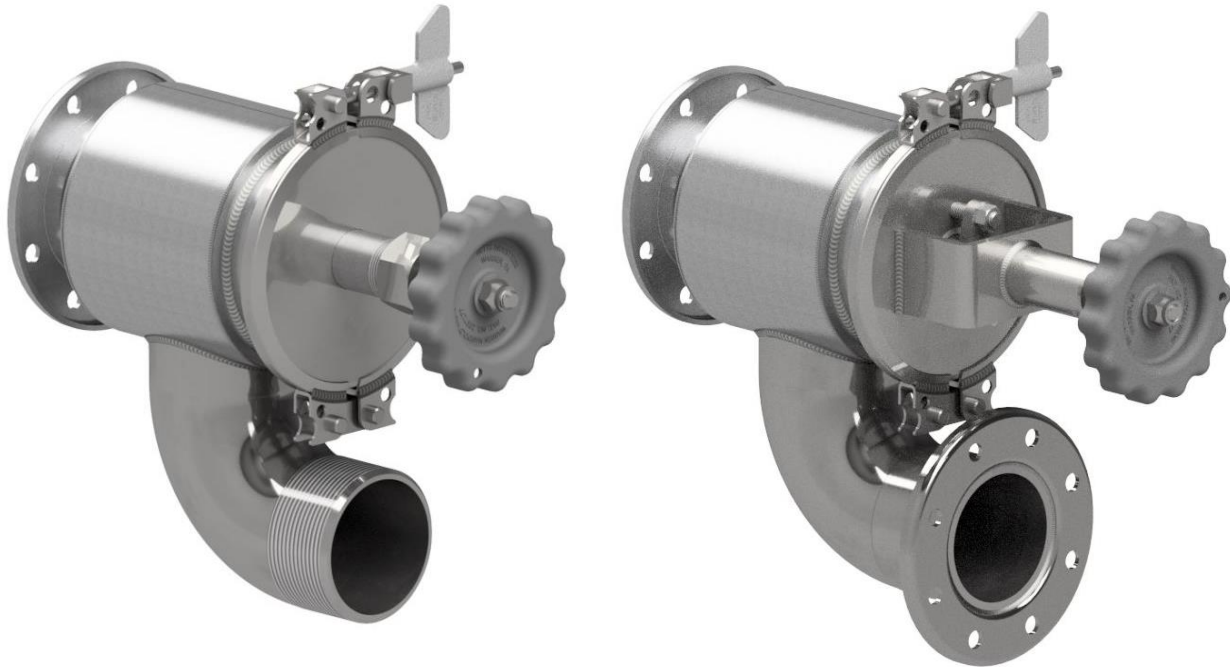



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1.0 General

- 1.1 It is strongly recommended that this entire manual be read prior to any operation, disassembly, or assembly of this equipment.
- 1.2 Betts Industries Inc. provides this manual as a guideline for reference only and assumes no responsibility for personal or property damage that may occur in conjunction with this manual. Betts Industries Inc. cannot be held responsible for incorrect installation, operation, or maintenance of product.
- 1.3 Betts Industries Inc. recommends all equipment be placed on a regular maintenance schedule that includes the routine replacement of seals and gaskets and visual inspection for leaks and corrosion. The end user must make their own determination and set their own schedule based upon use and environment. In some cases, regulations may dictate the minimum testing frequency of items. Make sure operators are aware of all applicable codes.
- 1.4 Only trained personnel should attempt to perform maintenance on this equipment.
- 1.5 As with any maintenance work, proper safety gear and procedures must be used at all times. A list of hazards may include but are not limited to contents under pressure, loaded springs, residual product, flammable liquid and vapors, pinch points.
- 1.6 Safety alert symbols are used to alert operator to potential personal injury hazards. These symbols are per ANSI Z535.4 and are listed below. Operator **MUST** obey all instructions that follow a safety symbol.

Alerts will be used to indicate known safety concerns. Additional concerns are possible and should be identified and avoided by the operator.

| | |
|---|--|
|  | Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. |
|  | Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. |
|  | Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. |

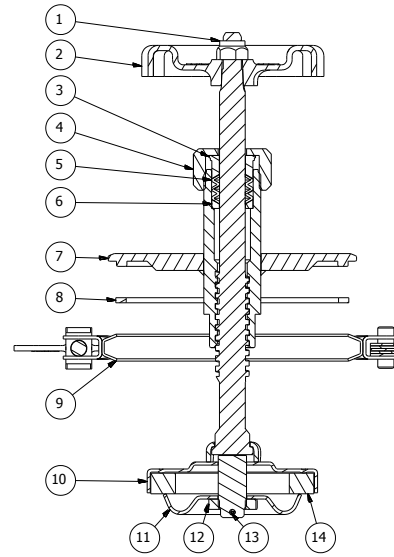
- 1.7 Product Warranty shall be void if product is subject to misapplication, misuse, neglect, alteration, or damage.
- 1.8 Specific design details described in this document are for reference only and are subject to change without notice. See Betts Industries Inc. web page for the most recent revision to this document. www.bettsind.com
- 1.9 For additional questions or more detailed technical assistance, contact the Betts Industries Inc. Sales or Engineering Department at (814)723-1250.

2.0 Parts List

| QRB & QC STYLE | | | | | |
|----------------|------------------------|---------|------|------------------|---------|
| No. | Description | Size | Req. | Material | Part no |
| 1 | Hex Nut 7/16-14 Thread | 3" & 4" | 1 | Steel Zinc Plate | 9Q8579 |
| | | | | 304 Stainless | 9Q8580 |
| 2 | Hand Wheel | 3" | 1 | Aluminum | 25186AL |
| | | 4" | | Aluminum | 25245AL |
| 3 | Top Gland | 3" & 4" | 1 | 316 Stainless | 15220SS |
| 4 | Stuffing Box Nut | 3" & 4" | 1 | Aluminum | 15026AL |
| | | | 1 | 304 Stainless | 15026SL |
| 5 | Packing (3 Rings) | 3" & 4" | 1 | Teflon | 15227NT |
| 6 | Bottom Gland | 3" & 4" | 1 | 316 Stainless | 15076SS |
| 7 | Top Had & Bonnet | 3" | 1 | 316 Stainless | 15573SS |
| | | 4" | 1 | 316 Stainless | 16126SS |
| 8 | Top Head Gasket | 3" | 1 | Cork Buna-N | 15905CB |
| | | | 1 | Teflon-Envelope | 15905TF |
| | | 4" | 1 | Cork Buna-N | 15977CB |
| | | | 1 | Teflon-Envelope | 15977TF |
| 9 | QRB Clamp Ring | 3" | 1 | 304 Stainless | 25641SL |
| | | 4" | 1 | 304 Stainless | 25683SL |
| 10 | Disc Holder & Stem | 3" | 1 | 316 Stainless | 17683SS |
| | | 4" | 1 | 316 Stainless | 17684SS |
| 11 | Disc Retaining Plate | 3" | 1 | 316 Stainless | 17028SS |
| | | 4" | 1 | 316 Stainless | 15051SS |
| 12 | Disc Plate Nut | 3" & 4" | 1 | 316 Stainless | 15204SS |
| 13 | Cotter Pin – 1/8 x 1 | 3" & 4" | 1 | 316 Stainless | 9Q5867 |
| 14 | Disc | 3" | 1 | Buna-N | 15202BU |
| | | | | Non-Asbestos | 15202NA |
| | | | | Teflon | 15202TF |
| | | | | Viton | 15202VT |
| | | 4" | 1 | Buna-N | 15024BU |
| | | | | Non-Asbestos | 15024NA |
| | | | | Teflon | 15024TF |
| | | | | Viton | 15024VT |

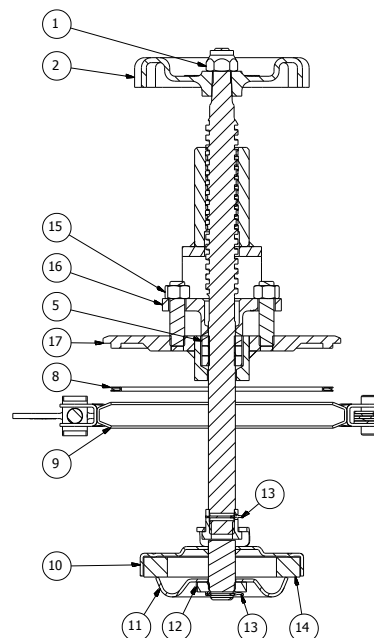
| OUTSIDE SCREW & YOKE STYLE | | | | | |
|----------------------------|------------------------|---------|------|------------------|---------|
| No. | Description | Size | Req. | Material | Part no |
| 1 | Hex Nut 7/16-14 Thread | 3" & 4" | 1 | Steel Zinc Plate | 9Q8579 |
| | | | | 304 Stainless | 9Q8580 |
| 2 | Hand Wheel | 3" | 1 | Aluminum | 25186AL |
| | | 4" | | Aluminum | 25245AL |
| 5 | Packing (3 Rings) | 3" & 4" | 1 | Teflon | 15227NT |
| 8 | Top Head Gasket | 3" | 1 | Cork Buna-N | 15905CB |
| | | | 1 | Teflon-Envelope | 15905TF |
| | | 4" | 1 | Cork Buna-N | 15977CB |
| | | | 1 | Teflon-Envelope | 15977TF |
| 9 | QRB Clamp Ring | 3" | 1 | 304 Stainless | 25641SL |
| | | 4" | 1 | 304 Stainless | 25683SL |
| 11 | Disc Retaining Plate | 3" | 1 | 316 Stainless | 17028SS |
| | | 4" | 1 | 316 Stainless | 15051SS |
| 12 | Disc Plate Nut | 3" & 4" | 1 | 316 Stainless | 15204SS |
| 13 | Cotter Pin – 1/8 x 1 | 3" & 4" | 1 | 316 Stainless | 9Q5867 |
| 14 | Disc | 3" | 1 | Buna-N | 15202BU |
| | | | | Non-Asbestos | 15202NA |
| | | | | Teflon | 15202TF |
| | | 4" | 1 | Buna-N | 15024BU |
| | | | | Non-Asbestos | 15024NA |
| | | | | Teflon | 15024TF |
| 15 | Gland Nut | 3" & 4" | 2 | 304 Stainless | 9Q5809 |
| 16 | Packing Gland | 3" & 4" | 1 | 304 Stainless | 16758SL |
| 17 | OS&Y Top Head & Bonnet | 3" | 1 | 316 Stainless | 26133SS |
| | | 4" | 1 | 316 Stainless | 26138SS |
| 18 | Disc Holder & Stem | 3" | 1 | 316 Stainless | 28003SS |
| | | 4" | 1 | 316 Stainless | 28004SS |


QRB Style



NOTE: Quick Clean Hydrolets (QC version) are only offered in the 3" size but use a 4" clamp ring, 4" top head gasket and 4" top head and bonnet.

Outside Screw & yoke (OS&Y) Style



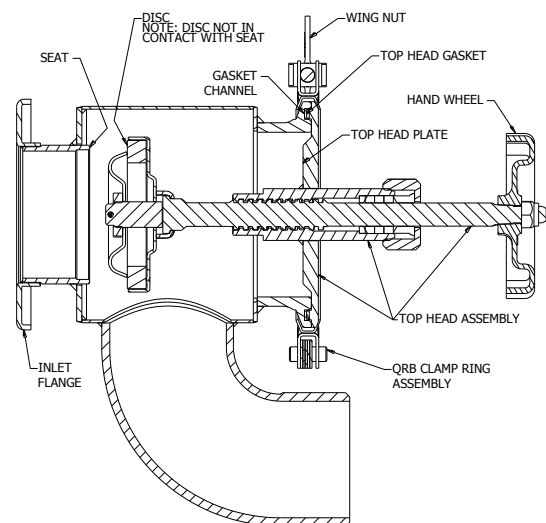
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3.0 Description and Intended Use

- 3.1 The Betts Quick Release Bonnet (QRB) hydrolet valve is designed to be used for a manual external loading/unloading stop valve. The QRB valve provides for a quick release clamp ring design, making it easy to clean the valve body and replace the seat and packing of the valve without unmounting it from the trailer. The valves are made from 316 stainless steel for compatibility with a wide range of products. Hydrolet valves are also available in a steam jacket version for use with temperature sensitive products.
- 3.2 There are 3 distinct QRB style valve families:
- 3.2.1 Standard QRB – Quick Release Bonnet - This style incorporates a large body diameter with a necked down bonnet flange and would be considered the standard hydrolet style.
- 3.2.2 QC – Quick Clean style – This style incorporates a casting body for seamless construction. It is only offered with a 3” inlet and 3” outlet. The clamp ring, top head gasket and top head bonnet are all the 4” size.
- 3.2.3 OS&Y – Outside Screw & Yoke – This style refers only to the top head and bonnet design, which can be put on either of the body styles described above. The OS&Y isolates the threads of the stem from the product being hauled.
- NOTE : Please see important safety information on OS&Y design in Engineering Bulletin EB-08-99


4.0 Installation

- 4.1 A flat mounting surface must be provided for the valve inlet flange.
- 4.2 Gaskets are available to seal between the mounting flange and the inlet flange of the valve. See section 40 of the catalog for details.
- 4.3 When bolting the valve inlet flange to the mounting flange, care should be taken to be sure to not over compress gasket material. Initial tightening should be done with a star pattern with gradually increasing bolt torque followed by clockwise pattern to ensure even pressure on gasket.
- 4.4 To install the top head assembly:
- 4.4.1 Back off the hand wheel in a counter clockwise direction to ensure the disc is positioned so that it will not meet the seat of the valve when initially assembled.
- 4.4.2 Ensure that the top head gasket is in place and sealed fully in gasket channel.



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- 4.4.3 Carefully install the top head assembly by inserting the disc past the opening in the valve body being sure the top head plate mates with the valve body gasket channel.
- 4.4.4 Inspect QRB clamp ring assembly for proper installation. Insure that clamp ring is seated properly around perimeter of bonnet and valve body. The wing nut must be secured hand tight, not to exceed 90 in-lb. Replace damaged clamp rings before loading or unloading. See EB-09-99 for more information.







| | |
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|  WARNING | Procedure Notice – Do not exceed 90in-lb torque on QRB clamp ring wing nut. Greater torque can damage clamp ring assembly causing failure of clamp ring. |
|--|---|

5.0 Inspection and Testing


- 5.1 Once valve has been mounted and the top head is correctly in place, pressure can be applied to the valve to test for leaks.
- 5.2 Do not stand in front of valve during testing.
- 5.3 Apply no more than 35 psi to valve.
- 5.4 Inspect inlet flange connection, clamp ring joint, and stem packing for leaks.

6.0 Disassembly and Rebuild Instructions

- 6.1 Prior to disassembly always wear protective gear appropriate to the product being transported. Examples may include gloves, safety goggles, face shields, protective suits and respirators. It is the responsibility of the operator to know the product being hauled and the gear required.
- 6.2 Ensure the primary outlet (emergency valve) is closed and the piping and hydrolet do not contain pressure or product.

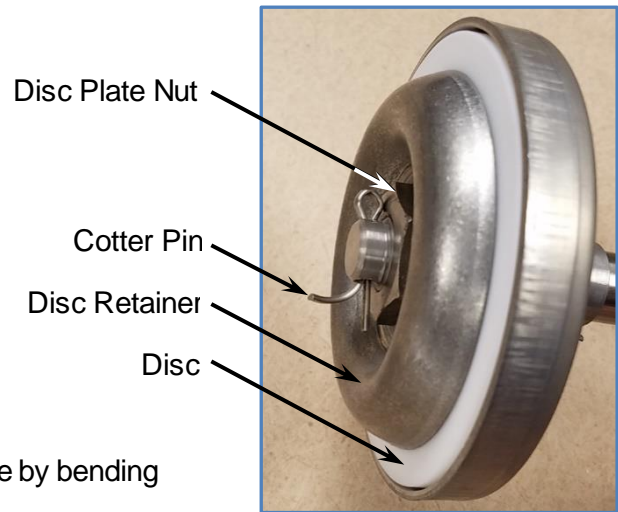
| | | |
|--|---|---|
|  WARNING |  | Pressure Hazard – Cargo tank or piping may contain residual pressure and failure to safely relieve could result in sudden loss of pressure causing death or serious injury. |
|  WARNING |  | Flammable Product – Cargo tank or piping may contain product that could present risk of fire, explosion, asphyxiation or other hazards resulting in death or serious injury. |
|  WARNING |  | Corrosive Material – Cargo tank or piping may contain corrosive material. Protective clothing including gloves and face shield shall be worn. |

- 6.3 Place appropriate container under outlet of valve to catch any residual product.
- 6.4 Remove any cap or cover that may be on the outlet piping of the valve.
- 6.5 Slowly turn the hand wheel of the valve in a counterclockwise direction. If any product drains from the outlet of the valve, stop the opening procedure until you have verified the primary outlet valve is closed and the piping is empty.

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- 6.6 Loosen the clamp ring and remove the top head from the valve body.
- 6.7 Remove the top head gasket and inspect the gasket groove for damage or debris. If damaged, replace valve body. Clean all debris and replace the top head gasket.
- 6.8 Inspect the main valve seat for damage or corrosion. Replace valve body if damaged.
- 6.9 To replace the disc.

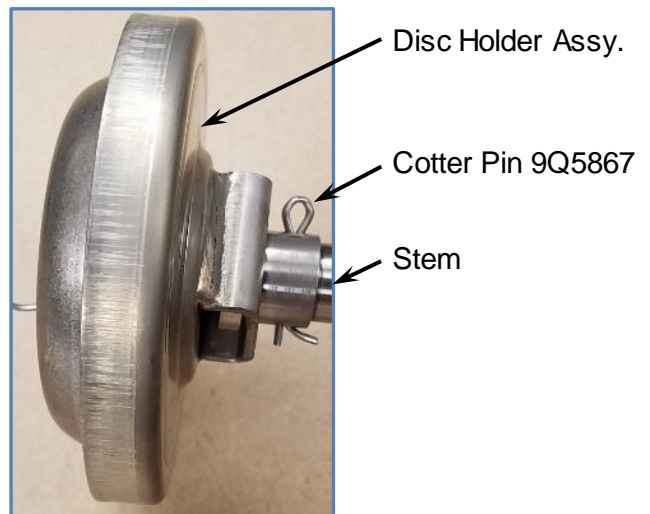
- 6.9.1 Remove the cotter pin and discard.
- 6.9.2 Remove the disc plate nut, the disc retainer, and disc.
- 6.9.3 Inspect the disc holder for any damage and replace if necessary.
- 6.9.4 Install a new disc and secure with disc retainer, and disc plate nut.
- 6.9.5 Install a new cotter pin and secure by bending over the ends.




- 6.10 The OS&Y hydrolet disc holder assembly utilizes an additional cotter pin to secure the disc holder assembly to the stem.


- 6.10.1 The OS&Y stem cotter pin is located at the junction of the stem and the disc holder assembly. It prevents the stem from disengaging from the disc holder assembly. This 316-stainless pin should be inspected for corrosion or wear and replaced if necessary at regular intervals depending on service conditions

- 6.10.2 The correct size and material cotter pin must be installed.



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|  WARNING | Procedure Notice – If cotter pin is not installed, the stem can separate from the disc and extract from the valve. Physical injury or product leakage could result. |
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- 6.11 The packing is packed tight at the factory and all final assemblies are pressure tested. Heating and cooling cycles may cause the packing to relax causing leakage at the stem. This condition is more prevalent on new valves or newly packed valves.

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6.12 It is recommended to tighten the packing after each heating and cooling of the valve for the first 1 or 2 loads. After this “break in period” packing should be checked and tightened if necessary at regular intervals depending on individual service conditions

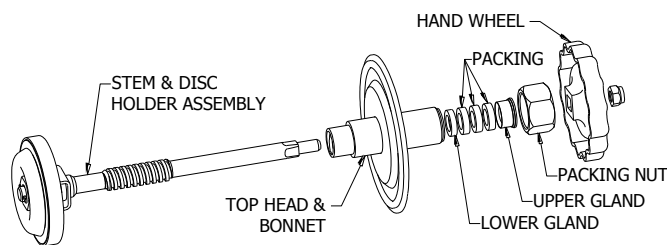
6.13 Standard hydrolet packing adjustment and replacement.

6.13.1 If leakage is coming from the stem, tighten the packing nut in a clockwise direction. If tightening the nut does not stop the leak the packing needs to be replaced.

6.13.2 Remove the packing nut and top gland.

6.13.3 Remove the packing from the stuffing box and inspect for wear or corrosion to both the stem and/or interior of the stuffing box.

6.13.4 Replace the lower gland, packing, upper gland, and packing nut.

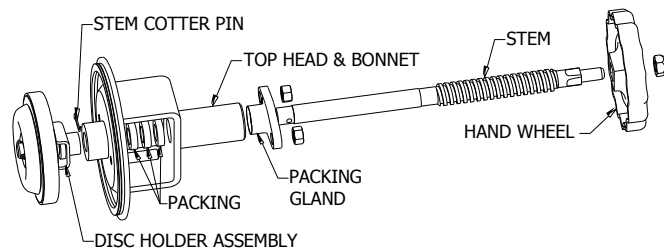



6.14 OS&Y hydrolet packing adjustment and replacement.

6.14.1 If leakage is coming from the stem, tighten the two nuts on both sides of the packing gland. Always tighten these nuts evenly so the top of the packing gland is parallel with the top of the bonnet plate.

6.14.2 If leakage at the stem continues the packing must be replaced.


- Remove the hand wheel and stem cotter pin and unscrew stem from the top head & bonnet and set aside.
- Remove packing gland and then remove packing being sure not to damage the stuffing box.
- Clean and flush the stuffing box and inspect for damage. Replace the top head & bonnet if necessary.



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- With the packing gland and stem in place, install new packing being careful not to damage the stuffing box. Use the packing gland to compress the packing by hand if necessary.
- Reinstall the packing gland and tighten evenly to compress the packing. (see section 6.14.1)
- Reassemble the hand wheel and disc holder assembly to stem (See Section 6.10)

SEE TROUBLESHOOTING GUIDE AT THE END OF THIS MANUAL

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Troubleshooting Guide

| Problem | Potential Cause | Potential Solution |
|------------------------------------|---|--|
| Product leaking out bonnet | Packing nut or packing gland loose | Tighten packing nut or packing gland (be sure to tighten evenly) |
| | Packing has taken a set and needs replaced | Replace packing (see section 6) |
| Product leaking out of top head | Clamp ring it not seated evenly | Relieve all pressure and remove product from valve. Then loosen wing nut and be sure clamp ring is positioned correctly and retighten. (see section 6) |
| | Top head gasket is worn out or damaged. | Replace top head gasket. (see section 6) |
| | Top head gasket channel or gasket boss is damaged | Inspect top head gasket channel and boss and replace if necessary (see section 6) |
| Product is leaking past main disc. | Hand wheel is not tightened enough. | Tighten hand wheel, but only use hand pressure. If still leaks, see below. |
| | Disc is worn out or damaged | Replace disc. (see section 6) |
| | Seat is worn out or damaged | Body must be replaced. |
| | | |
| | | |