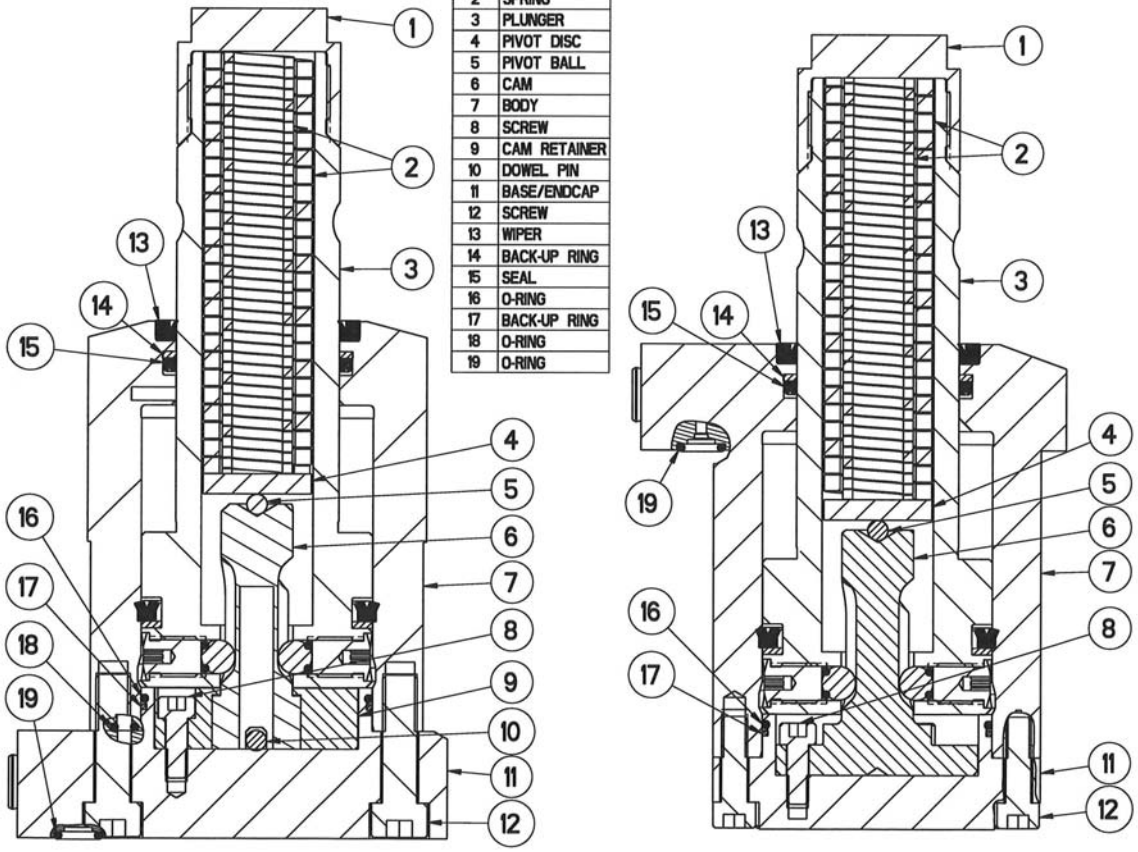
VEKTEK INC. 1334 E, SIXTH AVE. P.O. BOX 625 EMPORIA, KS. 66801 U.S.A.	**VEKTEK, INC.** **INSTRUCTION SHEET**	**IS-**	**1400**	
		REV.	**B**	**EFF./DATE**
		ECN. NO.	**2468**	
		BY/DATE:	**JDW**	**06/21/12**
		APPR./DATE:	**JAM**	**8-1-12**
		REV APPR/DATE:	**JAM**	**1-9-13**
TITLE:	**LOW PROFILE SWING CLAMP TUFFCAM CONVERSION KIT**			

DISASSEMBLY,
SINGLE ACTING,
LOW PROFILE SWING CLAMP
BOTTOM FLANGE AND TOP FLANGE

NOTE:
EARLIER MODEL ASSEMBLIES OF BOTH BOTTOM AND TOP FLANGE STYLE WILL HAVE A CAM RETAINER, DOWEL PIN AND CAM.
LATER MODEL ASSEMBLIES OF BOTH BOTTOM AND TOP FLANGE STYLE WILL HAVE ONLY A ONE PIECE CAM.
IN THE VIEWS SHOWN BELOW THE BOTTOM FLANGE STYLE WILL REPRESENT THE EARLIER ASSEMBLY VERSION AND
THE TOP FLANGE STYLE WILL REPRESENT THE LATER ASSEMBLY VERSION. SOME EARLY MODELS WERE PROVIDED WITH A
CLUTCH STYLE CAM AND CAN ALSO BE CONVERTED TO TUFFCAM STYLE WITH THE ADDITIONAL PURCHASE OF A NEW BASE OR ENDCAP.

1. CAREFULLY UNSCREW SPRING LOADED CAP (1) FROM PLUNGER (3).
2. REMOVE TWO RETURN SPRINGS (2).
3. REMOVE PIVOT DISC (4).
4. REMOVE PIVOT BALL (5).
5. REMOVE AND SAVE SCREWS (12) FROM BASE/END CAP (11).
6. SEPERATE BODY (7) FROM BASE/ENDCAP (11).
7. SEPERATE PLUNGER (3) FROM CAM (6).
8. REMOVE THREE CAM RETAINING SCREWS (8).
9. REMOVE CAM RETAINER (9).
10. REMOVE CAM (6).
11. REMOVE DOWEL PIN (10).
12. REMOVE WIPER (13), BACK-UP RING (14) AND SEAL (15) FROM BODY (7).
13. REMOVE O-RING (16) AND BACK-UP RING (17) FROM BASE/ENDCAP (11).
14. BOTTOM FLANGE STYLE ONLY, REMOVE TWO O-RINGS (18) FROM BODY (7).
15. IF USED , REMOVE TWO MANIFOLD MOUNTING O-RINGS (19) FROM BOTTOM FLANGE BASE (11) OR TOP FLANGE BODY (7).

ITEM	DESCRIPTION
1	CAP
2	SPRING
3	PLUNGER
4	PIVOT DISC
5	PIVOT BALL
6	CAM
7	BODY
8	SCREW
9	CAM RETAINER
10	DOWEL PIN
11	BASE/ENDCAP
12	SCREW
13	WIPER
14	BACK-UP RING
15	SEAL
16	O-RING
17	BACK-UP RING
18	O-RING
19	O-RING



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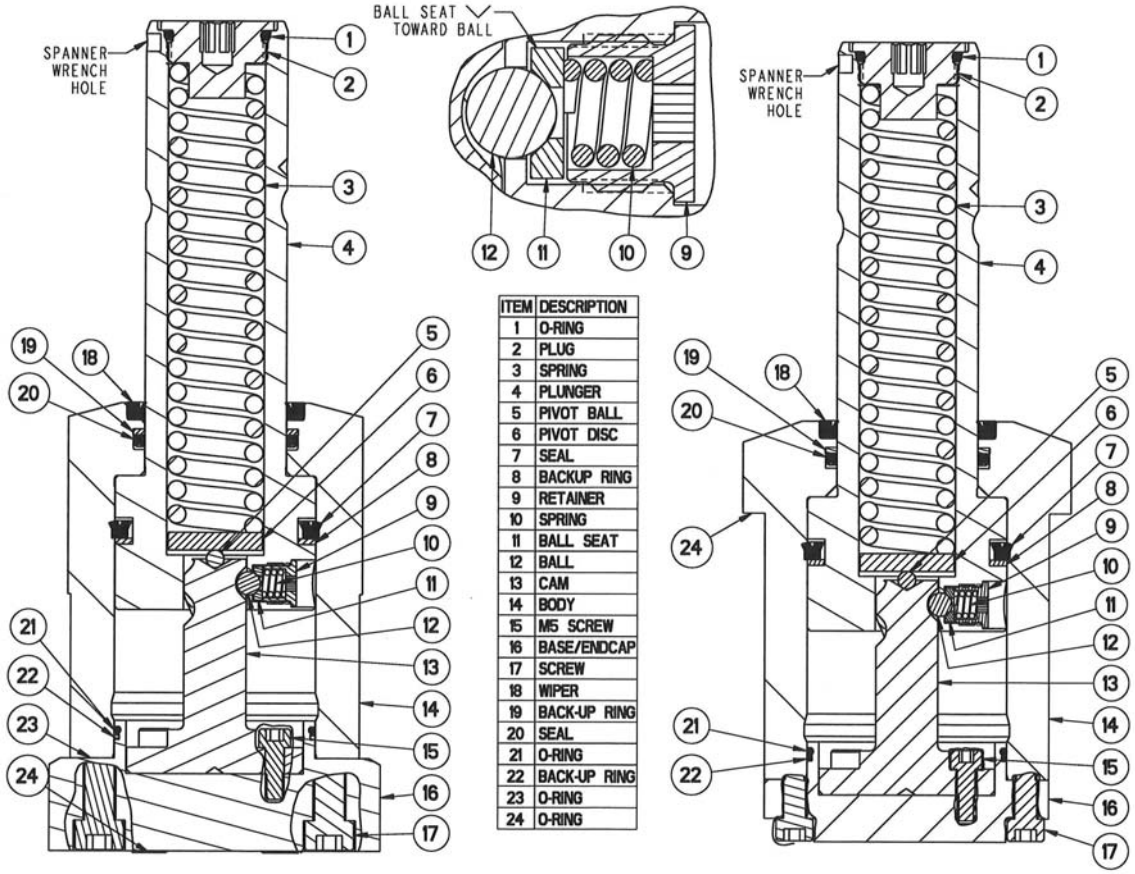
ASSEMBLY, TUFFCAM COINVERSION KIT
SINGLE ACTING,
LOW PROFILE SWING CLAMP
BOTTOM FLANGE AND TOP FLANGE

1. Install back-up ring (22) and o-ring (21) on base/endcap (16).
2. Install rod seal (20) into body (14) with seal lips toward bottom of assembly.
3. Install back-up ring (19) into body (14).
4. Install wiper (18) into body (14).
5. Insert cam (13) into base/endcap (16) and align bolt holes.
6. Apply medium strength thread locker on three M5 cam retaining screws (15). Then insert into bolt holes in cam (13) and torque to 100 in-lb / 11,3 Nm.
7. Install backup ring (8) into plunger (4) seal groove. 50001b & 22kn assemblies do not use this back-up ring.
8. Install seal (7) into plunger (4) seal groove with seal lips toward threaded end of plunger.
9. Insert plunger (4) onto cam (13) and align straight section of cam tracks to cam ball holes in plunger (4).
10. Insert ball (12) into cam ball hole of plunger (4).
11. Insert ball seat (11) into cam ball hole of plunger (4) with concave surface of ball seat facing toward ball.
12. Insert spring (10) into cam ball hole of plunger (4) seating against ball seat (11).
13. Thread retainer (9) into cam ball hole of plunger (4) and torque to 100 in-lb / 11,3 Nm using a 4mm hex tool.
14. Repeat steps 10 thru 13 two more times.
15. Install two o-rings (23) into counterbores of bottom flange body (14) to form the oil feed hole seal to base (16). Not used in top flange assemblies.
16. Insert body (14) onto base/endcap (16) taking care to properly align non-symetric bolt hole pattern.
17. Insert screws (17) into base/endcap (16) and thread into body (14). These screws vary depending on the assembly style and size. Refer to the original assembly parts list for installation instructions and torque.
18. Install pivot ball (5) into concave end of cam (13).
19. Install pivot disc (6) on top of pivot ball (5).
20. Insert spring (3) into plunger (4).
21. Install o-ring (1) onto plug (2).
22. Insert spring guide protrusion of plug (2) into inside diameter of spring (3).
23. Compress spring (3) and thread plug (2) into plunger (4).
24. Restrict the plunger (4) with a spanner wrench in the hole provided on plunger (4) to prevent rotational torque against the cam track and then torque plug (2) to 13 ft-lb / 17,6 Nm using a 8mm hex tool.
25. If used, install two manifold mounting o-rings (24) into bottom flange base (16) or top flange body (14)



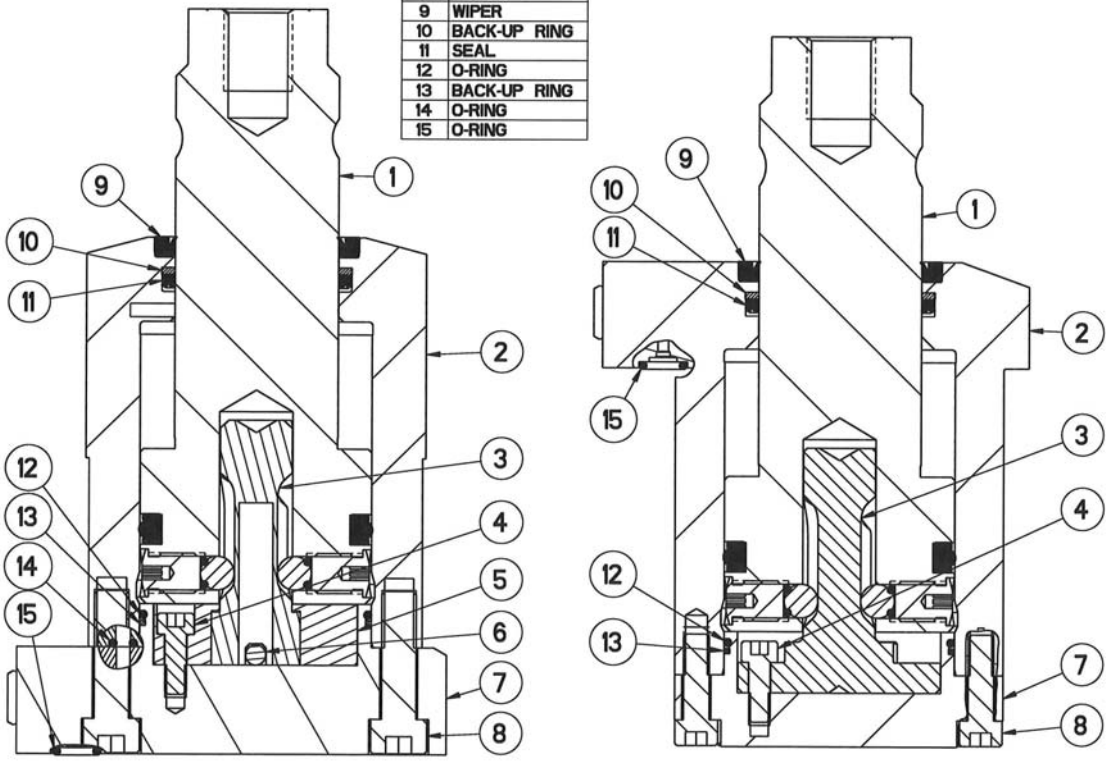
ITEM	DESCRIPTION
1	O-RING
2	PLUG
3	SPRING
4	PLUNGER
5	PIVOT BALL
6	PIVOT DISC
7	SEAL
8	BACKUP RING
9	RETAINER
10	SPRING
11	BALL SEAT
12	BALL
13	CAM
14	BODY
15	M5 SCREW
16	BASE/ENDCAP
17	SCREW
18	WIPER
19	BACK-UP RING
20	SEAL
21	O-RING
22	BACK-UP RING
23	O-RING
24	O-RING

DISASSEMBLY,
DOUBLE ACTING,
LOW PROFILE SWING CLAMP
BOTTOM FLANGE AND TOP FLANGE

NOTE:
EARLIER MODEL ASSEMBLIES OF BOTH BOTTOM AND TOP FLANGE STYLE WILL HAVE A CAM RETAINER, DOWEL PIN AND CAM.
LATER MODEL ASSEMBLIES OF BOTH BOTTOM AND TOP FLANGE STYLE WILL HAVE ONLY A ONE PIECE CAM.
IN THE VIEWS SHOWN BELOW THE BOTTOM FLANGE STYLE WILL REPRESENT THE EARLIER ASSEMBLY VERSION AND
THE TOP FLANGE STYLE WILL REPRESENT THE LATER ASSEMBLY VERSION. SOME EARLY MODELS WERE PROVIDED WITH A
CLUTCH STYLE CAM AND CAN ALSO BE CONVERTED TO TUFFCAM STYLE WITH THE ADDITIONAL PURCHASE OF A NEW BASE OR ENDCAP.

1. REMOVE AND SAVE SCREWS (8) FROM BASE/END CAP (7).
2. SEPERATE BODY (2) FROM BASE/ENDCAP (7).
3. SEPERATE PLUNGER (1) FROM CAM (3).
4. REMOVE THREE CAM RETAINING SCREWS (4) FROM BASE/ENDCAP (7).
5. REMOVE CAM RETAINER (5) FROM BASE/ENDCAP (7).
6. REMOVE CAM (3) FROM BASE/ENDCAP (7).
7. REMOVE DOWEL PIN (6) FROM BASE/ENDCAP (7).
8. REMOVE WIPER (9), BACK-UP RING (10) AND SEAL (11) FROM BODY (2).
9. REMOVE TWO O-RINGS (14) FROM BOTTOM FLANGE BODY (2). NOT USED IN TOP FLANGE ASSEMBLIES.
10. REMOVE O-RING (12) AND BACK-UP RING (13) FROM BASE/ENDCAP (7).
11. IF USED, REMOVE TWO MANIFOLD MOUNTING O-RINGS (15) FROM BOTTOM FLANGE BASE (7) OR TOP FLANGE BODY (2).

ITEM	DESCRIPTION
1	PLUNGER
2	BODY
3	CAM
4	SCREW
5	CAM RETAINER
6	DOWEL PIN
7	BASE/ENDCAP
8	SCREW
9	WIPER
10	BACK-UP RING
11	SEAL
12	O-RING
13	BACK-UP RING
14	O-RING
15	O-RING



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ASSEMBLY, TUFFCAM COINVERSION KIT
DOUBLE ACTING,
LOW PROFILE SWING CLAMP
BOTTOM FLANGE AND TOP FLANGE

1. Install back-up ring (18) and o-ring (17) on base/endcap (10).
2. Insert cam (3) into base/endcap (10) and align bolt holes.
3. Apply medium strength thread locker on three M5 cam retaining screws (9) then insert into bolt holes in cam (3) and torque to 100 in-lb / 11,3 Nm.
4. Install seal (4) into plunger (1) seal groove.
5. Insert plunger (1) onto cam (3) and align straight section of cam tracks to cam ball holes in plunger (1).
6. Insert ball (8) into cam ball hole of plunger (1).
7. Insert ball seat (7) into cam ball hole of plunger (1) with concave surface of ball seat facing toward ball.
8. Insert spring (6) into cam ball hole of plunger (1) seating against ball seat (7).
9. Thread retainer (5) into cam ball hole of plunger (1) and torque to 100 in-lb / 11,3 Nm using a 4mm hex tool.
10. Repeat steps 6 thru 9 two more times.
11. Install rod seal (16) into body (2) with seal lips toward bottom of assembly.
12. Install back-up ring (15) into body (2).
13. Install wiper (14) into body (2).
14. Install two o-rings (12) into counterbores of bottom flange body (2) to form oil feed hole seal to base (10). Not used in top flange assemblies.
15. Insert body (2) onto base/endcap (10) taking care to properly align non-symetric bolt hole pattern.
16. Insert screws (11) into base/endcap (10) and thread into body (2). These screws vary depending on the assembly style and size. Refer to the original assembly parts list for installation instructions and torque.
17. If used, install two manifold mounting o-rings (13) into bottom flange base (10) or top flange body (2).

ITEM	DESCRIPTION
1	PLUNGER
2	BODY
3	CAM
4	SEAL
5	RETAINER
6	SPRING
7	BALL SEAT
8	BALL
9	SCREW
10	BASE/ENDCAP
11	SCREW
12	O-RING
13	O-RING
14	WIPER
15	BACK-UP RING
16	SEAL
17	O-RING
18	BACK-UP RING