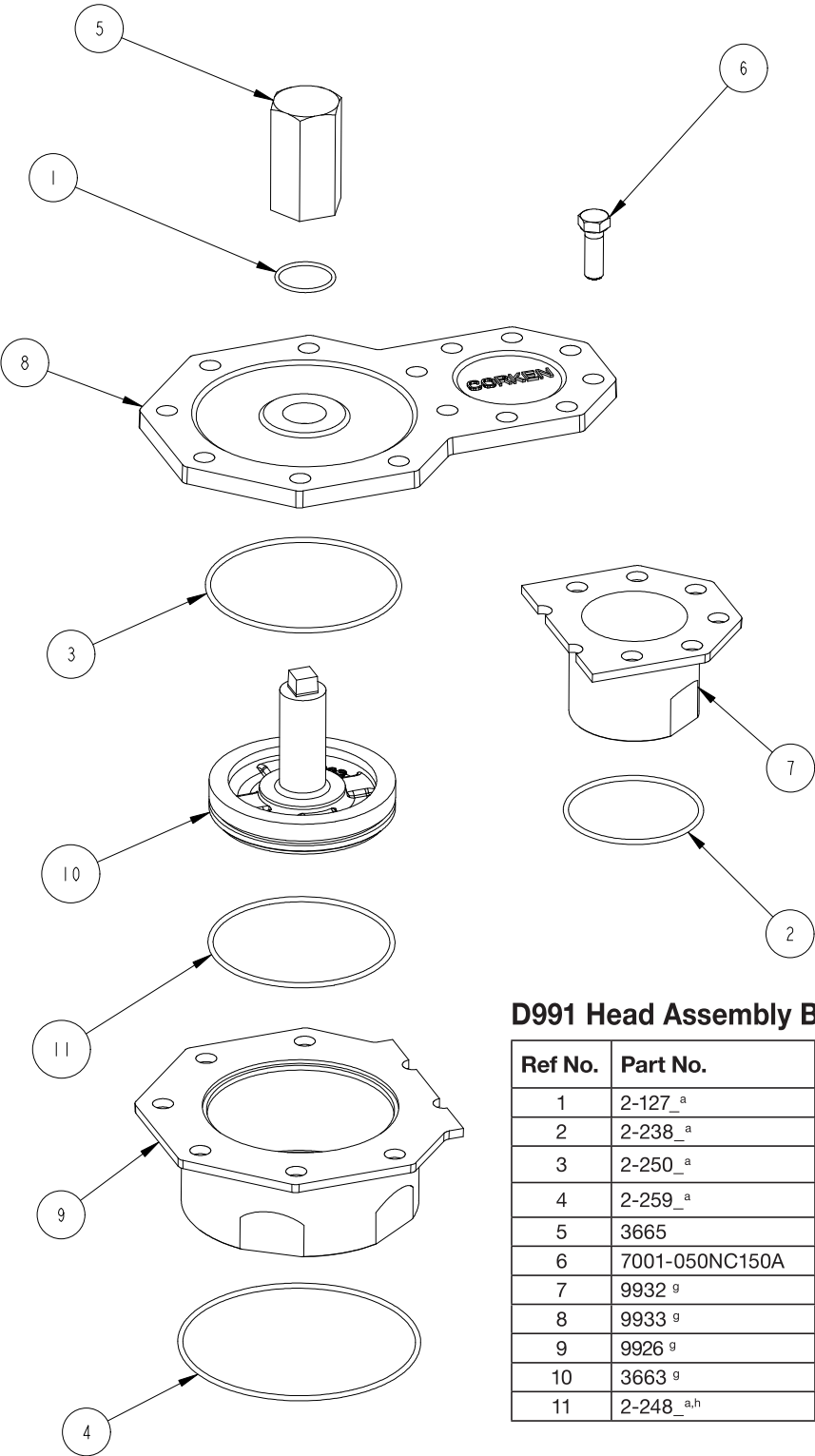


Appendix D—Head Assembly Details for Model D991



D991 Head Assembly Bill of Materials

Ref No.	Part No.	Description	Qty.
1	2-127_ ^a	O-ring	1
2	2-238_ ^a	O-ring	1
3	2-250_ ^a	O-ring	1
4	2-259_ ^a	O-ring	1
5	3665	Adjusting screw nut	1
6	7001-050NC150A	1/2-13 x 11 /2 Hex head bolt	14
7	9932 ^g	Cylinder head - 3.5"	1
8	9933 ^g	Adjusting cap	1
9	9926 ^g	Cylinder head - 6.375"	1
10	3663 ^g	Adjusting cup	1
11	2-248_ ^{a,h}	O-ring	1

Material Code	
A	Buna-N
B	Neoprene ^{®f}
D	Viton ^{®f}
E	PTFE

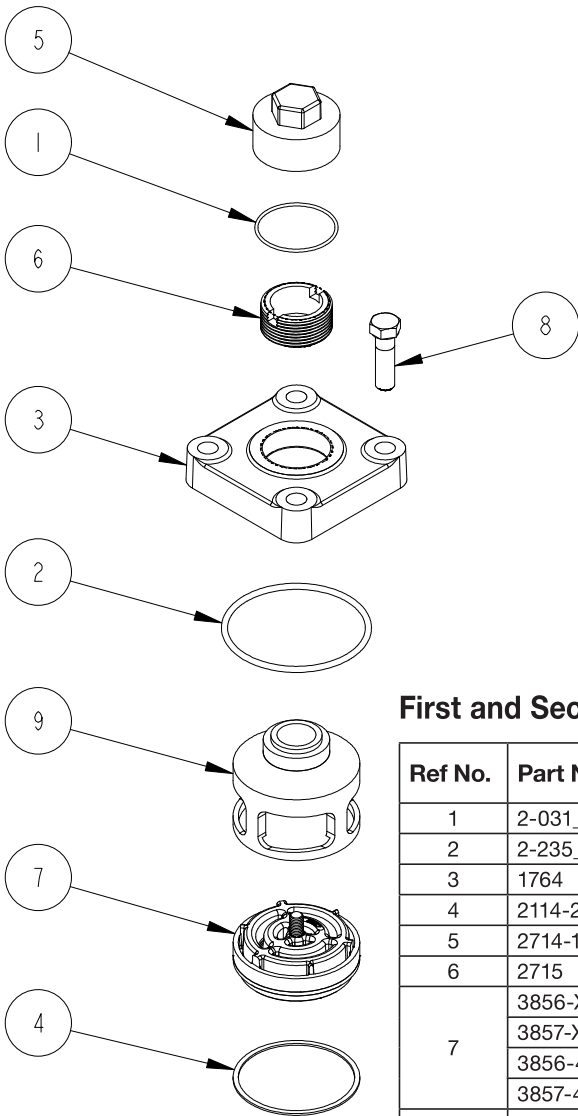
- ^a Denotes O-ring material code.
- ^b Included with valve assembly.
- ^c Included with unloader assembly.
- ^d Included with valve repair kit.
- ^e Install spacers back to back.
- ^f Registered trademark of the DuPont company.
- ^g Add "C" to end of the part number if the item requires MC1002 coating.
- ^h If material code calls for E (PTFE), use K (Kalrez).



CAUTION: Always relieve pressure in the unit before attempting any repairs.

Appendix D (Continued)—Valve Holddown Assembly Details for Model 991

First and Second Stage Holddown Assy.



First and Second Stage Holddown Assy. Bill of Materials

Ref No.	Part No.	Description	Qty. Per Compressor
1	2-031_a	O-ring	12
2	2-235_a	O-ring	12
3	1764	Cover plate	12
4	2114-2	Valve gasket	12
5	2714-1	Valve cap	12/6
6	2715	Hold down screw	12
7	3856-X2	Suction valve assembly (1st stage)	4
	3857-X2	Discharge valve assembly (1st stage)	4
	3856-4X2	Suction valve assembly (2nd stage)	2
	3857-4X2	Discharge valve assembly (2nd stage)	2
8	7001-043NC150A	7/16-14 x 1 1/2 Hex head bolt	48
9	9934_g	Valve cage	12

Material Code	
A	Buna-N
B	Neoprene ^{®f}
D	Viton ^{®f}
E	PTFE

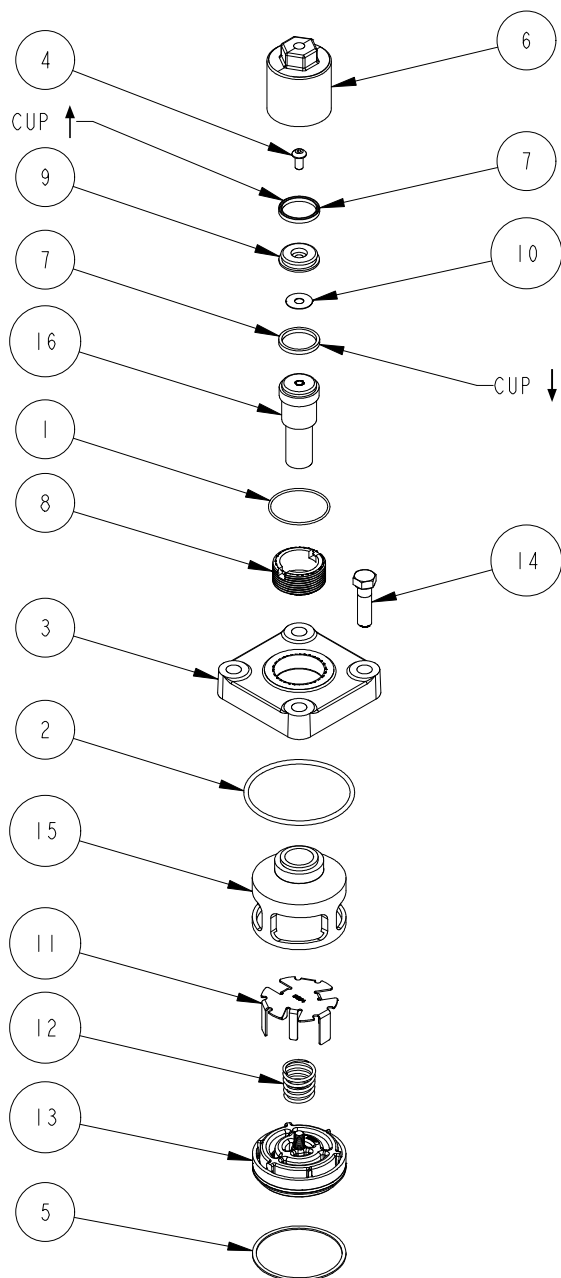
- a Denotes O-ring material code.
- b Included with valve assembly.
- c Included with unloader assembly.
- d Included with valve repair kit.
- e Install spacers back to back.
- f Registered trademark of the DuPont company.
- g Add "C" to end of the part number if the item requires MC1002 coating.
- h If material code calls for E (PTFE), use K (Kalrez).



CAUTION: Always relieve pressure in the unit before attempting any repairs.

Appendix D (Continued)—Holddown Assy. Unloader Details for Model 991

First and Second Stage 991 Holddown Assy. Unloaders Bill of Materials



Ref No.	Part No.	Description	Qty. Pe Compressor
1	2-031 ^a	O-ring	6
2	2-235 ^a	O-ring	6
3	1764	Cover plate	6
4	1910	Bolt	6
5	2114-2	Valve gasket	1
6	2598-1 ^g	Unloader cap	6
7	2619-X	Seal assembly - unloader piston	12
8	2715 ^g	Hold down screw	1
9	2857	Piston cap	6
10	2858	Gasket	6
11	3694	Unloader actuator (1st stage)	4
	3956	Unloader actuator (2nd stage)	2
12	3695	Spring	6
13	3856-X2	Suction valve assembly (1st stage)	4
	3856-4X2	Suction valve assembly (2nd stage)	2
14	7001-043NC150A	7/16-14 x 1 1/2 Hex head bolt	24
15	9934 ^g	Valve cage	1
16	9938	Unloader piston (1st stage)	4
	9939	Unloader piston (2nd stage)	2
17	????	Unloader assembly (1st Stage)	4
18	????	Unloader assembly (2nd Stage)	4

Material Code

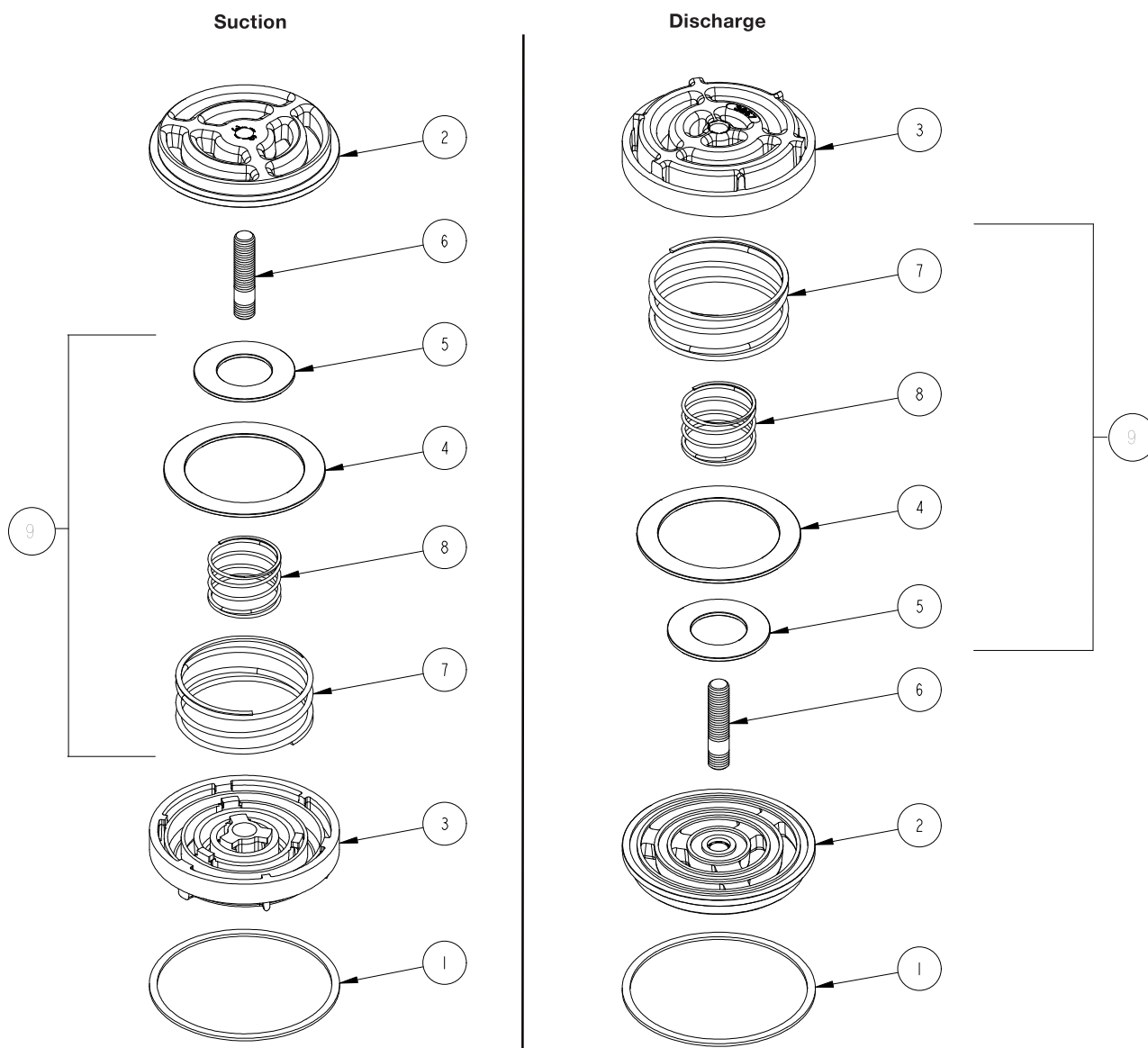
A	Buna-N
B	Neoprene ^{®f}
D	Viton ^{®f}
E	PTFE

- a* Denotes O-ring material code.
b Included with valve assembly.
c Included with unloader assembly.
d Included with valve repair kit.
e Install spacers back to back.
f Registered trademark of the DuPont company.
g Add "C" to end of the part number if the item requires MC1002 coating.
h If material code calls for E (PTFE), use K (Kalrez).



CAUTION: Always relieve pressure in the unit before attempting any repairs.

Appendix D (Continued)—Valve Assembly Details for Model 991



D991 Valve Assy. Bill of Materials

Ref No.	Part No.	Description	Qty. Per Valve Assy.
1	2114	Valve gasket	1
2	3856	Valve seat	1
	3856-4	Valve seat (2nd stage)	1
3	3857	Valve bumper	1
4	3871	Outer plate, s.s.	1
5	3872	Inner valve plate, s.s.	1
6	3920	Valve stud	1
7	3928	Outer spring	1
8	3929	Inner spring	1
9	3146-X1	Valve repair kit	1



CAUTION: Always relieve pressure in the unit before attempting any repairs.

Appendix D (Continued)—6.375" Piston Assembly Details for Model

6.375" Piston Assembly (9921-X) Bill of Materials

Ref. No.	Part No.	Description	Qty. Per Piston
1.	3603	Shim washer - Thick	As req.
	3603-1	Shim washer - Thin	
2.	3604	Locknut	1
3.	3730	Piston thrust washer	2
4.	7002-025TP100A	Socket head screw (torque to 8ft*lbs)	4
5.	9921 ^a	Piston - 6.375"	1
6.	9922	Expander ring - 6.375"	4
7.	9923	Piston ring - Alloy	4
8.	9924	Piston cap shim - Thick	As req.
	9924-1	Piston cap shim - Thin	
9.	9925 ^a	Piston cap - 6-3/8" - Thick	1

Piston Clearance (Cold)

Model	(X) Top Min. ^b	(X) Top Max. ^b	(Y) Bottom Min. ^c	(Y) Bottom Max. ^c
D991	0.084" (2.13 mm)	0.104" (2.64 mm)	0.010" (0.25 mm)	0.020" (0.50 mm)

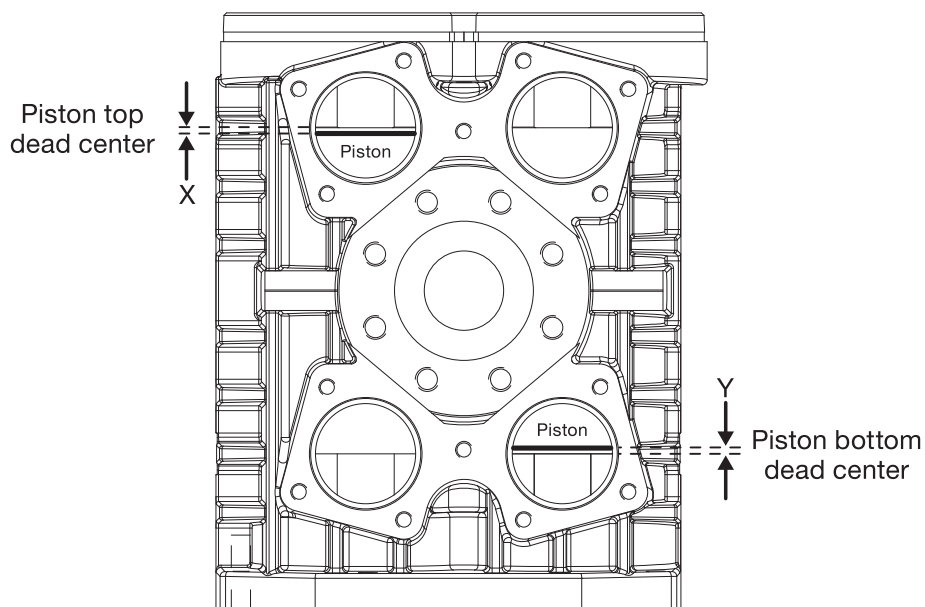
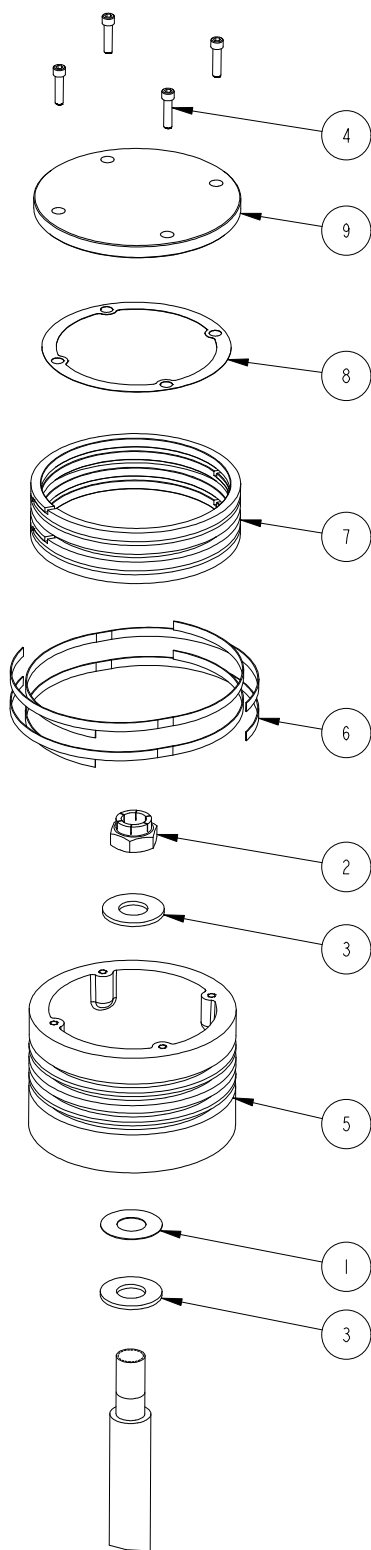
^a MC1002 coated piston and cap available. Add "C" to end of a standard part number (e.g. 3562C)

^b The distance from the bottom of the head to the top of the piston.

^c The distance from the bottom of the piston to the top of the packing barrel.

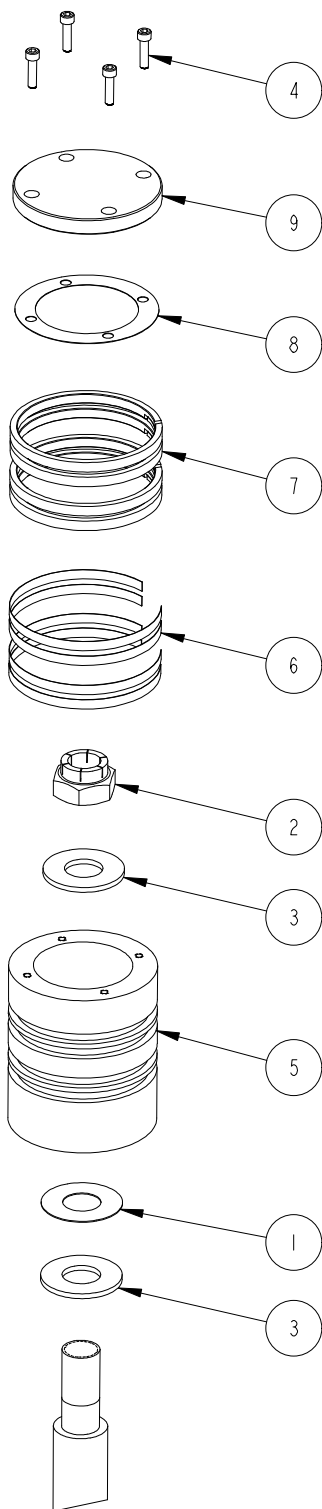


CAUTION: Always relieve pressure in the unit before attempting any repairs.



Appendix D (Continued)—3.50" Piston Assembly Details for Model 991

3.50" Piston Assembly (9927-X) Bill of Materials



Ref. No.	Part No.	Description	Qty. Per Piston
1.	9930	Shim washer - Thick	As req.
	9930-1	Shim washer - Thin	
2.	3604	Locknut	1
3.	3730	Piston thrust washer	2
4.	7002-010NC075A	Socket head screw (torque to 8ft*lbs)	4
5.	9927 ^a	Piston - 3.50"	1
6.	9928	Expander ring - 3.50"	4
7.	9929	Piston ring, Alloy	4
8.	9924	Piston cap shim - Thin	As req.
	9924-1	Piston cap shim - Thick	
9.	9931 ^a	Piston cap - 6-3/8"	1

Piston Clearance (Cold)

Model	(X) Top Min. ^b	(X) Top Max. ^b	(Y) Bottom Min. ^c	(Y) Bottom Max. ^c
D991	0.084" (2.13 mm)	0.104" (2.64 mm)	0.010" (0.25 mm)	0.020" (0.50 mm)

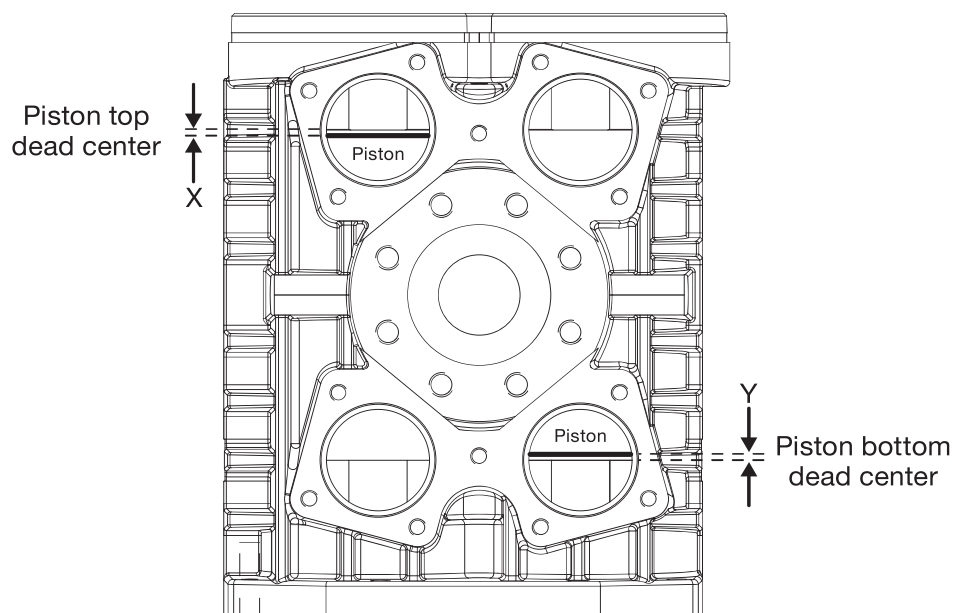
^a MC1002 coated piston and cap available. Add "C" to end of a standard part number (e.g. 3562C)

^b The distance from the bottom of the head to the top of the piston.

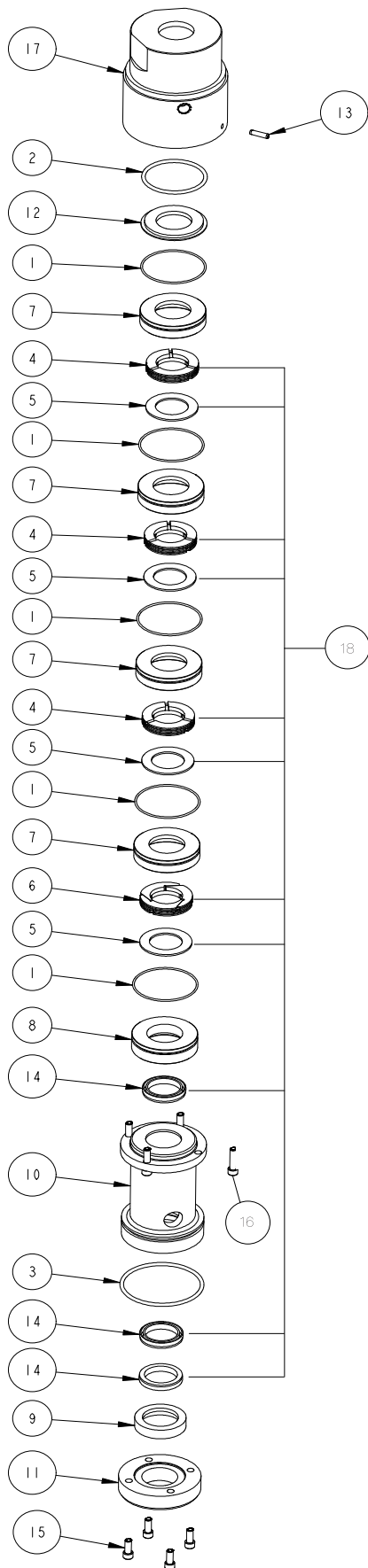
^c The distance from the bottom of the piston to the top of the packing barrel.



CAUTION: Always relieve pressure in the unit before attempting any repairs.



Appendix D—Packing Assembly Details for Model D991



Packing Assembly (9919-X1_ & 9918-X1_) Bill of Materials

Ref. No.	Part No.	Description	Qty. Per Compressor
1.	2-036_ ^{a,e}	O-ring	10
2.	2-228_ ^{a,e}	O-ring	2
3.	2-231_ ^{a,e}	O-ring	2
4.	3810	Segmented packing - rad tan	6
5.	3811	Packing backup ring	8
6.	3814	Segmented packing - tan tan	2
7.	3817	Packing cup	8
8.	3817-1	Packing cup, lip seal, barrel	2
9.	3817-2	Packing cup, lip seal, cartridge	2
10.	3855-1 ^f	Packing box cartridge	2
11.	3855-2 ^f	Packing cartridge cap, lip seal	2
12.	4272	Purge packing spacer	2
13.	4702	Roll pin- 3/16 X 3/4" (Second stage only)	2
14.	5070	Lip seal	6
15.	7002-025NC062A	Socket head bolt	8
16.	7002-025TP100A	Socket head screw	8
17.	9919 ^f	Packing barrel (3-1/2" cylinder) (Second stage)	1
	9918 ^f	Packing barrel (6-3/8" cylinder) (First stage)	1
18.	3814-X4	Segmented packing set	1

a Denotes O-ring material code.

b Deflector ring is loose within the packing cartridge until fitted on the piston rod. Must be put in from the bottom of the cartridge.

c Starting with serial number NN51397.

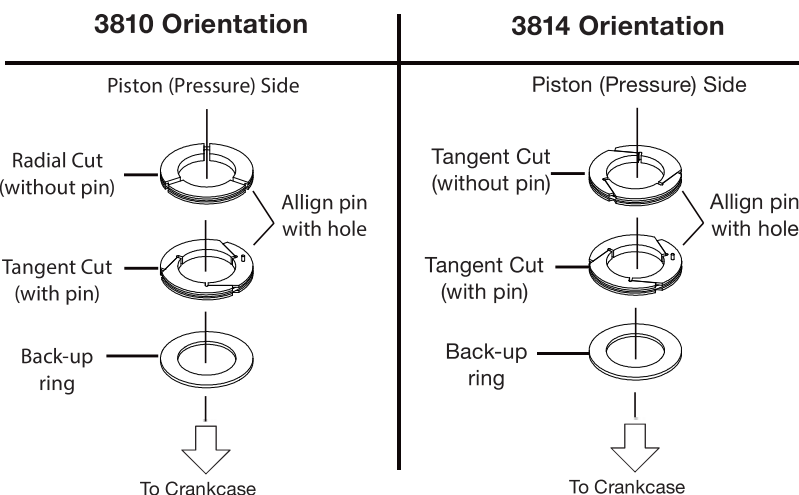
d Registered trademark of the DuPont company.

e If the material code call for E, use K for this part number.

f Add "C" to end of the part number if the item requires MC1002 coating



CAUTION: Always relieve pressure in the unit before attempting any repairs.



Appendix D Appendix D (Continued)—Crosshead Guide Parts Details

Crosshead Guide Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-231 ^a	O-ring	2
2.	2-238 ^{a,c}	O-ring	3
3.	2-259 ^{a,c}	O-ring	1
4.	1064	Street elbow, 1 /4"	1
5.	1399-1	Tube fitting 90 °elbow	2
6.	1435-1	Tube tee-1/4T X 1/8P steel	1
7.	2590	Pipe plug 1/8" npt flush plug	2/4
8.	2644	Compressor wrench	1
9.	3442	Pipe plug - 1 /4 npt	9
10.	3793-2S	Flange - 2" npt ductile iron	2
11.	3794-2S	Flange - npt 2"	2
12.	7001-050NC175A	½-13 x 1 ¾ Hex head bolt	40
13.	7001-025NC050A	¼-20 X ½" Hex head bolt	1
14.	9916	Crankcase gasket	1
15.	9917	Crosshead guide	1
16.	9918-X1	Packing box assembly, lip seal, 6-3/8"	1
17.	9919-X1	Packing box assembly, lip seal, 3-1 /2"	1
18.	9920 ^d	Cylinder	1
19.		Tube,ss,14 x .035, 3.800 in long	1
20.	2-242 ^a	O-ring	2

Material Code

A	Buna-N
B	Neoprene ^{®b}
D	Viton ^{®b}
E	PTFE
K	Kalrez ^{®b}

^a Denotes material code.

^b Registered trademark of the DuPont company.

^c When PTFE is specified as the trim option for the compressor, this O-ring must be Kalrez.

^d Add "C" to end of the part number if the item requires MC1002 coating

NOTE:

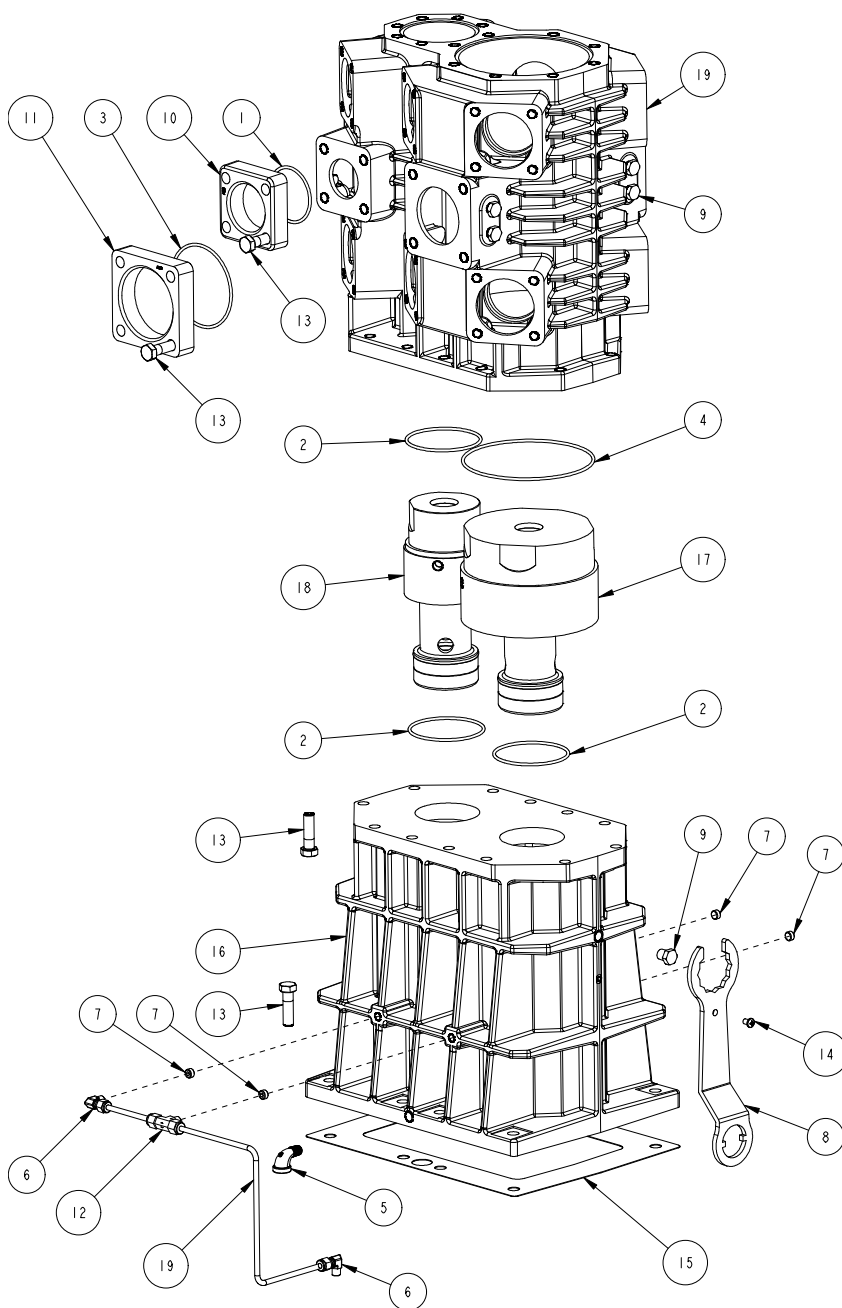
Packing barrel installation:

1. Use packing installation cone #9937 on the piston rod.
2. Insert small barrel first, use finger holes to align slinger ring on to the rod. Slip the packing barrel into place.
3. Align pin with slot in large packing barrel.
4. Slip large packing barrel in place.

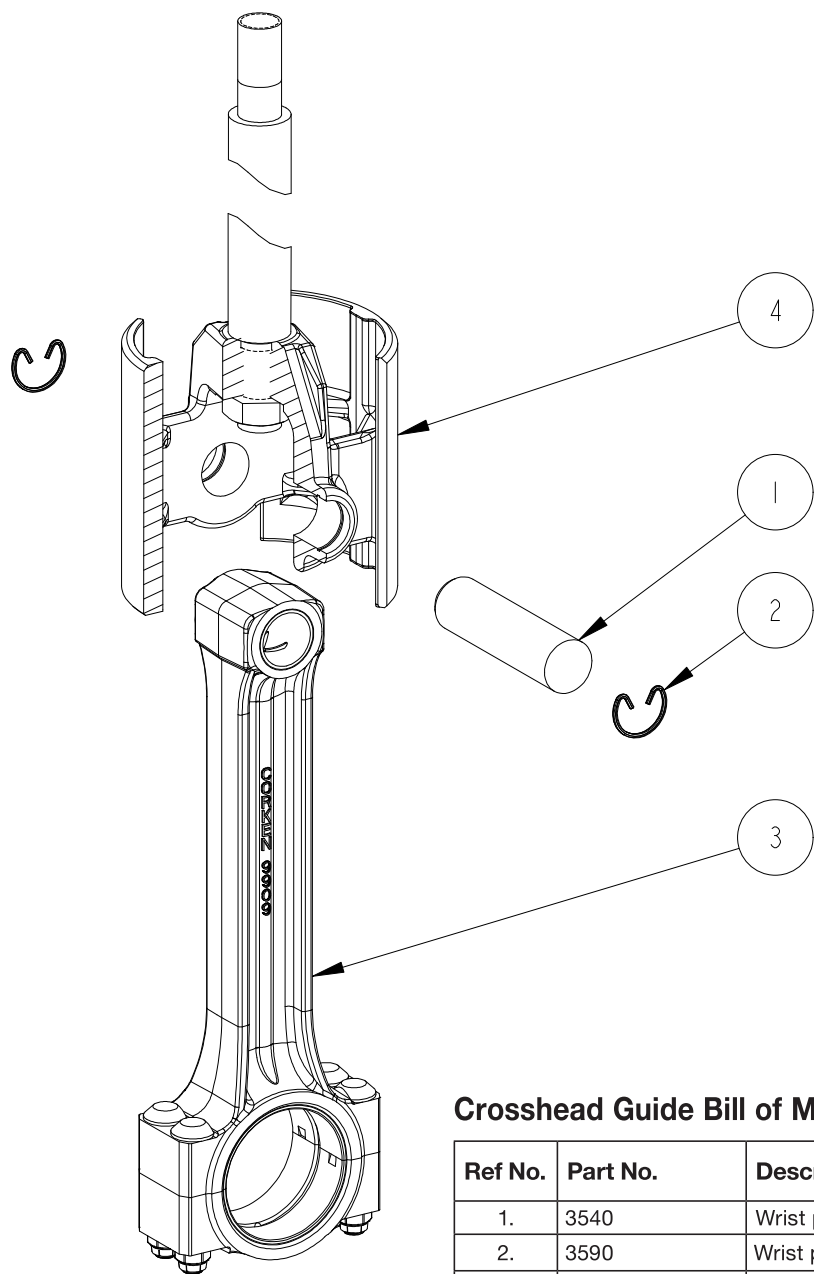
Never attempt to separate the piston rod and crosshead. When repair becomes necessary, the entire crosshead assembly must be replaced.



CAUTION: Always relieve pressure in the unit before attempting any repairs.



Appendix D (Continued)—Crosshead Assembly Parts Details for Model D991



Crosshead Guide Bill of Materials

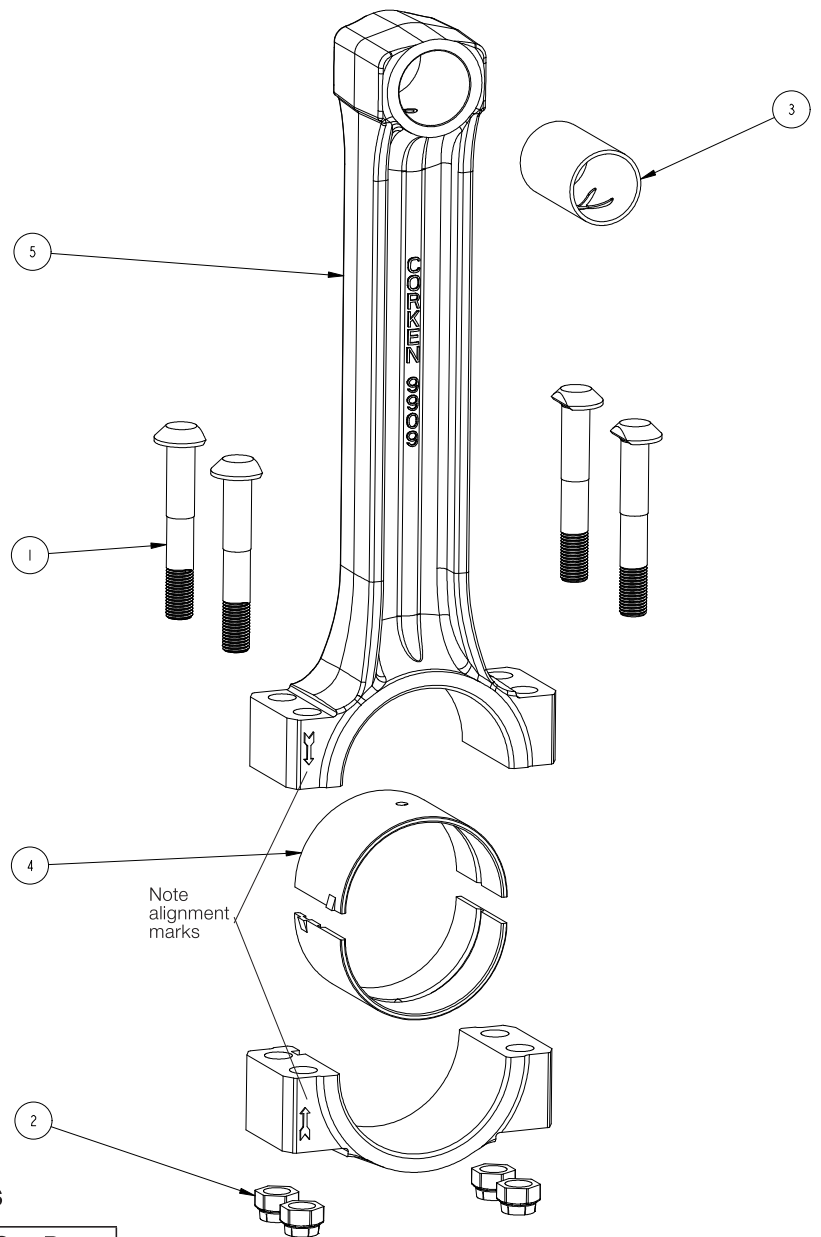
Ref No.	Part No.	Description	Qty. Per Compressor
1.	3540	Wrist pin	2
2.	3590	Wrist pin retainer ring	4
3.	9909-X	Connecting rod assembly	2
4.	9910-X	Crosshead assembly	2

Never attempt to separate the piston rod and crosshead. When repair becomes necessary, the entire crosshead assembly must be replaced.



CAUTION: Always relieve pressure in the unit before attempting any repairs.

Appendix D Appendix D (Continued)—Connecting Rod Assembly (9909-X) Parts Details



Connecting Rod (9909-X) Bill of Materials

Ref No.	Part No.	Description	Qty. Per Conn. Rod
1.	1726 ^{a,b}	Connecting rod bolt	4
2.	1727 ^{a,c}	Connecting rod nut	4
3.	3541-X ^a	Wrist pin bushing	1
4.	3542	Connecting rod bearing - pair	2
5.	9909-X	Connecting rod assembly	1

^a Included with connecting rod assembly

^b Torque connecting rod nut to 40 ft. lbs.

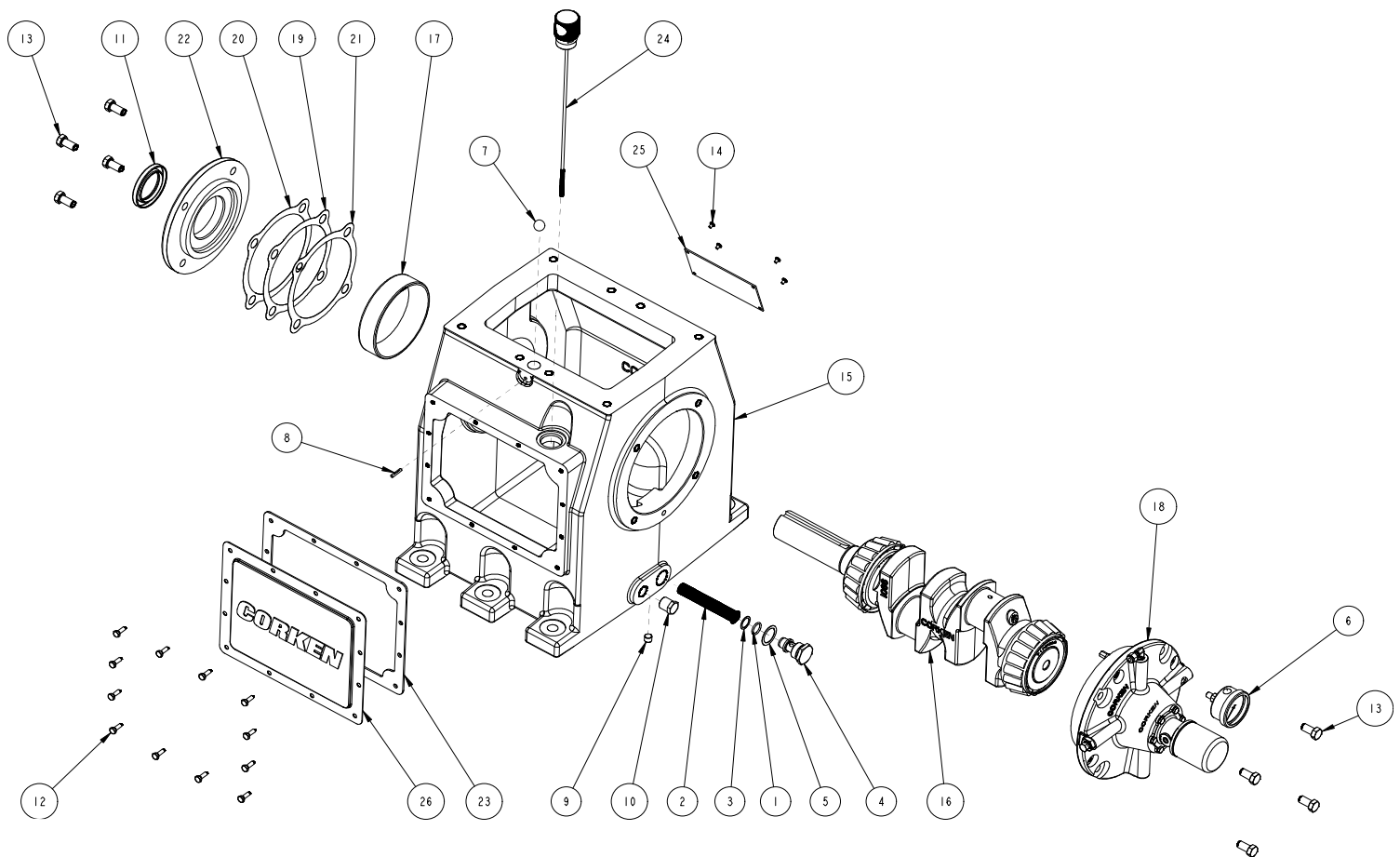
^c After the wrist pin bushing has been pressed into the connecting rod, it must be honed to 1.1258/1.1254. A hydraulic press and honing machine are recommended for this step.

Never attempt to separate the piston rod and crosshead. When repair becomes necessary, the entire crosshead assembly must be replaced.



CAUTION: Always relieve pressure in the unit before attempting any repairs.

Appendix D (Continued)—Crankcase Assembly Parts Details for Model D991



Crankcase Assembly Guide Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-116A	O-ring (Buna-N)	1
2.	1275	Oil pump filter screen	1
3.	1276	Filter screen washer	1
4.	1280	Filter screw	1
5.	1281	Screen screw gasket	1
6.	1302	Oil pressure gauge	1
7.	2126	Breather ball	1
8.	2197	Groovepin	1
9.	3289	Pipe plug (1/4" NPT, flush seal)	1
10.	3443	Pipe plug (1/2" NPT, steel)	1
11.	3526	Oil seal	1
12.	7001-025NC075A	1/4-20 x 3/4 Hex head bolt	12
13.	7001-050NC100A	1/2-13x1 Hex head bolt	8

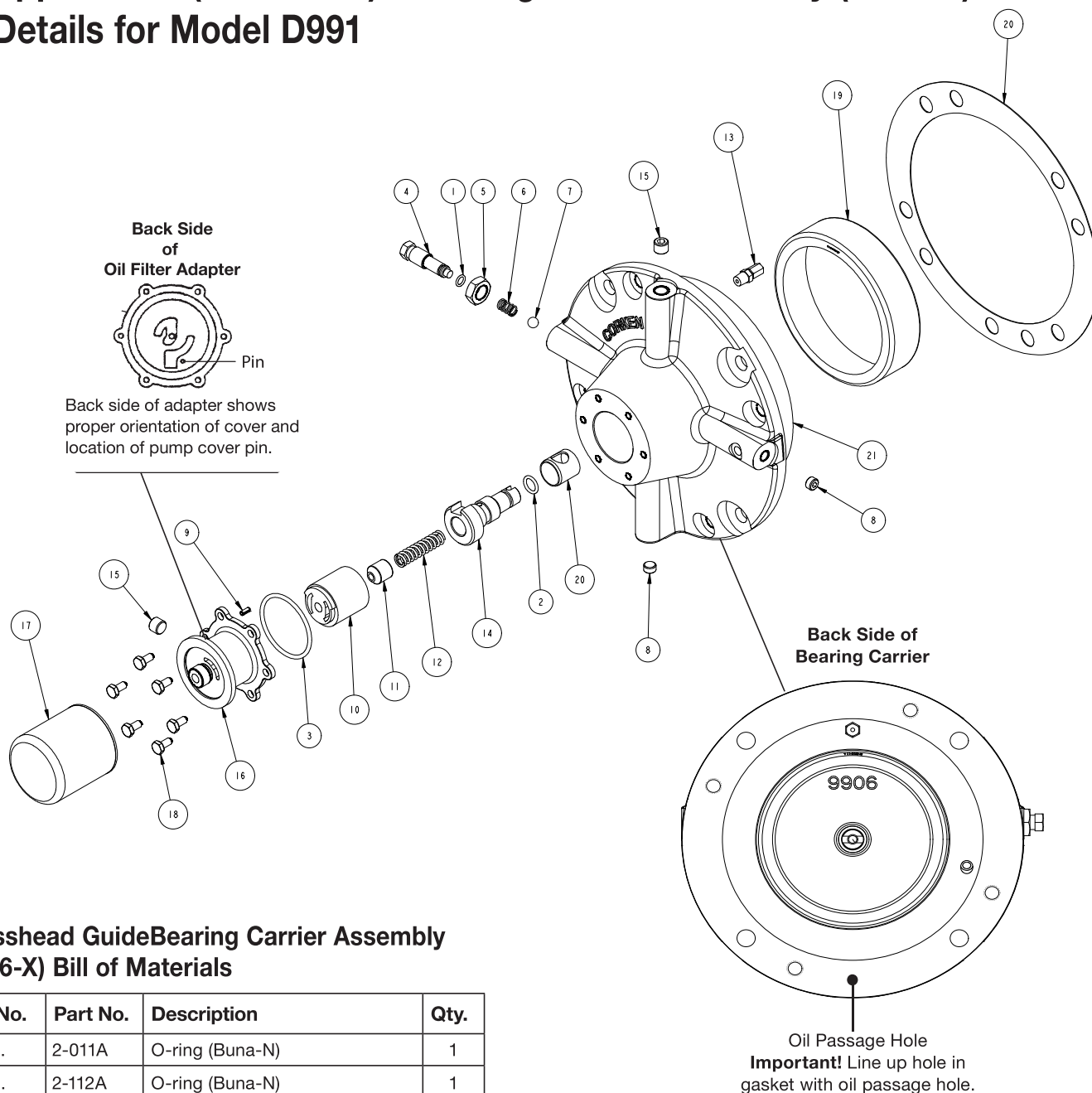


CAUTION: Always relieve pressure in the unit before attempting any repairs.

Ref No.	Part No.	Description	Qty.
14.	7012-010NC25B	Screw (10 - 24 x 1/4") Phillips head	4
15.	9900	Crankcase	1
16.	9901-X	Crankshaft assembly	1
17.	9904	Bearing cup	1
18.	9906-X	Bearing carrier assembly	1
19.	9907	Bearing adjustment shim	As req.
20.	9907-1	Bearing adjustment shim	As req.
21.	9907-2	Bearing adjustment shim	As req.
22.	9908-X	Bearing cover assembly	1
23.	9912	Crankcase inspection cover gasket	1
24.	9915-X1	Oil bayonet assembly w/o-ring	1
25.	9935	Inspection plate	1
26.	9913	Crankcase inspection plate	1
27.	3526	Oil Seal	1
28.	3503	Flywheel Key	1

^a Caution: To avoid damage during assembly, refer to installation Instruction Manual IE400.

Appendix D (Continued)—Bearing Carrier Assembly (9906-X) Parts Details for Model D991



Crosshead GuideBearing Carrier Assembly (9906-X) Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-011A	O-ring (Buna-N)	1
2.	2-112A	O-ring (Buna-N)	1
3.	2-228A	O-ring (Buna-N)	1
4.	1290	Relief valve adjusting screw	1
5.	1291	Hex nut	1
6.	1292	Relief valve spring	1
7.	1293	Relief valve ball	1
8.	1399-1	Tube fitting 90 °elbow	1
9.	2590	Pipe plug 1/8 inch npt flush plg	2
10.	2849-1X ^a	Oil pump	1
11.	2851	Oil pump screen guide	1
12.	2852	Oil pump spring	1
13.	2961-X	Air release valve assembly	1

Ref No.	Part No.	Description	Qty.
14.	3219	Shaft adapter	1
15.	4222-X ^a	Oil filter assy	1
16.	7001-025NC050A	1/4-20 x 1/2 Hex head bolt	6
17.	9904	Bearing cup	1
18.	9905	Bearing carrier gasket	1
19.	9906	Bearing carrier	1

^a Caution: To avoid damage during assembly, refer to installation Instruction Manual IE400.



CAUTION: Always relieve pressure in the unit before attempting any repairs.

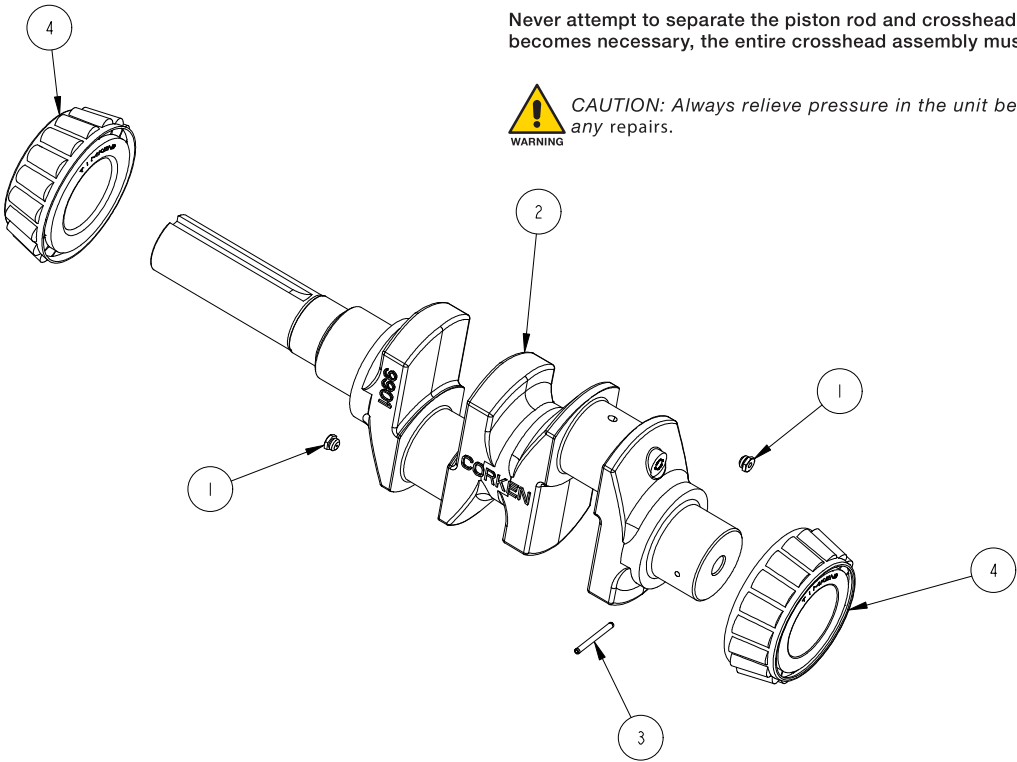
Appendix D Appendix D (Continued)—Crankshaft Assembly Parts Details

Crankshaft Assembly 9901-X—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	1284	Crankshaft orifice	2
2.	9901	Crankshaft	1
3.	9902	Roll pin - 3/16" X 2"	1
4.	9903	Bearing cone	2

Never attempt to separate the piston rod and crosshead. When repair becomes necessary, the entire crosshead assembly must be replaced.

 **CAUTION:** Always relieve pressure in the unit before attempting any repairs.

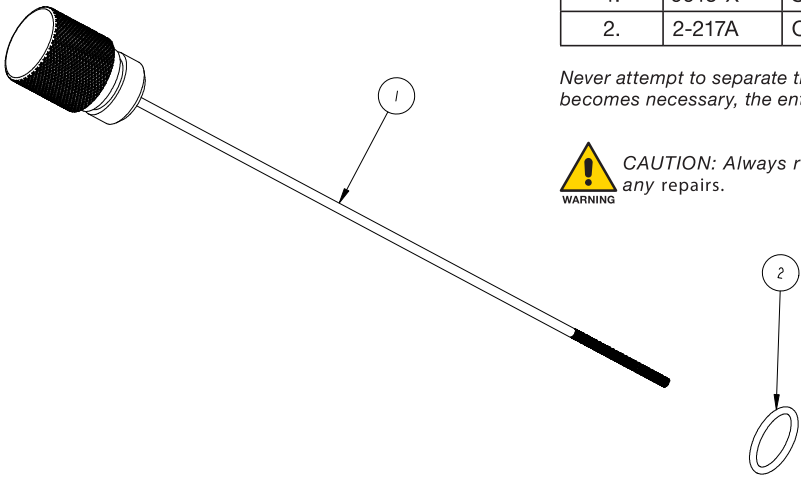


Oil Bayonet Assembly 9915-X1—Bill of Materials

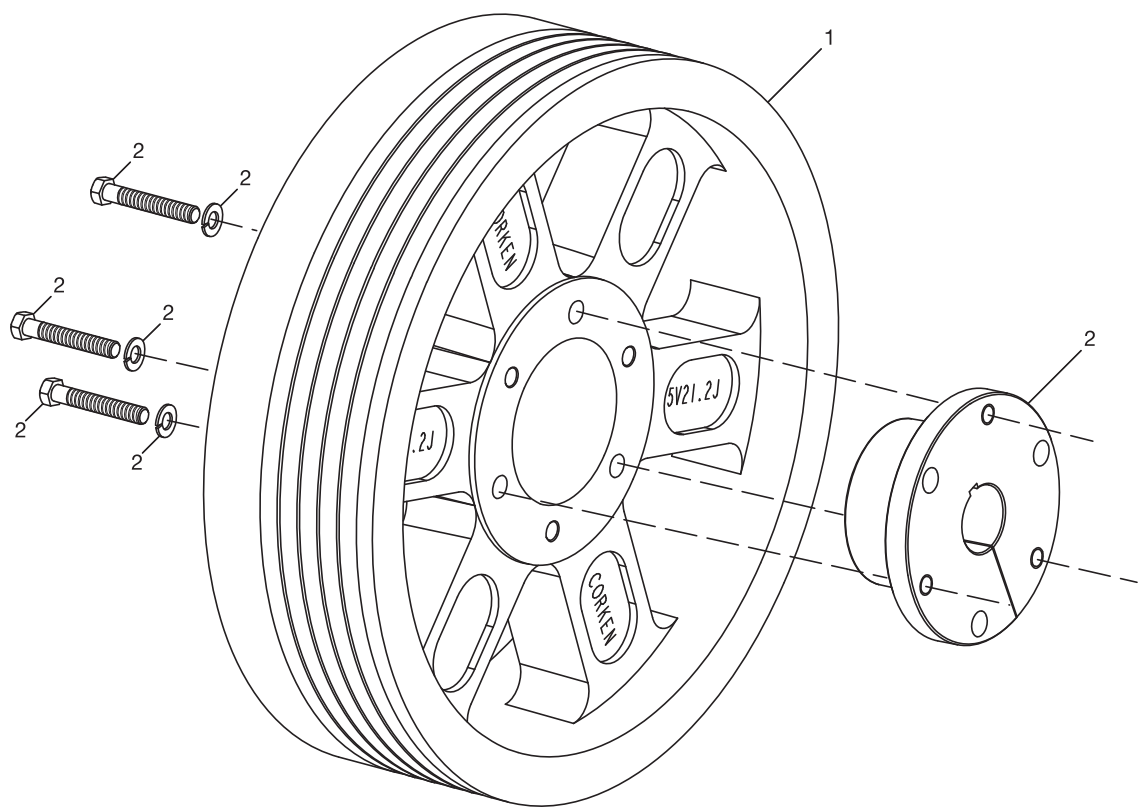
Ref No.	Part No.	Description	Qty.
1.	9915-X	Oil bayonet assembly	1
2.	2-217A	O-ring (Buna-N)	1

Never attempt to separate the piston rod and crosshead. When repair becomes necessary, the entire crosshead assembly must be replaced.

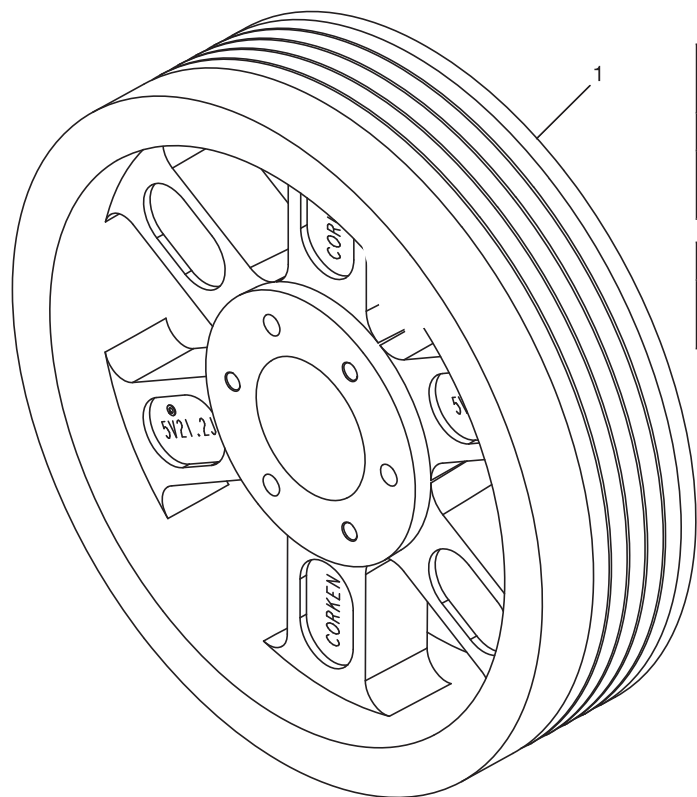
 **CAUTION:** Always relieve pressure in the unit before attempting any repairs.



Appendix D (Continued)— Flywheel Assembly Parts Details for All



Back Side



Front Side

Flywheel—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	3852	Flywheel (21.2" O.D., 5 groove)	1
2.	H J-2.125	Hub with three bolts and lockwashers	1

Assembly Number	Assembly Name
3852-X	Flywheel assembly (flywheel, hub, and three bolts)