Maintenance and Operating Instructions

For

Dixon Bayco

DBC 3" Series Dry Disconnects

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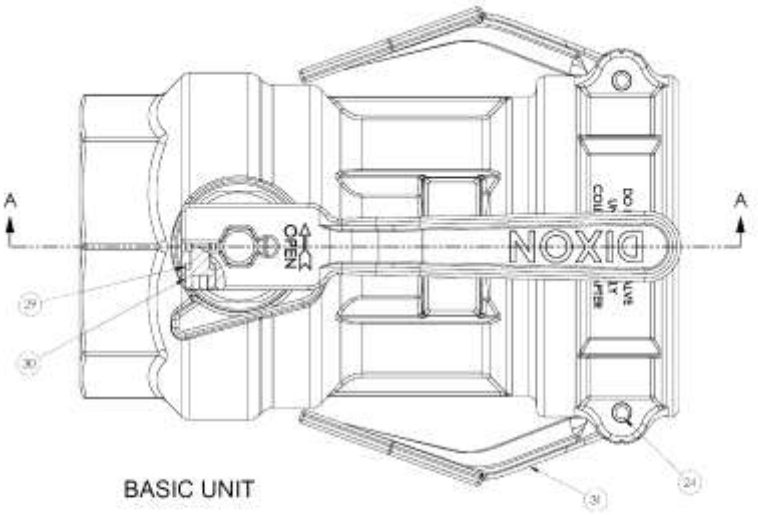
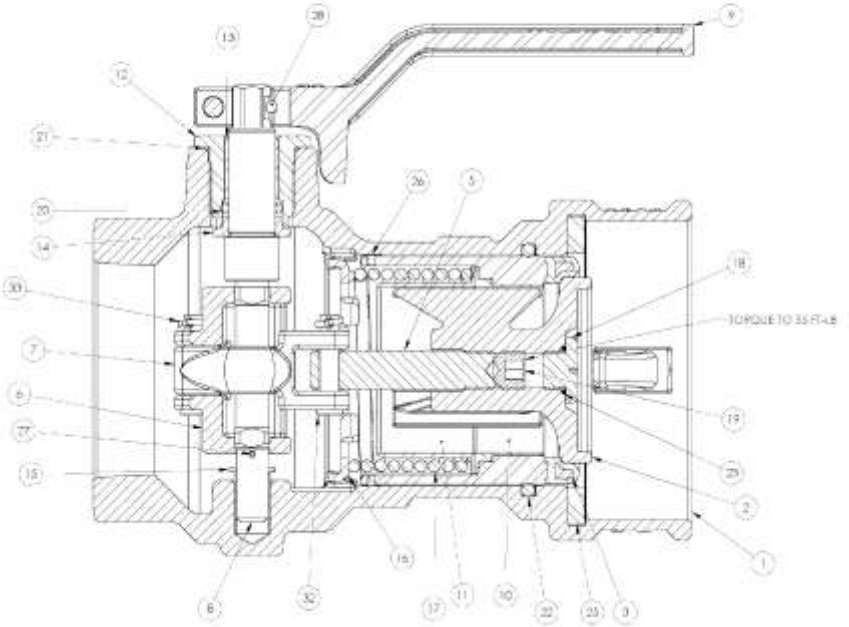


BASIC UNIT



Operating Instructions

These products are designed to operate as Dry Disconnect cam and groove couplings. They are to be used in place of standard cam and groove couplings when it is desired to prevent product from spilling from the fittings upon disconnect. This product is not intended to be the primary flow control or flow shut off device. Just as with standard cam and groove fittings, it is intended that a flow control and flow shutoff valve will be installed in the system.

1. To use these fittings, attach the coupler to the mating adapter by opening the two cam arms, sliding the coupler over the mating adapter and closing the two cam arms. This operation is similar to using standard cam and groove fittings. Make certain that both cam arms are fully closed.

2. To open the fittings, rotate the lever on the coupler approximately 190° counterclockwise until it moves into an over center position and remains in place. At this time, the flow control valve can be opened to transfer product.

3. After the product has been transferred, close the flow control valve, then rotate the coupler lever clockwise until it returns to its over center closed position and remains in place.

4. Open the cam arms and rotate them to the full open position. If the coupler lever will not remain in the closed position on its own, do not disengage the cam arms until the piping system and hoses have been drained.

Care must be taken in the design of the piping system to avoid trapping liquid between a shut off valve and a Dry Disconnect Coupler or Adapter. If liquid is trapped in this manner and the temperature increases, the pressure in the closed volume will rise dramatically and the Dry Disconnect fitting will be damaged.

Disassembly

1. Remove MAIN GASKET from BODY. If MAIN GASKET is a PTFE Encapsulated style, it is acceptable to leave the MAIN GASKET in place.

2. Insert a BLANK ADAPTER (an adapter end from a DBA style Dry Disconnect Adapter) into the coupler and close the CAM ARMS.

3. Remove the SCREW from the center of the POPPET. Discard the O-RING found under the head of the SCREW.

4. Loosen the SET SCREW found in the center of the POPPET using a 5/16” hex key. Do not remove the SET SCREW.

5. Rotate LEVER to the open position and unthread the POPPET from the POPPET STEM.

6. The next step is to remove the SEAL CYLINDER. Follow these instructions carefully to avoid injury and damage to the product. Keep your face and head off to the side of the open end of the coupler body. DO NOT look directly down into the POPPET area of the coupler. If the SEAL CYLINDER is released un-expectedly, injury will result.

a. While maintaining 50 to 55 pounds of force against the SEAL CYLINDER, open the two CAM ARMS and rotate and hold in the full open position using your fingers and thumb of the hand not pressing down on the BLANK ADAPTER.

b. With the two CAM ARMS held open, slowly decrease the holding force on the BLANK ADAPTER allowing it to move out of the BODY.

c.  **The guide BUTTONS on the SEAL CYLINDER may temporarily catch on the O-RING that seals the SEAL CYLINDER. DO NOT remove all holding force on the BLANK ADAPTER until the guide BUTTONS are free and clear of the SEAL CYLINDER O-RING.**

d. If the guide BUTTONS prevent the SEAL CYLINDER from releasing from the BODY, gently move the SEAL CYLINDER in an orbital fashion while pressing the SEAL CYLINDER down into the BODY and then allowing it to come back into contact with the O-RING.

e. If you are unable for any reason to remove the SEAL CYLINDER, depress the SEAL CYLINDER back into the BODY and re-secure the BLANK ADAPTER using the CAM ARMS. Never allow a partially disassembled unit to remain unattended. The SEAL CYLINDER could be ejected from the body unexpectedly and cause injury.

7. Remove the SEAL CYLINDER and SPRING from the BODY. If you are repairing the SEAL CYLINDER NOSE SEAL, discard the SEAL CYLINDER if it has a molded on NOSE SEAL. If the NOSE SEAL is a separate PTFE piece, then just the PTFE NOSE SEAL needs to be discarded.

8. Remove and discard the BUSHING inside of the SEAL CYLINDER if it is worn and is being replaced. Remove and discard the guide BUTTONS on the outside of the SEAL CYLINDER if they need to be replaced.

9. Remove the O-RING in the BODY that seals the SEAL CYLINDER if it is being replaced. A small brass hook may be used to extract this seal. Take care not to scratch the sealing surfaces inside of the O-RING groove or the SEAL CYLINDER bore.

10. Remove the spring seat WASHER from the body. Keep this part for reuse.

11. Remove the COTTER PIN from the main SHAFT and discard. This COTTER PIN is located between the YOKE and BODY.

12. Remove the LEVER from the main SHAFT. It may be necessary to gently pry the LEVER from the CAM SHAFT using the blade of a screwdriver. It may also be helpful to insert the blade of a screwdriver into the slot of the LEVER to spread the LEVER open.

13. Unthread the STUFFING BOX from the BODY. Take care not to scratch the sealing surfaces inside of the STUFFING BOX.

14. You may remove and discard the O-RING on the STUFFING BOX as well as the BEARING if these are items that are being replaced due to wear. The BEARING is pressed in place so you will need to use a pin with shoulder to remove the BEARING.

15. Remove the main SHAFT from the BODY by sliding it out from the YOKE.

16. Remove the Yoke and POPPET STEM from the body.

Reassembly

Prior to reassembly, inspect all components for damage especially scratches to the sealing surfaces. Pay close attention to the BODY, POPPET, SEAL CYLINDER, STUFFING BOX, and main SHAFT. If you are re-using any seals, inspect them to make sure there are no cracks or locations showing wear. When in doubt, it is often better to replace a seal at this stage rather than tear the unit down again.

All lubricants used in the assembly of Dry Disconnects must be compatible with the seal material used and also with the commodity being transferred through these fittings.

1. Assemble two CAM ARMS to the BODY using two pins. Position the CAM ARMS between the ears in the BODY and hammer two pins through the holes in the BODY ears and CAM ARMS.

2. Press the flanged BEARING into the STUFFING BOX with the BEARING flange located away from the STUFFING BOX hex end. Use red Loctite #277 on the BEARING prior to pressing into place. Take care not to get the Loctite on the inside of the BEARING.

3. Install the O-RING over the STUFFING BOX threads and seat against the hex shoulder.

4. Lubricate the STUFFING BOX O-RING and insert into the STUFFING BOX.

5. Place the spring seat WASHER through the coupler end of the body. Two large tabs on WASHER fit into slots in the BODY and point toward the threaded end.

6. Insert the SEAL CYLINDER O-RING into the groove in the BODY. Apply a liberal coating of grease to the O-RING and to the bore of the BODY where the SEAL CYLINDER will be placed.

- If the unit uses a PTFE O-RING, take care not to crease the O-RING when inserting it into the BODY groove. The O-RING should be lubricated and inserted into the BODY bore such that the O-RING goes past the groove. Then the O-Ring is pulled back up into the groove and worked around until it is in the groove.

7. Insert the SPRING into the BODY centering it over the 4 tabs on the spring seat WASHER.

8. Press new guide BUTTONS into the outside diameter of the SEAL CYLINDER and apply a liberal coating of grease to the SEAL CYLINDER outside diameter.

- If unit uses a PTFE NOSE SEAL, insert that NOSE SEAL into the end of the SEAL CYLINDER.

9. Insert the BUSHING inside of the SEAL CYLINDER.

10. Place the metal SPRING GUIDE into the SPRING such that the flange rests on top of the SPRING.

11. Place the assembled SEAL CYLINDER over the SPRING.

12. Center the BLANK ADAPTER on the SEAL CYLINDER and while holding the CAM ARMS open, press the SEAL CYLINDER into the BODY using an orbital motion to ease the SEAL CYLINDER BUTTONS past the O-RING in the BODY.

13. While holding the SEAL CYLINDER securely against the SPRING force, close the CAM ARMS. You can now release the force on the BLANK ADAPTER.

14. Insert the POPPET through the opening in the BLANK ADAPTER and into the SEAL CYLINDER.

15. Make sure the BUSHING is still in the hole in the BODY opposite of the STUFFING BOX.

16. Insert the YOKE and POPPET STEM assembly through the threaded end of the BODY and while holding the POPPET thread the POPPET STEM into the POPPET a few turns.

17. Insert the main SHAFT through the square holes in the YOKE and into the BUSHING in the BODY. You may need to rotate and move the POPPET up and down in the BODY and rotate the YOKE in order to get the end of the main SHAFT installed.

18. If the BODY is stainless steel, apply “Never Seize” to the STUFFING BOX threads. Install the assembled STUFFING BOX over the end of the main SHAFT and tighten into the BODY. Take care not to damage the O-RING in the STUFFING BOX as it slides onto the main SHAFT.

19. Install the LEVER onto the hex end of the main SHAFT. The small gap on the main SHAFT hex, points toward the portion of the LEVER that your hand will grip.

20. Insert the GROOVE PIN into the hole in the LEVER until it has gone past the gap in the LEVER and into the hole on the opposite side of the LEVER. Do not hammer the pin into place at this time.

21. Slide the LOCK WASHER over the LEVER SCREW and apply “Never Seize” to the LEVER SCREW.

22. Install the SCREW into the LEVER and tighten firmly to squeeze the LEVER against the hex of the CAM SHAFT.

23. Hammer the GROOVE PIN into the LEVER until flush.

24. Turn the coupler so that you can look into the open end nearest the LEVER.

25. Insert the COTTER PIN into the hole in the main SHAFT and using the LEVER to rotate the CAM SHAFT as needed, completely flair the COTTER PIN.

26. Adjust the POPPET by rotating the LEVER to the open position and rotating the POPPET left or right to increase or decrease the compression on the SEAL CYLINDER. The POPPET is properly adjusted when the seal on the SEAL CYLINDER is just barely separated from the face of the BLANK ADAPTER (about 1/32”) when the coupler LEVER is rotated to the closed position. There will be a noticeable ‘over center’ feel to the lever as it enters its closed position. The LEVER should tend to stay closed when rotated to its closed position. If it does not, open the LEVER and readjust the POPPET by threading it down further into the BODY then repeat this step.

27. With the POPPET correctly adjusted, tighten the SET SCREW in the POPPET securely against the YOKE. This requires 55 FT-LB of torque. This is necessary to prevent the POPPET from rotating out of adjustment.

28. Install the O-RING under the head of the POPPET SCREW. Apply “Never Seize” to the SCREW and tighten into the POPPET.

29. With the coupler in the closed position, unlock and open the CAM ARMS and remove the BLANK ADAPTER.

30. Install the main GASKET.

31. While holding the coupler BODY firmly, push the LEVER towards the open position and allow the coupler to open itself using the spring force against the SEAL CYLINDER. The coupler should 'snap' to the open without delay and the SEAL CYLINDER movement should remain in contact with the POPPET movement. If the SEAL CYLINDER separates from the POPPET or if the movement is 'sluggish', do not return this unit to service.

Test Procedure

The procedure for testing these products involves applying pressure to the coupler, submerging the coupler under water and checking for the appearance of bubbles. Generally the appearance of bubbles indicates a leak and is cause for rejection. There is often trapped air in various parts of the unit so the tester needs to make sure that the bubbles being seen are a leak (a steady repeating bubbling pattern) and not merely trapped air being released.

Safety glasses must always be worn when using compressed air for any testing.

Never rotate the LEVER to the open position while the coupler is under pressure and not coupled to a Dry Disconnect Adapter. This action can cause the LEVER to rapidly rotate and cause injury.

1. Install a test plug with airline adapter into the threaded end of the coupler.

2. With LEVER in closed position, pressurize the coupler to between 3 P.S.I.G. and 5 P.S.I.G. Submerge under water and check for leaks. (Low Pressure Closed)

3. Remove pressure and rotate LEVER to the open position.

4. Pressurize the coupler to between 3 P.S.I.G. and 5 P.S.I.G. Submerge under water and check for leaks. (Low Pressure Open).

5. Increase pressure to 30 P.S.I.G. while still under water and check for leaks. (High Pressure Open).

6. Remove pressure, remove unit from water and close LEVER.

7. Pressurize the unit to 30 P.S.I.G. Submerge under water and check for leaks. (High Pressure Closed)

8. Remove all pressure from the coupler and remove from the water.

9. Install a Dry Disconnect Adapter equipped with a plug in its threaded end. Make sure both CAM ARMS are closed and locked.

10. Rotate the LEVER to its open position and apply between 3 P.S.I.G. and 5 P.S.I.G. to the coupler.

11. Submerge under water and check for leaks at the MAIN GASKET. (Coupler to Adapter interface) DO NOT CLOSE LEVER!

12. Increase pressure to 30 P.S.I.G. while still under water and check for leaks at the MAIN GASKET. (Coupler to Adapter interface) DO NOT CLOSE LEVER!

13. Remove all pressure from the coupler. Remove from the water. Disconnect the air line from the test plug in the coupler.

14. Rotate the Lever to the closed position.

15. Unlock and open the CAM ARMS and remove the Dry Disconnect Adapter.

Repair Kits

Repair Kits for 3" Cam and Groove Dry Disconnect Couplers
(DBC Series)

All Seals						
Base Kit #	Size	Repair Kit	Qty	Item #	Description	Additional Description
DBCX1 Buna-N	300	RK1	1	20	O-Ring	Stuffing Box to Cam Shaft
			1	21	O-Ring	Stuffing Box to Body
			1	22	O-Ring	Seal Cyl to Body
			1	25	Gasket	Main Cam & Groove Gasket
			1	23	O-Ring	Poppet Screw Seal
DBCX2 Viton	300	RK1	1	20	O-Ring	Stuffing Box to Cam Shaft
			1	21	O-Ring	Stuffing Box to Body
			1	22	O-Ring	Seal Cyl to Body
			1	25	Gasket	Main Cam & Groove Gasket
			1	23	O-Ring	Poppet Screw Seal
Seal Cylinder						
DBC61 Alum & Buna	150	RK2	1	3	Seal Cyl	
			1	10	Bushing	
			8	26	Buttons	

DBC62 Alum & Viton	300	RK2	1	4	Seal Cyl	
			1	5	Bushing	
			8	13	Buttons	
Main Gasket						
DBCX1 Buna-N	300	RK3	1	25	Gasket	Main Cam & Groove Gasket
DBCX2 Viton	300	RK3	1	25	Gasket	Main Cam & Groove Gasket
Link, Yoke and Stem Sub Assy						
DBCXX	300	RK4	2	32	Clevis Pin	
			2	33	Cotter Pin	
			1	5	Stem	
			1	7	Link	
			1	6	Yoke	
Stuffing Box						
DBCXX	300	RK5	1	12	Stuffing Box	
			1	13	Bearing	Pressed in Stuffing Box
			1	21	O-Ring	Stuffing Box to Body
Lever (Handle)						
DBCXX	300	RK6	1	9	Lever	
			1	28	Groove Pin	
			1	29	Lockwasher	
			1	30	Screw	
Main Shaft						
DBCXX	300	RK7	1	8	Main Shaft	
			1	27	Cotter Pin	
			1	15	Bearing	Installed body @end of shaft
			1	14	Retainer	
Main Spring						
DBCXX	300	RK8	1	17	Spring	
Poppet						
DBCXX	300	RK9	1	2	Poppet	
			1	18	Screw	
			1	19	Set Screw	
			1	23	O-Ring	

Dixon Bayco Warranty

For complete warranty information, please refer to the latest Dixon catalog.