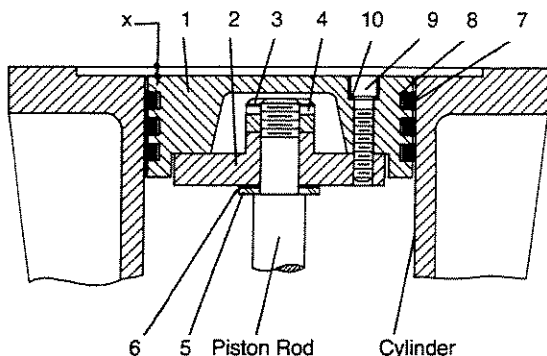
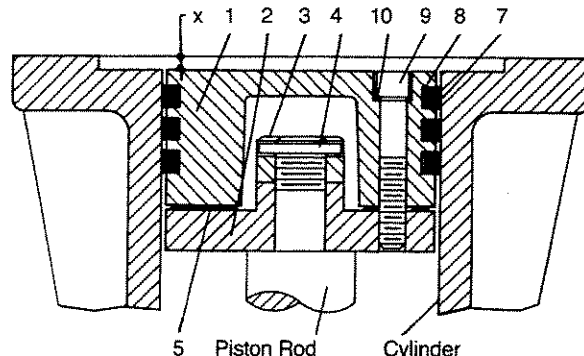


MODELS 91, 191, 291, 391, 491, 491-3



MODELS 590, 691, 691-4



Piston Assembly No.	ALL MODELS 190/191		ALL MODELS 390/391		ALL MODELS 590/591							
	1983-X	2001-X	1987-X	1981-X	1754-X	1755-X						
Piston Diameter	3" (7.62 cm)		4 1/2" (11.43 cm)		6" (15.24 cm)							
Ref. No. Part Name	Part No.	Qty./Piston	Part No.	Qty./Piston	Part No.	Qty./Piston	Part No.	Qty./Piston	Part No.	Qty./Piston		
1. Head, Iron	1983	1	2001	1	1987	1	1981	1	1754	1	1755	1
2. Piston Platform	1984	1	2002	1	1986	1	1982	1	1986	1	1986-1	1
3. Locknut	1482	1	1448	1	1482	1	1482	1	1482	1	1482	1
4. Lock Pin	1483	1	1483	1	1483	1	1483	1	1483	1	1483	1
5. Thrust Washer	1527	1	None	-	1527	1	1527	1	None	-	None	-
6. Shim Washer, Thick Shim Washer, Thin	1528 1528-1	As Req.	1378	As Req.	1528 1528-1	As Req.	1528 1528-1	As Req.	1735 1735-1	As Req.	1735 1735-1	As Req.
7. Piston Ring	1772	3	1770	3	1739	3	1771	3	1752	3	1756	3
8. Ring Expander	1775	3	2015	3	1740	3	1774	3	1753	3	1757	3
9. Screw, Soc. Hd.	7002-010 OC100A	4	7002-008 NC125A	4	7002-025 OC125A	8	7002-008 NC125A	6	7002-025 OC175A	8	7002-025 OC175A	4
10. Lock Washer	7207-010A	4	7207-008A	4	7207-025A	8	7207-008A	6	7207-025A	8	7207-025A	4

Piston Assembly No.	ALL MODELS 90/91, 290/291		ALL MODELS 490/491		ALL MODELS 491-3		ALL MODELS 690/691		ALL MODELS 690-4/691-4	
	1983-X		1985-X		1983-X1		1987-X1		1985-X1	
Piston Diameter	3" (7.62 cm)		4" (10.16 cm)		3" (7.62 cm)		4.5" (11.43 cm)		4" (10.16 cm)	
Ref. No. Part Name	Part No.	Qty./Piston	Part No.	Qty./Piston	Part No.	Qty./Piston	Part No.	Qty./Piston	Part No.	Qty./Piston
1. Head, Iron	1983	1	1985	1	1983	1	1987	1	1985	1
2. Piston Platform	1984	1	1986	1	1984-1	1	1986	1	1986	1
3. Locknut	1482	1	1482	1	1482	1	1482	1	1482	1
4. Lock Pin	1483	1	1483	1	1483	1	1483	1	1483	1
5. Thrust Washer	1527	1	1527	1	1527	1	None	-	None	-
6. Shim Washer, Thick Shim Washer, Thin	1528 1528-1	As Req.	1528 1528-1	As Req.	1528 1528-1	As Req.	1735 1735-1	As Req.	1735 1735-1	As Req.
7. Piston Ring	1772	3	1773	3	1772	3	1739	3	1773	3
8. Ring Expander	1775	3	1776	3	1775	3	1740	3	1776	3
9. Screw, Soc. Hd.	7002-010 OC100A	4	7002-025 OC125A	8	7002-010 OC100A	4	7002-025 OC125A	8	7002-025 OC125A	8
10. Lock Washer	7207-010A	4	7207-025A	8	7207-010A	4	7207-025A	8	7207-025A	8

PISTON CLEARANCE (COLD)

MODEL	"X" INCHES (MILLIMETER)	
	MINIMUM	MAXIMUM
91, 191, 291, 491 (b)	.020 (.51)	.044 (1.12)
A91, D91, A191, D191, A291, D291, WA391, WD391, D491, 491-3 (b)	.025 (.64)	.049 (1.24)
T91, T191, T291, FT191, FT291	.030 (.76)	.054 (1.35)
T690-4, WT690-4, WT690, WT590	.100 (2.54)	.112 (2.84)
T691	.115 (2.92)	.127 (3.22)
190, 390, 490, 491 (a)	.000 (.00)	.024 (.61)
A190, D190, A390, D390, A490, D490, D491, D490-3, D491-3	.005 (.13)	.029 (.74)
T491, T490-3	.010 (.25)	.034 (.86)
WT391, T491, T491-3 (b)	.030 (.76)	.054 (1.36)
590, 690, W690	.000 (.00)	.012 (.30)
691	.015 (.38)	.027 (.68)
A590, WA590, A690, WA690	.045 (1.14)	.057 (1.45)
D590, WD590, D690, D690-4, WD690, WD690-4	.050 (1.27)	.062 (1.57)
D691	.065 (1.65)	.077 (1.95)

NOTES:

- (a) For 491 Compressor with flat gasket.
- (b) For 491 Compressor with head o-rings.

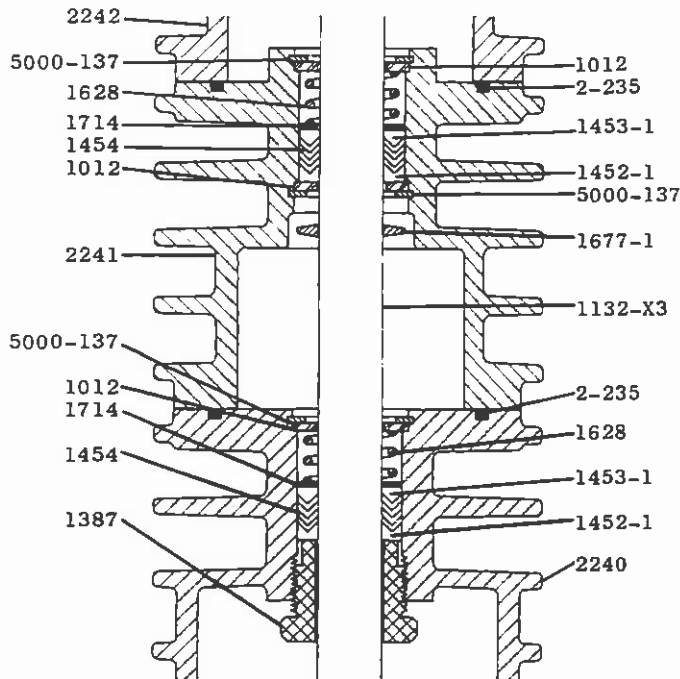
**CAUTION: ALWAYS RELIEVE PRESSURE
IN THE UNITS BEFORE
ATTEMPTING ANY REPAIRS.**

DISTANCE PIECE DETAILS
 MODEL D90, D91 COMPRESSORS
 ALL SPECIFICATIONS

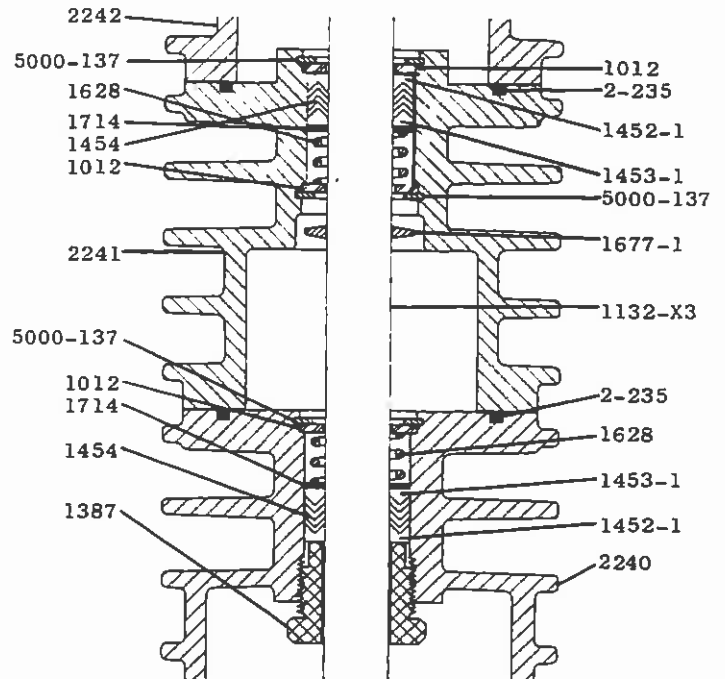
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 Supersedes E274H

MODELS D90A, D91A



MODELS D90B, D91B



PART NUMBER	PART NAME	ASSEMBLY NUMBER	ASSEMBLY NAME
1012	Washer		
1387	Adjusting Screw		
1452-1	Female Packing Ring		
1453-1	Male Packing Ring		
1454	Packing Ring		
1628	Packing Spring		
1677-1	Oil Deflector Ring		
1714	Packing Box Washer		
2240	Crosshead Guide, Gas		
2241	Distance Piece, Gas		
2242	Cylinder		
5000-137	Retainer Ring		
2-235	'O' Ring		
		1132-X3	Crosshead-Piston Rod Assembly
		1452-1X3	Packing Set with 1452-1, 1453-1, 1454 (6), 1628, 1714

The quantity of 1454 Packing Rings required will vary due to tolerances.

For 'O' Ring Material Coding see Page A500.

See Page E270 for description and application of distance piece arrangements.

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

DISTANCE PIECE DETAILS
MODEL T91 COMPRESSOR
ALL SPECIFICATIONS

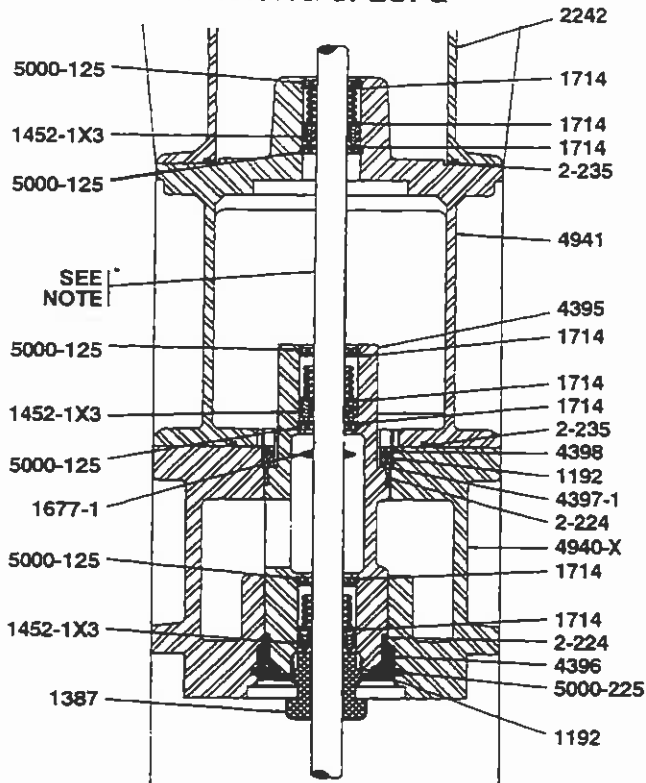
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MAY
FIRST

1997
ISSUE

PACKING SPEC. G



PART NO.	PART NAME
1192	LOCKING DEVICE TFE 1/8" DIA. X 1/4" LONG
1387	ADJUSTMENT SCREW
1452-1	FEMALE PACKING RING
1453-1	MALE PACKING RING
1454	PACKING RING
1628	PACKING SPRING
1677-1	OIL DEFLECTOR RING
1714	PACKING BOX WASHER
2242	CYLINDER
4395	PACKING CARTRIDGE
4396	CARTRIDGE PLATE
4397-1	SPACER
4398	CARTRIDGE HOLDDOWN SCREW
4940-X	CROSSHEAD GUIDE
4941	DISTANCE PIECE
5000-125	RETAINER RING
5000-225	RETAINER RING
2-224	O-RING
2-235	O-RING

NOTE:

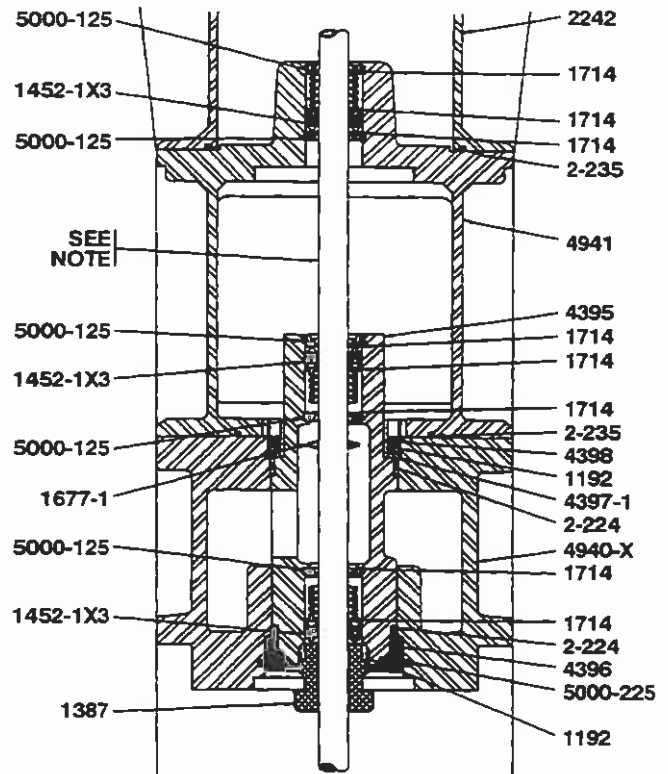
ASSEMBLY NO.	ASSEMBLY NAME
1132-X7	QUANTITY 1 (T91 - NITROTEC)
1132-X9	QUANTITY 1 (T91 - C,O ₂)
1452-1X3	PACKING SET WITH 1452-1, 1453-1, 1454 (5), 1628, 1714
1452-2X3	PACKING SET - ALLOY - D STYLE
4940-X	CROSSHEAD GUIDE ASSEMBLY WITH 2777, 5000-262, 4940, 4396, 5000-225

USE CONE 4005 FOR INSTALLATION OF PACKING.

THE QUANTITY OF 1454 PACKING RINGS REQUIRED WILL VARY DUE TO TOLERANCES.

FOR O-RING MATERIAL CODING SEE PAGE A500.

PACKING SPEC. H



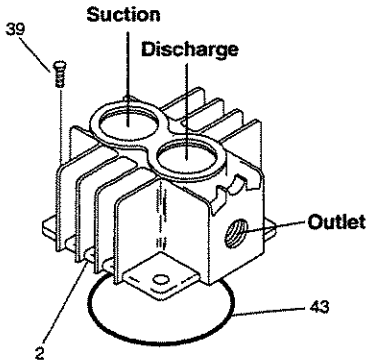
CAUTION: ALWAYS RELIEVE PRESSURE IN THE UNIT BEFORE ATTEMPTING ANY REPAIRS.

HEAD ASSEMBLY DETAILS
 ALL MODELS 91 AND 291 S/N JW47628 AND LATER
 ALL MODELS 191

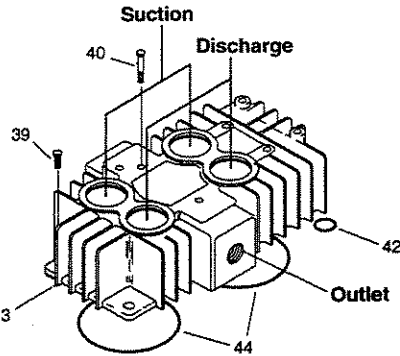
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OCTOBER 1994
 SUPERSEDES E300K

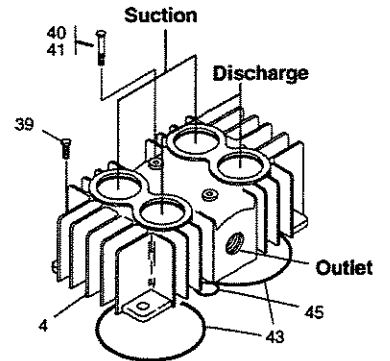
HEAD 90/91



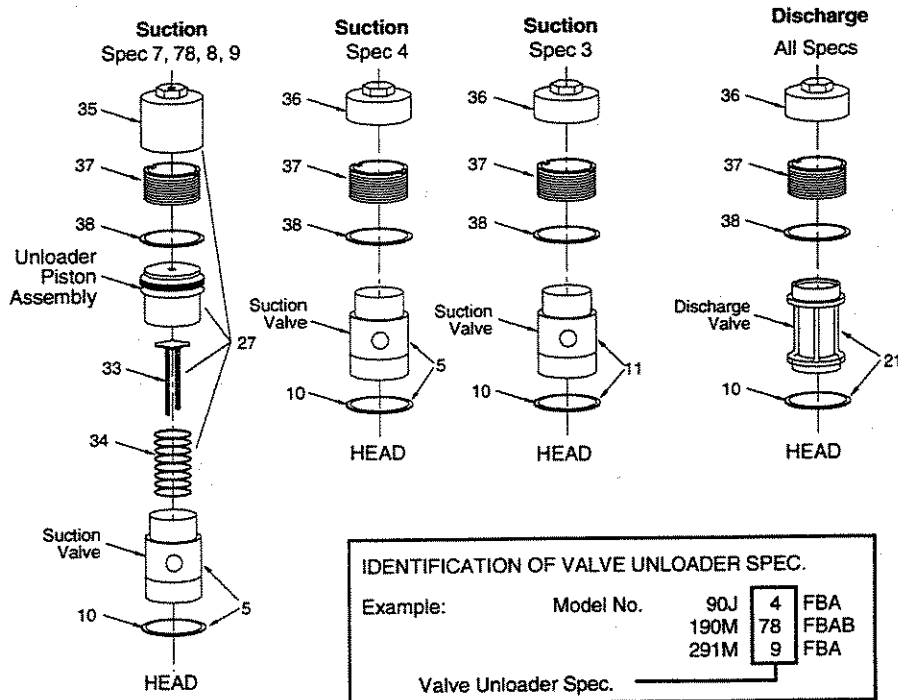
191



290/291

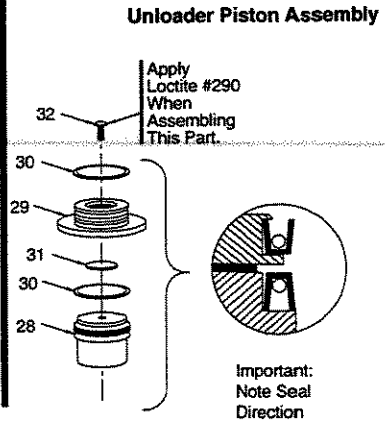
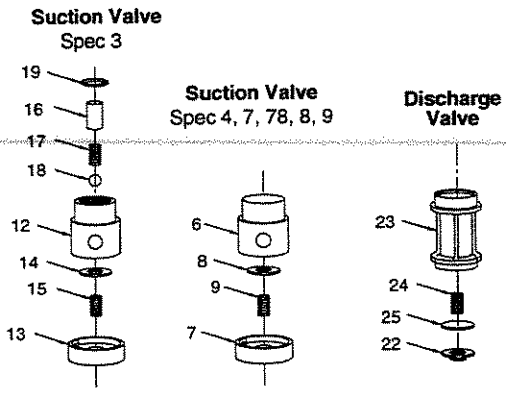


VALVE REMOVAL



IDENTIFICATION OF VALVE UNLOADER SPEC.			
Example:	Model No.	90J	4 FBA
		190M	78 FBAB
		291M	9 FBA
	Valve Unloader Spec.		

VALVE DETAILS



HEAD ASSEMBLY DETAILS
ALL MODELS 91 AND 291 S/N JW47628 AND LATER
ALL MODELS 191

NOTE: When ordering parts use
"PART NO." not "REF NO."

REF NO.	PART NO.	DESCRIPTION
(a)1.	2374-X	Head Assy, Spec 3, Model 90, 91, D90, D91
	2463-X1	Head Assy, Spec 3, Model 290, D290
	2912-X1	Head Assy, Spec 3, Model 291, D291
	2374-X1	Head Assy, Spec 4, Model 90, 91, D90, D91, A90, A91
	4013-X1	Head Assy, Spec 4, Model 191, A191, D191
	2463-X2	Head Assy, Spec 4, Model 290, A290, D290
	2912-X2	Head Assy, Spec 4, Model 291, D291
	2374-X2	Head Assy, Spec 8,9, Model 90, 91, D90, D91
	2374-X3	Head Assy, Spec 8,9, Model A90, A91
	4013-X2	Head Assy, Spec 7,78,8,9, Model 191, A191, D191
	2463-X3	Head Assy, Spec 7,78,8,9, Model 290, D290
	2463-X4	Head Assy, Spec 7,78,8,9, Model A290
	2912-X3	Head Assy, Spec 7,78,8,9, Model 291, D291
2.	2374	Head Model 90, 91
	4302	Head Model F91 (ANSI FLANGE)
3.	4013	Head Model 191
	4371	Head Model F191 (ANSI FLANGE)
4.	2463	Head Model 290, A290, D290 (Obsolete replace by 2912)
	2912	Head Model 291, A291, D291
	4300	Head Model F291 (ANSI FLANGE)
5.	3483-X	Suction Valve Assy, Spec 4,7,78,8,9
(b)	3483-X1	Same as above but with Copper Gaskets
(b)	3483-X2	Same as above but with Iron-Lead Gaskets
6.	3483	Suction Valve Seat
7.	3484	Suction Valve Bumper
8.	3972	Suction Valve Plate
9.	4009	Suction Spring
10.	2717	Valve Gasket, Alum.
(b)	2717-1	Valve Gasket, Copper
(b)	2717-2	Valve Gasket, Iron-Lead
11.	3483-1X	Suction Valve Assy, Spec 3
(b)	3483-1X1	Same as above but with Copper Gaskets
(b)	3483-1X2	Same as above but with Iron-Lead Gaskets
12.	3483-1	Suction Valve Seat, Spec 3
13.	3484	Suction Valve Bumper
14.	3972	Suction Valve Plate
15.	4009	Suction Spring
16.	3977	Suction Valve Relief Housing
17.	1411	Spring
18.	1410	Ball
19.	5000-77	Retainer Ring
20.		
21.	3485-X	Discharge Valve Assy
(b)	3485-X1	Same as above but with Copper Gaskets
(b)	3485-X2	Same as above but with Iron-Lead Gaskets
22.	3485	Discharge Valve Seat
23.	3486	Discharge Valve Bumper
24.	4008	Discharge Spring
25.	3973	Discharge Valve Plate

REF NO.	PART NO.	DESCRIPTION
27.	3919-X	Unloader Assy
28.	3919	Unloader Piston
29.	2857	Piston Cap
30.	2619-X	Piston Seat Assy
31.	2858	Unloader Piston Cap Gasket
32.	1910	Bolt 1/4-20 x 1/2 Soc. Button Hd.
33.	3975	Unloader Actuator
34.	3976	Unloader Spring
35.	2598-1	Unloader Cap
36.	2714-1	Valve Cap
37.	2715	Holddown Screw
(c)38.	2-031_	O-ring
39.	7001-037 NC100A	Bolt, 3/8-16 x 1" Gr.5 Hex Hd.
40.	2731	Center Headbolt
41.	2732	Gasket
42.	2-118E	O-ring, Teflon (Intercooler)
(c)43.	2-235_	O-ring
(c)44.	2-236_	O-ring
(c)45.	2-113_	O-ring

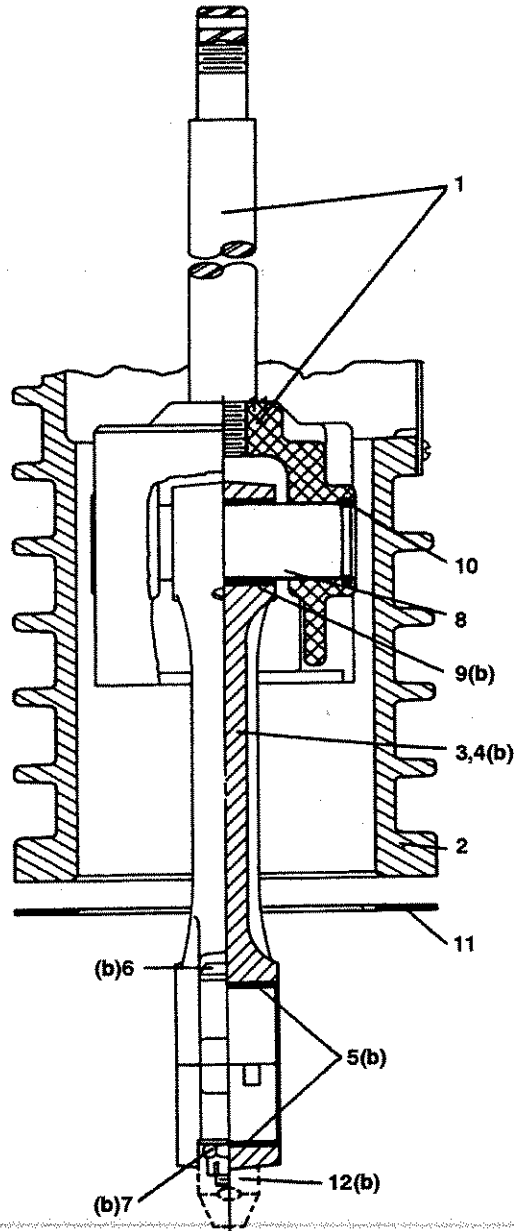
NOTES:

- (a) Not Shown.
- (b) Optional.
- (c) For O-ring material coding see page A500

**CAUTION: Always Relieve Pressure In The Unit
Before Attempting Any Repairs.**

CONNECTING ROD AND CROSSHEAD ASSEMBLY DETAILS
ALL MODELS
ALL SPECIFICATIONS

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REFER TO PARTS LIST
ON BACK SIDE OF
THIS SHEET.

**CAUTION: ALWAYS RELIEVE PRESSURE IN THE
UNIT BEFORE ATTEMPTING ANY REPAIRS.**

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CONNECTING ROD AND CROSSHEAD ASSEMBLY DETAILS
ALL MODELS
ALL SPECIFICATIONS

MAY
SUPERSEDES

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E351K

MODEL NUMBER	91	A91 D91	T91	181	A191 D191	T191	291	A291 D291	T291	391 W391 491	A391 WA391 D391 WD391 A491 D491-3 D491	T391 T491-3 T491	A590 WA590 D590 WD590 A691 WA690 D691 D691-4 WD690 WD690-4	590 W590 W690 691	A590 WA590 D590 WD590 A691 WA690 D691 D691-4 WD690 WD690-4	590 W590 W690 691	D791 D8091	
NO.	DESCRIPTION												SPEC. K,P ONLY	SPEC. M ONLY	SPEC. M ONLY			
1.	CROSSHEAD ASSEMBLY	1132-X2	1132-X3 1132-X7 1132-X9 (f)	1132-X1 (g) 1132-X2	1132-X3 1132-X4	1132-X8 (h) 1132-X7 1132-X9 (i) 1132-X10 (j)(k)	1132-X2 (l)	1132-X3 1132-X5	1132-X7 1132-X9 (f)	1394-X 2765(h) 1366(i)	1394-X1 1384-X4 (f)	1394-X2 1394-X3 (f)	1717-X	1716-X	1716-X	1716-X	2405-X	2405-1
2.	CROSSHEAD GUIDE	2240	4940-X	4383	4383	4383-X	4393	4383-X	4383-X	1889-X	1889-X	1889-X	1889-X	1889-1X	1889-1X	1889-1X	1889-1X	1889-1X
3.	CONN. ROD ASSY.	1889-1	1889-1	1889-1	1889-1	1889-1	1889-1	1889-1	1889-1	1889-1	1889-1	1889-1	1889-1	1889-1	1889-1	1889-1	1889-1	1889-1
4.	CONNECTING ROD	1367	1367	1367	1367	1367	1367	1367	1367	1367	1367	1367	1367	1367	1367	1367	1367	1367
5.	CONN. ROD BEARING	1599	1599	1599	1599	1599	1599	1599	1599	1599	1599	1599	1599	1599	1599	1599	1599	1599
6.	BOLT	1600(c)	1600(c)	1600(c)	1600(c)	1600(c)	1600(c)	1600(c)	1600(c)	1600(c)	1600(c)	1600(c)	1600(c)	1600(c)	1600(c)	1600(c)	1600(c)	1600(c)
7.	NUT	2505	2505	2505	2505	2505	2505	2505	2505	2505	2505	2505	2505	2505	2505	2505	2505	2505
8.	WRIST PIN	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)	1846-X(a)
9.	WRIST PIN BUSHING	1498	1498	1498	1498	1498	1498	1498	1498	1498	1498	1498	1498	1498	1498	1498	1498	1498
10.	RETAINER RING	2526	2526	2526	2526	2526	2526	2526	2526	2526	2526	2526	2526	2526	2526	2526	2526	2526
11.	CRANKCASE GASKET	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011
12.	DIPPER																	

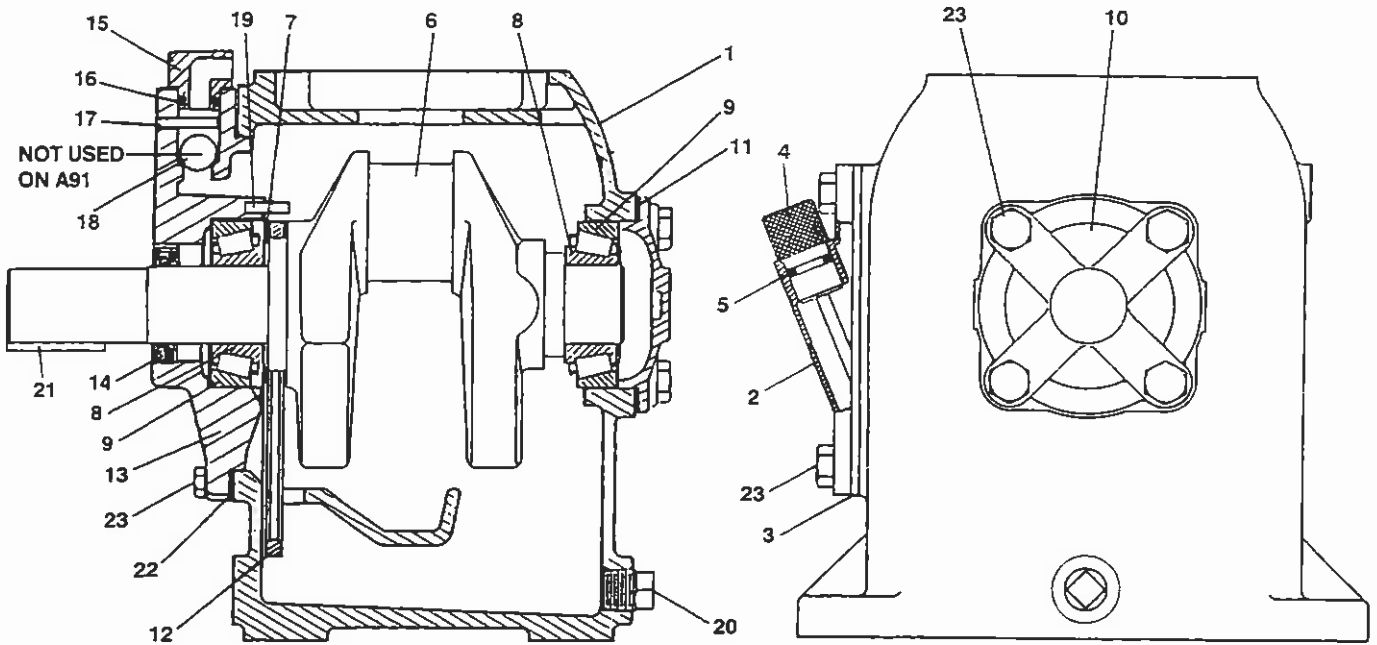
NOTES:

- (a) Must be rebored after replacing (0.8754/0.8751 Dia.)
- (b) Included with Connecting Rod Assembly
- (c) Torque Connecting Rod Nut to 28 ft. lbs.
- (d) Torque Connecting Rod Nut to 30 ft. lbs.
- (e) Torque Connecting Rod Nut to 40 ft. lbs.
- (f) Optional Chrome Oxide Piston Rods Only
- (g) Second Stage (Smaller Piston)
- (h) S/N XC30633 and Later
- (i) Prior to S/N XC30633
- (j) Must be rebored after replacing (1.1256/1.1252 Dia.)
- (k) Never attempt to separate the Piston Rod and Crosshead. When repair becomes necessary the entire Crosshead Assembly must be replaced.

CRANKCASE DETAILS
 MODELS 91, A91, D91, T91 COMPRESSORS
 CRANKCASE SPECIFICATION: J
 S/N KP48099 AND LATER

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CRANKCASE ASSEMBLY NO. 2554-X1



REF NO.	PART NO.	DESCRIPTION
1.	2554	CRANKCASE
2.	2728	CRANKCASE INSPECTION PLATE
3.	2729	INSPECTION PLATE GASKET
4.	1368-X1	OIL BAYONET ASSEMBLY (WITH O-RING)
5.	2-112A	O-RING
6.	2476	CRANKSHAFT
7.	2290	OIL RING RETAINER WASHER
8.	2719	BEARING CONE
9.	2718	BEARING CUP
10.	2720	BEARING CAP
11.	2721	BEARING ADJ. SHIM (0.005)
	2721-1	BEARING ADJ. SHIM (0.007)
	2721-2	BEARING ADJ. SHIM (0.020)
12.	2723	OIL CIRCULATING RING
13.	3260	BEARING CARRIER
14.	3259	OIL SEAL
15.	1279-X	BREATHER CAP ASSEMBLY (WITH O-RING)
16.	2-111A	O-RING
17.	1483	ROLL PIN - 1/8 X 1"
18.	2796	BREATHER BALL
19.	1807	ROLL PIN - 1/8 X 5/8"
20.	1661	PIPE PLUG - 3/8 NPT SQ. OR HEX
21.	2289	FLYWHEEL KEY

REF NO.	PART NO.	DESCRIPTION
22.	2725	BEARING CARRIER GASKET
23.	7001-037 NC075A	HEX HEAD 3/8-16 x 3/4", GR 5

ASSEMBLY NO.	ASSEMBLY NAME
2476-X	CRANKSHAFT ASSEMBLY WITH 2476, 2290 AND 2719
2476-SX	EXTENDED CRANKSHAFT ASSEMBLY WITH 2719 (2) AND 2290. (OPTIONAL)
3260-X	BEARING CARRIER ASSEMBLY WITH 3260, 2718, 3259; 1279-X, 2-111, 1483, 2796 AND 1807
(a)3271-X2	FLYWHEEL ASSEMBLY 14" - 2 GROOVE WITH H SF-1.125 AND 3271

NOTES:

(a) NOT SHOWN, NOT PART OF THE CRANKCASE ASSEMBLY.
 CRANKCASE CAPACITY: 0.9 QUARTS (0.8 LITERS)

**CAUTION: ALWAYS RELIEVE PRESSURE IN THE UNIT
 BEFORE ATTEMPTING ANY REPAIRS.**