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Installation, Operation & Maintenance Manual for Reliable Break-Away (RB) Couplings Models RB1 and RB1.25

Jan. 2008 *Form* FVC 046 - Rev 06

KEEP THIS DOCUMENT WITH THE PRODUCT UNTIL IT REACHES THE END USER.

WARNING

The Reliable Break-Away (RB) Couplings are designed to safely disconnect the nurse tank hose from any tool bar in the event of a pull-away, a nurse tank roll-over, or any occurrence that would cause the nurse tank hose to become taut. When the RB Coupling disconnects, two check valves close immediately. The inlet check valve, located on the male half of the coupling, remains with the nurse tank hose and prevents the nurse tank from releasing NH_3. The outlet check valve remains with the tool bar preventing a release of NH_3 from all piping or vessels located on the tool bar.

When properly installed with your RB Coupling, the RB1-1002 Mounting Bracket Assembly will establish and maintain an obstruction-free hose arrangement, resulting in maximum reliability of the RB Coupling.

CAUTION: Contact with or inhalation of Liquid Anhydrous Ammonia or L-P Gas or their vapors can cause serious injury or death. Dispersement must be in accordance with local regulations.
For the proper handling and storage of Anhydrous Ammonia, refer to ANSI Standard K61.1.
For the proper handling and storage of Liquefied Petroleum Gas, refer to NFPA Pamphlet 58.

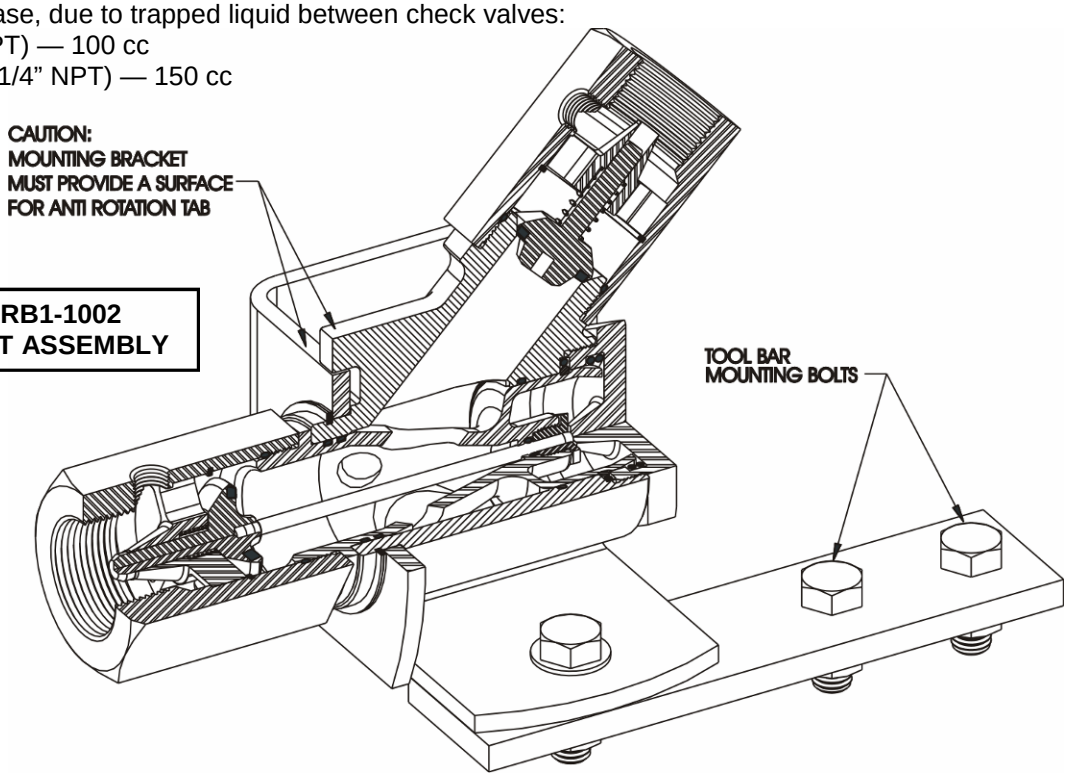
TOOLS REQUIRED: Safety Equipment (i.e. gloves, goggles, and clothing), two 3/4" Wrenches

Features and Design Specifications of RB Couplings

- All metal surfaces in working contact are corrosion-free stainless steel.
- No change-out date required.
- Installation of RB Coupling halves requires 30 to 40 pounds force.
- Separation force requirements of RB Couplings:
  Model RB1-1003 (1" NPT) — 200 to 550 pounds force
  Model RB1.25-1003 (1-1/4" NPT) — 200 to 550 pounds force
- Momentary Liquid NH_3 release, due to trapped liquid between check valves:
  Model RB1-1003 (1" NPT) — 100 cc
  Model RB1.25-1003 (1-1/4" NPT) — 150 cc

WARNING!
WITH THE RB COUPLING AND METER HOSE INSTALLED, THE MOUNTING BRACKET MUST BE FREE TO SWIVEL AT LEAST 80° TO EACH SIDE, 45° UP AND 20° DOWN.

FIGURE 1

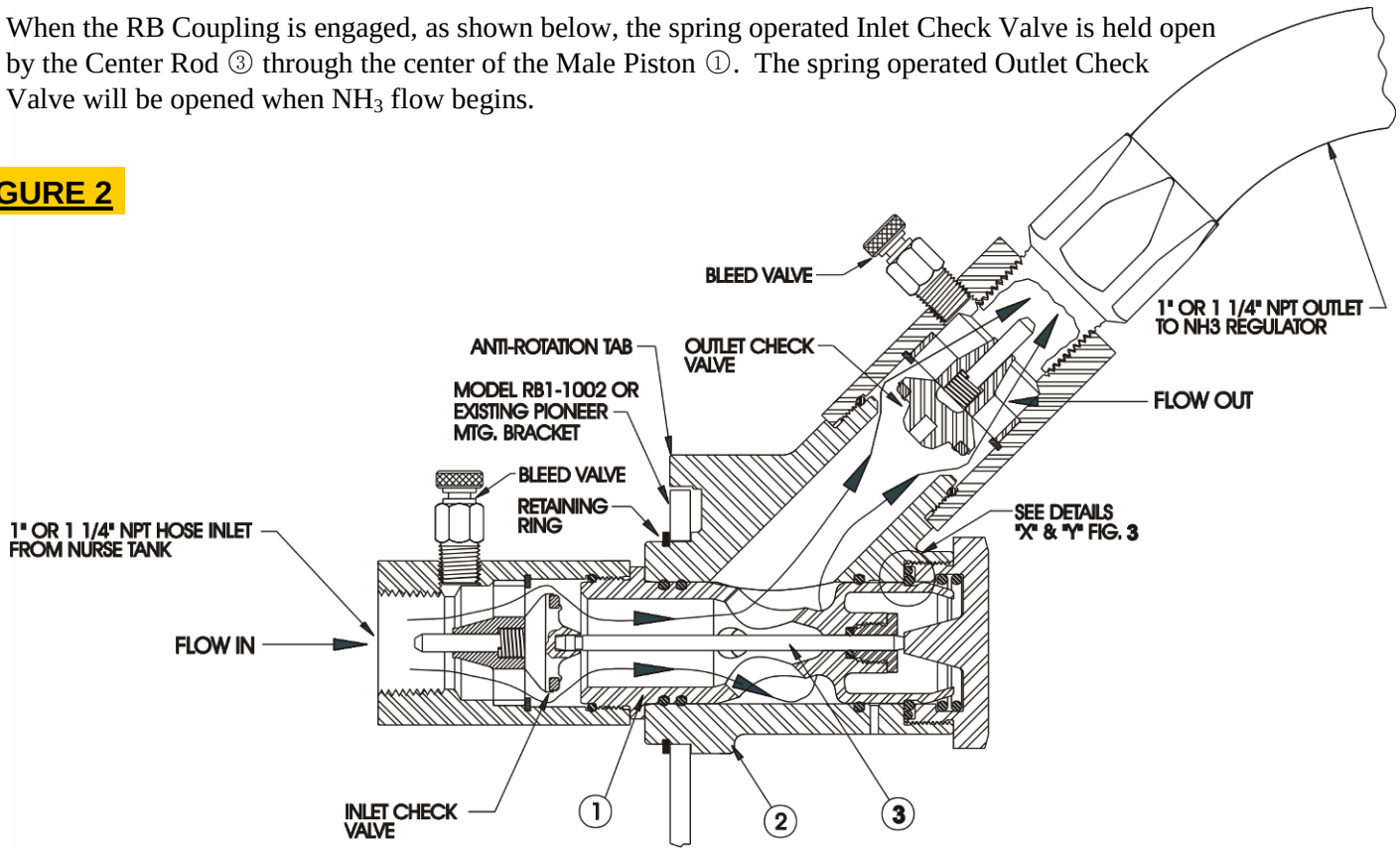


RB COUPLING WITH RB1-1002 MOUNTING BRACKET ASSEMBLY

Operation Instructions (Refer to Figures 2 & 3)

1. When the RB Coupling is engaged, as shown below, the spring operated Inlet Check Valve is held open by the Center Rod ③ through the center of the Male Piston ①. The spring operated Outlet Check Valve will be opened when NH_3 flow begins.

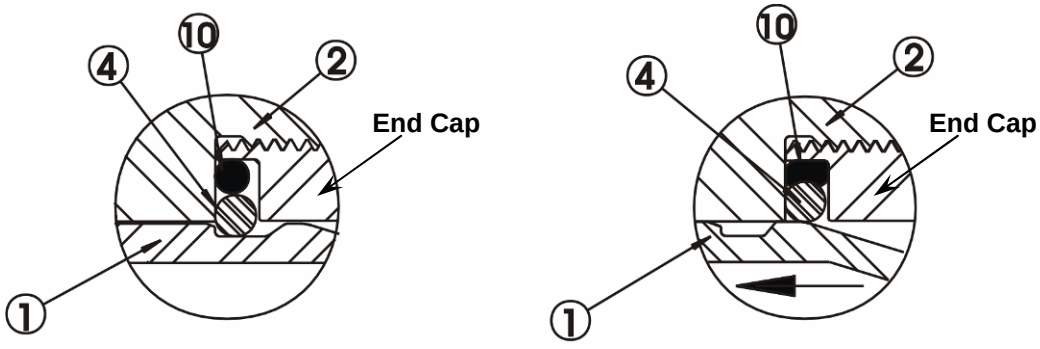
FIGURE 2



2. The Plug end of the Male Piston ① is secured to the Coupling Body ② by a Latch Ring ④, shown below - left. The separation of the Plug from the Coupling Body is accomplished when, and only when, the nurse tank hose becomes taut and is in a straight line pull with the RB Coupling. The NH_3 nurse tank pressure does not affect the separation force of the coupling. (See Features and Design Specifications, on page 1, for separation forces.)

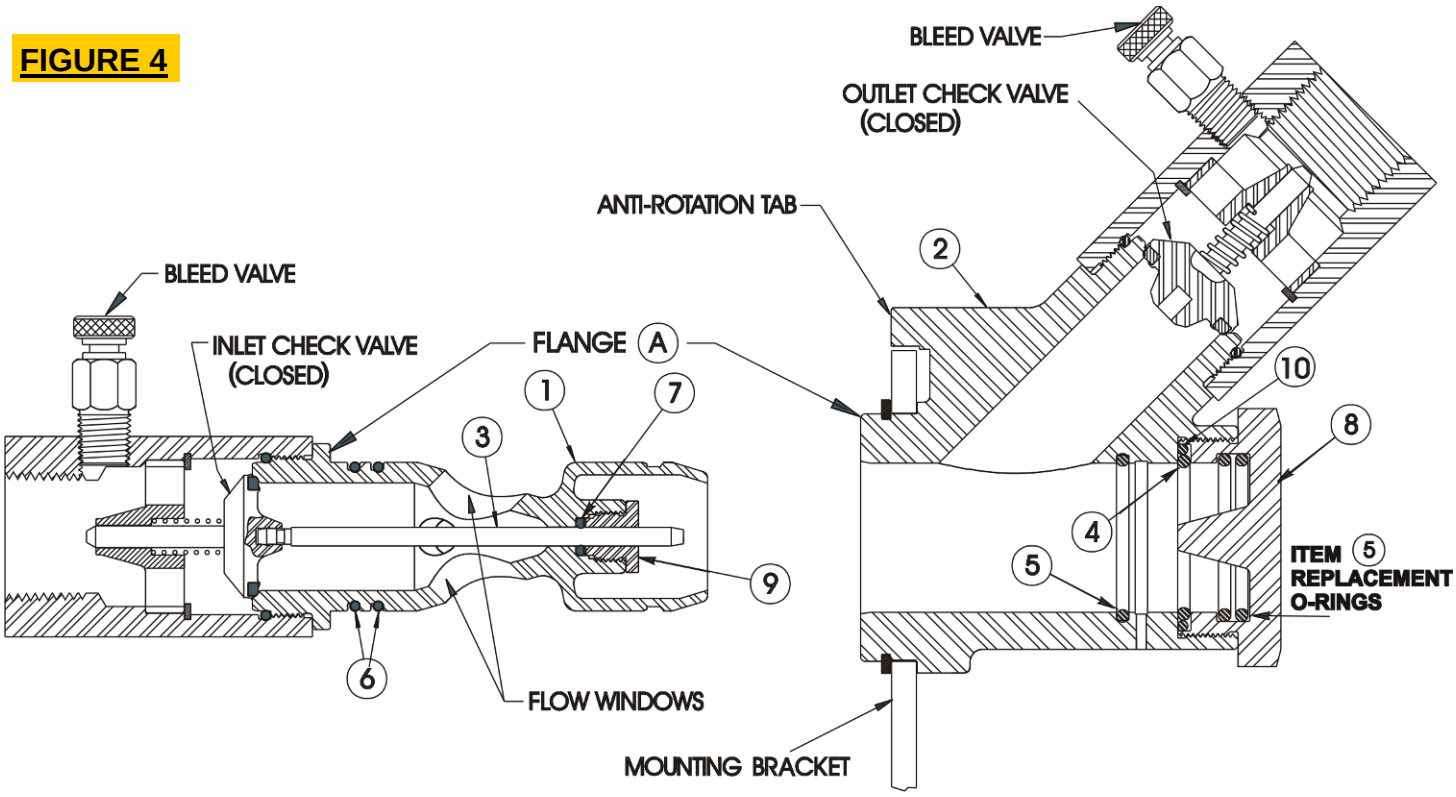
3. As the Plug end of the Male Piston ① starts to separate from the Coupling Body ②, the Latch Ring will expand as it slides up the inclined surface of the Plug, as shown below - right. When the Latch Ring is fully expanded, it presses inward on the Centering Ring ⑩, allowing the Male Piston to separate from the Coupling Body. The Latch Ring and the Centering Ring will spring back to their original size and remain inside the Coupling Body. After separation, the Inlet and Outlet Check Valves will seal and prevent additional NH_3 release to the atmosphere, as shown in Figure 4 on page 3. (See Features and Design Specifications, on page 1, for momentary liquid release at separation.)

FIGURE 3



Operation Instructions (Refer to Figure 4)

FIGURE 4

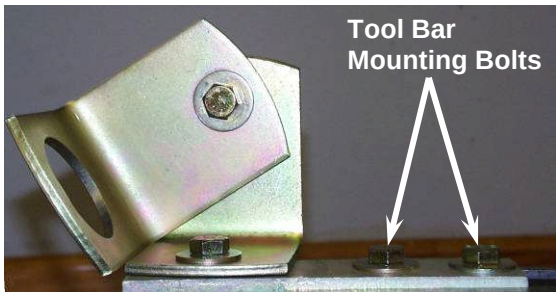


When separation occurs:

- The Male Piston ① is completely disengaged from the Body ② and remains with the nurse tank hose.
- The Inlet Check Valve is no longer forced open by the Center Rod, and is free to seal the flow path from the nurse tank.
- The Body ② remains with the tool bar.
- The Outlet Check closes when flow is interrupted.

Bracket Installation Instructions

It is mandatory that the RB Coupling be installed into a mounting bracket that allows the Coupling full freedom to always, and under any condition, align itself for a straight line pull from the nurse tank hose. The Squibb-Taylor Model RB1-1002 Mounting Bracket provides this freedom of motion and is available through your local distributor. An existing 1" NPT or 1-1/4" NPT Pioneer® bracket will also provide this freedom of motion, and may be used, provided that the bracket and snap ring are in good operating condition. Note: If the hole in the Pioneer® mounting bracket is off center, it may not fit the anti-rotation tab on the RB Coupling. To remedy this, simply rotate the bracket 180° and the RB Coupling will fit. (See page one for CAUTION on Anti-Rotation Tab.) It is also mandatory that the RB Coupling and mounting bracket assembly be mounted on the tool bar at a location that will ensure the nurse tank hose will not be pinched or restricted from full movement freedom during operation.



WARNING:

Improper constraint of an RB Coupler outlet hose can cause a <u>SERIOUS UNSAFE CONDITION</u>.

REFER TO FIGURE 5 — UNSAFE INSTALLATION

The hose from the outlet side of the RB Coupler in the UNSAFE INSTALLATION example below, is being restrained in a manner that restricts proper rotation of the coupler.

If the outlet hose restricts the rotation of the RB Coupler such that the nurse tank hose can not align itself in a straight pull, the RB Coupler may not separate in a pull-away situation. Remember that the hose is much stiffer when under operating pressure.

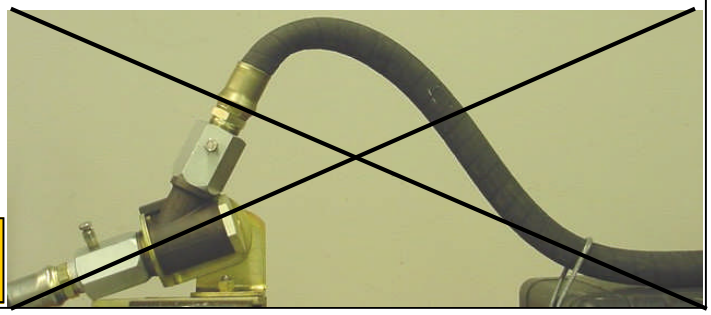


FIGURE 5
UNSAFE INSTALLATION

REFER TO FIGURE 6 — SAFE INSTALLATION

Figure 6 specifies the minimum outlet hose constraint parameters to assure safe rotation of the RB Coupler.

The outlet hose must have a minimum height of 2 feet and must not be tied down or restricted for at least 3 feet from the mounting bracket holding the RB Coupler.

If these minimum parameters are met, the coupler will have ample slack in the outlet hose to allow the coupler to separate properly in the event of a pull-away.

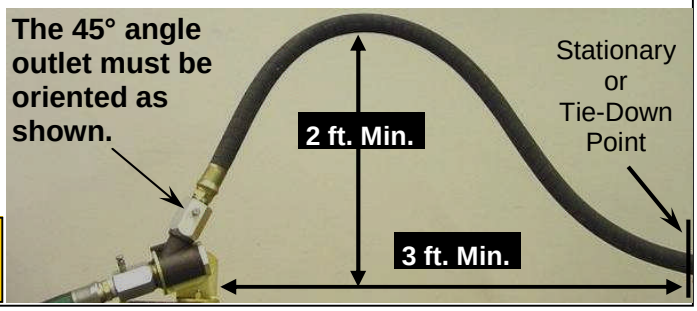
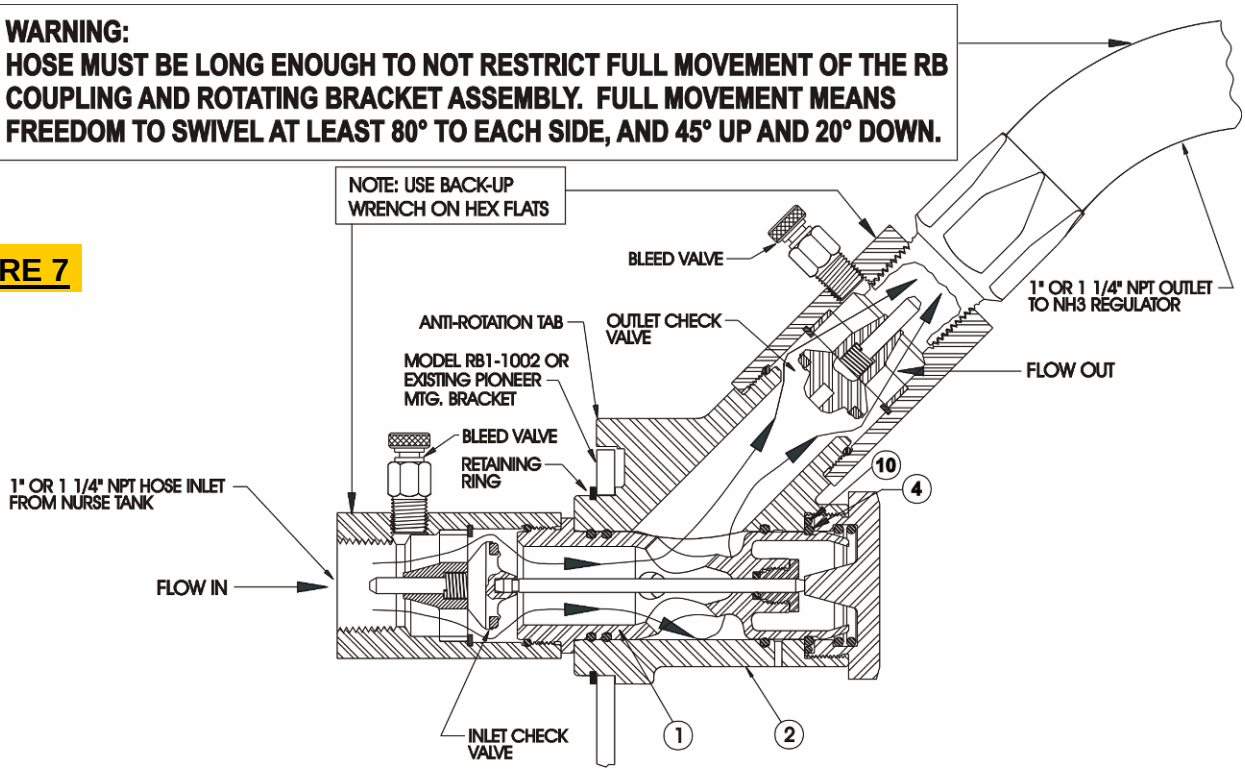


FIGURE 6
SAFE INSTALLATION

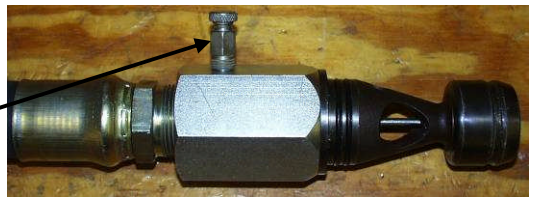
RB Coupling Installation Instructions

WARNING:
HOSE MUST BE LONG ENOUGH TO NOT RESTRICT FULL MOVEMENT OF THE RB COUPLING AND ROTATING BRACKET ASSEMBLY. FULL MOVEMENT MEANS FREEDOM TO SWIVEL AT LEAST 80° TO EACH SIDE, AND 45° UP AND 20° DOWN.

FIGURE 7



1. Attach the nurse tank hose to the Male Piston assembly of the RB Coupling. Always use the hex portion of the coupling when connecting or disconnecting a hose.
   NOTE: Install Bleed Valve into 1/4" NPT on hex portion of the Coupling.

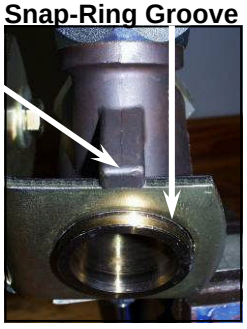


2. Connect the Coupling Body assembly of the RB Coupling to any NH_3 tool bar regulator with the proper hose length. See WARNING note at Figure 7, above.
   NOTE: Install Bleed Valve into 1/4" NPT on hex portion of the Coupling.

3. Insert the Coupling Body into the Mounting Bracket so that the Snap Ring groove is exposed on the opposite side and the anti-rotation tab is engaged.

Anti-Rotation Tab

Snap-Ring Groove

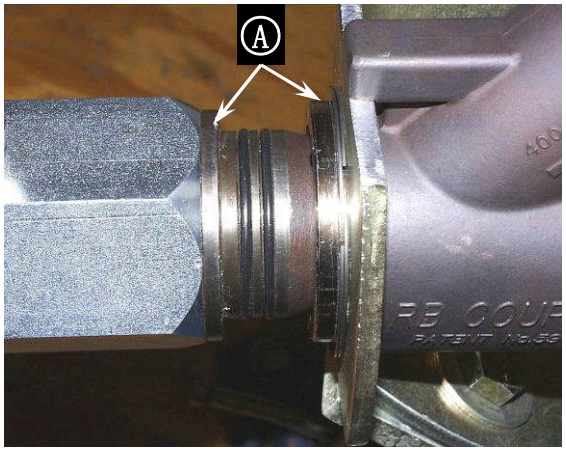


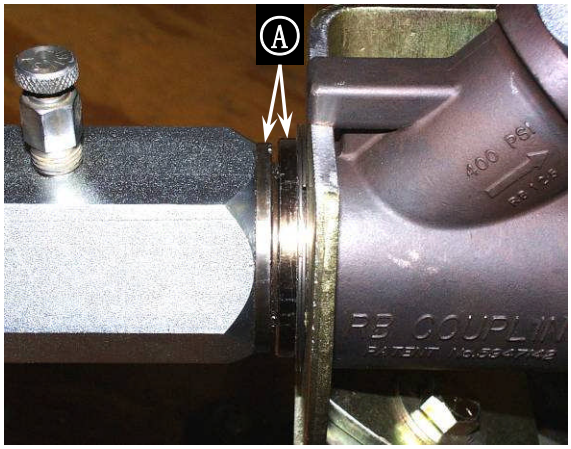
RB Coupling Installation Instructions (cont'd.)

4. Install the snap-ring into the groove.

Snap-Ring

5. Align the Plug end of the Male Piston with the bore of the Coupling Body.
6. Insert the Plug into the bore and force it into the Coupling Body until the two flange diameters come together at position Ⓐ, as shown below right. (Installing the Male Piston into the Coupling Body also installs the Latch Ring into its operating groove.)
   NOTE: A thrusting force of 30 to 40 pounds is required to install the Male Piston.





7. Before applying NH_3, check to see that the RB Coupling and hose are free to move in all directions and will not be restricted by any tool bar member or the nurse tank hitch.
   See SAFE INSTALLATION photo on page 4.
8. The RB Coupling is now ready to be placed in service.

Reconnection After Separation (Refer to Figure 5)

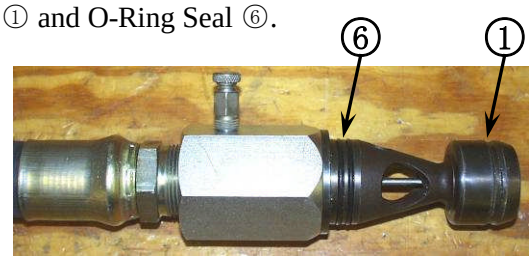
1. Before attempting to reconnect the Coupling:

a) Close the nurse tank withdrawal valve.

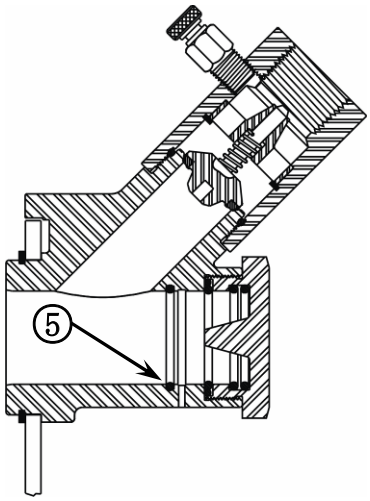
b) Bleed all pressure from the hose.

c) Bleed all pressure from the NH_3 regulator and the tool bar piping.

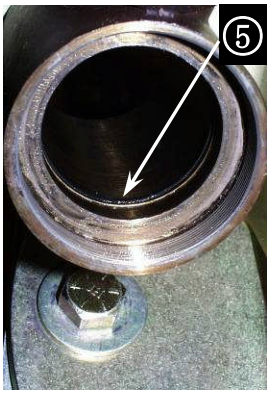
d) Wipe any dirt and debris from the Male Piston ① and O-Ring Seal ⑥.



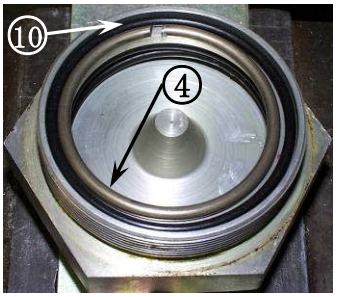
e) Look inside the bore of the Coupling Body ② to ensure that the O-Ring Seal ⑤ is in place.



f) If this O-Ring Seal is not in place, remove the End Cap to reinstall or replace it. Two replacement O-Rings can be found inside the End Cap.

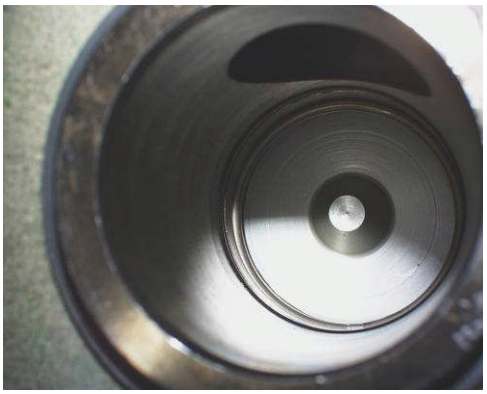


g) Ensure that the Latch Ring ④ and the Centering Ring ⑩ are installed properly in the recess at the inside edge of the End Cap, as shown.



h) To ensure that the Latch Ring and Centering Ring remain in place, rotate the Coupling Body as shown when replacing the End Cap. Wrench tighten the End Cap against the Coupling Body.

i) Look inside the Coupling Body to make sure the Latch Ring and Centering Ring have remained in position.

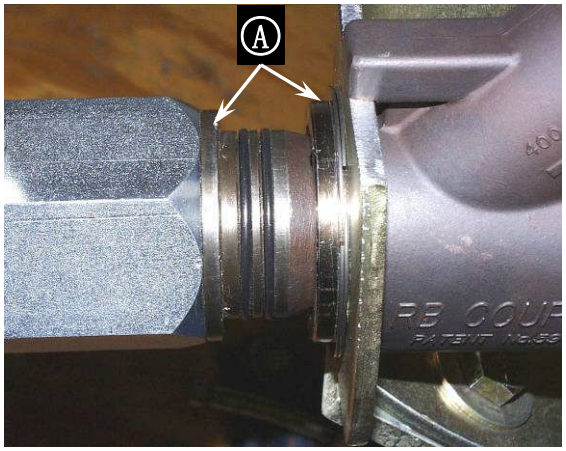


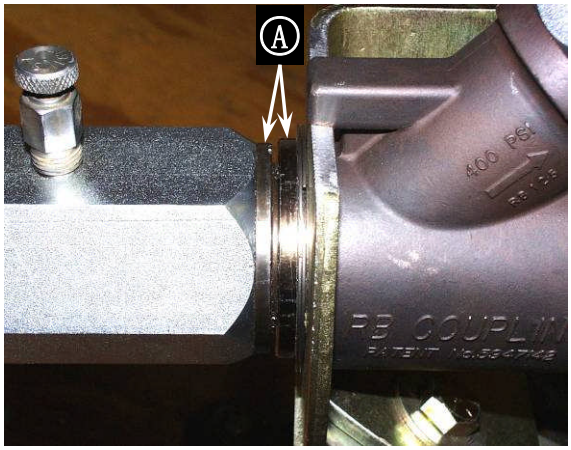
Reconnection After Separation (cont'd.)

2. **Reconnect the Coupling:**

   a) Align the Plug end of the Male Piston with the bore of the Coupling Body.

   b) Insert the Plug into the bore and force it into the Coupling Body until the two flange diameters come together at position Ⓐ, as shown below right. (Installing the Male Piston into the Coupling Body also installs the Latch Ring into its operating groove.)
   NOTE: A thrusting force of 30 to 40 pounds is required to install the Male Piston.





   c) Before applying NH_3, check to see that the RB Coupling and hose are free to move in all directions and will not be restricted by any tool bar member or the nurse tank hitch.
   See SAFE INSTALLATION photo on page 4.

   d) The RB Coupling is now ready to be placed in service.

Maintenance Instructions (Refer to Figure 8)

DANGER!

It is imperative that all pressure is removed from both sides of the coupling before separating the coupling manually.

USE EXTREME CAUTION!

A 100 cc to 150 cc liquid release of NH_3 will occur from the internal cavity of the RB Coupling when separated.

Serious bodily harm could result if the coupling is separated while under pressure.

To replace the O-Ring Seal ①:

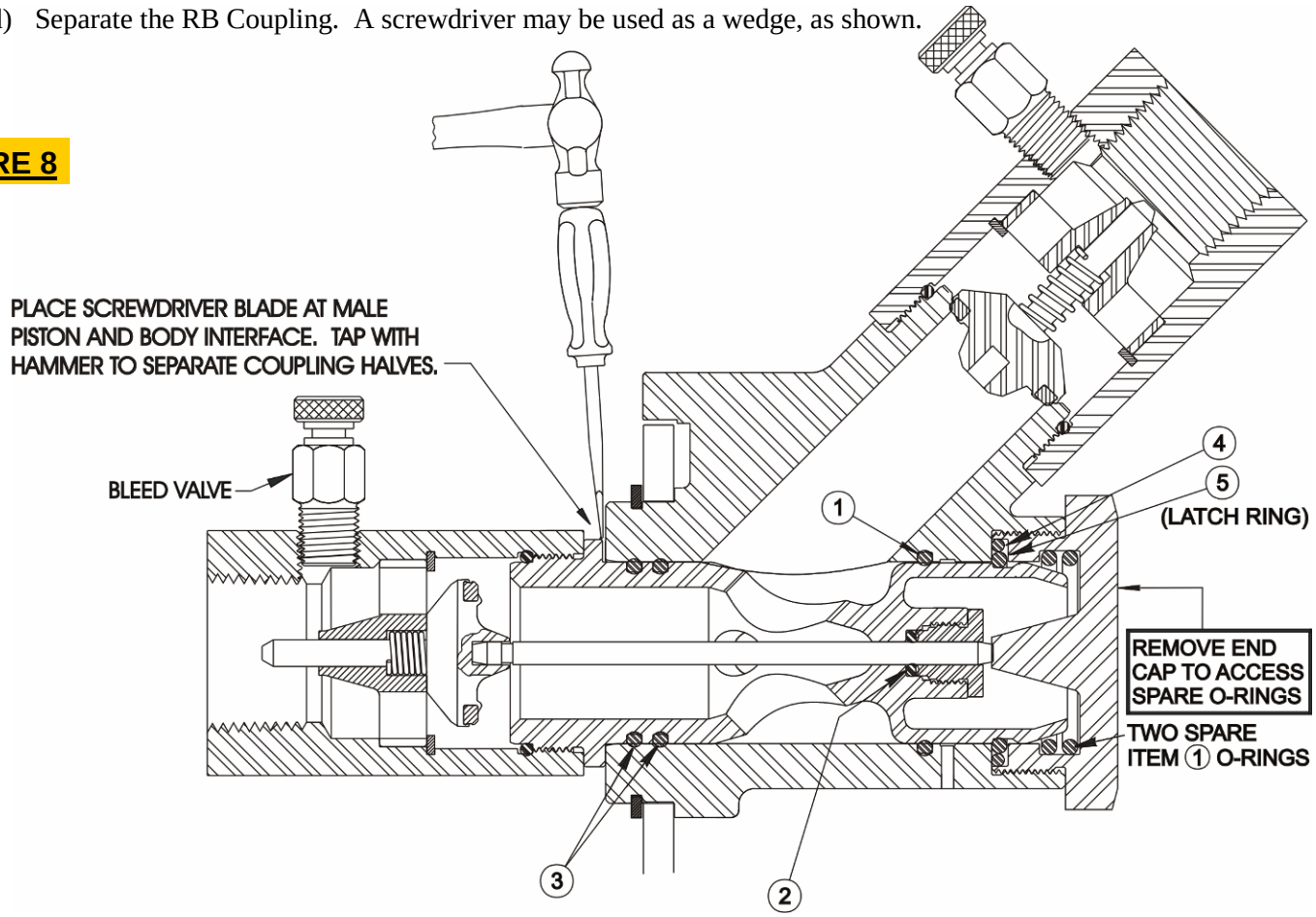
a) Close the nurse tank withdrawal valve.

b) Bleed all pressure from the hose.

c) Bleed all pressure from the NH_3 regulator and the tool bar piping.

d) Separate the RB Coupling. A screwdriver may be used as a wedge, as shown.

FIGURE 8

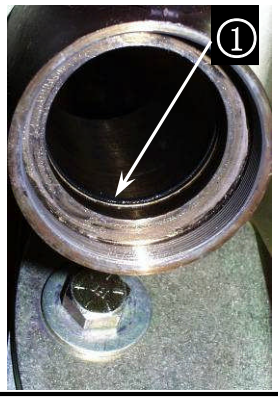


Maintenance Instructions (cont'd.)

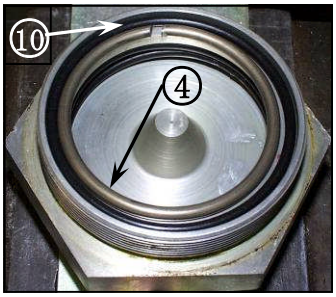
e) Remove the End Cap and the existing O-Ring Seal ①.

f) Wipe all internal grooves and surfaces clean.

g) Remove one of the replacement O-Rings from the bottom of the End Cap. Lubricate and install the replacement O-Ring Seal.

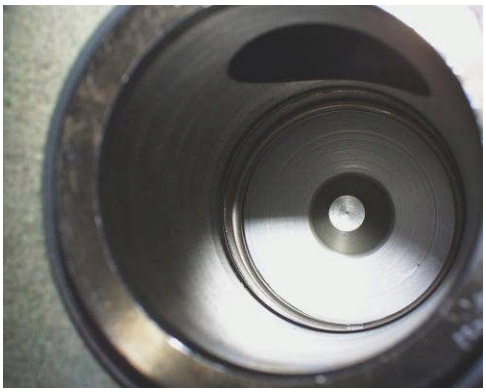


h) Ensure that the Latch Ring ④ and the Centering Ring ⑩ are installed properly in the recess at the inside edge of the End Cap, as shown.



i) To ensure that the Latch Ring and Centering Ring remain in place, rotate the Coupling Body as shown when replacing the End Cap. Wrench tighten the End Cap against the Coupling Body.

j) Look inside the Coupling Body to make sure the Latch Ring and Centering Ring have remained in position.



k) Reconnect the RB Coupling. See step 2, a) through d), on page 8.

Service Kits (Refer to Figure 9)

To replace the Center Rod O-Ring ③:

NOTE: Replacement parts for this procedure must be ordered separately. See the Kit Number chart below.

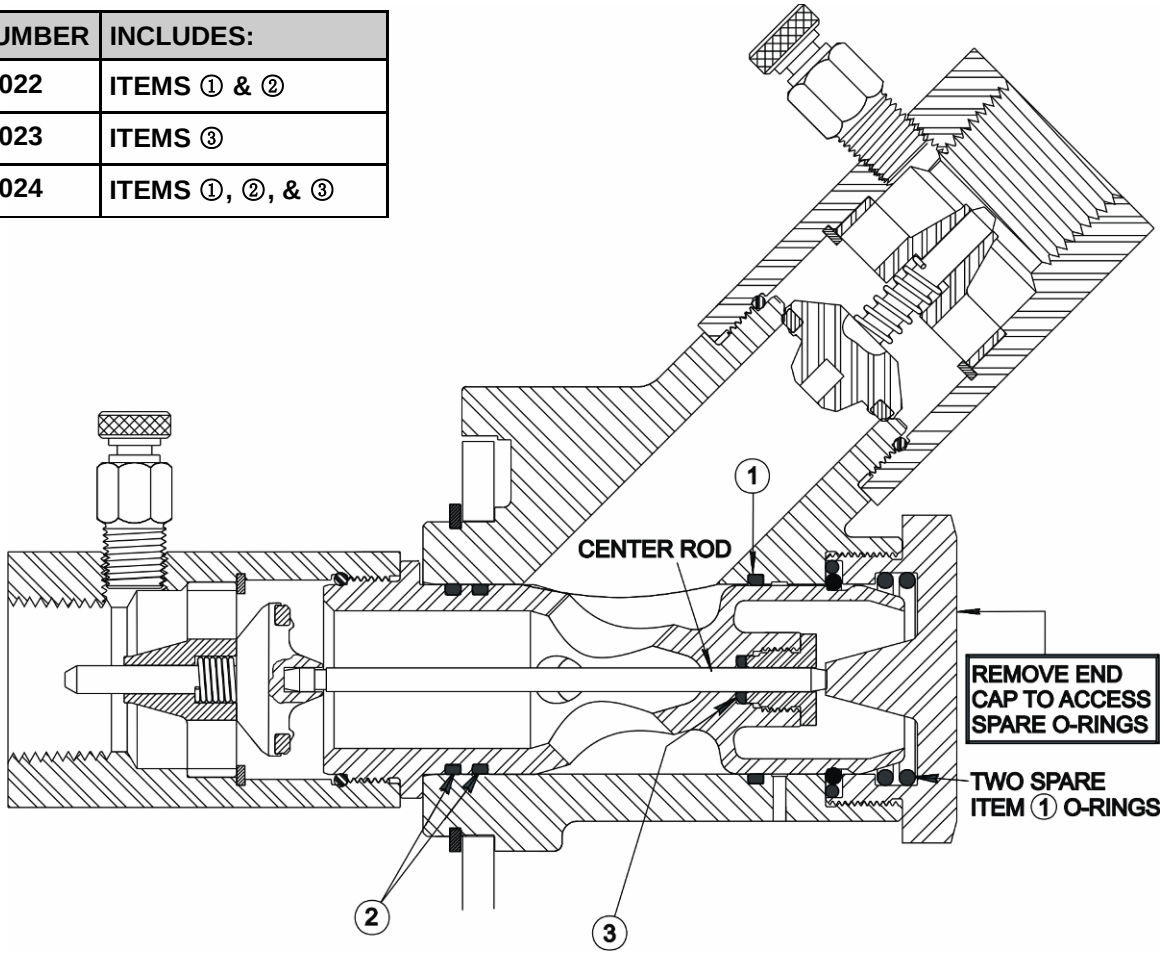
1. Remove the Center Rod Guide ④ using a 5/8" hex socket wrench.
2. Extract the existing O-Ring ③ over the Center Rod. Note: The Center Rod is crimped permanently to the Inlet Check Valve and cannot be removed.
3. Install the new Center Rod O-Ring.
4. Re-install the Center Rod Guide and tighten against the Male Piston.
5. Push the Center Rod several times to ensure that the spring will return the rod to its original position.
6. See Maintenance Instructions h) through k), on page 10 for final assembly instructions.

FIGURE 9

		RB1-1004	RB1.25-1004
ITEM	QTY.	PART NO.	PART NO.
1	1	P5-169-R0	P5-163-R0
2	2	P5-134-R0	P5-166-R0
3	1	P5-161-R0	P5-161-R0

See O-Ring Guide on page 12.

KIT NUMBER	INCLUDES:
RB1-0022	ITEMS ① & ②
RB1-0023	ITEMS ③
RB1-0024	ITEMS ①, ②, & ③



O-Ring Guide (Refer to Figure 9)

The illustration below may be used to confirm O-Ring sizes to part numbers.