

Vermeer®

D50X100A Navigator® Horizontal Directional Drill



Parts Manual

P1.02
SERIAL NO. 101-
ORDER NO. 105400N91

HOW TO USE THE MANUAL

This manual contains illustrations and parts lists of components and assemblies which make up the machine. Each page consists of the name of the assembly or component, a figure number, reference numbers, part numbers, part names, and the quantities of the parts used.

Assembly or component name helps identify the illustration and parts list for each figure. This name also helps locate the general area of the machine where the assembly or component can be located.

Figure numbers are used to identify each assembly or component and to group these assemblies or components into major categories.

Reference numbers shown in a column refer to the numbered parts in the illustration. This ties the part in the illustration to the part number and description in the parts list.

An asterisk indicates information about the item has changed since the previous release of the parts manual. A note in the Remarks column often explains the change.

Part numbers are used to identify individual parts or part assemblies.

Part descriptions provide the name of the part, plus additional information such as dimensional specifications and what parts are grouped together to form part assemblies, which helps you identify the part(s).

Quantities listed for each figure are only for that assembly or component and not the total used per machine.

This parts manual is not intended to be a complete guide for machine service or repairs. Contact your Vermeer dealer for any of your service or technical requirements.

ORDERING PARTS

Parts for repair or replacement are available through our network of authorized dealers located throughout the world.

Use only authorized Vermeer parts for repair or replacement. Always give the serial number and

model number of the machine for which parts are being ordered. When ordering parts for component(s), which are not manufactured by Vermeer Manufacturing, also give the serial number of that component(s). Order all parts by part number, part name, and quantity needed.

UPDATING AND REORDERING MANUALS

The parts lists, illustrations, and specifications in this manual are based on the latest information available at time of publication. Your machine may have product improvements and options not yet contained in this manual.

Vermeer Manufacturing Company reserves the right to make changes at any time without notice or obligation to you.

Your dealer will receive notice of these changes and can assist you with accurate parts identification when ordering.

A copy of this manual is supplied with each machine. Additional copies are available through your dealer. When ordering additional manuals, use the reorder number listed on the front cover and the quantity needed.

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Vermeer Manufacturing Company

1210 Vermeer Road East, P.O. Box 200

Pella, Iowa 50219-0200, USA+

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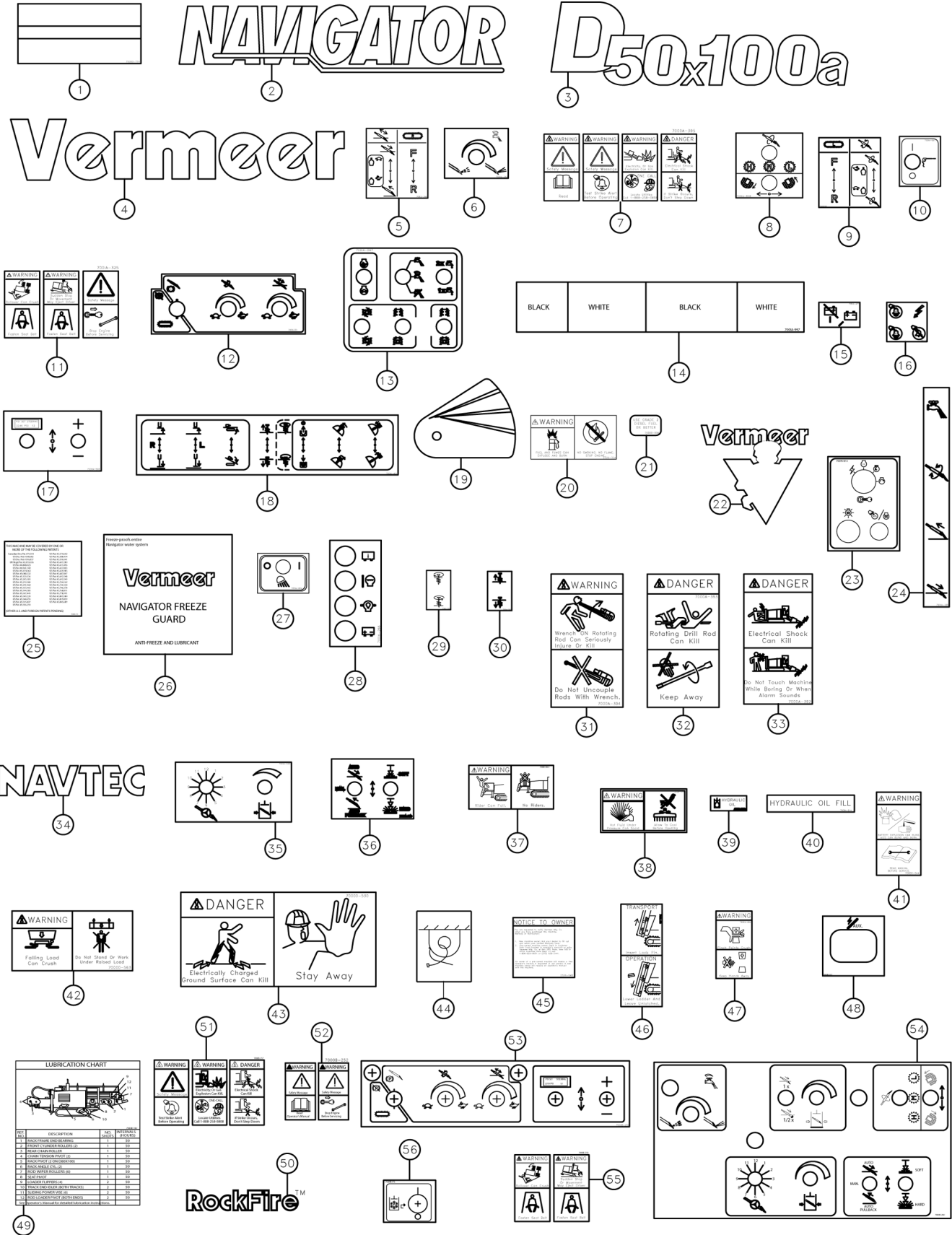
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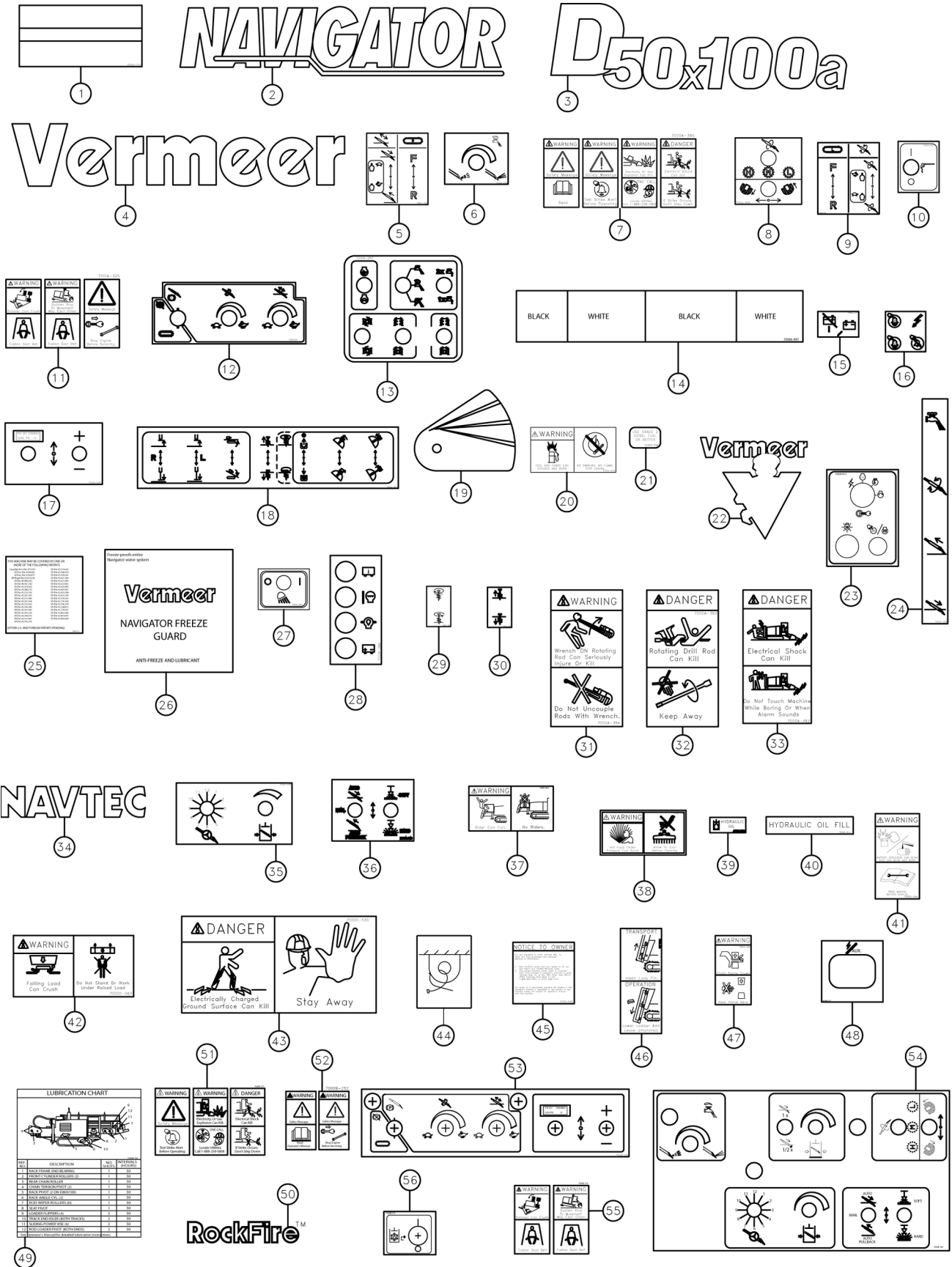
Decal - Domestic Fig 1-1r05



Decal - Domestic Fig 1-1r05

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		70000775	DECAL 3" VERMEER STRIPE	21	
2		70000614	DECAL-MODEL NAVIGATOR	2	BIG
		70000615	DECAL-MODEL NAVIGATOR	1	SMALL
3		7000A790	DECAL-MODEL D50X100A	2	
4		2326619	DECAL-VERMEER 3 X 15	2	
		2326595	DECAL VERMEER-4 1/2 X 24	1	
5		700IA268	DECAL-DRILL FORCE RT	1	UND
6		700IA262	DECAL-FLUID PRES.	1	UG, SN101-235
7		7000A395	DECAL-WARNING	1	SN101-235
8		700IA808	DECAL-SEAT/DRILL COMBO	1	SN101-235
9		700IA269	DECAL-DRILL ROTATION LT	1	UND
10		700IA807	DECAL-WASHWAND	1	
11		7000A325	DECAL-WARNING	1	SN101-235
12		700IA270	DECAL-SPEED VARI.	1	UND, SN101-235
13		700IA267	DECAL-ROD VISES	1	
14		700IA490	DECAL-INDICATOR 2 7/8-3 1/2 ROD	1	
15		700IA477	DECAL BATTERY SWITCH	1	UG
16		700IA260	DECAL-TEST	1	UND
17		7000A508	DECAL-DISPLAY	1	SN101-235
18		700IA401	DECAL-CONTROL BANK D50	1	
19		700IA624	DECAL-LOADER POSITION	1	
20		2326324	DECAL-WARNING/REFUEL	1	
21		70000098	DECAL-DIESEL	1	AT/UND
22		70000939	DECAL-15" VERMEER LOGO	1	
23		700IA813	DECAL-IGNITION	1	
24		700IA265	DECAL-INSTRUMENTS	1	UG
25		7000B119	DECAL-PATENT	1	
26		7000A027	DECAL-NAVIGATOR FREEZE GUARD	1	
27		700IA804	DECAL-WORK LIGHT	1	
28		700IA266	DECAL-CONTROL PANEL	1	UG
29		700IA306	DECAL-STAKE DRIVER ROTAT.	1	UND
30		700IA305	DECAL-STAKE DRIVE THRUST	1	UND
31		7000A394	DECAL-WARNING	1	
32		7000A393	DECAL-DANGER	1	
33		7000A392	DECAL-DANGER	1	
34		7000A745	DECAL-NAVTEC	2	
35		700IA509	DECAL-STEER	1	SN101-235
36		7000A510	DECAL-AUTO/MAN. SWITCH	1	SN101-235
37		700IA863	DECAL-WARNING	1	AT

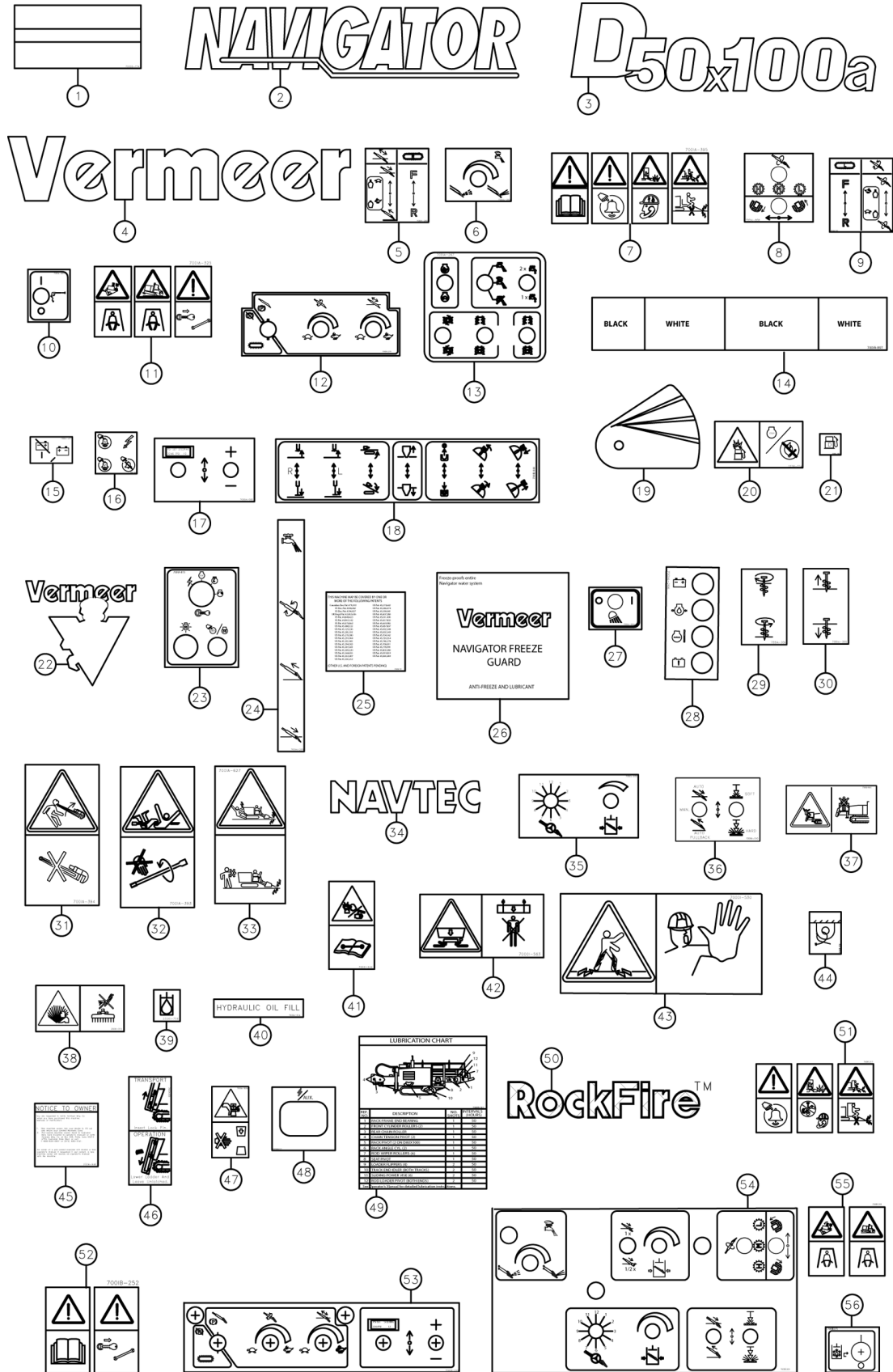
Decal - Domestic (continued) Fig 1-1r05



Decal - Domestic (continued) Fig 1-1r05

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
38		2326315	DECAL-WARNING	1	
39		2326756	DECAL-HYDRAULIC OIL	1	
40		7000A814	HYDRAULIC OIL FILLER	1	
41		70000044	DECAL-WARNING	1	AT/UND
42		70000563	DECAL-WARNING	2	UND
43		70000530	DECAL-DANGER	4	
44		7000I834	DECAL-TIE DOWN POINT	6	
45		2326940	DECAL-NOTICE TO OWNERS	1	
46		7000A858	DECAL-TRANSPORT LOCK	1	
47		7000A864	DECAL-WARNING	2	
48		700IB012	DECAL-AUXILIARY POWER	1	
49		7000B182	DECAL-LUBE CHART	1	
50		7000B202	DECAL-ROCKFIRE	1	SN236-
51		7000B257	DECAL-WARNING	1	SN236-
52		7000B252	DECAL-WARNING	1	SN236-
53		7000B259	DECAL-CONTROL	1	SN236-
54		7000B260	DECAL-CONTROLS	1	SN236-
55		7000B258	DECAL-WARNING	1	SN236-
56	*	700IB375	DECAL-OIL BYPASS	1	PN Added SN325-
		901228077	D50X100A DECAL ASSY		DOMESTIC, INC. ALL ITEMS IN THIS FIGURE

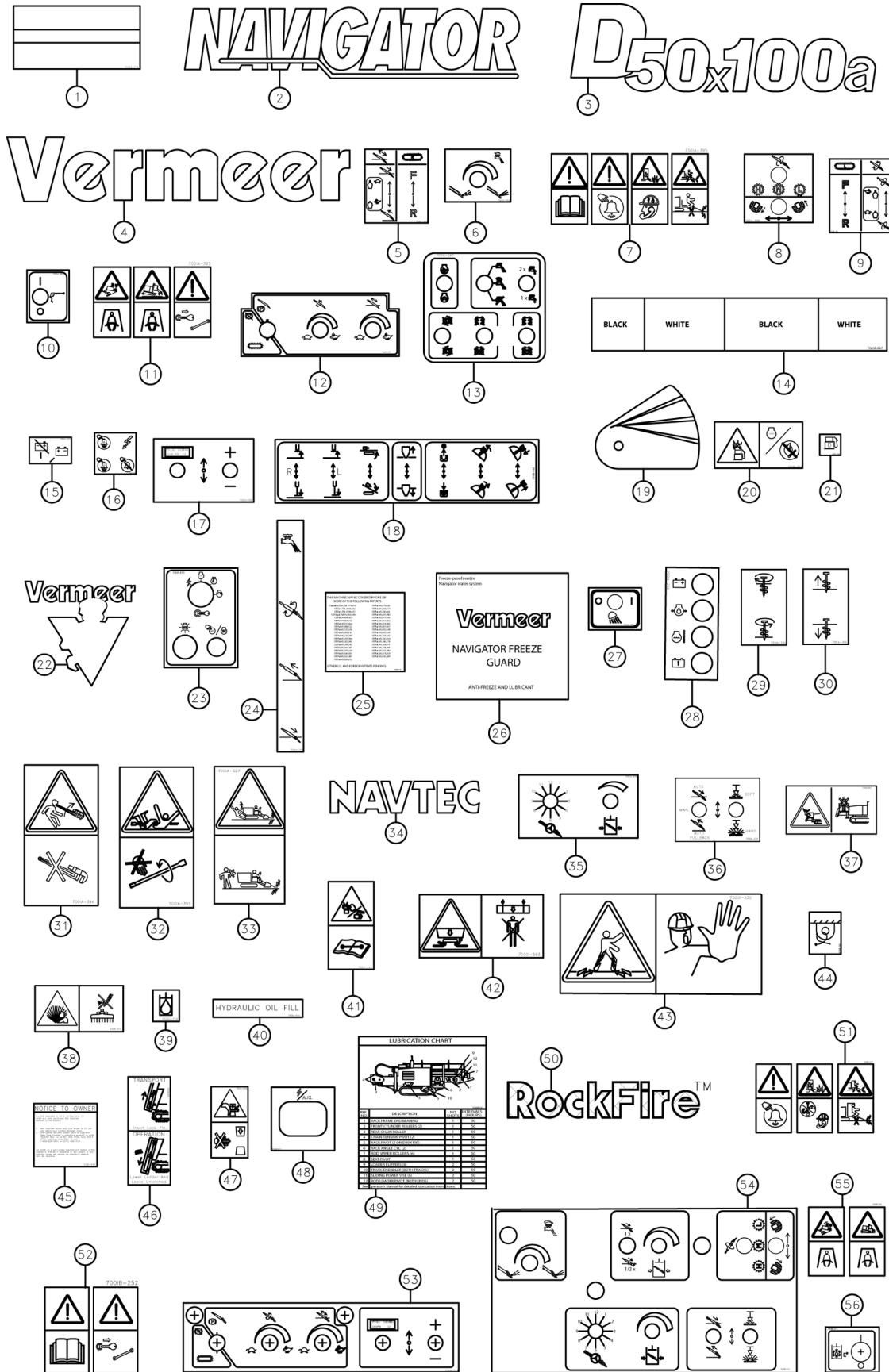
Decal - International Fig 1-2r05



Decal - International Fig 1-2r05

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		70000775	DECAL 3" VERMEER STRIPE	21	
2		70000614	DECAL-MODEL NAVIGATOR	2	BIG
		70000615	DECAL-MODEL NAVIGATOR	1	SMALL
3		7000A790	DECAL-MODEL D50X100A	2	
4		2326619	DECAL-VERMEER 3 X 15	2	
		2326595	DECAL VERMEER-4 1/2 X 24	1	
5		700IA268	DECAL-DRILL FORCE RT	1	UND
6		700IA262	DECAL-FLUID PRES.	1	UG, SN101-235
7		700IA395	DECAL-WARNING	1	SN101-235
8		700IA808	DECAL-SEAT/DRILL COMBO	1	SN101-235
9		700IA269	DECAL-DRILL ROTATION LT	1	UND
10		700IA807	DECAL-WASHWAND	1	
11		700IA325	DECAL-WARNING INT.	1	SN101-235
12		700IA270	DECAL-SPEED VARI.	1	UND, SN101-235
13		700IA267	DECAL-ROD VISES	1	
14		700IA490	DECAL-INDICATOR 2 7/8-3 1/2ROD	1	
15		700IA477	DECAL-BATTERY SWITCH	1	UG
16		700IA260	DECAL-TEST	1	UND
17		7000A508	DECAL-DISPLAY	1	SN101-235
18		700IA401	DECAL-CONTROL BANK D50	1	
19		700IA624	DECAL-LOADER POSITION	1	
20		2326I324	DECAL-WARNING	1	INT
21		7000I098	DECAL-DIESEL	1	AT/UND
22		70000939	DECAL-15" VERMEER LOGO	1	
23		700IA813	DECAL-IGNITION	1	
24		700IA265	DECAL-INSTRUMENTS	1	UG
25		7000B119	DECAL-PATENT	1	
26		7000A027	DECAL-NAVIGATOR FREEZE GUARD	1	
27		700IA804	DECAL-WORK LIGHT	1	
28		700IA266	DECAL-CONTROL PANEL	1	UG
29		700IA306	DECAL-STAKE DRIVER ROTAT.	1	UND
30		700IA305	DECAL-STAKE DRIVE THRUST	1	UND
31		700IA394	DECAL-WARNING	1	
32		700IA393	DECAL-DANGER	1	
33		700IA392	DECAL-DANGER	1	
34		7000A745	DECAL-NAVTEC	2	
35		700IA509	DECAL-STEER	1	SN101-235
36		7000A510	DECAL-AUTO/MAN. SWITCH	1	SN101-235
37		700IA863	DECAL-WARNING	1	AT

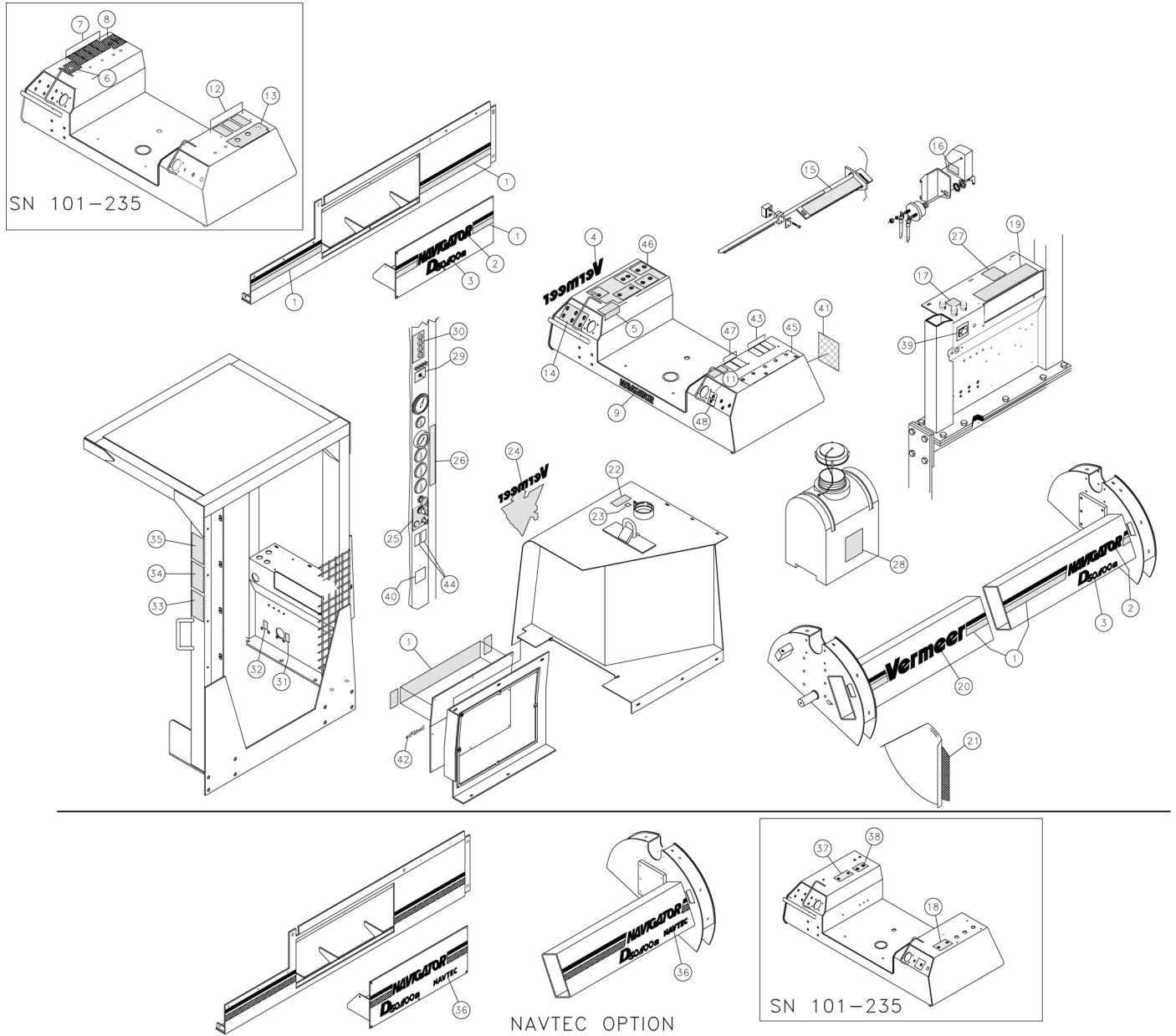
Decal - International (continued) Fig 1-2r05



Decal - International (continued) Fig 1-2r05

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
38		2326I315	DECAL-WARNING	1	INT
39		2326I756	DECAL-HYDRAULIC OIL	1	INT
40		7000A814	HYDRAULIC OIL FILLER	1	
41		7000I044	DECAL-WARNING	1	INT
42		7000I563	DECAL-WARNING	2	UND, INT
43		7000I530	DECAL-DANGER	4	INT
44		7000I834	DECAL-TIE DOWN POINT	6	
45		2326940	DECAL-NOTICE TO OWNERS	1	
46		7000A858	DECAL-TRANSPORT LOCK	1	
47		700IA864	DECAL-WARNING	2	
48		700IB012	DECAL-AUXILIARY POWER	1	
49		7000B182	DECAL-LUBE CHART	1	
50		7000B202	DECAL-ROCKFIRE	1	
51		7000B257	DECAL-WARNING	1	SN236-
52		700IB252	DECAL-WARNING	1	SN236-
53		7000B259	DECAL-CONTROL	1	SN236-
54		700IB260	DECAL-CONTROLS	1	SN236-
55		700IB258	DECAL-WARNING	1	SN236-
56	*	700IB375	DECAL-OIL BYPASS	1	PN Added SN325-
		901228078	D50X100A DECAL ASSY		INTERNATIONAL, INC. ALL ITEMS IN THIS FIGURE

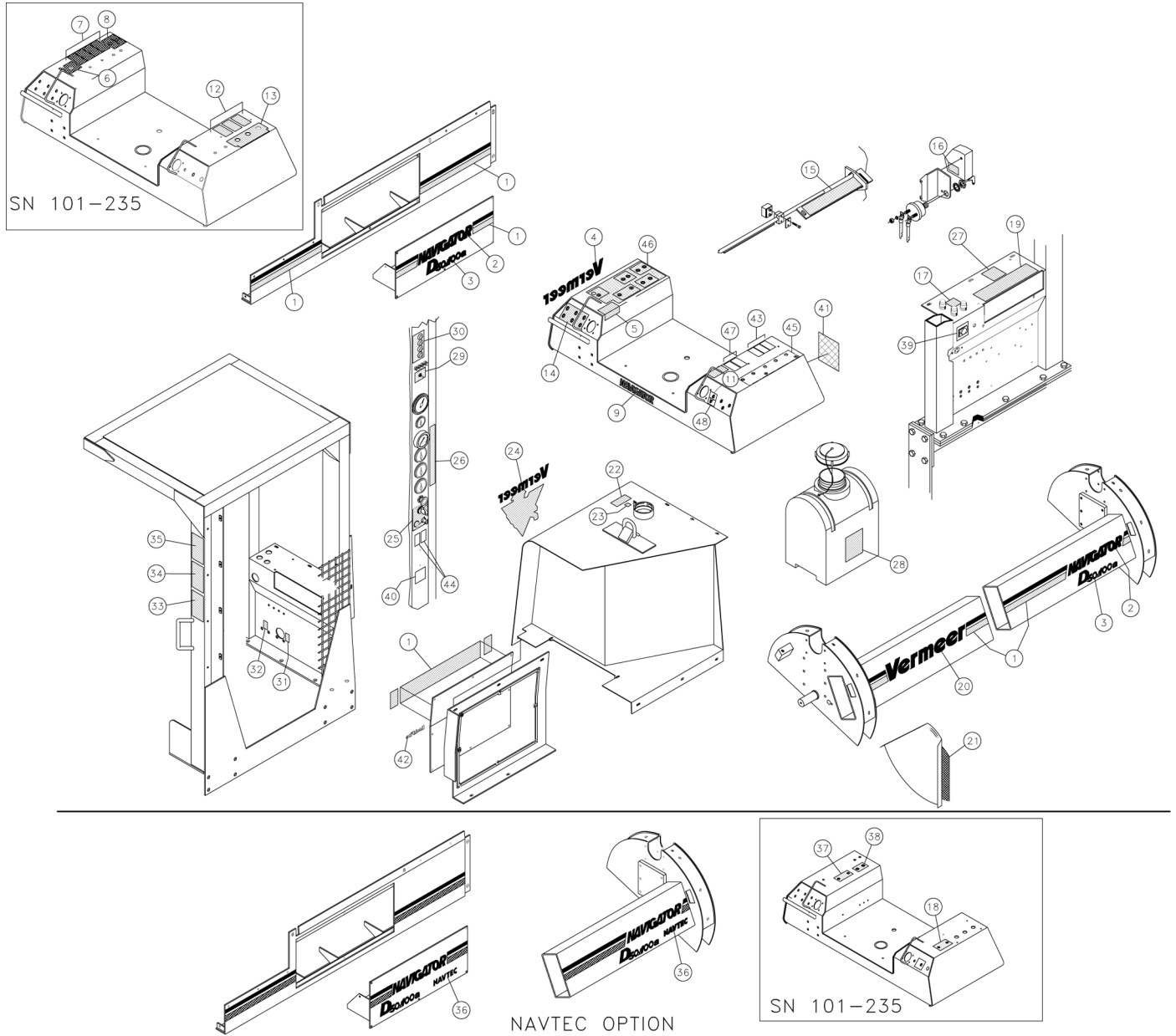
Decal Location Fig 1-3r04



Decal Location Fig 1-3r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		70000775	DECAL 3" VERMEER STRIPE	021	
2		70000614	DECAL-MODEL NAVIGATOR	2	BIG
3		7000A790	DECAL-MODEL D50X100A	2	
4		2326619	DECAL-VERMEER 3 X 15	1	
5		700IA268	DECAL-DRILL FORCE RT	1	UND
6		700IA262	DECAL-FLUID PRES.	1	UG, SN101-235
7		7000A395	DECAL-WARNING	1	SN101-235
		700IA395	DECAL-WARNING	1	INT, SN101-235
8		700IA808	DECAL-SEAT/DRILL COMBO	1	SN101-235
9		70000615	DECAL-MODEL NAVIGATOR	1	SMALL
10		700IA269	DECAL-DRILL ROTATION LT	1	UND
11		700IA807	DECAL-WASHWAND	1	
12		7000A325	DECAL-WARNING	1	SN101-235
		700IA325	DECAL-WARNING INT.	1	SN101-235
13		700IA270	DECAL-SPEED VARI.	1	UND, SN101-235
14		700IA267	DECAL-ROD VISES	1	
15		700IA490	DECAL-INDICATOR 2 7/8-3 1/2 ROD	1	
16		700IA477	DECAL-BATTERY SWITCH	1	UG
17		700IA260	DECAL-TEST	1	UND
18		7000A508	DECAL-DISPLAY	1	SN101-235
19		700IA401	DECAL-CONTROL BANK D50	1	
20		2326595	DECAL VERMEER-4 1/2 X 24	1	
21		700IA624	DECAL-LOADER POSITION	1	
22		2326324	DECAL-WARNING/REFUEL	1	INT
		2326I324	DECAL-WARNING	1	
23		70000098	DECAL-DIESEL	1	AT/UND
24		70000939	DECAL-15" VERMEER LOGO	1	
25		700IA813	DECAL-IGNITION	1	
26		700IA265	DECAL - INSTRUMENTS	1	UG
27		7000B119	DECAL-PATENT	1	
28		7000A027	DECAL-NAVIGATOR FREEZE GUARD	1	
29		700IA804	DECAL-WORK LIGHT	1	
30		700IA266	DECAL - CONTROL PANEL	1	UG
31		700IA306	DECAL-STAKE DRIVER ROTAT.	1	UND
32		700IA305	DECAL-STAKE DRIVE THRUST	1	UND
33		7000A394	DECAL - WARNING	1	
		700IA394	DECAL - WARNING	1	INT
34		7000A393	DECAL - DANGER	1	
		700IA393	DECAL - DANGER	1	INT

Decal Location (continued) Fig 1-3r04

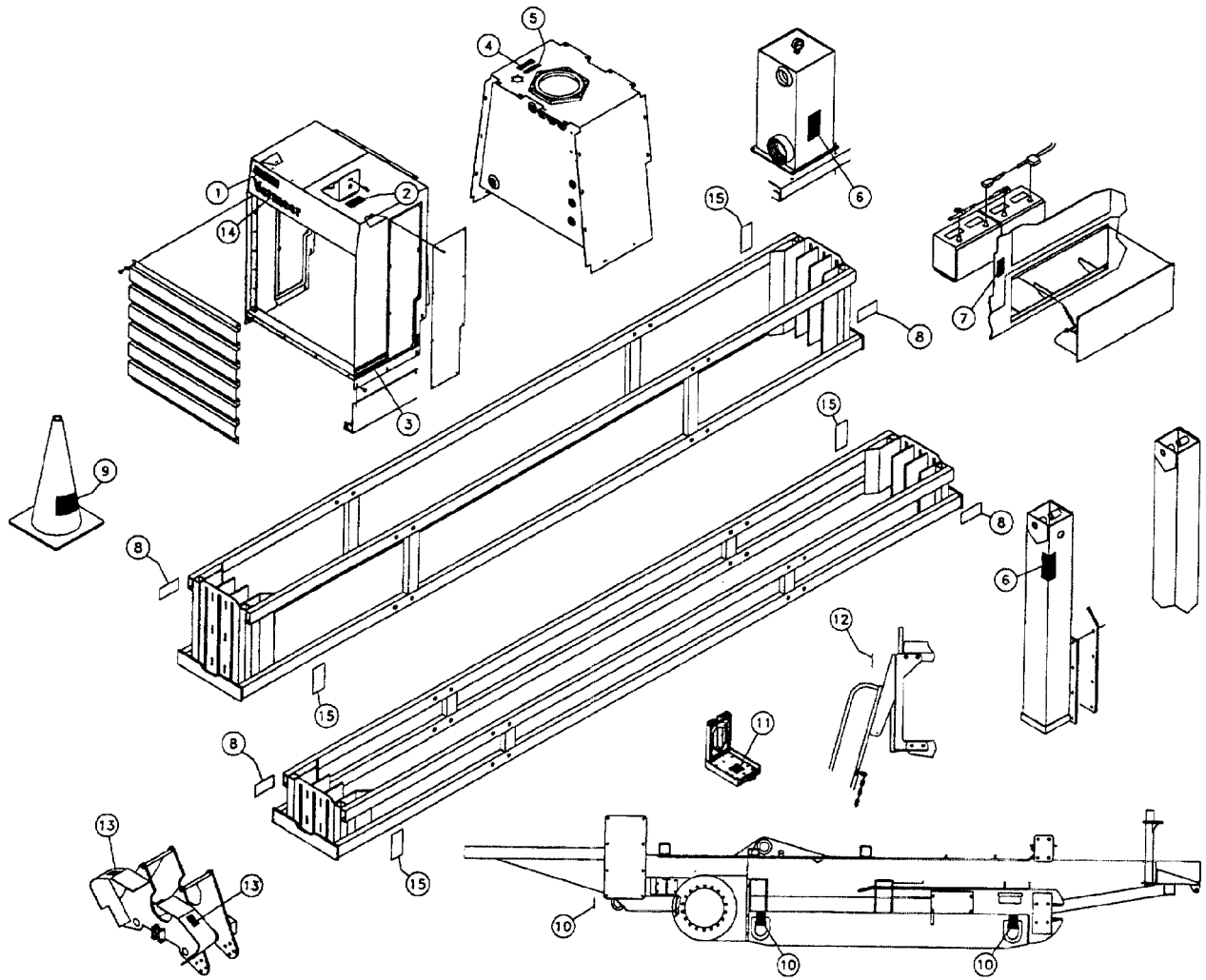


Decal Location (continued) Fig 1-3r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
35		7000A392	DECAL - DANGER	1	
		700IA392	DECAL - DANGER	1	INT
36		7000A745	DECAL-NAVTEC	2	
37		700IA509	DECAL-STEER	1	SN101-235
38		7000A510	DECAL-AUTO/MAN. SWITCH	1	SN101-235
39		700IB012	DECAL-AUXILIAR POWER	1	
40		7000B119	DECAL-PATENT	1	
41		7000B182	DECAL-LUBE CHART	1	
42		7000B202	ROCKFIRE	1	SN236-
43		7000B257	DECAL-WARNING	1	SN236-
		700IB257	DECAL-WARNING	1	INT, SN236-
44		7000B252	DECAL-WARNING	1	SN236-
		700IB252	DECAL-WARNING	1	INT, SN236-
45		7000B259	DECAL-CONTROL	1	SN236-
46		7000B260	DECAL-CONTROLS	1	SN236-
		700IB260	DECAL-CONTROLS	1	INT, SN236-
47		7000B258	DECAL-WARNING	1	SN236-
		700IB258	DECAL-WARNING	1	INT, SN236-
48	*	700IB375	DECAL-OIL BYPASS	1	PN Added SN325-

Decal Location Fig 1-4r03

Revised October 1999 due to update
in parts list. Changed part marked with *.

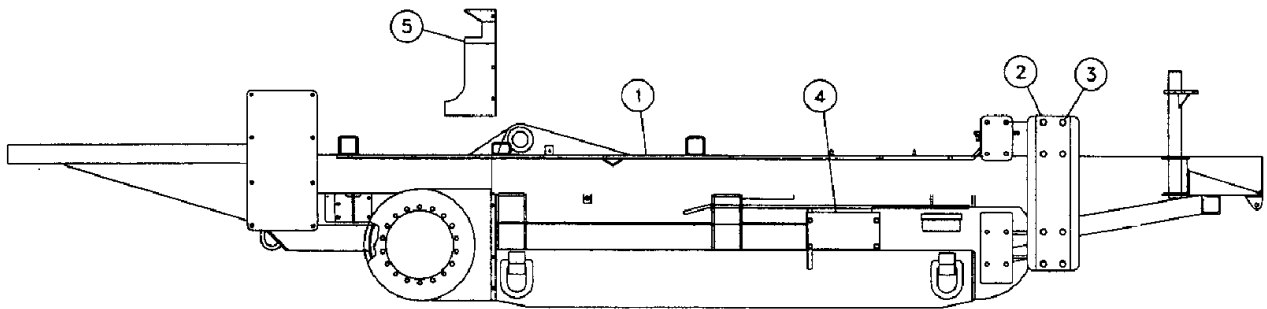


Decal Location Fig 1-4r03

REF NO.	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		70000089	DECAL-WARNING	1	AT
2		2326315	DECAL-WARNING	1	
		2326I315	DECAL-WARNING	1	INT.
3		70000775	DECAL 3" VERMEER STRIPE	21	
4		2326756	DECAL-HYDRAULIC OIL	1	
		2326I756	DECAL-HYDRAULIC FLUID	1	INT.
5		7000A814	HYDRAULIC OIL FILLER	1	
6		7000A392	DECAL - DANGER	2	
		700IA392	DECAL - DANGER	2	INT.
7		70000044	DECAL-WARNING	1	AT/UND
		7000I044	DECAL-WARNING	1	INT.
8		70000563	DECAL-WARNING	2	UND
		7000I563	DECAL-WARNING	2	UND, INT.
9		70000530	DECAL-DANGER	4	
		7000I530	DECAL-DANGER	4	INT.
10	*	7000I834	DECAL-TIE DOWN POINT	6	
11		2326940	DECAL-NOTICE TO OWNERS	1	
12		7000A858	DECAL-TRANSPORT LOCK	1	
13		7000A864	DECAL-WARNING	2	
		700IA864	DECAL-WARNING	2	
14		2326619	DECAL-VERMEER 3X15	1	
15		7000A392	DECAL-DANGER	4	
		700IA392	DECAL-DANGER	4	INT.

Main Frame Fig 1-5r02

Revised February 1999 due to change
in ROPS support plate & hardware update.
Changed/added parts marked with *.

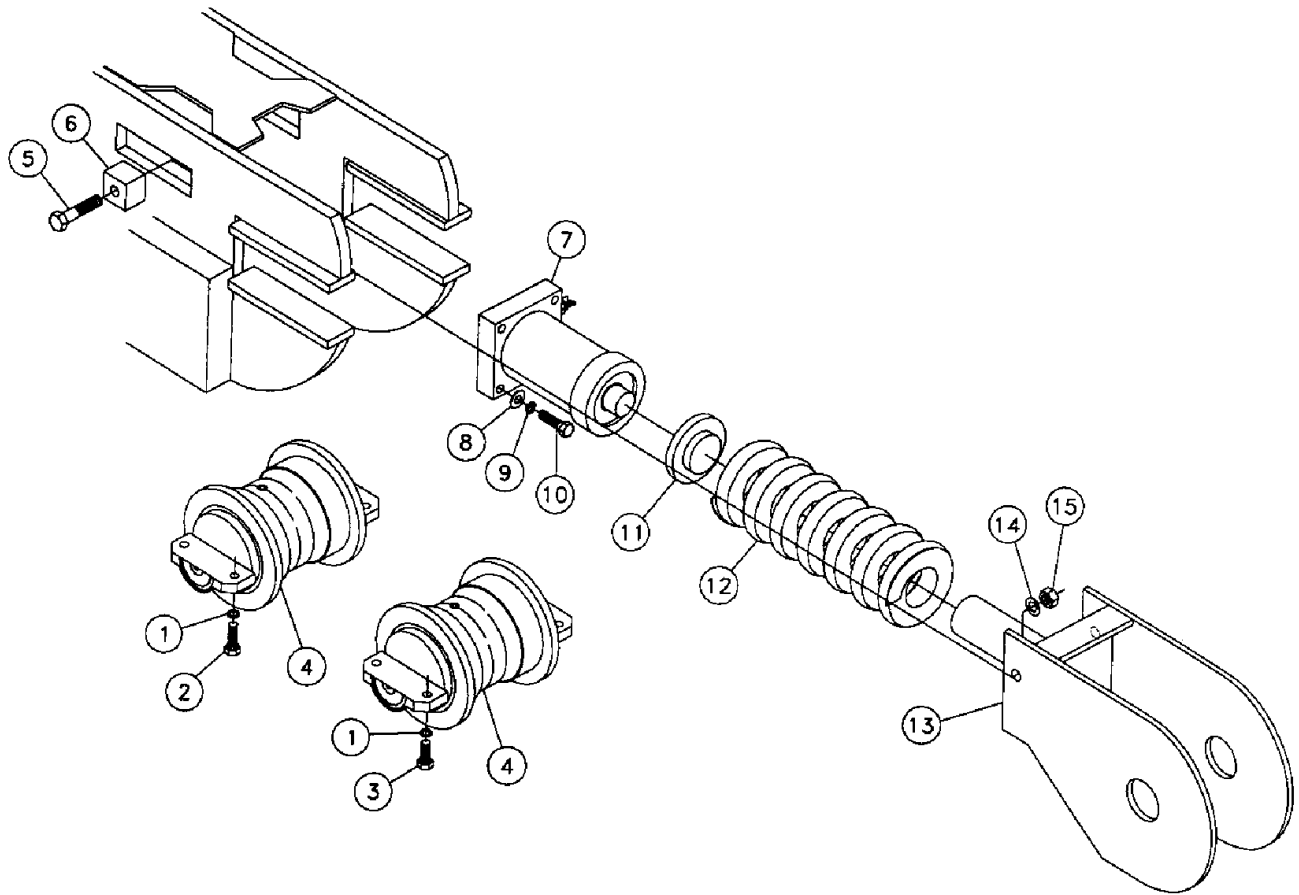


Main Frame Fig 1-5r02

REF NO.	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		241653001	FRAME-MAIN D50A	1	
2	*	277785001	PLATE-ROPS SUPPORT	1	
3		238220001	BOLT-5/8"-11X1 3/4" GR 8 HEX ZINC	8	
	*	235715001	WASHER-5/8 SAE HARD ZINC PLT	16	
	*	250513001	NUT-5/8"-11 GR 8 TOP LOCK Y/ZINC	8	
4		902157001	TRACK TIGHTENER SHIELD	2	
	*	235727001	BOLT-3/8-16X1" GRADE#8 HEX ZINC PLT	8	
	*	235713001	WASHER-3/8 SAE HARD ZINC PLT	8	
5		902162001	SPROCKET SHIELD	1	LEFT
		902162002	SPROCKET SHIELD	1	RIGHT
	*	485025	WASHER-1/2 FLAT HARDENED ZINC	6	
	*	235737001	BOLT-1/2-13 X 1 1/4 GR #8 HEX ZINC	6	

Track Tightener, Roller & Chain Fig 1-6r02

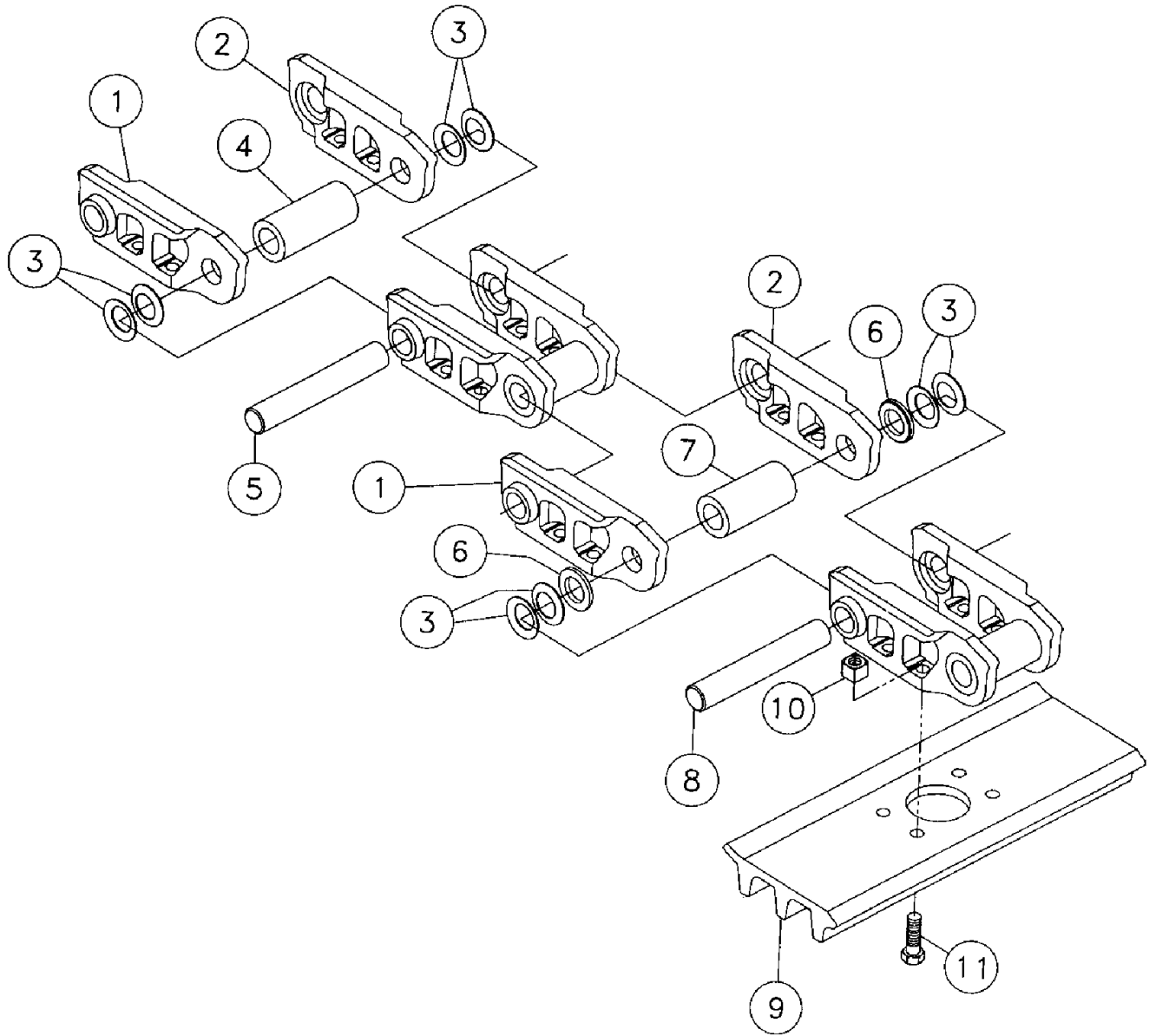
Revised June 2000 due to update
in parts list. Changed parts marked
with *.



Track Tightener, Roller & Chain Fig 1-6r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		480011	WASHER-1/2 S/T LOCK	56	
2		75381012	BOLT-1/2-UNC X 1 1/4 GR. 8 HEX	12	
3		75381014	BOLT-1/2-UNC X 1 1/2 GR.8 HEX	44	
4		902013001	ROLLER-TRACK 3T4352	14	
5		250532001	5/8-18X2 3/4 ZINC	4	
6	*	285769001	SPACER-TRACK ADJ BOLT	4	REPLACES 6716001
7		231104001	CYLINDER-3 1/2" X 4 3/4"	2	BREAKDOWN FIG. 1-23
8		485011	WASHER-1/2 FLAT	8	
9		480011	WASHER-1/2 S/T LOCK	8	
10		75381016	BOLT-1/2-UNC X 1 3/4 GR.8 HEX	8	
11		69908001	PLATE-TRACK SPRING SUPPORT	2	
12		1803051	SPRING-COMP. 1"W X 4 1/2 OD X 12"	2	
13		901995001	BOX-TRACK END ROLLER	2	
14		235715001	WASHER-5/8 H ZINC	4	
15		396001	NUT-5/8-18 GR 8 SLTL	4	

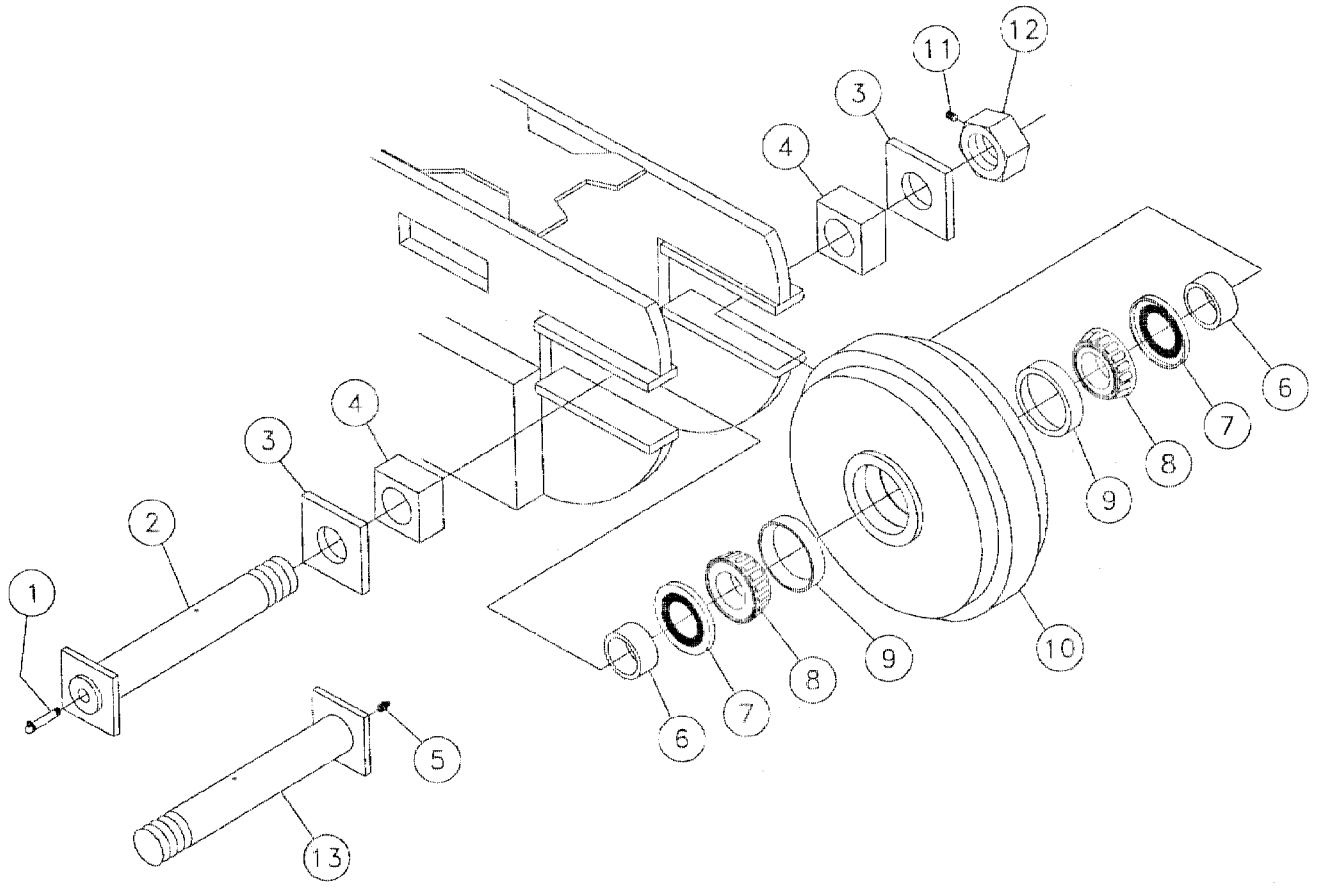
Track Chain Fig 1-7



Track Chain Fig 1-7

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		901767005	LINK-R.H.	39	
2		901767007	LINK-L.H.	39	
3		901766015	WASHER	156	
4		901767009	BUSHING	38	
5		901767011	PIN	38	
6		901766011	SPACER	2	
7		901766017	BUSHING	1	
8		901766013	PIN-MASTER	1	
9		901767003	GROUSER-18" TRIPLE 6ZXXXX	39	
10		26384001	NUT-IN 1319A 9/16-18 SQ.HD.	156	
11		12698001	BOLT-9/16-18X2 TRACK PAD	156	
		901767001	CHAIN-TRACK		INC. ALL ITEMS IN THIS FIGURE

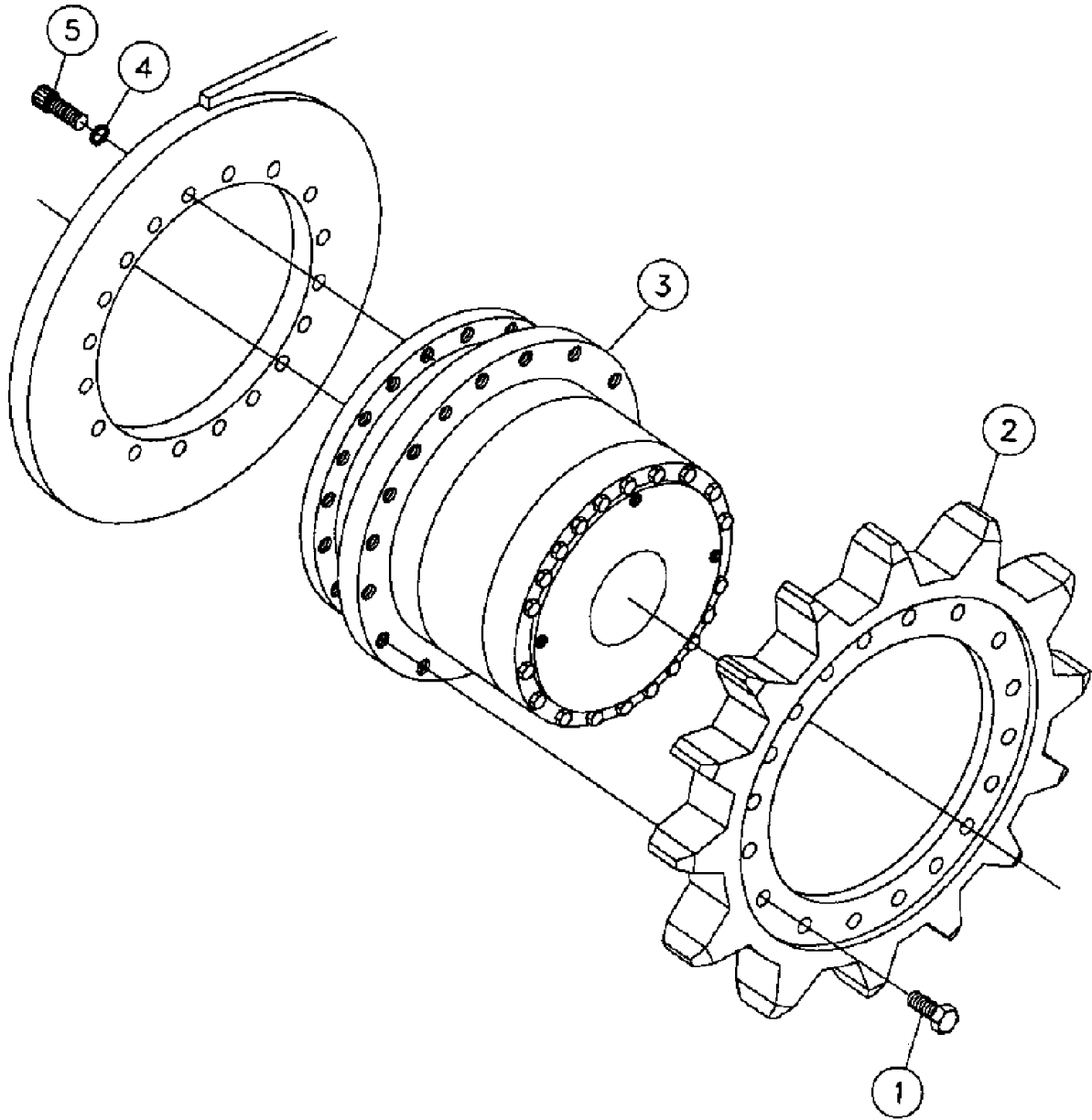
Track End Roller Fig 1-8r04



Track End Roller Fig 1-8r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		593001	ZERK-1/8" 90 DEG GRSE 1 13/16	1	
2		902770005	BOLT ASSY.-END IDLER ROLLER	1	INC. REF. 1
3		903257001	SPACER-IDLER ROLLER BOLT	4	
4	*	285770001	BLOCK-IDLER ROLLER BOLT	4	REPLACES 903256-001
5		586001	ZERK-1/8 NPT ST GREASE	1	
6		280532001	SPACER-IDLER ROLLER	4	REPLACES 6706-001
7		3967001	SEAL	4	
8		1716011	TIMKEN CONE 2"	4	
9		1715011	TIMKEN CUP 2"	4	
10		217479003	ROLLER-TRACK END IDLER	2	INC. TWO OF REF. 9
11		530001	SSS-3/8-16 X 1/2	2	
12		6702003	NUT ASSY-END IDLER ROLLER	2	
13		902770003	BOLT ASSY-END IDLER ROLLER	1	INC. REF. 5
			Revised June 2000 due to update in parts list. Changed part marked with *.		

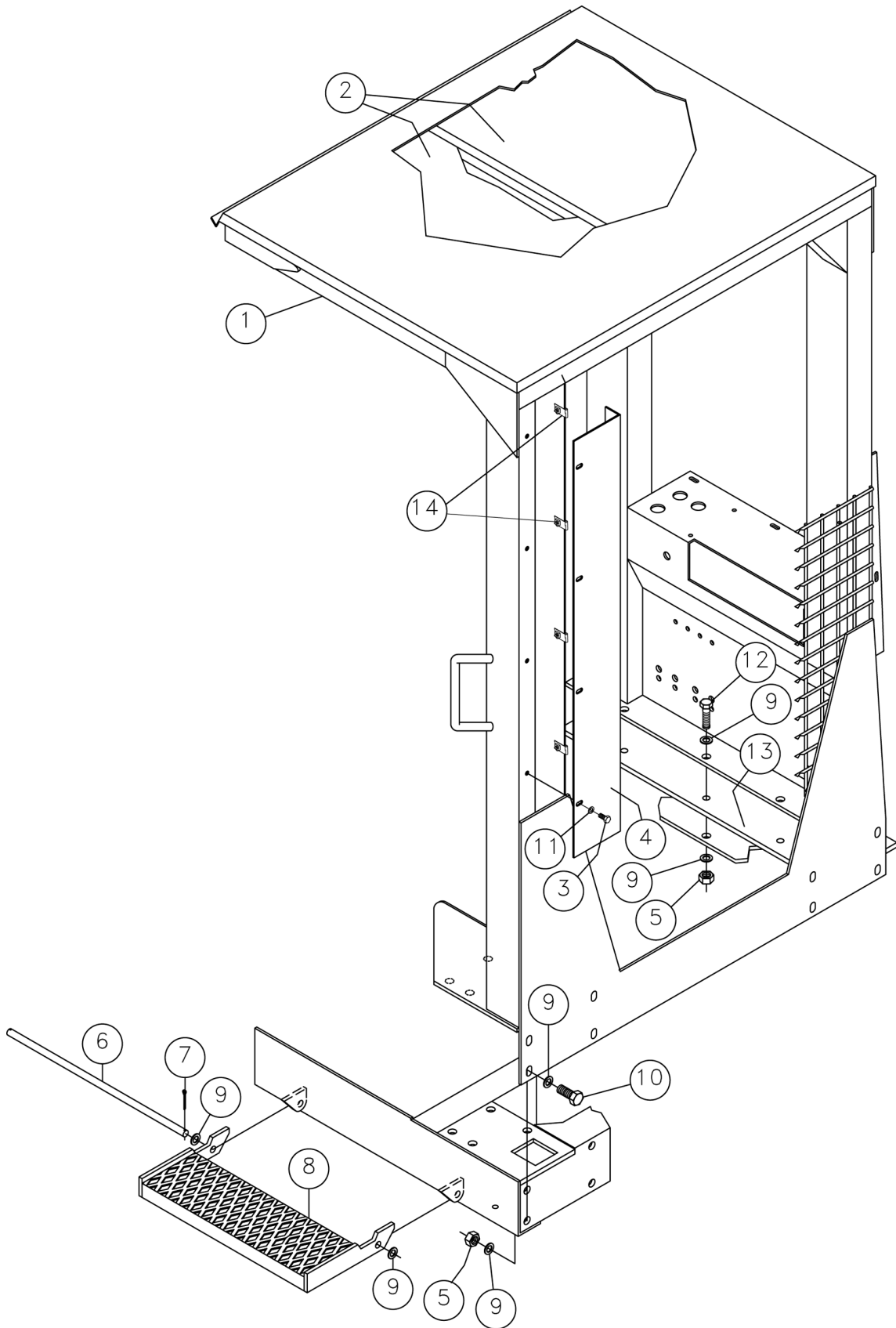
Track Planetary Fig 1-9r02



Track Planetary Fig 1-9r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		249884001	BOLT-M 16 X 40 HHCS 10.9 DIN 933 ZN	36	
2	*	285757001	SPROCKET-19T TRACK F/C72750	2	REPLACES 901997001
3		214045001	PLANETARY	2	BREAKDOWN FIG. 1-22
4		249889001	WASHER-M16 8.8 LOCK ZINC	36	
5		249885001	BOLT-M 16 X 45 12.9 50CHD C/S ZINC	36	
			Revised June 2000 due to update in parts list. Changed part marked with *.		

R.O.P.S. Fig 1-10r05

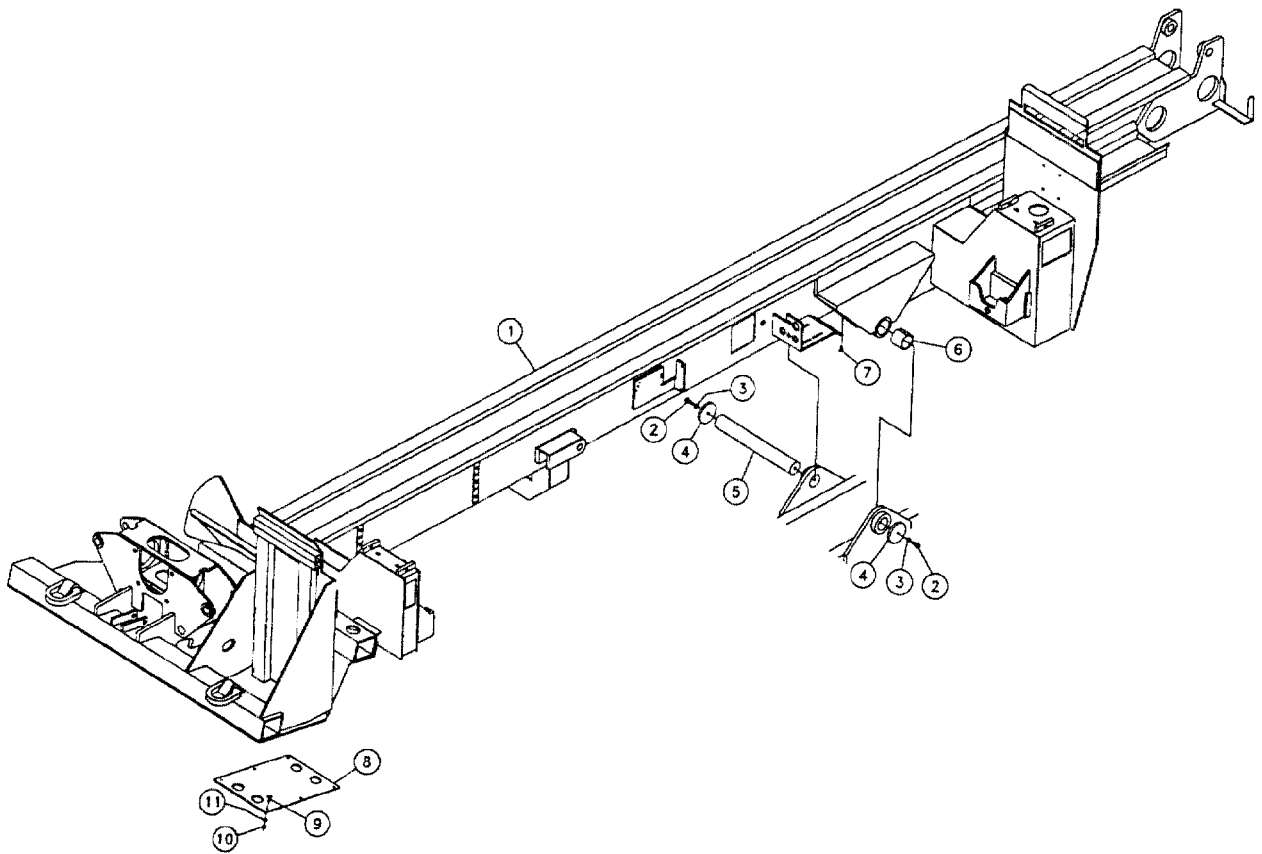


R.O.P.S. Fig 1-10r05

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1	*	283631001	CAGE-ROPS	1	PN Changed
2		227871001	FOAM-ROPS LINER	2	
3		235726001	BOLT-3/8-16X3/4 GR 8 HEX ZINC PLT	8	
4		224369001	PLATE-GAUGE COVER	1	
5	*	241064001	NUT-5/8-11 UNC GR 8 HEX ZINC	24	
6		234318001	ROD-STEP PIN	1	
7		510011	COTTER PIN-1/8" X 1 1/2"	2	
8		234316001	STEP	1	
9		235715001	WASHER-5/8 SAE HARD ZINC	49	
10		238220001	BOLT-5/8-11X1 3/4" GR 8 HEX ZINC	13	
11		235713001	WASHER-3/8 SAE HARD ZINC PLT	8	
12		238245001	BOLT-5/8"-11X2 1/4" GR 8 HEX Z	12	
13		277782001	PLATE-ROPS SPACER	1	
14		415001	NUT-3/8 NC HEX NUT CLIP	4	

Rack Frame Fig 1-11r03

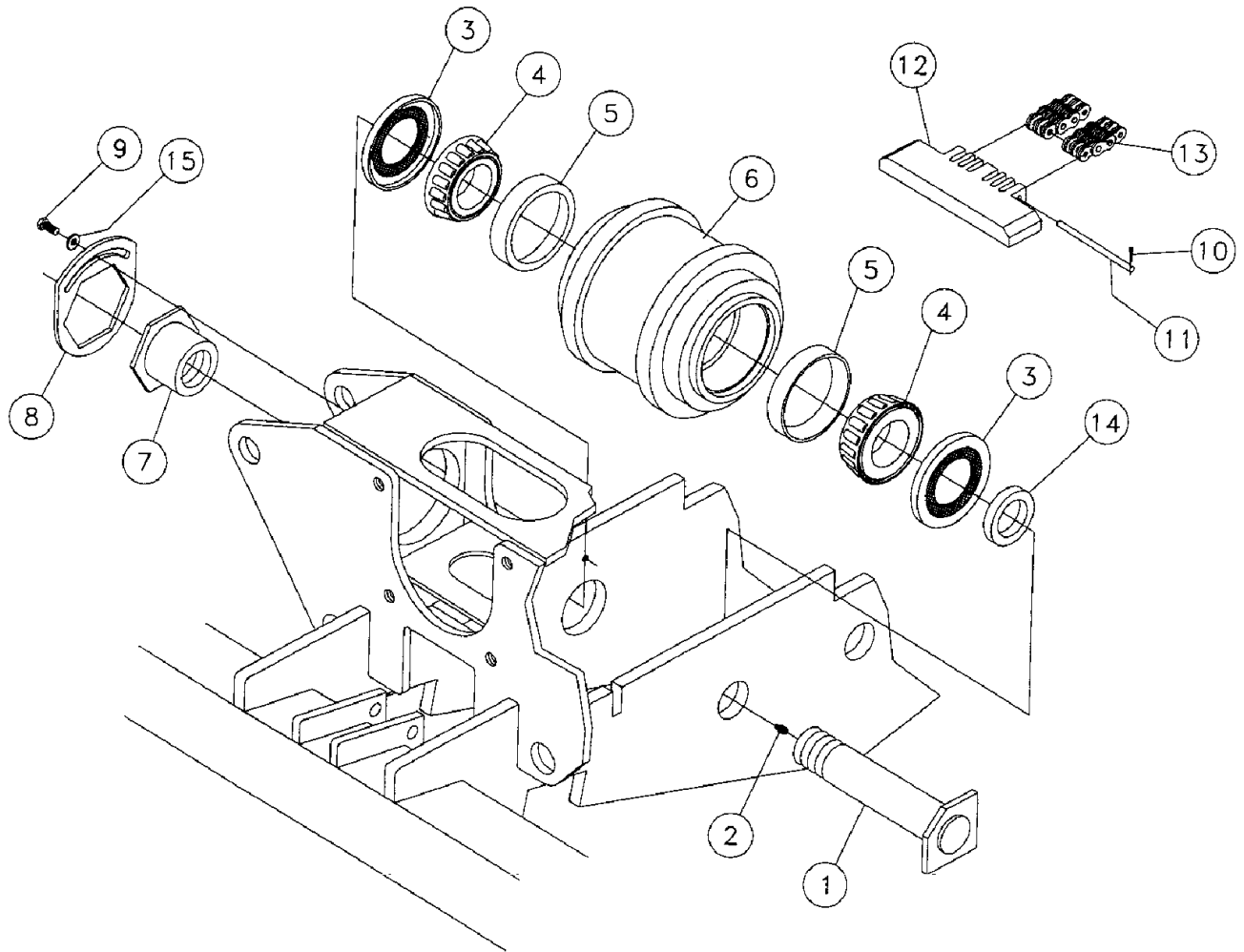
Revised October 1999 due to update in illustration.



Rack Frame Fig 1-11r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		234376001	RACK-15' D50X100A	1	INC. REF. 6 & 7
2		235737001	BOLT-1/2-13 X 1 1/4 GR 8 HEX ZINC	2	
3		485025	WASHER-1/2 FLAT HARDENED ZINC	2	
4		38884001	PIVOT ROD PLUG	2	
5		216620001	PIN-RACK PIVOT	1	
6		1835099	BSHG-STL.3 X 2 1/2-2 1/2	2	
7		590001	ZERK-1/8" NPT 90 DEG GREASE	1	
8		227929001	COVER-BASE PLATE	1	
9		375010	BOLT-3/8"-16X1"GD #5 CARRIAGE	6	
10		235725001	NUT - 3/8-16 GR 8 HEX ZINC	6	
11		235713001	WASHER-3/8" SAE HARD ZINC	6	

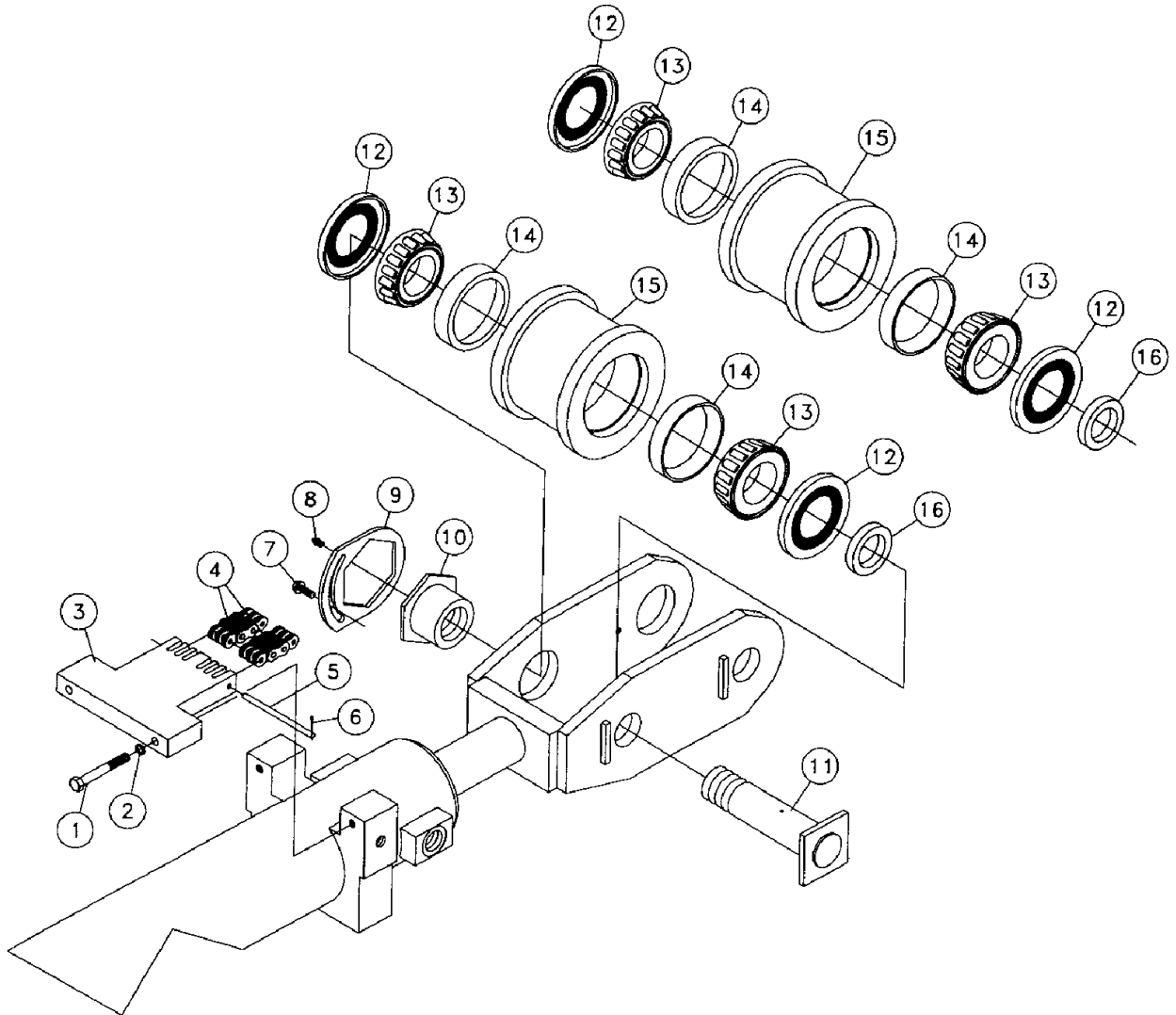
Front Roller Fig 1-12r02



Front Roller Fig 1-12r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		216712003	PIN ASSY-FRONT ROLLER	1	INC. REF. 2
2		586001	ZERK-1/8" ST NPT GREASE	1	
3		224299001	SEAL-C/R 31353	2	
4		1716153	TIMKEN CONE-2 1/8" #6280	2	
5		1715091	TIMKEN CUP-2 1/8" #6220	2	
6		239482001	FRNT CHAIN ROLL ASSY D50 X 100A	1	INC. REF. 5
7		216596001	NUT-IDLER PIN	1	
8		224265001	PLATE-NUT LOCK	1	
9		4475006	BOLT-3/8-16 X 3/4 FLG WHIZ	1	
10		510005	COTTER PIN-3/32" X 3/4"	2	
11		216742001	PIN-2 BL8XX LEAF CHAIN	1	
12		239289001	ANCHOR-THRUST CHAIN	1	
13	*	283591001	CHAIN-LEAF 2-233 PITCHES MATCHED	1	
		98422001	LINK-BL866 CONNECTOR		
14		224250001	SPACER-SHEAVE	1	
15		235713001	WASHER-3/8" SAE HARD ZINC PLTED	1	
			Revised June 2000 due to update in parts list. Changed parts marked with *.		

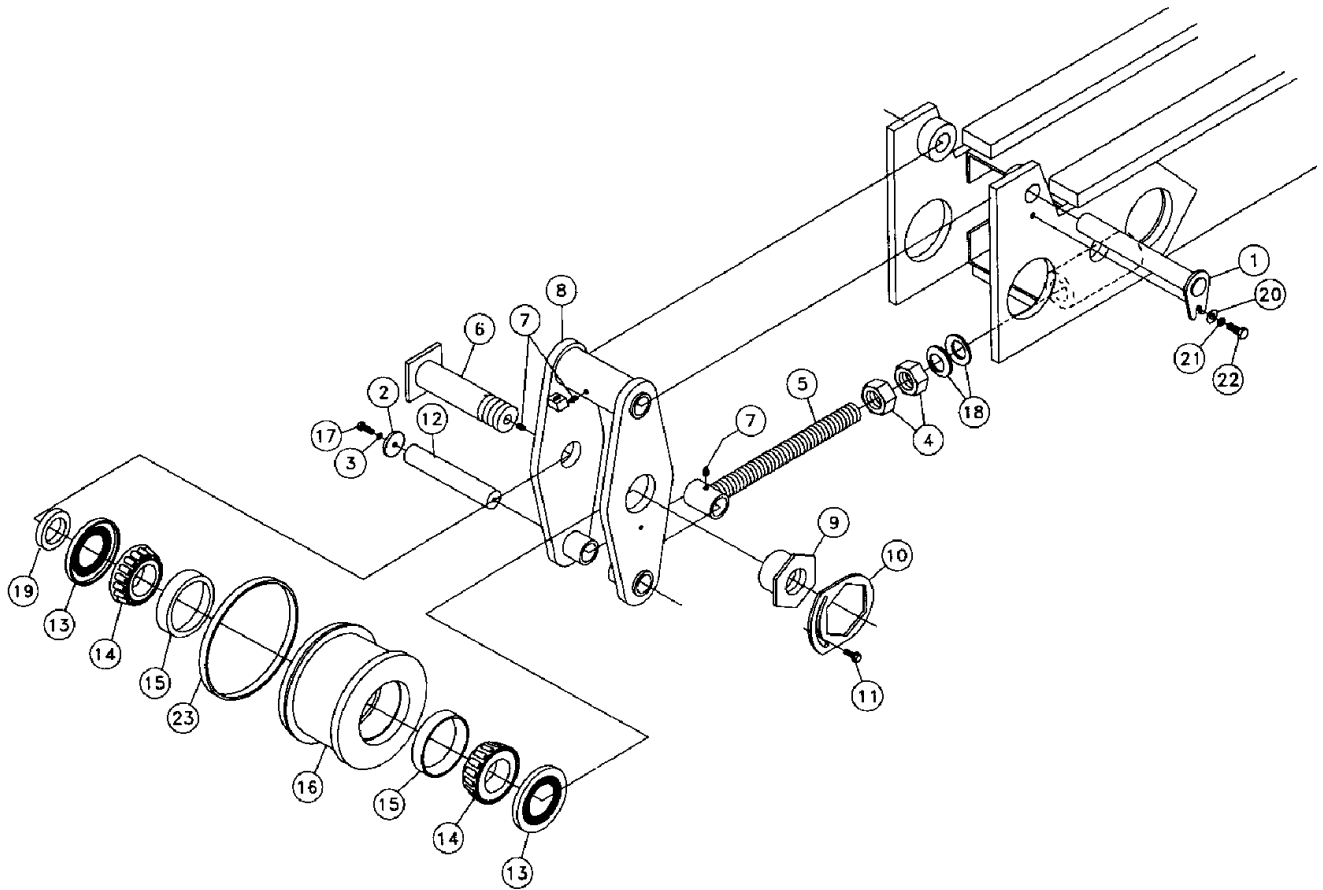
Thrust Cylinder Roller Fig 1-13r01



Thrust Cylinder Roller Fig 1-13r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		358036	1/2-13X3 3/4" GRADE #5 HEX BOLT	2	
2		480011	WASHER-1/2 S/T LOCK	2	
3		216658001	CLEVIS-2BL866	1	
4	*	283592001	CHAIN-LEAF 2-363 PITCHES MATCHED	1	
		98422001	LINK-BL866 CONNECTOR	2	
5		216742001	PIN-2BL8XX LEAF CHAIN	1	
6		510005	COTTER PIN-3/32" X 3/4"	2	
7		4475010	BOLT-3/8-16X1 FLANGE WHIZ	2	
8		586001	ZERK-1/8" ST NPT GREASE	2	
9		224265001	PLATE-NUT LOCK	2	
10		216596001	NUT-IDLER PIN	2	
11		216713003	PIN ASSY-REAR ROLLER	2	INC. REF. 8
12		224299001	SEAL-C/R 31353	4	
13		1716153	TIMKEN CONE-2 1/8"	4	
14		1715091	TIMKEN CUP-2 1/8"	4	
15		239483001	CHAIN ROLLER ASSY	1	INC. TWO OF REF. 14
16		224250001	SPACER-SHEAVE	2	
			Revised June 2000 due to update in parts list. Changed part marked with *.		

Rear Chain Tightener Fig 1-14

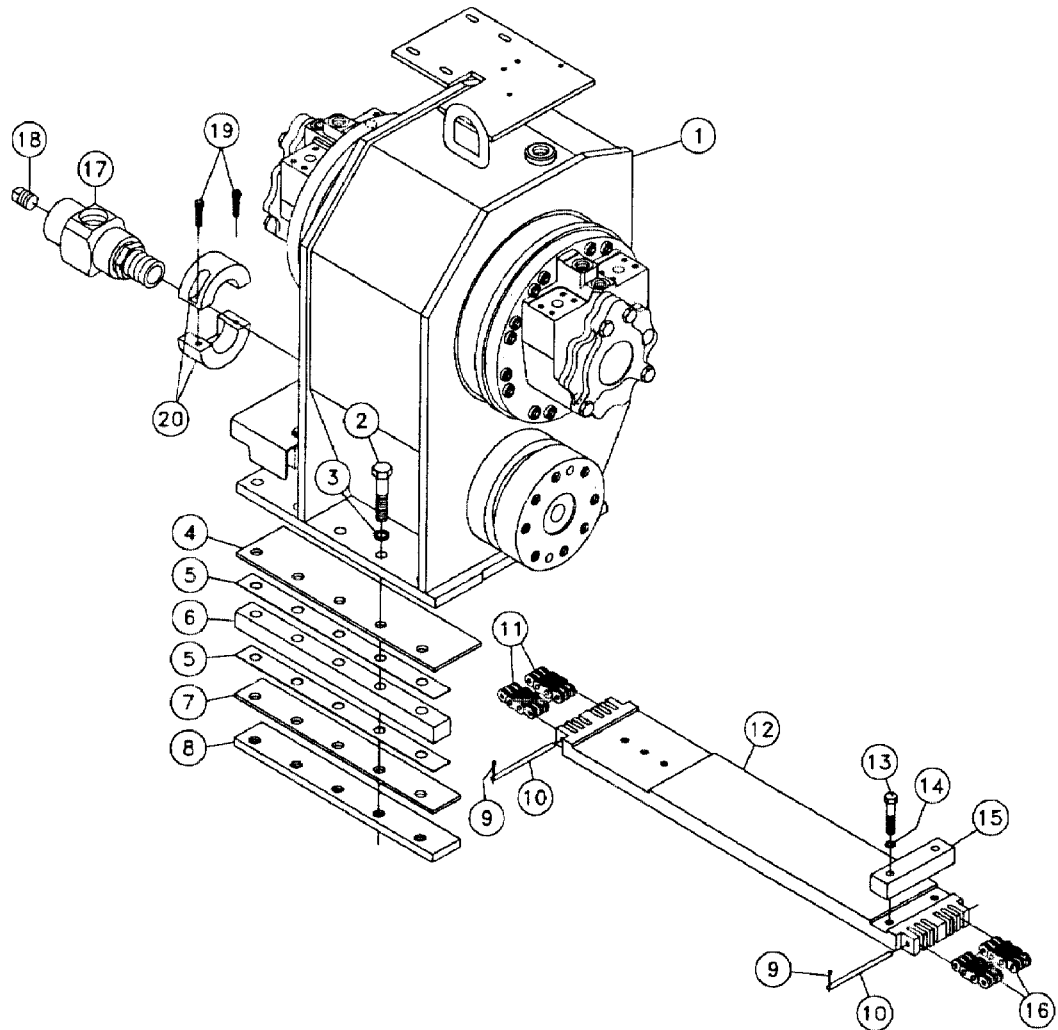


Rear Chain Tightener Fig 1-14

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		227918001	PIN-ROLLER FRAME PIVOT	1	
2		18150001	SLUG-2 DIA.-1/4"	2	
3		480007	WASHER-3/8 S/T LOCK	2	
4		234436001	NUT-1 1/2"-4 ACME	2	
5		234434003	TIGHTENER ASSY-CHAIN	1	INC. ONE OF REF. 7
6		216713003	PIN ASSY-REAR ROLLER	1	INC. ONE OF REF. 7
7		586001	ZERK-1/8" ST NPT GREASE	3	
8		216720003	FRAME ASSY-REAR CHAIN IDLER	1	INC. ONE OF REF. 7
9		216596001	NUT-IDLER PIN	1	
10		224265001	PLATE-NUT LOCK	1	
11		4475006	BOLT-3/8-16X3/4 FLG WHIZ	1	
12		216723001	PIN-REAR IDLER FRAME	1	
13		224299001	SEAL-C/R 31353	2	
14		1716153	TIMKEN CONE-2 1/8"	2	
15		1715091	TIMKEN CUP-2 1/8"	2	
16		216591003	ROLLER ASSEMBLY	1	INC. REF. 15 & 23
17		354012	BOLT-3/8 - 16X 1 1/4" GR5 HEX	2	
18		234452001	WASHER-BELLEVILLE2.50ODX1.53ID	18	
19		224250001	SPACER-SHEAVE	1	
20		485011	WASHER-1/2 FLAT	1	
21		480011	WASHER-1/2 S/T LOCK	1	
22		358012	BOLT-1/2-13 X 1 1/4 GR #5 HEX	1	
23		234816001	121 PULSE RING	1	

Rotation Gearbox Fig 1-15r03

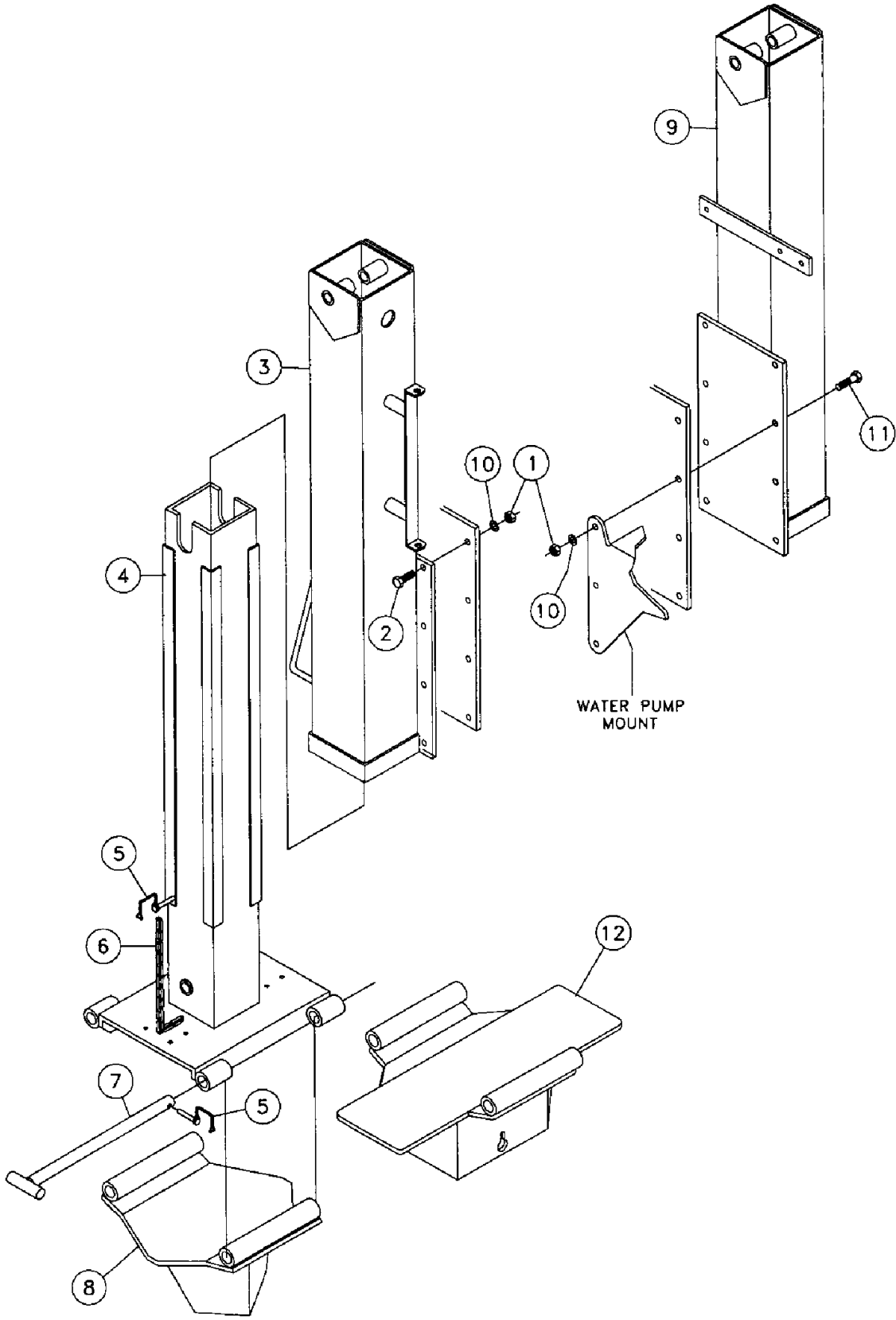
Revised February 2000 due to update
in illustration & parts list. Changed/added
parts marked with *.



Rotation Gearbox Fig 1-15r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		239491001	ROTATION GEARBOX ASSY-D50 X 100A	1	BREAKDOWN FIG. 1-19
2		369036	BOLT-3/4-10X3 3/4 GR5 HEX	10	
3		480017	WASHER-3/4 S/T LOCK	10	
4		216667001	WEARSTRIP	2	PLASTIC
5		216749001	SHIM-GEAR BOX SLIDE	4	
6		216747001	SPACER-GEARBOX SLIDE	2	
7		216547001	WEARSTRIP	2	PLASTIC
8		216748001	BAR-SLIDE	2	
9		510005	COTTER PIN-3/32" X 3/4"	4	
10		216742001	PIN-28L8XX LEAF CHAIN	2	
11	*	283592001	CHAIN-LEAF 2-363 PITCHES MATCHED	1	
		98422001	LINK-BL866 CONNECTOR		
12		234499001	DOGBONE-CYLINDER STYLE	1	
13		279269001	BOLT-1/2-20 X 2 1/2 HEX HD GR 8 ZINC	4	
14		480011	WASHER-1/2 S/T LOCK	4	
15		224277001	STOP-DOGBONE	2	
16		98422001	LINK-BL866 CONNECTOR		
	*	283591001	CHAIN-LEAF 2-233 PITCHES MATCHED	1	
17		277834001	SWIVEL-200 GPM WATER W/BRG	1	
18		732009	PLUG-3/4" PIPE BLACK STEEL	1	
19		283838001	CAPSCREW-3/8-16X1 1/2 SOC HD G8 ZY	2	SN236-
20		284348001	BUSHING-SWIVEL LOCK 2 HALVES	1	SN236-

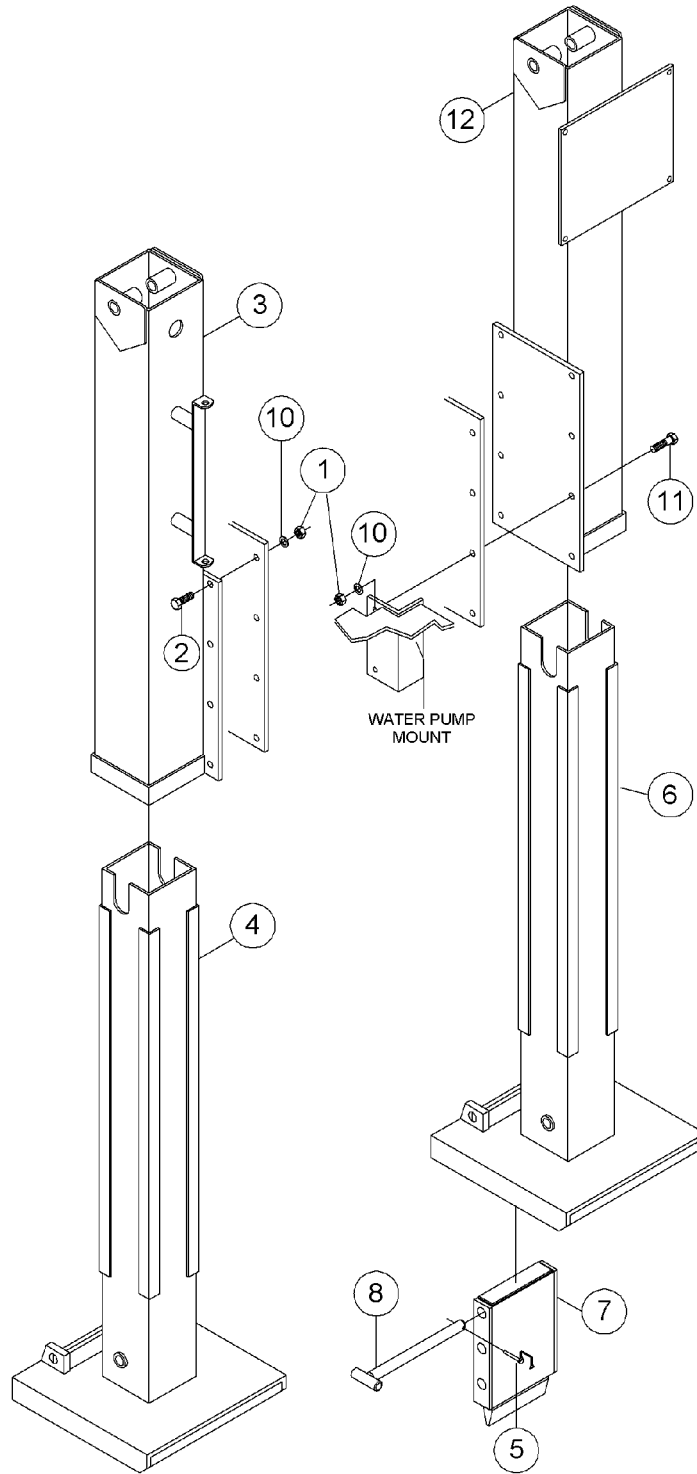
Outrigger - SN101-311 Fig 1-16r03



Outrigger - SN101-311 Fig 1-16r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		238221001	NUT-5/8 11 GR 8 HEZ Y/ZINC	16	
2		250607001	BOLT-5/8 11 X 2" GRADE#8 HEX Y/ZINC	13	
3		239469001	OUTRIGGER-OUTSIDE TUBE	1	LEFT
4		224331001	OUTRIGGER TUBE-INSIDE	2	
5		2108001	LYNCH PIN - 1/4 X 2	6	
6		239284001	CHAIN - 1/4" PC 18 LINKS	2	
7		227791001	PIN-OUTRIGGER SHOVEL	4	
8		224340001	STAKE-REAR	2	
9		239458001	OUTRIGGER-OUTSIDE TUBE	1	RIGHT
10		235715001	WASHER-5/8 SAE HARD ZINC PLT	16	
11		238245001	BOLT-5/8-11 X 2 1/4" GR 8 HEX ZINC	3	
12		239257001	STAKE-LARGER OUTRIGGER	2	
			Revised June 2000 due to update in heading.		

Outrigger - SN312 Fig 1-16x01r01

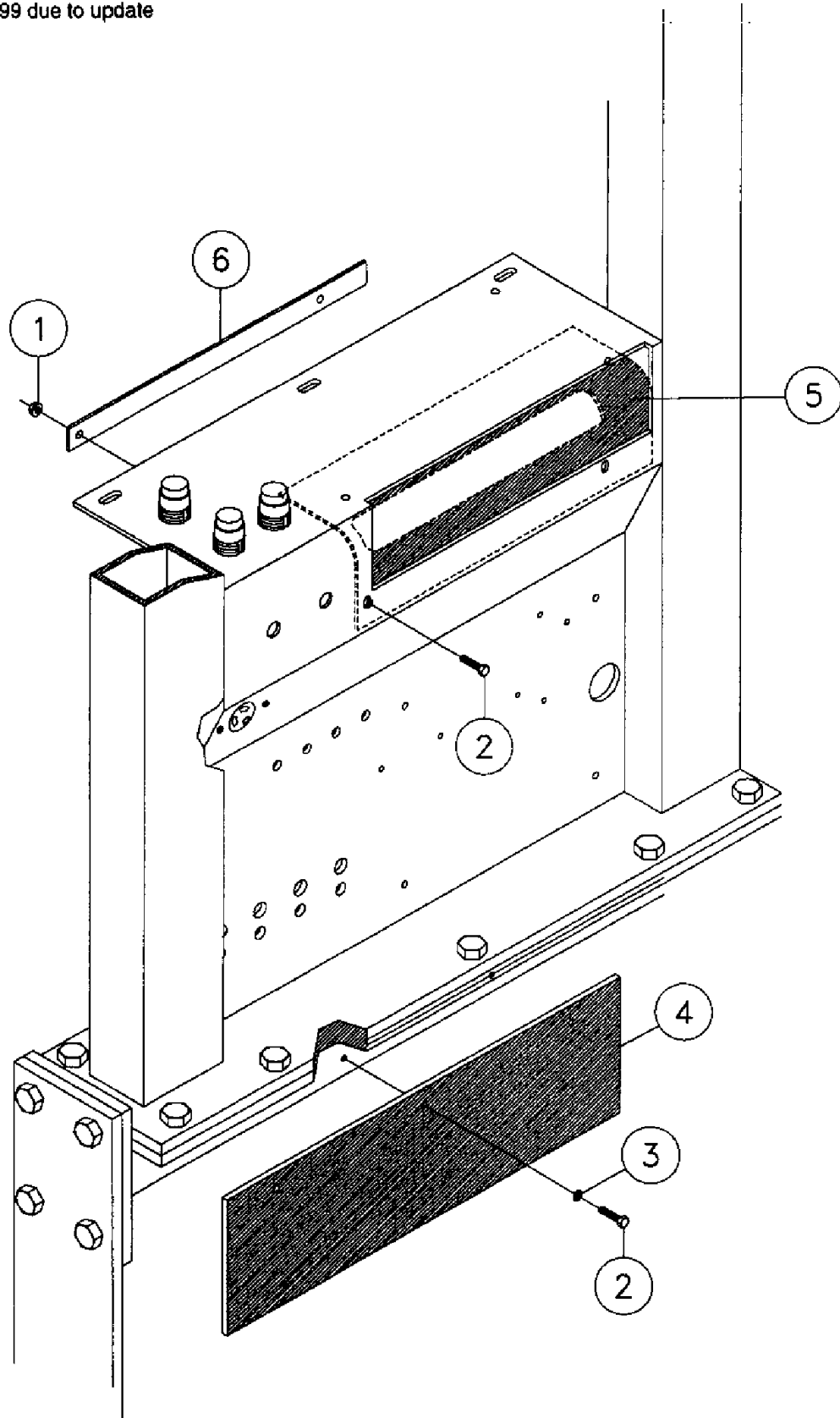


Outrigger - SN312 Fig 1-16x01r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		238221001	NUT-5/8 11 GR 8 HEZ Y/ZINC	16	
2	*	145645001	BOLT - 5/8 - 11 X 2 GR.8 PLATE	14	PN Changed
3		239469001	OUTRIGGER-OUTSIDE TUBE	1	LEFT
4		283568001	OUTRIGGER TUBE-INSIDE LEFT	1	
5		2108001	LYNCH PIN - 1/4 X 2	2	
6		283569001	OUTRIGGER TIRE-INSIDE RIGHT	1	
7		283549001	KNIFE-OUTRIGGER	2	
8		283558001	PIN-OUTRIGGE KNIFE	2	
9		278059001	OUTRIGGER-OUTSIDE TUBE	1	RIGHT
10		235715001	WASHER-5/8 SAE HARD ZINC PLT	16	
11		238245001	BOLT-5/8-11 X 2 1/4" GR 8 HEX ZINC	2	
12		287007001	OUTRIGGER TUBE OUTSIDE RIGHT	1	

Heat Shield Fig 1-17r02

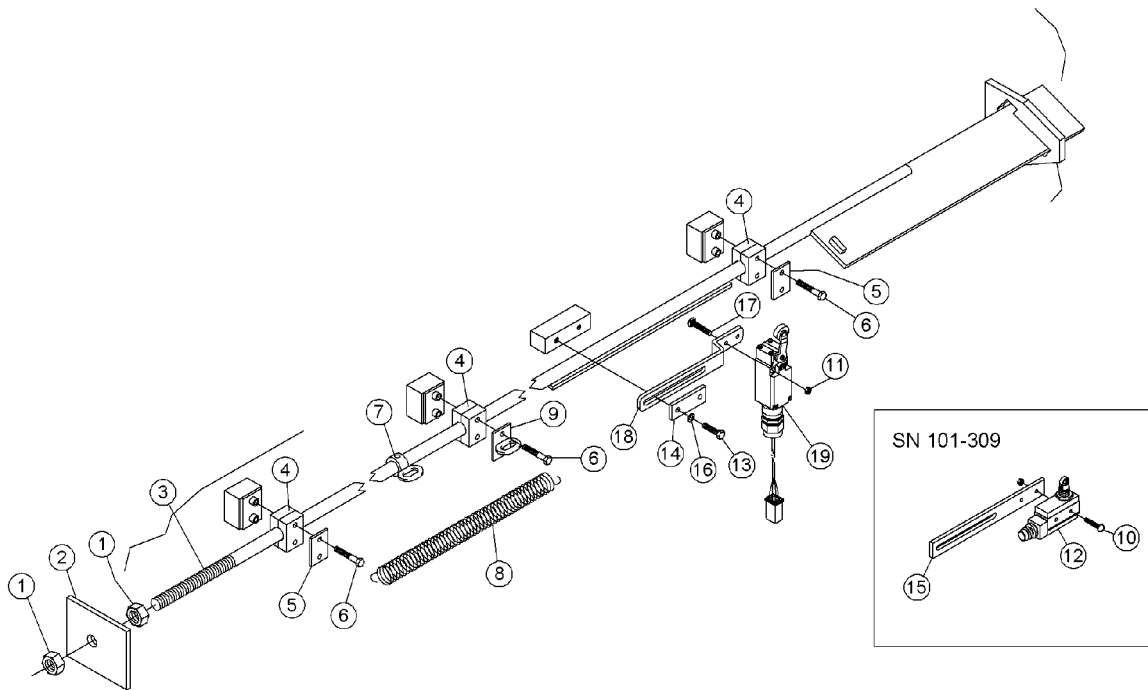
Revised July 1999 due to update in illustration.



Heat Shield Fig 1-17r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		405001	NUT-1/4 NC FLG WHIZ LOCK	2	
2		4473010	BOLT-1/4-20X1 FLANGE WHIZ	5	
3		235716001	WASHER-1/4 SAE HARD ZINC PLTD	1	
4		234278001	MUD FLAP - TRACK	1	
5		234279001	COVER-RUBBER VALVE	1	
6		234280001	MOUNT-HEAT COVER	1	
			Revised July 1999 due to update in illustration.		

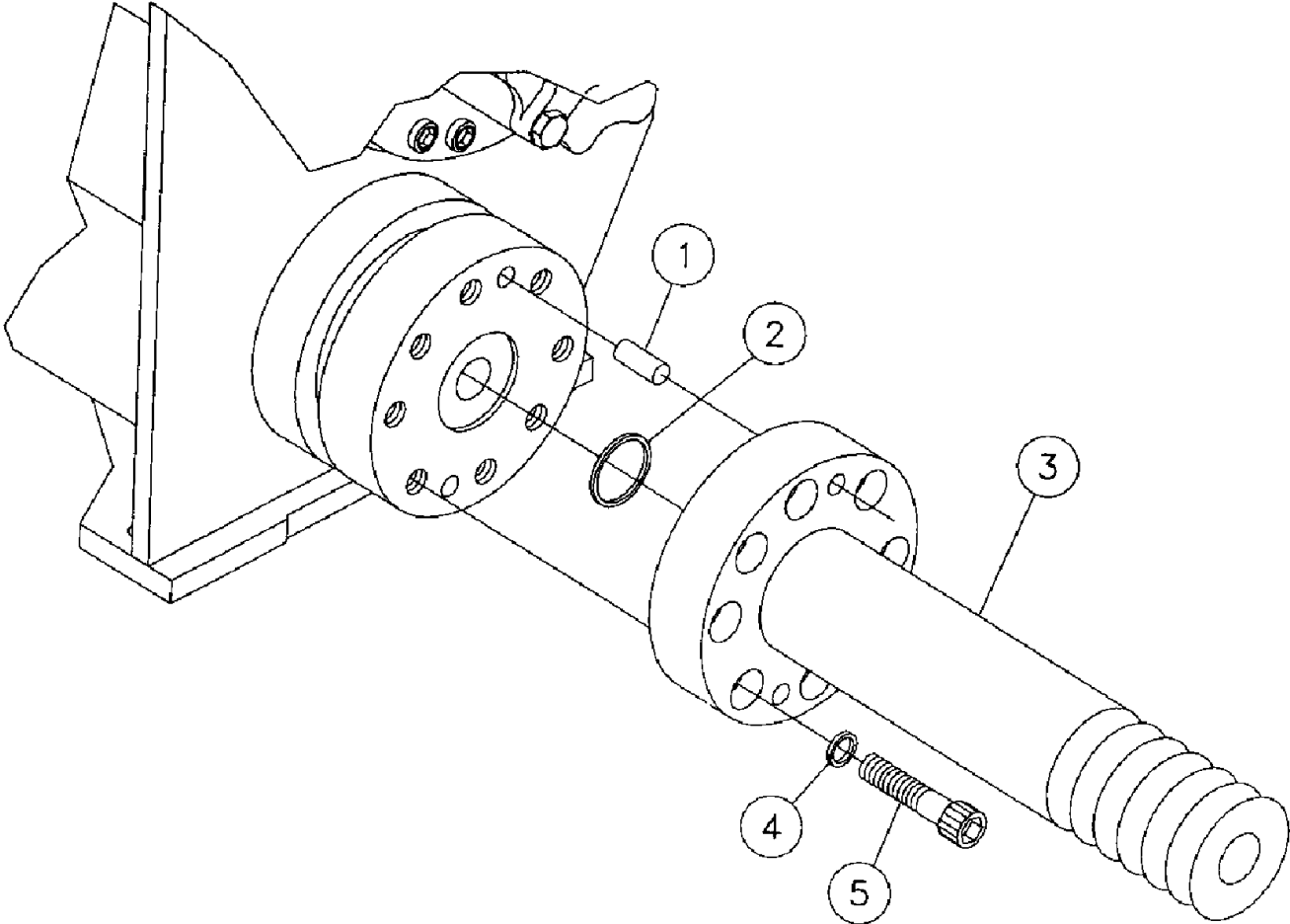
Drill Rod Position Indicator Fig 1-18r03



Drill Rod Position Indicator Fig 1-18r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		250513001	NUT-5/8-11 GR 8 HEX Z/P	2	
2		227968001	SLUG-DRILL ROD INDICATOR	1	
3		227962001	INDICATOR-DRILL ROD	1	
4		279817001	CLAMP-HOSE 2180PP	3	
5		903135005	PLATE-COVER COP-2	2	
6		238210001	BOLT-1/4-20 X 1 1/2" GRADE#8	6	HEX Z/P
7		227979001	MOUNT-ROD INDICATOR SPRING	1	
8		1789001	SPRING-1 1/8 OD X 15/16 ID X 15 EXT	1	
9		227978001	MOUNT-ROD INDICATOR SPRING	1	
10		10530012	SCREW-8-32 X 1 1/4 RD HD	2	SN101-309 (SLOT MACH)
11		399001	NUT-8-32 HEX	2	
12		223967001	SWITCH-OMRON ENCLOSED LIMIT	1	SN101-309
13		235735001	BOLT-1/4-20 X 1 GR 8 HEX Z/P	2	
14		234420001	PLATE-SWITCH MOUNT COVER	1	
15		234418001	MOUNT-SWITCH	1	SN101-309
16		235716001	WASHER-1/4 SAE HARD ZINC PLTD	2	
17	*	144654001	SCREW-#8-32 X 1 1/2 STOVE	2	PN Added SN310-
18	*	283555001	MOUNT - SWITCH	1	PN Added SN310-
19	*	276467001	SWITCH - LIMIT NO/NC LEVER/ROL	1	PN Added SN310-

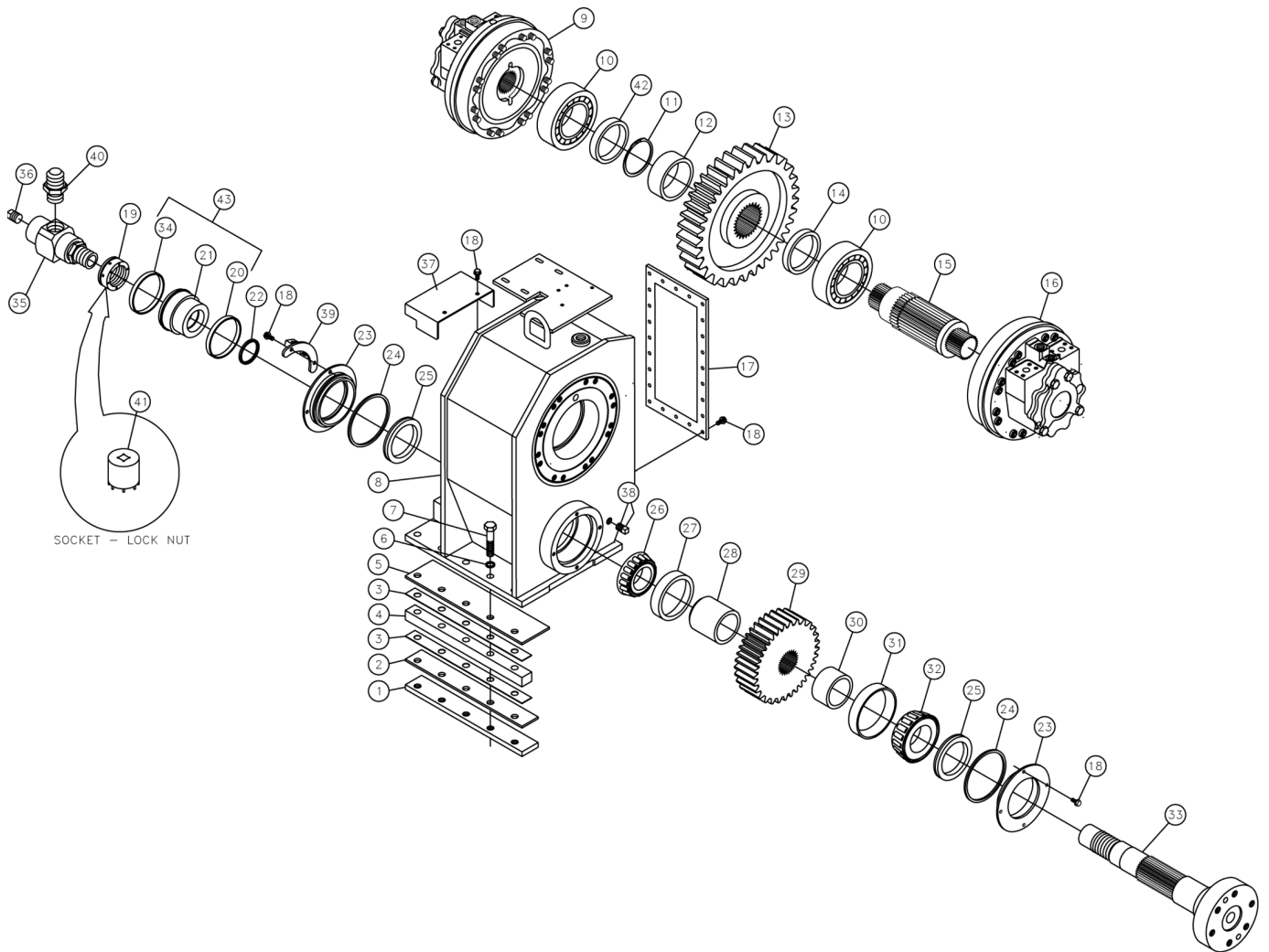
Drive Chuck Fig 1-19



Drive Chuck Fig 1-19

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		70096001	PIN-DOWEL 5/8DIA.-1 1/2	2	
2		72897001	O RING-SQ. #24 FLANGE	1	
3		222431001	DRIVE CHUCK -3 5/8" OD	1	
		222447001	DRIVE CHUCK-3 1/4" OD	1	
4		480017	WASHER-3/4 S/T LOCK	8	
5		239364001	BOLT-3/4-16X3 1/4 SKTHD GR8 ZN	8	

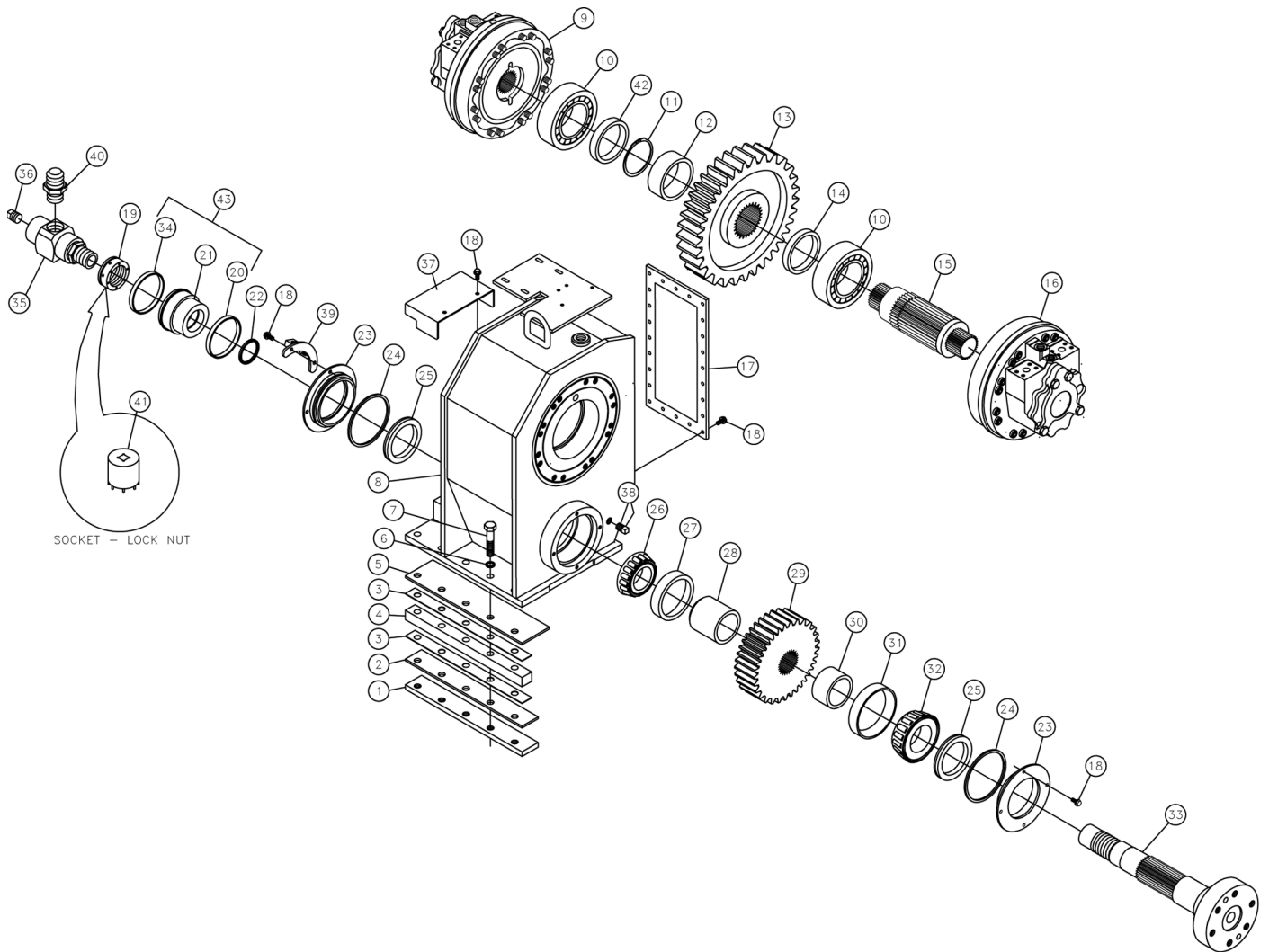
Rotation Gearbox Components Fig 1-20r04



Rotation Gearbox Components Fig 1-20r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		216748001	BAR-SLIDE	2	
2		216547001	WEARSTRIP	2	PLASTIC
3		216749001	SHIM-GEAR BOX SLIDE	4	
4		216747001	SPACER-GEARBOX SLIDE	2	
5		216667001	WEARSTRIP	2	PLASTIC
6		480017	WASHER-3/4 S/T LOCK	10	
7		369036	BOLT-3/4-10 X 3 3/4 GR5 HEX	10	
8		227506001	ROTATION BOX-D50	1	
9		216674001	MOTOR-2 SPEED HYD. MS18	1	BREAKDOWN FIG. 1-21
10	*	283609001	BEARING-3.94 SPHERICAL ROLLER	2	Replaces 277584001, PN Changed
11		224915425	SNAP RING-4 1/4" EXTERNAL	1	
12		227505001	TUBE-SPACER	1	
13		227514001	GEAR-45 TOOTH	1	
14		227591001	TUBE-TOP GEAR SPACER	1	
15		227513001	SHAFT-UPPER DRIVE	1	
16		216675001	MOTOR-2 SPEED HYD. MS18	1	BREAKDOWN FIG. 1-22
17		227583001	PLATE-GEAR COVER	1	
18		4475006	BOLT-3/8-16 X 3/4 FLG WHIZ	34	
19		239492001	NUT-65 X 18-03 ADJUSTABLE LOCK	1	
20		234814001	60 PULSE RING	1	
21	*	283619001	COLLAR - PULSE RING	1	PN Changed
22		227589001	O-RING	1	
23		227592001	BAR-SEAL RETAINER	2	
24		224997001	O-RING	2	
25		227594001	SEAL-5.25 OD X 4.00 ID X .63 HP	2	
26		1716163	TIMKEN CONE-2 3/4" 9	1	
27		1715099	TIMKEN CUP-#H913810	1	
28		227503001	TUBE-SPACER	1	
29		227515001	GEAR-28 TOOTH	1	
30		227504001	TUBE-SPACER	1	
31		1715097	TIMKEN CUP	1	
32		1716161	TIMKEN CONE-3 1/4"	1	
33		227512001	SHAFT-LOWER DRIVE	1	SN101-294
33	*	283618001	HEADSHAFT - ROTATION GEARBOX	1	PN Changed
34		234815001	2 PULSE RING	1	
35		277834001	SWIVEL 200 GPM WATER W/BRG.	1	BREAKDOWN FIG. 1-25
36		732009	PLUG-3/4" PIPE BLACK STEEL	1	
37		244531001	SHIELD-CYLINDER	1	
38		734001	PLUG-1/2" MAGNETIC	1	
			Continued on next page.		

Rotation Gearbox Components (continued) Fig 1-20r04



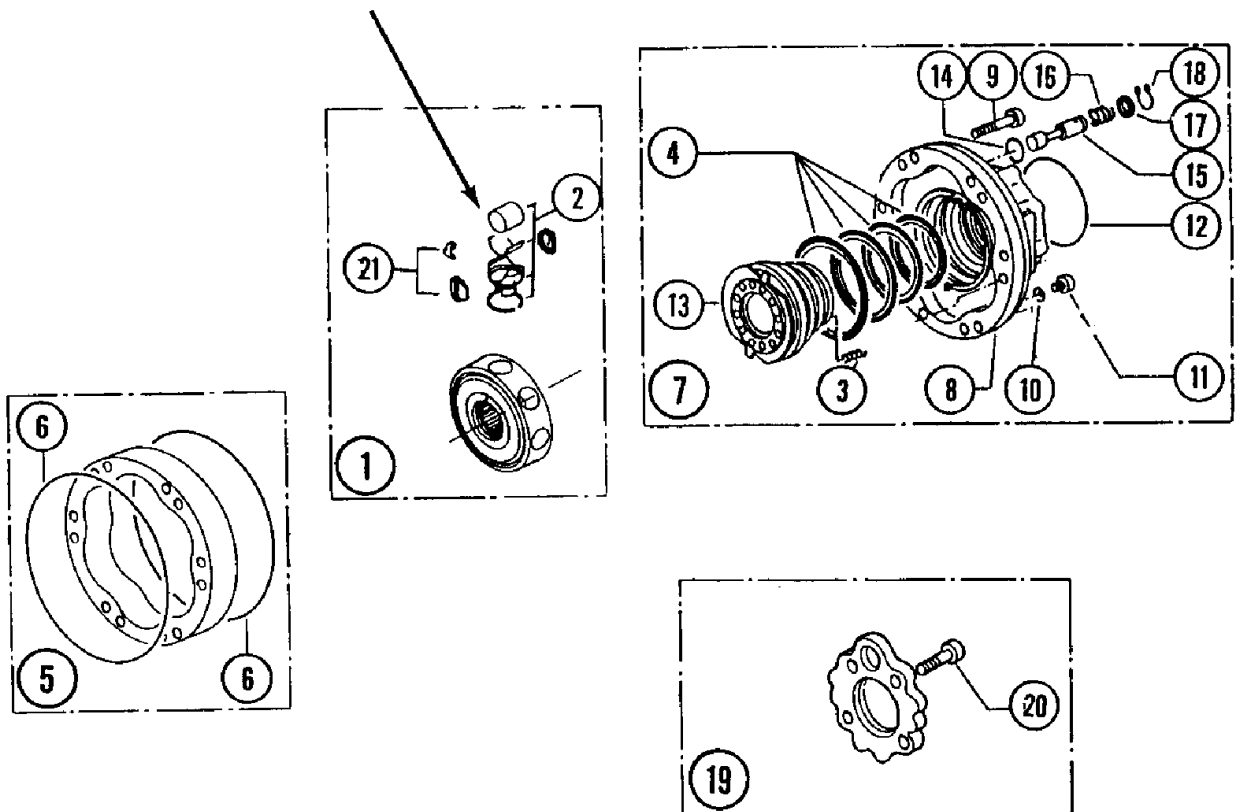
Rotation Gearbox Components (continued) Fig 1-20r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
39		234812001	MOUNT-PPU	1	
40		94569001	FITTING-1 1/2M NPT X 24 M JIC STR.	1	
41	*	296275047	SOCKET-LOCK NUT	1	PN Changed
42		279761001	TUBE-SPACER	1	SN230-
43	*	283619003	COLLAR ASSEMBLY - PULSE RING	1	INC. REF. 20, 21, 34, PN Added
		239491001	ROTATION GEARBOX AY.D50 X 100A		INC. REF. 1-40

Hydraulic Motor Components Fig 1-21r01

Revised February 1999 due to update of hyd. motor components. Changed parts marked with *.

THERE IS THE POSSIBILITY OF HAVING TWO SIZES OF PISTONS IN A MOTOR. NORMALLY CL "0" IS USED. THERE IS NO MARKING ON THE PISTON OR CYLINDER BLOCK. THERE IS THE POSSIBILITY OF HAVING CL "1" WHICH IS 1mm OVER SIZE. THERE WILL BE A "1" STAMPED ON THE PISTON AND A CORRESPONDING "1" STAMPED ON THE CYLINDER BLOCK IN THE AREA OF THE EFFECTED CYLINDER BORE.



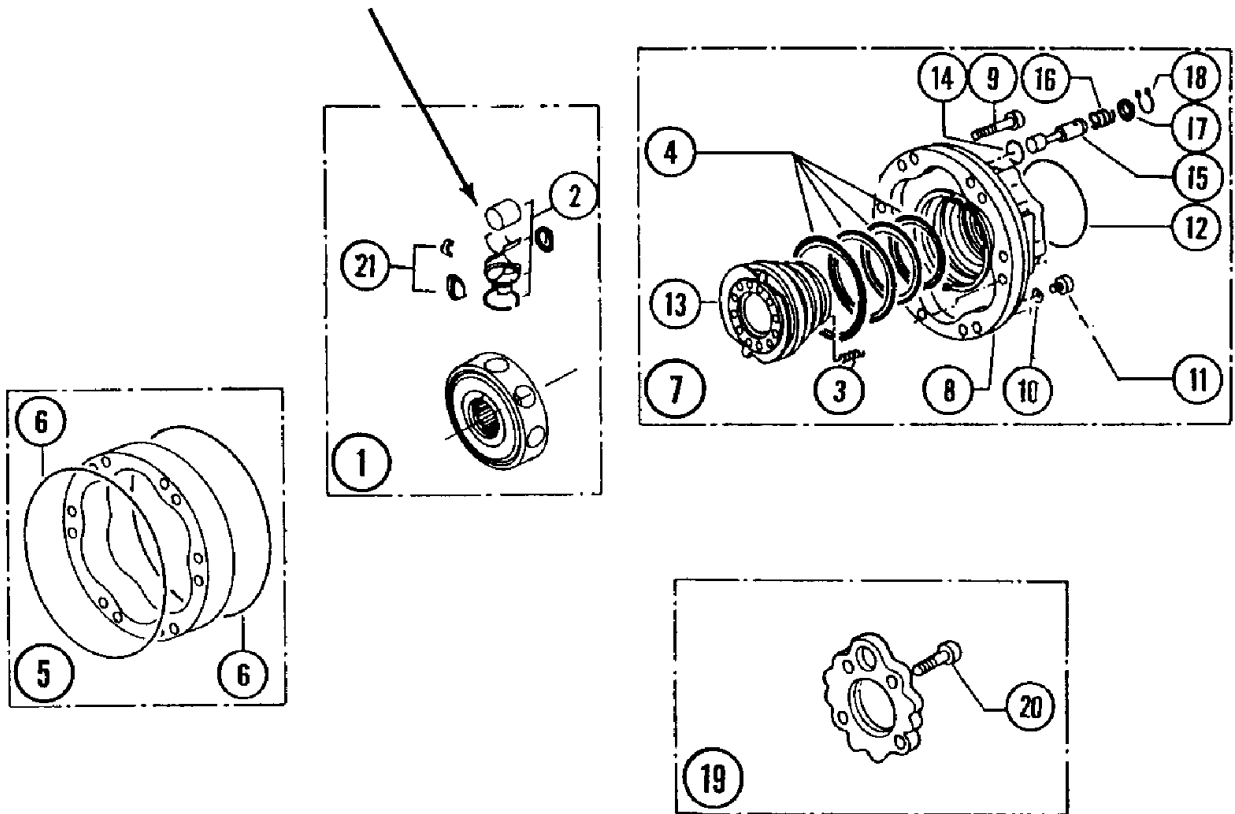
Hydraulic Motor Components Fig 1-21r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		99098005	CYLINDER BLOCK	1	
2		119885003	PISTON CL'O XCX	AR	NOMINAL SIZE
		84550009	PISTON CL "1"	AR	1 MIL. OVER SIZE
3		84550029	SPRING	12	
4		84550025	VALVE SEAL SET	1	
5		216674003	CAM ASSEMBLY	1	
6		99098013	O-RING-3.50 X 314	2	
7		216675003	VALVING COVER ASSEMBLY	1	
8		216674007	VALVING COVER	1	
9		216674009	BOLT-M16X100 CL 10.9	16	
10		64078025	WASHER	2	
11		64078027	SCREW-BLEEDING	2	
12		83651025	O-RING-2.62X145.72	1	
13		216674011	VALVING	1	
14		216675005	O-RING	1	
15		216675007	VALVE SPOOL	1	
16		216675009	SPRING	1	
17		216675011	WASHER	1	
18		216675013	SNAP RING	1	
19		85635027	PLATE-REAR COVER	1	
20		85635029	BOLT-M16X35	4	
21	*	119885005	REPAIR KIT-PISTON	1	FOR 10 PISTONS
	*	216674001	MOTOR-2 SPEED HYD. MS18 COMPLETE		INC. ALL ITEMS IN THIS FIGURE
			Revised February 1999 due to update of hyd. motor components. Changed parts marked with *.		

Hydraulic Motor Components Fig 1-22r01

Revised February 1999 due to update of hyd. motor components. Changed parts marked with *.

THERE IS THE POSSIBILITY OF HAVING TWO SIZES OF PISTONS IN A MOTOR. NORMALLY CL "0" IS USED. THERE IS NO MARKING ON THE PISTON OR CYLINDER BLOCK. THERE IS THE POSSIBILITY OF HAVING CL "1" WHICH IS 1mm OVER SIZE. THERE WILL BE A "1" STAMPED ON THE PISTON AND A CORRESPONDING "1" STAMPED ON THE CYLINDER BLOCK IN THE AREA OF THE EFFECTED CYLINDER BORE.

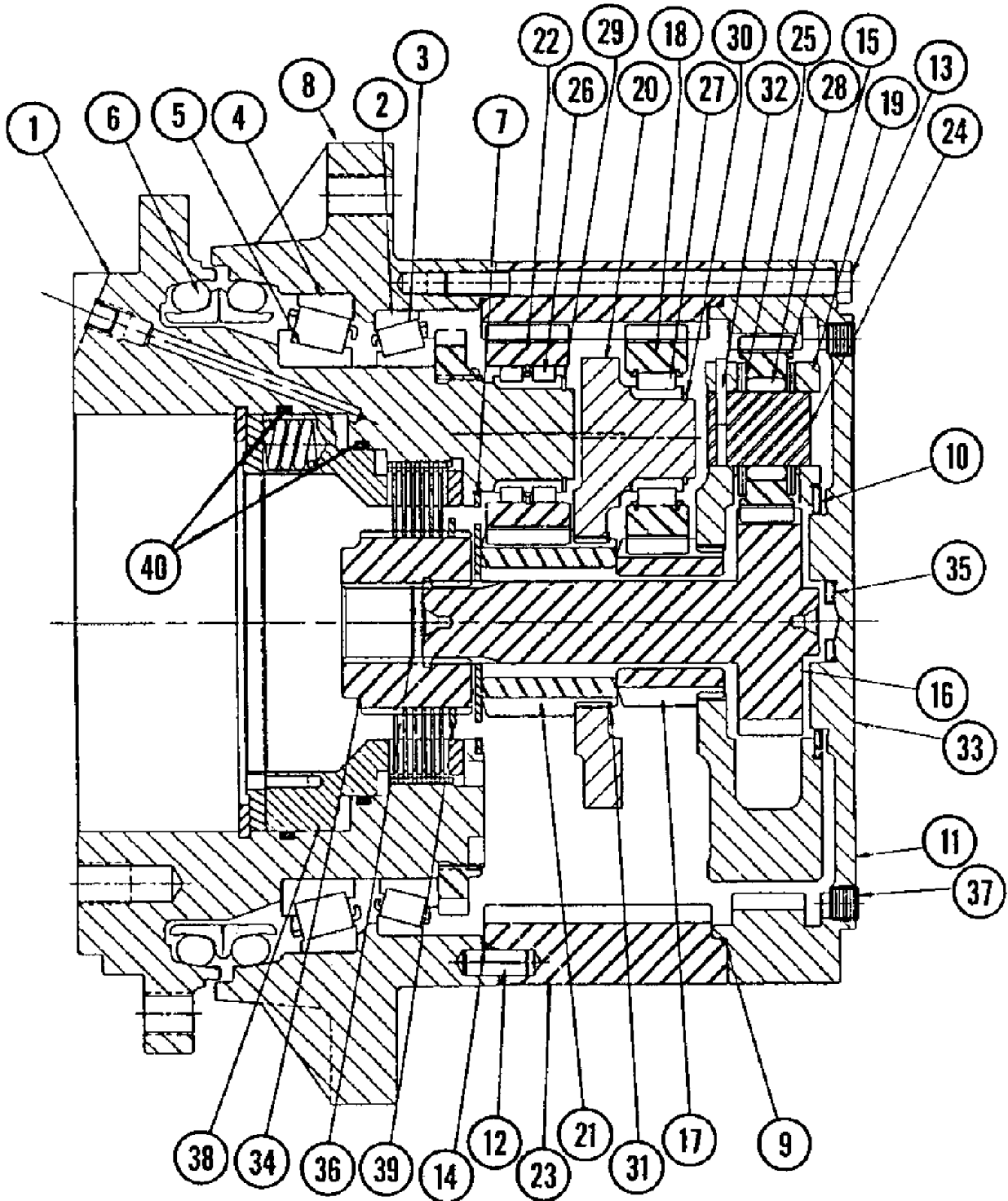


Hydraulic Motor Components Fig 1-22r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		99098005	CYLINDER BLOCK	1	
2		119885003	PISTON CL'O XCX	AR	NOMINAL SIZE
		84550009	PISTON CL "1"	AR	1 MIL. OVER SIZE
3		84550029	SPRING	12	
4		84550025	VALVE SEAL SET	1	
5		216674003	CAM ASSEMBLY	1	
6		99098013	O-RING-3.50 X 314	2	
7		216675003	VALVING COVER ASSEMBLY	1	
8		216674007	VALVING COVER	1	
9		216674009	BOLT-M16X100 CL 10.9	16	
10		64078025	WASHER	2	
11		64078027	SCREW-BLEEDING	2	
12		83651025	O-RING-2.62X145.72	1	
13		216674011	VALVING	1	
14		216675005	O-RING	1	
15		216675007	VALVE SPOOL	1	
16		216675009	SPRING	1	
17		216675011	WASHER	1	
18		216675013	SNAP RING	1	
19		85635027	PLATE-REAR COVER	1	
20		85635029	BOLT-M16X35	4	
21	*	119885005	REPAIR KIT-PISTON	1	FOR 10 PISTONS
	*	216675001	MOTOR-2 SPEED HYD.		COMPLETE, INC. ALL ITEMS IN THIS FIGURE
			Revised February 1999 due to update of hyd. motor components. Changed parts marked with *.		

Planetary Gearbox Components Fig 1-23r01

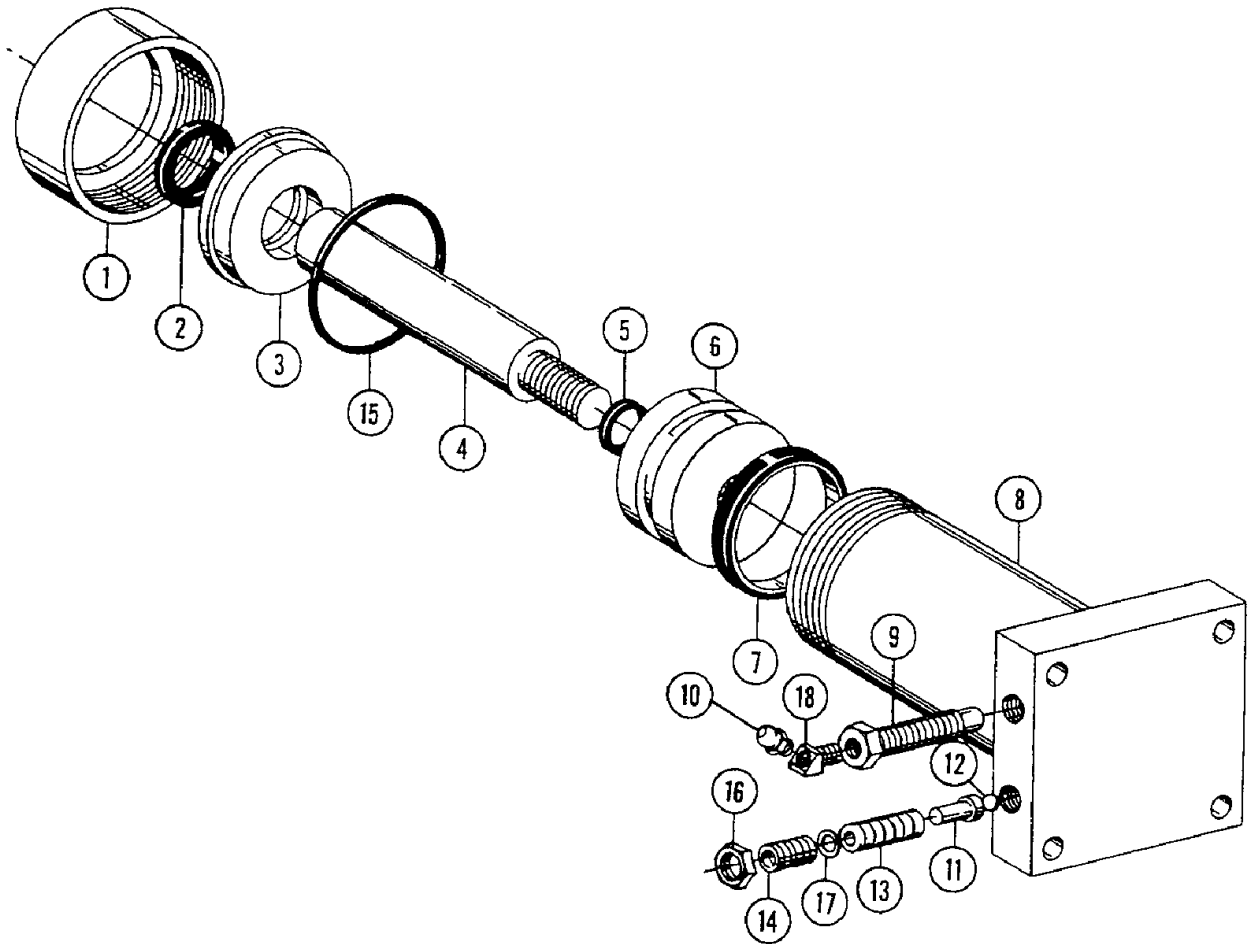
Revised February 1999 due to addition of repair kit. Added part marked with *.



Planetary Gearbox Components Fig 1-23r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		214045003	SPINDLE	1	
2		214045005	CUP-TAPERED BEARING	1	
3		214045007	CONE-TAPERED BEARING	1	
4		214045009	CUP-TAPERED BEARING	1	
5		214045011	CONE-TAPERED BEARING	1	
6		214045013	SEAL-FACE	1	
7		214045015	SPACER-THRUST	1	
8		214045017	HOUSING	1	
9		214045019	O-RING	1	
10		214045021	WASHER-THRUST	1	
11		901555055	PLATE-ID #901202	1	
12		214045023	PIN-DOWEL	2	
13		214045025	BOLT-HEX.375-16X6.0 GR8	20	
14		214045027	O-RING	1	
15		214045029	GEAR-PLANET	3	
16		214045031	GEAR-SUN	1	
17		214045033	GEAR-SUN	1	
18		214045035	GEAR-PLANET	3	
19		214045037	CARRIER	1	
20		214045039	CARRIER	1	
21		214045041	GEAR-SUN	1	
22		214045043	SET	1	
23		214045045	GEAR-RING	1	
24		214045047	SHAFT-PLANET	3	
25		114280043	WASHER-THRUST	12	
26		214045049	BEARING-CYLINDER ROLLER	5	
27		214045051	BEARING-CYLINDER ROLLER	3	
28		214045053	BEARING-NEEDLE	57	
29		114280035	RET.RING-EXT.	5	
30		214045055	RETAIN RING-EXTERNAL	3	
31		214045057	RETAINING RING-EXTERNAL	1	
32		114280037	PIN-ROLL	3	
33		214045059	PLATE-COVER	1	
34		214045061	COUPLING	1	
35		214045063	WASHER-THRUST	1	
36		214045065	RETAINING RING-INTERNAL	1	
37		118586033	PLUG-PIPE .250-18	3	
38		214045067	BRAKE-INPUT	1	
39		214045069	RETAINING RING-EXTERNAL	1	
40	*	214045071	REPAIR KIT	1	INC. TWO O-RINGS & BACKUPS
		214045001	PLANETARY-GEARBOX		COMPLETE, INC. ALL ITEMS IN FIGURE

Cylinder Components - 3 1/2 x 4 3/4 Grease Fig 1-24

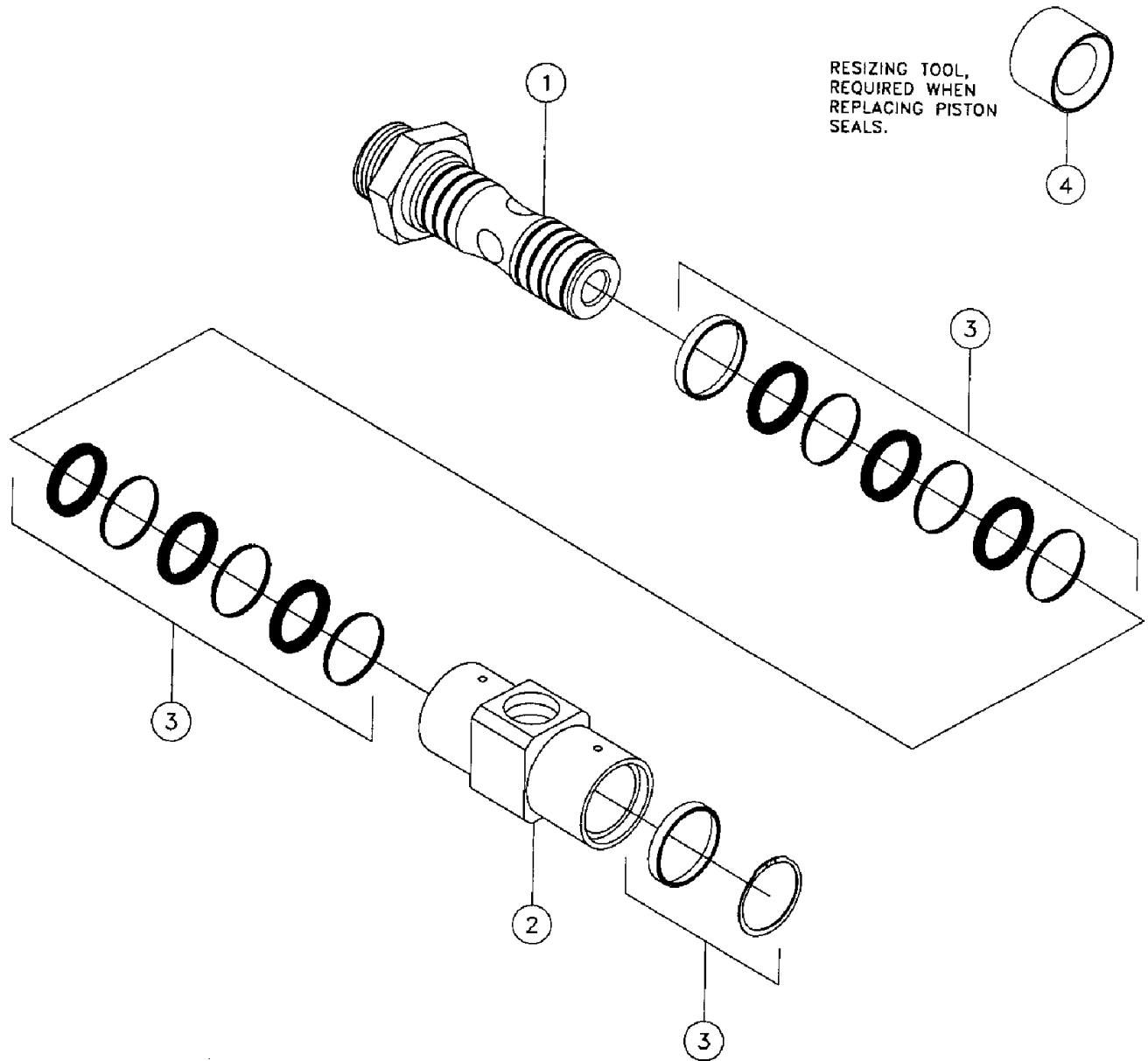


Cylinder Components - 3 1/2 x 4 3/4 Grease Fig 1-24

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		68573001	CAP	1	
2		57300001	WIPER	1	
3		68579001	GLAND	1	
4		68577001	ROD	1	
5		3211043	O-RING	1	
6		68578001	PISTON	1	
7		58138001	UNI-RING	1	
8		68574001	BODY	1	
9		68580003	BOLT ASSY-GREASE	1	INC. REF. 10
10		88978001	ZERK-1/8 NPT STR. LEAK PROOF	1	
11		68581001	SUPPORT-BALL BEARING	1	
12		3113009	BALL-STEEL 5/16 DIA. ENGY	1	
13		3115027	SPRING	1	
14		15164001	SSS-5/8-11X1 DOGPOINT/LOCKPATC	1	
15		4350001	O-RING 042 NAT.	1	
16		429001	NUT-5/8 NC HEX JAM	1	
17		15694001	WASHER-#6M FLAT	1	
18		88979001	STREET ELBOW-1/8 NPT	1	
		231104001	CYLINDER-TRACK RELIEF		INC. REF. 1-18
		68582001	REPAIR KIT		INC. REF. 2, 5, 7 & 15

Water Swivel Components Fig 1-25

Revised July 1999 due to addition of figure to manual.

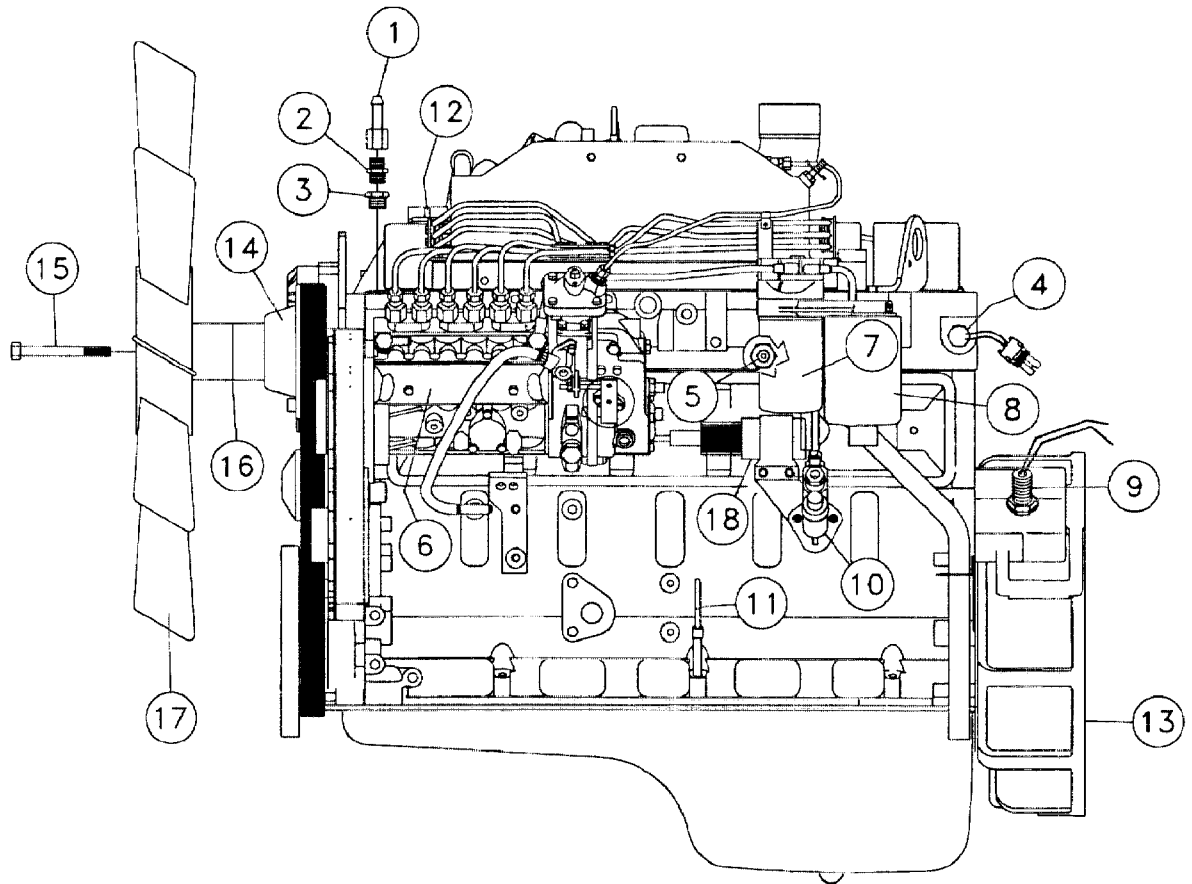


Water Swivel Components Fig 1-25

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		NSS	STEM	1	
2		NSS	BODY	1	
3		277834003	SEAL KIT	1	SEAL & SNAP RING
		277834005	SEAL KIT	1	SEAL, SNP RNG & BRG
4		277834007	RESIZING TOOL		
		277834001	SWIVEL-200 GPM WATER W/BRG		INC. ITEMS 1 THROUGH 3

Engine Components Fig 2-1r02

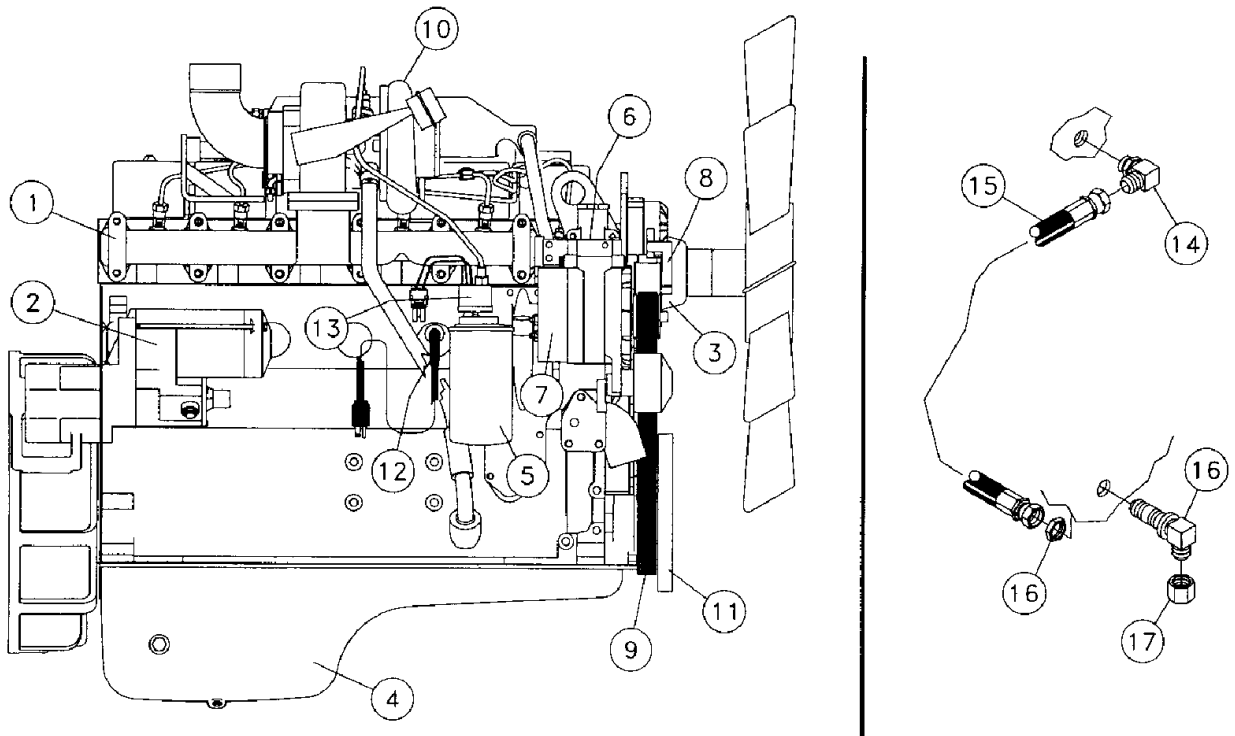
Revised February 2000 due to update in illustration & parts list. Added part marked with *.



Engine Components Fig 2-1r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		103007001	.VALVE-CHECK	1	
2		103006001	.COUPLING	1	
3		103005001	.BUSHING	1	
4		227965001	SWITCH-TEMPERATURE	1	220F
5		11981001	SENDER-8992016 WATER TEMP	1	
6		234217003	.PUMP-FUEL INJECTION	1	
6		234218015	.GASKET-INJECTION PUMP	1	
6		234217005	.INJECTOR-FUEL	6	
7		220162025	.FILTER-SECONDARY FUEL	1	
8		220162023	.FILTER-PRIMARY FUEL W/SEPARATER	1	
9		244758001	PICKUP-MAGNETIC	1	SN101-231
10		234218019	.PUMP-FUEL LIFT	1	
10		220681013	.FUEL PUMP GASKET	1	
11		220162041	.DIPSTICK	1	
11		220162017	.TUBE-DIPSTICK	1	
12		102996001	.CAP-OIL FILL	1	
13		104063001	.FLYWHEEL	1	
13		103027001	.BOLT-FLYWHEEL	8	
14		103019001	.PULLEY-FAN	1	
15		64111001	BOLT-M10X110 GR.8	4	
16		234218027	.FAN SPACER - 1 1/2	1	
16		234218029	.FAN SPACER-2"	1	
17		238749001	FAN-30" 12 BLADE PUSHER	1	
18	*	278014002	.SOLENOID-FUEL PUMP	1	SN232-
			. ITEMS WARRANTED BY AUTHORIZED CUMMINS DEALER		

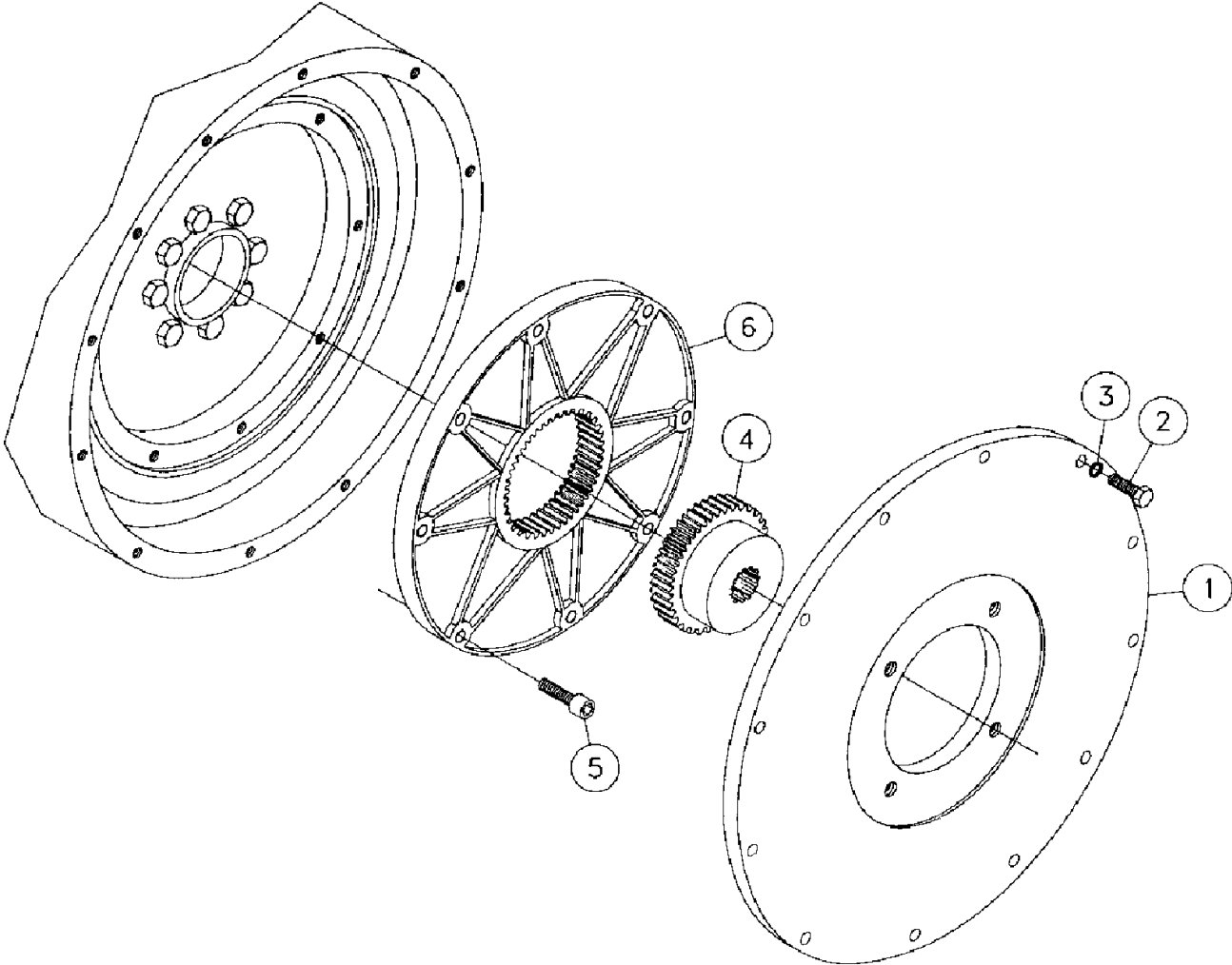
Engine Components Fig 2-2r02



Engine Components Fig 2-2r02

REF. NO.	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		224560011	+EXHAUST MANIFOLD	1	
		220681027	+BOLT	12	
		234218003	+GASKET-EXHAUST MANIFOLD	6	
2		234217009	+STARTER MOTOR	1	
		220681025	+STARTER MOUNTING BOLT	2	
3		220162009	+WATER PUMP	1	
		220681031	+SEAL-RECTANGULAR RING	1	
4		224558009	+OIL PUMP	1	
5		234217011	+FILTER-OIL	1	
6		104073001	+THERMOSTAT	1	
		104074001	+GASKET-THERMOSTAT	1	
7		220171001	ALTERNATOR-MODIFIED 42 AMP	1	
		5902001	ALTERNATOR FAN	1	
		220162039	+SHEAVE-ALTERNATOR	1	
		220681019	+ALTERNATOR BRACKET-LOWER	1	
		220681017	+ALTERNATOR BRACKET-UPPER	1	
		220681021	+ALTERNATOR MOUNTING BOLT-UPPER	1	
		220681023	+ALTERNATOR MOUNTING BOLT-LOWER	2	
8		224559019	+BELT TENSIONER	1	
9		234217013	+BELT-DRIVE	1	
10		234217015	+TURBO	1	
		220162037	+GASKET	1	
11		234217007	+PULLEY-CRANKSHAFT	1	
		103011001	+BOLT-CRANKSHAFT PULLEY	4	
12	*	279804001	+HEATER-ENGINE (SN273-)	1	REPLACES 104067-001
	*	279805001	+CABLE-ENGINE HEATER (SN273-)	1	REPLACES 104068-001
13		98678001	SWITCH-PRESSURE SIN POLE 9 PSI	1	
14		100351001	ELBOW-10M JIC X 18-1.5M X 90 METRIC	1	
15		53842063	HOSE-5/8 X 32 10FS JIC (100R2)	1	
16		77735001	FITTING-10M JIC BULKHEAD 90 DEG	1	
17		78062001	FITTING-10F JIC CAP NUT	1	
			+ITEMS WARRANTED BY AUTHORIZED CUMMINS DEALER		
			Revised June 2000 due to update in parts list. Changed parts marked with *.		

Pump Drive Fig 2-3

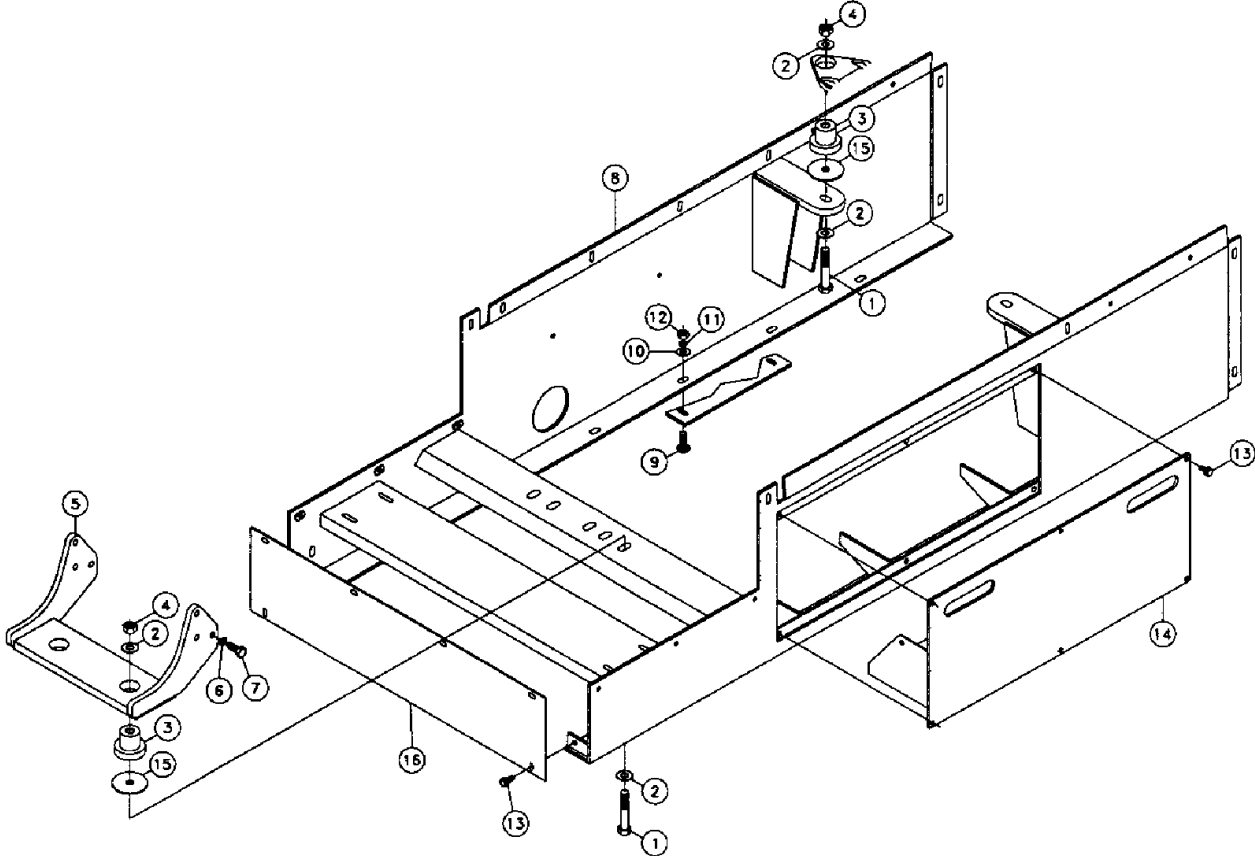


Pump Drive Fig 2-3

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		220021001	PLATE-PUMP MOUNT	1	
2		77736001	BOLT-10X35 DIN931	12	
3		13625001	WASHER-10 MM LOCK	12	
4		224297001	HUB-FLE65 SERIES Z3T SPLINE	1	
5		4478014	CAPSCREW-3/8-16X1 1/2 SOCHD G8	8	
6		220075001	FLANGE-65 FLE-PA 10"FLYWHEEL	1	

Engine Base Assembly Fig 2-4r02

Revised July 1999 due to update in illustration.

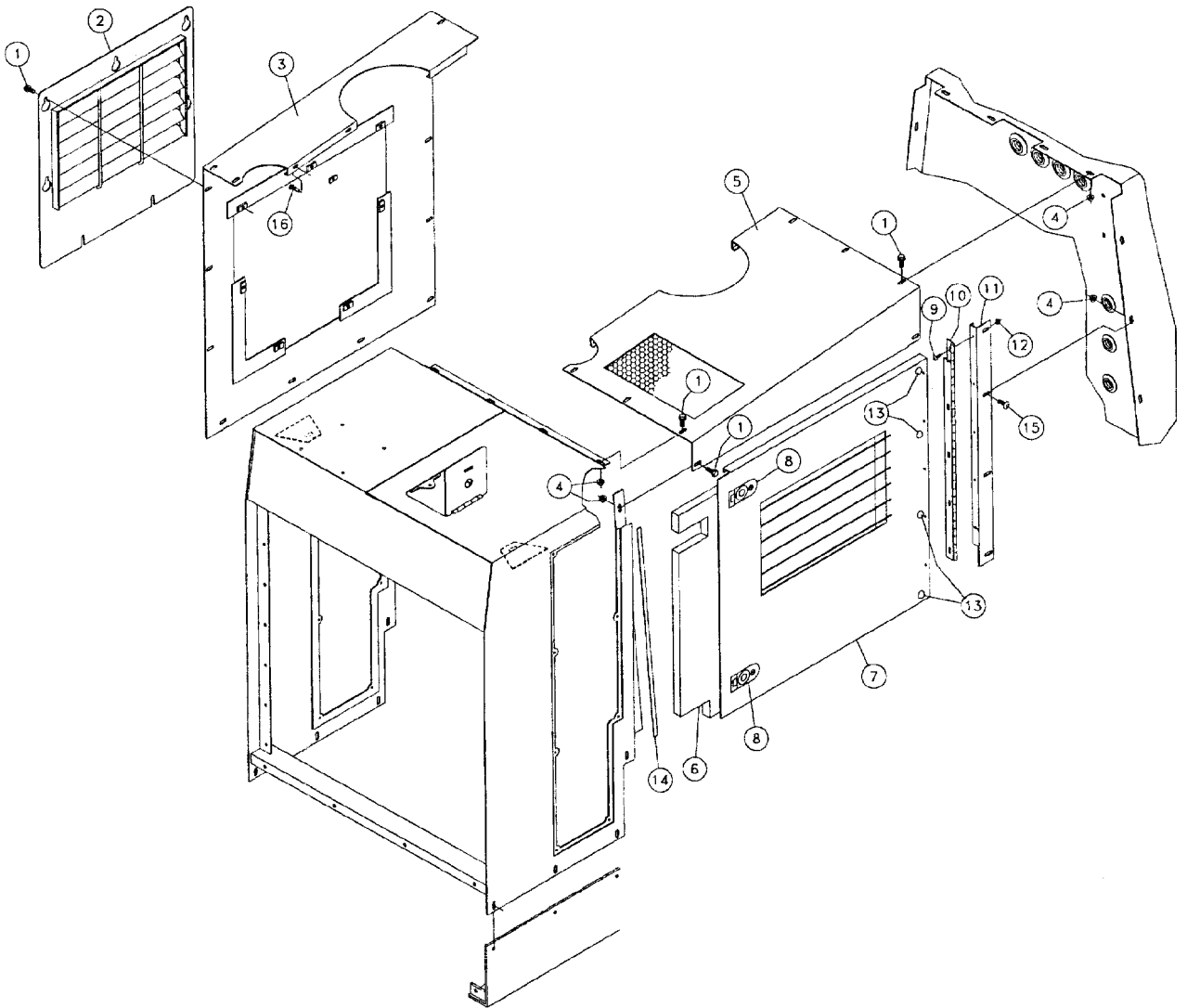


Engine Base Assembly Fig 2-4r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		366034	BOLT-5/8-11X3 1/2 GRADE#5 HEX	4	
2		485015	WASHER-5/8 FLAT	8	
3		220165001	MOUNT-M500-50-NR RUBBER	4	
4		430001	NUT-5/8-11 NC SELF LOCKING	4	
5		234238001	MOUNT-FRONT ENGINE	1	
6		64108001	WASHER-M12 LOCK	6	
7		24772001	BOLT-12M X 35 GR. 8.8 HEX HEAD	6	
8		234240001	BASE-ENGINE	1	
9		377012	BOLT-1/2-13X1 1/4"GD#5CARRIAGE	14	
10		485011	WASHER-1/2 FLAT	14	
11		480011	WASHER-1/2 S/T LOCK	14	
12		421001	NUT-1/2 NC HEX	14	
13		4475006	BOLT-3/8-16X3/4 FLG WHIZ	12	
14		238592001	DOOR-BATTERY ACCESS	1	
15		220203001	SLUG-ENGINE MOUNT	4	
16		238678001	SHIELD-FRONT ANTI-RECIRCULATION	1	

Engine Shields Fig 2-5r03

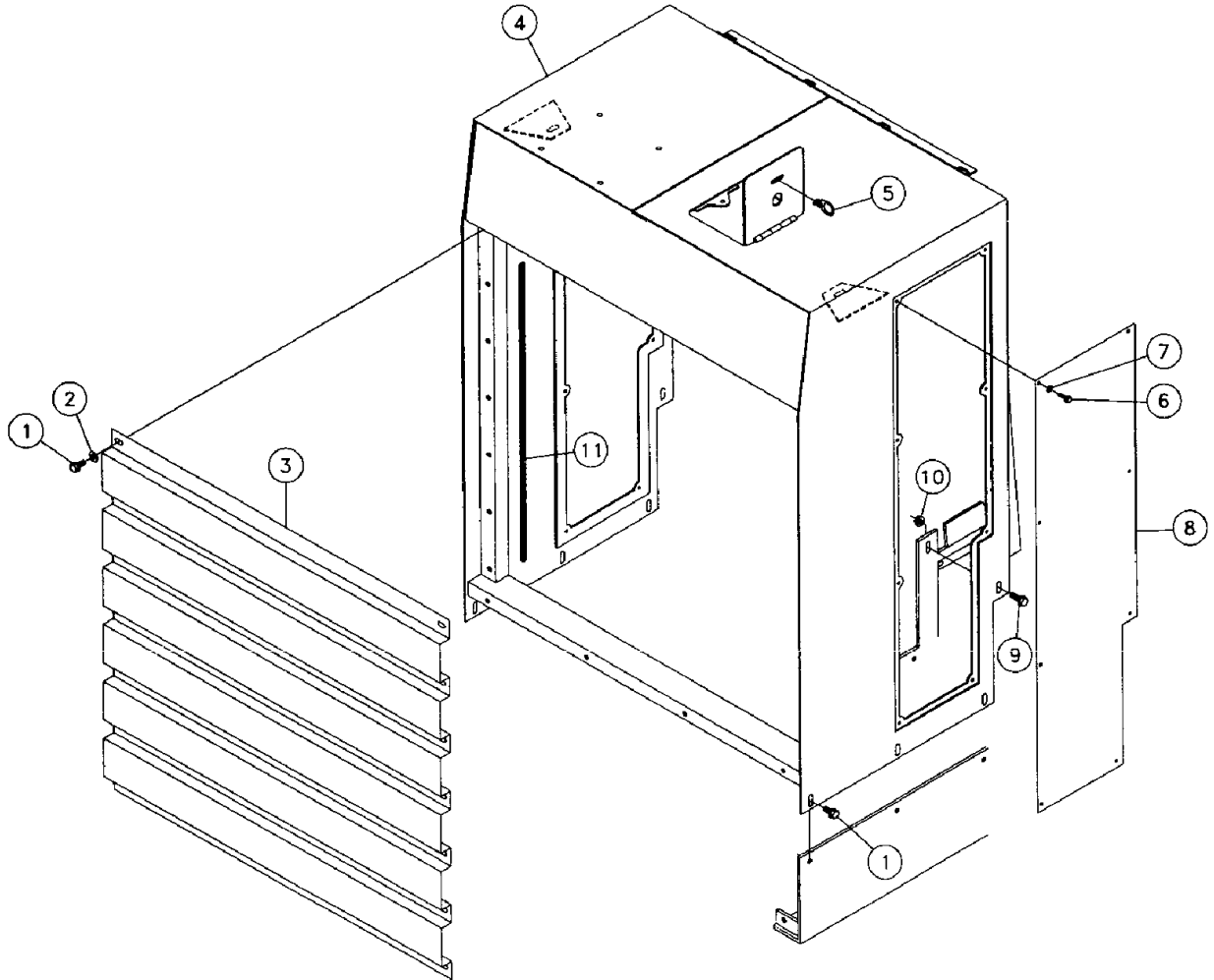
Revised February 2000 due to update
in parts list. Added part marked with *



Engine Shields Fig 2-5r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		4475006	BOLT-3/8-16X3/4 FLG WHIZ	27	
2		238686001	DOOR-ACCESS	1	
3		238682001	SHIELD LEFT SIDE ENGINE	1	
4		4536001	NUT - 3/8-16 FLG. WHIZ LOCK	24	
5		238679001	SHIELD-TOP RIGHT ENGINE	1	
6		238672001	FOAM-DOOR	1	
7		238666001	SHIELD-RIGHT SIDE ENGINE	1	SN101-231
	*	287019001	SHIELD-RIGHT SIDE ENGINE	1	SN232-
8		110479001	LATCH-SEALED LEVER	2	
9		373005	BOLT-1/4-20X5/8 GR5 CARRIAGE	10	
10		279337001	HINGE-ENGINE BAY DOOR	1	
11		238674001	BRACKET-ENGINE DOOR HINGE	1	
12		405001	NUT-1/4 NC FLG WHIZ LOCK	10	
13		101522001	BUMPER-RUBBER SELF ADHES.3/4OD	4	
14		98436001	SEAL-SELF ADHESIVE 1/16X1/2	1	SPECIFY LENGTH
15		375006	BOLT-3/8-16X3/4 CARRIAGE GR.5	4	
16		244907001	BOLT-SHIELD ALIGNMENT	2	

Radiator Shield Fig 2-6

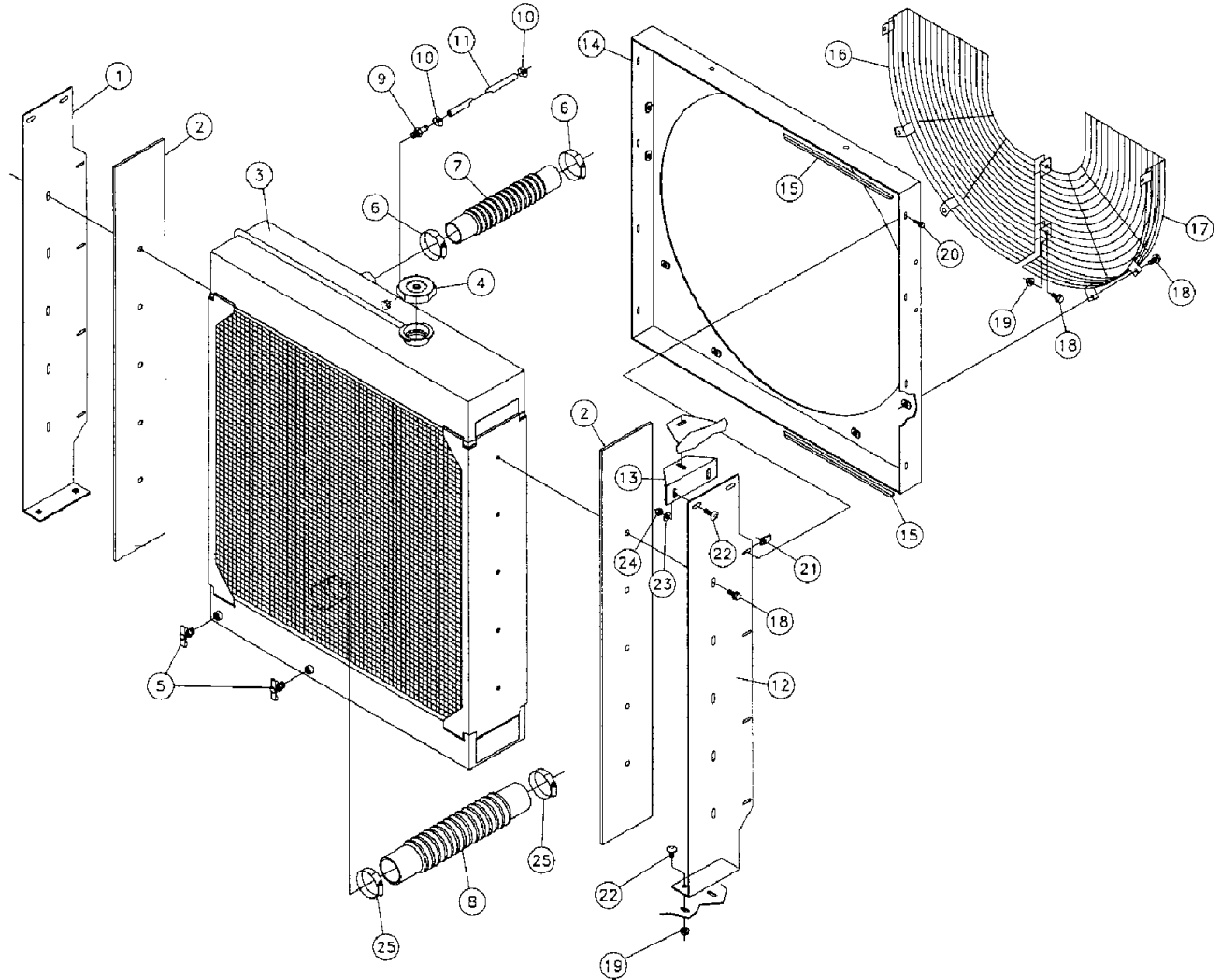


Radiator Shield Fig 2-6

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		4475006	BOLT-3/8-16X3/4 FLG WHIZ	20	
2		485007	WASHER-3/8 FLAT	14	
3		238502001	SCREEN-RADIATOR	1	
4		234246001	WRAPPER-RADIATOR	1	
5		86113001	FASTENER-1/4 TURN	1	
6		4473006	BOLT-1/4-20X3/4 FLG WHIZ	16	
7		480003	WASHER-1/4 S/T LOCK	16	
8		238677001	SCREEN-AIR INLET	2	
9		4475010	BOLT-3/8-16X1 FLANGE WHIZ	2	
10		4536001	NUT - 3/8-16 FLG. WHIZ LOCK	2	
11		97456001	SEAL-BULB EDGE 1/8" STYLE	AR	SPECIFY LENGTH

Radiator/Flashing Fig 2-7r02

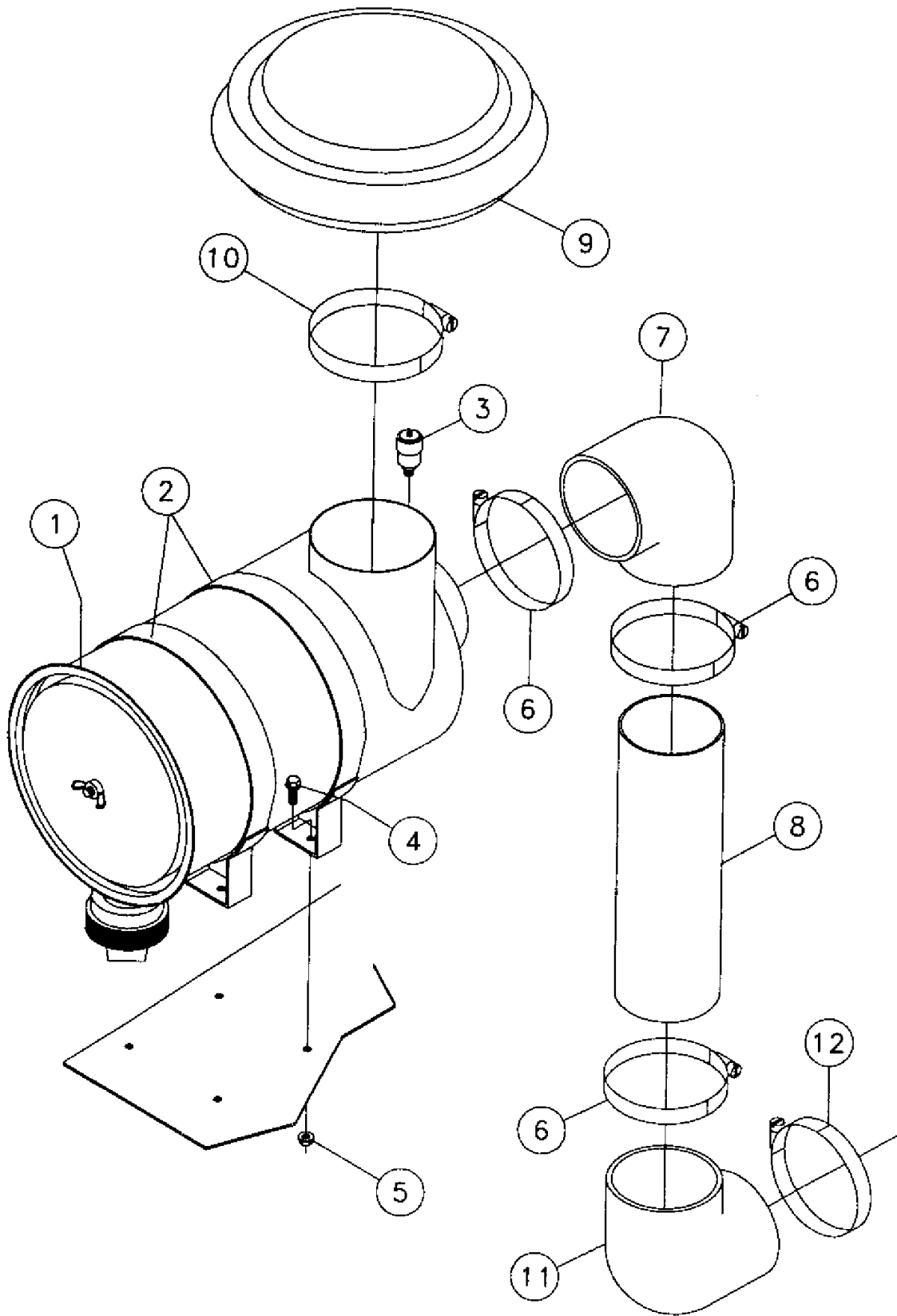
Revised July 1999 due to update
in parts list. Changed part marked
with *.



Radiator/Flashing Fig 2-7r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		366034	BOLT-5/8-11X3 1/2 GRADE#5 HEX	4	
		238508001	PLATE-RADIATOR MOUNTING	1	
2		238510001	FOAM-RADIATOR	2	
3		238657001	RADIATOR ASSEMBLY	1	
4		68125001	CAP-RADIATOR TR102 7 PSI	1	
5		225532005	DRAIN COCK-1/4"	2	
6	*	1580009	HOSE CLAMP - 1 3/4"	2	
7		244769001	HOSE-1 3/4X23 1/2 RADIATOR	1	UPPER
8		224848001	HOSE-2 1/4ID X17" COOLANT	1	LOWER
9		102118001	FITTING-1/4NPT X 3/8 HOSE BARB	1	
10		1580001	HOSE CLAMP - 3/8"	2	
11		57706001	HOSE-3/8" 200PSI 1 PLY BLACK	AR	SPECIFY LENGTH
12		238509001	PLATE-RADIATOR MOUNTING	1	
13		238665001	RUBBER-UPPER RADIATOR SUPPORT	2	
14		238570001	SHROUD-FAN	1	
15		97456001	SEAL-BULB EDGE 1/8" STYLE	AR	SPECIFY LENGTH
16		238654001	GUARD-LEFT FAN	1	LEFT
17		238653001	GUARD-RIGHT FAN	1	RIGHT
18		4475006	BOLT-3/8-16X3/4 FLG WHIZ	18	
19		4536001	NUT - 3/8-16 FLG. WHIZ LOCK	6	
20		4473006	BOLT-1/4-20X3/4 FLG WHIZ	8	
21		18992001	U-CLIP-1/4-20 SP/3/4 THROAT	8	
22		375006	BOLT-3/8-16X3/4 CARRIAGE GR. 5	10	
23		485007	WASHER-3/8 FLAT	6	
24		416001	NUT-3/8 NC SLTL	6	
25		1580013	HOSE CLAMP-2 1/2"	2	
			Revised July 1999 due to update in parts list. Changed part marked with *.		

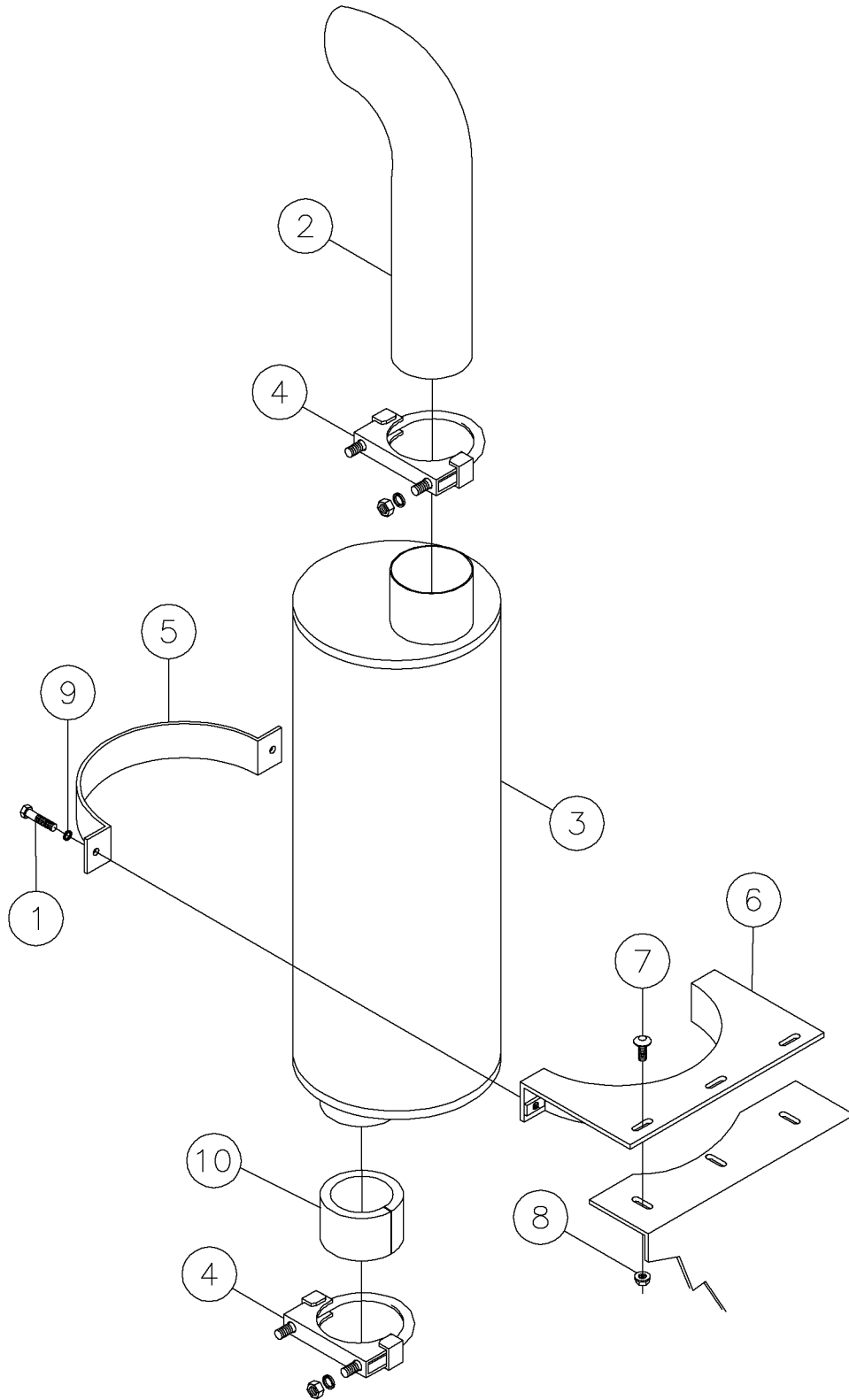
Air Cleaner Fig 2-8



Air Cleaner Fig 2-8

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		601644001	AIR CLEANER-12" NELSON	1	BREAKDOWN FIG. 2-11, DOES NOT INC. CLAMPS
2		2157001	BAND - AAH00-0349	2	
3		113557001	INDICATOR-RAXOO-2101	1	
4		4475006	BOLT-3/8-16X3/4 FLG WHIZ	4	
5		4536001	NUT - 3/8-16 FLG. WHIZ LOCK	4	
6		123618001	CLAMP-SPRING LOADED HOSE 5.25	3	
7		244764001	ELBOW-5" 90 DEG RUBBER	1	
8		244763001	TUBE-AIR INTAKE	1	
9		140176001	CAP-AIR CLEANER	1	
10		140176003	CLAMP	1	
11		84096001	HOSE-5X4 90DEG. ELBOW	1	
12		123617001	CLAMP-SPRING LOADED HOSE	1	

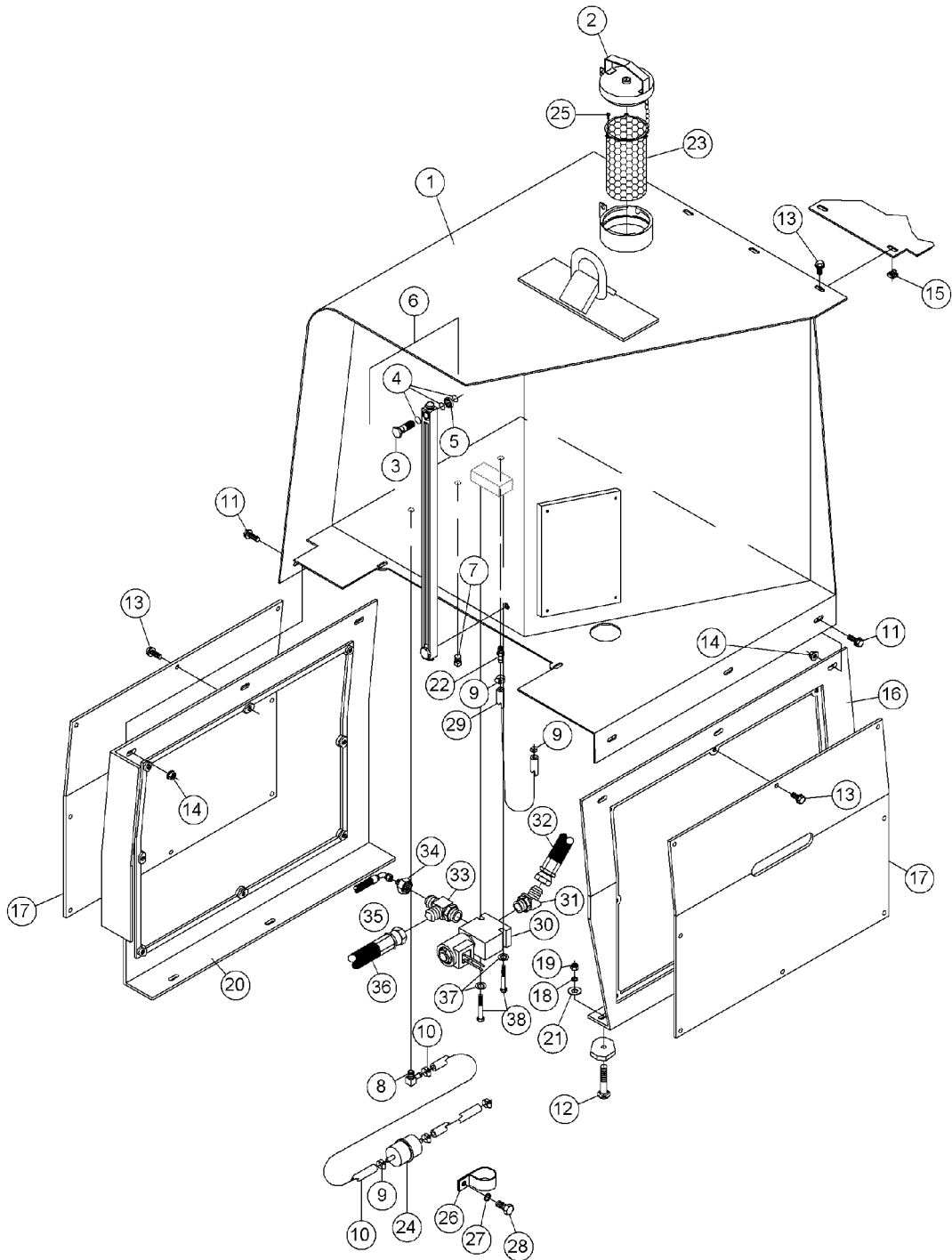
Muffler Fig 2-9r02



Muffler Fig 2-9r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		354020	3/8-16X2" GRADE#5 HEX BOLT	2	
2		244768001	STACK-EXHAUST	1	
3		238744001	MUFFLER-VERTICAL EXHAUST	1	
4	*	2609017	CLAMP-MUFFLER 4"	2	
5		238533001	STRAP-MUFFLER SUPPORT	1	
6		238530001	BRACKET-MUFFLER SUPPORT	1	
7		375010	BOLT-3/8"-16X1"GD#5 CARRIAGE	3	
8		4536001	NUT - 3/8-16 FLG. WHIZ LOCK	3	
9		480007	WASHER-3/8 S/T LOCK	2	
10		238523001	SPACER-MUFFLER	1	
			Revised June 2000 due to update in illustration & parts list. Changed part marked with *.		

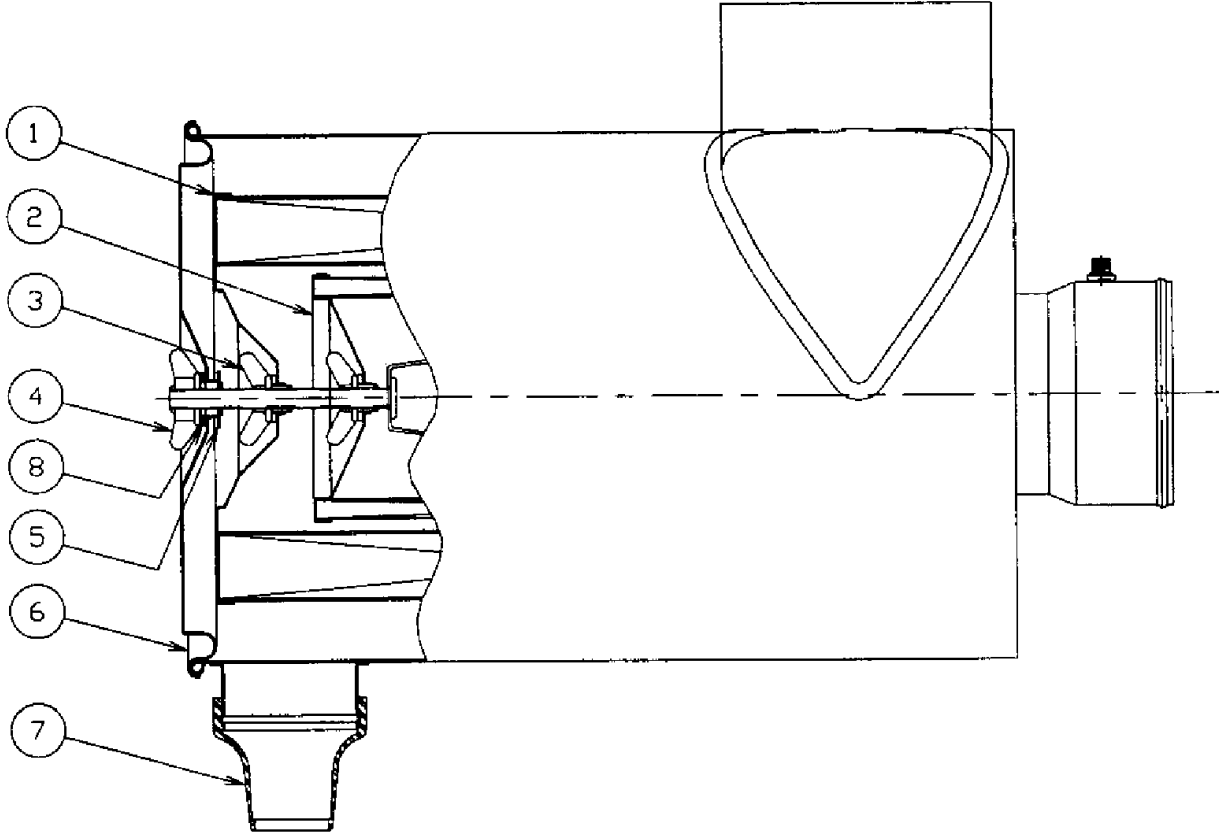
Fuel Tank Fig 2-10r03



Fuel Tank Fig 2-10r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		227841003	TANK-FUEL	1	
2		224985001	CAP-VENTED FUEL TANK	1	
3		234349003	BOLT-12M	2	SIGHT GAUGE
4		227757003	O-RING	6	
5		227757005	SPACER	2	
6		234349001	GAUGE 23" SIGHT	1	INC. REF. 3-5
7		732007	1/2" PIPE PLUG BLACK STEEL	1	
8		11384001	FITTING-1557 WTHR-HD	1	
9		1578001	HOSE CLAMP - 1/4"	4	
10		620029	HOSE-5/16 FUEL LINE-50"	1	
11		4475010	BOLT-3/8-16 X 1 FLANGE WHIZ	6	
12		377014	BOLT-1/2"-13 X 1 1/2" GD#5 CARRIAGE	4	
13		4475006	BOLT-3/8-16 X 3/4 FLG WHIZ	24	
14		4536001	NUT-3/8-16 FLG. WHIZ LOCK	6	
15		415001	NUT-3/8 NC HEX NUT CLIP	6	
16		227859001	MOUNT-ENGINE BAY DOOR	1	
17		227759001	LID-ENGINE BAY	2	
18		480011	WASHER-1/2 S/T LOCK	4	
19		423001	NUT-1/2 NC SLTL UTB	4	
20		227861001	EXTENSION-ENGINE BOX	1	
21		485011	WASHER-1/2 FLAT	4	
22		78171001	FITTING-1/8MNPT X 5/16 BARB STR.	1	
23		9998001	STRAINER-6" .030 STEEL	1	
24		102995001	STRAINER	1	
25		66695001	SCREW-MACH. 632 X 3/8	3	
26		230965001	CLAMP-1 3/4" W/17/32 HOLE	1	
27		64108001	WASHER-M12 LOCK	1	
28		64110001	BOLT-M12 X 25 METRIC	1	
29		620105	FUEL LINE HOSE 5/16 X 62.00	1	
30	*	279818001	VALVE - POPPET 2-WAY NC	1	PN Added, BREAKDOWN FIG. 2-13
31	*	60718001	FITTING-45-12MJ-12MORBA	1	PN Added
32	*	279815001	HOSE - 3/4 X 46 12 FSJIC ST/ST 300PSI	1	PN Added
33	*	59420001	FITTING-12 JICX12M ADJ. STR THRD RUN T	1	PN Added
34	*	813450001	FITTING-12 FSJJCX4M JIC STR	1	PN Added
35	*	53843583	HOSE - 1/4 X 112 4 FSJIC 90D	1	PN Added SN 325-
36	*	279832001	HOSE - 3/4 X 54 12 FSJIC ST/90 3000PSI	1	PN Added SN 325-
37	*	235714001	WASHER - 5/16 - FLATSTRL - .31 - .34	2	PN Added SN 325-
38	*	248029001	BOLT-5/16-18X2 1/2 GR8 ZINC PL	2	PN Added SN 325-

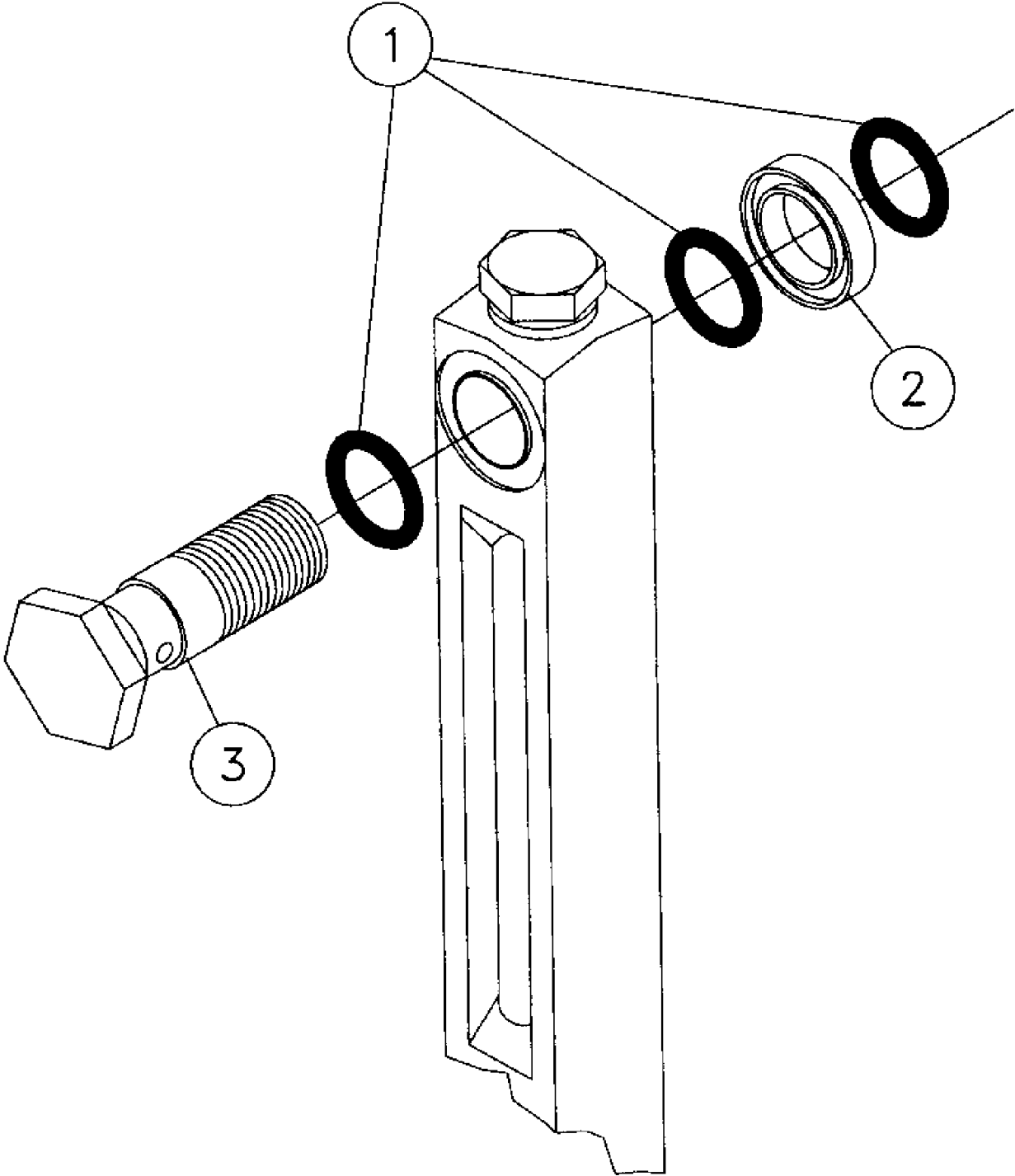
Air Cleaner Components Fig 2-11



Air Cleaner Components Fig 2-11

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		601644003	PRIMARY ELEMENT	1	
2		601644005	SAFETY ELEMENT	1	
3		601644007	WING NUT	2	
4		601644009	WING NUT	1	
5		601644011	"E" RING	1	
6		601644013	COVER ASSEMBLY	1	INC. REF. 4, 5 & 8
7		601644015	DUST EJECTOR	1	
8		601644017	WASHER	1	
		601644001	AIR CLEANER		COMPLETE, INC. REF. 1-8

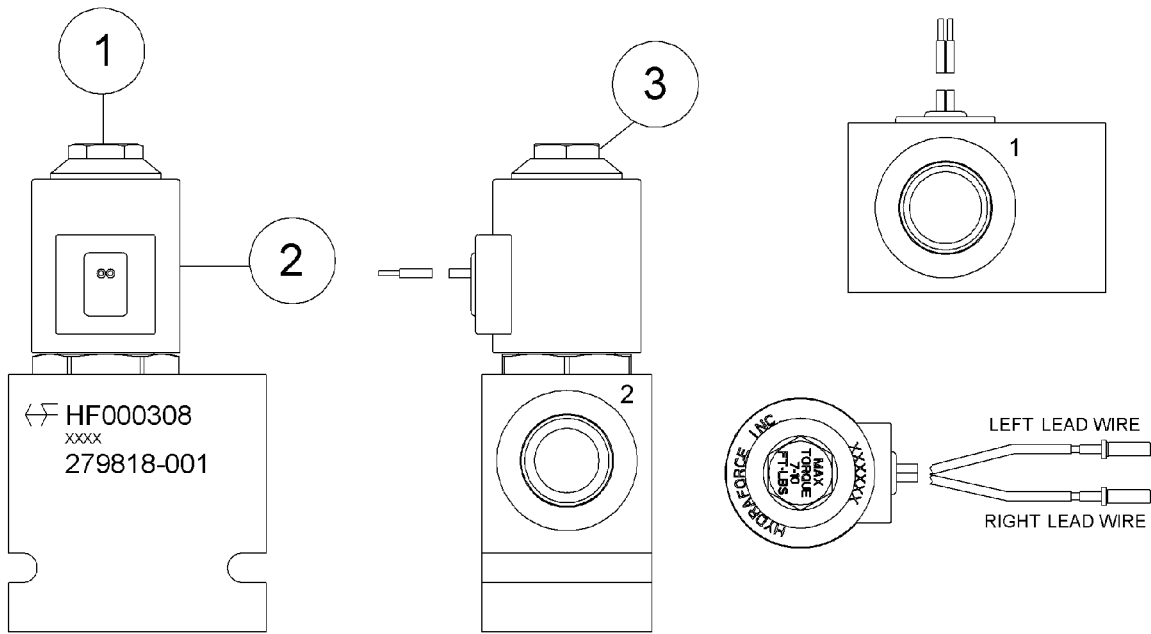
Sight Gauge Components Fig 2-12



Sight Gauge Components Fig 2-12

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		227757003	O-RING	6	
2		227757005	SPACER	2	
3		234349003	BOLT-12M	2	SIGHT GAUGE
		234349001	GAUGE-23" SIGHT		INC. GAUGE & 1-3

Poppet Valve Fig 2-13

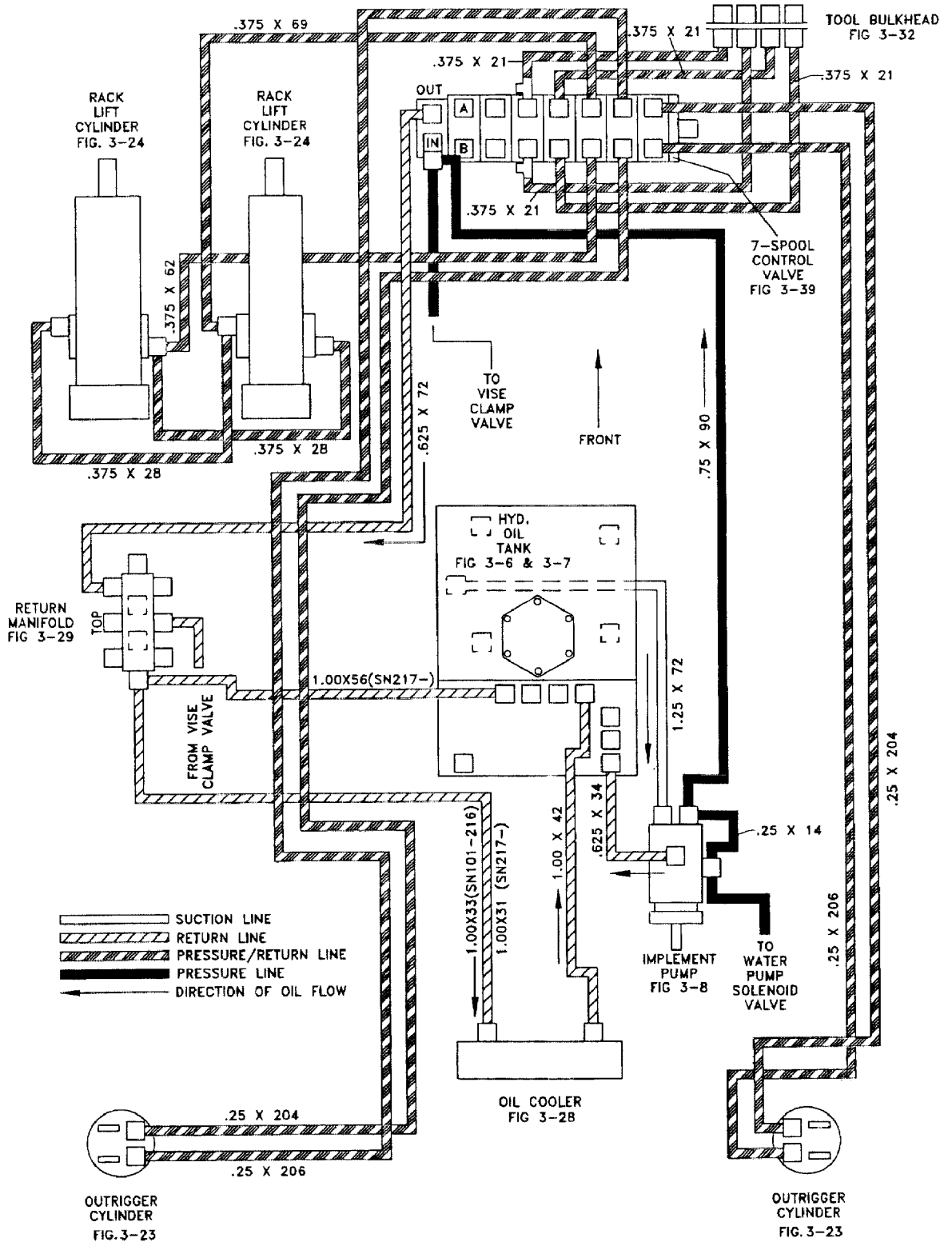


Poppet Valve Fig 2-13

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		New Fig. Page Added
1		296251269	SOLENOID-CARTRIDGE	1	
		251108009	SEAL KIT	1	
2		251112005	COIL - 10 DL 12V/SPL	1	
3		280624001	NUT - RAIN PROOF COIL	1	
		279818001	VALVE - POPPET 2-WAY NC		ALL ITEMS IN FIG.

Hyd. Comp. Loc. Diagram - Implement System Fig 3-1r03

Revised February 2000 due to update in illustration.

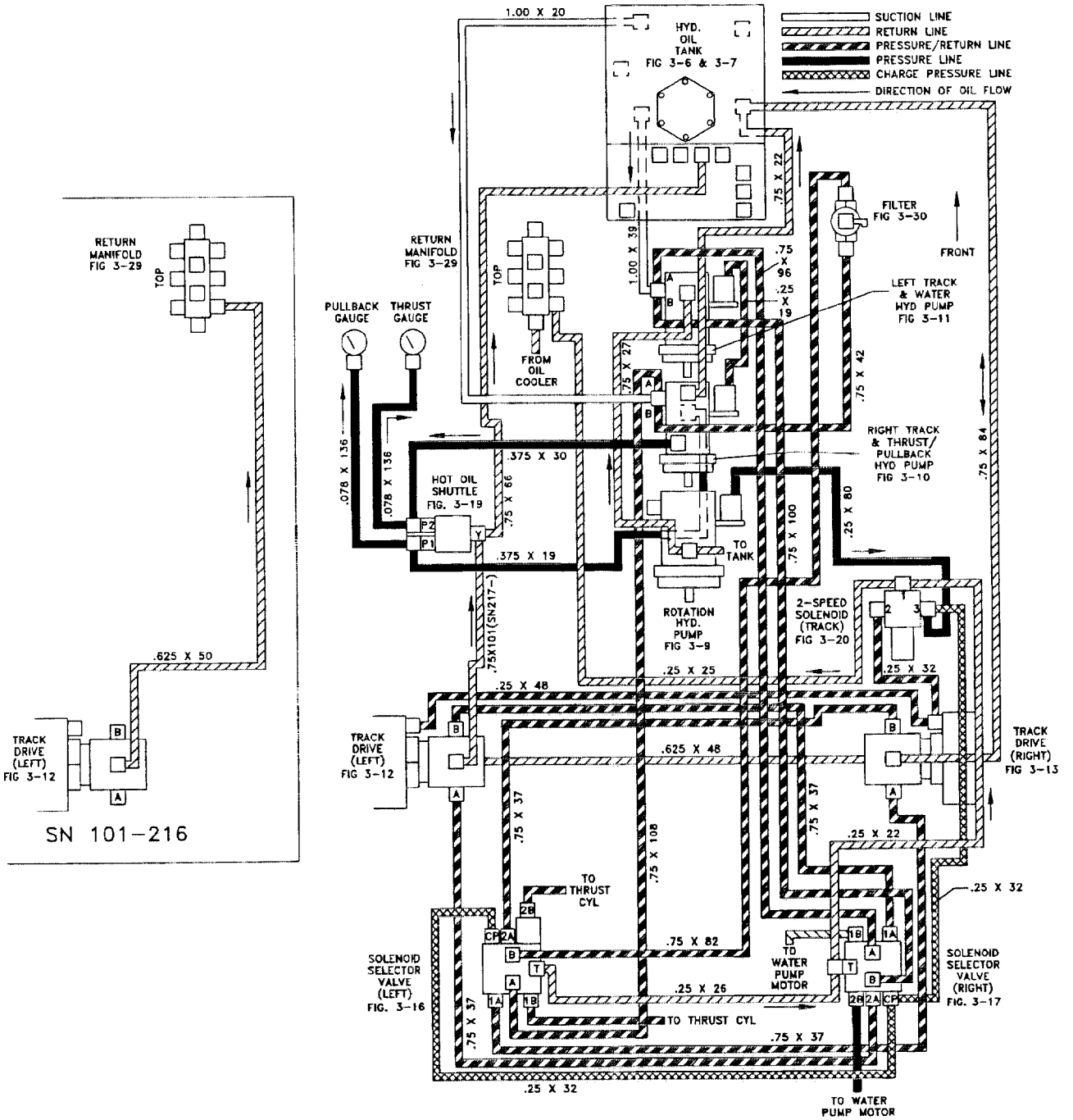


Hyd. Comp. Loc. Diagram - Implement System Fig 3-1r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS

Hyd. Comp. Loc. Diagram - Ground Drive System Fig 3-2r03

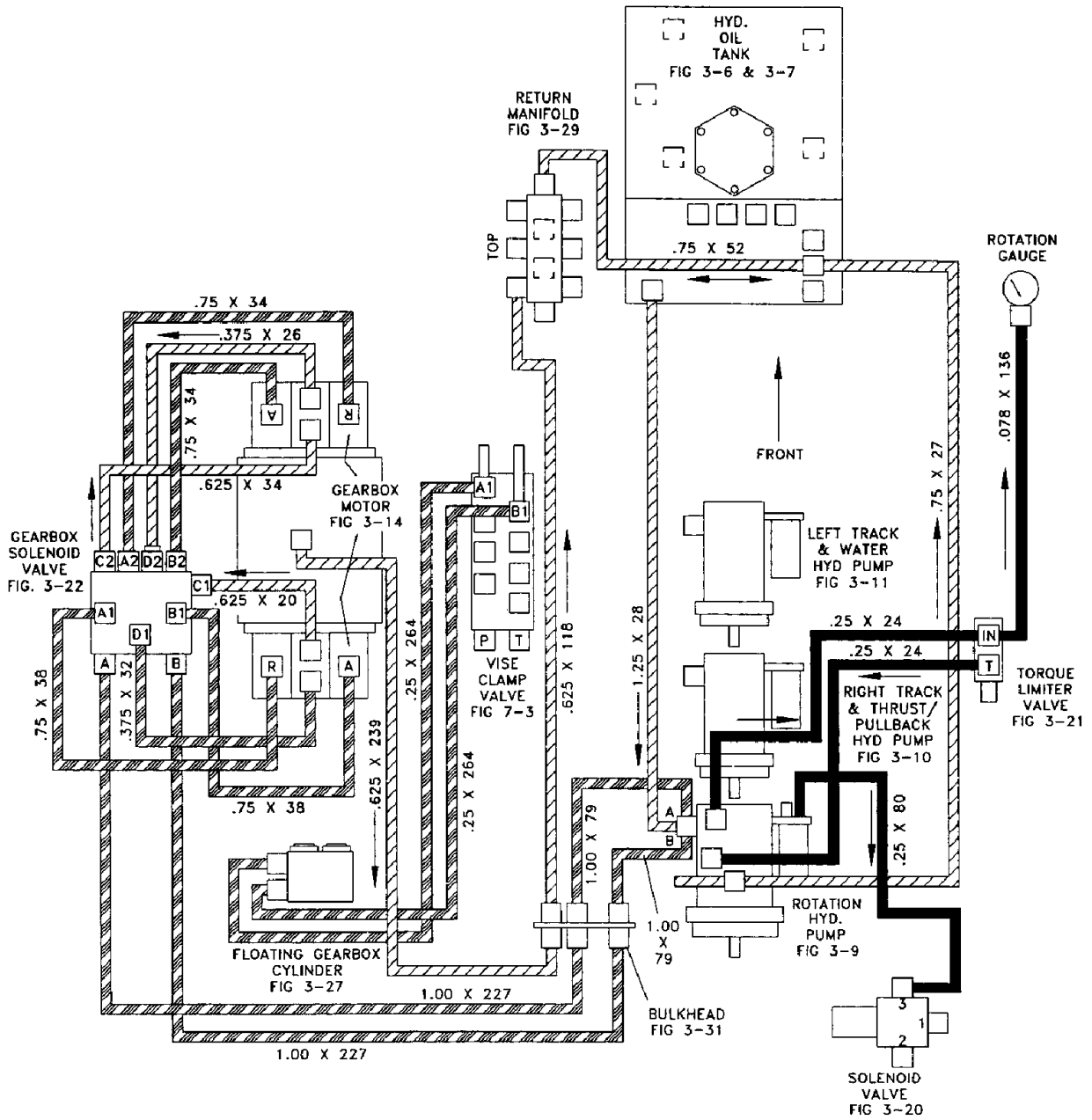
Revised February 2000 due to update in illustration.



Hyd. Comp. Loc. Diagram - Ground Drive System Fig 3-2r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS

Hydraulic Comp. Loc. Diagram - Rotation System Fig 3-3

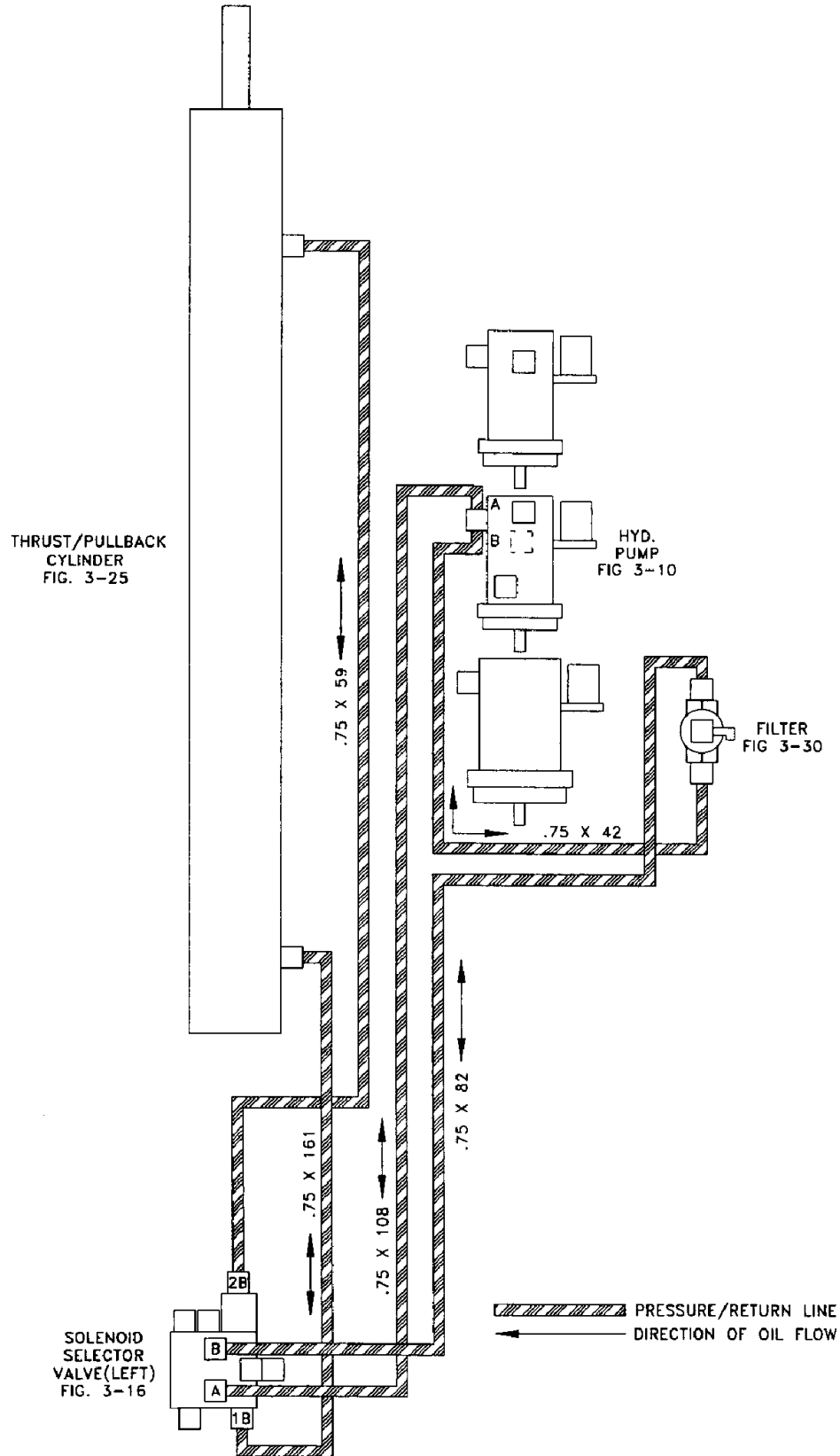


- SUCTION LINE
- RETURN LINE
- PRESSURE/RETURN LINE
- PRESSURE LINE
- DIRECTION OF OIL FLOW

Hydraulic Comp. Loc. Diagram - Rotation System Fig 3-3

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS

Hyd. Comp. Loc. Diagram - Thrust/Pullback System Fig 3-4

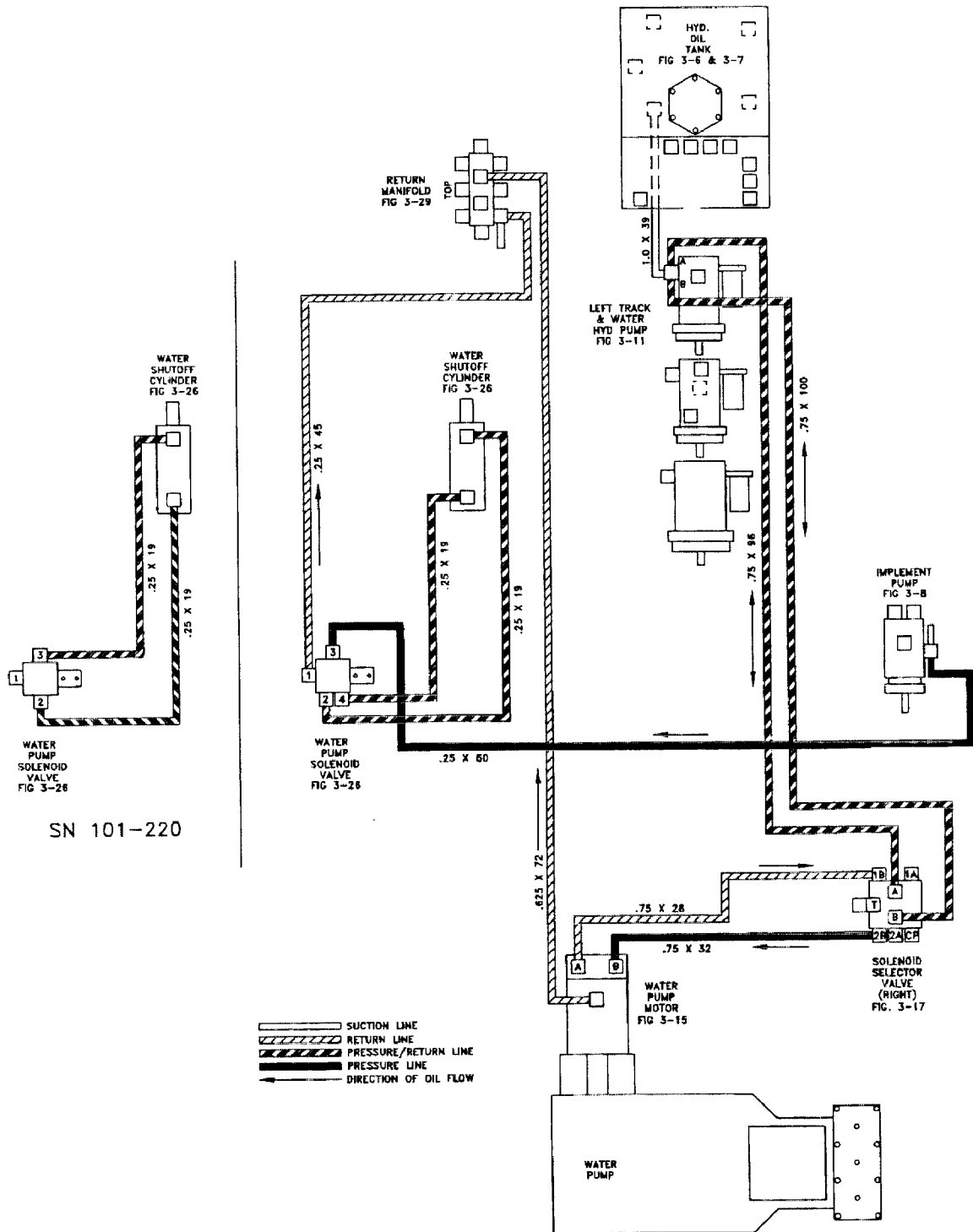


Hyd. Comp. Loc. Diagram - Thrust/Pullback System Fig 3-4

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS

Hyd. Comp. Loc. Diagram - Water Pump System Fig 3-5r03

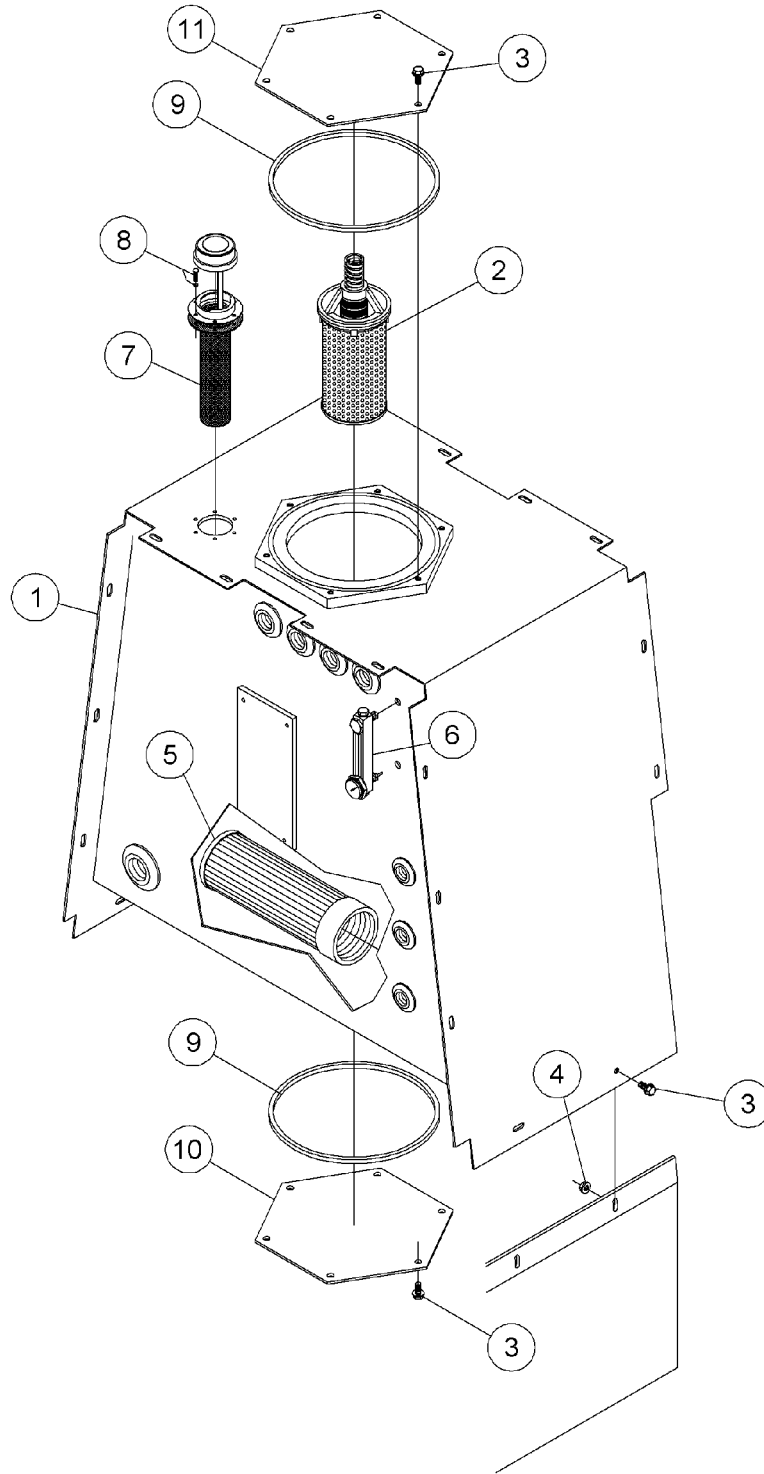
Revised February 2000 due to update in illustration.



Hyd. Comp. Loc. Diagram - Water Pump System Fig 3-5r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS

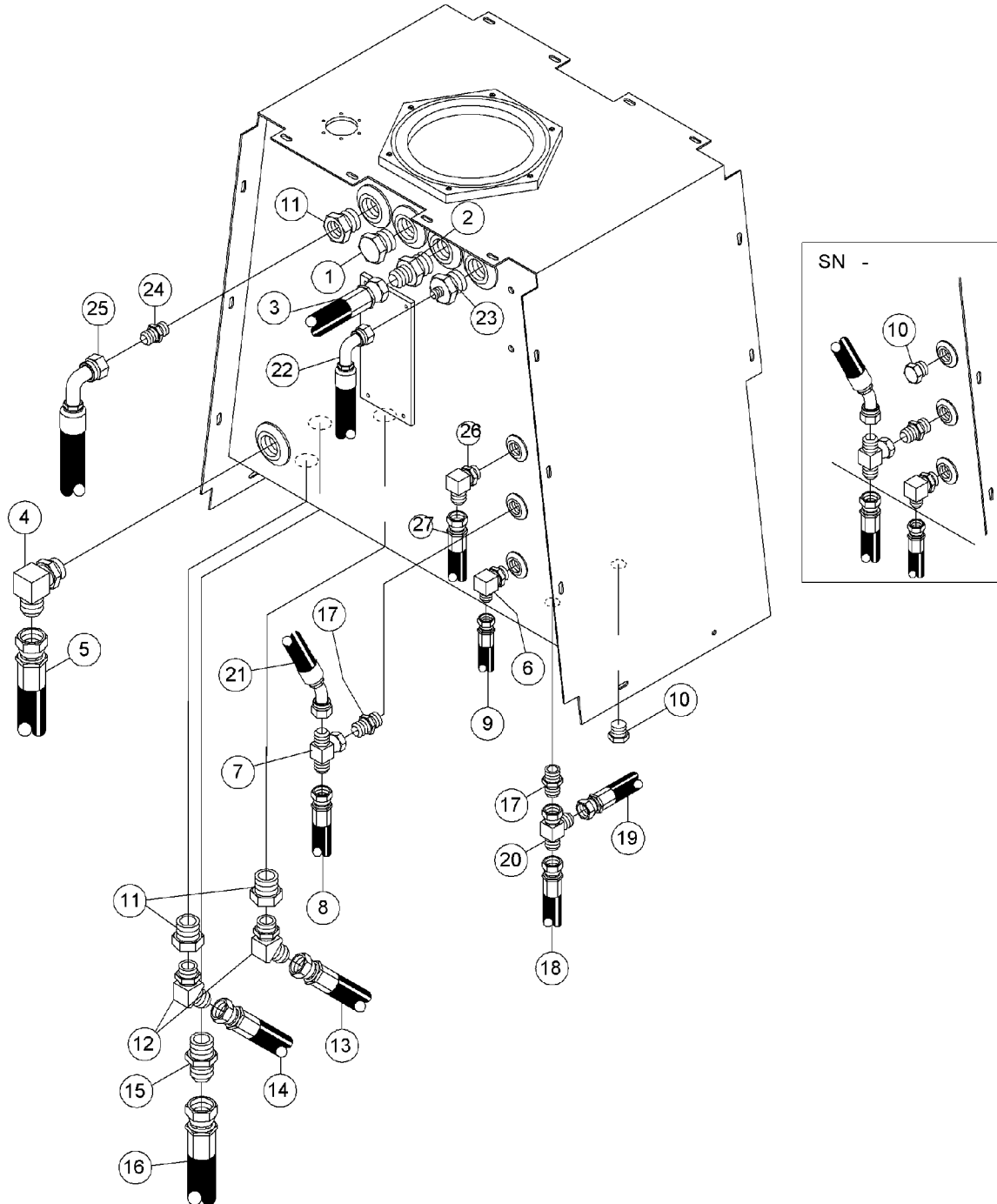
Oil Tank Fig 3-6r05



Oil Tank Fig 3-6r05

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		238534003	TANK-OIL	1	
2		609133001	FILTER ASSEMBLY - HYDRAULIC	1	
2		244486001	FILTER-HYD. RETURN	1	SN217-, BREAKDOWN FIG. 3-55
2		89671003	ELEMENT-FILTER	2	
3		4475006	BOLT-3/8-16 X 3/4 FLG WHIZ	16	
4		4536001	NUT - 3/8-16 FLG. WHIZ LOCK	4	
5		98681001	FILTER-TANK 3 NPT OUTLET PORT	1	
6		81590001	GAUGE-SIGHT	1	
7		235808001	CAP-FILLER/BREATHER W/O RELIEF	1	
8		1802006	BOLT-10-24 X 3/4 RND HD STOVE	6	
8		480001	WASHER-3/16 S/T LOCK	6	
9		78544001	O-RING AS-378 B46	2	
10	*	96291001	PLATE-CLEANOUT PORT	2	QTY Changed
11		225358001	LID-FILTER	1	

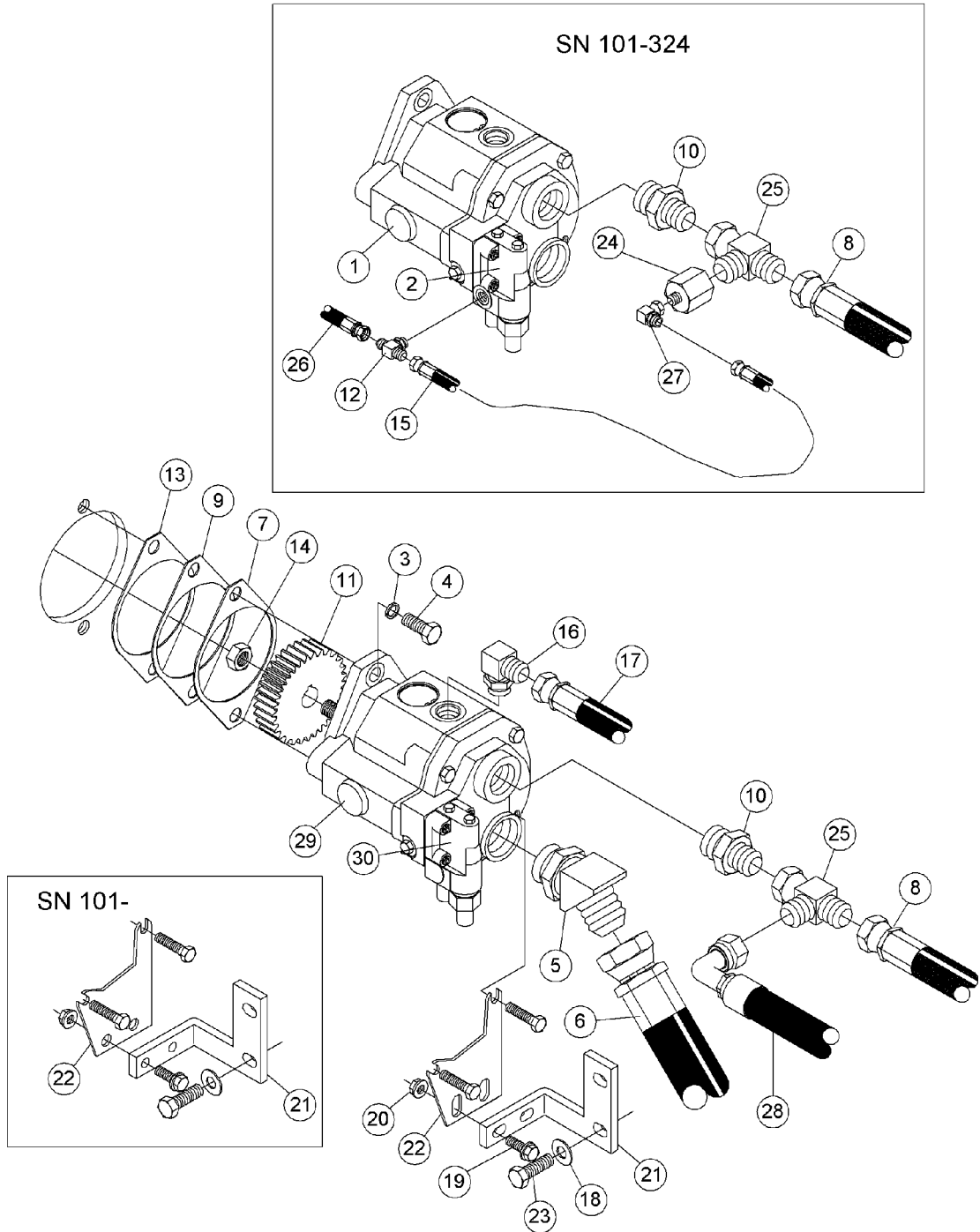
Oil Tank Plumbing Fig 3-7r04



Oil Tank Plumbing Fig 3-7r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		81704001	FITTING-20M PLUG	1	
2		85657001	FITTING-20M X 16M JIC STR.	1	
3		53846065	HOSE-1 X 42 16FS JIC 100R4	1	
4		77137001	FITTING-20M X 20M JIC 90 DEG.	1	
5		65560085	HOSE-1 1/4 X 28 20FS JIC 200 PSI	1	
6		59409001	10M JIC X 12M ADJ. 90 DEG. ELBOW	1	
7		61456001	12JIC BCH SW NUT TEE	1	
8		53845677	HOSE-3/4 X 27 12FSJIC-12FSJIC 45	1	
9		53842123	HOSE-5/8 X 34 10FS JIC 1500 PSI	1	
10	*	67570001	PLUG-12M	1	QTY Changed
11		79498001	FITTING-20M X 16F ST. REDUCER	3	
12		53835001	#16M O-RING #16M JIC 45 DEG.	2	
13		53846001	HOSE-1 X 20 16FS JIC 100R4	1	
14		53846209	HOSE-1 X 39 16FSJIC/16FSJIC-90	1	
15		70006001	FITTING-20M X 20M JIC STR.	1	
16		65560023	HOSE-1 1/4 X 72 20FS JIC 100R4	1	
17		244464001	VALVE-CHECK	2	65 PSI CRACK
18		53845007	HOSE-3/4 X 84 12FS JIC 100R4	1	
19		53845001	HOSE-3/4 X 22 12FS JIC 100R4	1	
20		59417001	12 JIC SW RUN TEE	1	
21		53845683	HOSE-3/4 X 52 12FSJIC-12FSJIC 45	1	
22		53845791	HOSE-3/4 X 66 12FS JIC ST/90 3000#	1	
23		85658001	FITTING-20M X 12M JIC STR	1	
24		246431001	VALVE-CHECK 30 PSI	1	SN217-
25		53846249	HOSE-1 X 56 16FS JIC/16FS JIC 90	1	SN217-
26	*	59410001	FITTING-12JICX12MADJ 90 DEG ELBOW	1	SN325- PN Added
27	*	279815001	HOSE - 3/4 X 46 12 FSJIC ST/ST 300PSI	1	SN325- PN Added

Implement Pump Fig 3-8r03

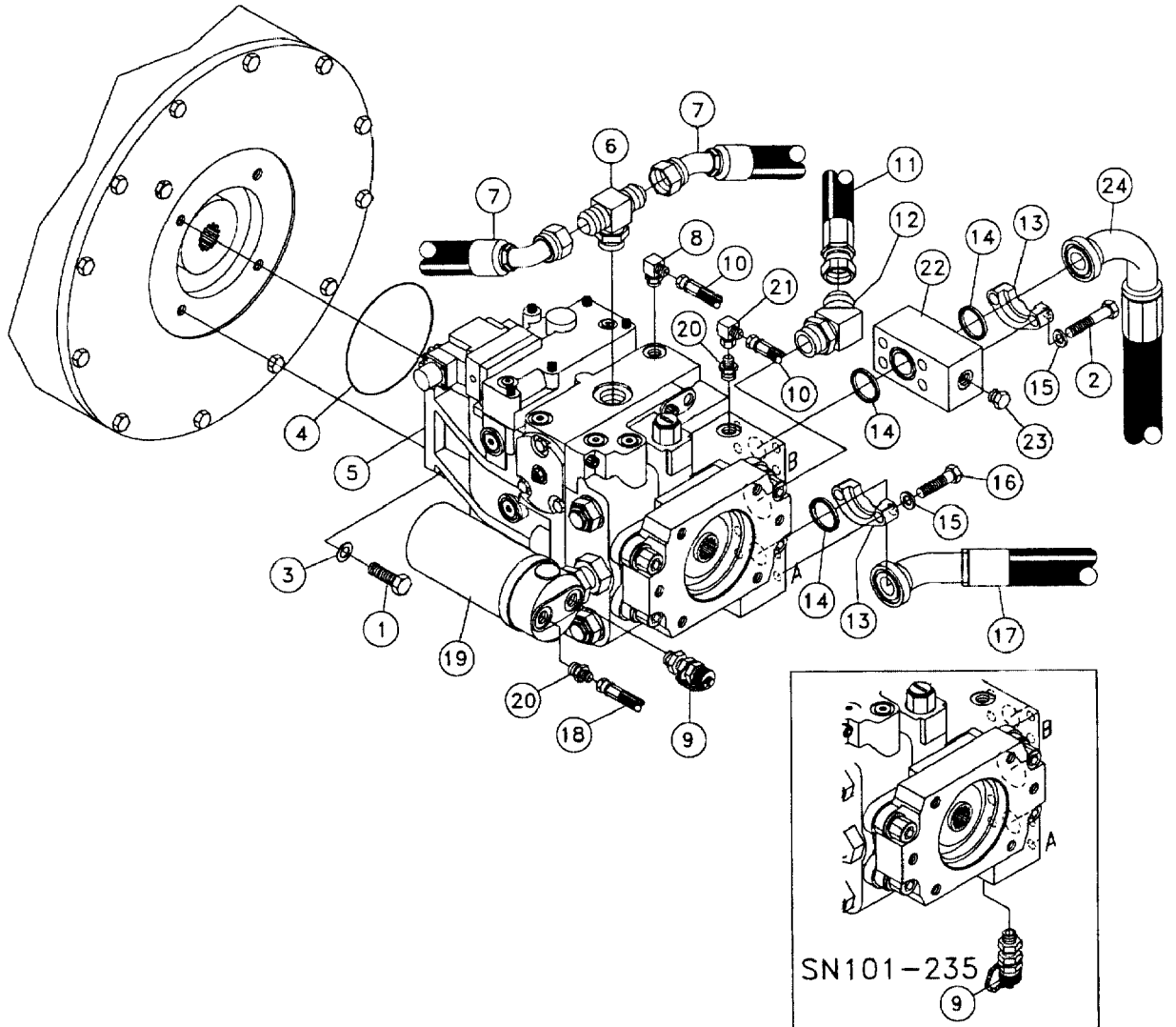


Implement Pump Fig 3-8r03

REF NO.	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		244596001	PUMP-PFC 2.32 CID	1	SN101-324
		113253003	SEAL KIT-PUMP/COMPENSATOR	1	SN101-324
2		98687005	COMPENSATOR ASSEMBLY	1	SN101-324
3		64108001	WASHER-M12 LOCK	2	
4		24772001	BOLT-12M X 35 GR. 8.8 HEX HEAD	2	
5		81703001	FITTING-20MX20M JIC 45 DEG.EL.	1	
6		65560023	HOSE-1 1/4X72 20FS JIC 100R4	1	
7		103032001	GASKET	1	
8		53845687	HOSE-3/4X90 12FSJIC-12FSJIC 45	1	
9		103029001	SPACER-.060	1	
10		70008001	FITTING-16M X 12M JIC STR.	1	
11		103031001	GEAR	1	
12		81343001	4M (BCH)X4M JICX4M JIC TEE	1	SN101-324
13		103032001	GASKET	2	
14		103030001	NUT	1	
15		53843197	HOSE-1/4X14 4FS JIC 3000 PSI	1	SN101-324
16		53829001	#10M O-RING-#10M JIC 90 DEG.	1	
17		53842123	HOSE-5/8X34 10FS JIC 1500PSI	1	
18		485009	WASHER-7/16 FLAT	2	
19		4475010	BOLT-3/8-16X1 FLANGE WHIZ	2	
20		4536001	NUT-3/8-16 FLG WHIZ LOCK	2	
21		238514001	BRACKET-PUMP SUPPORT	1	
22		235805001	PLATE-PUMP BRACKET	1	
23		100478001	BOLT-M12X1.75X30 DIN933 GR.8.8	2	
24		81345001	FITTING-2F JIC X 4M JIC STR.	1	SN101-324
25		59417001	12 JIC SW RUN TEE	1	
26		53843481	HOSE-1/4X60 4FS JIC 3000 PSI	1	SN101-324
27		53658001	FITTING-4M JIC X 4FS JIC 90 DEG.	1	SN101-324
28	*	279832001	HOSE - 3/4 X 54 12 FSJIC ST/90 3000PSI	1	PN Added SN325-
29	*	279808001	PUMP - PC 2.32 CID	1	PN Added SN325-
30	*	77958097	SEAL KIT-PUMP & COMPENSATOR	1	PN Added SN325-

Hyd. Pump - Rotation Fig 3-9r03

Revised February 2000 due to update in illustration & parts list. Changed parts marked with *.

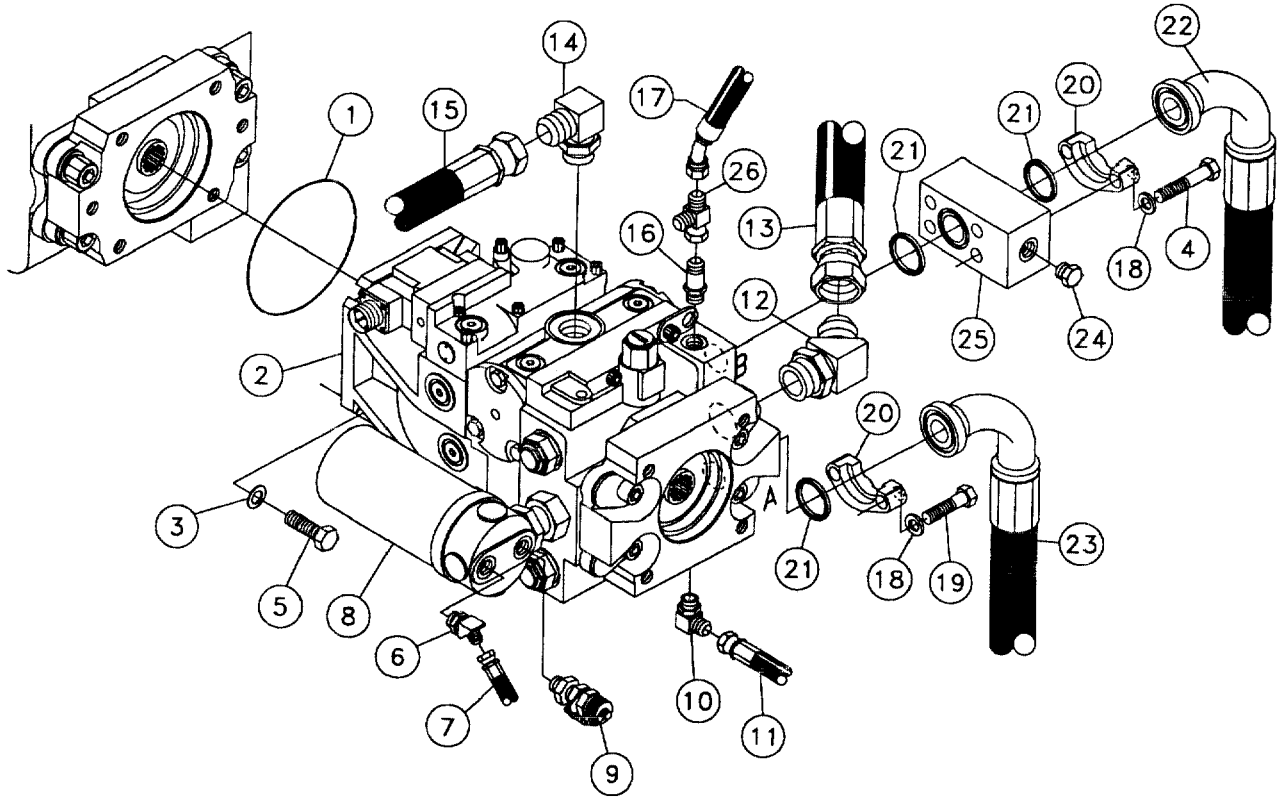


Hyd. Pump - Rotation Fig 3-9r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		75381014	BOLT-1/2-UNCX1 1/2 GR.8 HEX	4	
2	*	357040	BOLT-7/16-14X4 GR5 HHCS PLATED	4	
3		86510001	WASHER-1/2 FLT HARDENED	4	
4		85642163	O-RING	1	
5		224411001	PUMP-90 SERIES 100CC 23T EDC	1	BREAKDOWN FIG. 3-33
6		70032001	12M BCH X 12M JIC X 12M JIC TEE	1	
7		53845677	HOSE-3/4X27 12FS JIC-12FS JIC 45	2	
8		600118001	FITTING-6M ORING X 4M JIC 90 PARKER	2	
9	*	72056001	COUPLER-DIAG. TCM-20 9/16NF	1	SN101-235, QTY WAS 2
10		68210001	HOSE-1/4X24 4FS JIC	2	M2T
11		65560085	HOSE-1 1/4X28 20FS JIC 200 PSI	1	
12		81703001	FITTING-20M X 20M JIC 45 DEG. EL.	1	
13		67745001	SPLIT FLANGE HALF CODE 62/16	2	
14		72895001	O RING-SQ. #16 FLANGE	3	
15		480009	WASHER-7/16 S/T LOCK	8	
16		357016	7/16-14X1 3/4" GRADE #5 HEX BOLT	4	
17		53845431	HOSE 1X79 16FS JIC 16/62/6OD 6000	1	
18		53843237	HOSE-1/4X80 4FS JIC 3000 PSI	1	
19		81902001	FILTER-OIL	1	
20		57968001	6M O-RING 4M JIC STRAIGHT	2	
21		53658001	FITTING-4M JIC X4 FS JIC 90 DEG	1	
22		234780001	BLOCK-CODE 62	1	
23		83635001	PLUG #6 JIC MALE	1	
24	*	53846487	HOSE-1X79 16FSST 16/62/90 6000	1	

Hyd. Pump - Right Track, Thrust/Pullback Fig 3-10r03

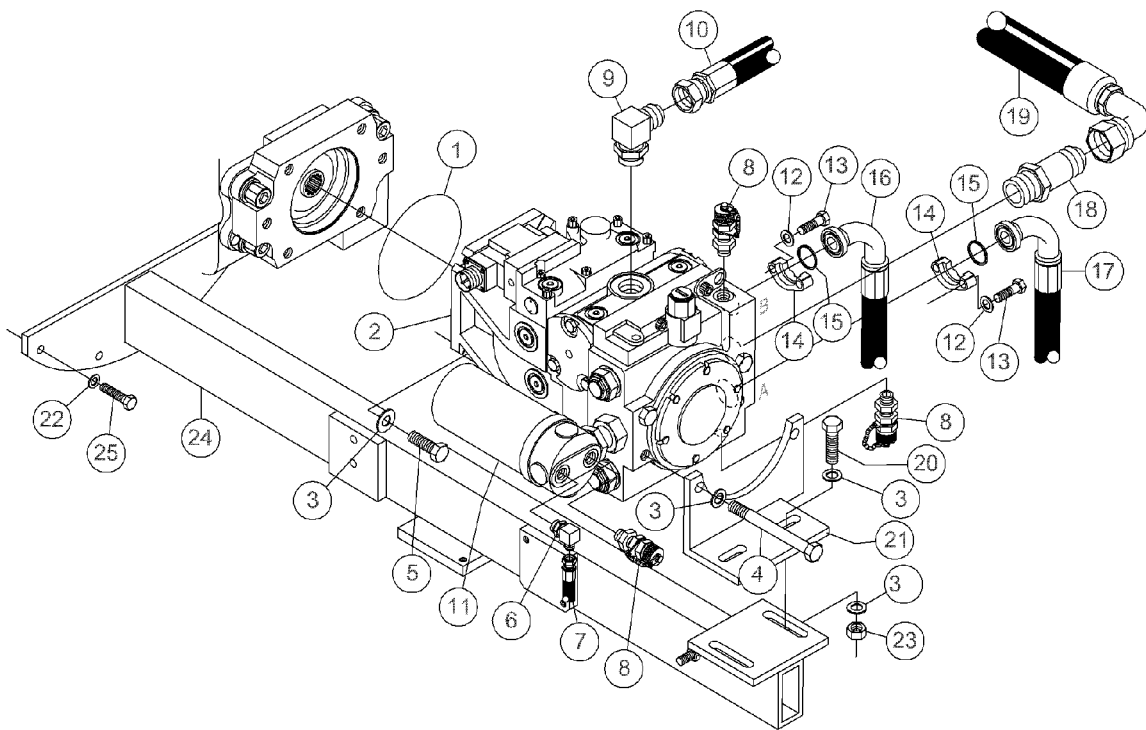
Revised February 2000 due to update
in illustration & parts list. Changed/added parts
marked with *.



Hyd. Pump - Right Track, Thrust/Pullback Fig 3-10r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		85642163	O-RING	1	
2		224413001	PUMP-90 SERIES 55CC 14T EDC	1	BREAKDOWN FIG. 3-34
3		86510001	WASHER-1/2 FLT HARDENED	4	
4	*	357040	BOLT-7/16-14X4 GR5 HHCS PLATED	4	
5		75381014	BOLT-1/2-UNCX1 1/2 GR.8 HEX	4	
6		82931001	FITTING-6MX4M JIC 45DEG. ELBOW	1	
7		53843251	HOSE-1/4X19 4FS JIC 2750 PSI	1	
8		81902001	FILTER-OIL	1	
9		72056001	COUPLER-DIAG. TCM-20 9/16NF	1	
10		59426001	FITTING-6M JICX6M ADJ 90 ELBOW	1	
11		57940659	HOSE-3/8X19 6FS JIC ST 4000 PSI	1	
12		53835001	#16 O-RING #16M JIC 45 DEG.	1	
13		53846001	HOSE-1X20 16FS JIC 100R4	1	
14		59410001	12M JIC X 12M ADJ. 90 DEG. ELBOW	1	
15		53845001	HOSE-3/4X22 12FS JIC 100R4	1	
16		103047001	FITTING-6M JIC X6M ORING LONG STR	1	
17		57940661	HOSE-3/8X30 6FS JIC ST/45 4000#	1	
18		480009	WASHER-7/16 S/T LOCK	8	
19		357016	7/16-14X1 3/4" GRADE #5 HEX BOLT	4	
20		67745001	SPLIT FLANGE HALF CODE 62/16	2	
21		72895001	O RING-SQ. #16 FLANGE	3	
22		53845791	HOSE 3/4X42 12 JIC 16/62/90 5000	1	
23		53845795	HOSE 3/4 X 108 12 JIC 16/62/90 DEG	1	
24		83635001	PLUG #6 JIC MALE	1	
25		234780001	BLOCK-CODE 62	1	
26	*	59427001	TEE-6M JIC BCH 6FS JIC 6M JIC	1	SN236-

Hyd. Pump - Left Track, Water Fig 3-11r02

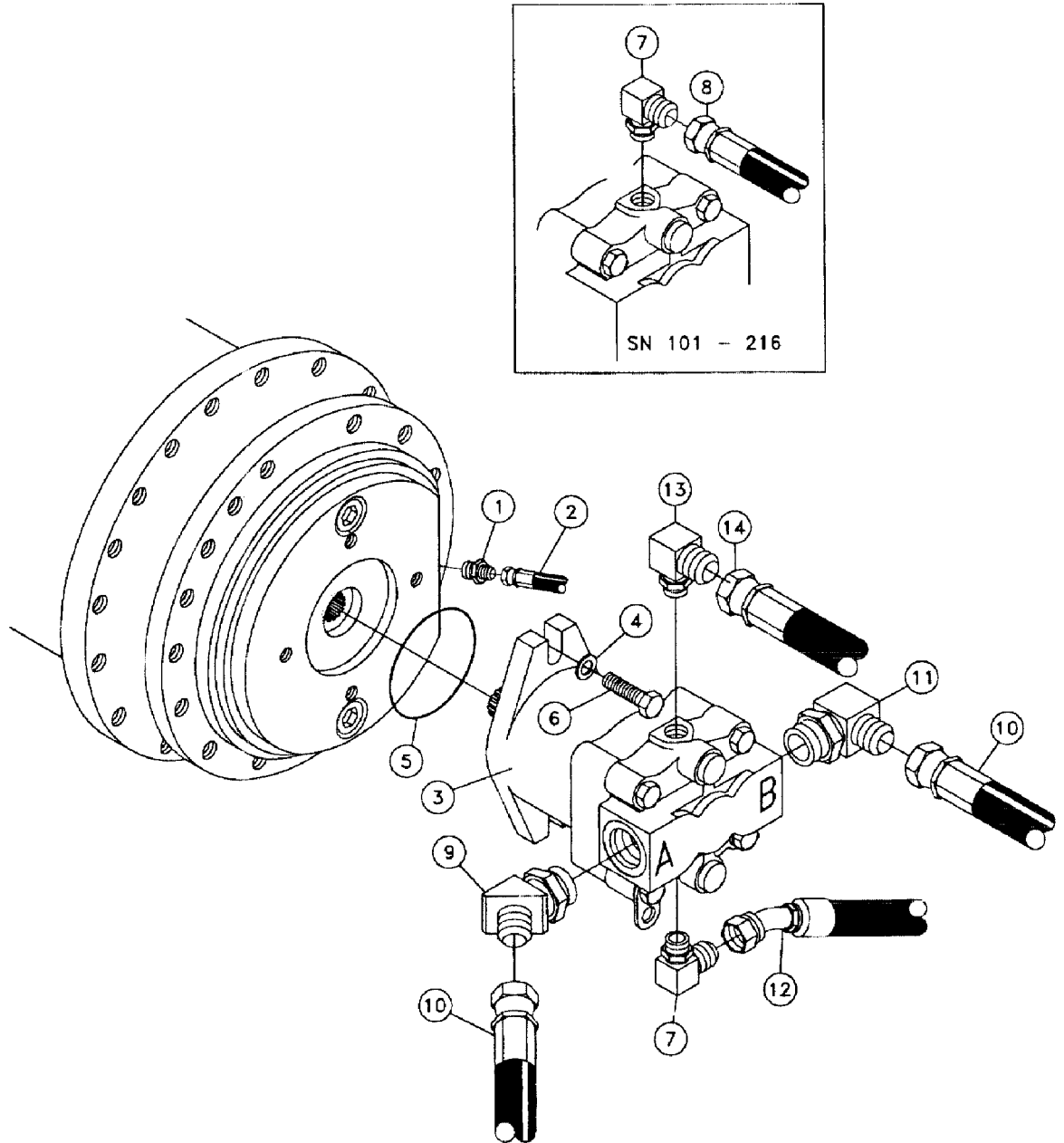


Hyd. Pump - Left Track, Water Fig 3-11r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus.
1		85642163	O-RING	1	
2		224412001	PUMP-90 SERIES 55CC 14T EDC	1	BREAKDOWN FIG. 3-35
3		485025	WASHER-1/2 FLT HARDENED ZINC	8	
4		250621001	BOLT-M12X1.75-110MM 10.9 Y/Z	2	
5		235721001	BOLT-1/2-13X1 1/2 GR 8 HEX Y/Z	4	
6		600118001	FITTING-6MORINGX4MJIC90PARKER	1	
7		53843251	HOSE-1/4X19 4FS JIC 2750 PSI	1	
8		72056001	COUPLER-DIAG. TCM-20 9/16NF	3	
9		59410001	12M JICX12M ADJ. 90 DEG.ELBOW	1	
10		53845677	HOSE-3/4X27 12FSJIC-12FSJIC 45	1	
11		81902001	FILTER-OIL	1	
12		250540001	WASHER-7/16 HARDENED FLAT Y/Z	8	
13		250622001	BOLT-7/16"-14X1 3/4" GR 8 HEX Y/Z	8	
14		67745001	SPLIT FLANGE HALF CODE 62/16	4	
15		72895001	O RING-SQ. #16 FLANGE	2	
16		53845611	HOSE-3/4X100 12JIC90X16/62/90	1	
17		53845793	HOSE 3/4X96 12JIC16/62/90 5000	1	
18		94161001	FITTING-16M JIC X 16M O-RING LONG	1	
19		53846209	HOSE-1X39 16FSJIC/16FSJIC-90	1	
20		240334001	BOLT-1/2-13X1 3/4 GR 8 HEX ZINC	2	
21		224431001	SUPPORT PUMP	1	
22		240061001	WASHER-10MM HARDENED FLAT Z	2	
23		235731001	NUT-1/2-13 GR 8 ZINC/PLTD	2	
24		224430001	SUPPORT-PUMP	1	
25		250574001	BOLT-10M X 50MM 10.9 HEX Y/ZINC	4	

Track Drive Motor - Left Fig 3-12r02

Revised February 2000 due to update in illustration & parts list. Changed/ added parts marked with *.

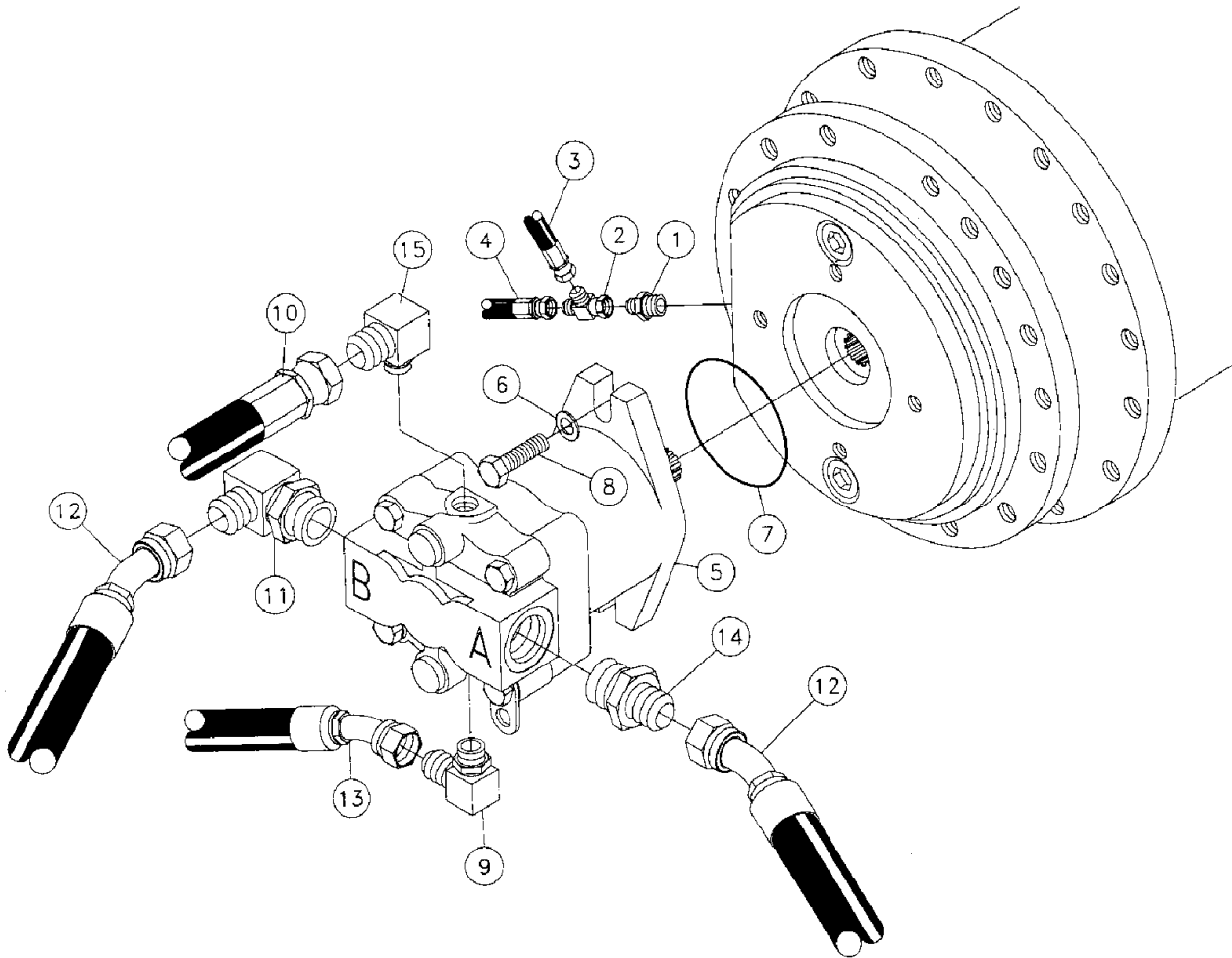


Track Drive Motor - Left Fig 3-12r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		103058001	FITTING-M12X1.5X4M JIC STR.	1	
2		53843709	HOSE-1/4X48 4FS JIC 3000 PSI	1	
3		200873001	MOTOR-MDT46	1	
4		485025	WASHER-1/2 FLT HARDENED ZINC	2	
5		903382001	O-RING	1	
6		235721001	BOLT-1/2-13X1 1/2 GRADE #8 HEX ZINC	2	
7	*	53823001	#8M O-RING #10M JIC 90 DEG.	1	SN101-216, QTY. WAS 2
8		53842047	HOSE-5/8X50 10FS JIC 100R2	1	SN101-216
9		81212001	FITTING-16M X 12M JIC 45 ELBOW	1	
10		53845615	HOSE-3/4X37 12FS JIC ST/45D5000#	2	
11		78057001	FITTING-16M X 12M JIC 90 DEG	1	
12		232127025	HOSE-5/8X48 10FS JIC45/10FSJC45	1	
13	*	59411001	12M JIC X 8M ADJ 90 DEG	1	SN217-
14	*	53845803	HOSE-3/4X101 12FS JIC ST/90 D3000	1	SN217-

Track Drive Motor - Right Fig 3-13r01

Revised February 1999 due to hardware updates. Changed parts marked with *.

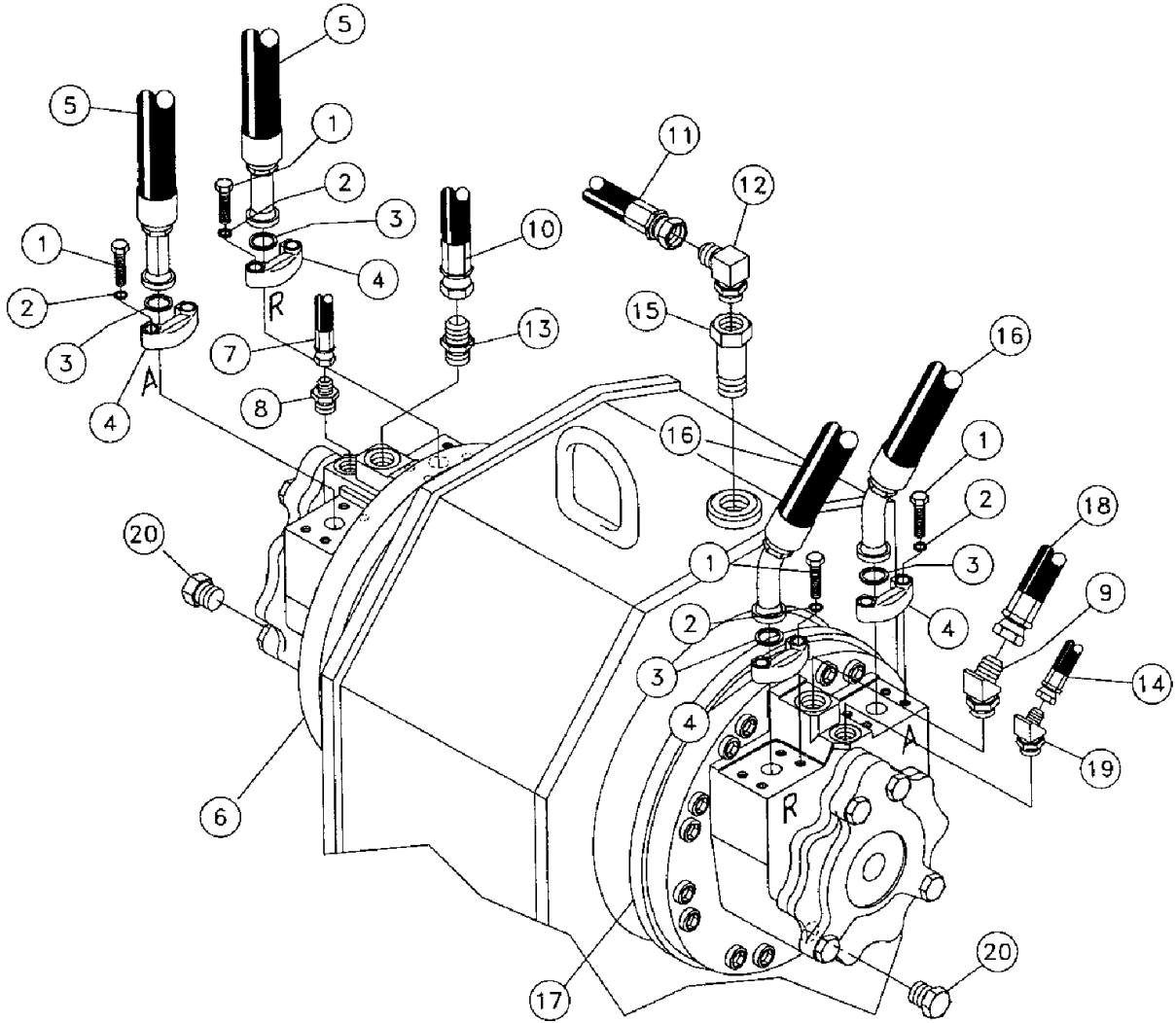


Track Drive Motor - Right Fig 3-13r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		103058001	FITTING-M12X1.5X4M JIC STR.	1	
2		60248001	TEE-4M JICX4M JICX4FS JIC	1	
3		53843253	HOSE-1/4X32 4FS JIC 2750 PSI	1	
4		53843709	HOSE-1/4X48 4FS JIC 3000 PSI	1	
5		200873001	MOTOR-MDT46	1	
6	*	485025	WASHER-1/2 FLT HARDENED ZINC	2	
7	*	903382001	O-RING	1	
8	*	235721001	BOLT-1/2-13X1 1/2 GRADE #8 HEX ZINC	2	
9		53823001	#8M O-RING-#10M JIC 90 DEG.	1	
10		53845007	HOSE-3/4X84 12FS JIC 100R4	1	
11		78057001	FITTING-16MX12M JIC 90 DEG	1	
12		53845615	HOSE-3/4X37 12FSJICST/45D5000#	2	
13		232127025	HOSE-5/8X48 10FSJIC45/10FSJC45	1	
14		70008001	FITTING-16M X 12M JIC STR.	1	
15		59411001	12M JICX8M ADJ. 90 DEG.ELBOW	1	
			Revised February 1999 due to hardware updates. Changed parts marked with *.		

Gearbox Drive Motor Fig 3-14r02

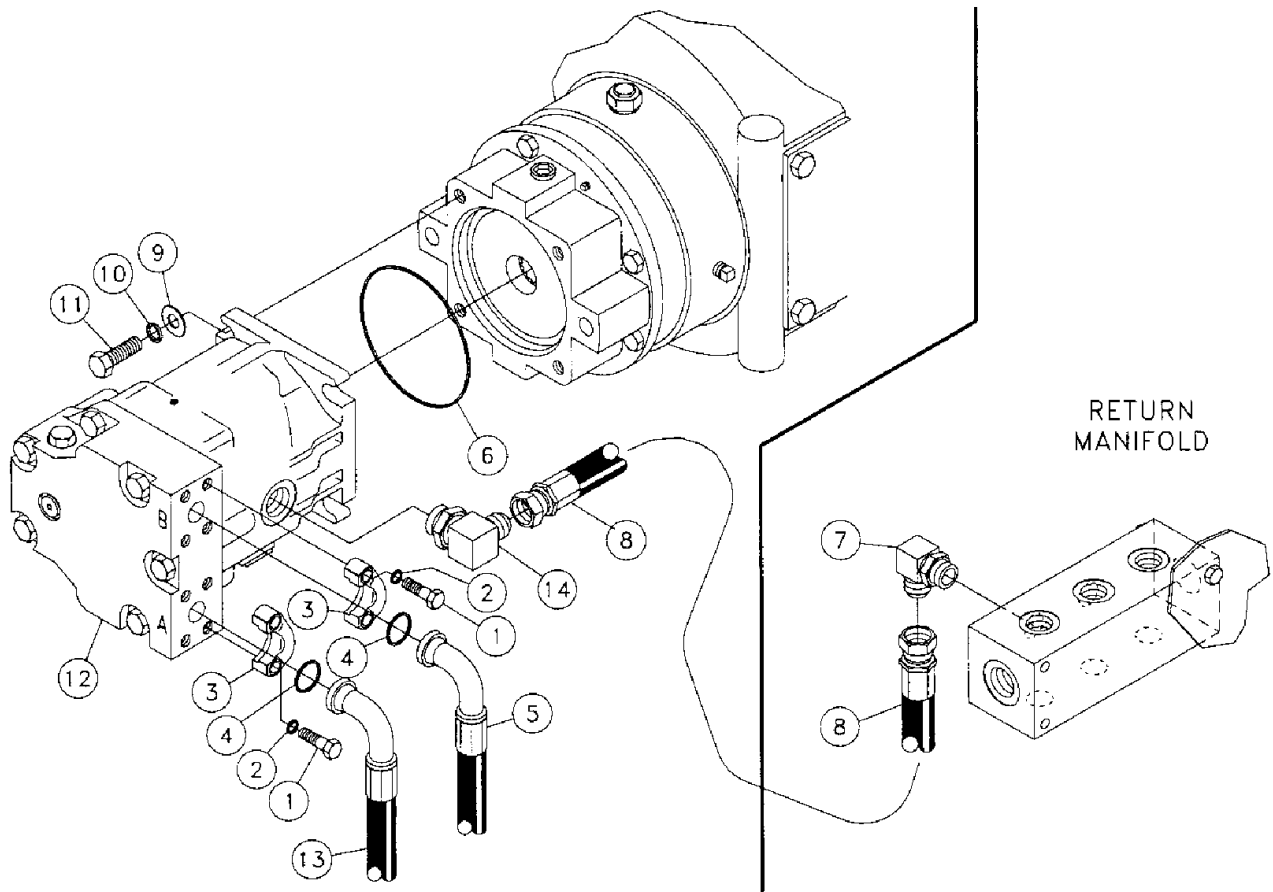
Revised July 1999 due to update
in parts list. Changed parts marked
with *.



Gearbox Drive Motor Fig 3-14r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1	*	249891001	BOLT-10M X 35 10.9 HHCS D933 ZINC	16	
2	*	141350001	WASHER-M10 HARDENED PLATED FLAT	16	
3		72894001	O RING-SQ. #12 FLANGE	4	
4		67746001	SPLIT FLANGE HALF CODE 62/12	4	
5		53845771	HOSE-3/4X38 12FS/12FLH 6000PSI	2	
6		216674001	MOTOR-2 SPEED HYD.	1	BREAKDOWN FIG. 1-20
7		57940407	HOSE-3/8X32 6FS JIC 4000 PSI	1	
8		60247001	FITTING-8M X 6M JIC ST.	1	
9		56725001	FITTING-10MX10M JIC 45 DEG.	1	
10		53842303	HOSE-5/8X20 10FSJICST/10FSJC90	1	
11		53842515	HOSE-5/8X239 10FSJICST 3000PSI	1	
12		53829001	#10M O-RING-#10M JIC 90 DEG.	1	
13		53827001	FITT.-#10M O-RING-#10M JIC ST.	1	
14		57940029	HOSE-3/8X26 6FS JIC 100R1	1	
15		682001	12 M X 10 F SOLID ADAPT.	1	
16		53845769	HOSE-3/4X34 12FS/12FLH60 6000#	2	
17		216675001	MOTOR-2 SPEED HYD.	1	BREAKDOWN FIG. 1-21
18		53842123	HOSE-5/8X34 10FS JIC 1500 PSI	1	
19		59425001	FITTING-6M JICX8M ADJ.45 ELBOW	1	
20		4235001	10 M PLUG	2	
			Revised July 1999 due to update in parts list. Changed parts marked with *.		

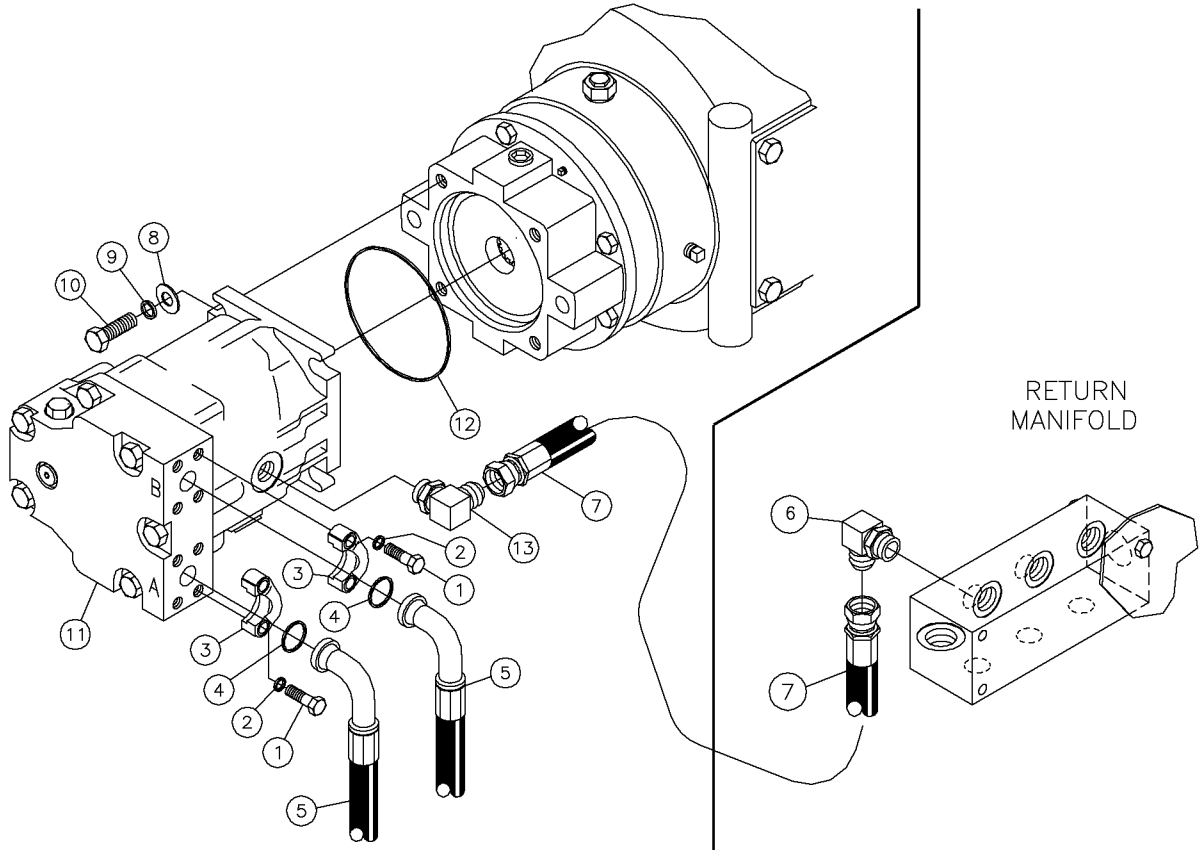
Water Pump Drive Motor - SN101-312 Fig 3-15r02



Water Pump Drive Motor - SN101-312 Fig 3-15r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		357016	7/16-14 X 1 3/4" GRADE #5 HEX BOLT	8	
2		480009	WASHER-7/16 S/T LOCK	8	
3		67745001	SPLIT FLANGE HALF CODE 62/16	2	
4		72895001	O RING-SQ. #16 FLANGE	2	
5		59255127	HOSE-3/4 X 32 12FSJIC/62/12 5000	1	
6		234319001	O-RING #159N70	1	
7		53829001	#10M O-RING #10M JIC 90 DEG.	1	
8		53842027	HOSE-5/8 X 72 10FS JIC	1	M2T
9		86510001	WASHER-1/2 FLT HARDENED	4	
10		480011	WASHER-1/2 S/T LOCK	4	
11		358014	BOLT-1/2-13 X 1/2" GRADE #5 HEX	4	
12		204731001	MOTOR-HYD	1	BREAKDOWN FIG. 3-36
13		59255129	HOSE-3/4 X 28 12FSJIC/62/12 5000	1	
14		59409001	10M JICX12M ADJ. 90 DEG. ELBOW	1	
			Revised June 2000 due to update in heading.		

Water Pump Drive Motor - SN313- Fig 3-15x01

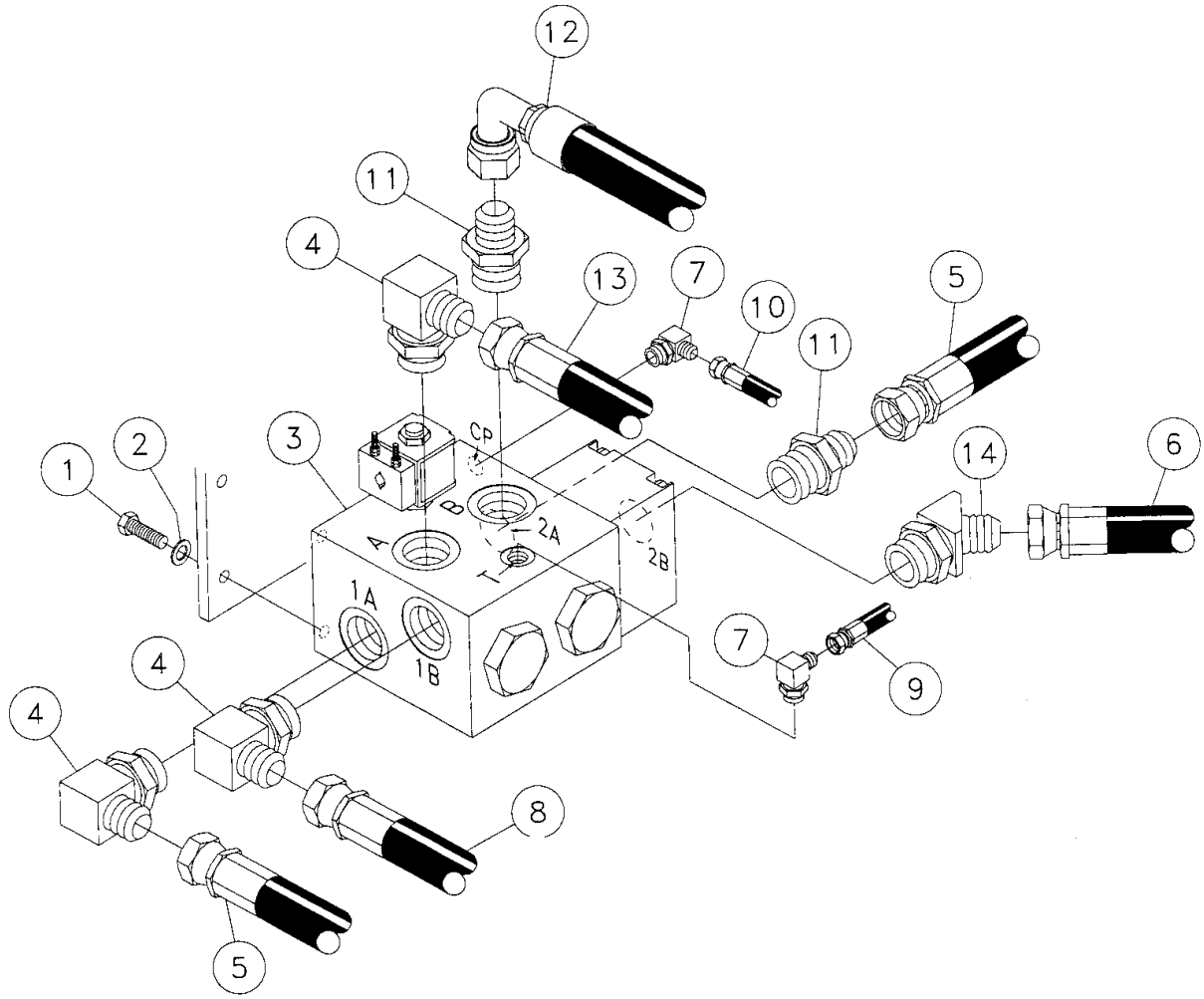


Water Pump Drive Motor - SN313- Fig 3-15x01

REF NO.	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		250507001	BOLT-7/16-14 X 1 3/4" GR 8 HEX Y	8	
2		250515001	WASHER-7/16 HARD WA. SAE Y/ZINC	8	
3		67745001	SPLIT FLANGE HALF CODE 62/16	4	
4		72895001	O RING-SQ. #16 FLANGE	2	
5		278064001	HOSE-3/4 X 72 12FS JIC 62/1690 C13	2	
6		53829001	#10M O-RING-#10M JIC 90 DEG.	1	
7		53842317	HOSE 58 X 92 10FS JIC 27000 PSI	1	
8		86510001	WASHER-1/2 FLT HARDENED	4	
9		480011	WASHER-1/2 S/T LOCK	4	
10		358014	BOLT-1/2-13 X 1 1/2" GRADE #5 HEX	4	
11		234266001	MOTOR-90 SERIES 55 CC14T	1	BREAKDOWN FIG. 3-36A
12		234319001	O-RING	1	
13		59409001	10M JIC X 12M ADJ. 90 DEG ELBOW	1	
			Revised June 2000 due to addition of figure to manual.		

Selector Valve - Left Fig 3-16r01

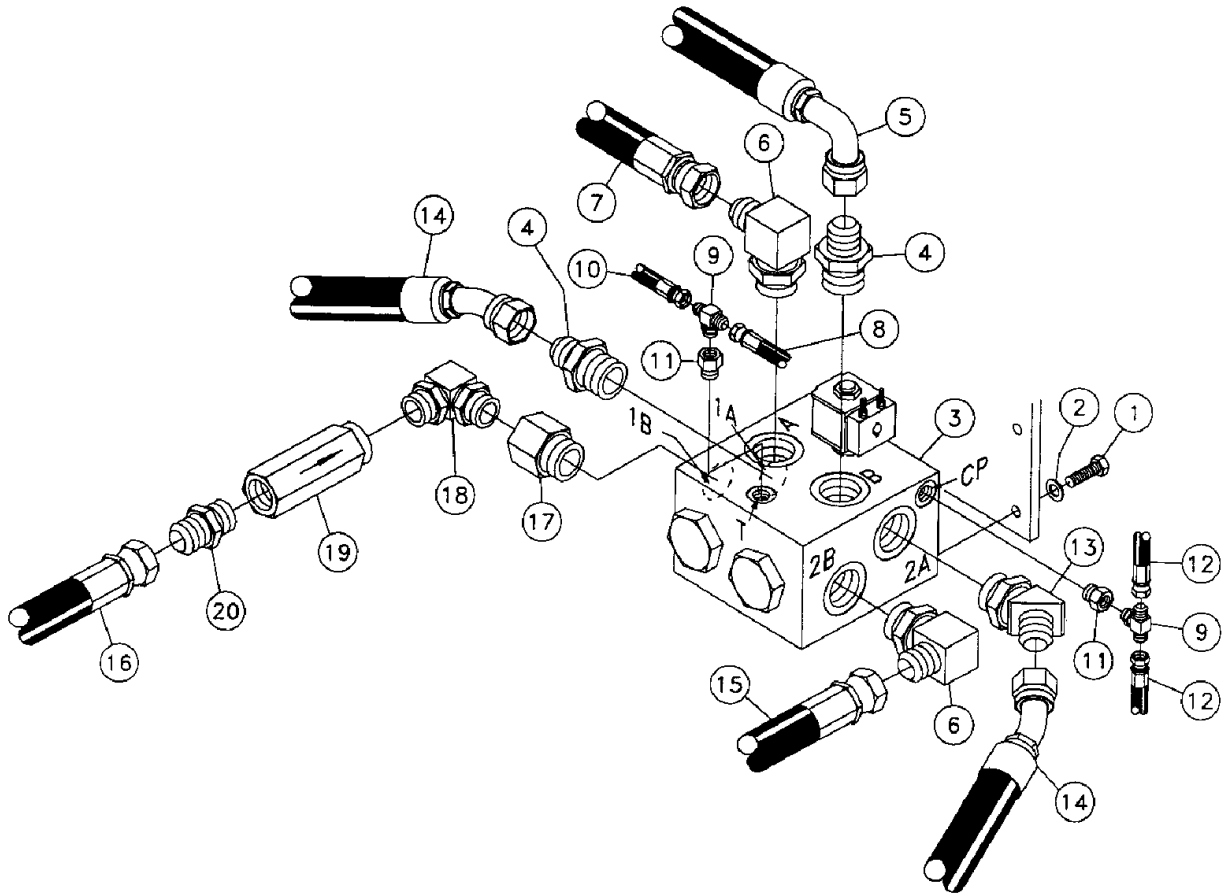
Revised February 1999 due to valve change & hardware update. Changed parts marked with *.



Selector Valve - Left Fig 3-16r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1	*	250539001	BOLT-7/16"-14X1" GR#8 HEX Y/ZINC	4	
2	*	250540001	WASHER-7/16 HARDENED FLAT Y/Z	4	
3	*	251061001	VALVE-SOLENOID SELECT W/CHECK	1	BREAKDOWN FIG. 3-37
4		78057001	FITTING-16MX12M JIC 90 DEG	3	
5		53845615	HOSE-3/4X37 12FSJICST/45D5000#	2	
6		53845773	HOSE-3/4X59 12FSJICST/90 5000#	1	
7		600118001	FITTING-6MORINGX4MJIC90PARKER	2	
8		53845779	HOSE-3/4X161 12FSJICST/90 5000	1	
9		53843239	HOSE-1/4X26 4FS JIC 3000 PSI	1	
10		53843253	HOSE-1/4X32 4FS JIC 2750 PSI	1	
11		70008001	FITTING-16M X 12M JIC STR.	2	
12		53845753	HOSE-3/4X82 12FSJIC 90/ST 5000	1	
13		53845795	HOSE 3/4X108 12JIC16/62/90DEG	1	
14		81212001	FITTING-16MX12M JIC 45 ELBOW	1	
			Revised February 1999 due to valve change & hardware update. Changed parts marked with *.		

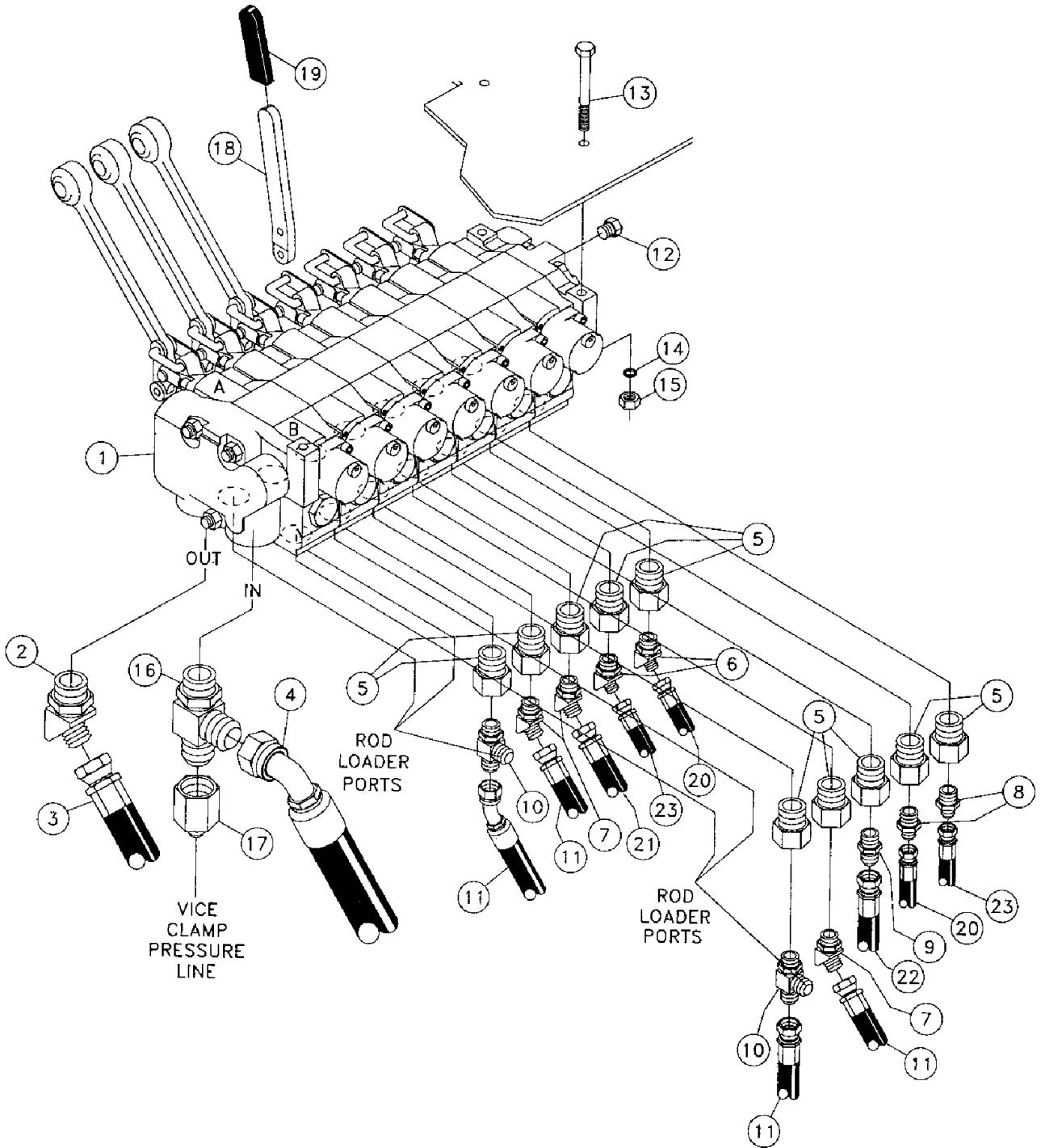
Selector Valve - Right Fig 3-17r04



Selector Valve - Right Fig 3-17r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		250539001	BOLT-7/16"-14 X 1" GR#8 HEX Y/ZINC	4	
2		250540001	WASHER-7/16 HARDENED FLAT Y/Z	4	
3		251062001	VALVE-SOLENOID SELECTOR	1	BREAKDOWN FIG. 3-38
4		70008001	FITTING-16M X 12M JIC STR.	2	
5		53845611	HOSE-3/4 X 100 12JIC90X16/62/90	1	
6		78057001	FITTING-16M X 12M JIC 90 DEG	2	
7		53845793	HOSE 3/4 X 96 12JIC16/62/90 5000	1	
8		53843239	HOSE-1/4 X 26 4FS JIC 3000 PSI	1	
9		81343001	4M (BCH) X 4M JICX4M JIC TEE	2	
10		53843057	HOSE-1/4 X 22 4FS JIC 100R1	1	
11		67291001	6M X 4F SOLID REDUCER	2	
12		53843253	HOSE-1/4 X 32 4FS JIC 2750 PSI	2	
13		81212001	FITTING-16M X 12M JIC 45 ELBOW	1	
14		53845615	HOSE-3/4 X 37 12FSJICST/45D5000#	2	
15		59255127	HOSE-3/4 X 32 12FSJIC/62/12 5000	1	SN101-312
	*	278064001	HOSE-3/4 X 72 12FS JIC 62/690C13	1	SN313-
16		59255129	HOSE-3/4 X 28 12FSJIC/62/12 5000	1	SN101-312
	*	278064001	HOSE-3/4 X 72 12FS JIC 62/1690C13	1	SN313-
17		71252001	FITTING-16M X 12F ADAPTER	1	
18		238219001	FITTING-12M X 12M O-RING 90 D EL	1	
19		238223001	VALVE-OIL CHECK	1	
20		53828001	FITTING-12M X 12M JIC ST ADAPT	1	
			Revised June 2000 due to update in parts list. Added parts marked with *.		

Control Valve - 7 Spool Fig 3-18r02

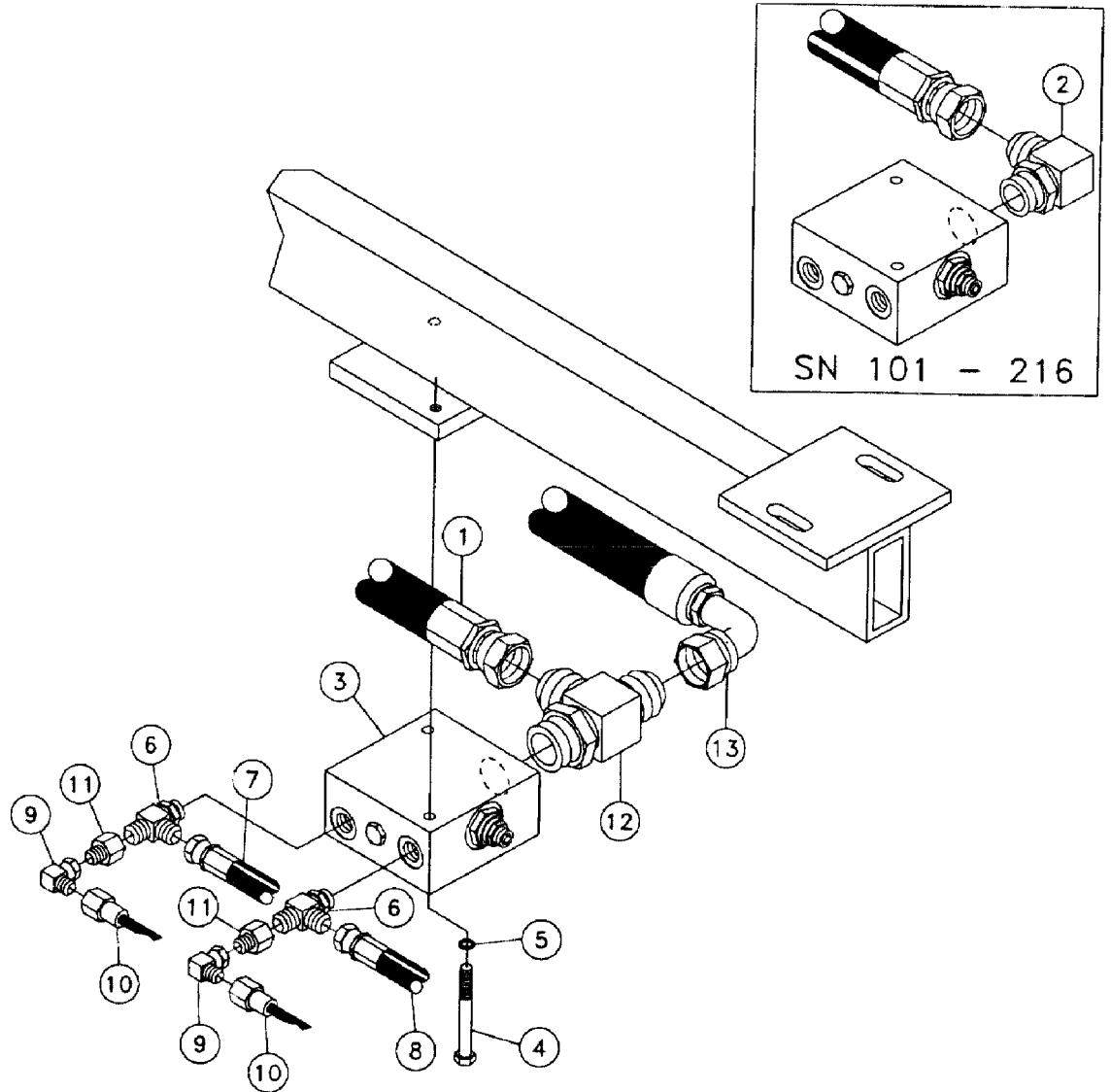


Control Valve - 7 Spool Fig 3-18r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		244728001	VALVE-7 SECT V20 L.S.	1	V20-8239A, BREAKDOWN FIG. 3-39
2		88659001	FITTING-12M ORINGX10MJIC 45DEG	1	
3		53842027	HOSE-5/8 X 72 10FS JIC	1	M2T, SN101-312
	*	53842317	HOSE-5/8 X 92 10FS JIC 2750 PSI	1	SN313-
4		53845687	HOSE-3/4 X 90 12FSJIC-12FSJIC 45	1	
5		57967001	10M-6F O-RING BUSHING	10	
6		82931001	FITTING-6M X 4M JIC 45DEG. ELBOW	2	
7		65563001	6M X 6M JIC 45 DEGREE	3	
8		57968001	6M O-RING 4M JIC STRAIGHT	2	
9		65565001	FITTING-6M X 6M JIC ST.	1	
10		68774001	FITTING-6M X 6M JIC (RUN)X6M JIC	2	
11		57940719	HOSE-3/8 X 21 6FSJICST/45D3000#	4	
12		67263001	PLUG-4M	1	
13		351030	5/16-18 X 3" GRADE #5 HEX BOLT	3	
14		480005	WASHER-5/16 S/T LOCK	3	
15		406001	NUT-5/16 NC HEX	3	
16		59420001	12 JIC X 12M ADJ. STR THRD TEE	1	
17		60909001	6M JIC X 12F JIC ST. ADAPTER	1	
18		234364001	PLATE-VALVE HANDLE	4	
19		201482001	HANDLE-BLACK PLASTIC 2 1/2"	1	
20		53843539	HOSE-1/4 X 204 4FS JIC 2750 PSI	2	
21		57940665	HOSE-3/8 X 69 6FSJICST/90 3000#	1	
22		57940663	HOSE-3/8 X 62 6FSJICST/90 3000#	1	
23		53843721	HOSE-1/4 X 206 4FSJICST 3000PSI	2	
			Revised June 2000 due to update in parts list. Changed part marked with *.		

Hot Oil Shuttle Fig 3-19r02

Revised February 2000 due to update in illustration & parts list. Added parts marked with *.

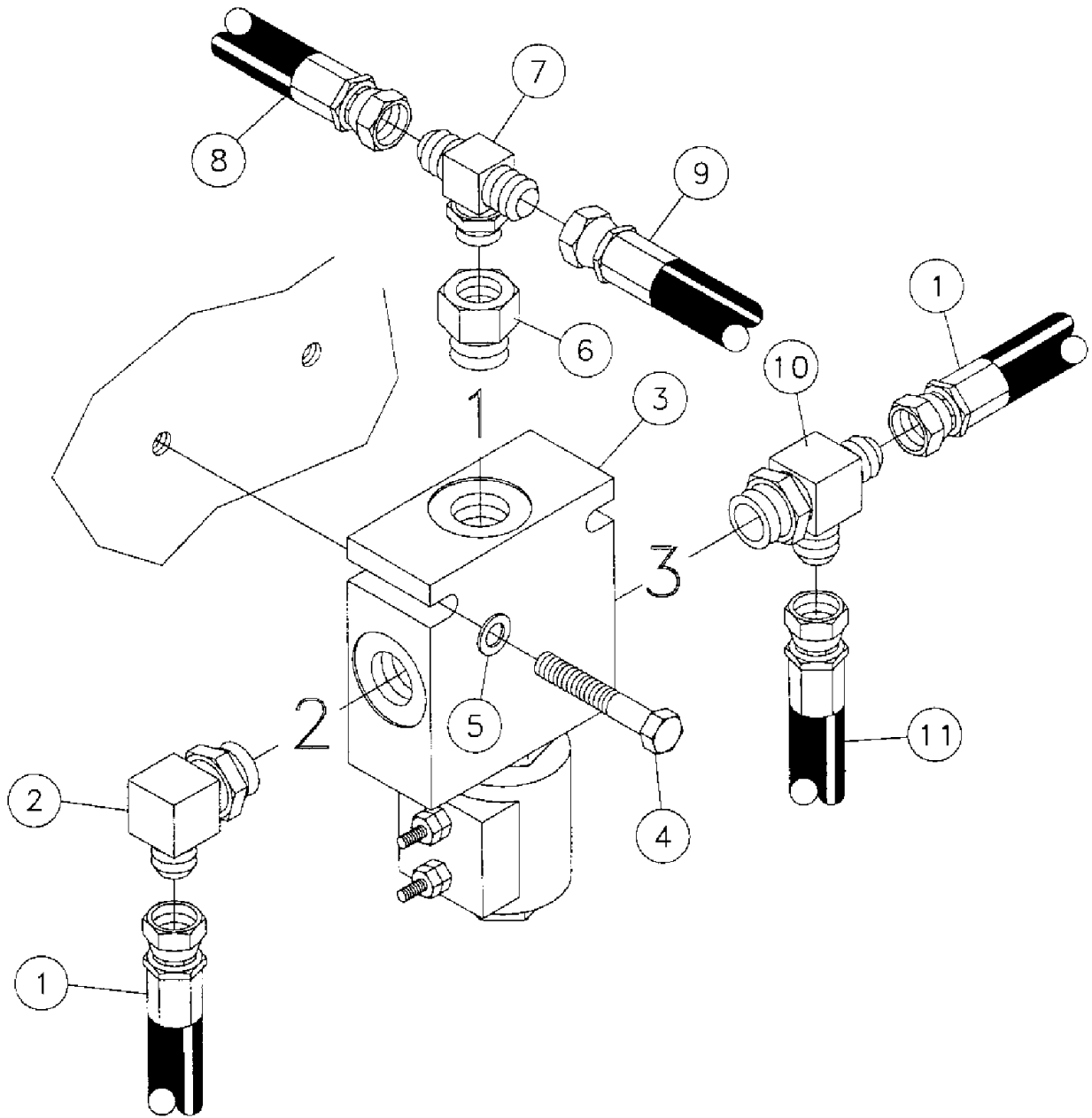


Hot Oil Shuttle Fig 3-19r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		53845781	HOSE-3/4X66 12FS JIC ST/90 3000#	1	
2		59410001	12M JICX12M ADJ. 90 DEG. ELBOW	1	SN101-216
3		902012001	VALVE-SHUTTLE	1	BREAKDOWN FIG. 3-37
4		351026	5/16-18X2 3/4IN. GR.#5 HEX BOLT	3	
5		480005	WASHER-5/16 S/T LOCK	3	
6		68774001	FITTING-6MX6M JIC (RUN) X 6M JIC	2	
7		57940661	HOSE-3/8X30 6FS JIC ST/45 4000#	1	
8		57940659	HOSE-3/8X19 FS JIC ST 4000 PSI	1	
9		53658001	FITTING-4M JICX4 FS JIC 90 DEG	2	
10		244520001	HOSE-.078 X 136 4FS JIC ST	2	
11		59928001	6F JICX4M JIC ST REDUCER	2	
12	*	59420001	12 JIC X 12M ADJ STR THRD TEE	1	SN217-
13	*	53845803	HOSE-3/4X101 12FS JIC ST 90D3000	1	SN217-

Solenoid Valve - Track Fig 3-20r01

Revised February 1999 due to valve change & hardware update. Changed parts marked with *.

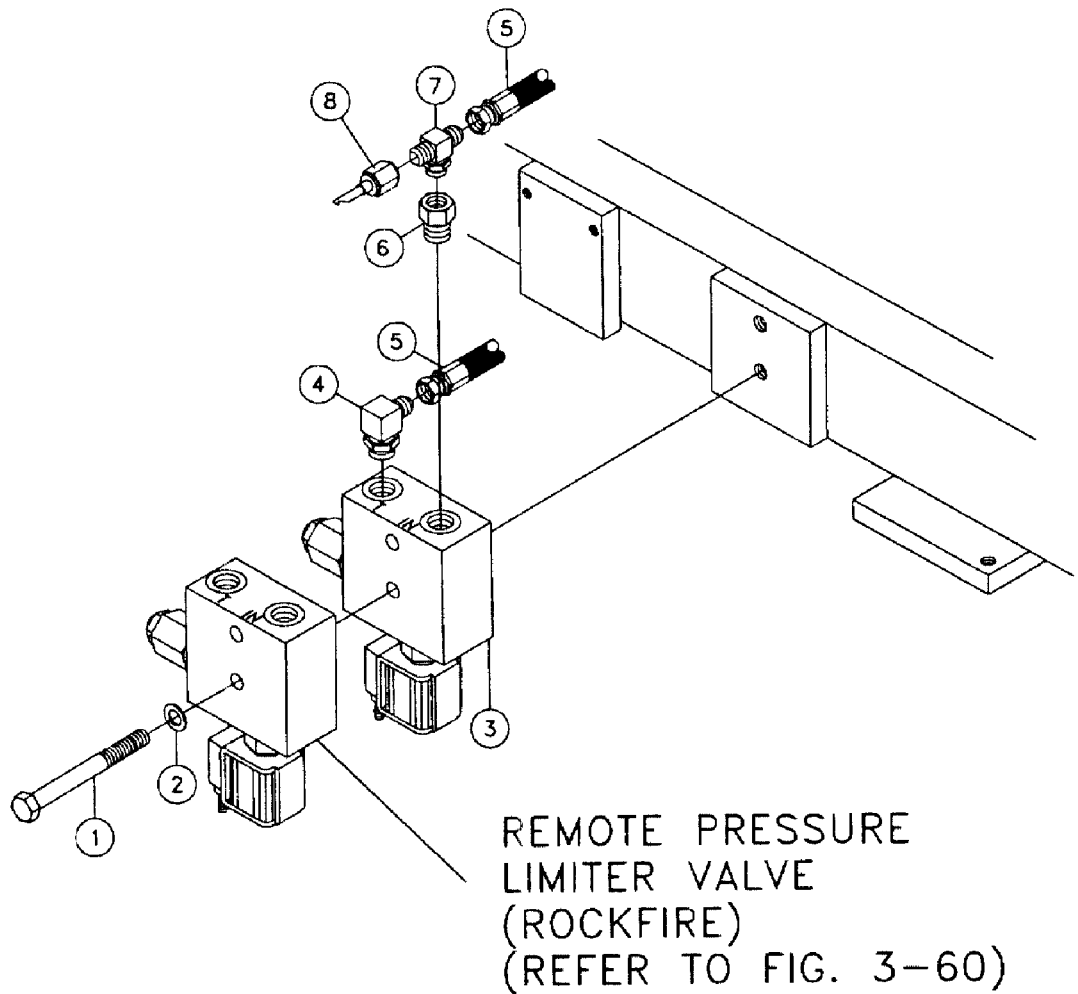


Solenoid Valve - Track Fig 3-20r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		53843253	HOSE-1/4X32 4FS JIC 2750 PSI	2	
2		600118001	FITTING-6MORINGX4MJIC90PARKER	1	
3	*	244491001	VALVE-2 POS. 3 WAY	1	BREAKDOWN FIG. 3-46
4	*	238210001	BOLT-1/4-20X1 1/2"GR#8 HEX ZINC	2	
5	*	235716001	WASHER-1/4 SAE HARD ZINC PLTD	2	
6		67291001	6MX4F SOLID REDUCER	1	
7		81343001	4M (BCH)X4M JICX4M JIC TEE	1	
8		53843325	HOSE-1/4X25 4FS JIC 3000 PSI	1	
9		53843057	HOSE-1/4X22 4FS JIC 100R1	1	
10		82930001	FIT-6MX4M JICX4M JIC (BCH) TEE	1	
11		53843237	HOSE-1/4X80 4FS JIC 3000 PSI	1	
			Revised February 1999 due to valve change & hardware update. Changed parts marked with *.		

Torque Limiter Valve Fig 3-21r02

Revised February 2000 due to update in illustration & parts list. Added part marked with *.

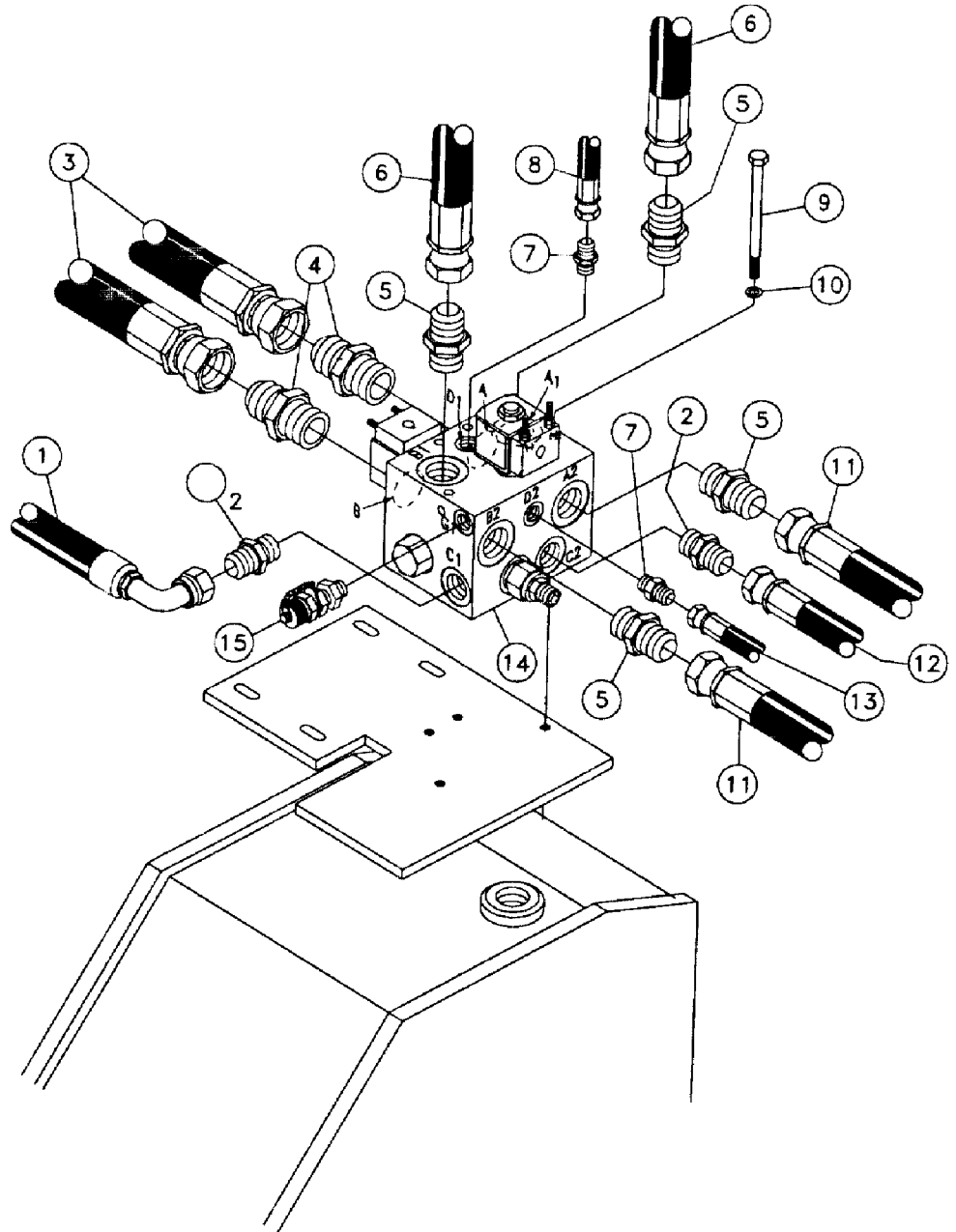


Torque Limiter Valve Fig 3-21r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		240454001	BOLT-3/8-16X2" GRADE #8 HEX ZINC	2	SN101-235
	*	16114034	BOLT-3/8-16X3 1/2 HEX HD GR 8	2	SN236-
2		235713001	WASHER-3/8 SAE HARD ZINC	2	
3		251063001	VALVE-REMOTE PRESSURE LIMITER	1	BREAKDOWN FIG.3-47
4		600118001	FITTING-6M ORING X 4M JIC 90 PARKER	1	
5		68210001	HOSE-1/4X24 4FS JIC	2	M2T
6		67291001	6MX4F SOLID REDUCER	1	
7		81343001	4M (BCH) X4M JIC X 4M JIC TEE	1	
8		244520001	HOSE-078X136 4FS JIC ST	1	

Gearbox Valve Fig 3-22r03

Revised February 2000 due to update in illustration & parts list. Added parts marked with *.

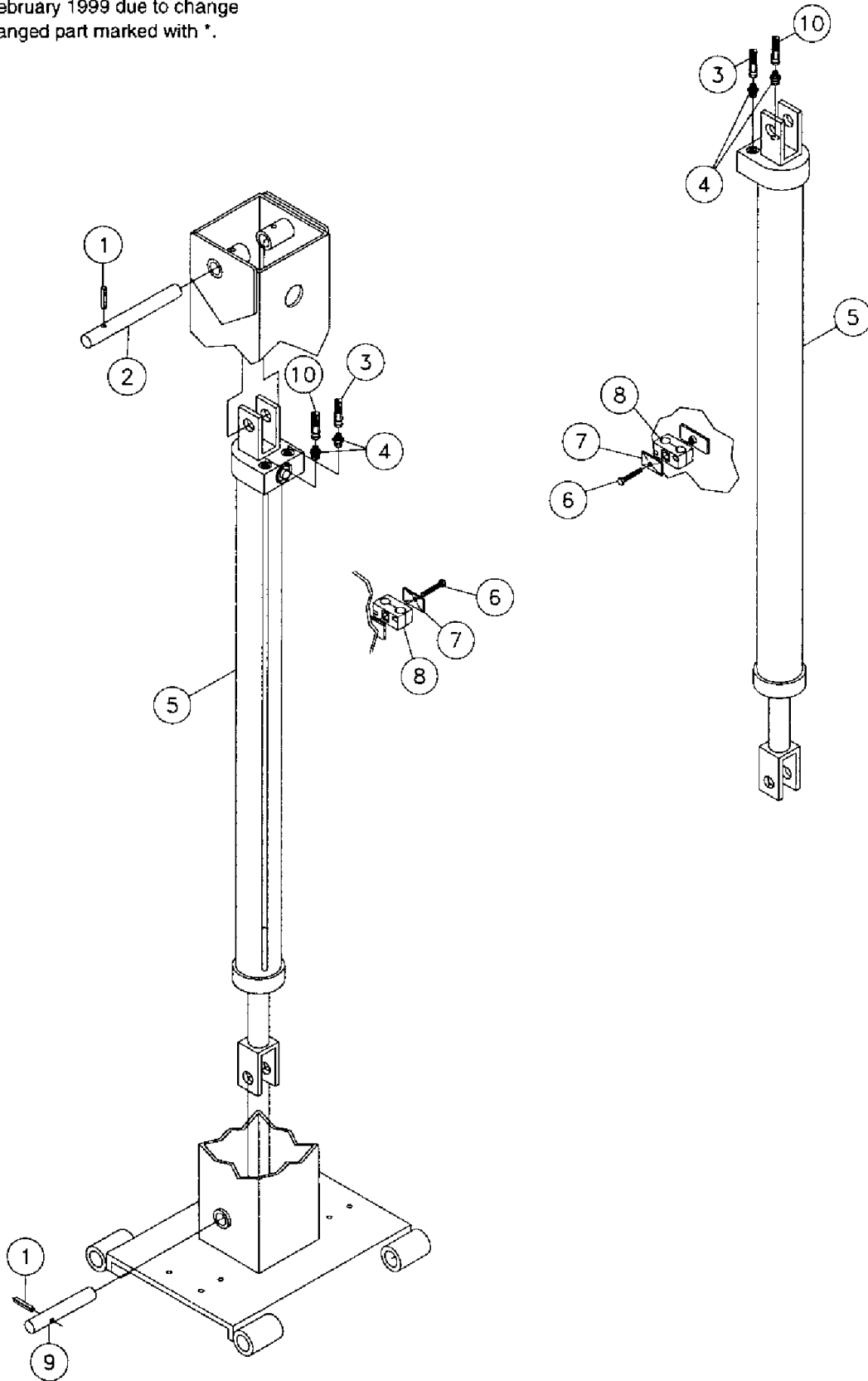


Gearbox Valve Fig 3-22r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		53842303	HOSE-5/8X20 10FS JIC ST/10FSJC90	1	
2		53827001	FITT.#10M O-RING #10M JIC ST.	2	
3		53846469	HOSE-1X227 16FS JIC ST/ST 6000#	2	
4		60907001	FITTING-16M JICX16M STR ADAPT	2	
5		53828001	#12M O-RING #12M JIC ST.	4	
6		53845771	HOSE-3/4X38 12FS/12FLH 6000PSI	2	
7		65565001	FITTING-6M X 6M JIC ST.	2	
8		57940407	HOSE-3/8X32 6FS JIC 4000 PSI	1	
9		248069001	BOLT-5/16-18X18 X 5 GR 8 ZINC PLTD	4	
10		235714001	WASHER-5/16 SAE HARD ZINC PLT	4	
11		53845769	HOSE-3/4X34 12FS/12FLH60 6000#	2	
12		53842123	HOSE-5/8X34 10FS JIC 1500 PSI	1	
13		57940029	HOSE-3/8X26 6FS JIC 100R1	1	
14		277838001	VALVE-3 SPEED SHUTTLE	1	SN192-232, BREAKDOWN FIG.3-48, REPLACES 279780001.
	*	279780001	VALVE-3-SPEED SHUTTLE	1	SN233-, BREAKDOWN FIG. 3-48, REPLACES 277838001
15	*	72056001	COUPLER-DIAG TCM-20 9/16 NF	1	SN233-

Outrigger Cylinder Fig 3-23r01

Revised February 1999 due to change in bolt. Changed part marked with *.

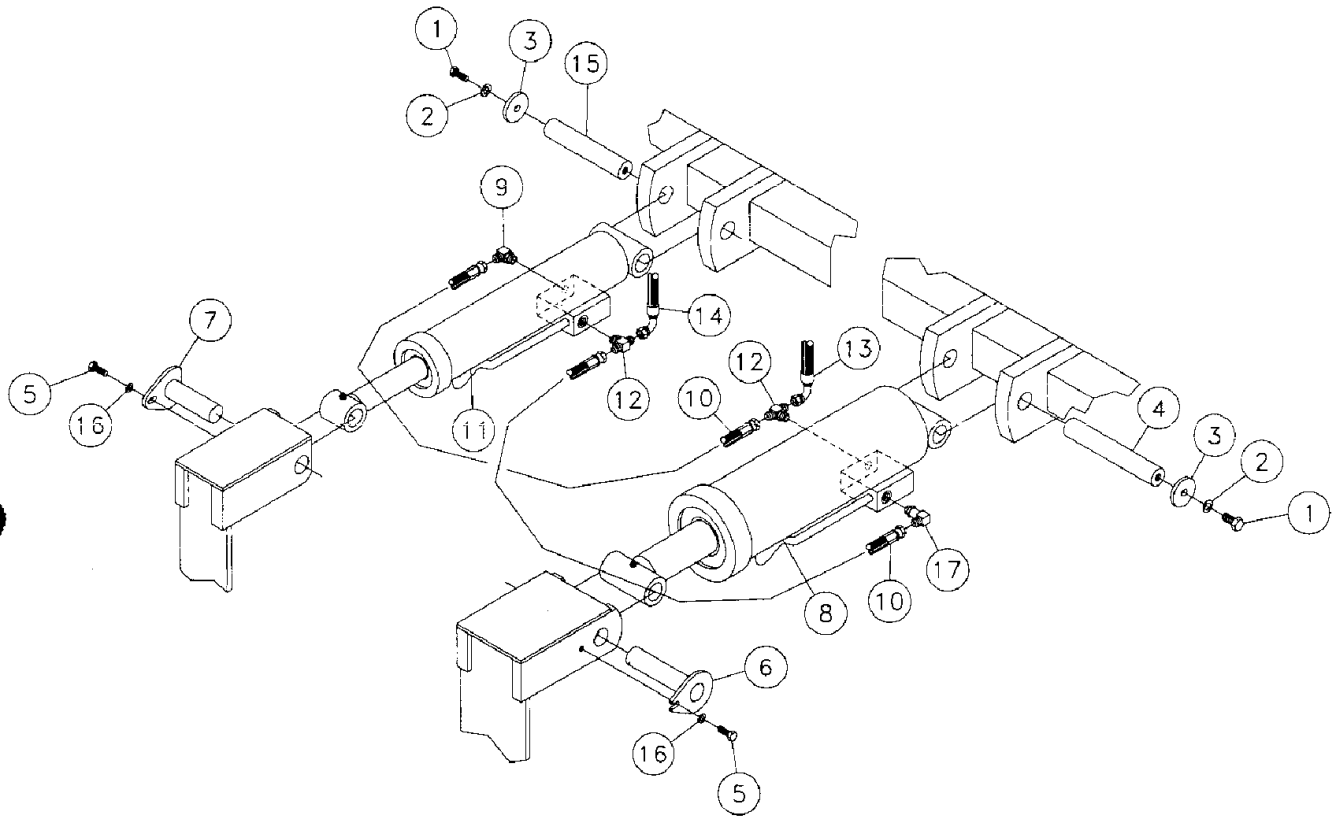


Outrigger Cylinder Fig 3-23r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		1788033	PIN-EXP.3/8X2 1/4	4	
2		216681001	PIN-OUTRIGGER CYLINDER	2	
3		53843539	HOSE-1/4X204 4FS JIC 2750 PSI	2	
4		57968001	6M O-RING 4M JIC STRAIGHT	4	
5		224278001	CYL 3"X40 XCX W/ CB VALVE	2	BREAKDOWN FIG. 3-49
6	*	248031001	BOLT-5/16-18X1 1/4 GR 8 ZINC PL	4	
7		67846003	PLATE-TWIN COVER	4	
8		900035005	CLAMP-3/8"DOUBLE HOSE	4	
9		216682001	PIN-OUTRIGGER CYLINDER	2	
10		53843721	HOSE-1/4X206 4FSJICST 3000PSI	2	
			Revised February 1999 due to change in bolt. Changed part marked with *.		

Rack Lift Cylinder Fig 3-24r01

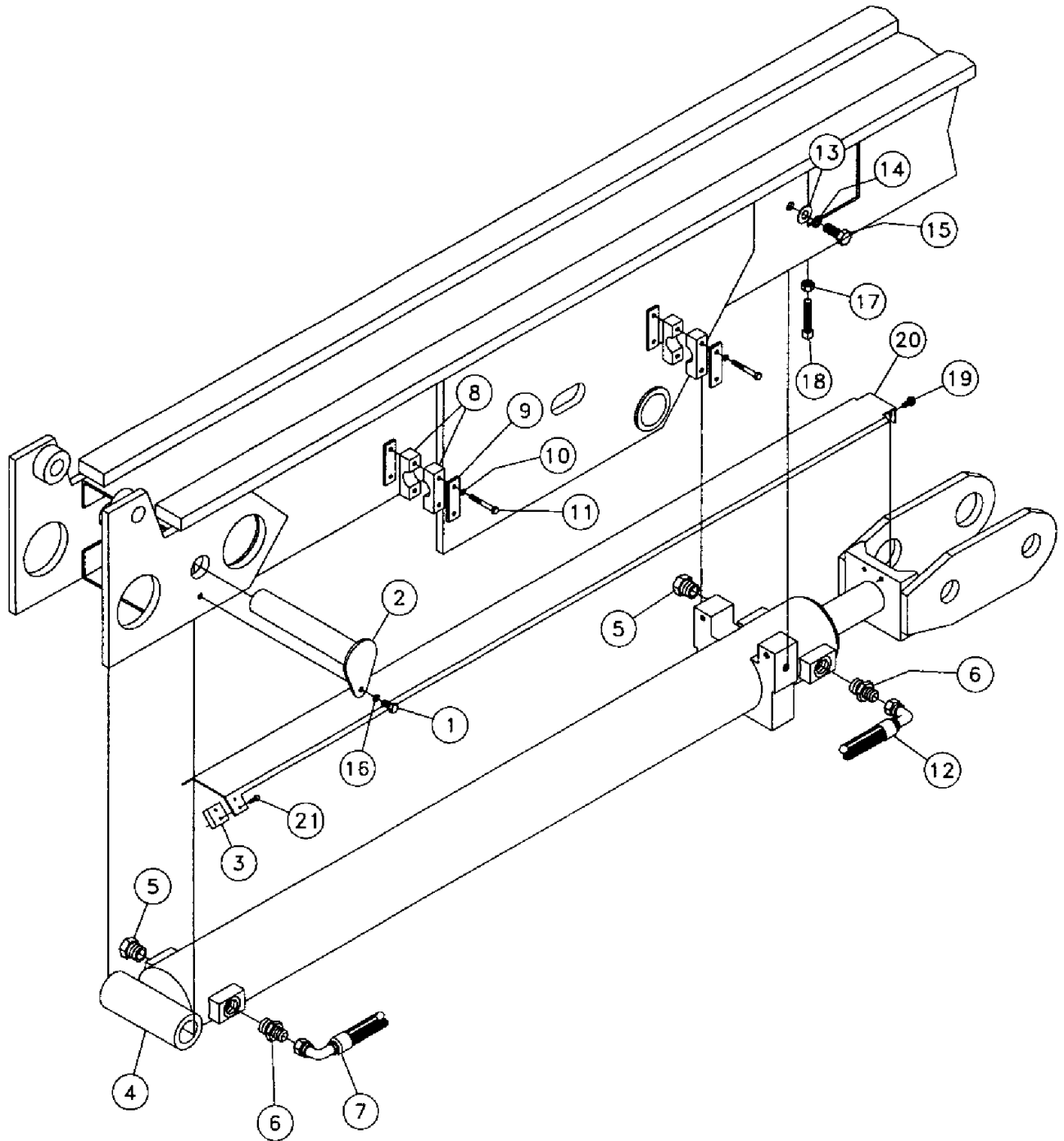
Revised February 1999 due to hardware updates. Changed parts marked with *.



Rack Lift Cylinder Fig 3-24r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1	*	235729001	BOLT-1/2-13X1" GRADE#8 HEX ZINC	4	
2	*	485025	WASHER-1/2 FLAT HARDENED ZINC	4	
3	*	18150001	WASHER-2OD X 13/32ID-1/4	4	
4		216722001	PIN-RACK PIVOT CYLINDER	1	
5	*	235727001	BOLT-3/8-16X1 GR 8 HEX ZINC	2	
6		227854001	PIN-LEFT RACK CYLINDER	1	
7		227852001	PIN-RIGHT RACK CYLINDER	1	
8		216695001	CYLINDER-4 1/2"X12 XCX	1	BREAKDOWN FIG.3-50
9		59426001	FITTING-6M JICX6M ADJ 90 ELBOW	1	
10		68209023	HOSE-3/8X28 6FS JIC	2	M2T
11		224445001	CYLINDER-3X12 HYD.	1	BREAKDOWN FIG. 3-51
12		68787001	FITTING-6M (BCH)X6M JICX6M JIC	2	
13		57940663	HOSE-3/8X62 6FSJICST/90 3000#	1	
14		57940665	HOSE-3/8X69 6FSJICST/90 3000#	1	
15		216724001	PIN-RACK PIVOT CYLINDER	1	
16	*	235713001	WASHER-3/8 SAE HARD ZINC	2	
17		65570001	6M X 6M JIC 90 DEGREE LONG	1	
			Revised February 1999 due to hardware updates. Changed parts marked with *.		

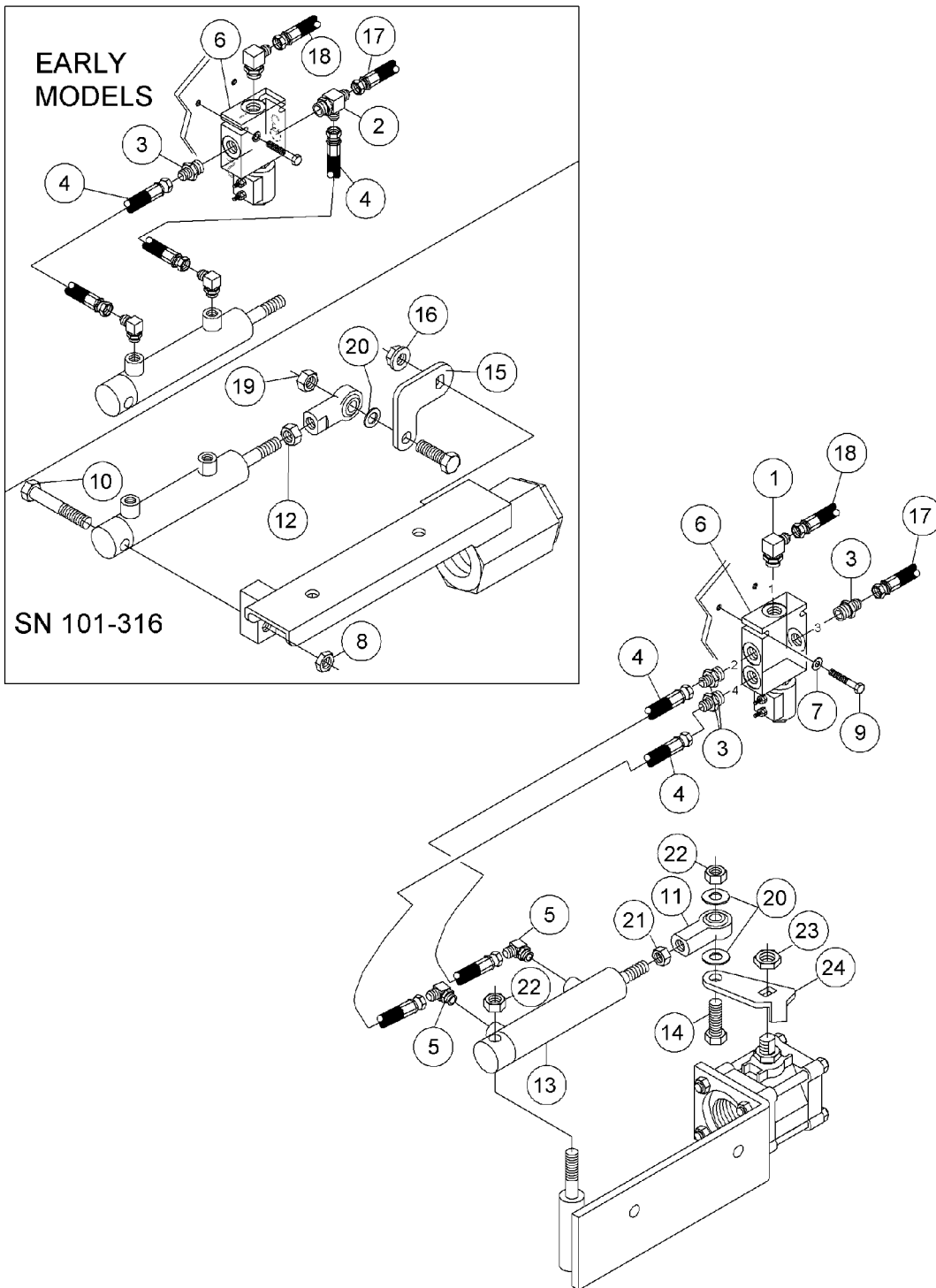
Thrust Cylinder Fig 3-25r01



Thrust Cylinder Fig 3-25r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		358010	BOLT-1/2-13 X 1" GRADE #5 HEX	1	
2		224268001	PIN-THRUST CYLINDER	1	
3		227986001	WEARSTRIP-CYLINDER GUARD	2	
4		224478001	CYLINDER-5 X 96	1	BREAKDOWN FIG. 3-34
5		83638001	PLUG-#16 JIC MALE	2	
6		70008001	FITTING-16M X 12M JIC STR.	2	
7		53845779	HOSE-3/4 X 161 12FS JIC ST/90 5000	1	
8		217034003	CLAMP-PLASTIC INSIDE	3	PAIR
9		71220007	PLATE-HOSE CLAMP TOP	3	
10		480007	WASHER-3/8 S/T LOCK	3	
11		354026	BOLT-3/8-16 X 2 3/4" GRADE#5HEX	3	
12		53845773	HOSE-3/4 X 59 12FSJICST/90 5000#	1	
13		485017	WASHER-3/4 FLAT	2	
14		480017	WASHER-3/4 S/T LOCK	2	
15		369016	3/4-10 X 1 3/4"GRADE#5 HEX BOLT	2	
16		480011	WASHER-1/2 S/T LOCK	1	
17		429001	NUT-5/8 NC HEX JAM	2	
18		601697030	SQ HSS-5/8-11 X 3 ZINC PLT	2	
19		4475006	BOLT-3/8-16 X 3/4 FLG WHIZ	2	
20		227985001	GUARD-CYLINDER	1	
21	*	283873001	BOLT-1/4-20 X 1/2 SL HWH T/C ZP	4	
			Revised June 2000 due to update in illustration and parts list. Changed part marked with *.		

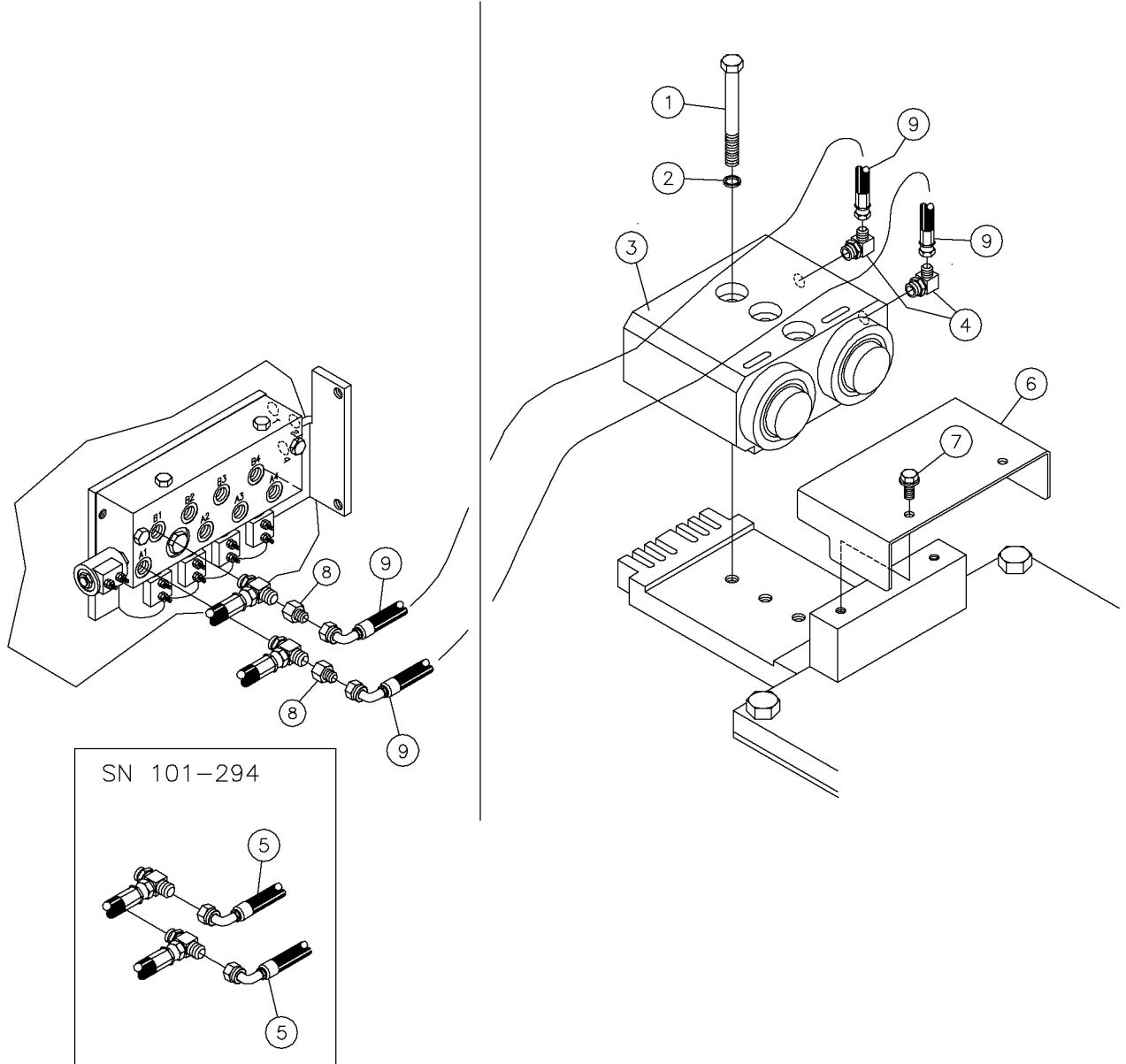
Water Pump On/Off Cylinder Fig 3-26r05



Water Pump On/Off Cylinder Fig 3-26r05

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Parts List
1		600118001	FITTING-6MORING X 4MJIC90	1	PARKER
2		82930001	FIT-6M X 4M JIC X 4M JIC (BCH) TEE	1	
3		57968001	6M O-RING 4M JIC STRAIGHT	1	
4		53843251	HOSE-1/4 X 19 4FS JIC 2750 PSI	2	
5		59423001	FIT-4M JIC X 4M ADJ. 90 DEG. ELBOW	2	
6		244491001	VALVE-2 POS. 3 WAY	1	SN101-22, BREAKDOWN FIG. 3-46
6		244725001	VALVE-2 POS 4-WAY	1	SN221-, BREAKDOWN FIG. 3-59
7		235713001	WASHER-3/8 SAE HARD ZINC	2	
8		235722001	NUT-1/2-13 GR 8 JAM ZINC PLTD	1	
9		250624001	BOLT-1/4-20 X 1 3/4" GR 8 HEX ZINC	2	
10		235724001	BOLT-1/2-13 X 3 GR 8 HEX ZINC PLT	1	SN101-316
11		224291001	BALL JOINT-1/2-20 FEMALE THDS.	1	
12		250525001	NUT-1/2 N.F. HEX Y/ZINC	1	
13		234359001	CYLINDER-1 X 3 1/2	1	BREAKDOWN FIG. 3-53
14		235721001	BOLT-1/2-13 X 1 1/2"GRADE#8 HX ZNC	1	
15		244692	LINKAGE-BALL VALVE	1	SN101-316
16		234421003	NUT-7/16-20NF FLANGE WHIZ	1	
17		53843395	HOSE-1/4 X 45 4FSJICST-4FSJIC 90	1	
18	*	53843583	HOSE-1/4 X 112 4FSJIC 4FSJIC 90D	1	PN Changed
19		423001	NUT-1/2 NC SLTL UTB	1	SN101-316
20		485025	WASHER-1/2 FLAT HARDENED ZINC	2	
21		3888001	NUT-1/2 NF HEX JAM	1	SN317-
22		250512001	NUT-1/2 NC GR 8 TOP LOCK Y/ZINC	1	SN317-
23		75388001	NUT-5/8 UNF GR 8 HEX JAM	1	
24		278224001	LEVER-BRACE VALVE	1	SN317-

Floating Gearbox Cylinder Fig 3-27r01

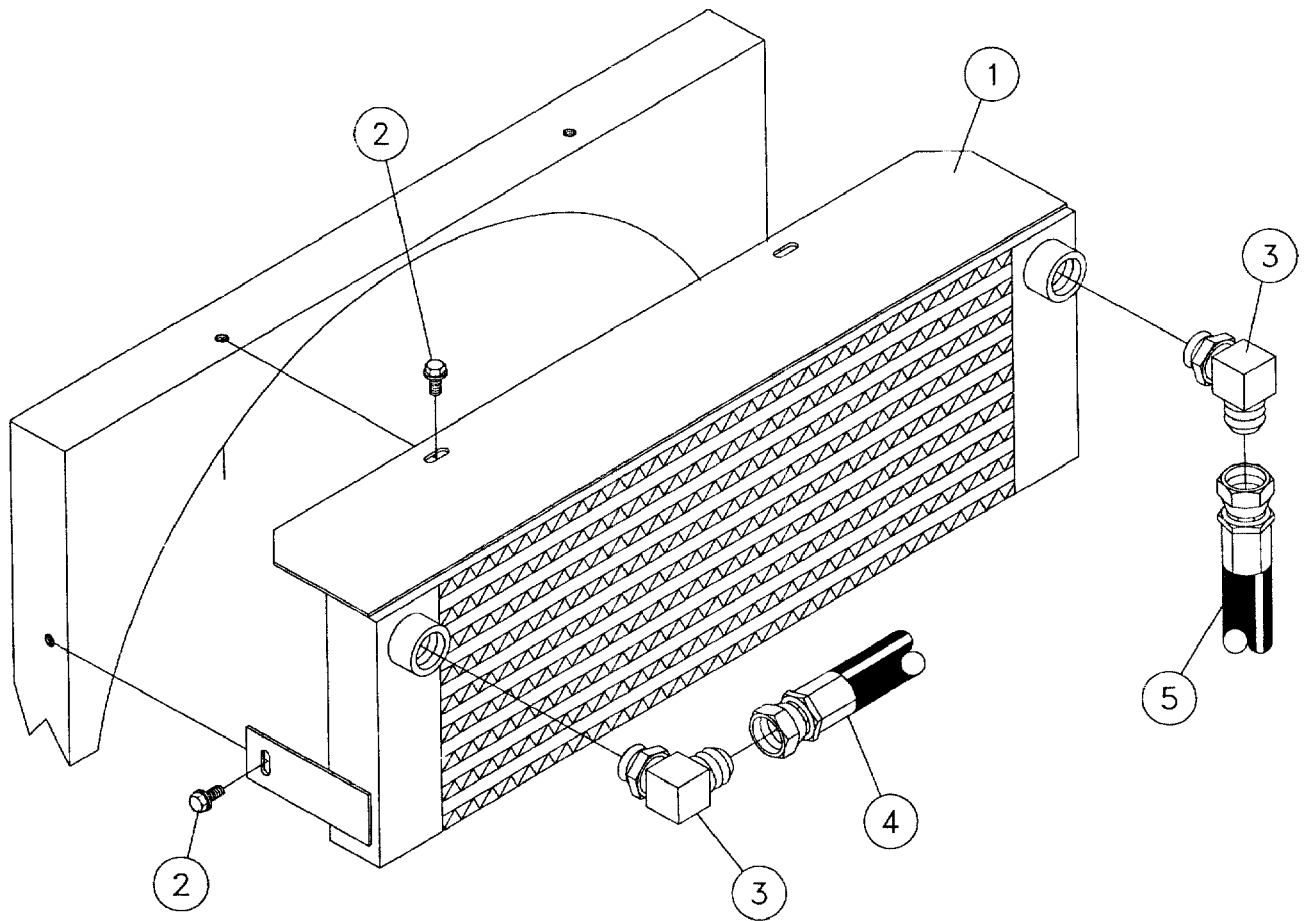


Floating Gearbox Cylinder Fig 3-27r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		383044	1/2-20 X 4 1/2"GRADE#8 HEX BOLT	3	
2		480011	WASHER-1/2 S/T LOCK	3	
3		234498001	CYLINDER-DUAL 3 X 2 ROD -2	1	BREAKDOWN FIG. 3-54
4		57950001	FITTING-6M X 4 JIC 90 DEG.	2	
5		244500001	HOSE-1/4 X 264 6FSJIC90/4FSJICST	2	SN101-294
6		244531001	SHIELD-CYLINDER	1	
7		4475006	BOLT-3/8-16 X 3/4 FLG WHIZ	2	
8	*	59928001	6F JIC X 4M JIC ST REDUCER	2	SN295-
9	*	283588001	HOSE-1/4 X 264 4FS JIC 90/4FS JIC ST	2	SN295-

Oil Cooler Fig 3-28r01

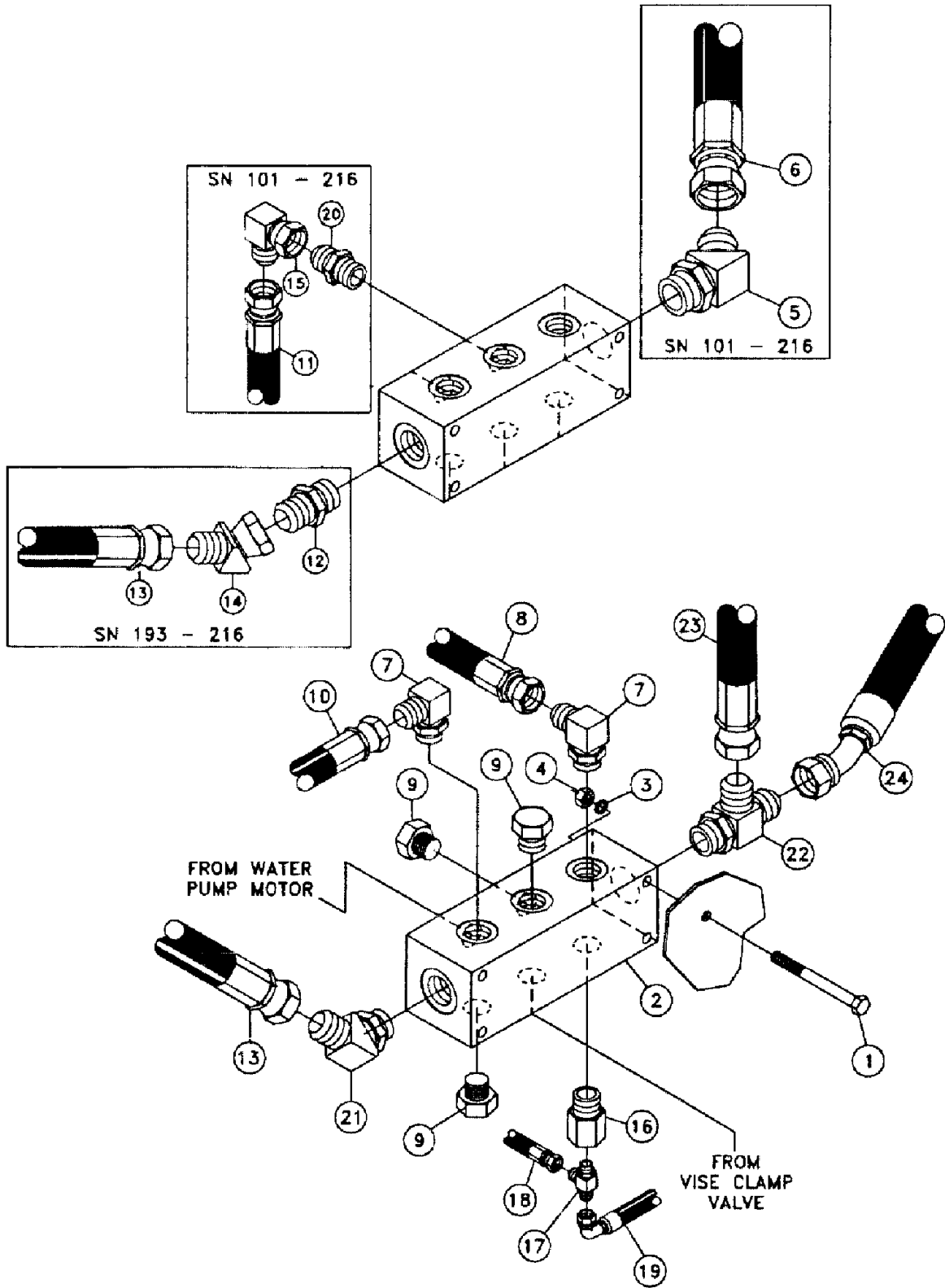
Revised February 2000 due to update in parts list. Added part marked with *.



Oil Cooler Fig 3-28r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		238658001	COOLER-HYDRAULIC OIL	1	
2		4475006	BOLT-3/8-16X3/4 FLG WHIZ	4	
3		31703001	16M X 16M JIC 90	2	
4		53846065	HOSE-1X42 16FS JIC 100R4	1	
5		53846059	HOSE-1X33 16FS JIC 100R4	1	
	*	279781001	HOSE-1X31 16FS JIC ST/45 DEG. 300 PSI	1	SN217-

Return Manifold Fig 3-29r04

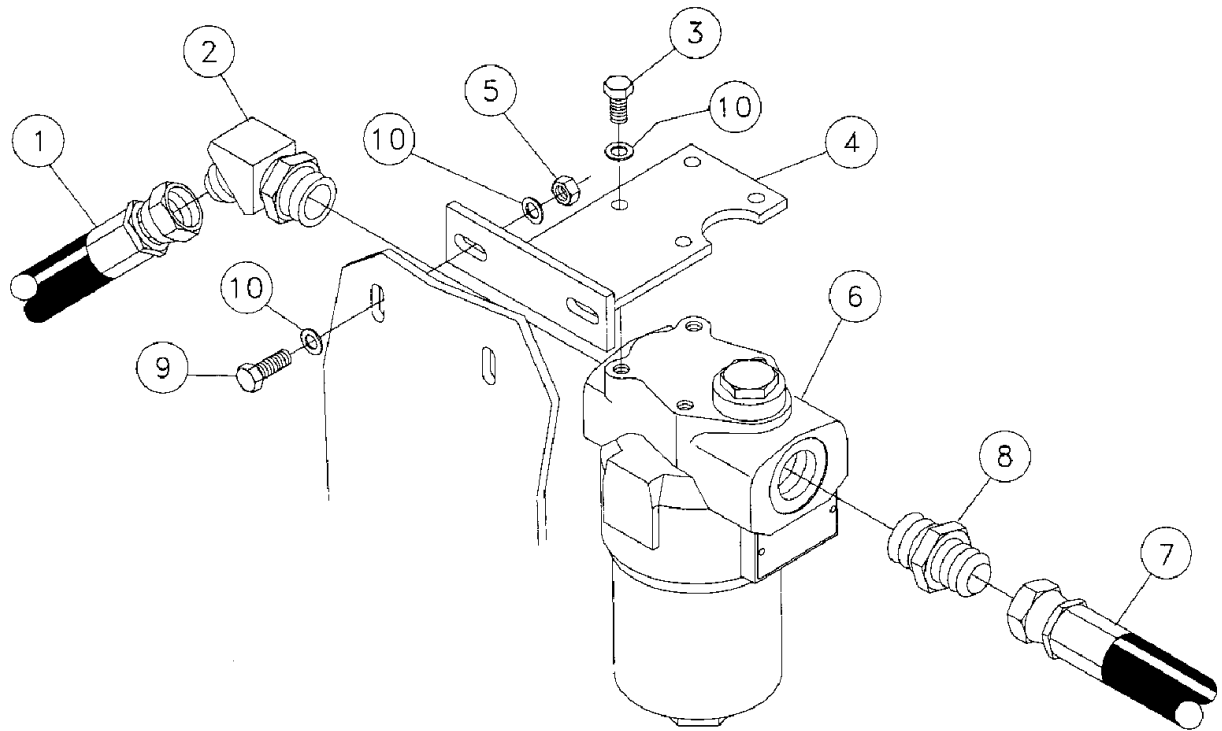


Return Manifold Fig 3-29r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		250541001	BOLT-3/8-16 X 4 GR 8 HEX Y/ZINC	4	
2		239445001	MANIFOLD-RETURN	1	
3		235713001	WASHER-3/8 SAE HARD ZINC	4	
4		235725001	NUT-3/8-16 GR 8 HEX ZINC	4	
5		53835001	#16M O-RING #16M JIC 45 DEG.	1	SN101-216
6		53846059	HOSE-1 X 33 16FS JIC 100R4	1	SN101-216
7		53829001	#10M O-RING #10M JIC 90 DEG.	2	
8		53842021	HOSE-5/8 X 100 10FSJIC 100R2	1	
9		4235001	10 M PLUG	3	QTY. CHANGE
10		53842027	HOSE-5/8 X 72 10FS JIC	1	M2T, SN193-216
	*	53842317	HOSE-5/8 X 92 10FS JIC 2750 PSI	1	SN216-
11		53842047	HOSE-5/8 X 50 10FS JIC 100R2	1	SN101-216
12		279777001	VALVE-12M X 12M JIC 95 PSI) CHECK	1	SN193-216
13		53845683	HOSE-3/4 X 52 12FSJIC-12FSJIC 45	1	
14		58017001	12M JIC 12FS 45 DEG	1	
15		61694001	10 JIC X 10FS JIC 90	1	
16		108484001	FITTING-4F X 10M STR. ADAPTER	1	
17		81342001	4M X 4M JIC (BCH) X 4M JIC TEE	1	
18		53843325	HOSE-1/4 X 25 4FS JIC 3000 PSI	1	
19		53843395	HOSE-1/4 X 45 4FSJICST-4FSJIC 90	1	
20		279776001	VALVE-10M X 10M JIC (5 PSI) CHECK	1	SN193-216
21		60718001	12M JIC X 12M ADJ 45 DEG EL	1	SN217-
22		94565001	TEE-16M JIC X 16M OR RUN X 16M JIC	1	SN217-
23		53846249	HOSE-1 X 56 16FS JIC/16 FS JIC 90	1	SN217-
24		279781001	HOSE-1 X 31 16FS JIC ST/45 300 PSI	1	SN217-
			Revised June 2000 due to update in parts list. Changed part marked with *.		

Oil Filter Fig 3-30r01

Revised February 1999 due to hyd.
filter & hardware updates. Changed/
added parts marked with *.

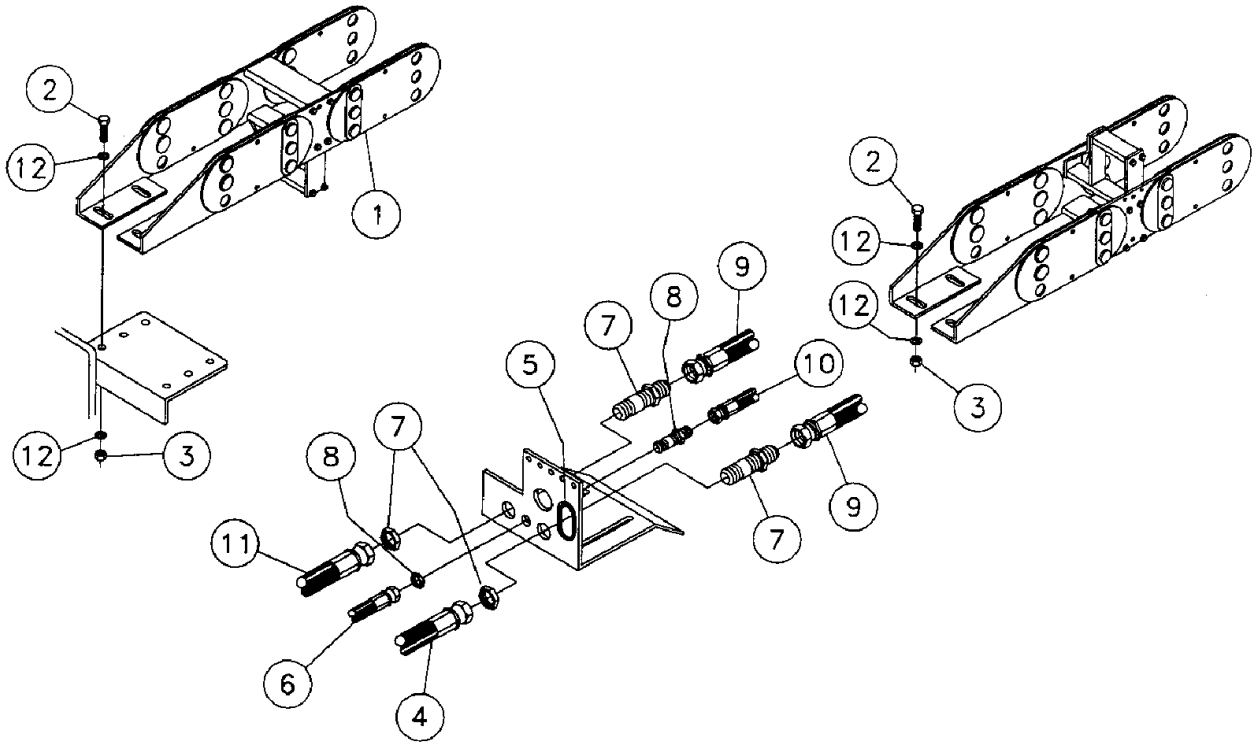


Oil Filter Fig 3-30r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		53845753	HOSE-3/4X82 12FSJIC 90/ST 5000	1	
2	*	81212001	FITTING-16M X 12M JIC 45 EL	1	
3	*	235726001	BOLT-3/8-16X3/4' GR 8 HEX ZINC	4	
4		224404001	MOUNT-FILTER	1	
5	*	235725001	NUT - 3/8-16 GR 8 HEX ZINC	2	
6	*	244560001	FILTER-HIGH PRESSURE	1	BREAKDOWN FIG. 3-58
7		53845791	HOSE 3/4X42 12JIC16/62/90 5000	1	
8	*	70008001	FITTING-16MX12M JIC ST ADAPT	1	
9	*	235727001	BOLT-3/8-16X1 GR 8 HEX ZINC	2	
10	*	235713001	WASHER-3/8" SAE HARD ZINC	8	
			Revised February 1999 due to hyd. filter & hardware updates. Changed/added parts marked with *.		

Hose Carrier/Bulkhead Fig 3-31r02

Revised July 1999 due to update in illustration & parts list. Change in hose carrier starting w/ Serial No. 185 & up. Changed parts marked with *.

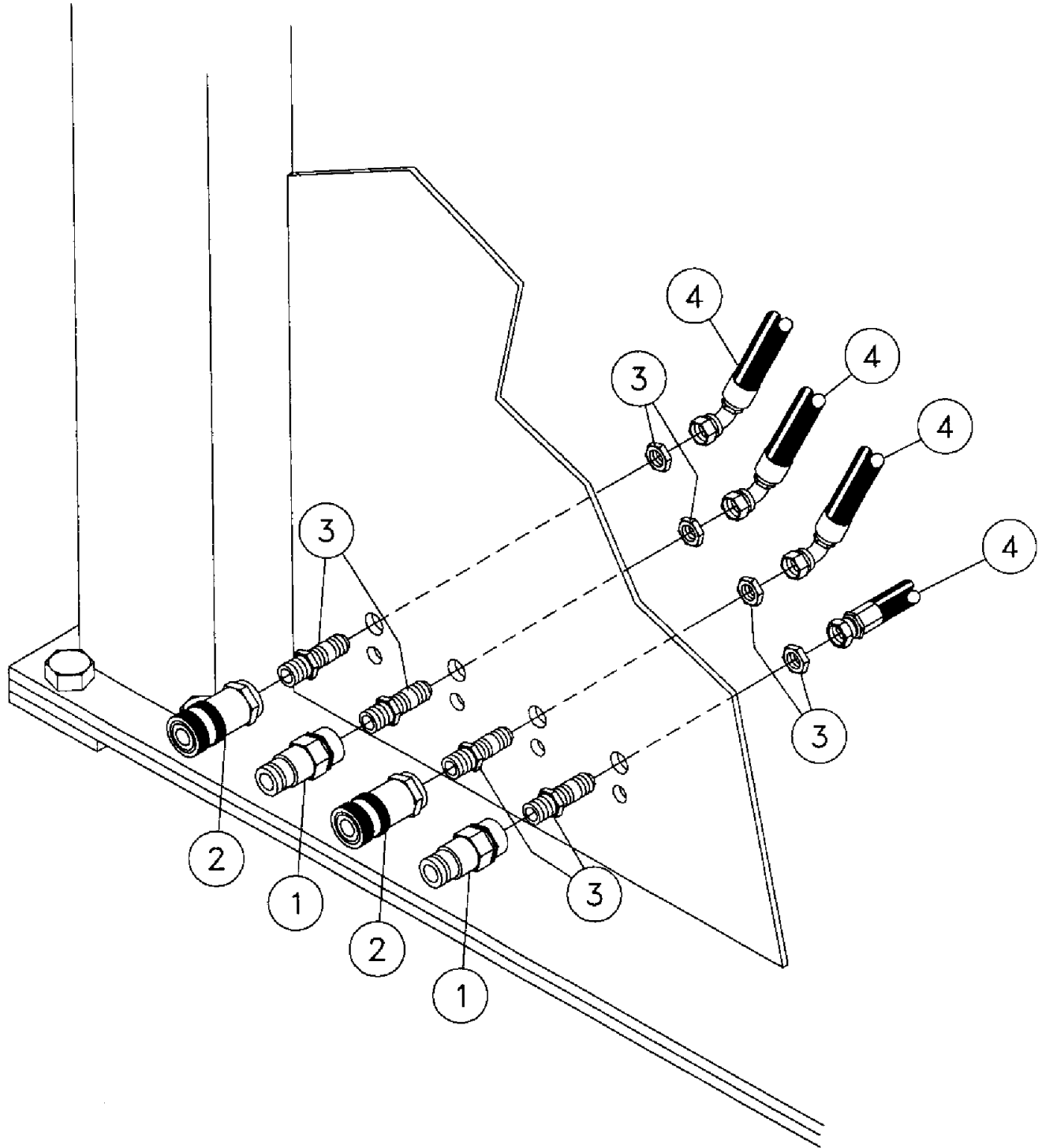


Hose Carrier/Bulkhead Fig 3-31r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1	*	278101001	HOSE CARRIER-15.0 X 5.0	1	BREAKDOWN FIG. 3-49
2		235736001	BOLT-3/8-16X1 1/4 GR 8 HEX Y/Z	8	
3		235725001	NUT - 3/8-16 GR 8 HEX Y/Z	8	
4		53846431	HOSE 1X79 16FSJIC16/62/60D6000	1	
5		1865055	GROMMET-1 1/2 IDX1 3/4 OD 1/4G	1	
6	*	53842021	HOSE-5/8X100 10FSJIC 100R2	1	
7		81698001	FITTING-16MJIC BULKHEAD STR.	2	
8		77734001	FITTING-10M JIC BULKHEAD STR.	1	
9		53846469	HOSE-1X227 16FSJICST/ST 6000#	2	
10		53842515	HOSE-5/8X239 10FSJICST 3000PSI	1	
11		53846487	HOSE-1X79 16FSST 16/62/90 6000	1	
12		235713001	WASHER-3/8 SAE HARD ZINC PLTD	8	
			Revised July 1999 due to update in illustration & parts list. Change in hose carrier starting w/Serial No. 185 & up. Changed parts marked with *.		

Tool Bulkhead Fig 3-32r01

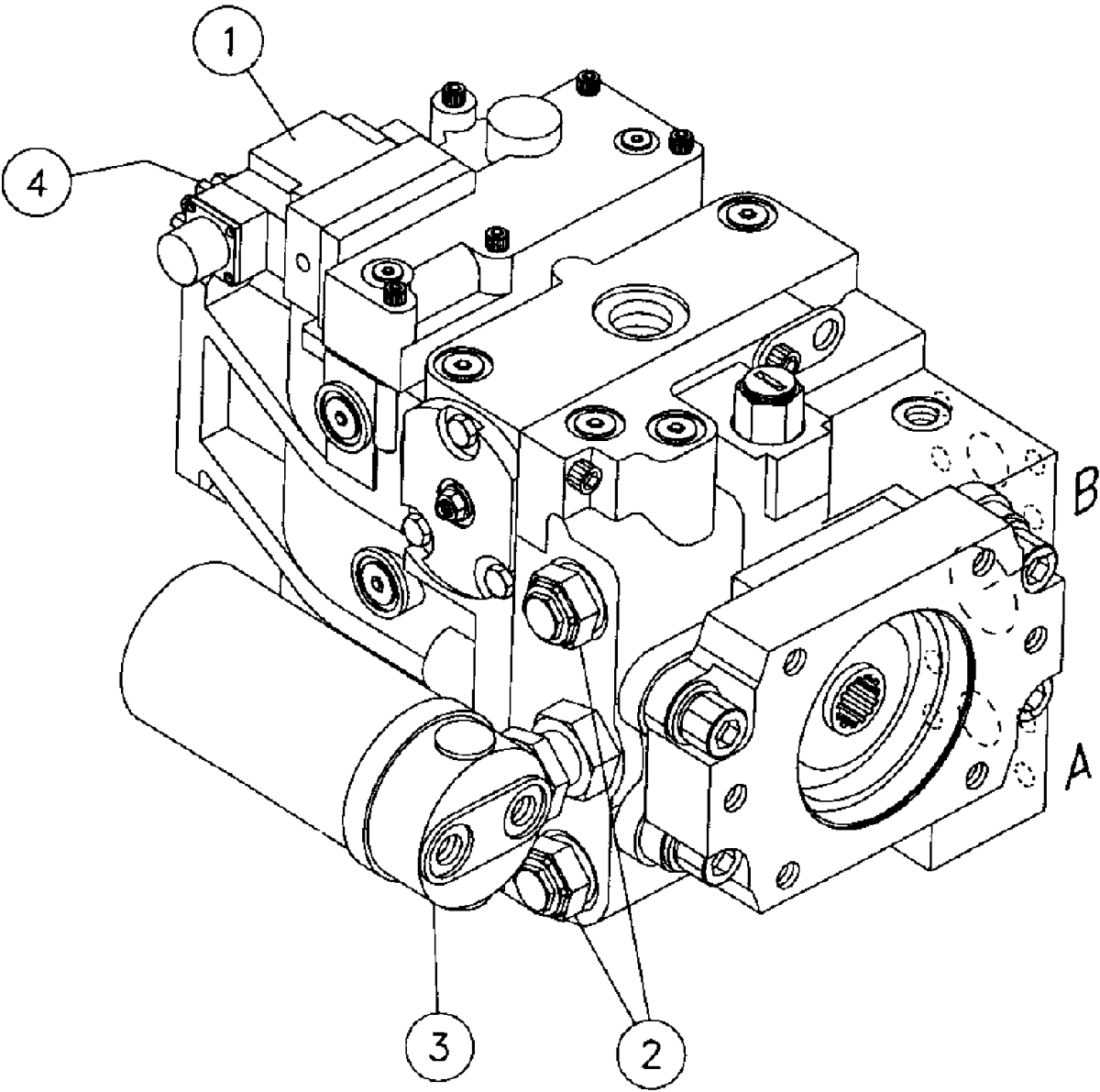
Revised July 1999 due to update of illustration.



Tool Bulkhead Fig 3-32r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		221503001	COUPLER-3/8 NPT QUICK	2	MALE
2		221504001	COUPLER-3/8 NPT QUICK	2	FEMALE
3		130987001	FITTING-6MJIC/3/8MNPT BULKHEAD	4	
4		57940719	HOSE-3/8X21 6FSJICST/45D3000#	4	
			Revised July 1999 due to update of illustration.		

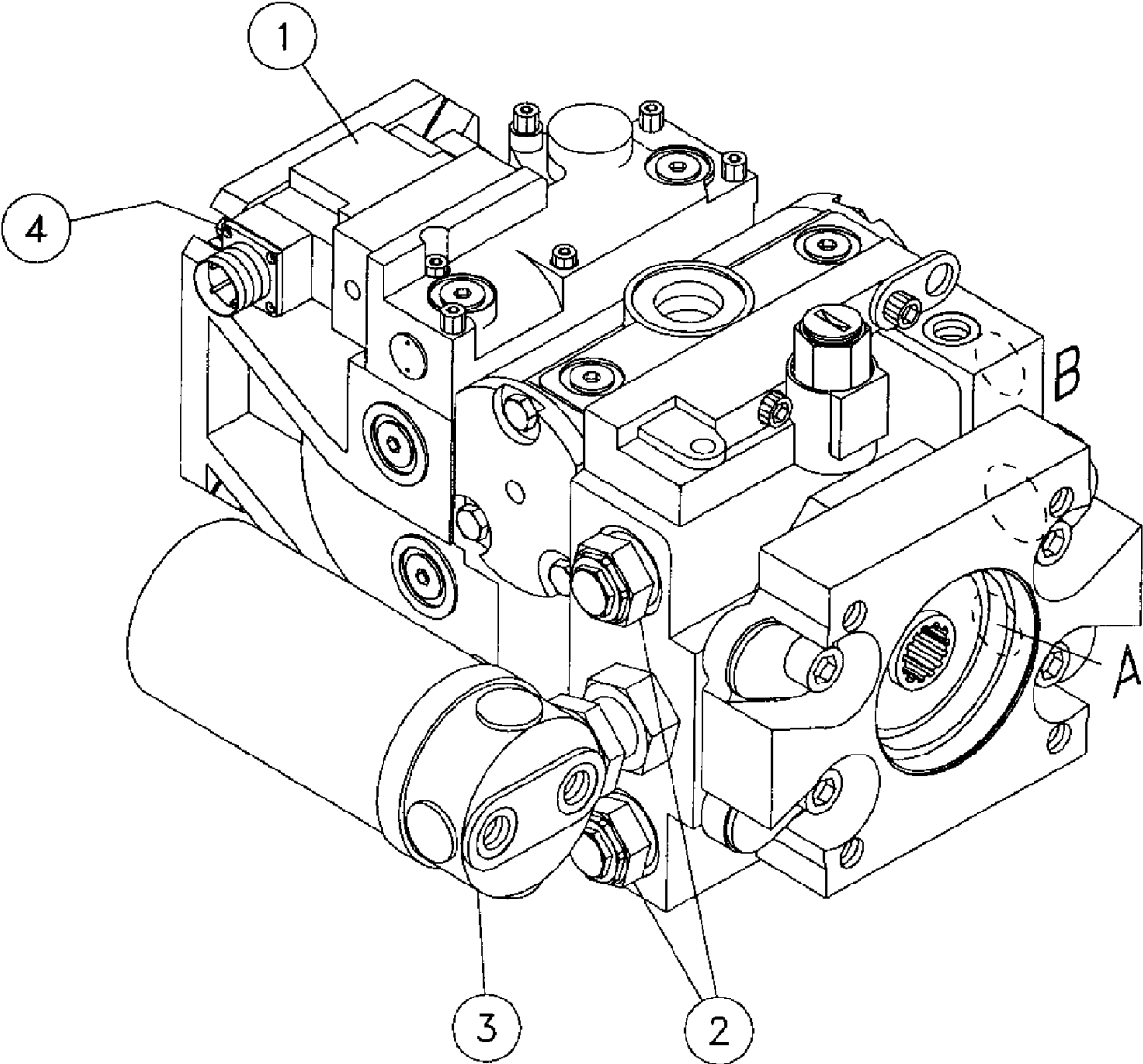
Hyd. Pump Components Fig 3-33



Hyd. Pump Components Fig 3-33

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		224411003	EDC KIT W/MS CONNECTOR	1	INC. GASKET & HARDWARE
		224411005	GASKET-CONTROL	1	
2		85642007	+ VALVE-MULTI-FUNCTION	2	
		85642009	O-RING (per valve)	1	OUTER
		85642011	O-RING (per valve)	1	INNER
3		85642051	FILTRATION-INTEGRAL SHT FILTER	1	
		81902001	FILTER-OIL	1	
4		98688009	LIP SEAL	1	
		98688011	SEAL-CARRIER	1	
		98688013	O-RING	1	
		224411001	PUMP-HYD.		COMPLETE
			+ SPECIFY PRESSURE SETTING		PRESSURE SETTING IS 50570 PSI

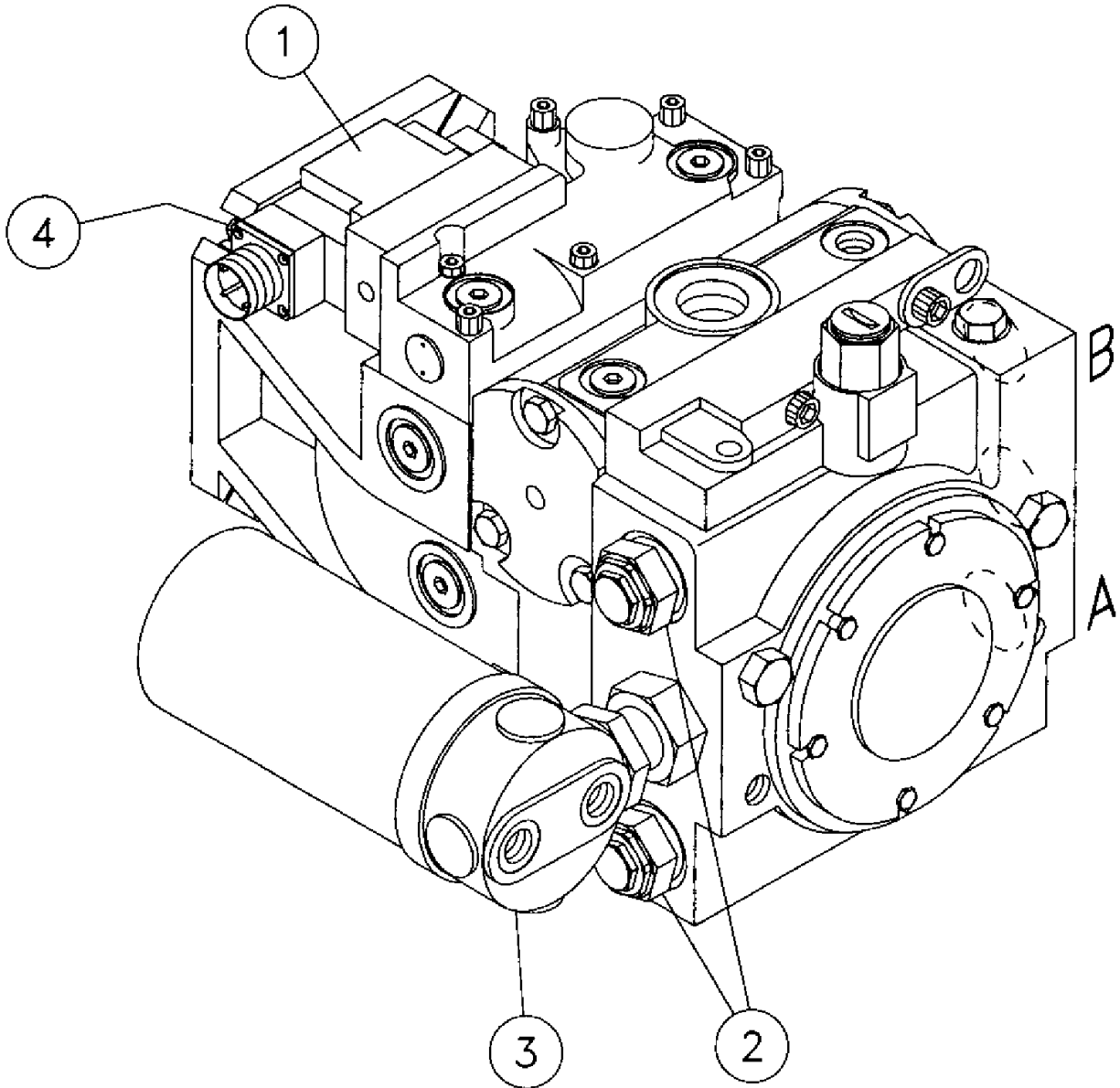
Hyd. Pump Components Fig 3-34



Hyd. Pump Components Fig 3-34

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		224413003	EDC KIT W/MS CONNECTOR	1	INC. GASKET & HARDWARE
		224413005	GASKET-CONTROL	1	
		85642021	PRESSURE CONTROL PILOT VALVE	1	
2		85642007	+ VALVE-MULTI-FUNCTION	2	
		85642009	O-RING (per valve)	1	OUTER
		85642011	O-RING (per valve)	1	INNER
3		85642051	FILTRATION-INTEGRAL SHT FILTER	1	
		81902001	FILTER-OIL	1	
4		98688009	LIP SEAL	1	
		98688011	SEAL-CARRIER	1	
		98688013	O-RING	1	
		224413001	PUMP-HYD.		COMPLETE
			+ SPECIFY PRESSURE SETTING		PRESSURE SETTING IS 5070 PSI

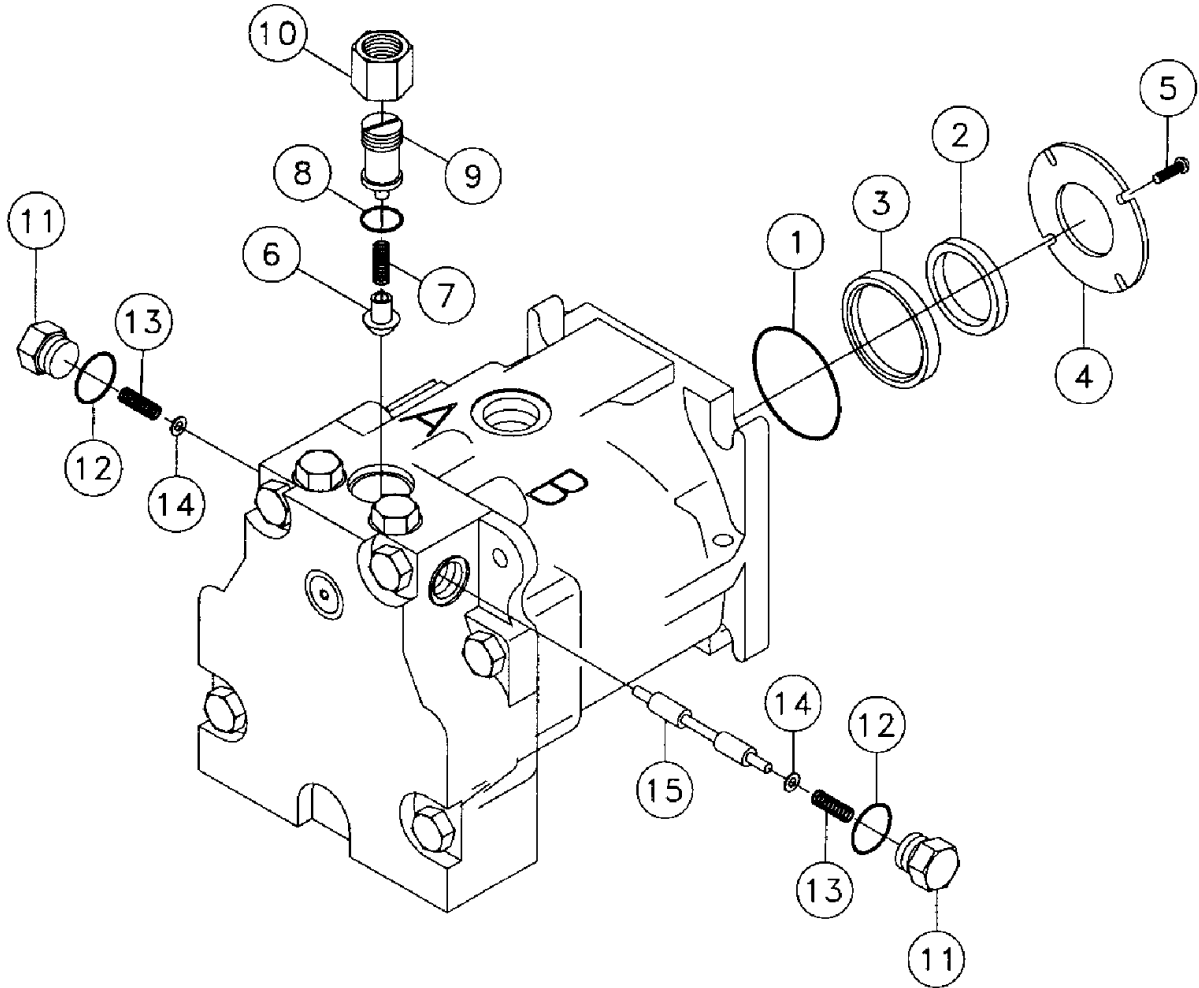
Hyd. Pump Components Fig 3-35



Hyd. Pump Components Fig 3-35

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		224413003	EDC KIT W/MS CONNECTOR	1	INC. GASKET & HARDWARE
		224413005	GASKET-CONTROL	1	
		85642021	PRESSURE CONTROL PILOT VALVE	1	
2		85642007	+ VALVE-MULTI-FUNCTION	2	
		85642009	O-RING (per valve)	1	OUTER
		85642011	O-RING (per valve)	1	INNER
3		85642051	FILTRATION-INTEGRAL SHT FILTER	1	
		81902001	FILTER-OIL	1	
4		98688009	LIP SEAL	1	
		98688011	SEAL-CARRIER	1	
		98688013	O-RING	1	
		224412001	PUMP-HYD.		COMPLETE
			+ SPECIFY PRESSURE SETTING		PRESSURE SETTING IS 3300 PSI

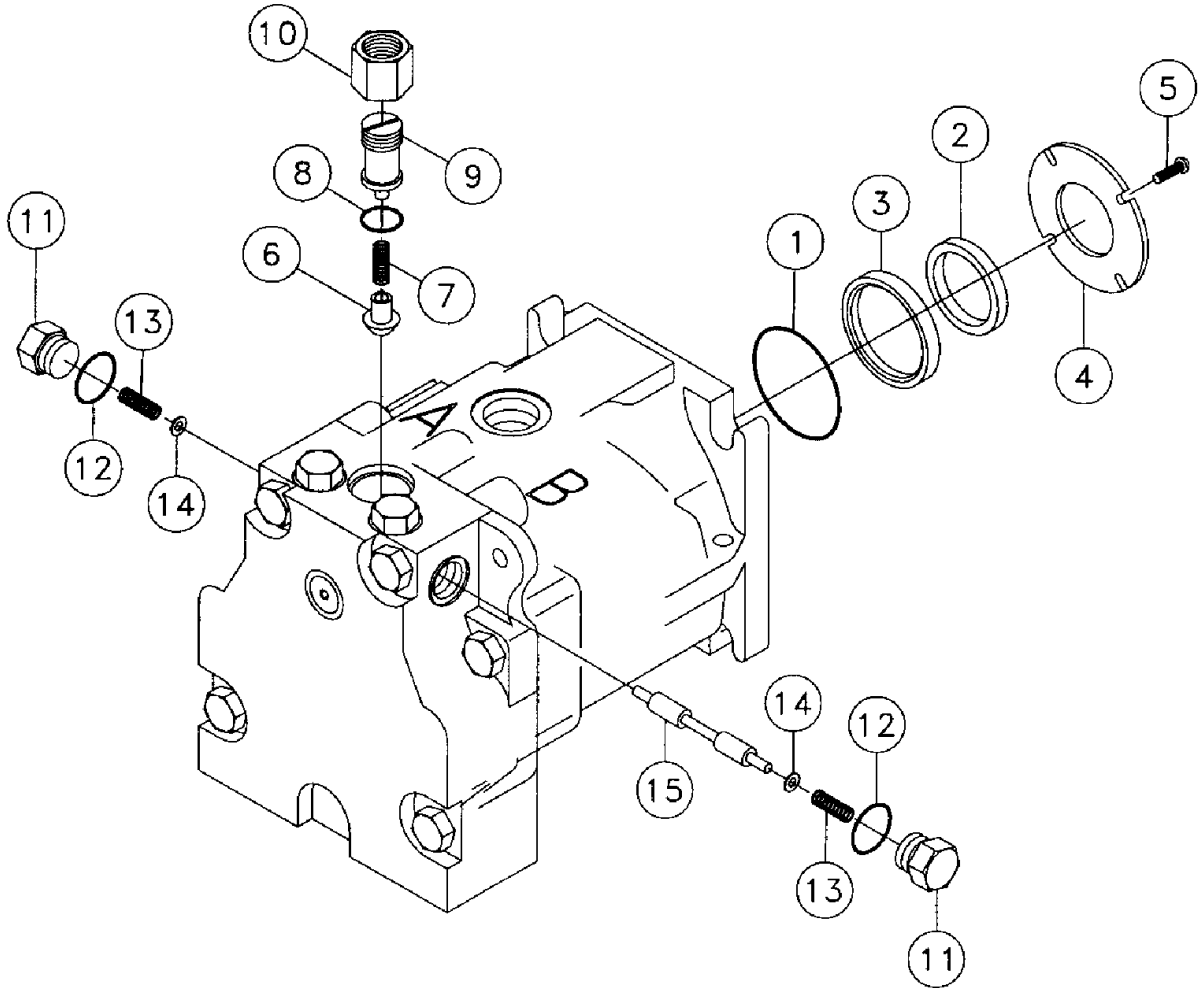
Hyd. Motor Components - SN101-312 Fig 3-36r01



Hyd. Motor Components - SN101-312 Fig 3-36r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		114282007	O-RING	1	
2		114282005	LIP SEAL	1	
3		114282003	SEAL CARRIER	1	
4		131494019	RETAINER PLATE	1	
5		85642087	SCREW-INT. HEX	3	
6		131494023	CHARGE RELIEF POPPET	1	
7		131494025	SPRING	1	
8		68859011	O-RING	1	
9		131494027	CHARGE RELIEF PLUG	1	
10		234266003	NUT	1	
11		131494017	SPECIAL PLUG	2	
12		57941093	O-RING	2	
13		234266005	SPRING	2	
14		131494033	SPRING GUIDE	2	
15		131494031	SHUTTLE SPOOL	1	
		234266001	MOTOR-HYD		COMPLETE
			Revised June 2000 due to update in heading.		

Hyd. Motor Components - SN313- Fig 3-36x01

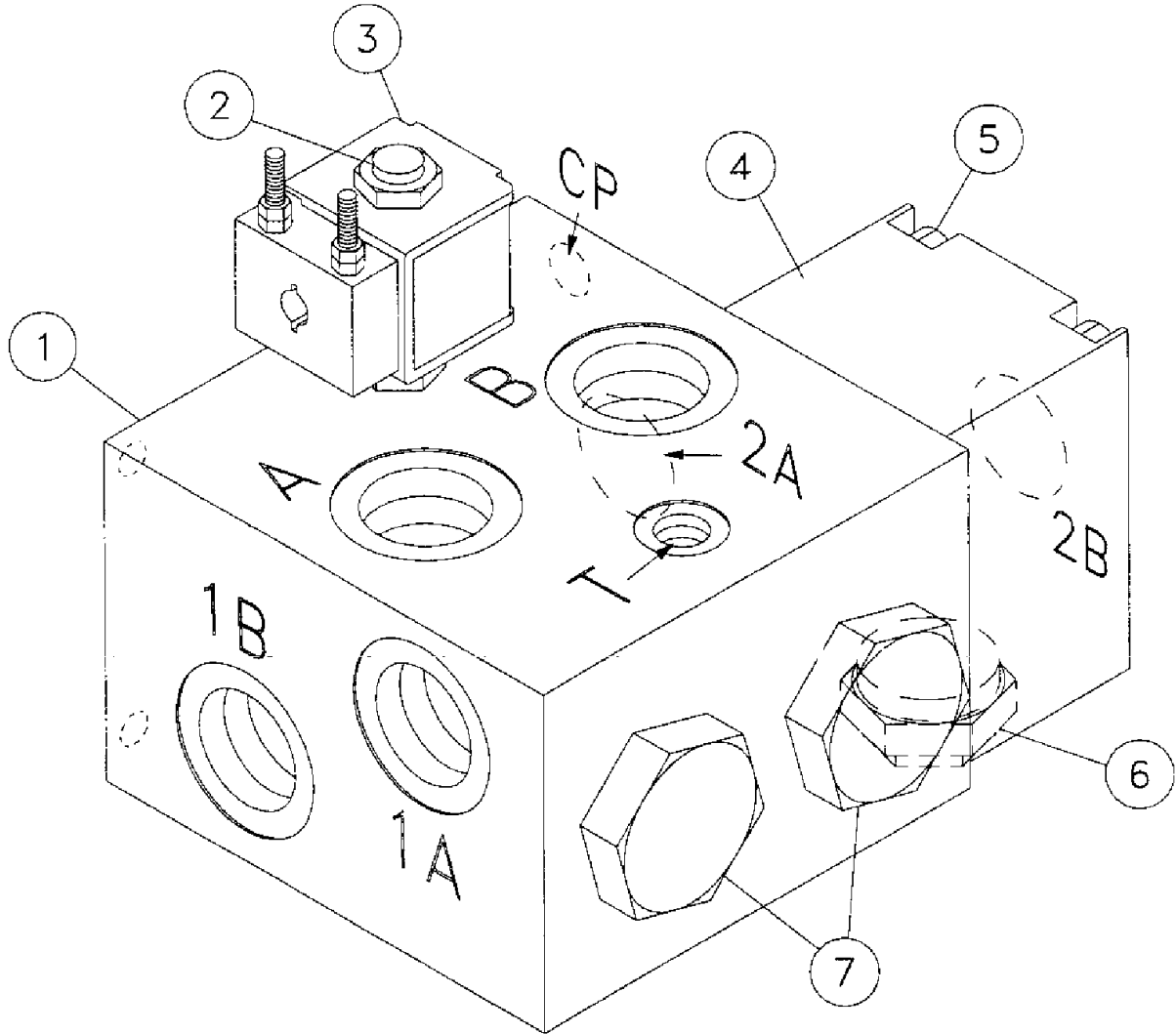


Hyd. Motor Components - SN313- Fig 3-36x01

REF NO.	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		114282007	O-RING	1	
2		114282005	LIP SEAL	1	
3		114282003	SEAL CARRIER	1	
4		131494019	RETAINER PLATE	1	
5		85642087	SCREW-INT. HEX	3	
6		131494023	CHARGE RELIEF POPPET	1	
7		131494025	SPRING	1	
8		68859011	O-RING	1	
9		131494027	CHARGE RELIEF PLUG	1	
10		234266003	NUT	1	
11		131494017	SPECIAL PLUG	2	
12		57941093	O-RING	2	
13		234266005	SPRING	2	
14		131494033	SPRING GUIDE	2	
15		131494031	SHUTTLE SPOOL	1	
		234266001	MOTOR-HYD		COMPLETE
			Revised June 2000 due to addition of figure to manual.		

Solenoid Selector Valve Components Fig 3-37r01

Revised February 1999 due to update of valve components. Changed parts marked with *.

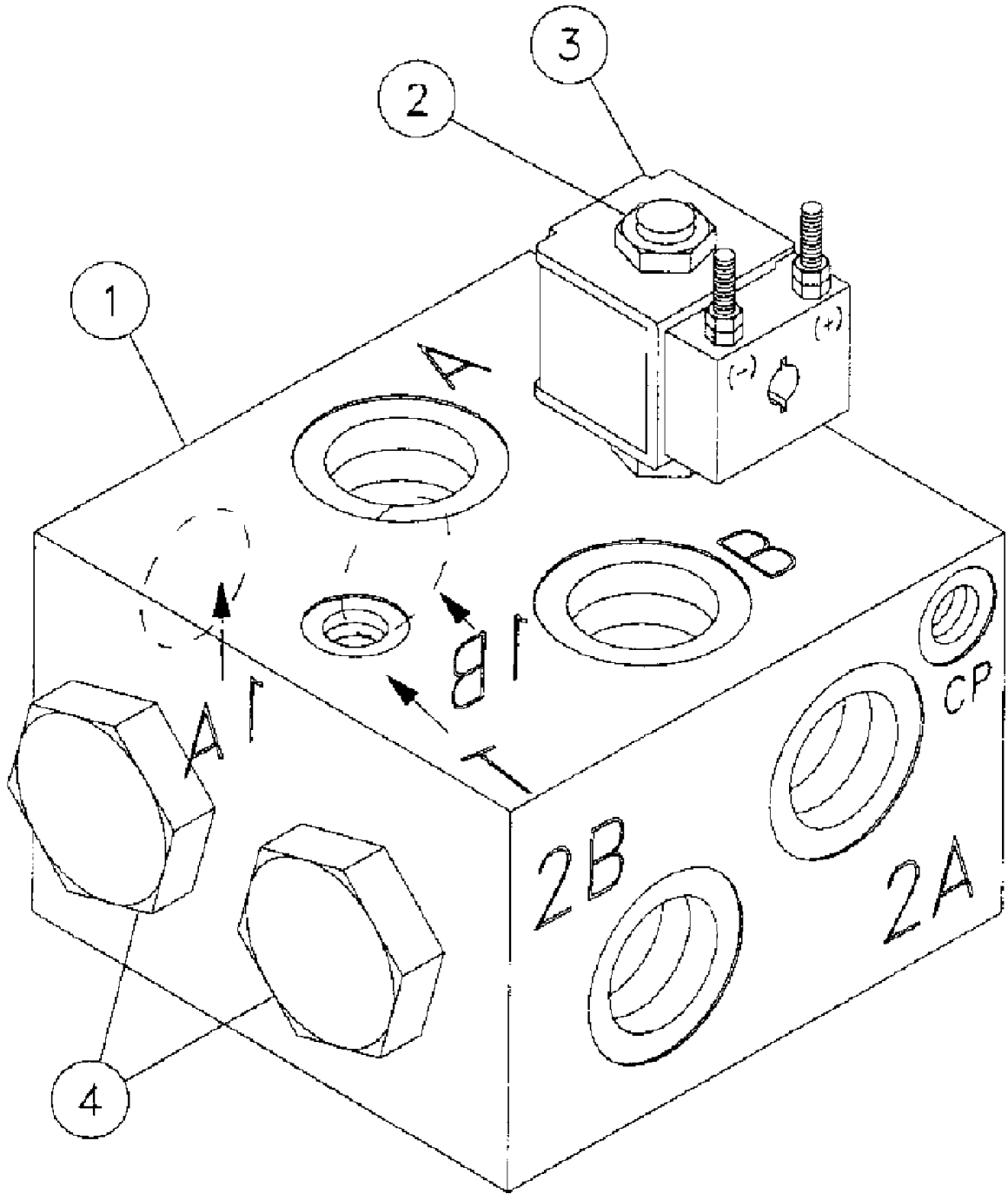


Solenoid Selector Valve Components Fig 3-37r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		224292003	BODY	1	
2		207418007	SOLENOID VALVE	1	
		207418009	REPAIR KIT-SOLENOID VALVE		
3	*	251061003	SOLENOID VALVE COIL-2 POST	1	
4		224292005	BODY	1	
5		4478024	3/8-16X2 1/2 SOCK HD.	4	
6		224292007	CHECK VALVE	1	
		231770001	SEAL KIT		
7		224292009	DIVERTER VALVE	2	
		231771001	SEAL KIT		
	*	251061001	VALVE-SOLENOID SELECT		INC. REF. 1-7
			Revised February 1999 due to update of valve components. Changed parts marked with *.		

Solenoid Selector Valve Components Fig 3-38r01

Revised February 1999 due to update of valve components. Changed parts marked with *.

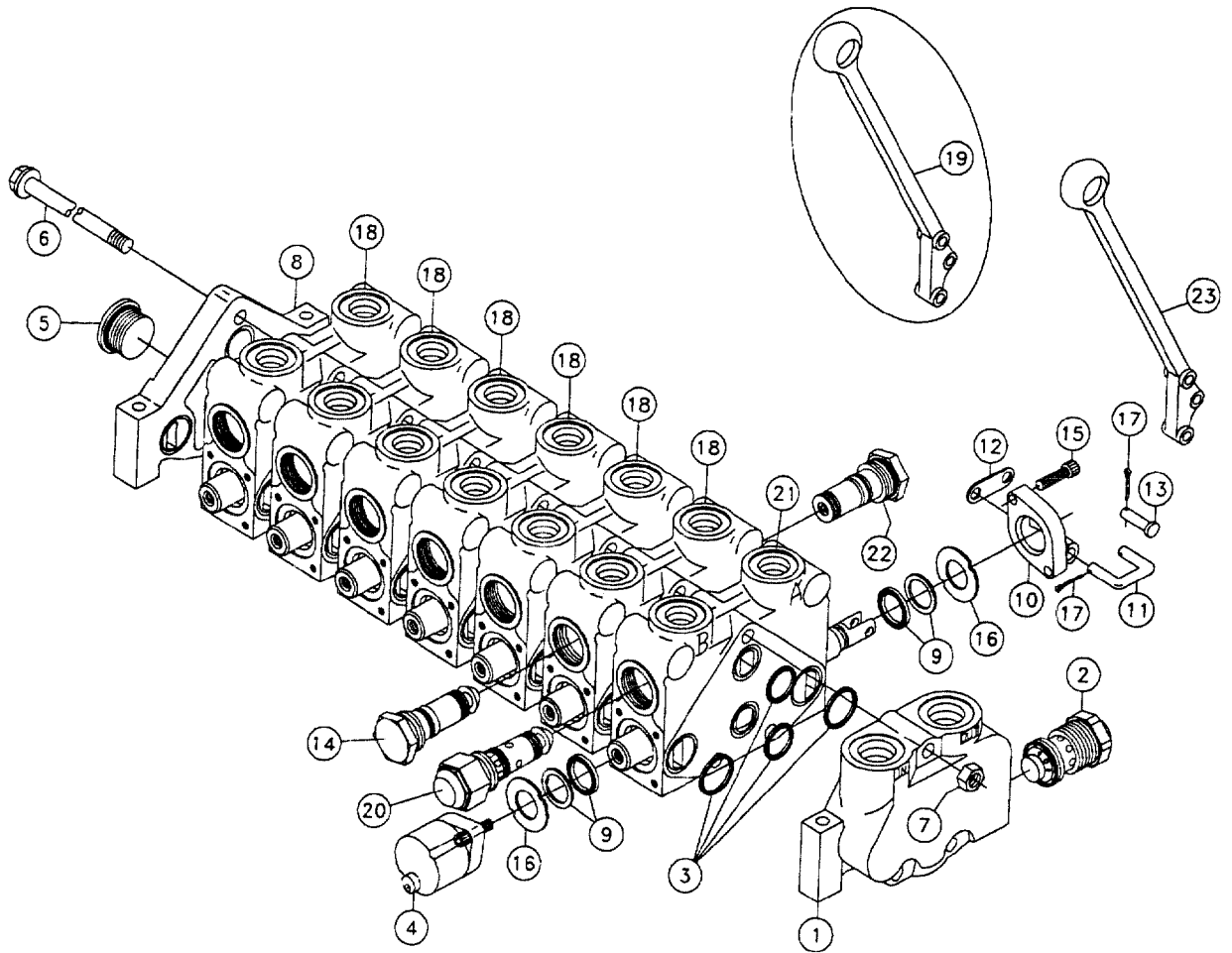


Solenoid Selector Valve Components Fig 3-38r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		224292003	BODY	1	
2		207418007	SOLENOID VALVE	1	
		207418009	REPAIR KIT-SOLENOID VALVE		
3	*	251061003	SOLENOID VALVE COIL-2 POST	1	
4		224292009	DIVERTER VALVE	2	
		231771001	SEAL KIT		
	*	251062001	VALVE-SOLENOID SELECTOR		INC. REF. 1-4
			Revised February 1999 due to update of valve components. Changed parts marked with *.		

Control Valve Components Fig 3-39r04

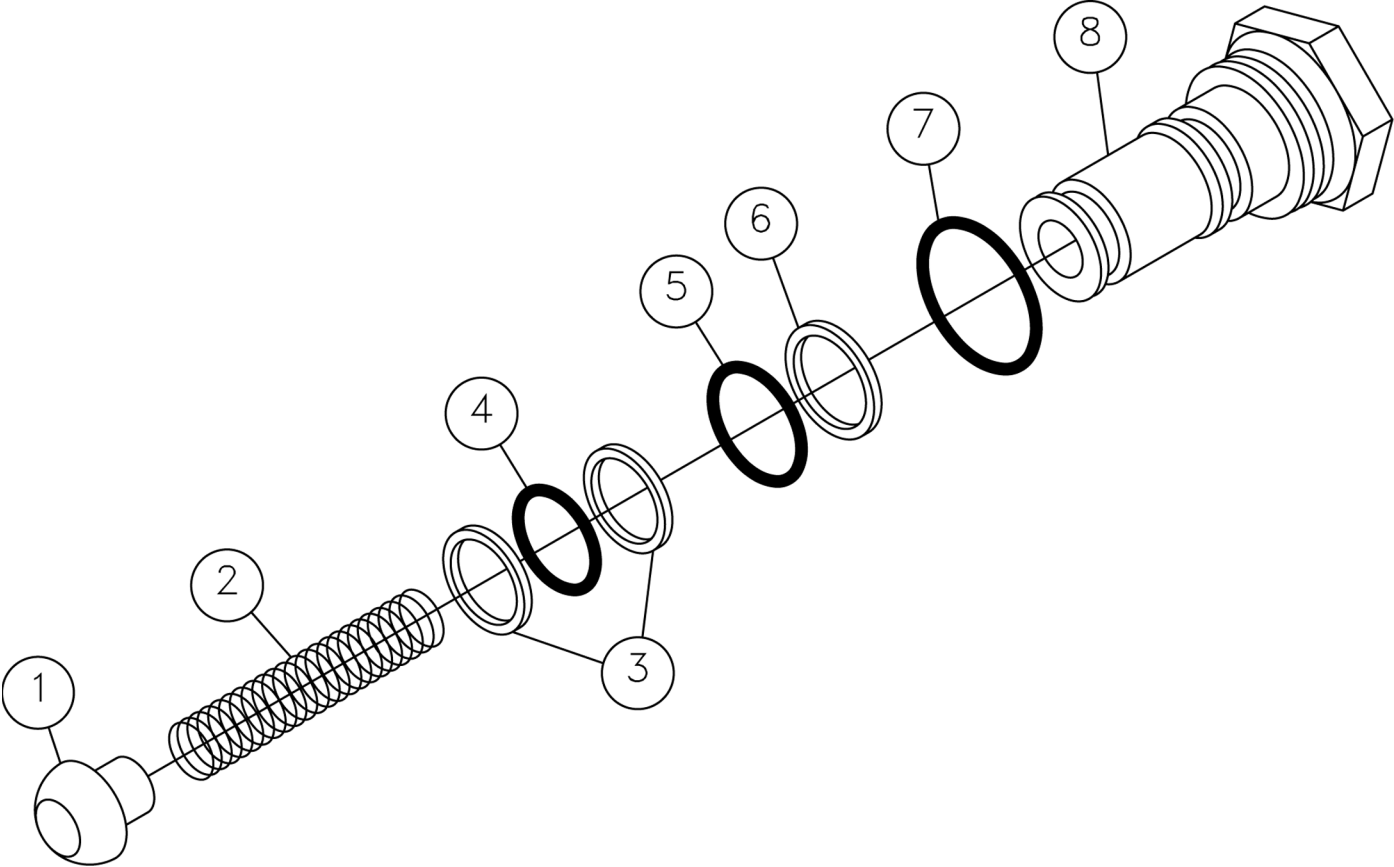
Revised October 1999 due to update
in illustration & parts list. Added
part marked with *.



Control Valve Components Fig 3-39r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		228113003	LEFT COVER PLATE COMP.	1	INC. REF.2
2		228113005	WH MAIN RELIEF 3500 PSI	1	BREAKDOWN FIG. 3-41
3		3147079	REPAIR KIT-CP VALVE	8	
4		6149005	POSITIONER-STD.	7	BREAKDOWN FIG. 3-42
5		98108011	PLUG-1 15/16-12 UNF SOCK HD	1	
		3152013	SEAL-O-RING	1	
6		68386001	STUD KIT-7 SPOOL	1	INC. REF. 7
7		446001	NUT-3/8 NF HEX	3	
8		219120011	RIGHT COVER PLATE	1	INC. ONE OF REF. 3 & 5
9		3147077	REPAIR KIT	7	
10		3147029	BRACKET	7	
11		4333003	LINK	7	INC. REF. 12
12		4333005	PLATE-LINK	7	
13		2110003	PIN-CLEVIS 1/4X7/8 - 47/64 UL	7	
14		3147035	PLUG-LOAD CHECK STEEL	6	BREAKDOWN FIG. 3-40
15		79704001	SCREW-1/4-20X7/8 SOC HD SELFLK	14	
16		3147081	RETAIN-PLT WASH GRN 6752-001	14	
17		510035	PIN-3/32 X 1/2 COTTER	21	
18		244519003	BODY ASSY-CENTER SECTION	6	INC. ONE OF REF. 3, 4, 9-13, 14 & 22, TWO OF REF. 15, 16 & THREE OF REF. 17
19		3147039	HANDLE - CP VALVE	3	REPLACED BY 280625001
20		89275007	RC PORT RELIEF		BREAKDOWN FIG. 3-44
21		244519005	BODY ASSY-CENTER SECTION	1	INC. ONE OF REF. 3, 4, 9-13, 20 & 22, TWO OF REF. 15 & 16 & THREE OF REF. 17
22		238196001	CARTRIDGE-ANTI-DRIFT	1	BREAKDOWN FIG. 3-43
23	*	280625001	HANDLE W/ ZINC PLATE & BLACK PLASTIC COAT	3	
		244728001	VALVE-7 SECT V20 L.S.		INC. ALL ITEMS IN FIGURE

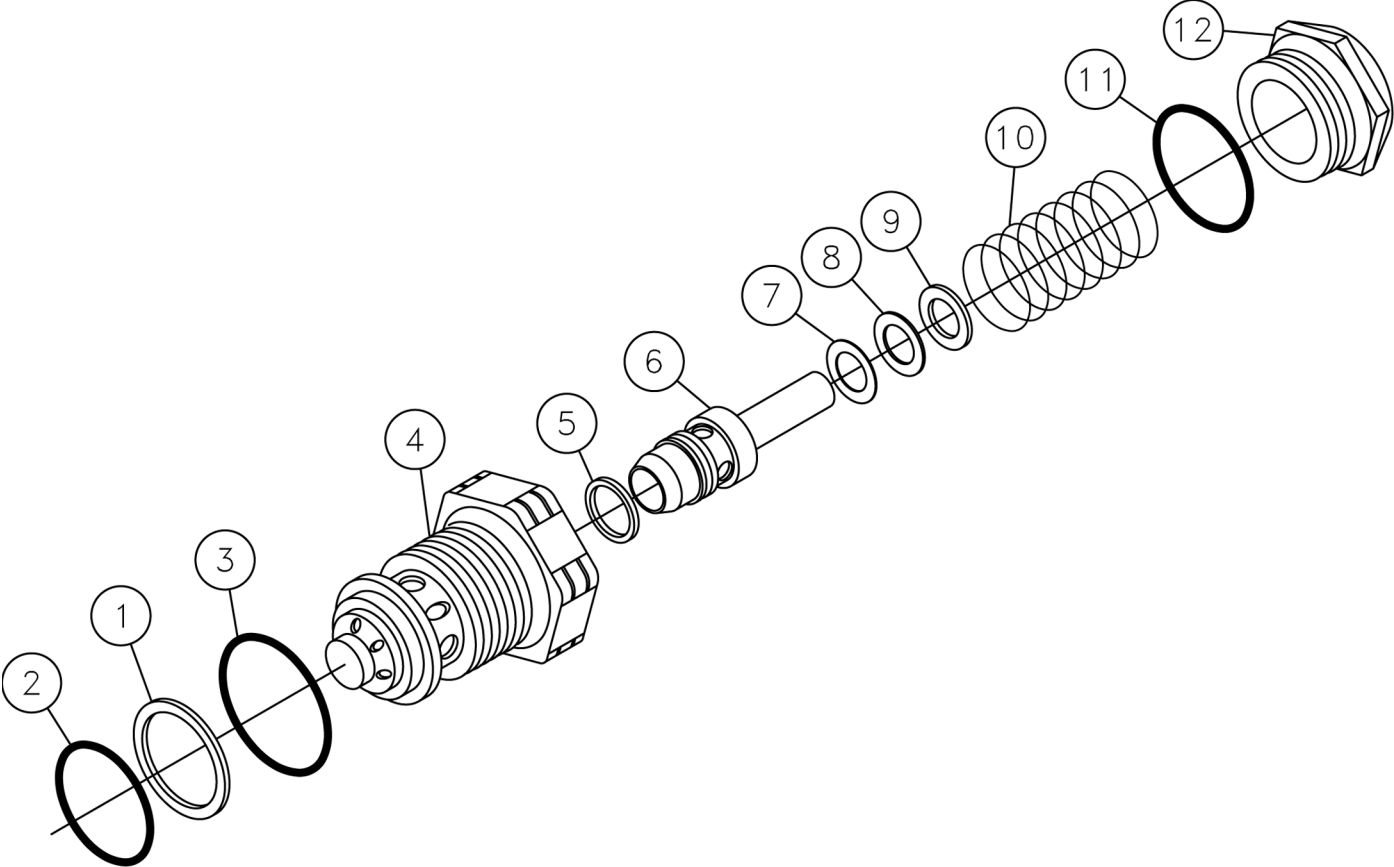
Load Check Plug Components Fig 3-40r04



Load Check Plug Components Fig 3-40r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	May, 2005		Separated Fig. Page 3-41 From 3-40
1		3128009	POPPET-CHECK	1	
2		3147041	SPRING-CHECK	1	
3		NSS	WASHER-BACKUP	2	INNER
4		NSS	O-RING	1	
5		NSS	O-RING	1	
6		NSS	WASHER-BACKUP	1	OUTER
7		NSS	O-RING	1	
8		3147043	PLUG-LIFT CHECK	1	
		87396001	PLUG-LOAD CHECK LESS POPPET		INC. REF. 3-8
		3147035	PLUG-LOAD CHECK STEEL		INC. ALL ITEMS IN THIS FIGURE
		3147037	REPAIR KIT		INC. REF. 3-7

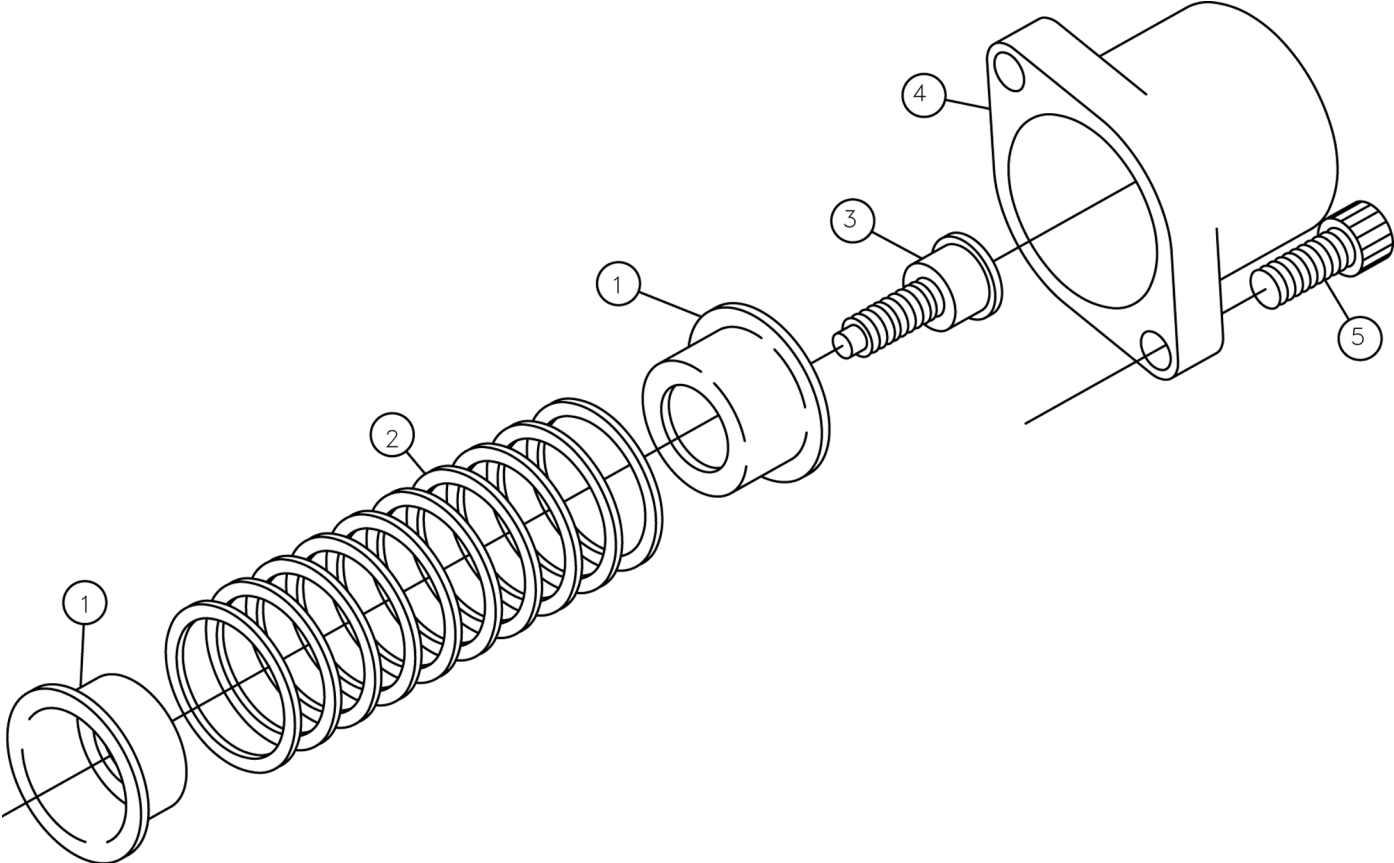
No Relief Plug Components Fig 3-41r01



No Relief Plug Components Fig 3-41r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	May, 2005		Separated Fig. 3-41 From Fig. Page 3-40.
1		NSS	RING-BACKUP	1	
2		NSS	SEAL-O-RING	1	
3		NSS	SEAL-RING	1	
4		15844009	BODY-WH RELIEF	1	
5		NSS	RING-PISTON	1	
6		NSS	POPPET	1	
7		208019	SHIM-.010	AR	
8		208017	SHIM-.020	AR	
9		208015	SHIM-.040	AR	
10		228113007	SPRING, 3000-3500 PSI	1	
11		NSS	SEAL-O-RING	1	
12		3147027	CAP	1	
		3147011	SERVICE KIT		INC. REF. 5 & 6
		15844007	REPAIR KIT		INC. REF. 1, 3 & 11
		228113005	WH MAIN RELIEF, 3500 PSI		INC. REF. 1-12

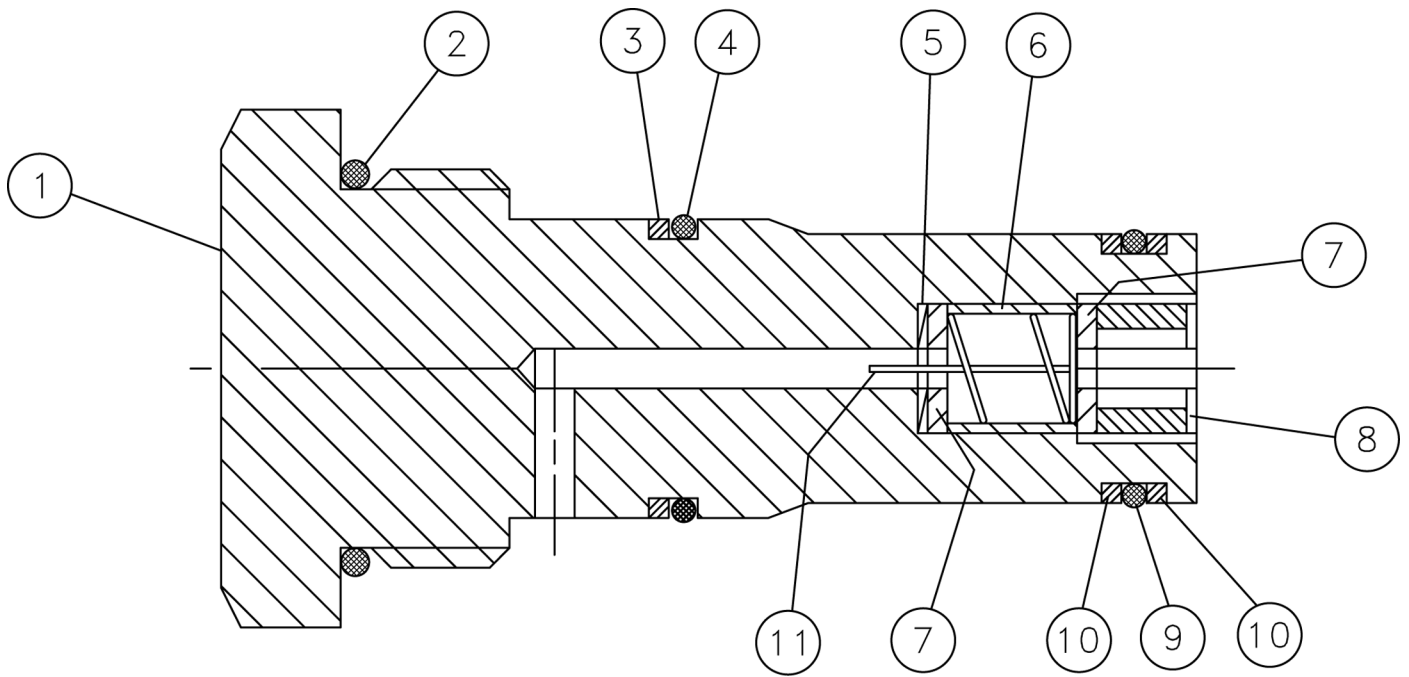
Standard Spool Positioner Components Fig 3-42r02



Standard Spool Positioner Components Fig 3-42r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	May, 2005		Separated Fig. Page 3-43 from 3-42
1		3149005	COLLAR-SPRING	2	
2		6149057	SPRING-RETURN	1	
3		3149013	COLLAR-SPOOL	1	
4		6149043	BONNET	1	
5		79704001	SCREW-1/4-20X7/8 SOC HD SELFLK	2	
		6149005	POSITIONER-STD.		INC. ALL ITEMS IN THIS FIGURE

Anti-Drift Cartridge Components Fig 3-43r01

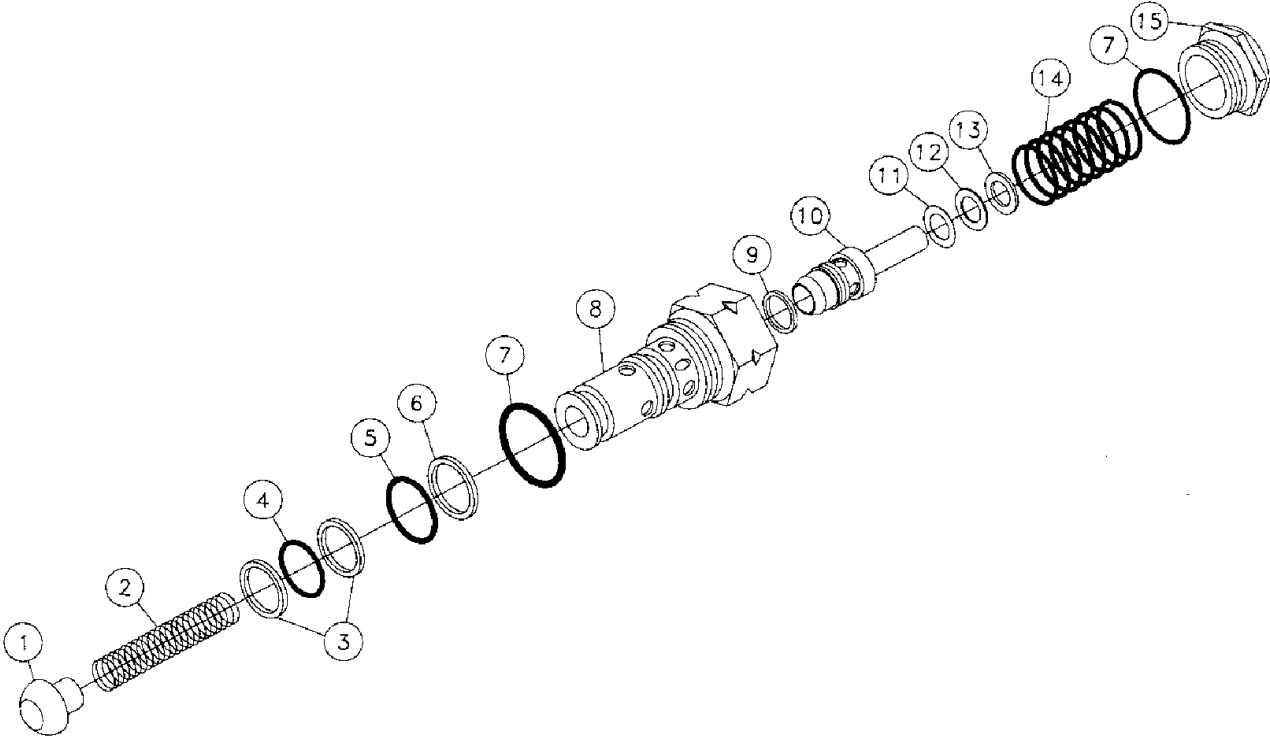


Anti-Drift Cartridge Components Fig 3-43r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	May, 2005		Separated Fig. Page 3-43 from 3-42
1		238196003	PLUG-BLEED OFF	1	
2		NSS	SEAL-O-RING	1	
3		NSS	RING-BACKUP	1	
4		NSS	SEAL-O-RING	1	
5		238196005	WASHER-BLEED OFF	1	
6		238196007	SPACER	1	
7		238196009	WASHER-BACK UP	2	
8		238196011	SCREW-LOCKING	1	
9		NSS	SEAL-O-RING	1	
10		NSS	RING-BACKUP-CUT	2	
11		238196013	SPRING	1	
		238196001	CARTRIDGE-ANTI-DRIFT		INC. ALL ITEMS IN FIGURE
		3147037	REPAIR KIT		INC. REF. 2-4, 9, 10

RC Port Relief Components Fig 3-44r01

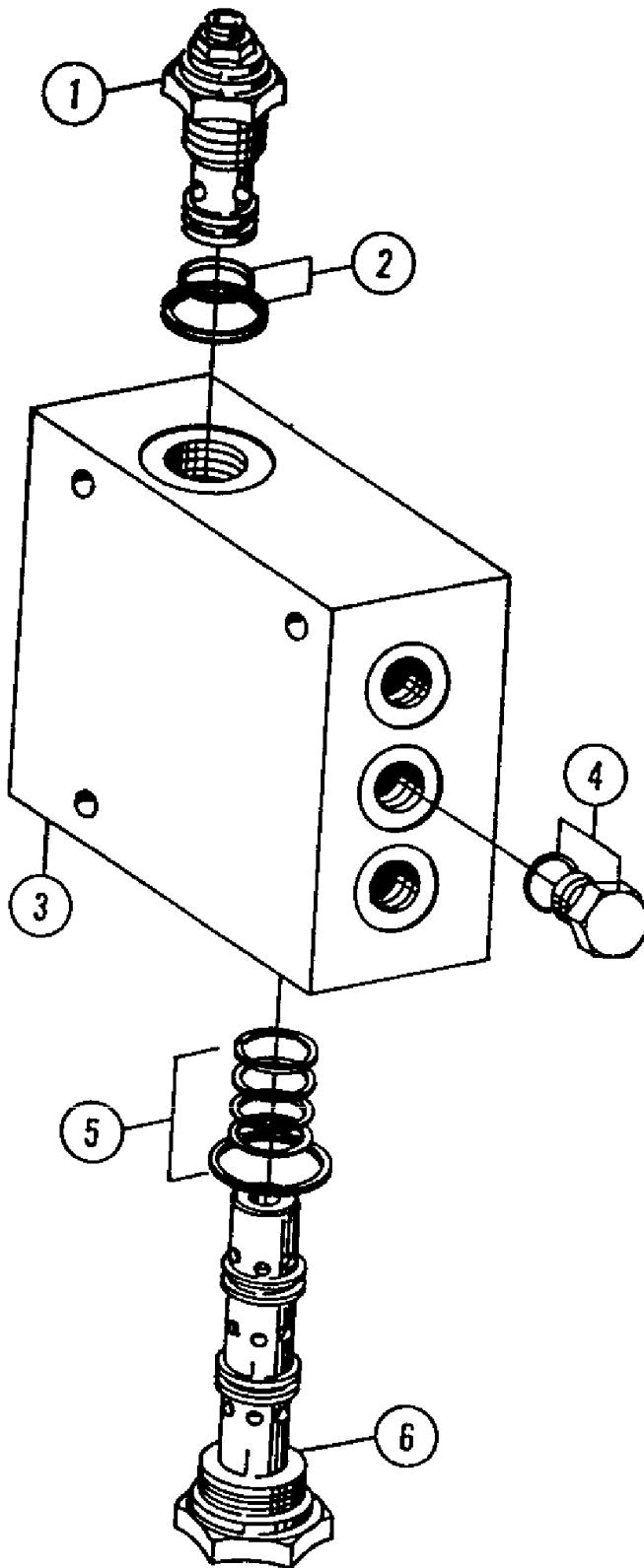
Revised February 1999 due to drawing update.



RC Port Relief Components Fig 3-44r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		3128009	POPPET-CHECK	1	
2		3147041	SPRING-CHECK	1	
3		NSS	WASHER-BACKUP	2	
4		NSS	O-RING	1	
5		NSS	O-RING	1	
6		NSS	WASHER-BACKUP	1	
7		NSS	O-RING	2	
8		3159007	BODY-RELIEF	1	
9		NSS	RING-PISTON	1	
10		NSS	POPPET-RELIEF	1	
11		208019	SHIM - .010	AR	
12		208017	SHIM - .020	AR	
13		208015	SHIM - .040	AR	
14		3147023	SPRING-YELLOW	1	
		86323005	SPRING-SS 2000-3000 PSI	1	
15		3147027	CAP	1	
		89275007	RC PORT RELIEF-1800 PSI		INC. ALL ITEMS IN THIS FIGURE
		3159005	REPAIR KIT		INC. REF. 3-7
		3147011	SERVICE KIT		INC. REF. 9 & 10
		NSS	NOT SOLD SEPARATELY		
			Revised February 1999 due to drawing update.		

Shuttle Valve Components Fig 3-45

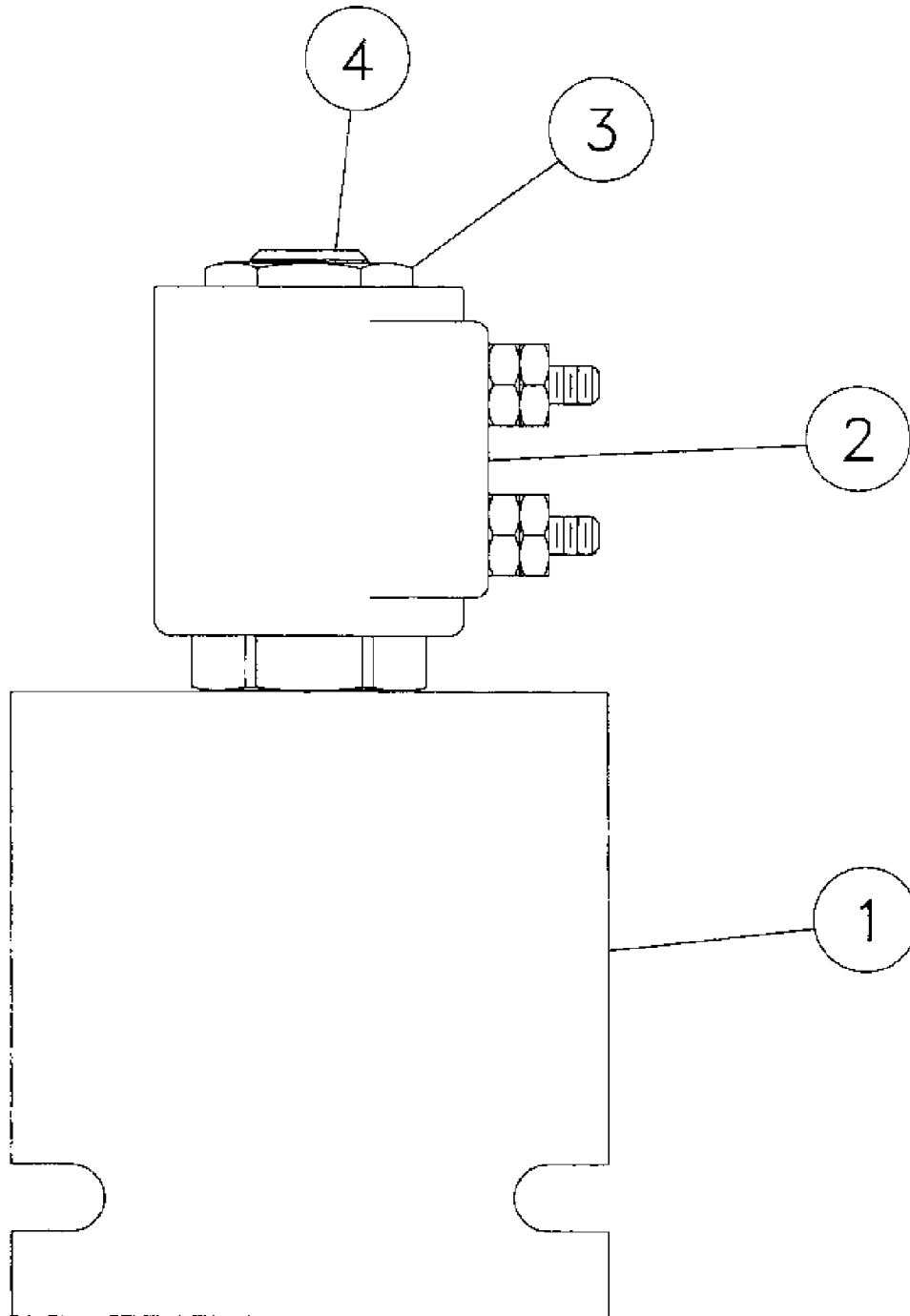


Shuttle Valve Components Fig 3-45

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		902012003	VALVE-RELIEF	1	
2		202731001	REPAIR KIT-RELIEF VALVE	1	
3		902012005	BODY-VALVE	1	
4		901562015	PLUG-9/16"-18 UNF	1	
5		204954001	REPAIR KIT-SHUTTLE VALVE	1	
6		901562011	VALVE-SHUTTLE	1	
		902012001	VALVE-SHUTTLE		INC. ALL ITEMS IN THIS FIGURE

Solenoid Valve Components Fig 3-46r01

Revised February 1999 due to
update of valve components.
Changed parts marked with *.

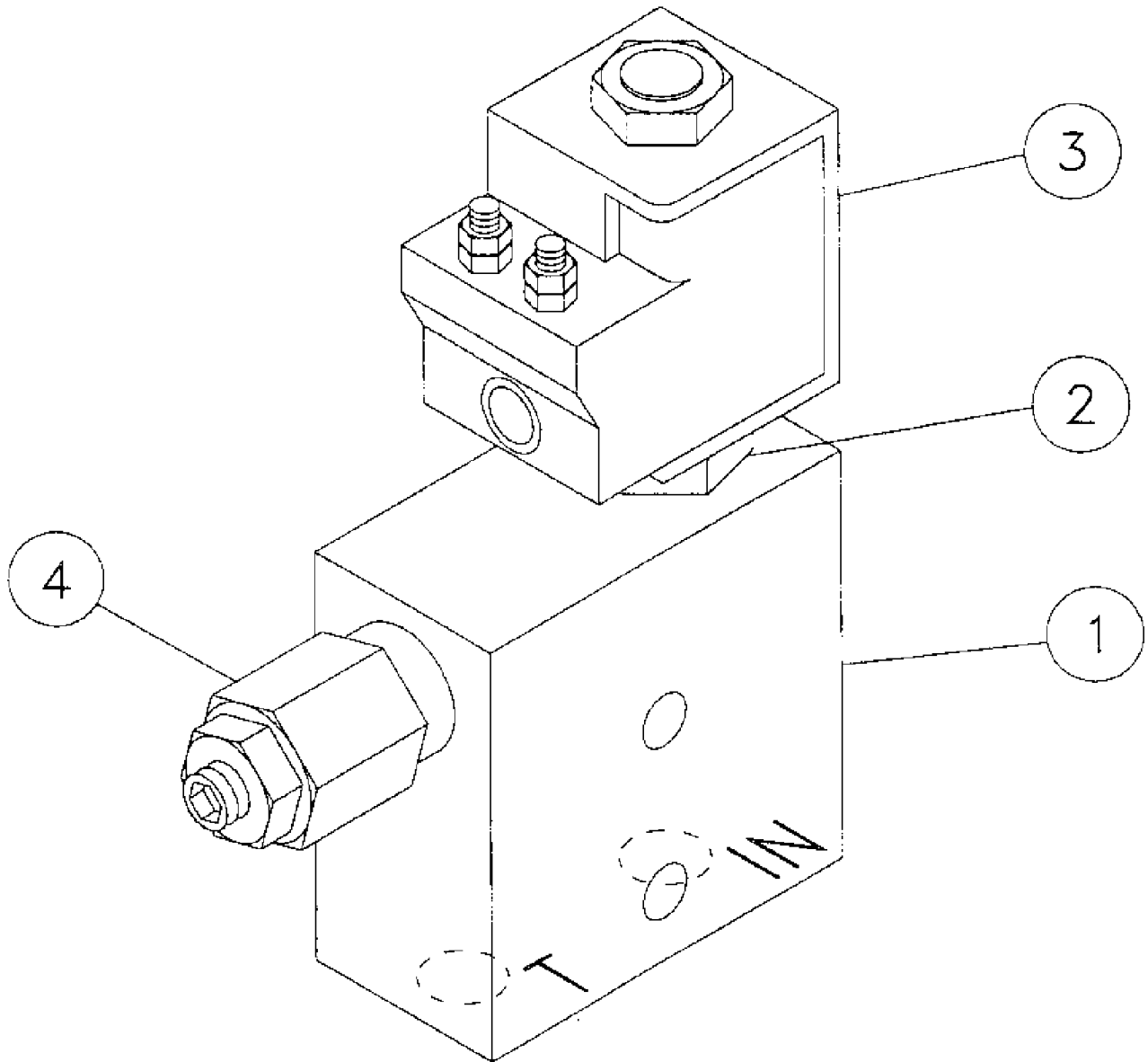


Solenoid Valve Components Fig 3-46r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		239443003	BODY-VALVE	1	
2	*	244725005	COIL	1	
3	*	244725007	NUT-COIL	1	
4		228124017	CARTRIDGE-SOLENOID	1	
		110467003	SEAL KIT		
	*	244491001	VALVE-2 POS. 3 WAY		INC. ALL ITEMS IN THIS FIGURE
			Revised February 1999 due to update of valve components. Changed parts marked with *.		

Pressure Limiter Valve Components Fig 3-47r01

Revised February 1999 due to
update of valve components

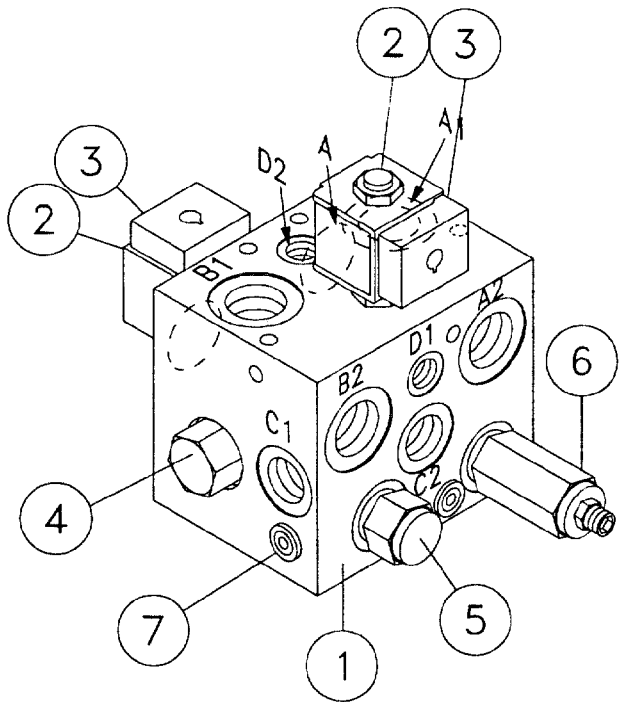


Pressure Limiter Valve Components Fig 3-47r01

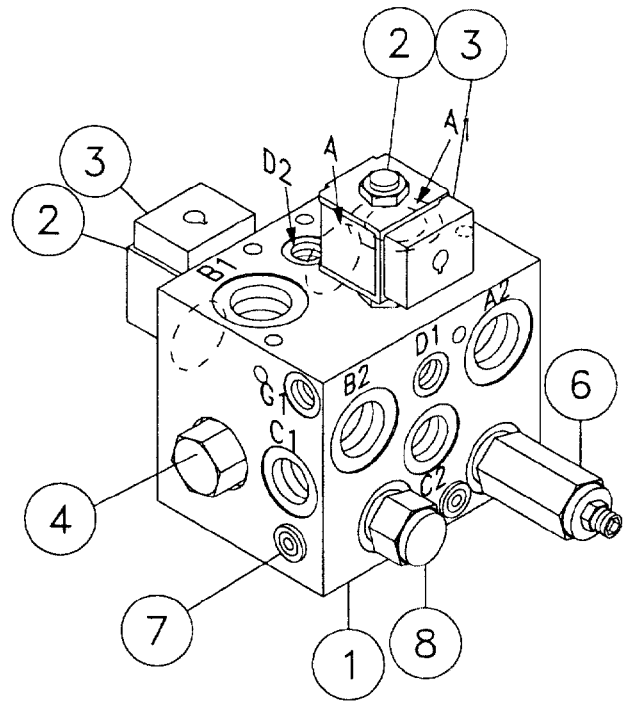
REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		228114003	BODY-MANIFOLD	1	
2		228114005	CARTRIDGE	1	
		228114007	SEAL KIT		
3		251063003	COIL	1	
4		228114011	VALVE RELIEF	1	
		85647025	REPAIR KIT		
		251063001	VALVE-REMOTE PRESSURE LIMITER		INC. ALL ITEMS IN THIS FIGURE
			Revised February 1999 due to update of valve components.		

Shuttle Valve Components 3 Spool Fig 3-48r02

Revised February 2000 due to update in illustration & parts list. Changed/ added parts marked with *.



SN 192-232

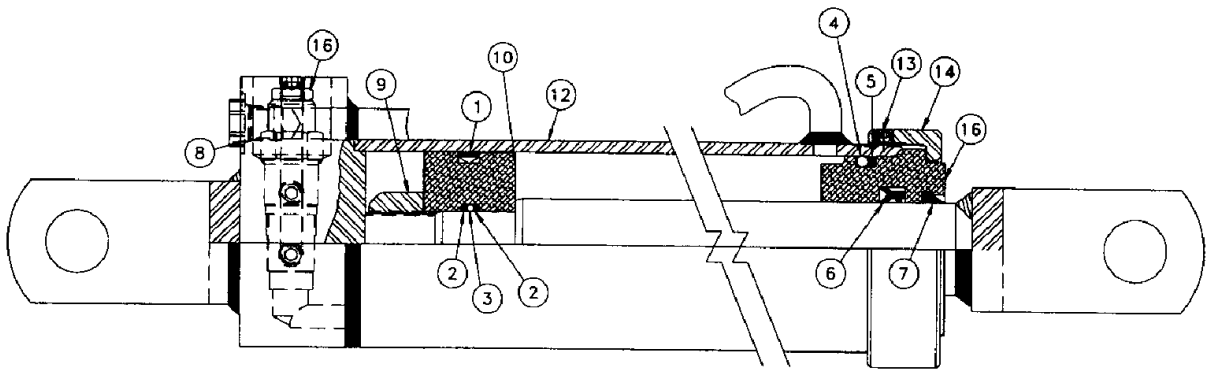


SN 233-

Shuttle Valve Components 3 Spool Fig 3-48r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		NSS	VALVE BODY	1	
2		224476005	CARTRIDGE-VALVE	2	
3		251061003	SOLENOID VALVE COIL-2 POST	2	
		207418009	REPAIR KIT-SOLENOID VALVE		
4		277838003	SHUTTLE VALVE	1	
		277838005	REPAIR KIT-SHUTTLE VALVE		
5		277838007	PRESSURE FLOW CONTROL VALVE	1	
		277838009	REPAIR KIT		PRESSURE FLOW CONTROL VALVE
6		277838011	RELIEF VALVE	1	
		277838013	REPAIR KIT-RELIEF VALVE		
7		277838015	#2 EPCO PLUG	6	
8	*	279780002	PRESSURE FLOW CONTROL VALVE	1	
	*	277838009	REPAIR KIT PRESSURE FLOW CONTROL VALVE	1	
	*	277838001	VALVE-3 SPEED SHUTTLE		SN192-232, INC REF. 1-7
	*	279780001	VALVE-3 SPEED SHUTTLE		SN233-, INC. REF. 1-4 & 6-8

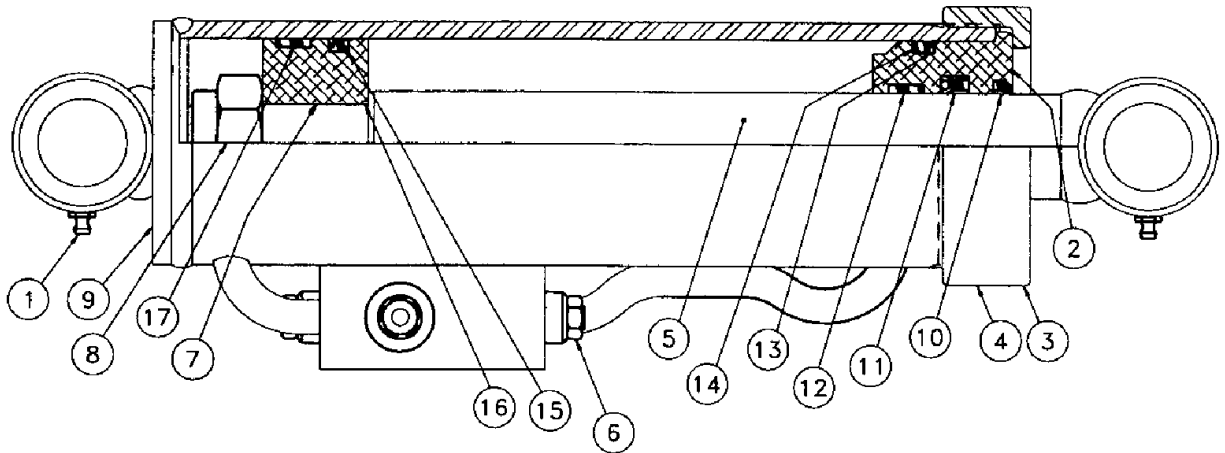
Hyd. Cyl. Comp. 3 x 40 Fig 3-49



Hyd. Cyl. Comp. 3 x 40 Fig 3-49

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		200780001	UNI-RING	1	
2		208331001	RING-BACK UP	2	
3		208332001	O-RING	1	
4		218021011	O-RING	1	
5		209057001	WASHER-BACK UP	1	
6		209058001	U CUP-DOUBLE LIP	1	
7		200808001	WIPER 52-1500	1	
8		223998003	O-RING	2	
9		218496007	LOCK NUT	1	
10		209060001	PISTON	1	
11		224278003	BARREL ASSEMBLY	1	
12		224278005	ROD ASSEMBLY	1	
13		219125011	NT SH SET SCREW	1	
14		218496013	THREADED CAP	1	
15		207403005	CAP HEAD-THREAD	1	
16		58035007	REPAIR KIT	1	
		202529001	VALVE CART. - CNTR BALANCE	1	
		224278001	CYL 3"X40 XCX W/ CB VALVE COMPLETE		INC. REF. 1-16
		207403009	SEAL KIT		INC. REF. 1-7

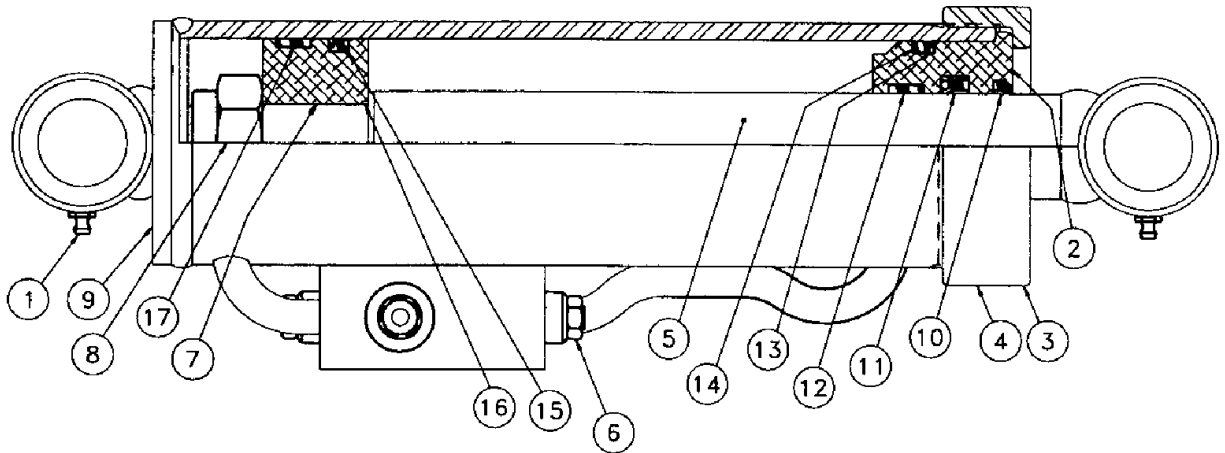
Hyd. Cyl. Comp. 4 1/2 x 12 Fig 3-50



Hyd. Cyl. Comp. 4 1/2 x 12 Fig 3-50

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		224445007	GREASE FITTING	2	
2		224445009	HEAD GLAND	1	
3		99859005	SCREW-LG SET .313-18 X .25	1	
4		224445011	HEAD GLAND CAP	1	
5		224445003	ROD WELDMENT	1	
6		94488033	VALVE-CHECK	2	
7		224445013	PISTON	1	
8		110188007	LOCKNUT-1.125-12	1	
9		224445005	TUBE WELDMENT	1	
10		99541019	ROD WIPER	1	
11		99541015	POLYPACK	1	
12		224445015	WEAR BAND	1	
13		215657023	BACKUP RING	1	
14		215657019	O-RING	1	
15		221729007	T-SEAL	1	
16		110188013	O-RING	1	
17		215657009	WEAR BAND	1	
		224445017	SEAL KIT		INC. REF.10-17
		224445001	CYLINDER-3X12 HYD. COMPLETE		INC. REF. 1-17

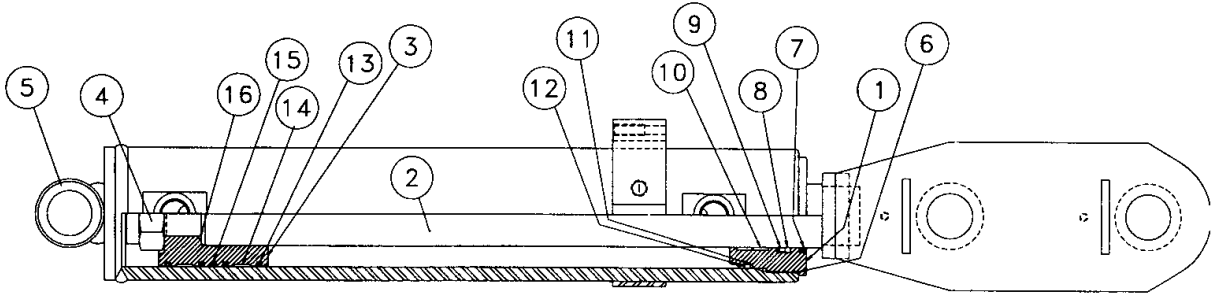
Hyd. Cyl. Comp. 3 x 12 Fig 3-51



Hyd. Cyl. Comp. 3 x 12 Fig 3-51

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		224445007	GREASE FITTING	2	
2		224445009	HEAD GLAND	1	
3		99859005	SCREW-LG SET .313-18 X .25	1	
4		224445011	HEAD GLAND CAP	1	
5		224445003	ROD WELDMENT	1	
6		94488033	VALVE-CHECK	2	
7		224445013	PISTON	1	
8		110188007	LOCKNUT-1.125-12	1	
9		224445005	TUBE WELDMENT	1	
10		99541019	ROD WIPER	1	
11		99541015	POLYPACK	1	
12		224445015	WEAR BAND	1	
13		215657023	BACKUP RING	1	
14		215657019	O-RING	1	
15		221729007	T-SEAL	1	
16		110188013	O-RING	1	
17		215657009	WEAR BAND	1	
		224445001	CYLINDER-3X12 HYD. COMPLETE		INC. REF. 1-17
		224445017	SEAL KIT		INC. REF.10-17

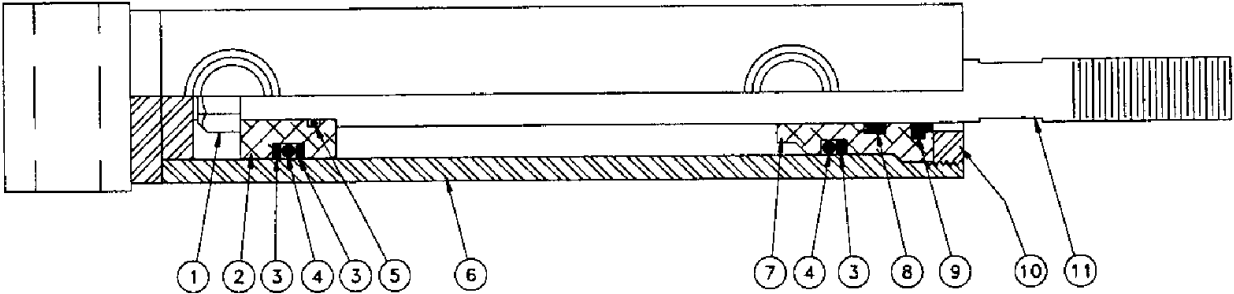
Hyd. Cyl. Comp. 5 x 96 w/ 3 Rod Fig 3-52



Hyd. Cyl. Comp. 5 x 96 w/ 3 Rod Fig 3-52

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		224478027	HEAD GLAND	1	
2		224478003	ROD WELDMENT	1	
3		224478007	PISTON	1	
4		114215007	LOCKNUT-2"-12	1	
5		224478005	TUBE WELDMENT	1	
6		224478009	O-RING	1	
7		224478011	CANNED ROD WIPER	1	
8		224478013	MODULAR BACKUP	1	
9		224478015	POLY PAK	1	
10		224478017	WEAR BAND	2	
11		89540011	WASHER-BACKUP	1	
12		85777019	O-RING	1	
13		224478019	CAST IRON RING	4	
14		85777029	WEARBAND	2	
15		224478021	PSP SEAL	1	
16		224478023	O-RING	1	
		224478001	CYLINDER-5X96 COMPLETE		INC. REF. 1-16
		224478025	SEAL KIT		INC. REF. 6-16

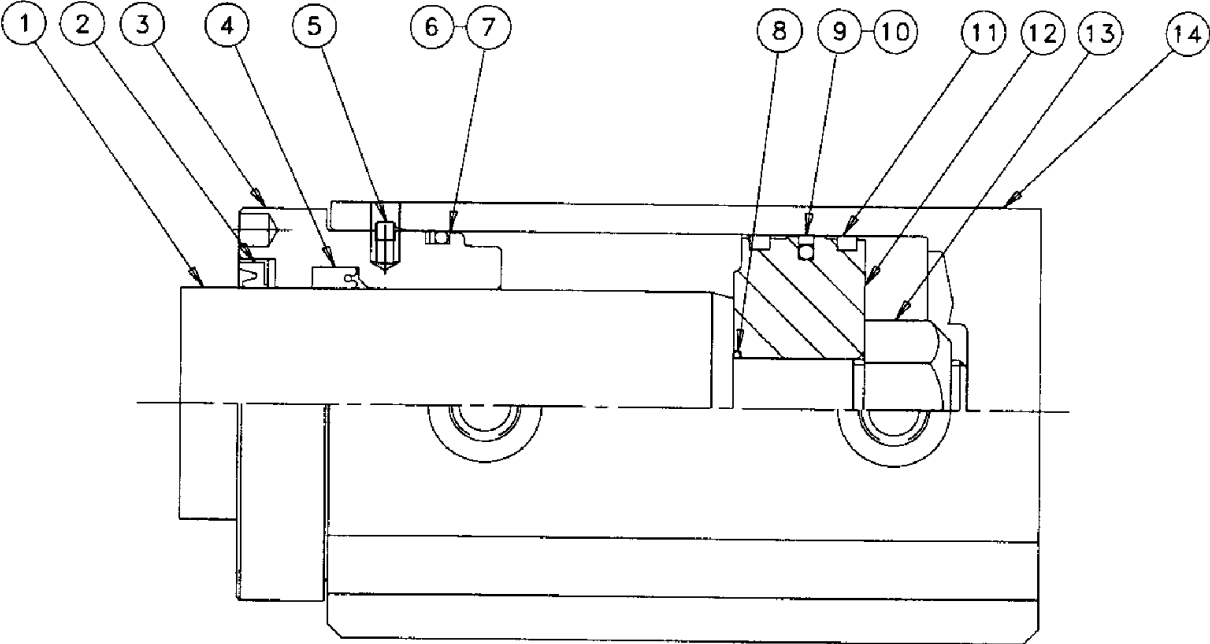
Hyd. Cyl. Comp. 1 x 3 1/2 Fig 3-53



Hyd. Cyl. Comp. 1 x 3 1/2 Fig 3-53

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		234359003	NUT	1	
2		234359005	PISTON	1	
3		68094057	WASHER-BACK-UP	3	
4		68094055	O-RING	2	
5		1749025	SEAL-O RING	1	
6		234359017	BARREL	1	W/CLEVIS AND PORTS
7		234359007	HEAD	1	
8		234359009	SEAL-ROD	1	
9		234359011	SEAL-DUST	1	
10		234359013	COLLAR	1	
11		234359015	SHAFT	1	
		234359001	CYLINDER-1X3 1/2		INC. REF. 1-11
		234359019	REPAIR KIT		INC. REF. 3, 4, 5, 8 & 9

Hyd. Cyl. Comp. Dual Fig 3-54



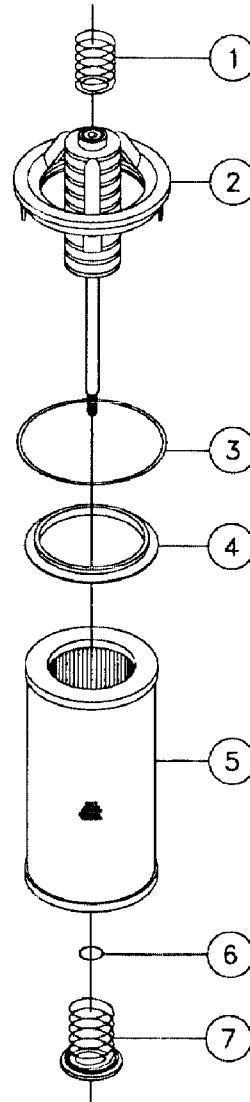
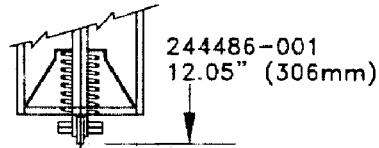
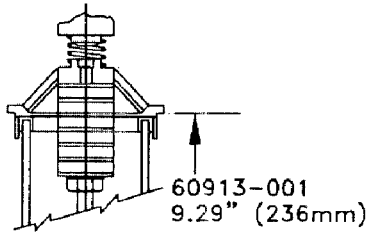
Hyd. Cyl. Comp. Dual Fig 3-54

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		234498003	SHAFT	2	
2		234498005	WIPER	2	
3		234498007	HEAD	2	
4		234498009	U-CUP	2	
5		234498011	RETAINER WIRE	2	
6		234498013	BACK-UP WASHER	2	
7		234498015	O-RING	2	
8		234498017	O-RING	2	
9		234498019	PISTON SEAL	2	
10		234498021	O-RING	2	
11		234498023	WEAR RING	4	
12		234498025	PISTON	2	
13		234498027	LOCKNUT	2	
14		234498029	CASE	1	
		234498001	CYLINDER-DUAL HYD.		INC. REF. 1-14
		234498031	SEAL KIT		INC. REF. 2, 4-11

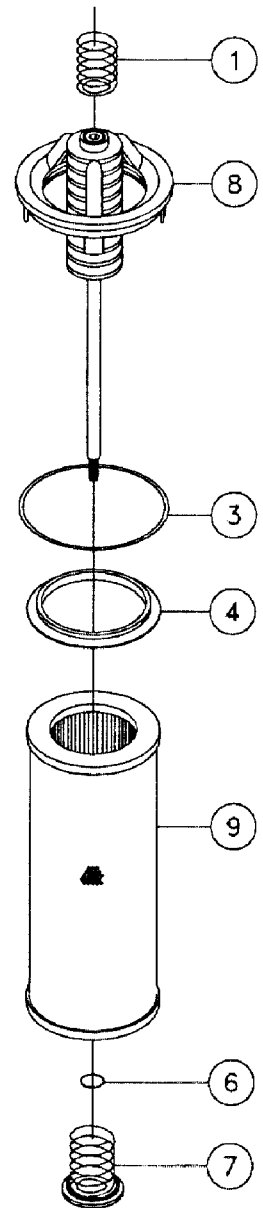
Hyd. Filter Components Fig 3-55r03

Revised February 2000 due to update in illustration & parts list. Changed/added parts marked with *.

NOTE: WHEN IK854 WAS INSTALLED, 244486-001 WAS PART OF THE IK, SO OLDER UNITS MAY HAVE 244486-001 INSTALLED. REFER TO ILLUSTRATION BELOW FOR A QUICK REFERENCE.



609133-001
(SN 101-216)



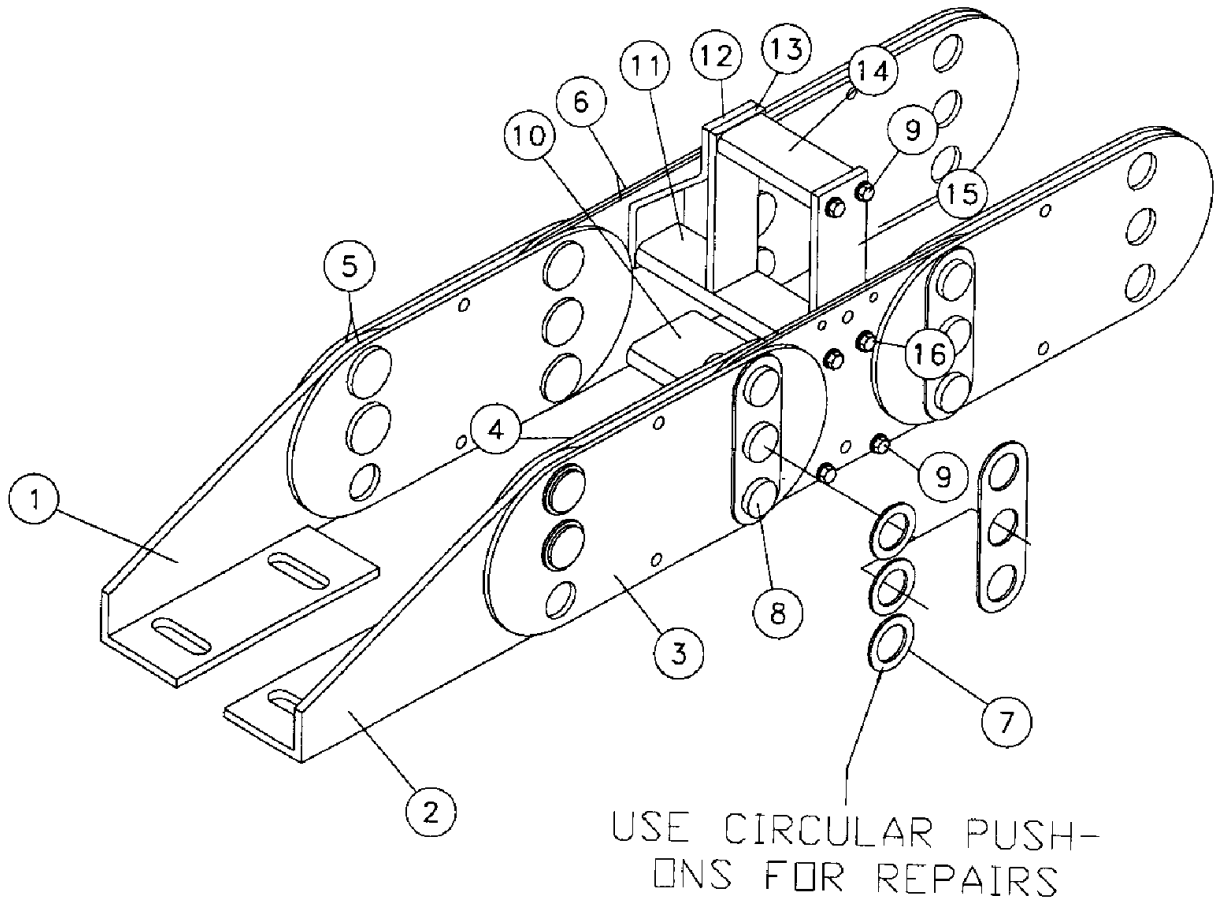
244486-001
(SN 217-)

Hyd. Filter Components Fig 3-55r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		89671005	SPRING	1	
2		89671009	INSERT ASSEMBLY	1	
3		89671007	SEAL	1	
4		89671011	BYPASS GASKET	1	
5		609133003	ELEMENT-FILTER	1	
6		89671013	ELEMENT-O-RING	1	
7		89671015	BYPASS ASSEMBLY	1	
8	*	244486005	INSERT ASSEMBLY	1	
9	*	244486003	FILTER ELEMENT	1	
	*	609133001	FILTER ASSEMBLY		INC. REF. 1-7

Hose Carrier Components Fig 3-56r03

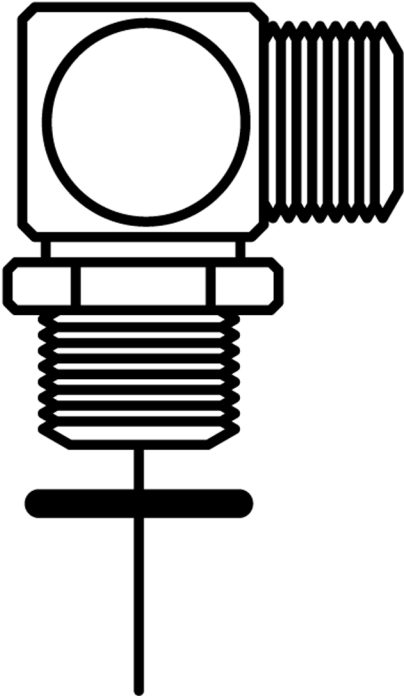
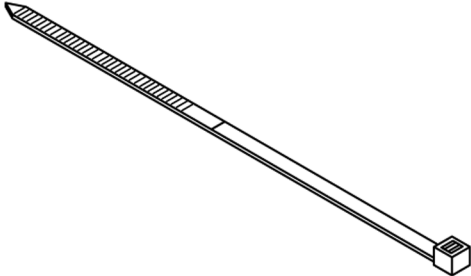
Revised July 1999 due to change of hose reels. Figure is new.



Hose Carrier Components Fig 3-56r03

REF. NO.	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		234256003	PT45E MOUNTING BRACKET AY (L)	2	
2		234256005	PT45E MOUNTING BRACKET AY(R)	2	
3		234256007	PT45E OUTFR LINK W/VERMEERLOGO	44	
4		234256009	PT45E OUTER LINK	44	
5		234256011	PT45E ANTI-FRICTION DISC	176	
6	*	278101003	PT45E INNER LINK 15.0R VERMEER	84	Corrected part number.
7		234256015	PT45E CIRCULAR PUSH-ON	252	
8		234256017	PT45E HINGE PIN-PUSH ON FASTNR	252	
9		215252017	BOLT-WHIZ LOCK .250-20 X .620	124	
10		278101007	PT45E ALUMINUM CHANNEL 5.288 LG	21	
11		278101009	PT35E ALUMINUM CHANNEL 5.028 LG	20	
12		278101011	CARRIER PLATE ANGLE	20	
13		278101013	STEEL SEPERATOR	20	
14		278101015	PT35E ALUMINUM CHANNEL 2.825 LG	20	
15		278101017	CARRIER SIDE PLATE	20	
16		278101019	BOLT WHIZ-LOCK #10-32X.750 LG	120	
17		278101021	PT35E ALUMINUM CHANNEL 5.288 LG	120	NOT SHOWN
		278101001	HOSE CARRIER 15.0X5.0		INC. ALL ITEMS LISTED IN FIGURE

Miscellaneous Supplies Fig 3-57

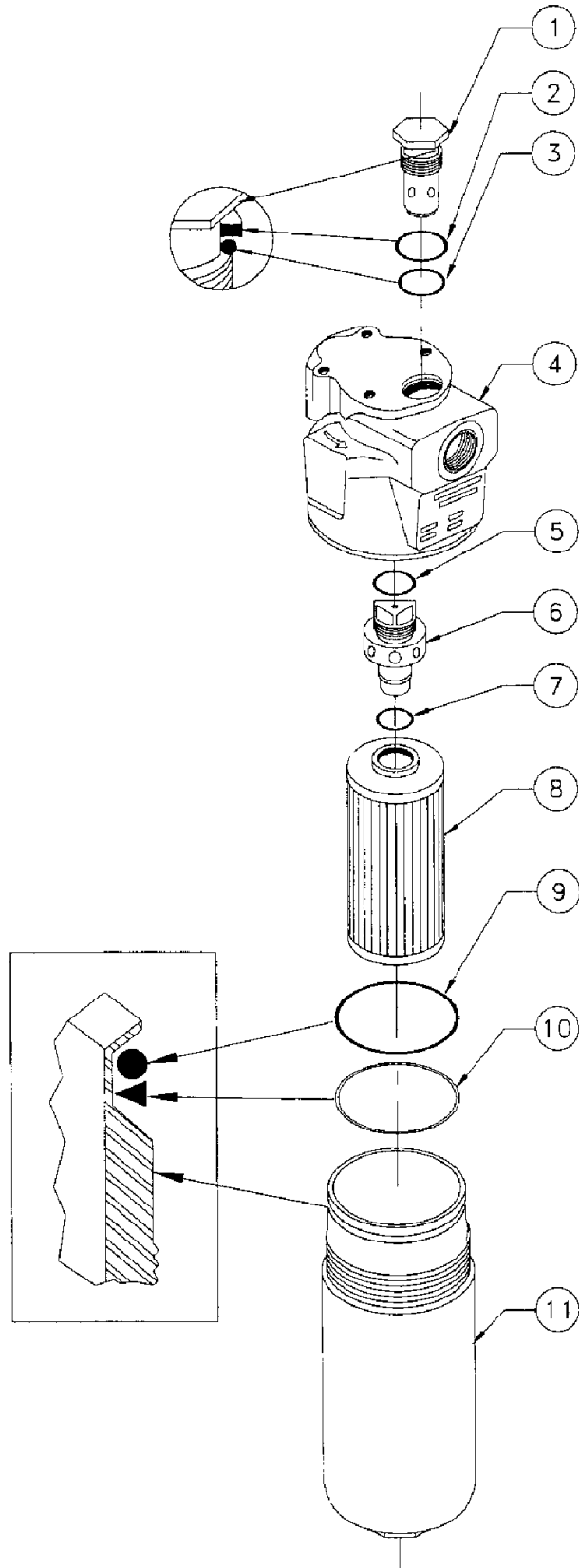


Miscellaneous Supplies Fig 3-57

REF NO.	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	May, 2005		Update in Illustration
			CORDURA SLEEVES		
		83726001	INSIDE DIAMETER .71		
		66094001	INSIDE DIAMETER 1.22		
		37264001	INSIDE DIAMETER 1.42		
		69129001	INSIDE DIAMETER 1.59		
		53840001	INSIDE DIAMETER 1.81		
		53841001	INSIDE DIAMETER 2.37		
			SPECIFY LENGTH WHEN ORDERING SLEEVES		
			TIE STRAPS		
		78657001	LENGTH 4 IN.		
		59634001	LENGTH 8 IN.		
		58151001	LENGTH 15 IN.		
			SPECIFY LENGTH WHEN ORDERING TIE STRAPS		
			O-RINGS		
		78185027	SAE FITTING SIZE 4M		REPLACEMENT O-RING
		53649081	SAE FITTING SIZE 5M		REPLACEMENT O-RING
		59088057	SAE FITTING SIZE 6M		REPLACEMENT O-RING
		59088053	SAE FITTING SIZE 8M		REPLACEMENT O-RING
		792029	SAE FITTING SIZE 10M		REPLACEMENT O-RING
		78518037	SAE FITTING SIZE 12M		REPLACEMENT O-RING
		64082019	SAE FITTING SIZE 14M		REPLACEMENT O-RING
		81580001	SAE FITTING SIZE 16M		REPLACEMENT O-RING
		93316001	SAE FITTING SIZE 20M		REPLACEMENT O-RING
			O-RINGS LISTED ARE 90 DUROMETER		

Oil Filter Components Fig 3-58r03

Revised February 1999 due to addition of figure to manual.

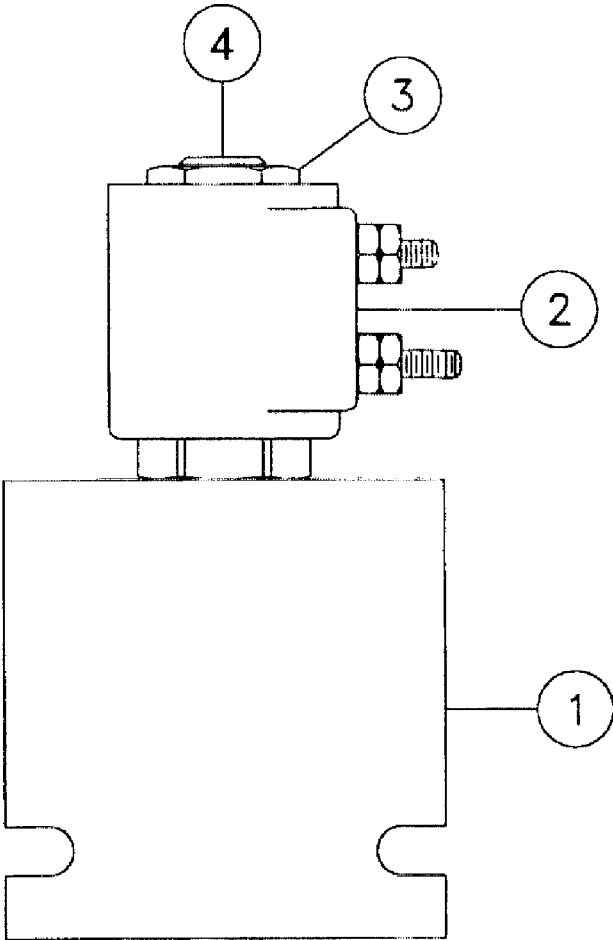


Oil Filter Components Fig 3-58r03

REF NO.	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		244560003	VALVE-BY-PASS		
2		244560005	RING-BY-PASS BACKUP		
3		75353003	SEAL-HEAD/BY-PASS HOUSING		
4		244560007	HEAD		
5		75353013	SEAL-HEAD/MANIFOLD		
6		244560009	VALVE-REVERSE FLOW		
7		244560011	SEAL-ELEMENT TO ADAPTER		
8		244560013	ELEMENT-FILTER		
9		244560015	SEAL-HEAD/BOWL		
10		224400005	RING-HEAD TO BOWL		
11		244560017	BOWL		
		244560001	FILTER-HIGH PRESSURE		INC. ALL ITEMS IN THIS FIGURE
			Revised February 1999 due to addition of figure to manual.		

Solenoid Valve Components - SN221- Fig 3-59

Revised February 2000 due to addition of figure to manual.

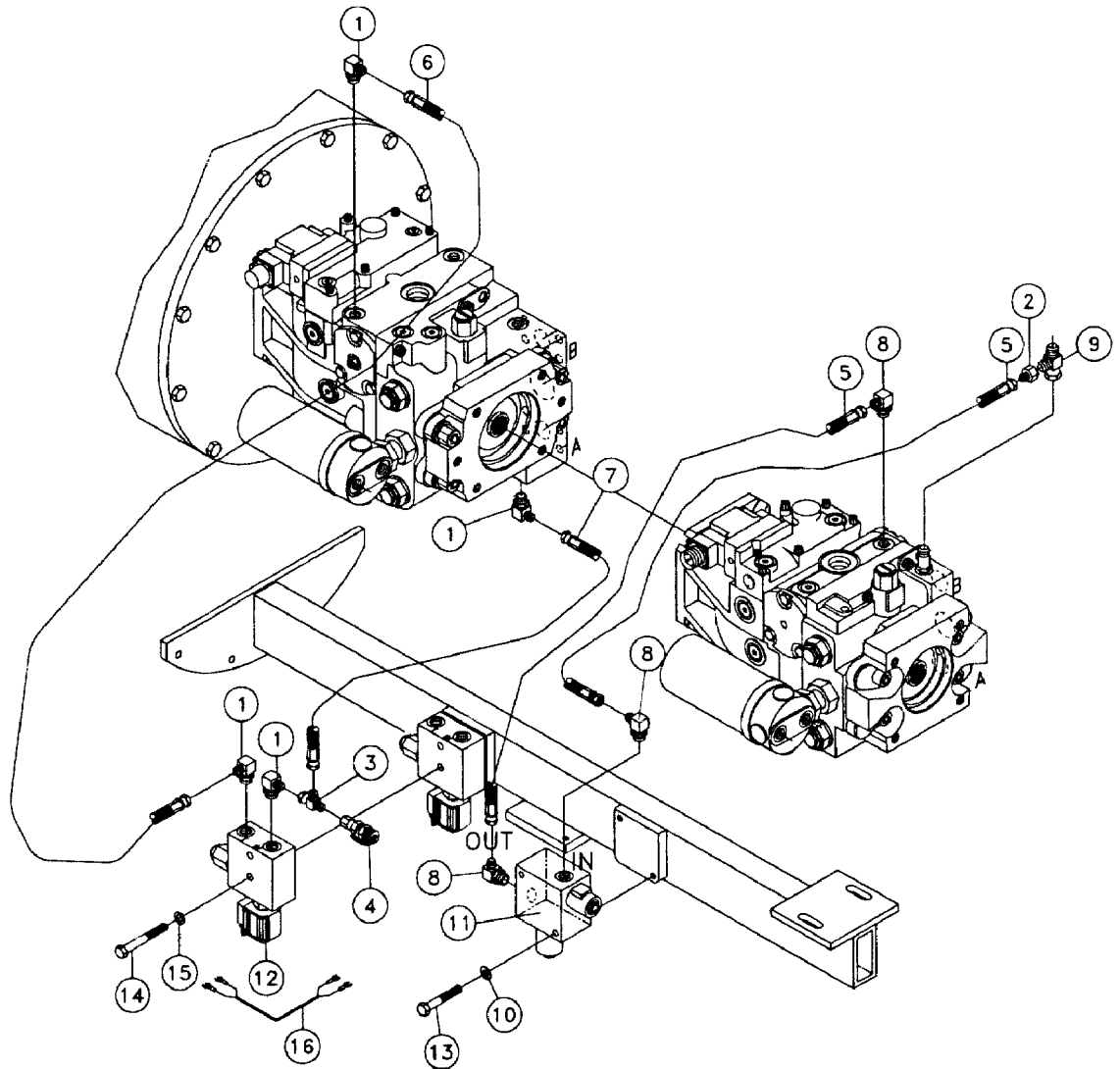


Solenoid Valve Components - SN221- Fig 3-59

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		244725003	BODY-VALVE	1	
2		244725005	COIL	1	
3		244725007	NUT-COIL	1	
4		244725009	CARTRIDGE-SOLENOID	1	
		244725011	SEAL KIT	1	
		244725001	VALVE-2 POST 4 WAY		INC. ALL ITEMS IN THIS FIGURE

Rockfire Valve - SN236- Fig 3-60

Revised February 2000 due to addition of figure to manual.

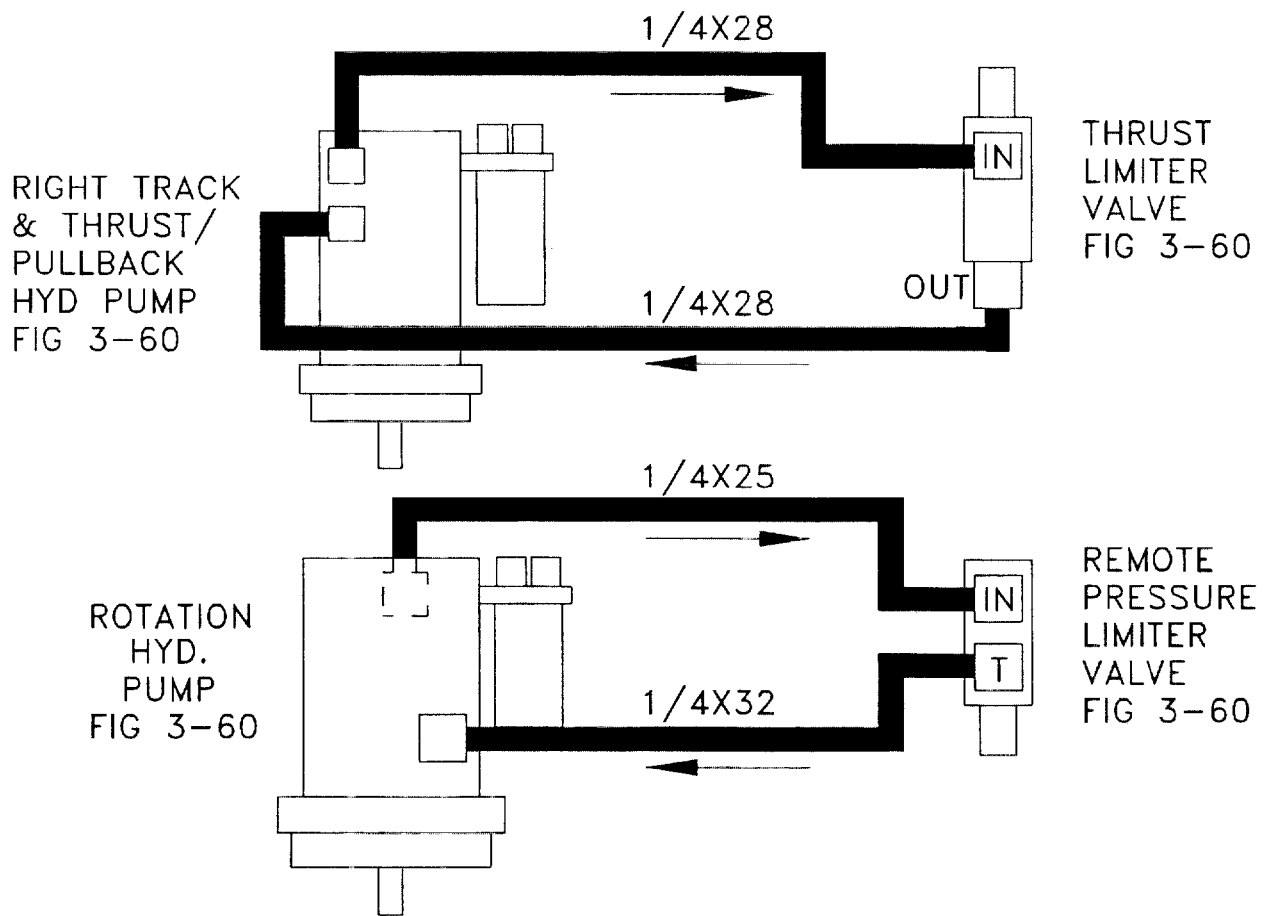


Rockfire Valve - SN236- Fig 3-60

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		57950001	FITTING-6M X 4JIC 90 DEG	4	
2		59928001	6F JIC X 4M JIC ST REDUCER	1	
3		60248001	TEE-4M JIC X 4M JIC X 4FS JIC	1	
4		83015001	FITTING-4F JIC DIAGNOSTIC	1	
5		53843181	HOSE-1/4X28 4FS JIC 3000 PSI	2	
6		53843559	HOSE-1/4X32 4FS JIC 3000 PSI	1	
7		53843325	HOSE-1/4X25 4FS JIC 3000 PSI	1	
8		59423001	FIT-4M JIC X 4M ADJ. 90 DEG. ELBOW	3	
9		59427001	TEE-6M JIC BCH 6FS JIC X 6M JIC	1	
10		235714001	WASHER-5/16 SAE HARD ZINC PLTD	2	
11		250131001	VALVE-THRUST LIMITER	1	BREAKDOWN FIG. 3-63
12		250120001	VALVE-REMOTE PRES. LIMITER	1	BREAKDOWN FIG. 3-62
13		244147001	BOLT-5/16-18X2 1/4 GR 8 ZINC PL	1	
14	*	16114034	BOLT-3/8-16X3 1/2 HEX HD GR 8	2	
15	*	235713001	WASHER-3/8" SAE HARD ZINC	2	
16	*	249979001	HARNES-THRUST LIMITER	1	

Hyd. Comp. Loc. Diagram - Rockfire Fig 3-61

Revised February 2000 due to addition of figure to manual.

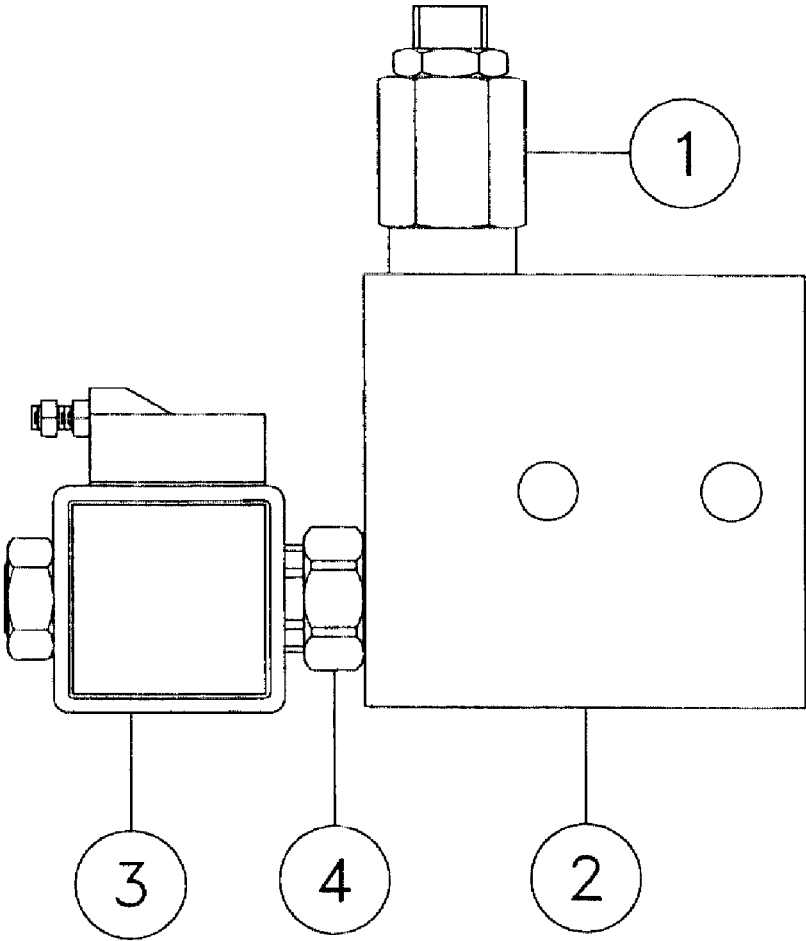


Hyd. Comp. Loc. Diagram - Rockfire Fig 3-61

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
			Revised February 2000 due to addition of figure to manual.		

Pressure Limiter Valve Components - Rockfire Fig 3-62

Revised February 2000 due to addition of figure to manual.

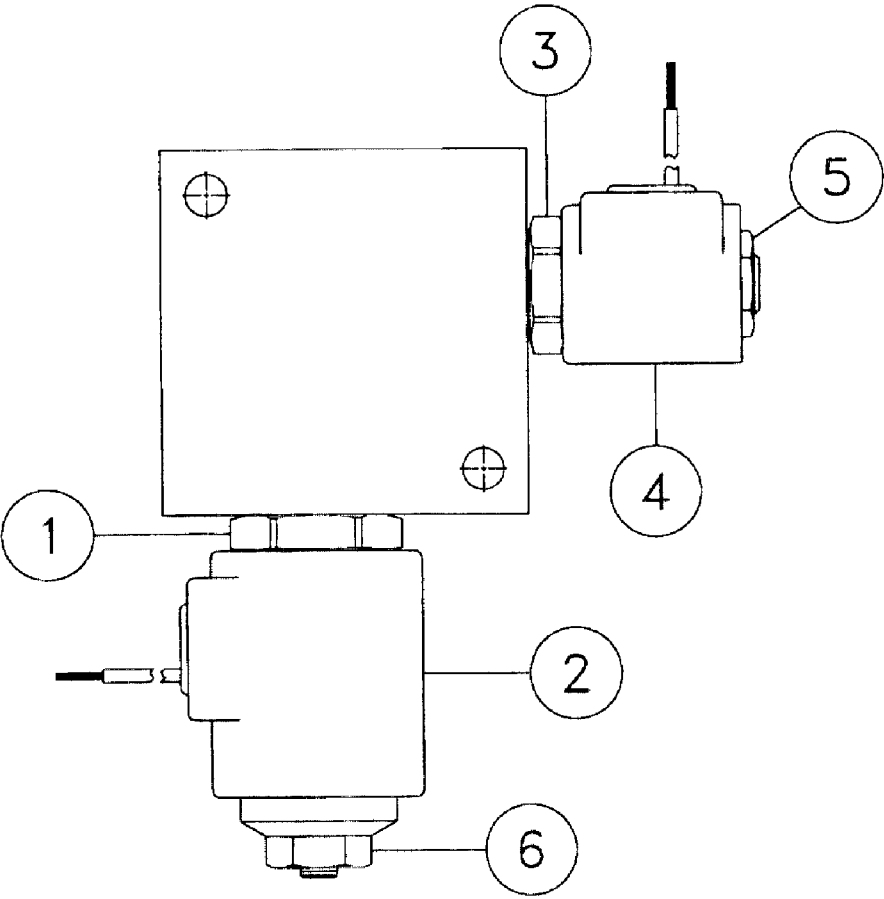


Pressure Limiter Valve Components - Rockfire Fig 3-62

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		250120003	VALVE-RELIEF	1	
		122618001	SEAL-KIT SOLENOID VALVE	1	
2		NSS	BODY-VALVE	1	
3		251063001	COIL	1	
4		250120005	VALVE-SOLENOID	1	
		228114007	SEAL KIT	1	
		250120001	VALVE-PRESSURE LIMITER		INC. ALL ITEMS IN FIGURE

Thrust Limiter Valve Components - Rockfire Fig 3-63

Revised February 2000 due to addition of figure to manual.

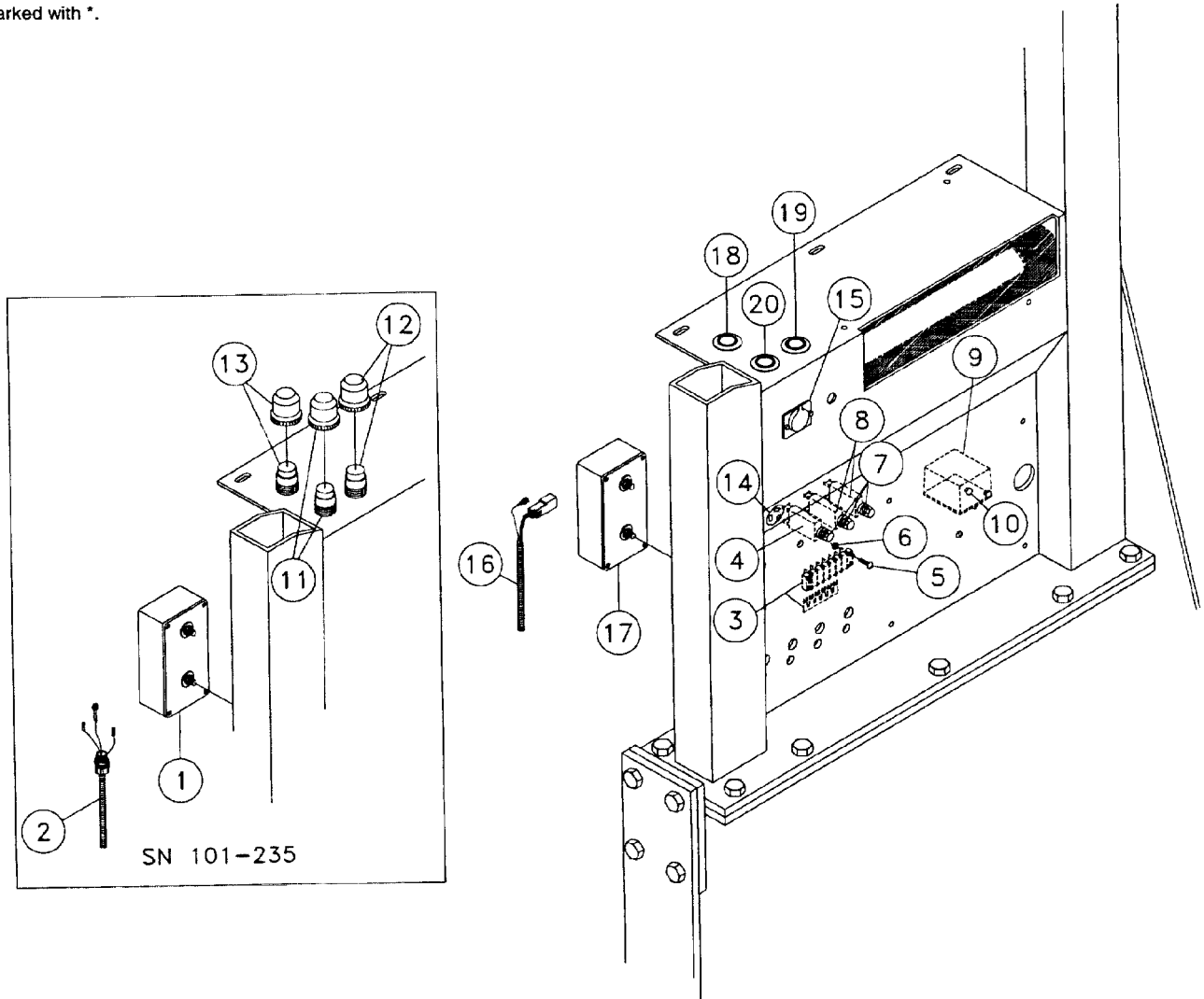


Thrust Limiter Valve Components - Rockfire Fig 3-63

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		250131003	CARTRIDGE-RELIEF W/PILOTED SPOOL	1	
		151954001	SEAL KIT	1	
2		251112005	COIL-10DL 12V/SPL	1	
3		250131005	CARTRIDGE-2-WAY NC HP	1	
		278950003	SEAL KIT	1	
4		251117009	COIL-#8	1	
5		244725007	NUT-COIL	1	
6		250131007	NUT-COIL	1	
		250131001	VALVE-THRUST LIMITER	1	INC. ALL ITEMS IN FIGURE

Rops Control Panel Fig 4-1r02

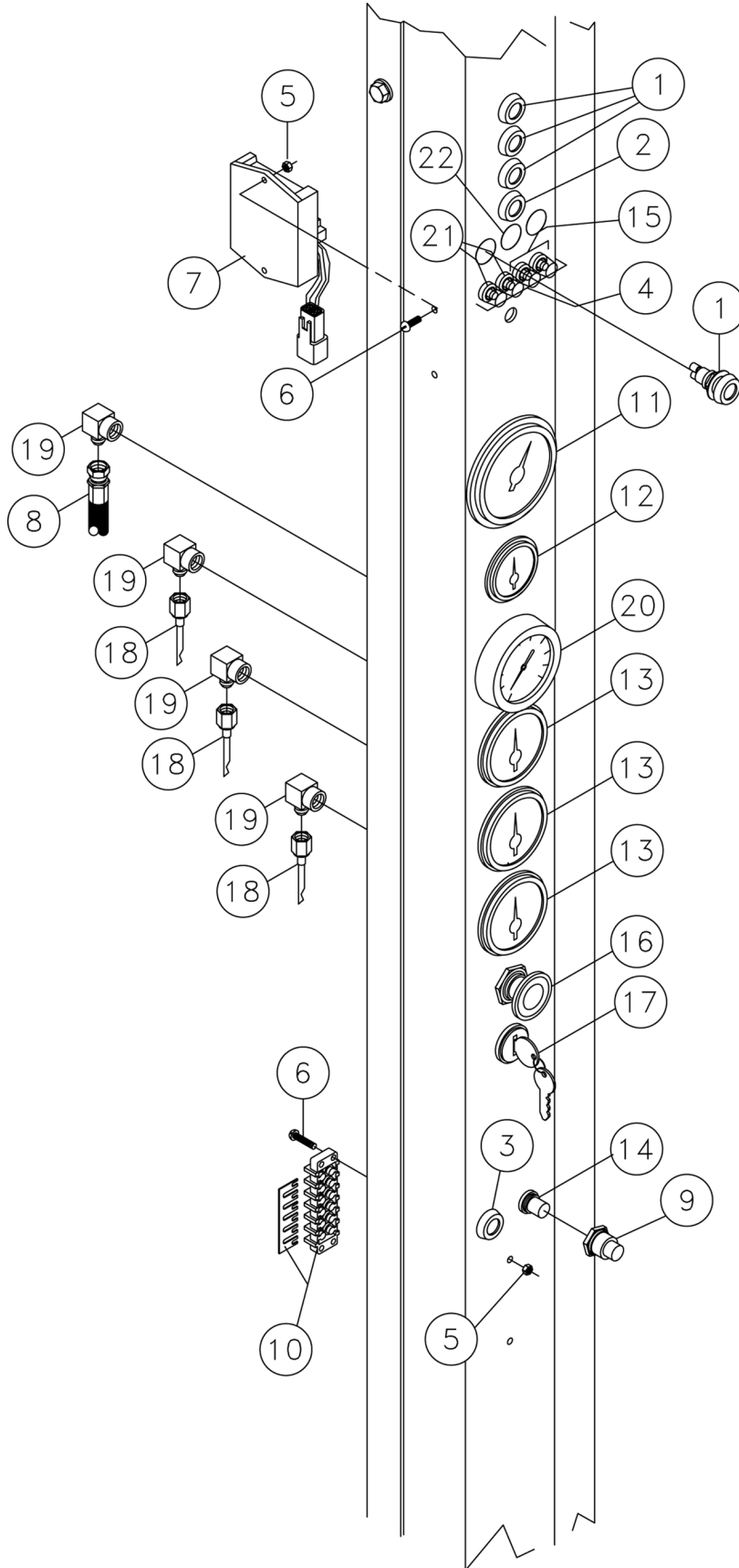
Revised February 2000 due to update in illustration & parts list. Added parts marked with *.



Rops Control Panel Fig 4-1r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		217231001	ZAP ALERT-CURRENT SENSE	1	SN101-235
2		224922001	COIL-CURRENT	1	W/17" COAX CABLE, SN101-235
3		251991001	TERMINAL 6 POLE W/JUMPER	1	
4		72082001	BREAKER 45-700 514 DD22 AMP	1	
5		1802010	BOLT-3/16" X 1" NC STOVE	2	
6		400001	NUT-3/16 NC HEX	2	
7		89597001	COVER-BREAKER SWITCH	3	
8		78107001	BREAKER-CIRCUIT 10AMP	2	
9		98937001	SWITCH-MURPHY 12V/30 SEALED	1	
10		1802006	BOLT-10-24 X 3/4 RND HD STOVE	2	
11		215991001	STRIKE ALERT TEST BUTTON ASSY	1	SN101-235
		215993001	BOOT-GREEN RUBBER	1	
		215994001	BLOCK-N.O. CONTACT	1	
		215992001	BUTTON-GREEN FLUSH CONTACT	1	
12		215995001	STRIKE ALERT RESET BUTTON ASSY	1	SN101-235
		215996001	BUTTON-BLACK EXTENDED CONTACT	1	
		215997001	BOOT-BLACK RUBBER	1	
		215998001	BLOCK-N.C. CONTACT	1	
13		215992001	BUTTON-GREEN FLUSH CONTACT	1	SN101-235
		215993001	BOOT-GREEN RUBBER	1	
		904423001	CONTACT BLOCK	1	
		226209001	BUTTON ASSY-CURRENT TEST	1	
14		904346001	BUZZER	1	
		905001001	BOLT-8-32 X 2 STOVE	2	
		904995001	WASHER-8 INTERNAL STAR	2	
		399-001	NUT-8-32 HEX	2	
15		236473001	OUTLET-12 V STAINLESS	1	
		57200001	SCREW-#8-32X1/2 RND. HD. MACH.	2	
		69759001	LOCK NUT-#8-32 NYLON INSERT PL	2	
16	*	276856001	COIL-CURRENT W/17' COAX CABLE	1	SN236-
17	*	281523001	ZAP ALERT CURRENT SENSE	1	SN236-
18	*	277697001	SWITCH-PUSH BUTTON ZAP ALERT CURRENT TEST	1	SN236-
19	*	277695001	SWITCH-PUSH BUTTON ZAP ALERT RESET	1	SN236-
20	*	277696001	SWITCH-PUSH BUTTON ZAP ALERT VOLTAGE TEST	1	SN236-

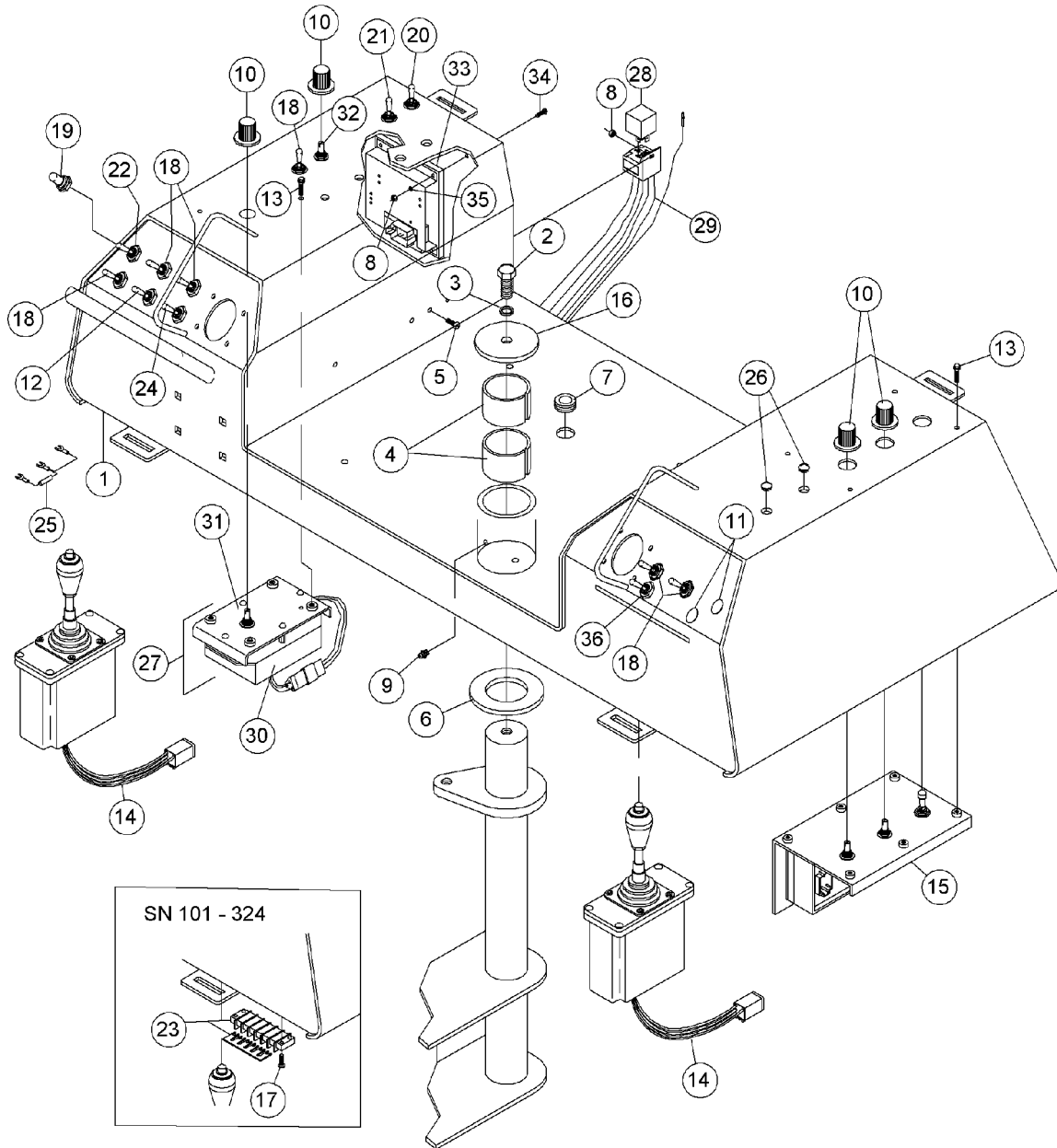
Rops Control Panel (Continued) Fig 4-2r05



Rops Control Panel (Continued) Fig 4-2r05

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		27148001	LIGHT-RED WARNING	A/R	
		70889001	BULB	A/R	
2		81374001	LIGHT-GREEN WARNING	1	
3		86581001	LIGHT-WARNING	1	AMBER
4		89597001	COVER-BREAKER SWITCH	4	
5		400001	NUT-3/16 NC HEX	4	
6		1802010	BOLT-3/16" X 1" STOVE	4	
7		231248001	RELAY-LOW VOLTAGE SENSING	1	SN101-235
		251672001	ELECTRIC MODULE-DSR CONTROL	1	SN236-
8		53843133	HOSE-1/4" X 230" 4FS JIC ST/ST 100R1	1	SN101-312
		53843607	HOSE-1/4 X 258 4FS JIC 3000 PSI	1	SN313-
9		90622001	COVER-PUSH BUTTON SWITCH 5/8-32	1	
10		251991001	TERMINAL 6 POLE W/ JUMPER	1	
11		98933001	GAUGE-TACHOMETER O-3000 RPM	1	
12	*	180006564	GAUGE-WATER TEMP MAXIMA	1	PN Changed
13		77964001	GAUGE-CO-1015.5-CBMUTNV	3	
14		66816001	SWITCH ASSY-	1	
15		72079001	BREAKER 5 AMP	2	
16		86575001	OPERATOR-PUSH/PULL W/O BUTTN	1	
		904563001	E-STOP LENS	1	
		904423001	CONTACT BLOCK	1	
17	*	229801001	SWITCH-IGNITION (4 TERMINAL)	1	PN Changed
	*	229802001	KEY-IGNITION SWITCH (SET OF 2)	1	PN Changed
18		244520001	HOSE-078 X 136 4FS JIC ST	3	
19		81665001	FITTING-1/4F X 4M JIC 90 DEG.	4	
20		234343001	GAUGE-PRESSURE 0-2000 PSI	1	W/ GASKET
21		78107001	BREAKER-10AMP	2	
22		97389009	PLUG-3/4 BLACK DOME	A/R	

Control Panel Fig 4-3r04

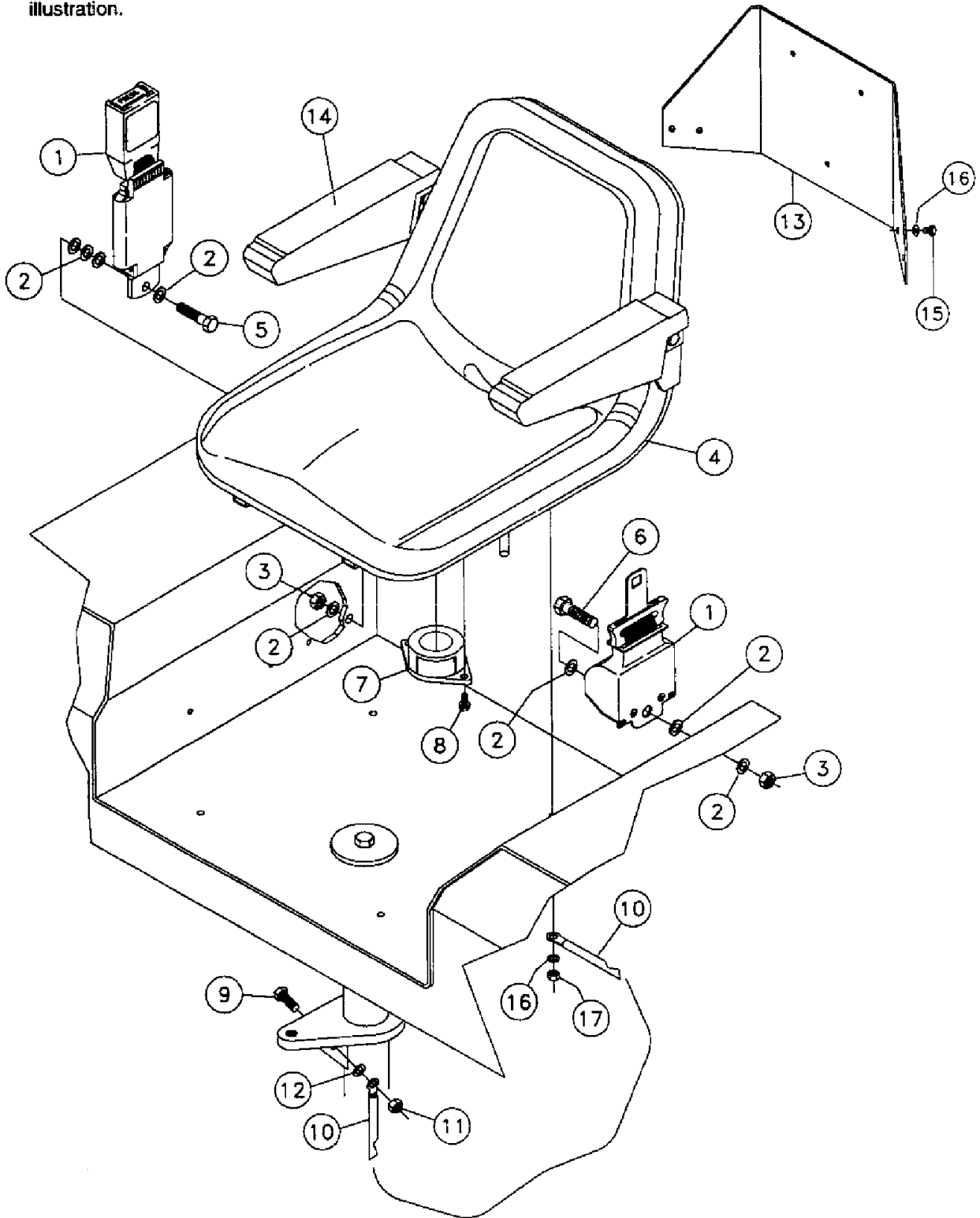


Control Panel Fig 4-3r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		216741003	OPERATORS STATION ASSY	1	INC. REF. 4 & 9
2		358010	BOLT-1/2-13X1" GRADE#5 HEX	1	
3		480011	WASHER-1/2 S/T LOCK	1	
4		85790003	BUSHING-SPRING 2 1/4X2 X 1 1/2	2	
5		1802006	BOLT-10-24X3/4 RND HD STOVE	2	
6		215200001	WASHER-THRUST	1	
7		1865015	GROMMET-BLACK/5/8ID-3/16 GR.	1	
8		400001	NUT-3/16 NC HEX	5	
9		598001	ZERK-1/4" NF ST GREASE	1	
10		78114001	CONTROL KNOB	4	
11	*	97389007	PLUG-9/16" BLACK DOME	A/R	QTY Changed
12		210082001	SWITCH-3 POSITION TOGGLE	1	
13		103202001	SCREW-1/4-20X1/2 STH MACHINE	6	
14		234876001	HANDLE-CONTROL	2	BREAKDOWN FIG. 4-14
15		277806001	BOX-DRILL/TRANSPORT M2907	1	
16		53276001	WASHER-JACKSHAFT END	1	
17	*	1802006	BOLT-10-24 X 3/4 RND HD STOVE	4	QTY Changed SN101-324
18		67292001	SWITCH-TOGGLE 8500K9 SEALED	5	SN101-235
19		5537001	COVER-TOGGLE SWITCH	10	
20		78104001	SWITCH-DPDT MOMENTARY	1	
21		86579001	SWITCH-4 POLE ON-ON-ON	1	
22		86580001	SWITCH-DPST ON-ON	1	
23		251991001	TERMINAL 6 POLE W/ JUMPER	1	SN101-324
24		57938001	SWITCH-8510K2	1	SN101-231
24		78104001	SWITCH-DPDT MOMENTARY	1	SN232-
25	*	234322001	RESISTOR ASSY. -220 OHM 5 WATT	1	PN Changed
26		79942001	PLUG-15/32 BUTTON	2	
27		279322001	MODULE-WATER CONTROL	1	INC. REF. 30 & 31
28		219137001	RELAY BOSCH NO NC 20/30 AMP	1	
29		277779001	HARNESS WATER CONTROL	1	SN101-235 SN236- Water Harness Was Incorporated Into Main Harness
30		244682001	MODULE-WATER CONTROL (M2905)	1	
31		277826001	SWITCH-POTENTIOMETER	1	
32		244485001	POTENTIOMETER-10K W/ PLUG	1	SN236-
33		251043001	CONTROLLER-PWM VALVE DRIVE	1	SN236-
34		1802010	BOLT-3/16X1 NC STOVE	4	SN236-
35		480001	WASHER-3/16 ST LOCK	4	SN236-
36	*	214000001	SWITCH-TOGGLE SP ST MOM.	1	PN Added SN325-

Seat Fig 4-4r02

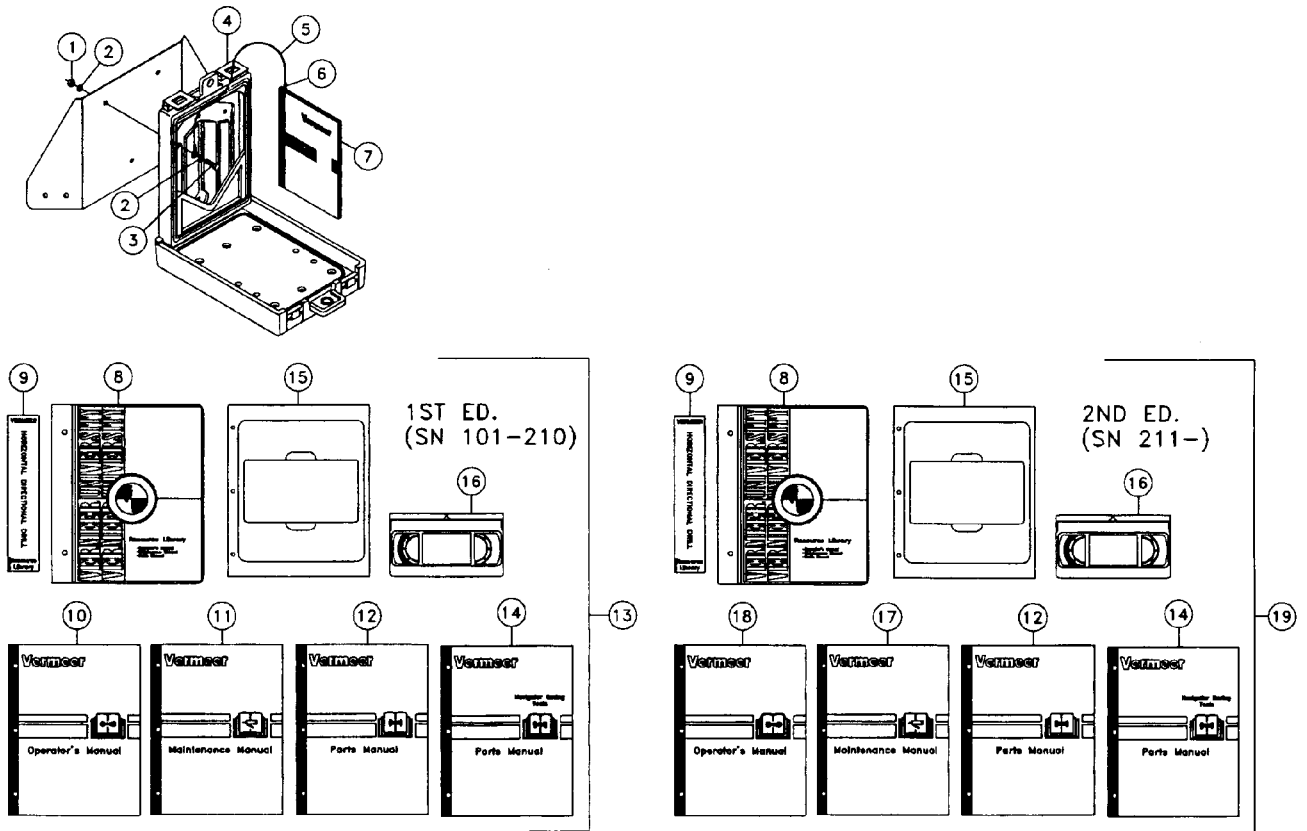
Revised July 1999 due to update in illustration.



Seat Fig 4-4r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		203254001	2"SEAT BELT F08015	1	
2		250540001	WASHER-7/16" HARDENED FLAT Y/Z	AR	
3		250509001	NUT-7/16 NC GR 8 TOP LOCK Y/Z	2	
4		219186001	SEAT	1	DOES NOT INC. ARM REST KIT
5		250507001	BOLT-7/16-14X1 3/4" GR 8 HEX Z/P	1	
6		250584001	BOLT-7/16-14X1 1/4" GR 5 HEX PLT	1	
7		219186003	SWITCH-SAFETY	1	
8		4474004	BOLT-5/16-18X1/2 FLG WHIZ	2	
9		235727001	BOLT-3/8-16X1 GR 8 HEX Z/P	1	
10		219380001	STRAP-GROUND 4 GA.X12" E-E	1	
11		235725001	NUT - 3/8-16 GR 8 ZINC PLTD	1	
12		235713001	WASHER-3/8 SAE HARD ZINC PLTD	1	
13		235683001	MOUNT-MANUAL BOX	1	
14		220238001	KIT-ARM REST	1	OPT., INC. MOUNTING HARDWARE
15		235740001	BOLT-5/16-18X1/2" GR 8 HEX Z/P	4	
16		235714001	WASHER-5/16" SAE HARD Z/P	8	
17		235741001	NUT-5/16"-18 GR 8 Z/P	4	
			Revised July 1999 due to update in illustration.		

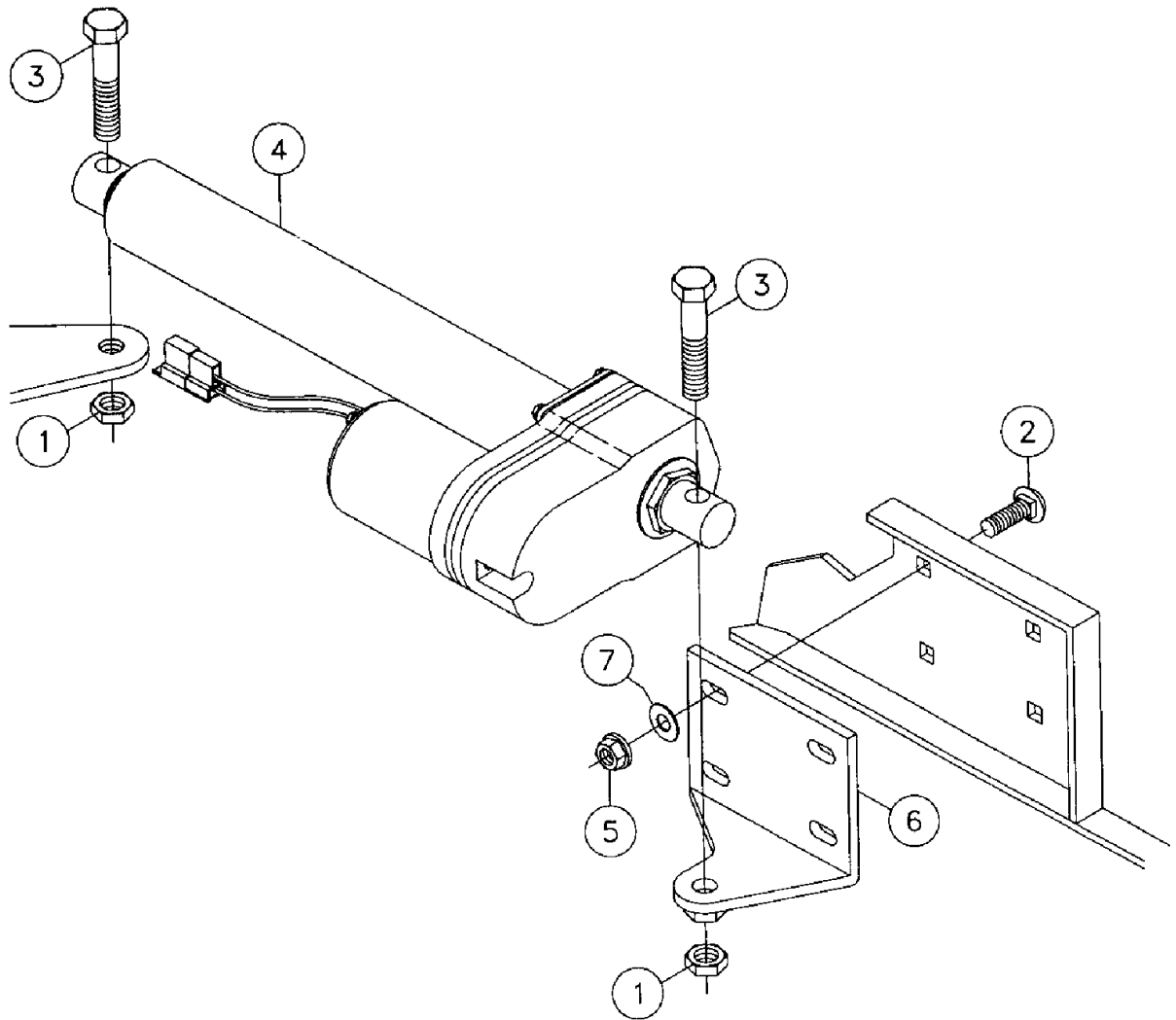
Literature Box Fig 4-5r02



Literature Box Fig 4-5r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		405001	NUT-1/4 NC FLG WHIZ LOCK	3	
2		485003	WASHER-1/4 FLAT	3	
3		350006	BOLT-1/4-20X3/4" GRADE #5 HEX	3	
4		142410001	CASE-6"X9 XCX X1" OPERATOR MANUAL	1	
5		142954001	CABLE-.068 DIA. NYLON CT.-36.00	1	
6		142423001	CRIM-CABLE	2	FOR. 068 DIA. CABLE
7		243141001	MANUAL ASSY.-D50X100A OM MINI 1ST	1	INC. REF. 5 & 6, SN101-210
	*	284505001	MANUAL ASSY.-D50X100A MINI 2ND	1	INC. REF. 5 & 6, SN211-
8		144144001	NOTE BOOK BINDER 2"-3 XCX	1	
9		7000B222	DECAL-RESOURCE LIB HORIZONTAL DIRECTIONAL DRILL	1	
10		105400N89	D50X100A NAVIGATOR OM 1ST ED	1	SN101-210
11		105400N90	D50X100A NAVIGATOR MM 1T ED	1	SN101-210
12		105400N91	D50X100A NAVIGATOR PM 1ST ED	1	
13		280543001	D50X100A RESOURCE LIBRARY ASSY.	1	SN101-210, INC. REF.8-12 & 14-16
14	*	15400M37	NAVIGATOR BORING TOOLS PM	1	
15	*	144145001	VHS HOLDER	1	
16	*	251803001	VIDEO-FIRESTICK DRILL STEM	1	
17	*	150400R73	MM-D50X100A (EN) 2ND	1	
18	*	105400R72	OM-D50X100A (EN) 2ND	1	
19	*	283774001	D50X100A RESOURCE LIBRARY	1	SN211-, INC. REF. 8, 9, 12, 14-18
			Revised February 2000 due to update in illustration and parts list. Added parts marked with *.		

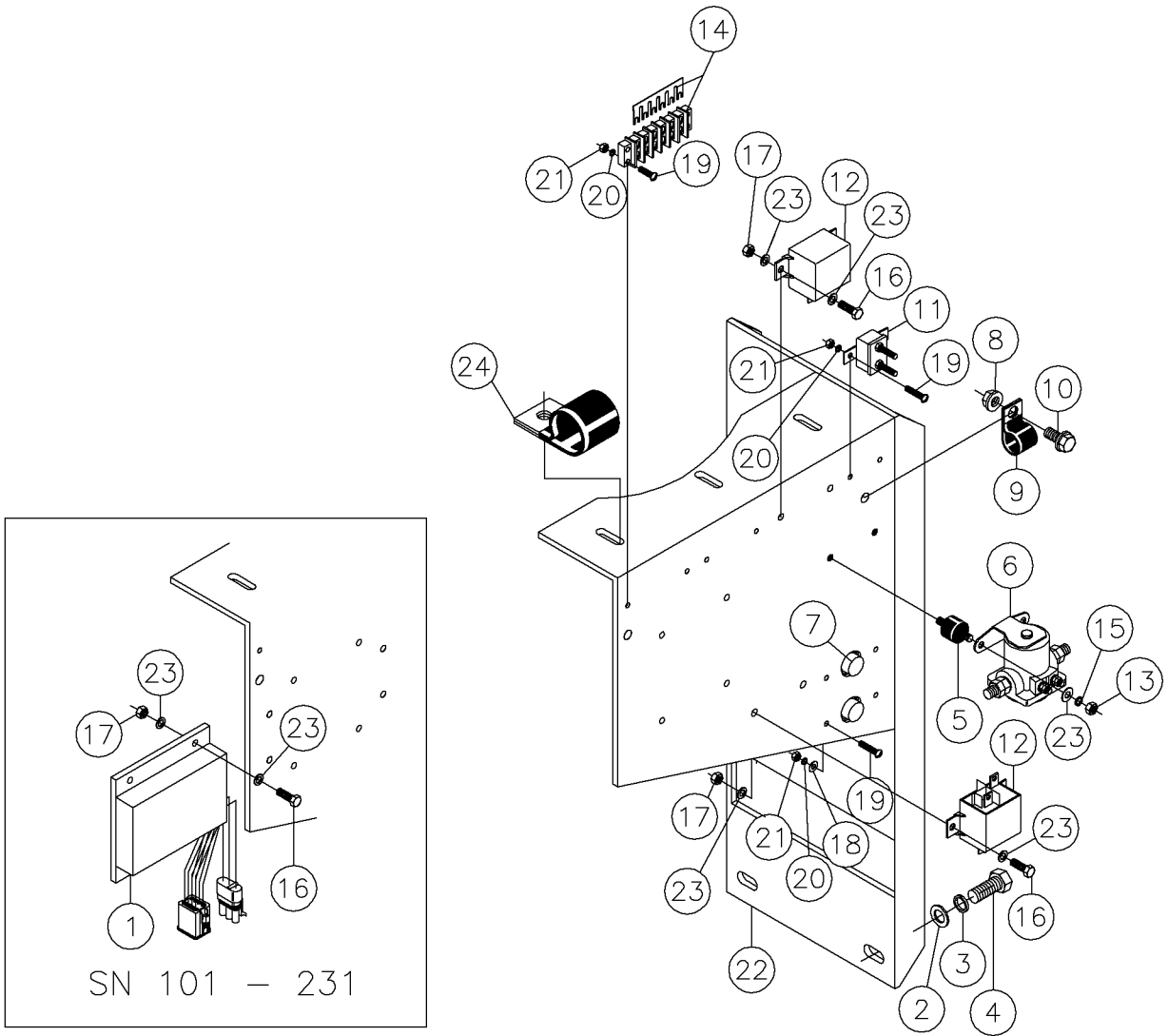
Seat Actuator Fig 4-6



Seat Actuator Fig 4-6

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		422001	NUT-1/2 NC HEX JAM	2	
2		375010	BOLT-3/8"-16X1"GD#5 CARRIAGE	4	
3		358024	BOLT-1/2-13X2 1/2"GRADE#5HEX	2	
4		52864001	ACTUATOR-D12-10A5-06	1	
		52864003	MOTOR-12V DC	1	
		52864005	SEALING KIT	1	
		52864007	INTERMEDIATE GEAR-10:1	1	
		52864009	CLUTCH	1	
5		4536001	NUT - 3/8-16 FLG. WHIZ LOCK	4	
6		235256001	MOUNT-SWING CYLINDER	1	
7		485011	WASHER-1/2 FLAT	4	

Electrical Panel-Engine Fig 4-7r04

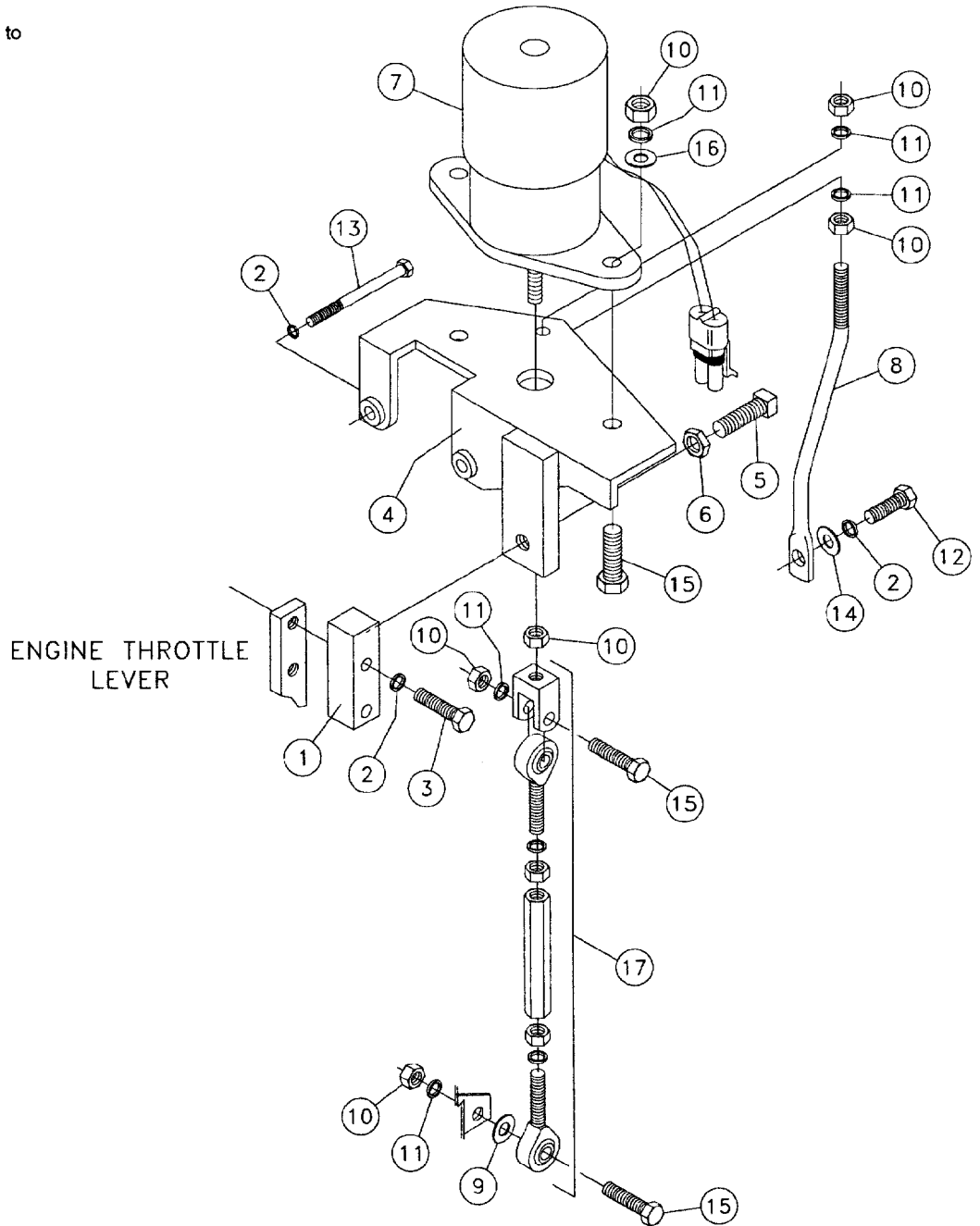


Electrical Panel-Engine Fig 4-7r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		277759001	CONTROLLER-APECS ASSY.	1	
2		86510001	WASHER-1/2 FLT HARDENED	2	
3		64108001	WASHER-M12 LOCK	2	
4		64110001	BOLT-M12 X 25 METRIC	2	
5		91306001	MOUNT-SANDWICH DOUBLE STUD	2	
6		81947001	RELAY-STARTER D20F-11450-AA	1	
7		244767001	BREAKER-105 AMP CIRCUIT	2	
8		4536001	NUT -3/8-16 FLG. WHIZ LOCK	2	
9		2595007	HOSE CLAMP - TS7J 3/4"	2	
10		4475006	BOLT-3/8-16 X 3/4 FLG WHIZ	2	
11		86582001	BREAKER-40A TYPE 1 W/METALCASE	1	
12		86217001	RELAY-BOSCH SPST 75 AMP SEALED	2	SN101-231, QTY WAS 1
13		401001	NUT-1/4 NC HEX	2	
14		251991001	TERMINAL 6-POLE W/ JUMPER	1	
15		480001	WASHER-1/4 S/T LOCK	2	
16		4473006	BOLT-1/4-20 X 3/4 FLG WHIZ	4	
17		405001	NUT-1/4 NC FLG WHIZ LOCK	4	
18		405001	WASHER-3/16 FLAT	4	
19		1802010	BOLT-3/16" X 1" NC STOVE	8	
20		480001	WASHER-3/16 S/T LOCK	8	
21		400001	NUT-3/16 NC HEX	8	
22		238527001	BRACKET-MUFFLER SUPPORT	1	
23		485003	WASHER-1/4 FLAT	8	
24	*	230965001	CLAMP-1 3/4" W/ 17/32 HOLE	1	

Throttle Solenoid - SN101-231 Fig 4-8r02

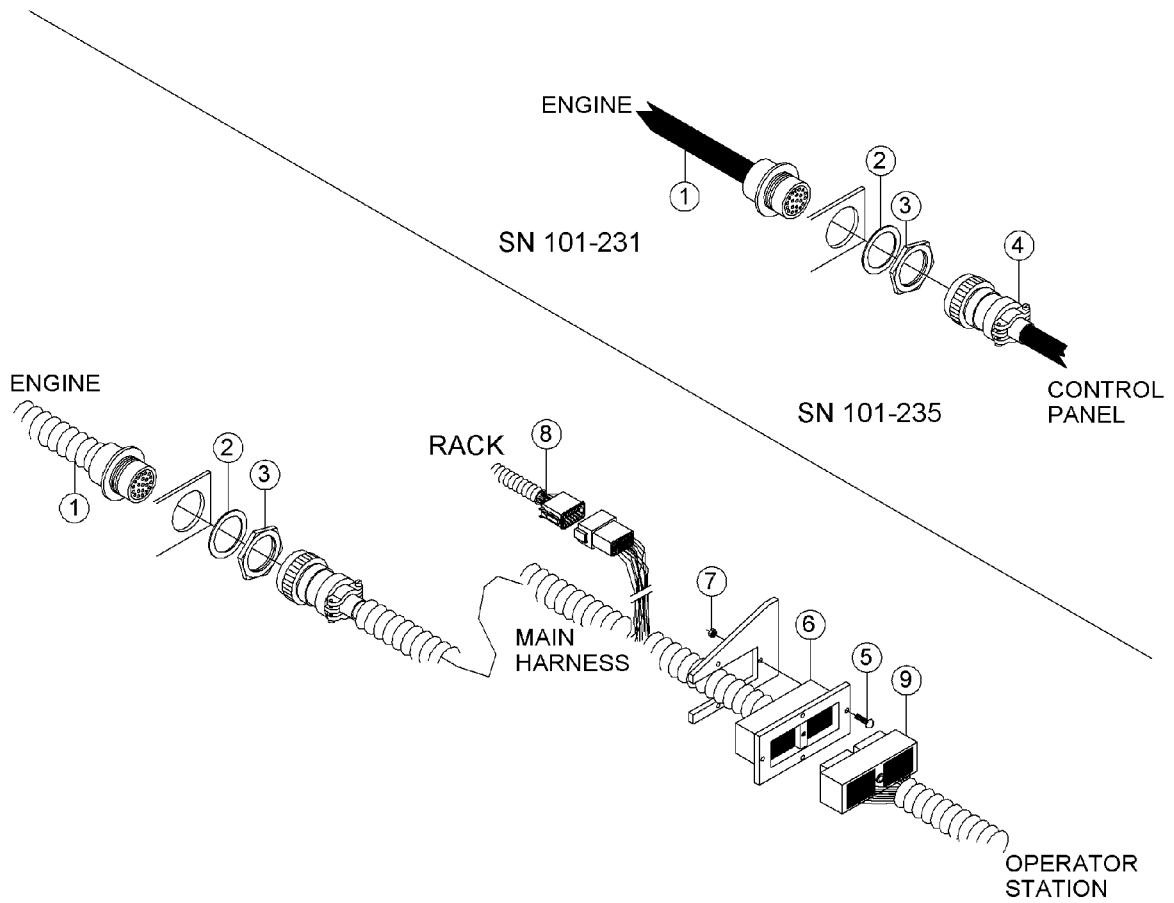
Revised February 2000 due to update in heading.



Throttle Solenoid - SN101-231 Fig 4-8r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		244750001	BAR-THROTTLE LINKAGE	1	
2		15693001	WASHER-#6M LOCK	3	
3		208244001	BOLT-6M X 25M HEX METRIC	2	
4		244751001	MOUNT-THROTTLE SOLENOID	1	
5		548012	SQ HSS-5/16-18X1 1/4"	1	
6		407001	NUT-5/16 NC HEX JAM	1	
7		244756001	ACTUATOR-APECS 2000	1	
8		NSS	SUPPORT ROD	1	
9		NSS	WASHER-FLAT	1	.090" THICK
10		4734001	NUT-1/4-28 NF HEX	6	
11		480003	WASHER-1/4 S/T LOCK	7	
12		17391001	BOLT-6MX15M HEX METRIC	1	
13		NSS	BOLT-M6X55MM HEX METRIC	2	
14		15694001	WASHER-#6M FLAT	1	
15		13395010	BOLT-1/4"-28 NF X 1" HEX	4	
16		485003	WASHER-1/4 FLAT	2	
17		244757005	LINKAGE KIT	1	

Wire Harness Fig 4-9r04

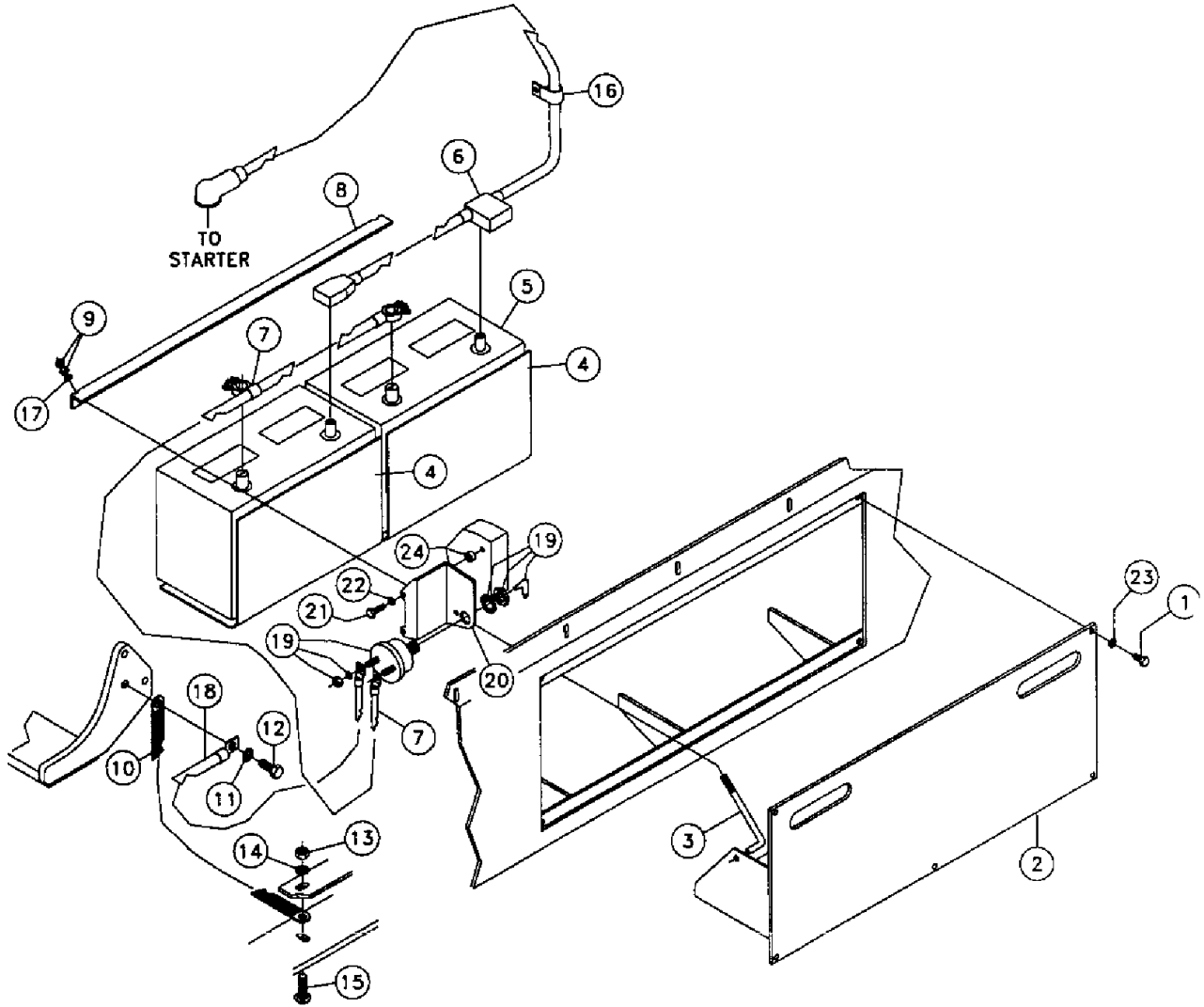


Wire Harness Fig 4-9r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		277758001	HARNESS-D80 X 100 ENGINE WIRE	1	SN101-231
1		279807001	HARNESS-ENGINE WIRE	1	SN232-, REPLACES 278203-001
2		87697005	WASHER-LOCK	1	
3		87697003	NUT-PANEL	1	
4		238582001	HARNESS-D50 X 100A WIRE	1	SN101-235
5		10530012	SCREW-8-32 X 1 1/4 RD HD MACH SLT	1	SN236-
6		244974001	HARNESS-D50/80 MAIN WIRE	1	SN236-324
	*	279812001	HARNESS - D50/D80 MAIN WIRE	1	PN Added SN325-
7		69759001	LOCK NUT-#8-32 NYLON INSERT PL	1	SN236-
8		276848001	HARNESS-D50/80 RACK WIRE	1	SN236-
9		244975001	HARNESS-D50/80 OPERATOR STA	1	SN236-324
	*	279813001	HARNESS - D50/D80 OPERATOR STA	1	PN Added SN325-

Battery Fig 4-10r03

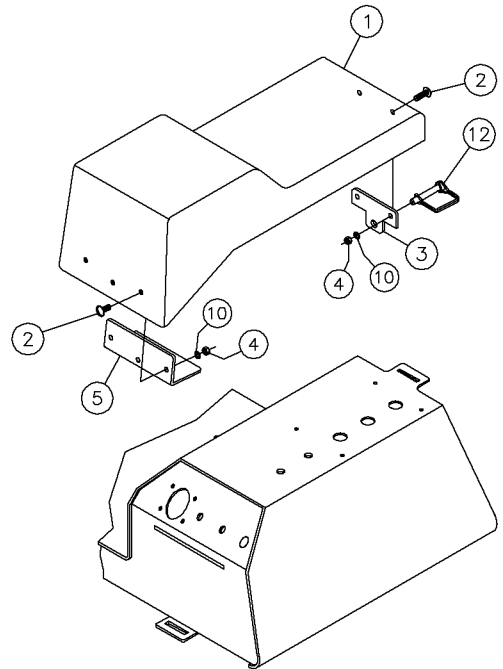
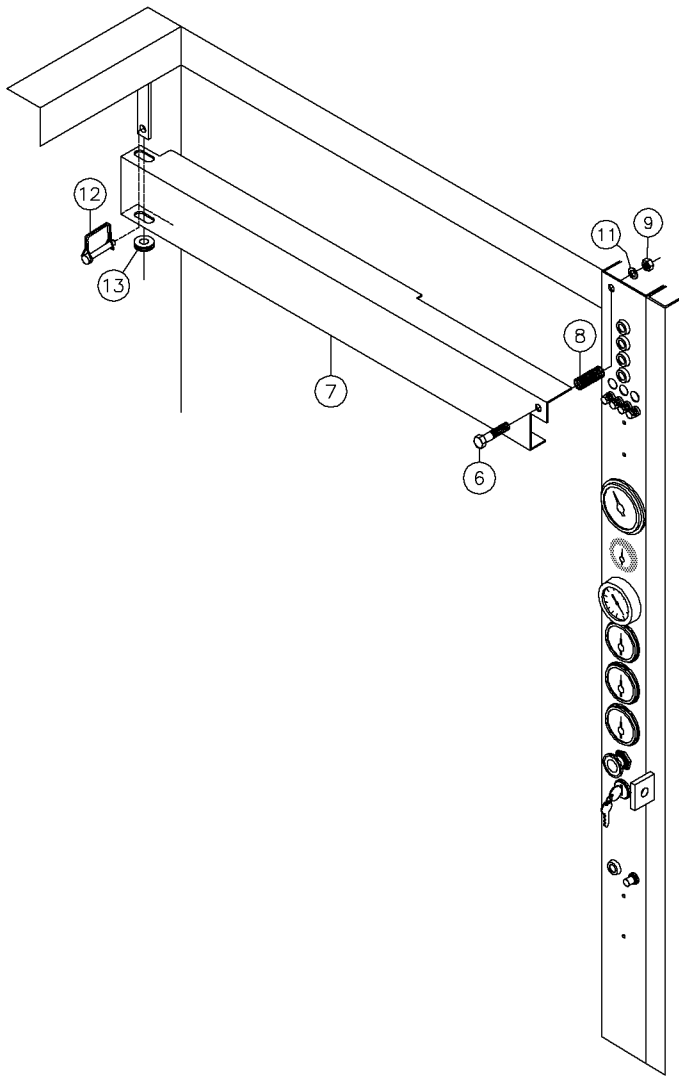
Revised July 1999 due to update
in parts list. Changed part marked with *.



Battery Fig 4-10r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		235726001	BOLT-3/8-16X3/4 GR 8 HEX ZNCPLT	6	
2		238592001	DOOR-BATTERY ACCESS	1	
3		240880001	BOLT-BATTERY ANCHOR	2	
4		903884001	PAD-BATTERY	2	
5		N/A	BATTERY	2	
6		226058001	CABLE-BATTERY 2/0 GA.X58"P-P-E	1	
7	*	280531001	CABLE-BATTERY 2/0 GA.X28 NNE BLK	1	
8		225353001	HOLDDOWN-BATTERY	1	
9		406001	NUT-5/16 NC HEX	4	
10		218260001	STRAP-4GA.X18"E-E BRAIDED GRND	1	
11		238249001	12MM HARD WASHER Y/ZINC	1	
12		250516001	BOLT-12M X 35M GR 10.9 Y/ZINC	1	
13		235731001	NUT-1/2-13 GR 8 ZINC PLTD	1	
14		485025	WASHER-1/2 FLAT HARDENED ZINC	1	
15		275366001	BOLT-1/2-13 UNC X 1 1/4 CAR. GR 8 Z	1	
16		2595007	HOSE CLAMP - TS7J 3/4"	2	
17		253714001	WASHER-5/16 SAE HARD ZINC PLTD	2	
18		228400001	CABLE-BATT. 2/0 GA.X15"E-E BLK	1	
19		904365001	DISCONNECT SWITCH	1	INC. KEY
		87356001	SWITCH-1754 SPST W/ KEY	1	
20		251404001	MOUNT-SWITCH	1	
21		119512001	BOLT-M8 X 1.25-25MM HEX HEAD	2	
22		250517001	8MM HARD WASHER Y/ZINC	2	
23		235713001	WASHER-3/8 SAE HARD ZINC	6	
24		244963001	TUBE-SPACER	1	
			Revised July 1999 due to update in parts list. Changed part marked with *.		

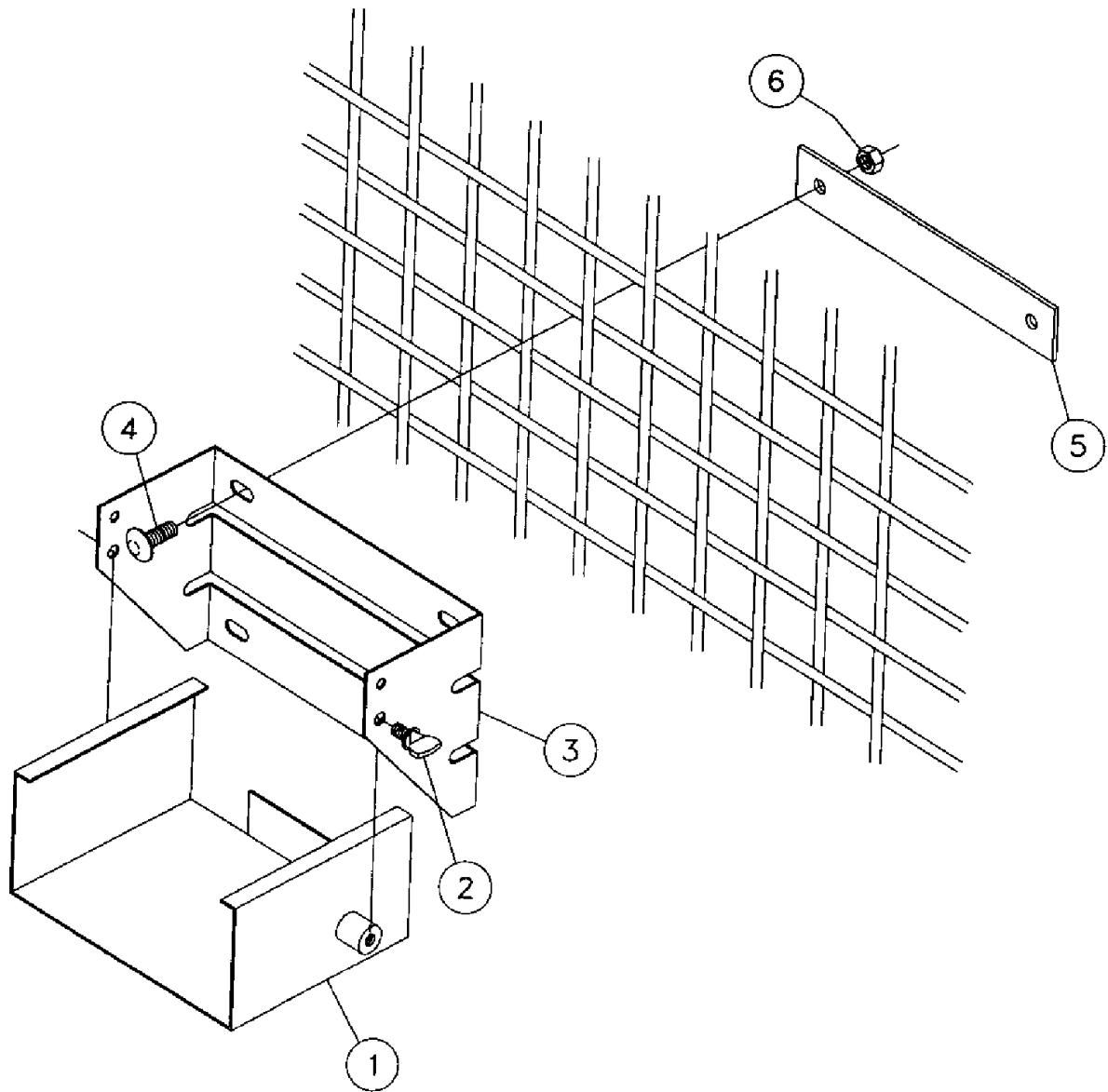
Vandal Shield Fig 4-11r02



Vandal Shield Fig 4-11r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		234393001	VANDAL SHIELD-OPERATOR SEAT	2	
2		20666001	BOLT-5/16-18 X 3/4 GR5 TRUSS HD	10	
3		234394001	PLATE-SHIELD CLIP	2	
4		235741001	NUT-5/16-18 GR8 ZIN PLTD	10	
5		234395001	PLATE-SHIELD CLIP	2	
6		235744001	BOLT-1/2-13 X 2 3/4" GRADE #8 ZINC PLTD	1	
7		234408001	VANDAL SHIELD-ROPS POST	1	
8		1803019	SPRING-COMP. #48 2 1/2" OA	1	
9		235731001	NUT-1/2-13 GR 8 ZIN PLTD	1	
10		235714001	WASHER-5/16 SAE HARD ZIN PLTD	10	
11		485025	WASHER-1/2 FLAT HARDENED ZINC	1	
12		2108001	LYNCH PIN-1/4 X 2"	3	
13		902402001	GROMMET-1 1/2" RUBBER	1	
			Revised June 2000 due to update in illustration.		

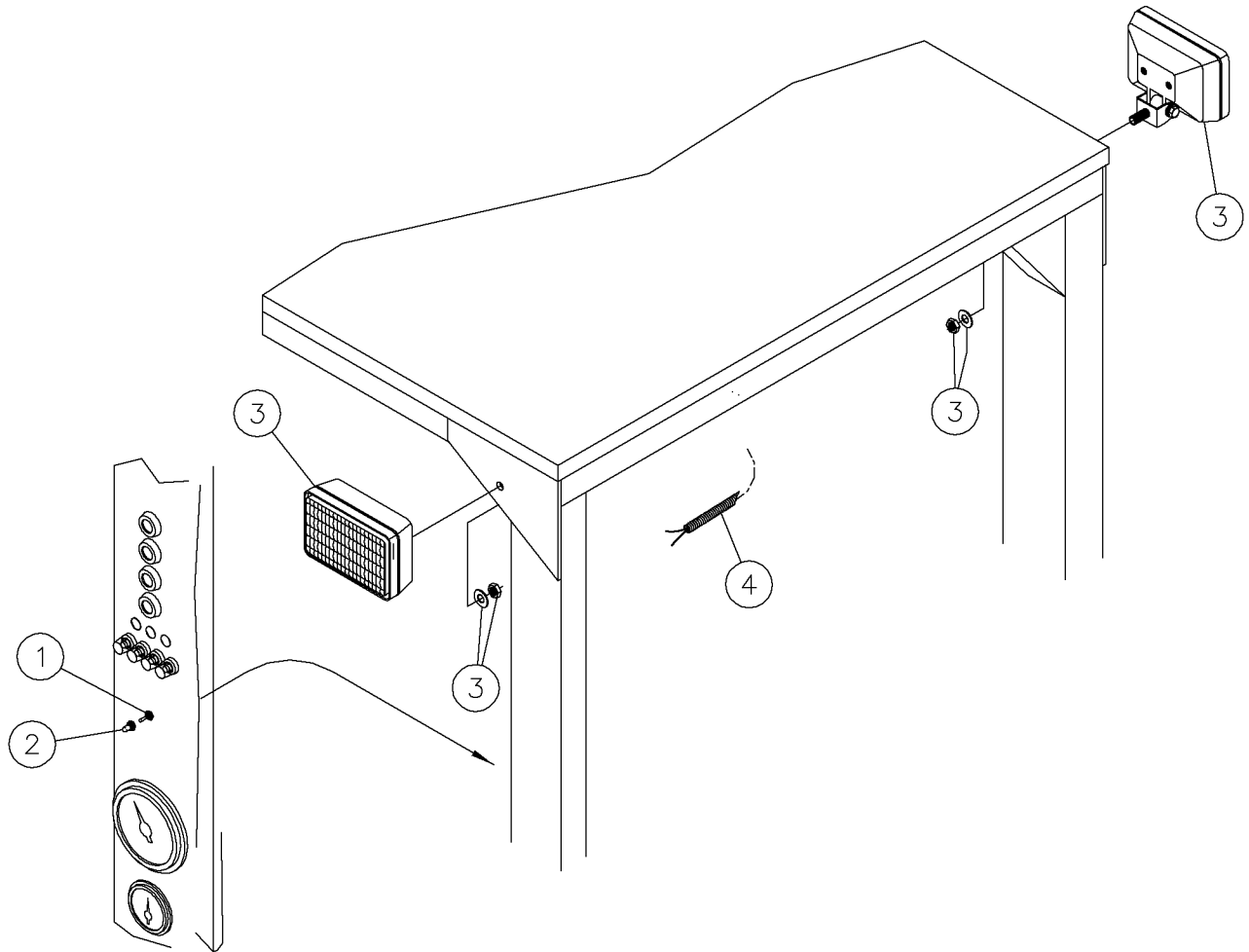
Remote Locator Holder Fig 4-12



Remote Locator Holder Fig 4-12

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		234369001	HOLDER-REMOTE LOCATOR RECEIVER	1	
2		234475001	BOLT-5/16-18 X 1/2 THUMB SCREW	2	
3		234368001	PLATE-REMOTE BRACKET	1	
4		375010	BOLT-3/8"-16X1"GD#5 CARRIAGE	4	
5		234377001	PLATE-REMOTE HOLDER BACK	2	
6		416001	NUT-3/8 NC SLTL	4	

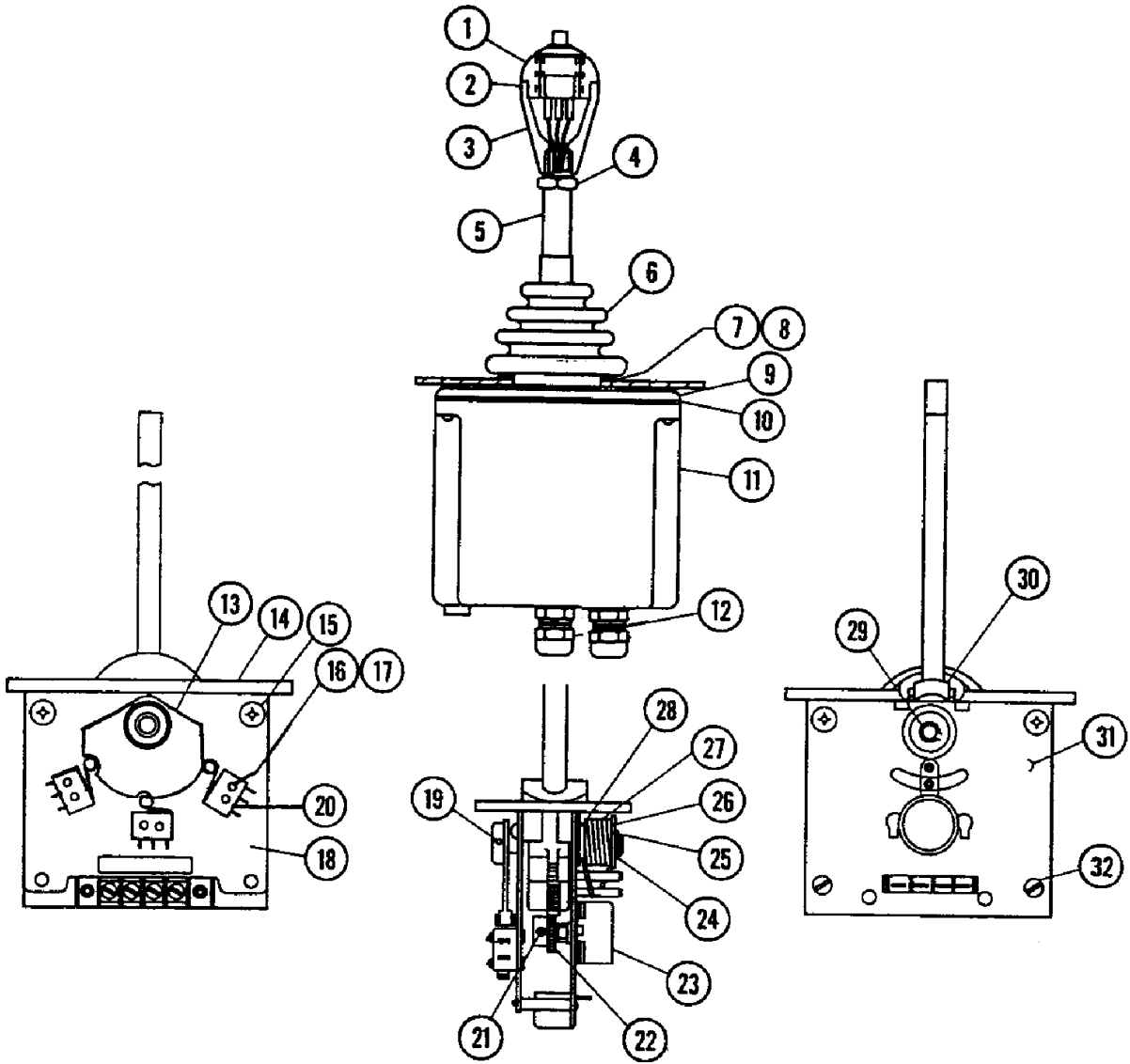
Work Light Fig 4-13r02



Work Light Fig 4-13r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		67292001	SWITCH-TOGGLE 8500K9 SEALED	1	
2		5537001	COVER-TOGGLE SWITCH	1	
3		215861001	LIGHT-3 X 5 FLOOD	2	
4		244772001	HARNESS-D50X100A LIGHT	1	
			Revised June 2000 due to update in illustration.		

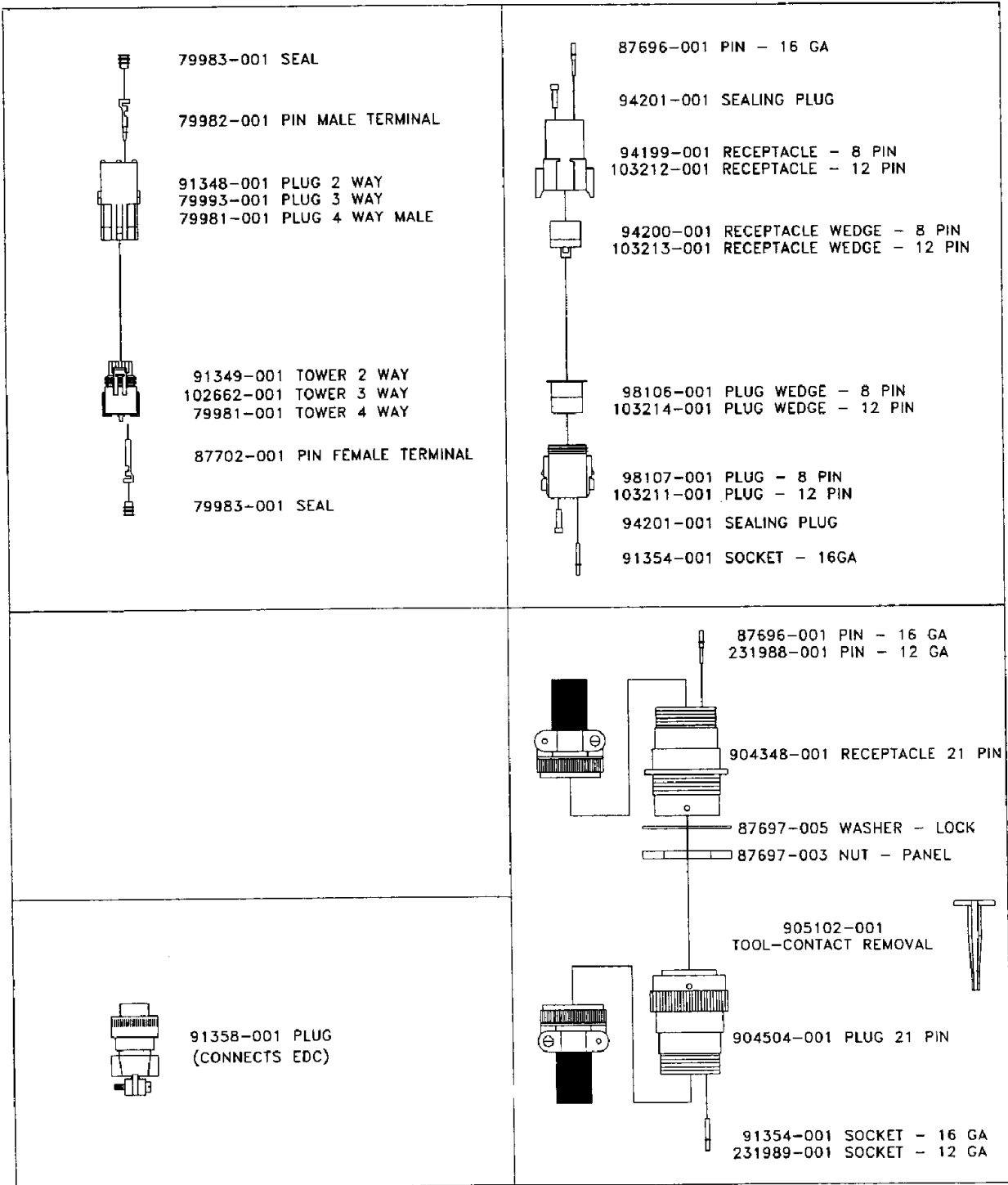
Control Handle Components Fig 4-14



Control Handle Components Fig 4-14

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		224294003	SWITCH& TOP KNOB ASSEMBLY	1	
2		224294005	SET SCREW	2	
3		224294007	KNOB	1	BOTTOM
4		413001	NUT-3/8 NC HEX JAM	1	
5		224294031	LEVER	1	
6		119701009	BOOT	1	
7		67708001	SCREW	4	
8		67707001	BUSHING	4	
9		67712001	BUTTON	4	
10		67723001	GASKET	1	
11		67724001	CASE-	1	
12		69892005	CONNECTOR	2	
13		224294009	CAM ASSEMBLY	1	
14		119701007	COVER	1	
15		103733005	SCREW	2	
16		234876003	SCREW-2-56X9/16	6	
17		89807005	PLATE-SPACER	3	
18		234876005	SWITCH PLATE ASSY	1	
19		204734011	SET SCREW	1	
20		234876007	SWITCH-MICRO SUB MIN.	3	
21		103733003	SET SCREW	1	
22		96070011	GEAR-SPUR	1	
23		234876009	POTENTIOMETER	1	
24		224294015	WASHER-FLAT	1	
25		224294017	WASHER-FLAT	1	NYLON
26		224294019	BUSHING-OUTER	1	PLASTIC
27		96070005	SPRING	1	
28		224294021	BUSHING-INNER	1	PLASTIC
29		224294023	RETAINER RING	1	
30		224294025	GEAR SEGMENT ASSEMBLY	1	
31		224294027	POTENTIOMETER PLATE ASSEMBLY	1	
32		224294029	SCREW-PAN HEAD	2	
		89807007	PLATE-MOUNTING	3	THREADED
		234876001	HANDLE-CONTROL		COMPLETE, INC. ALL ITEMS IN THIS FIGURE

Harness Plug Components Fig 4-15

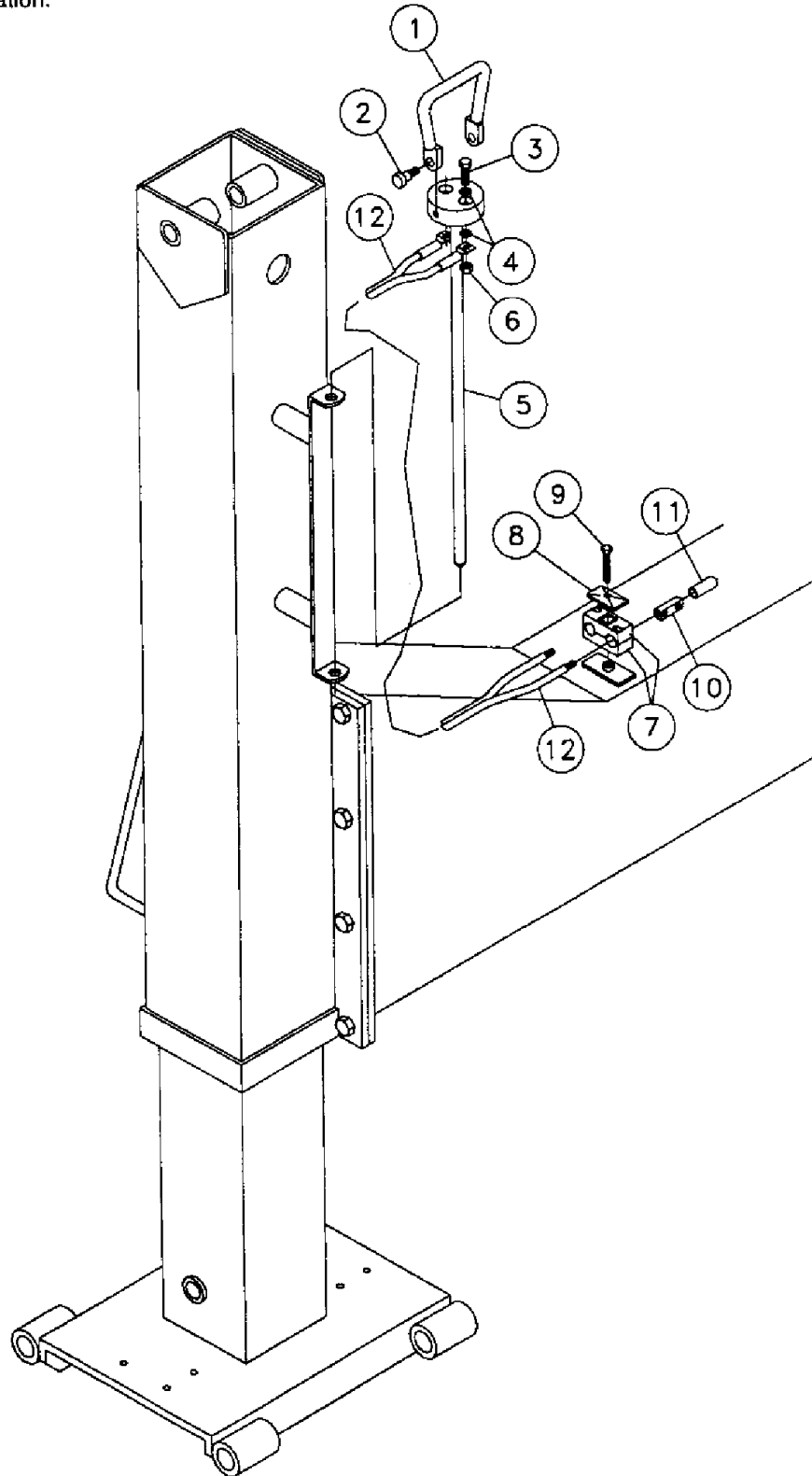


Harness Plug Components Fig 4-15

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		79983001	SEAL		
		79982001	PIN MALE TERMINAL		
		91348001	PLUG 2 WAY		
		79993001	PLUG 3 WAY		
		79981001	PLUG 4 WAY MALE		
		91349001	TOWER 2 WAY		
		102662001	TOWER 3 WAY		
		79981001	TOWER 4 WAY		
		87702001	PIN FEMALE TERMINAL		
		79983001	SEAL		
		91358001	PLUG		CONNECTS EDC
		87696001	PIN - 16 GA	1	
		94201001	SEALING PLUG		
		94199001	RECEPTACLE - 8 PIN		
		103212001	RECEPTACLE - 12 PIN		
		94200001	RECEPTACLE WEDGE - 8 PIN		
		103213001	RECEPTACLE WEDGE - 12 PIN		
		98106001	PLUG WEDGE - 8 PIN		
		103214001	PLUG WEDGE - 12 PIN		
		98107001	PLUG - 8 PIN		
		103211001	PLUG - 12 PIN		
		94201001	SEALING PLUG		
		91354001	SOCKET - 16GA		
		87696001	PIN - 16 GA	1	
		231988001	PIN - 12 GA		
		904348001	RECEPTACLE 21 PIN		
		87697005	WASHER - LOCK		
		87697003	NUT - PANEL		
		905102001	TOOL-CONTACT REMOVAL	1	
		904504001	PLUG 21 PIN		
		91354001	SOCKET - 16 GA		
		231989001	SOCKET - 12 GA	1	

Ground Stake/Voltage Stake Fig 5-1r02

Revised July 1999 due to update in illustration.

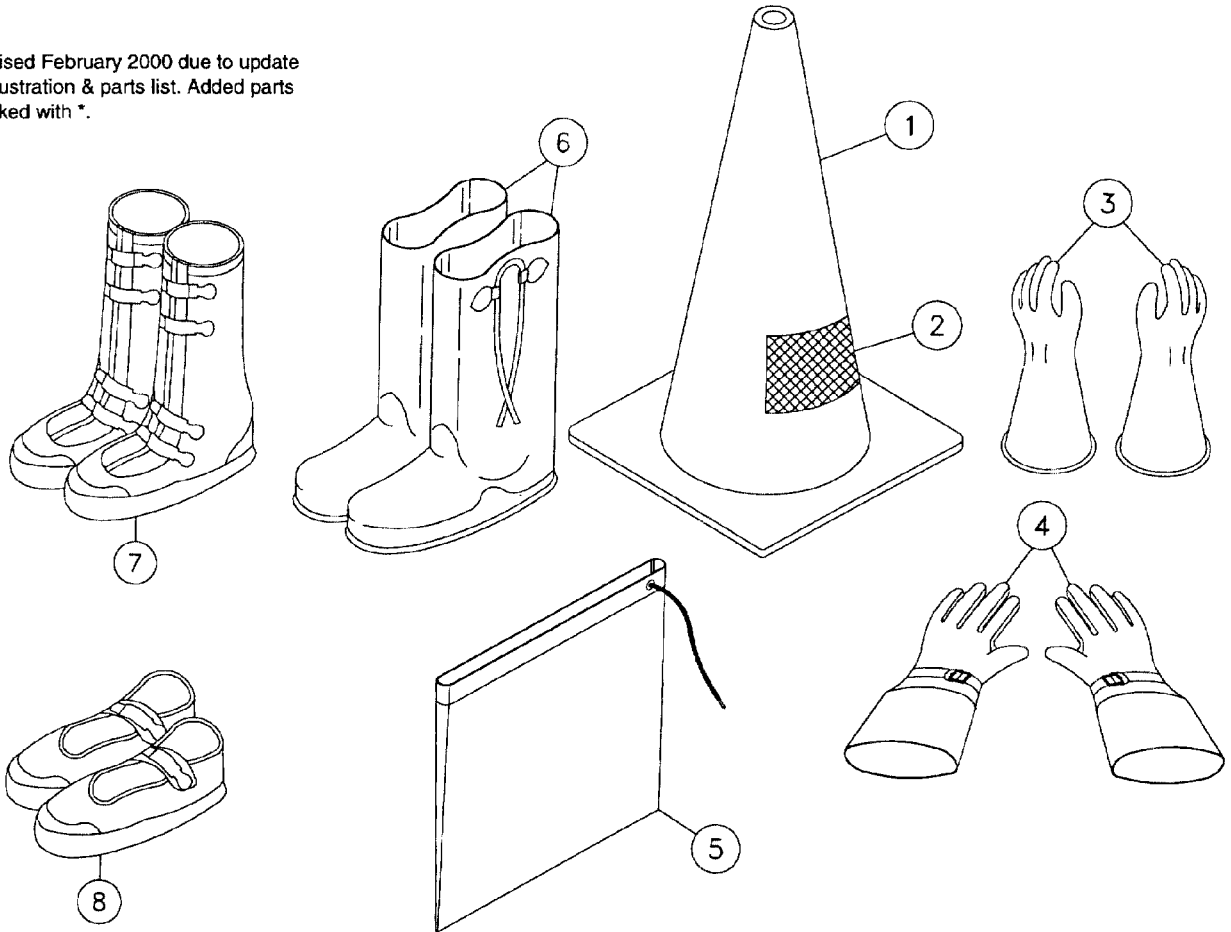


Ground Stake/Voltage Stake Fig 5-1r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		234164001	HANDLE-VOLTAGE STAKE	1	
2		240056001	SCREW-1/2-13X1/2 NCSOC HD ZNC	2	
3		235736001	BOLT-3/8-16X1 1/4 ZINC PLTD	2	
4		235713001	WASHER-3/8 SAE HARD ZINC PLTD	4	
5		234167001	STAKE-VOLTAGE	1	
6		235725001	NUT-3/8-16 GR 8 ZINC PLTD	2	
7		900035003	DOUBLE-HOSE CLAMP PLATE 3/8	2	
8		67846003	PLATE-TWINE COVER	1	
9		248031001	BOLT-5/16-18X1 1/4 GR 8 ZINC PL	1	
10		904355001	CONNECTOR	2	
11		208065001	SHRINK-TUBE 3/4 ID COMMERCIAL GRD	2	SPECIFY LENGTH
12		217967001	CORD ASSY.-VOLTAGE STAKE	1	
			Revised July 1999 due to update in illustration.		

Safety Accessories - Gloves, Boots, Cones Fig 5-2r01

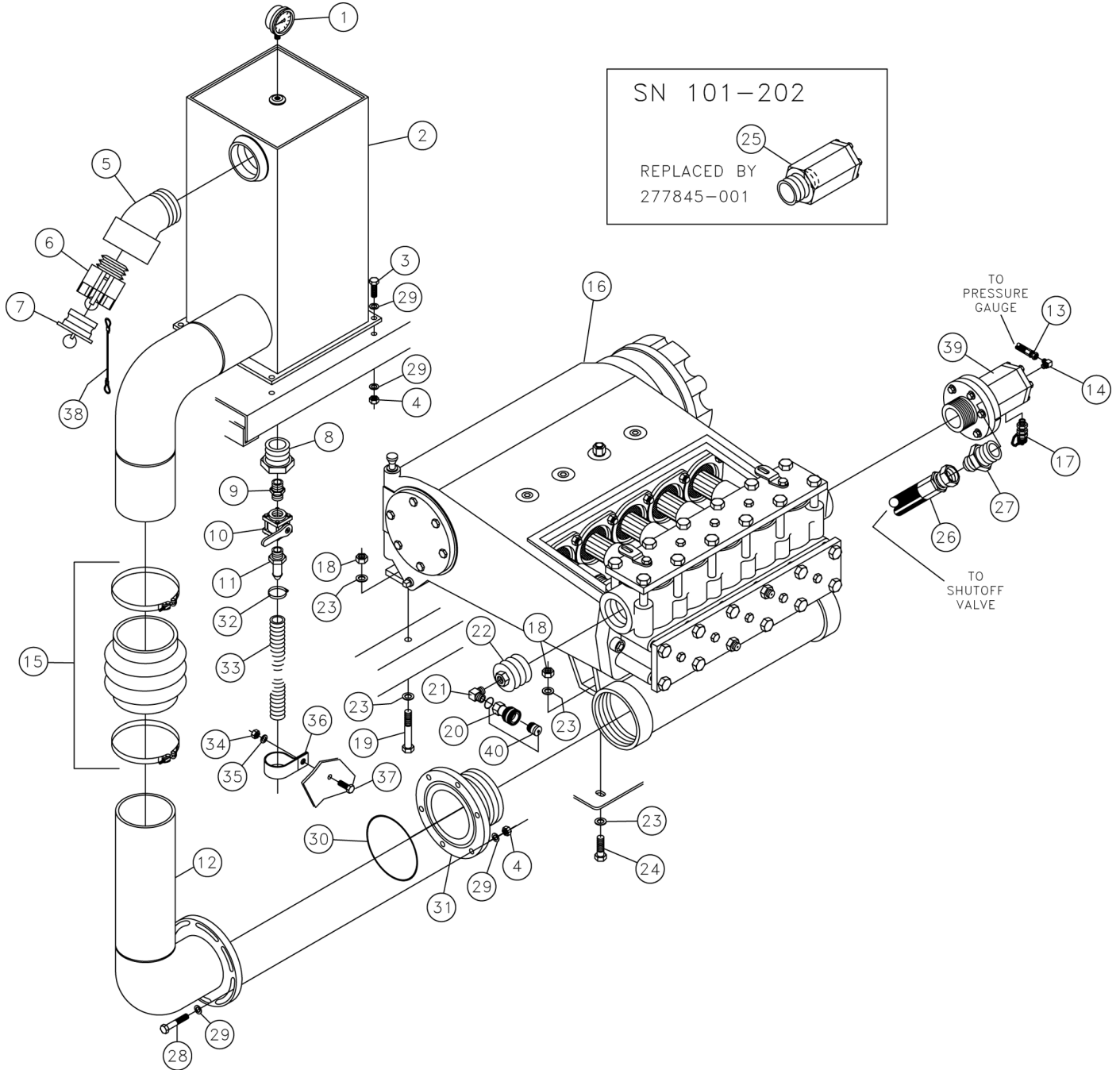
Revised February 2000 due to update in illustration & parts list. Added parts marked with *.



Safety Accessories - Gloves, Boots, Cones Fig 5-2r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		904541001	CONES-ORANGE PVC	4	
2		7000I530	DECAL-DANGER	4	
		7000I530	DECAL-DANGER	4	INTERNATIONAL
3		210782001	GLOVES-SIZE 9 RUBBER INSULATE	1 pair	
		210782005	GLOVES-SIZE 9 1/2 RUBBER INSUL	1 pair	
		210782003	GLOVES-SIZE 10 RUBBER INSULATE	1 pair	
		210782007	GLOVE-SIZE 11 RUBBER INSULATED	1 pair	
		210782009	GLOVE-SIZE 12 RUBBER INSULATED	1 pair	
		210783001	GLOVES-SIZE 9 LEATHER PROTECT	1 pair	
4		210783005	GLOVES SIZE 9 1/2 LEATHER PROT	1 pair	
		210783003	GLOVES-SIZE 10 LEATHER PROTECT	1 pair	
		210783007	GLOVE-SIZE 11 LEATHER PROTECT	1 pair	
		210783009	GLOVE-SIZE 12 LEATHER PROTECT	1 pair	
		210781001	GLOVE KIT-SIZE 9	1	INC. 1 PAIR OF RUBBER GLOVES, 1 PAIR OF LEATHER GLOVES & 1 GLOVE BAG REF. 5
		224979001	GLOVE KIT-SIZE 9 1/2	1	INC. 1 PAIR OF RUBBER GLOVES, 1 PAIR OF LEATHER GLOVES & 1 GLOVE BAG REF. 5
		210785001	GLOVE KIT-SIZE 10	1	INC. 1 PAIR OF RUBBER GLOVES, 1 PAIR OF LEATHER GLOVES & 1 GLOVE BAG REF. 5
		224990001	GLOVE KIT-SIZE 11	1	INC. 1 PAIR OF RUBBER GLOVES, 1 PAIR OF LEATHER GLOVES & 1 GLOVE BAG REF. 5
		224991001	GLOVE KIT-SIZE 12	1	INC. 1 PAIR OF RUBBER GLOVES, 1 PAIR OF LEATHER GLOVES & 1 GLOVE BAG REF. 5
5		210784001	BAG-GLOVE	1	
6		210780009	BOOTS-SIZE 9 OVER-THE-SHOE	1 pair	
		210780001	BOOTS-SIZE 10 OVER-THE-SHOE	1 pair	
		210780003	BOOTS-SIZE 11 OVER-THE-SHOE	1 pair	
		210780005	BOOTS-SIZE 12 OVER-THE-SHOE	1 pair	
		210780007	BOOTS-SIZE 13 OVER-THE-SHOE	1 pair	
		210780011	BOOTS-SIZE 14 OVER-THE-SHOE	1 pair	
		210780013	BOOTS-SIZE 15 OVER-THE-SHOE	1 pair	
		210780015	BOOTS-SIZE 16 OVER-THE-SHOE	1 pair	
7	*	279118001	BOOT -4 BUCKLE SIZE 9	1 pair	
	*	279118002	BOOT -4 BUCKLE SIZE 10	1 pair	
	*	279118003	BOOT -4 BUCKLE SIZE 11	1 pair	
	*	279118004	BOOT -4 BUCKLE SIZE 12	1 pair	
	*	279118005	BOOT -4 BUCKLE SIZE 13	1 pair	
	*	279118006	BOOT -4 BUCKLE SIZE 14	1 pair	
	*	279118007	BOOT -4 BUCKLE SIZE 15	1 pair	
	*	279118008	BOOT -4 BUCKLE SIZE 16	1 pair	
8	*	279119001	BOOT-ANKLE RUBBER SIZE 9	1 pair	
	*	279119002	BOOT-ANKLE RUBBER SIZE 10	1 pair	
	*	279119003	BOOT-ANKLE RUBBER SIZE 11	1 pair	
	*	279119004	BOOT-ANKLE RUBBER SIZE 12	1 pair	
	*	279119005	BOOT-ANKLE RUBBER SIZE 13	1 pair	
	*	279119006	BOOT-ANKLE RUBBER SIZE 14	1 pair	
	*	279119007	BOOT-ANKLE RUBBER SIZE 15	1 pair	
	*	279119008	BOOT-ANKLE RUBBER SIZE 16	1 pair	

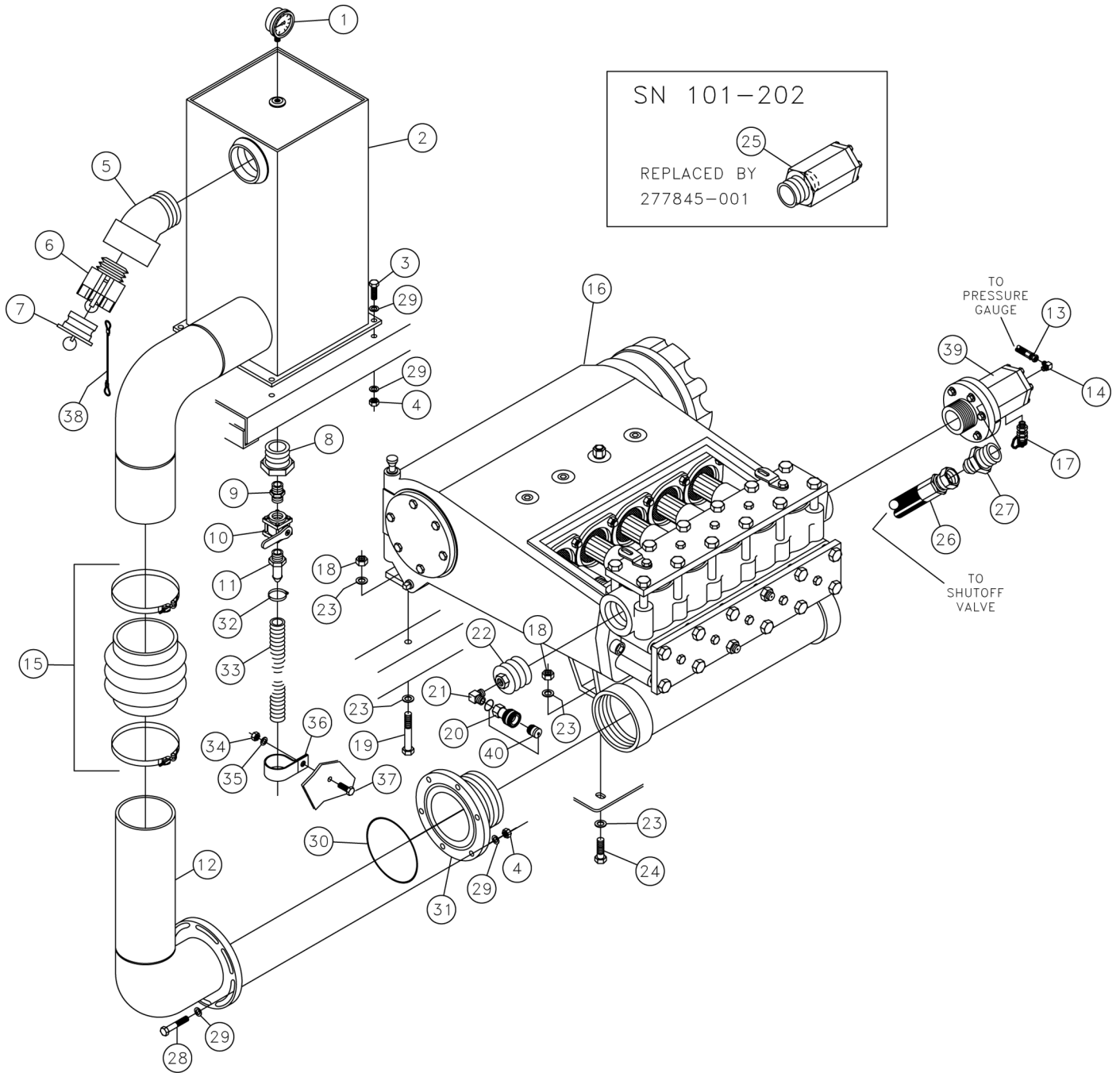
Water Pump - 150 Gal. (SC115L) - SN101-312 Fig 6-1r06



Water Pump - 150 Gal. (SC115L) - SN101-312 Fig 6-1r06

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		234473001	GAUGE-30 HG-0-100 PSI	1	
2		238227001	TANK-SUCTION STABILIZER	1	
3		240334001	BOLT-1/2-13X1 3/4" GRADE#8 ZNC PLT	4	
4		75382001	NUT-1/2 UNC GR 8 SLTL	10	
5		238079001	ELBOW-3" 45 DEG STREET POLY	1	
6		238080001	COUPLER-3" FEMALE MNPT POLY	1	
7		234480001	PLUG-3" CAM LOCK POLY	1	
8		225838001	BUSHING-2X3/4 NPT REDUCER POLY	1	
9		231049001	NIPPLE-3/4" NPT SHORT POLY	1	
10		225847001	VALVE-3/4" FPT BALL POLY	1	BREAKDOWN FIG. 6-15
11		905437001	FITTING-3/4X1 BARB ST NYLON	1	
12		275367001	ELBOW-WATER PUMP FLANGE	1	LONG
13		53843133	HOSE-1/4"X230 4FS JIC ST/ST 100R1	1	
14		59423001	FITTING-4MX4M JIC 90 DEG ELBOW	1	
15		239453001	5" EXPANSION JOINT	1	
16		244643001	PUMP-ALEX SC115L CAST END	1	BREAKDOWN FIG. 6-7 - 6-12
17		75493001	COUPLER-MALE TCM20-7/16" UNF-V	1	
18		238221001	NUT-5/8-11 GR 8 NC Y/ZINC	4	
19		250542001	BOLT-5/8-11X4 3/4 GR 8 HEX	2	
20		227235001	COUPLER-1/2" NPT QUICK	1	FEMALE
21		904831001	FITTING-1/2M NPT X 1/2M NPT 90	1	
22		244516001	FITTING-40MNPT/8FNPT HEX REDCR	1	
23		235715001	WASHER-5/8 SAE HARD ZINCPLTD	8	
24		238245001	BOLT-5/8-11X2 1/4" GR 8 HEX	2	
25		239471001	WATER PUMP OUTLET ASSY	1	-SC115L, BREAKDOWN FIG. 6-13r02, REPLACED BY 277845001, SN101-202
26		239495001	HOSE-1 1/2X65 24 FS JIC ST/ST	1	
27		94569001	FITTING-1 1/2M NPT X24M JIC STR.	1	
28		235744001	BOLT-1/2-13X2 3/4 GR 8 ZNC PLTD	6	
29		485025	WASHER-1/2 FLAT HARDENED ZINC	20	
30		275321001	O-RING	1	
31		275312010	FLANGE-WATER PUMP INLET	1	
32		1580003	HOSE CLAMP-3/4"	1	
33		905429007	HOSE-1" PVC SUCTION-54"	1	
34		235725001	NUT-3/8-16 GR8 ZIN PLTD	1	
35		235713001	WASHER-3/8 SAE HARD ZINC PLTD	1	
36		204721001	HOSE CLAMP-1 3/4"	1	
37		235727001	BOLT-3/8-16X1 GR 8 HEX ZINC PLT	1	

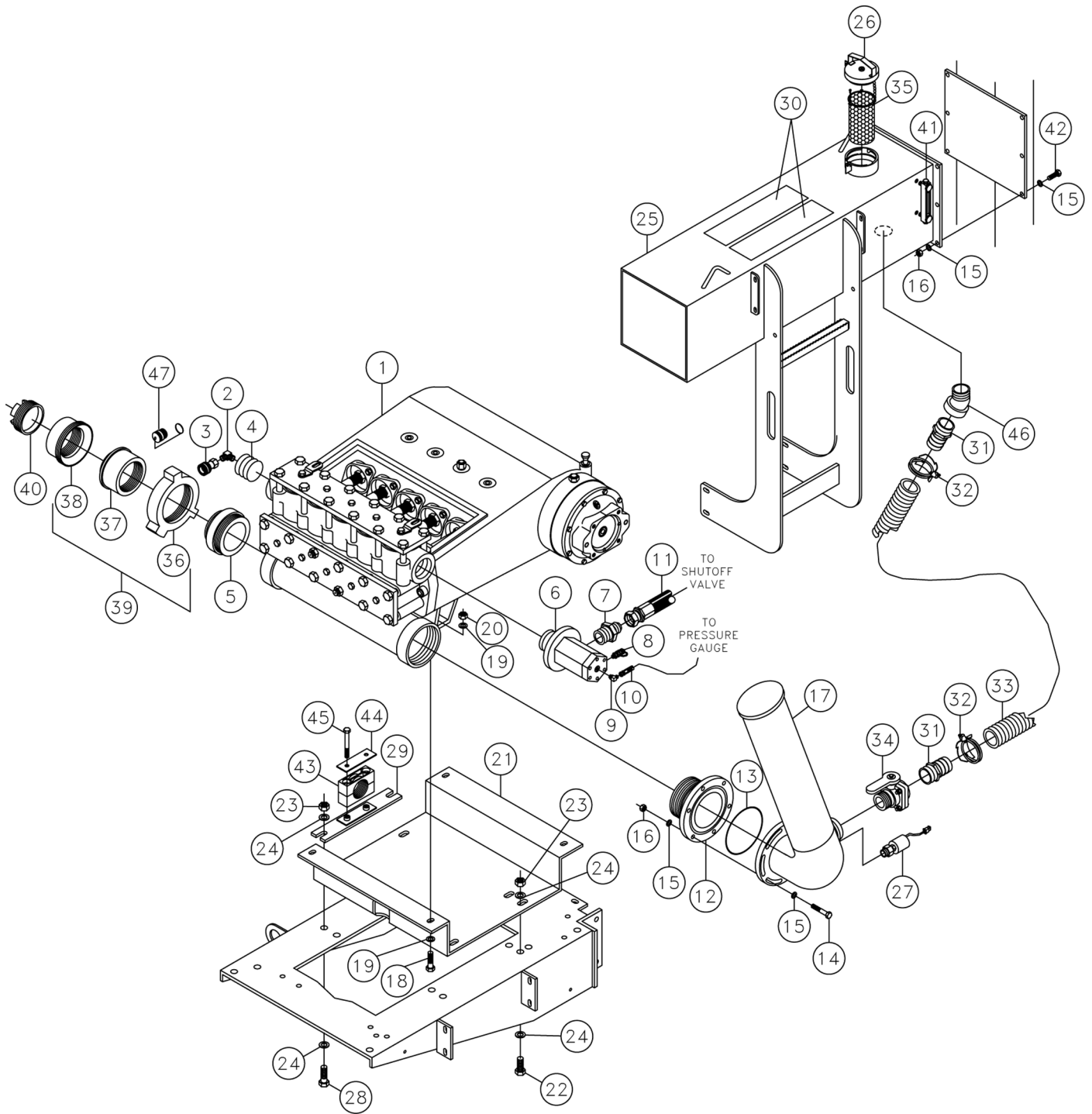
Water Pump - 150 Gal. (SC115L) - SN101-312 (continued) Fig 6-1r06



Water Pump - 150 Gal. (SC115L) - SN101-312 (continued) Fig 6-1r06

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
38		1830071	CABLE-3/32" NYLON COATED-12"	1	
		1838001	CONNECTOR-WIRE	2	
39		277845001	OUTLET ASSY.-SC115L FLANGE	1	BREAKDOWN FIG. 6-13x01r01
40	*	234679001	CAP-DUST	1	PN Added

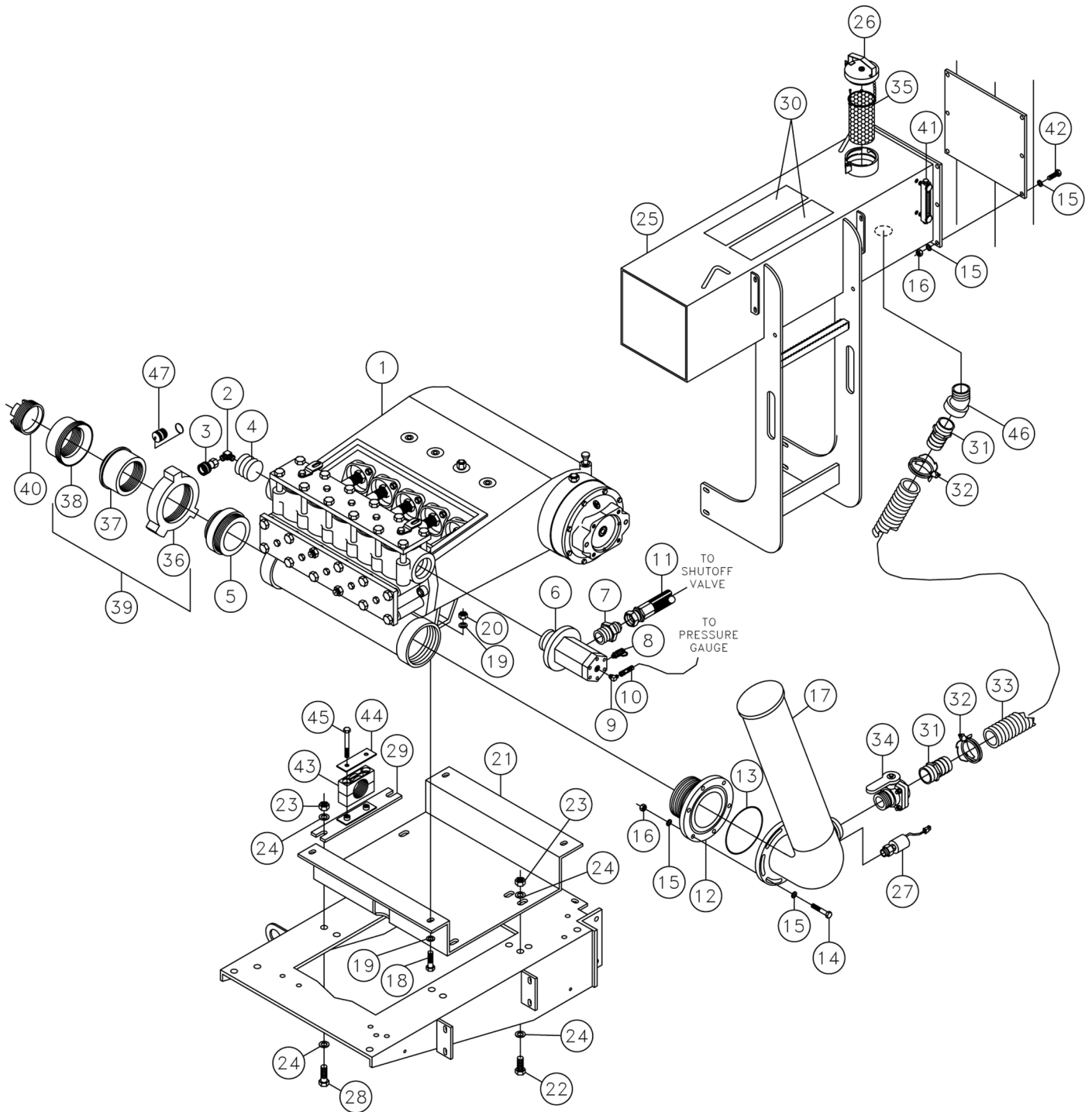
Water Pump - 150 Gal. (SC115L) - SN313- Fig 6-1x01r01



Water Pump - 150 Gal. (SC115L) - SN313- Fig 6-1x01r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		244643001	PUMP-SC115L CAST END WATER	1	BREAKDOWN FIG. 6-7, 6-9 THRU 6-12
2		904831001	FITTING-1/2M NPT X 1/2M NPT 90	1	
3		227235001	COUPLER-1/2" NPT QUICK	1	FEMALE
4		244516001	FITTING-40M NPT 8F NPT HEX REDUCER	1	
5		287034001	FITTING-5" MPT X 4MPT REDUCER	1	
6		277845001	OUTLET ASSY-SC115L FLANGE	1	BREAKDOWN FIG. 6-13A
7		94569001	FITTING-1 1/2M NPT X 24M JIC STR	1	
8		75493001	COUPLER-MALE TCM20-7/16" UNF-V	1	
9		59423001	FIT-4M JIC X 4M ADJ 90 DEG ELBOW	1	
10		53843607	HOSE-1/4X258 4FS JIC 3000 PSI	1	
11		239496001	HOSE-1 1/2 X 92 24FS JIC ST/ST	1	
12		275312001	FLANGE-WATER PUMP INLET	1	
13		275321001	O-RING SS#165	1	
14		235744001	BOLT-1/2-13X2 3/4 GR 8 ZINC PLTD	6	
15		485025	WASHER-1/2 FLAT HARDENED ZINC	14	
16		75382001	NUT-1/2 UNC GR 8 SLTL	12	
17		287046001	TUBE-SUCTION STABILIZER	1	
18		238245001	BOLT-5/8-11X2 1/4" GR 8 HEX	4	
19		235715001	WASHER-5/8 SAE HARD ZINC PLTD	8	
20		238221001	NUT-5/8-11 GR 8 NC Y/ZINC	4	
21		287094001	BASE-SC115L PUMP (D50A)	1	REPLACES 277822-001
22		243905001	BOLT-3/4-10X1 3/4 GR 8 HEX ZP	2	
23		235739001	NUT-3/4-10 GR 8 ZINC PLTD	4	
24		235717001	WASHER-3/4 SAE HARD ZINC PLTD	8	
25		287003001	TANK-WP ANTI-FREEZE	1	
26		224985001	CAP-VENTED FUEL TANK	1	
27		287069001	SWITCH-SEALED DIAPHRAM 6-15 PSI	1	
28		243921001	BOLT-3/4-10X2 1/4 GR 8 ZP	2	
29		287058001	BRACKET-HOSE CLAMP	1	
30		5776001	TAPE-SAFETY WALK 4 WIDE	2.5	
31		215426001	HOSE-BARB-2X2 MPT	2	POLY
32		238064001	CLAMP-2" POWERLOCK HOSE	2	
33		278116001	HOSE-2" HD SUCTION 45"	1	
34		236045001	VALVE-2" FPTX2" MPT POLY BALL	1	BREAKDOWN FIG. 6-14
35		99998001	STRAINER-6" .030 STEEL	1	
36		287056007	NUT-4" HAMMER UNION WING 1000 PSI	1	
37		287056003	SUB-4" MALE HAMMER UNION 1000 PSI	1	
38		287056005	SUB-4" FEMALE HAMMER UNION 1000 PSI	1	
39		287056001	UNION-4" HAMMER 1000 PSI	1	

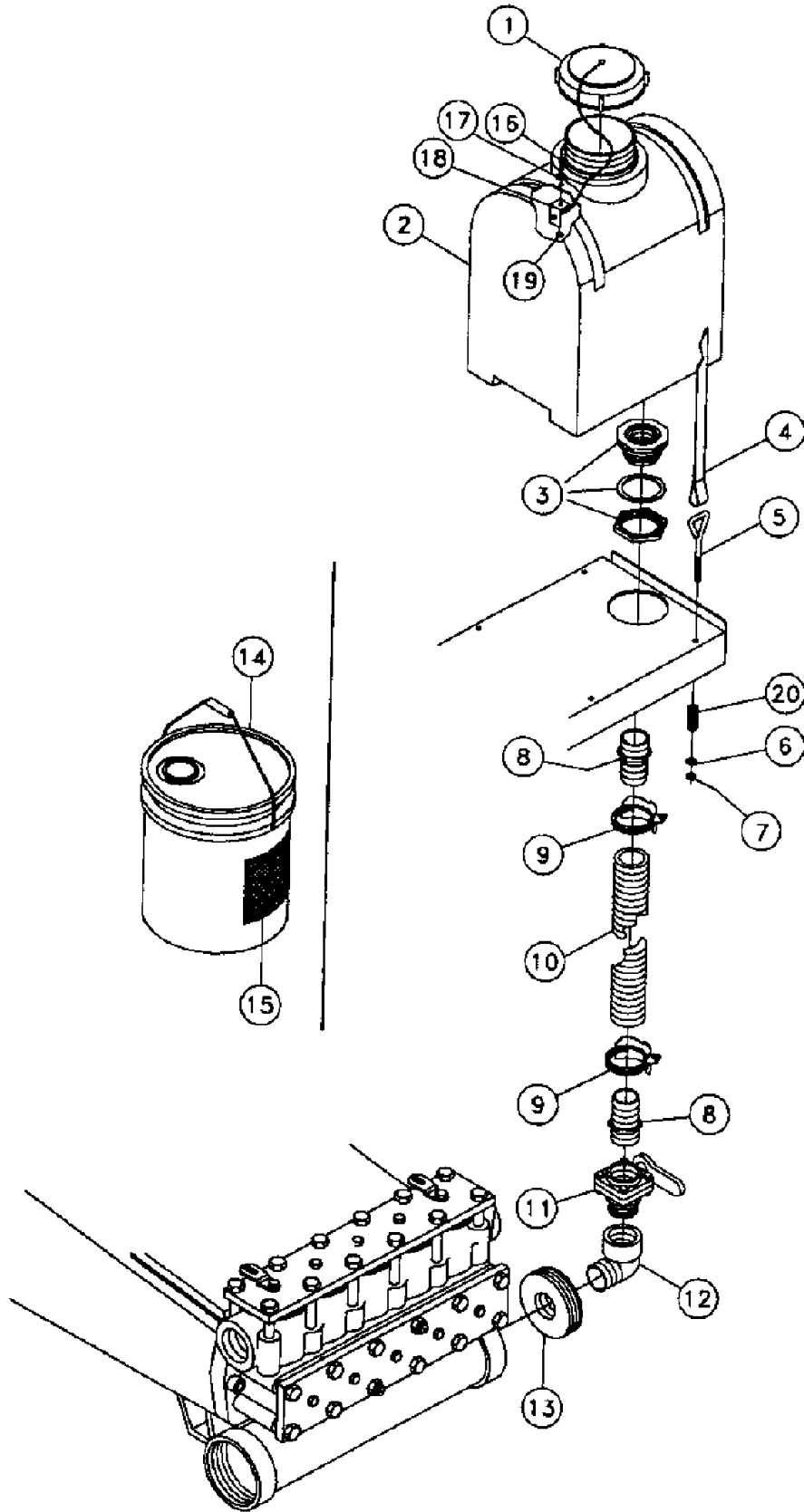
Water Pump - 150 Gal. (SC115L) - SN313- (continued) Fig 6-1x01r01



Water Pump - 150 Gal. (SC115L) - SN313- (continued) Fig 6-1x01r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
40		287057001	PLUG-4" NPT	1	
41		81590001	GAUGE-SIGHT	1	
42		235721001	BOLT-1/2-13X1 1/2 GR 8 ZINC PLT	4	
43		278186003	CLAMP-PAIR	1	2/11" ID
44		278186005	PLATE-COVER	1	
45		357040	BOLT-7/16-14X4 GR 5 HHCS PLATED	2	
46		224939001	ELBOW-2" 45 DEG STREET	1	POLY
47	*	234679001	CAP-DUST	1	PN Added

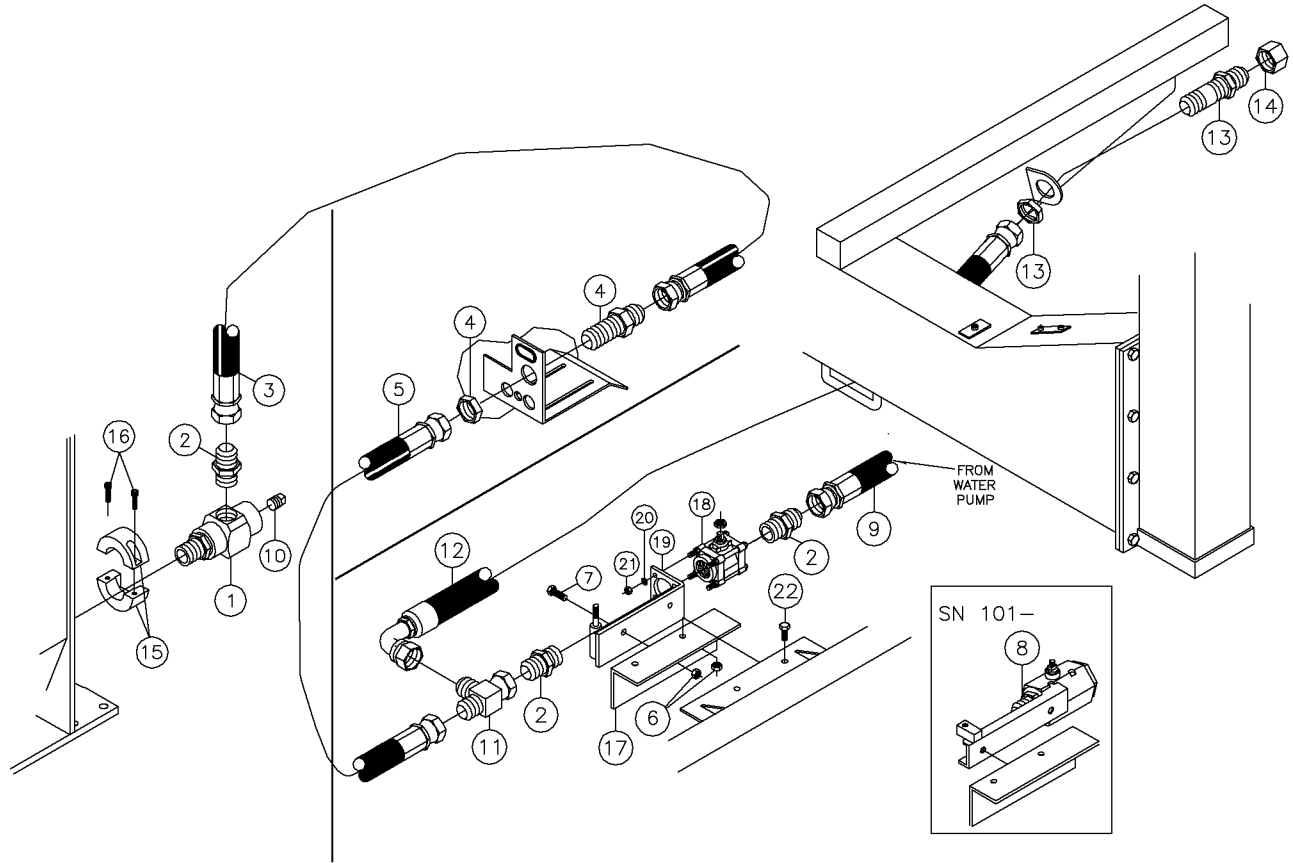
Anti-Freeze System - SN101-312 Fig 6-2r04



Anti-Freeze System - SN101-312 Fig 6-2r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		236466003	LID-TANK W/ STRING	1	
2		239477001	TANK-ANTIFREEZE	1	INC. REF. 1, 2, 16-19
3		904062007	2" BUNG	1	
4		220639001	STRAP-NYLON 1 X 34	2	BLK
5		903862001	BOLT-WATER TANK HOLD DOWN	4	
6		235713001	WASHER-3/8 SAE HARD ZINC PLTD	4	
7		250508001	NUT-3/8 NC GR 8 TOP LOCK Y/ZINC	4	
8		215426001	HOSE BARB-2X2 MPT	2	POLY
9		238064001	CLAMP-2" POWERLOCK HOSE	2	
10		275385001	HOSE-2" X 30" SUCTION	1	
11		236045001	VALVE-2" FPT X 2MPT POLY BALL	1	BREAKDOWN FIG. 6-14
12		214088001	ELBOW-90 DEG 2" POLY STREET	1	
13		239447001	FITTING-5X2 HEX BUSHING	1	
14		210779001	NAVIGATOR FREEZE GUARD	1	5 GAL, SHOWN
		210779003	NAVIGATOR FREEZE GUARD	1	55 GAL
15		70000675	DECAL-NAVIGATOR FREEZE GUARD	1	
		7000A027	DECAL-NAVIGATOR FREEZE GUARD	1	
16		235734001	BOLT-1/4-20 X 3/4 GR 8 ZINC PLTD	1	
17		236466005	WASHER-1/4" SEAL	1	
18		236466007	CLIP	1	
19		235732001	NUT-1/4-20 GR 8 ZINC PLTD	1	
20		1803019	SPRING COMP.-#48 2 1/2 OA	2	
			Revised June 2000 due to update in heading.		

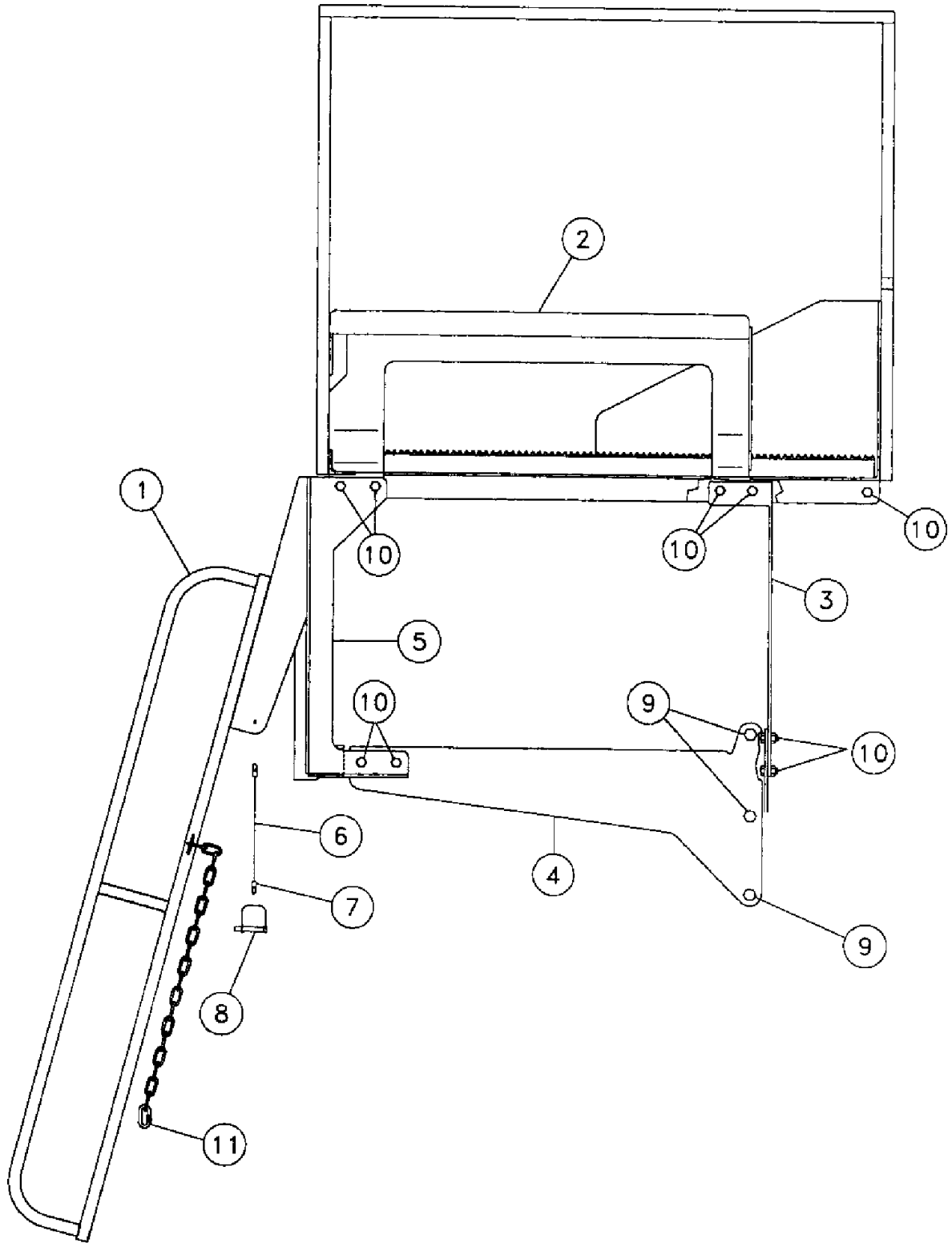
Water Line Fig 6-3r04



Water Line Fig 6-3r04

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		277834001	SWIVEL-200 GPM WATER W/BRG.	1	
		234978003	SEAL KIT	1	
		234978005	RESIZING RING	1	
2		94569001	FITTING-1 1/2MNPTX24MJIC STR.	3	
3		239497001	HOSE-1 1/2X224 24FSJIC ST/ST	1	
4		244517001	FITTING-24M JIC BULKHEAD ST	1	
5	*	239496001	HOSE-1 1/2X92 24FS JIC ST/ST	1	
6	*	75382001	NUT-1/2 UNC GR 8 SLTL	4	
7		235737001	BOLT-1/2 3X1 1/4 GR 8 ZINC PLT	4	
8		244693001	VALVE-DRILL FLUID SHUTOFF	1	SN101-316
9	*	287091001	HOSE-1 1/2X116 24FS JIC ST/ST 3000 PSI	1	
10		732009	PLUG-3/4" PIPE BLACK STEEL	1	
11		141856001	FITTING-24FS JIC TEE	1	SN236-
12		284500001	HOSE-1 1/4X65 24FS JIC ST/90 3000 PSI	1	SN236-316
	*	287082001	HOSE-1 1/4X85 24FS JIC ST/90 DEG 3000 PSI	1	SN 317-
13		244517001	FITTING-24M JIC BULKHEAD ST	1	SN236-
14		86315001	FITTING-CAP NUT-24F JIC	1	SN236-
15		284348001	BUSHING SWIVEL LOCK-2 HALVES	1	SN236-
16		283838001	CAPSCREW-3/8"-16X1 1/2 SOC HD G8 ZY	2	SN236-
17		284508001	BRACKET-BALL VALVE OFFSET	1	SN236-
18	*	287053001	VALVE-1 1/2 STEEL BALL 2200 PSI	1	SN317-, BREAKDOWN FIG. 6-23
19	*	278225001	SUPPORT-BALL VALVE	1	SN317-
20	*	235713001	WASHER-3/8 SAE HARD ZINC PLT	4	SN317-
21	*	250508001	NUT-3/8-16 GR8 TOP LOCK Y/ZINC	4	SN317-
22	*	235721001	BOLT-1/2-13X1 1/2 GR 8 ZINC PLT	2	
			Revised June 2000 due to update in illustration & parts list. Changed/added parts marked with *.		

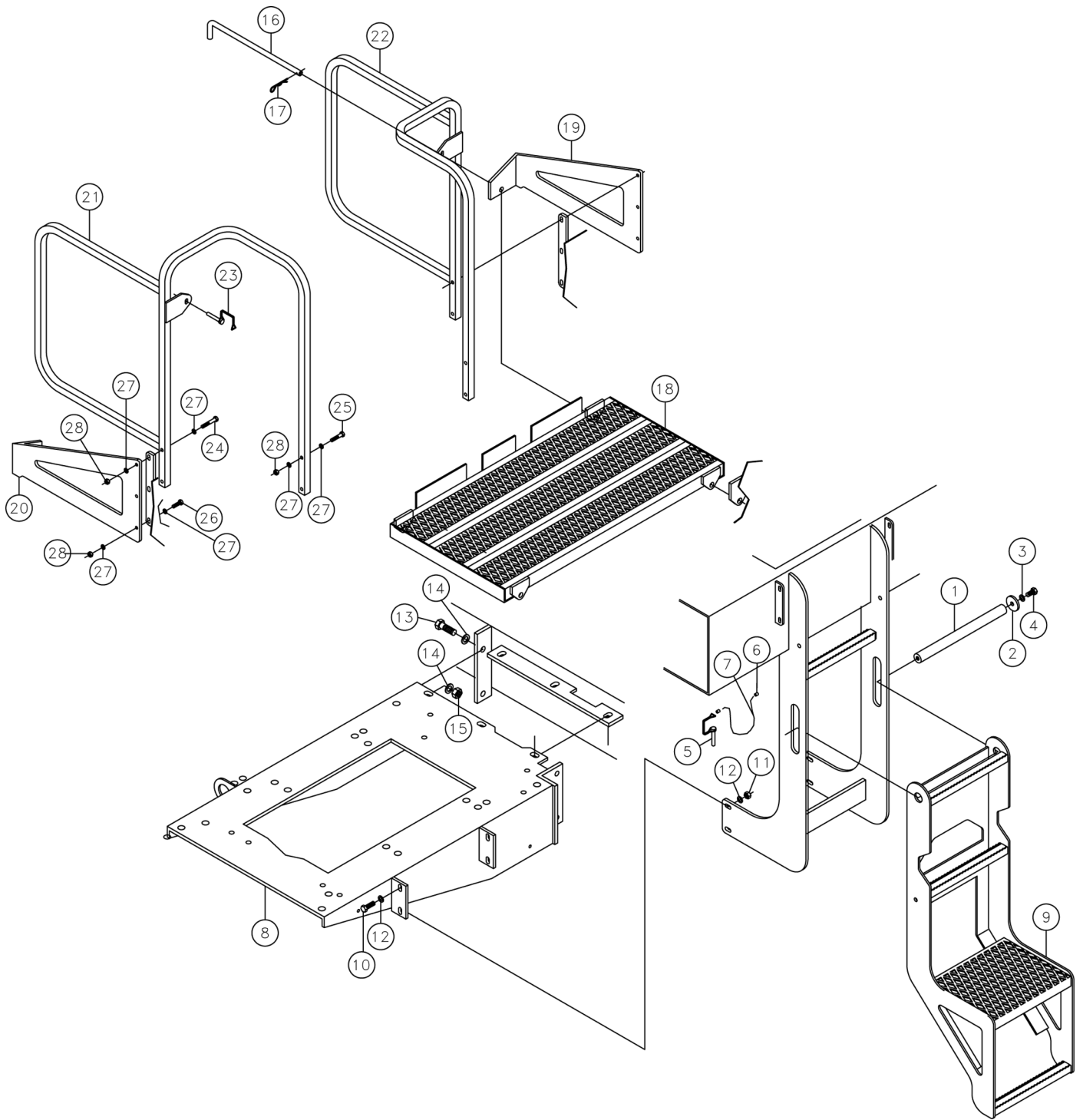
Platform - SN101-312 Fig 6-4r03



Platform - SN101-312 Fig 6-4r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		239348001	LADDER	1	
2		275344001	PLATFORM-WATER PUMP	1	
3		239339001	PLATE-PLATFORM SUPPORT	1	LEFT
4		239374001	MOUNT-WATER PUMP	1	
5		239358001	MOUNT-PLATFORM	1	
6		1830011	NYLON COATED CABLE-3/32-16"	2	
7		1838001	CONNECTOR-WIRE	4	ETC
8		2109003	PIN LOCKING - 3/8 X 2 1/4	2	
9		238245001	BOLT 5/8"-11 X 2 1/4" XCX GR8 HEX	3	
		238221001	NUT-5/8-11 GR8 NC Y/ZINC	3	
		235715001	WASHER-5/8 SAE HARD ZINC PLTD	3	
10		235721001	BOLT-1/2-13X1 1/2 GR8 ZINC PLT	12	
		485025	WASHER-1/2 FLAT-HARDENED-ZINC	12	
		235731001	NUT-1/2-13 GR8 ZINC PLTD	12	
11		901062001	CHAIN LINK 3/16 X 2 THD	1	
			Revised June 2000 due to update in heading.		

Platform - SN313- Fig 6-4x01

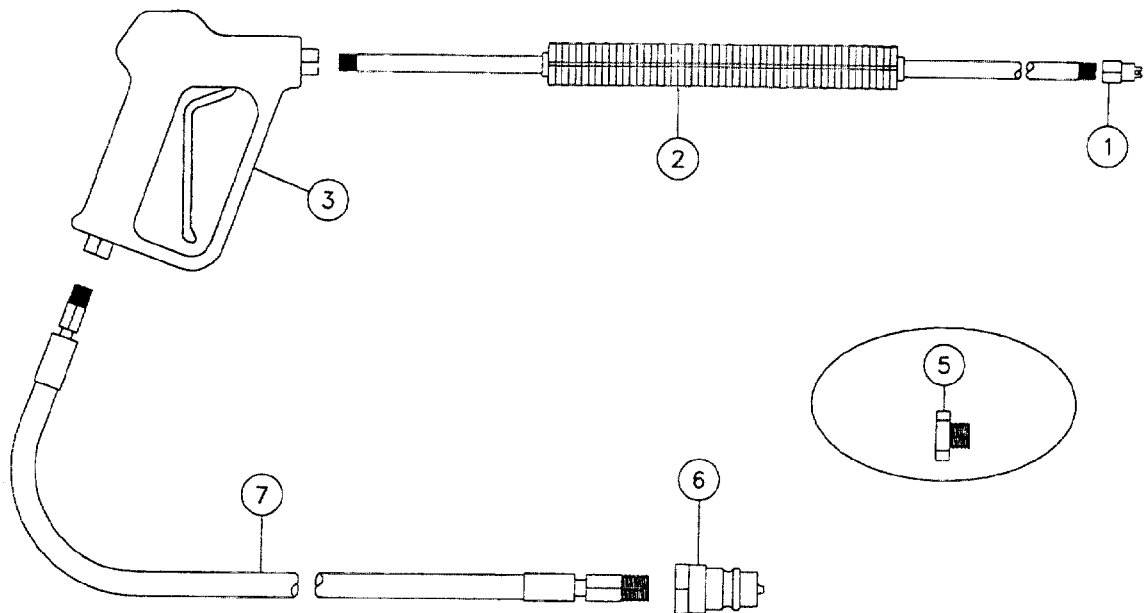


Platform - SN313- Fig 6-4x01

REF NO.	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		277816001	BAR-STEP PIVOT	1	
2		18150001	WASHER-2 OD X 13/32 ID-1/4	2	
3		235713001	WASHER-3/8 SAE HARD ZINC PLTD	10	
4		235727001	BOLT-3/8-16X1 GR 8 HEX ZINC PLTD	2	
5		2109003	PIN-LOCKING-3/8X2 1/4	2	
6		1838001	CONNECTOR-WIRE	4	ETC
7		1830059	NYLON-COATED CABLE 3/32-10.00	2	
8		278249001	PLATFORM-WATER PUMP	1	
9		287038001	LADDER-TANK	1	
10		235721001	BLT-1/2-13X1 1/2 GR 8 ZINC PLT	4	
11		235731001	NUT-1/2-13 GR 8 ZINC PLT	4	
12		485025	WASHER-1/2 FLAT HARDENED ZINC	8	
13		243921001	BOLT-3/4-10 X 2 1/4 GR 8 ZP	5	
14		235717001	WASHER-3/4 FLAT HARDENED Y/ZINC	10	
15		235739001	NUT-3/4-10 GR 8 ZINC PLTD	5	
16		287068001	PIN-PLATFORM PIVOT	2	
17		1794003	HAIR PIN COTTER-.148 WIRE	2	
18		287065001	PLATFORM-ACCESS	1	
19		287066001	PLATE-PLATFORM SUPPORT	1	FRONT
20		287067001	PLATE-PLATFORM SUPPORT	1	REAR
21		278103001	HANDRAIL-LEFT PLATFORM	1	
22		278104001	HANDRAIL-RIGHT PLATFORM	1	
23		2109001	PIN-38-20 LP 3/8X2 1/4	1	
24		250504001	BOLT-3/8-16X2 1/4 GR 8 HEX Y	4	
25		235720001	BOLT-3/8-16X1 3/4 GR 8 ZINC PLT	4	
26		235736001	BOLT-3/8-16X1 1/4 ZINC PLTD	2	
27		235713001	WASHER-3/8 SAE HARD ZINC PLTD	20	
28		235725001	NUT-3/8-16 GR 8 ZINC PLTD	10	
			Revised June 2000 due to addition of figure to manual.		

Wand Fig 6-5r01

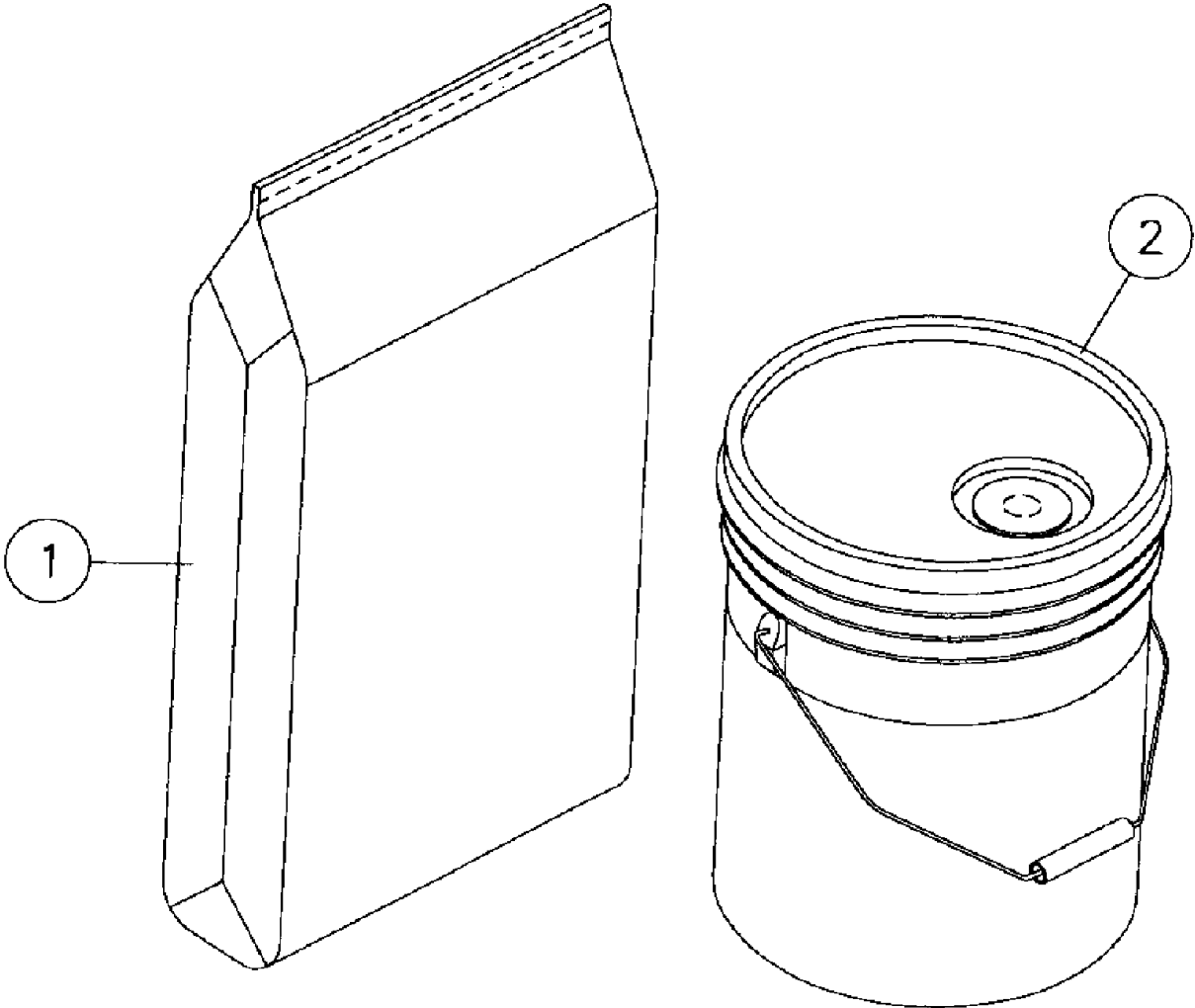
Revised October 1999 due to update
in illustration & parts list. Changed/
added parts marked with *.



Wand Fig 6-5r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		904576001	SPRAY NOZZLE	1	
2		904577001	MOLDED LANCE	1	
3		904578001	GUN HANDLE	1	
4		129692001	HOSE-3/8X 300 1/4M/3/BMS NPTF	1	REPLACED BY 282761001
5		730003	1/2" X 1/4" HEX BUSHING STEEL	1	
6		227236001	COUPLER-1/2" NPT QUICK	1	MALE
7	*	282761001	HOSE-3/8X500 3/8" MN NPT 1/2 MNPT 100R2	1	
	*	240264001	WAND ASSY		REPLACES 227891001

Drill Fluid Fig 6-6

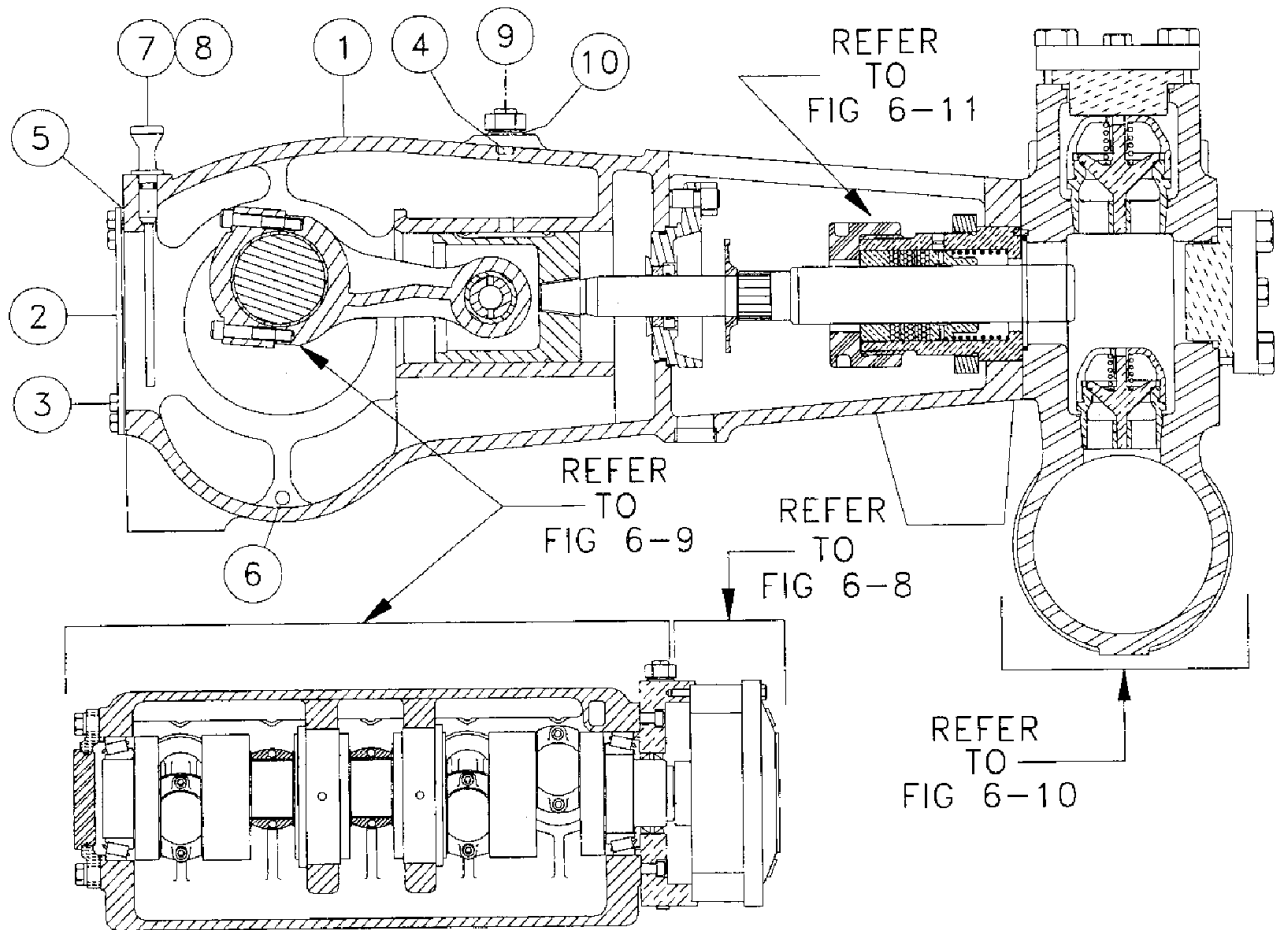


Drill Fluid Fig 6-6

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		904882001	50LBS BAG QUICK GELL BENTONITE	1	
		123596001	BORE-GEL	1	50 LB BAG
2		905216001	POLYMER	1	5 GALLON
		123595001	EZ-MUD	1	5 GALLON

Water Pump Components - SC115L Fig 6-7r02

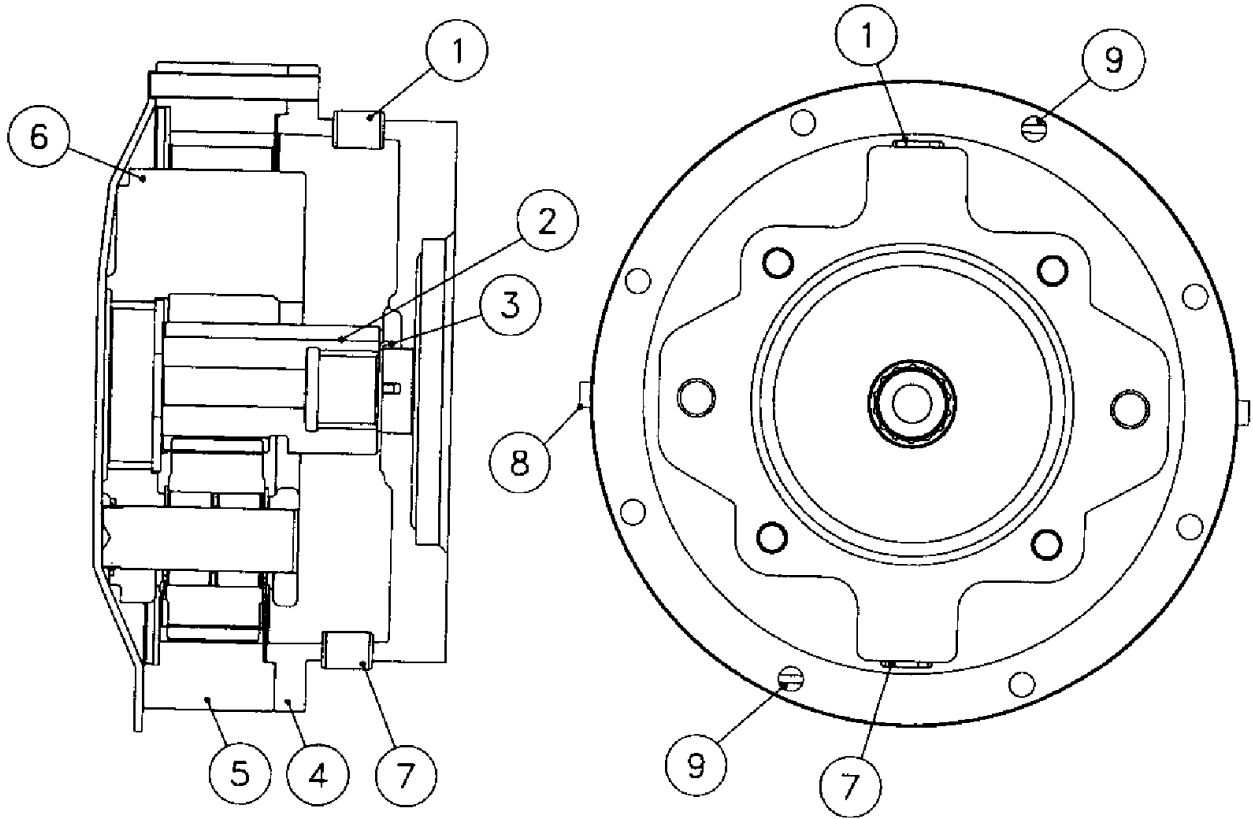
Revised February 1999 due to parts list update. Added part marked with *.



Water Pump Components - SC115L Fig 6-7r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		239383005	POWER FRAME	1	FOR DIPSTICK
2		239383007	CRANKCASE COVER	1	
3		220741009	3/8-16X5/8 HHCS	12	
4		239383009	PLUG-1/4 NPT SOCKET HEAD PLUG	5	
5		239383011	GASKET-CRANKCASE COVER	1	
6		239383013	PLUG-1/2 NPT SQ HEAD	2	
7		224408081	OIL LEVEL DIPSTICK	1	
8		224408083	O-RING	1	
9		244643003	BREATHER-CRANKCASE 3/4M NPT	1	
10		220741017	PLUG-1/2 NPT SOCKET HEAD	5	
	*	244643001	PUMP-SC115L CAST END WATER		BREAKDOWN FIG. 6-7 THRU 6-12
			Revised February 1999 due to parts list update. Added part marked with *.		

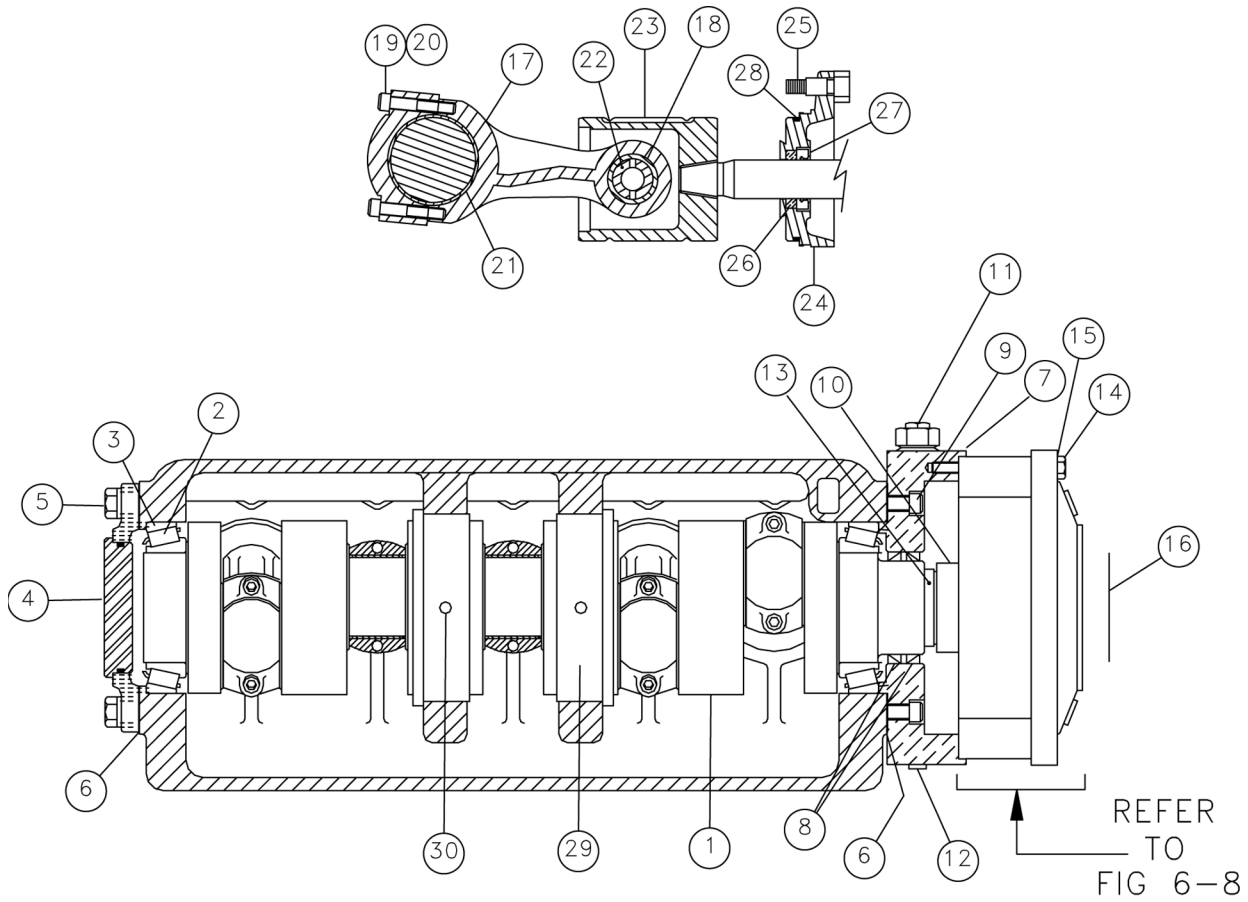
Gearbox Components Fig 6-8



Gearbox Components Fig 6-8

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		221652039	PIPE PLUG	1	FILLER
2		234267005	GEAR-SUN 6"	1	
3		131488021	THRUST WASHER	1	
4		234352001	MOTOR MOUNT HOUSING ASSEMBLY	1	INC. REF. 9
5		234267007	GEAR-RING	1	
6		234267009	SEC CARRIER ASSEMBLY	1	
7		221652035	MAGNETIC PLUG	1	
8		221652015	PIPE PLUG	2	
9		100003001	PLUG-1/8 BLK.PIPE HEX CTSK	2	
		234354001	GEAR BOX KIT-MODIFIED		INC. REF. 1-9

Water Pump Components - SC115L (continued) Fig 6-9r03

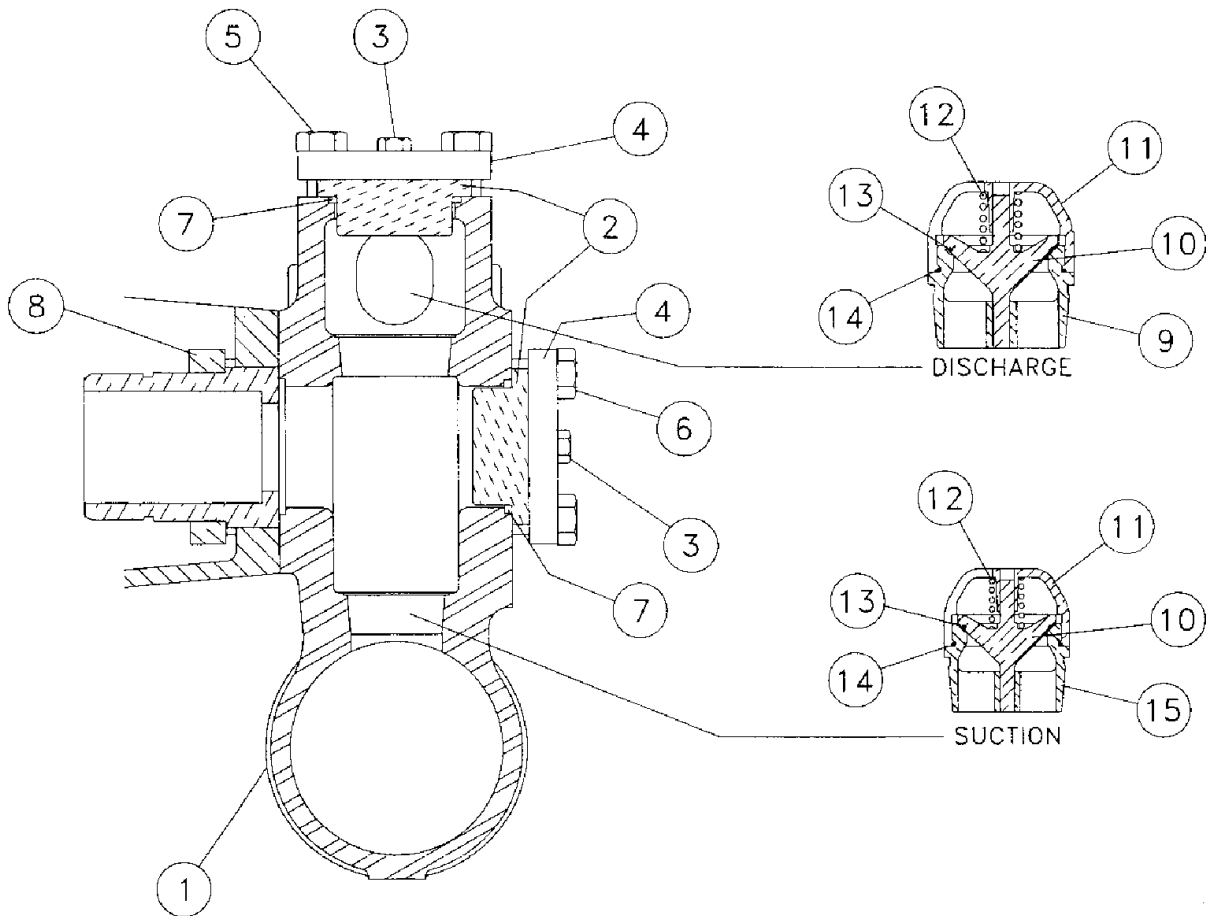


Water Pump Components - SC115L (continued) Fig 6-9r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Udate in Illus. & Parts List
1		239383059	CRANKSHAFT	1	
2		234309005	BEARING CONE	2	
3		234309007	BEARING CUP	2	
4		234309009	BLIND BEARING CUP	1	
5		224408097	HEX HEAD CAP SCREW 1/2 X 1 1/2	6	
6		234309011	SHIM SET	1	
7	*	234309013	BEARING RETAINER	1	PN Changed
8	*	239383079	OIL SEAL	2	PN Changed
9	*	55419001	SCREW-1/2-13X1 3/4 SCKT HEAD CAP	6	PN Changed
10		234309017	PLANETARY OUTPUT SHAFT	1	
11		220741019	BREATHER-CRANKCASE 3/4M NPT	1	
12		234309019	1/4 NPT PIPE PLUG	4	
13	*	234309021	SNAP RING	1	PN Changed
14	*	234309023	5/ 16-18 HEX HD CAPSCREW 3 1/4	6	PN Changed
15	*	234309025	WASHER-STAT-O-SEAL- 5/16	6	PN Changed
16		239383087	O-RING	1	
17		224408085	CONNECTING ROD	5	INC. REF. 18, 19 & 20
18		224408087	WRIST PIN BUSHING	5	
19		4478024	3/8-16X2 1/2 SOCK HD.	10	
20		480007	WASHER-3/8 S/T LOCK	10	
21		224408089	CRANK PIN BEARING HALF	10	
22		224408091	WRIST PIN	5	
23		224408093	CROSSHEAD	5	
24		224408095	WIPER BOX	5	
25		224408097	HEX HEAD CAP SCREW 1/2 X 1 1/2	10	
26		224408099	POLYPAK RING	5	
27		224408101	OIL SEAL-WIPER BOX	5	
28		224408103	O-RING-WIPER BOX	5	
29		239383017	BEARING-CENTER	2	
30		239383089	SET SCREW-3/8 NC X1 1/2 SOC HD	2	
	*	296253155	SC-115 LH-#6 CRNKSHFT KIT W/BRGS	1	PN Added INC REF 1-3, REF 10, AND REF 13

Water Pump Components - SC115L (continued) Fig 6-10r02

Revised February 1998 due to water pump change (S/N 107). Figure is new.

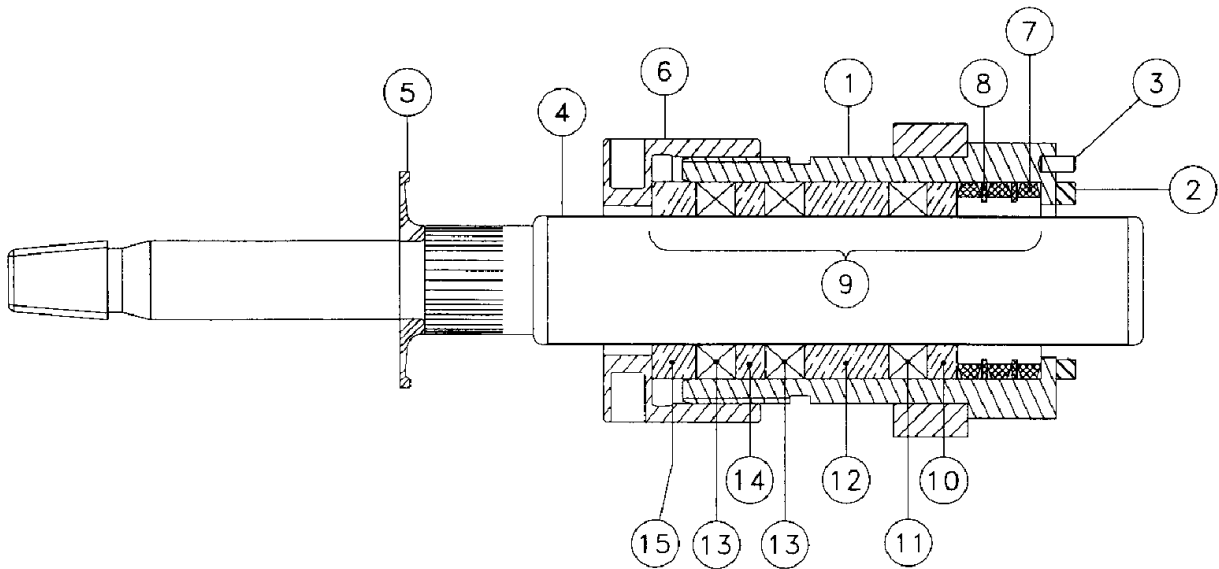


Water Pump Components - SC115L (continued) Fig 6-10r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		244643019	FLUID END-DUCTILE IRON	1	
2		244643021	VALVE COVER & CYLINDER HEAD PLUG	2	
3		233983023	CAP SCREW-1/2 NC-1 1/4 HEX HD	10	
4		239383019	VALVE COVER RETAINER PLATE	2	
5		244643023	CAP SCREW-3/4 NC-2 1/2" HEX HD	4	
6		244643025	CAP SCREW-3/4 NC-9 1/2" HEX HD	10	
7		239383021	O-RING	10	
8		239383075	RETAINER PLATE	1	
9		239383025	VALVE SEAT	5	
10		239383027	DOUBLE STEM VALVE 17-4PH SS	10	
11		239383031	GUIDE CAGE-STAINLESS STEEL	10	
12		244643027	VALVE SPRING, ICONEL	10	
13		239383029	O-RING, POLYURETHANE SIZE 2-030	10	
14		239383033	O-RING, NITRILE RUBBER SIZE 2-035	10	
15		244643029	VALVE SEAT	5	
			Revised February 1999 due to water pump change (S/N 107). Figure is new.		

Water Pump Components - SC115L (continued) Fig 6-11r01

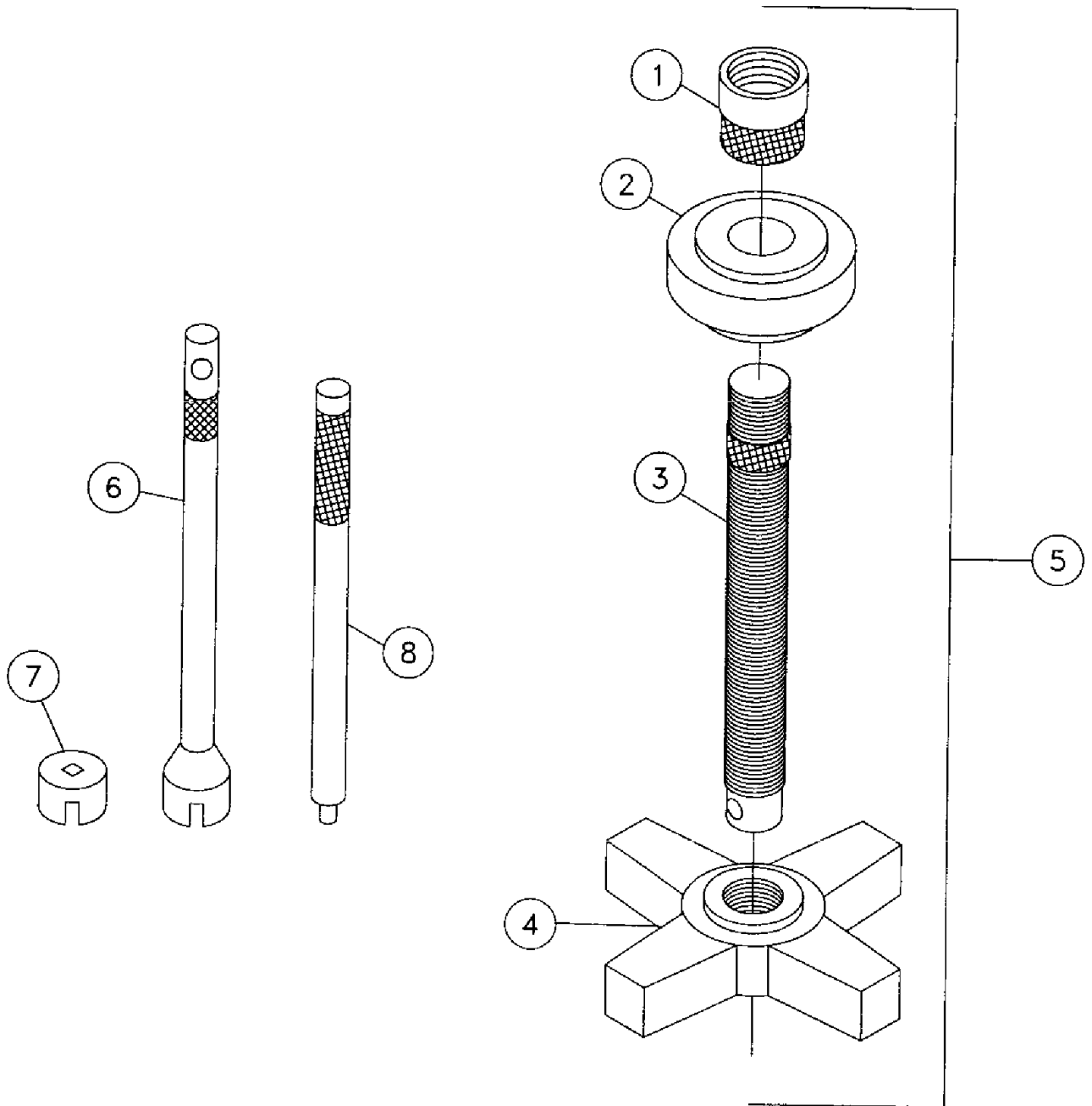
Revised February 1998 due to water pump change (S/N 107). Changed part marked with *.



Water Pump Components - SC115L (continued) Fig 6-11r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		239383039	STUFFING BOX	1	2 3/4 PLUNGER
2		224408131	SEAL-STUFFING BOX	1	RUBBER
3		239383041	ROLL PIN - 1/4 X 5/8	1	
4		239383003	PLUNGER-2.75"DIA. CHROME OXIDE	1	
5		224408133	BAFFLE PLATE-RUBBER	1	
6		239383043	STUFFING BOX GLAND-2 3/4 PLNG	1	
7		239383045	ELASTOMER SPRING	3	
8		239383047	SPRING SPACER	2	
9		239383049	PACKING ASSY - HI/LO	1	INC. REF. 10 & 15
	*	244643031	PACKING SET	1	PACKING ONLY, INC. REF. 11 & 13
10		239383091	SPRING ADAPTER-BRONZE	1	
11		239383093	STYLE-140 PACKING	1	
12		239383095	SPACER-BRONZE	1	
13		239383097	STYLE 141 PACKING	2	
14		239383099	SPACER-BRONZE	1	
15		239383101	GLAND RING-BRONZE	1	
			Revised February 1998 due to water pump change (S/N 107). Changed part marked with *.		

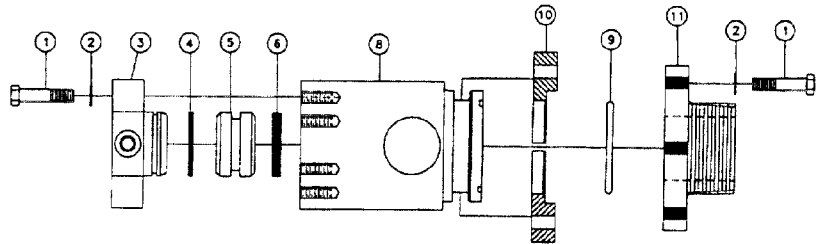
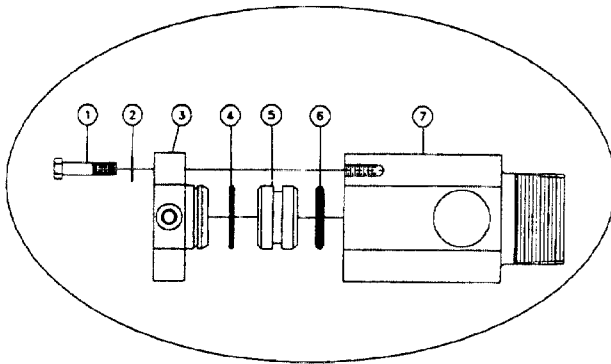
Water Pump Components - SC115L (continued) Fig 6-12



Water Pump Components - SC115L (continued) Fig 6-12

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		224408165	PULLER HEAD	1	
2		239383053	BRIDGE	1	
3		224892001	STEM PULLER	1	
4		224893001	WING NUT	1	
5		239383083	VALVE PULLER ASSEMBLY	1	
6		239383055	CAGE WRENCH	1	
7		239383057	CAGE SOCKET	1	
8		239383085	GLAND NUT WRENCH	1	

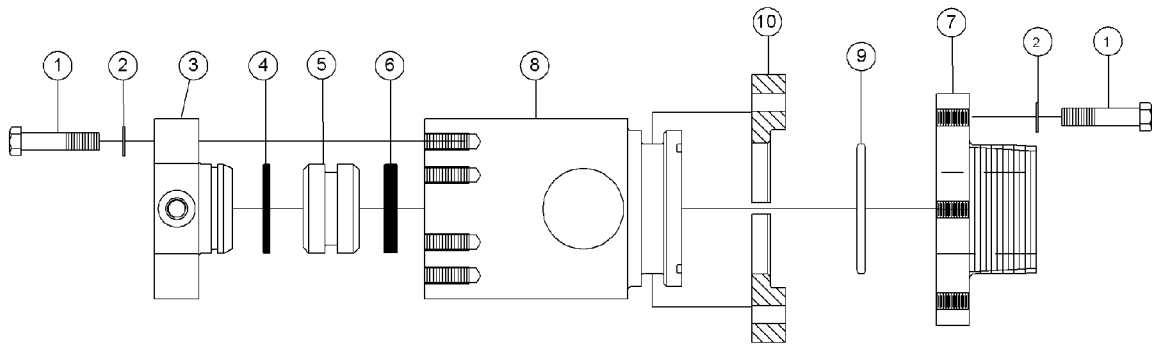
Water Pump Outlet Components - SC115L - SN101-202 Fig 6-13r02



Water Pump Outlet Components - SC115L - SN101-202 Fig 6-13r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		354016	BOLT-3/8-16X1 3/4" GRADE#5 HEX	12	
2		480007	WASHER-3/8 S/T LOCK	12	
3		239468001	ENDCAP-SC115L OUTLET FITTING	1	
4		51163001	O-RING	1	
5		239252001	PISTON-SC65 OUTLET FITTING	1	
6		51181001	O-RING	1	
7		239467001	FITTING-APLEX SC115L OUTLET	1	REPLACED BY REF. 8, 9, 10, 11
8		277842001	FITTING-APLEX SC115L OUTLET	1	
9		227589001	O-RING	1	
10		277843001	FLANGE-SPLIT SC115L OUTLET	1	
11		277841001	FLANGE SC115L OUTLET	1	
		239471001	OUTLET ASSY -SC115L FLANGE		INCLUDES ALL ITEMS IN FIGURE, REPLACED BY 277845001
			Revised June 2000 due to update in heading & parts list.		

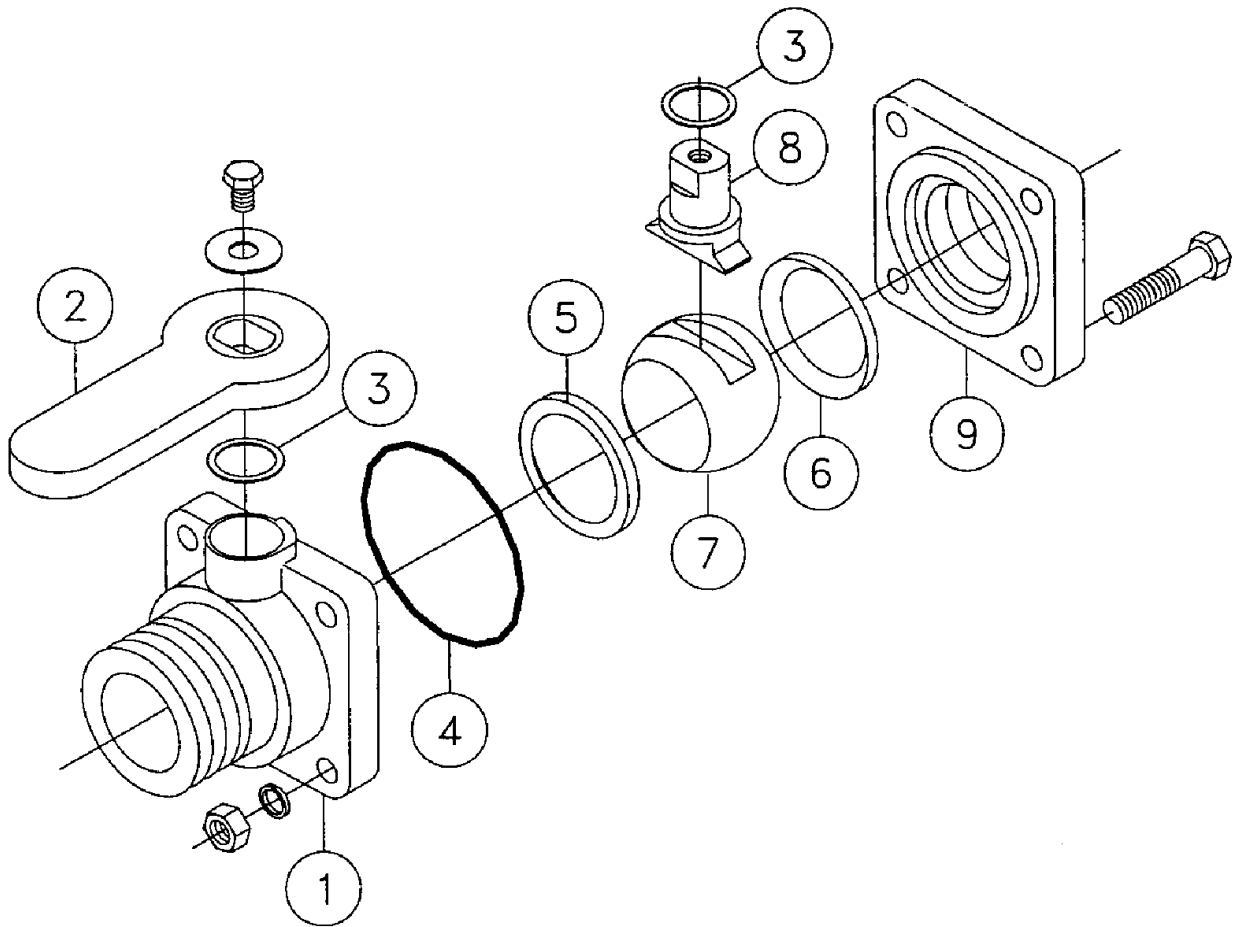
Water Pump Outlet Components - SC115L - SN203-312 Fig 6-13x01r01



Water Pump Outlet Components - SC115L - SN203-312 Fig 6-13x01r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		354016	BOLT-3/8-16X1 3/4" GRADE#5 HEX	12	
2		480007	WASHER-3/8 S/T LOCK	12	
3	*	283638001	REPLACEMENT ASSY	1	PN Changed, SC115L OUTLET FITTING
4		51163001	O-RING	1	
5		239252001	PISTON-SC65 OUTLET FITTING	1	
6		51181001	O-RING	1	
7		239467001	FITTING-APLEX SC115L OUTLET	1	REPLACED BY REF. 8 THRU 11
8		277842001	FITTING-APLEX SC115L OUTLET	1	
9		227589001	O-RING	1	
10		277843001	FLANGE-SPLIT SC115L OUTLET	1	
	*	283640001	OUTLET ASSY -SC115L FLANGE		PN Changed, INCLUDES ALL ITEMS IN THIS FIGURE

Ball Valve Components - 2" M x F Fig 6-14

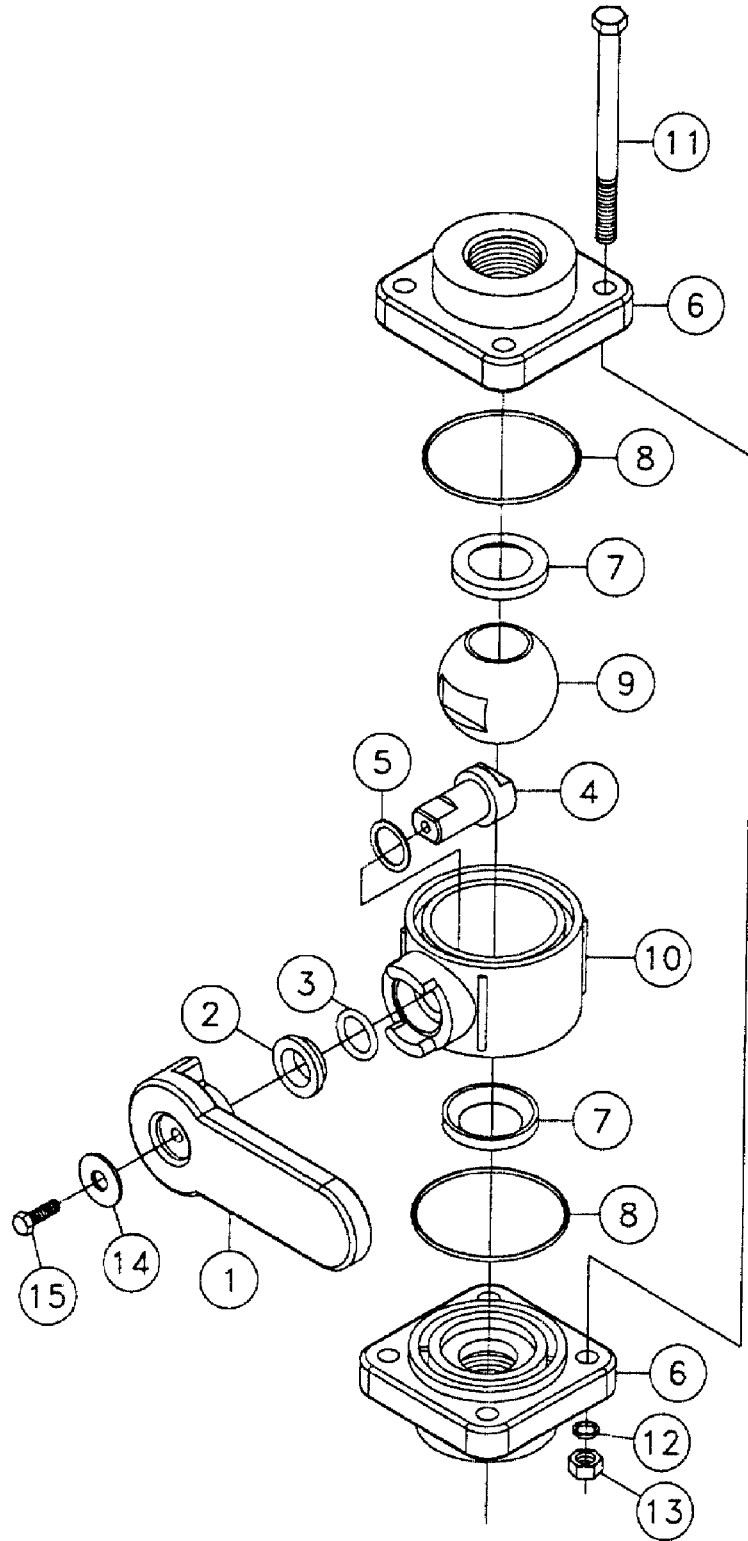


Ball Valve Components - 2" M x F Fig 6-14

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		236045003	BODY-2" MNPT	1	
2		236045005	HANDLE-SHORT	1	
3		224942011	THRUST WASHER	2	
4		236045007	GASKET-BODY	1	
5		236045009	SEAT	1	
6		236045011	SEAT	1	
7		236045013	BALL	1	
8		236045015	STEM	1	
9		224942013	END PLATE	1	
		236045001	VALVE-2" FPT X 2" MPT POLY BALL		INC. ALL ITEMS IN FIGURE

Ball Valve Components - 3/4" Fig 6-15

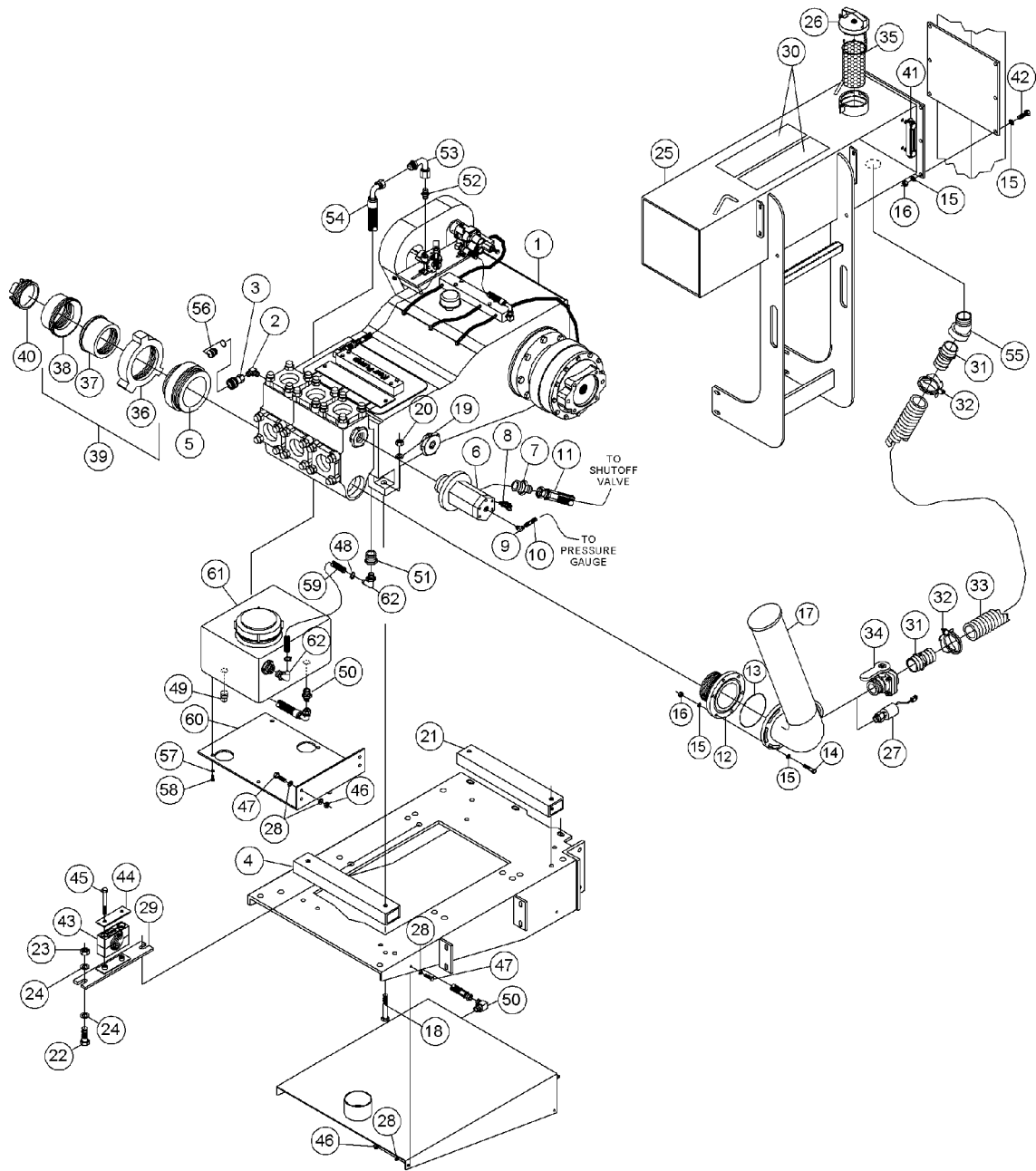
Revised October 1999 due to addition of figure to manual.



Ball Valve Components - 3/4" Fig 6-15

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		225847022	HANDLE-1"	1	
2		225847005	UPPER STEM BUSHING	1	
3		225847007	STEM O-RING	1	
4		225847009	STEM	1	
5		225847011	THRUST WASHER	1	
6		225847013	END PLATE	2	
7		225847015	BALL SEATS	2	
8		225847017	VALVE BODY O-RING	2	
9		225847019	VALVE BALLE	1	
10		225847021	VALVE BODY	1	
11		225847024	BODY BOLT	4	
12		225847025	LOCK WASHER-1/4"	4	
13		225847026	BODY NUT-1/4"	4	
14		225847027	HANDLE WASHER	1	
15		225847028	BOLT-HANDLE	1	
		225847023	REPAIR KIT		INC. REF. 2, 3, 5, 7 & 8
		225847001	VALVE-3/4" FPT BALL		POLY, INC. ALL ITEMS IN FIGURE

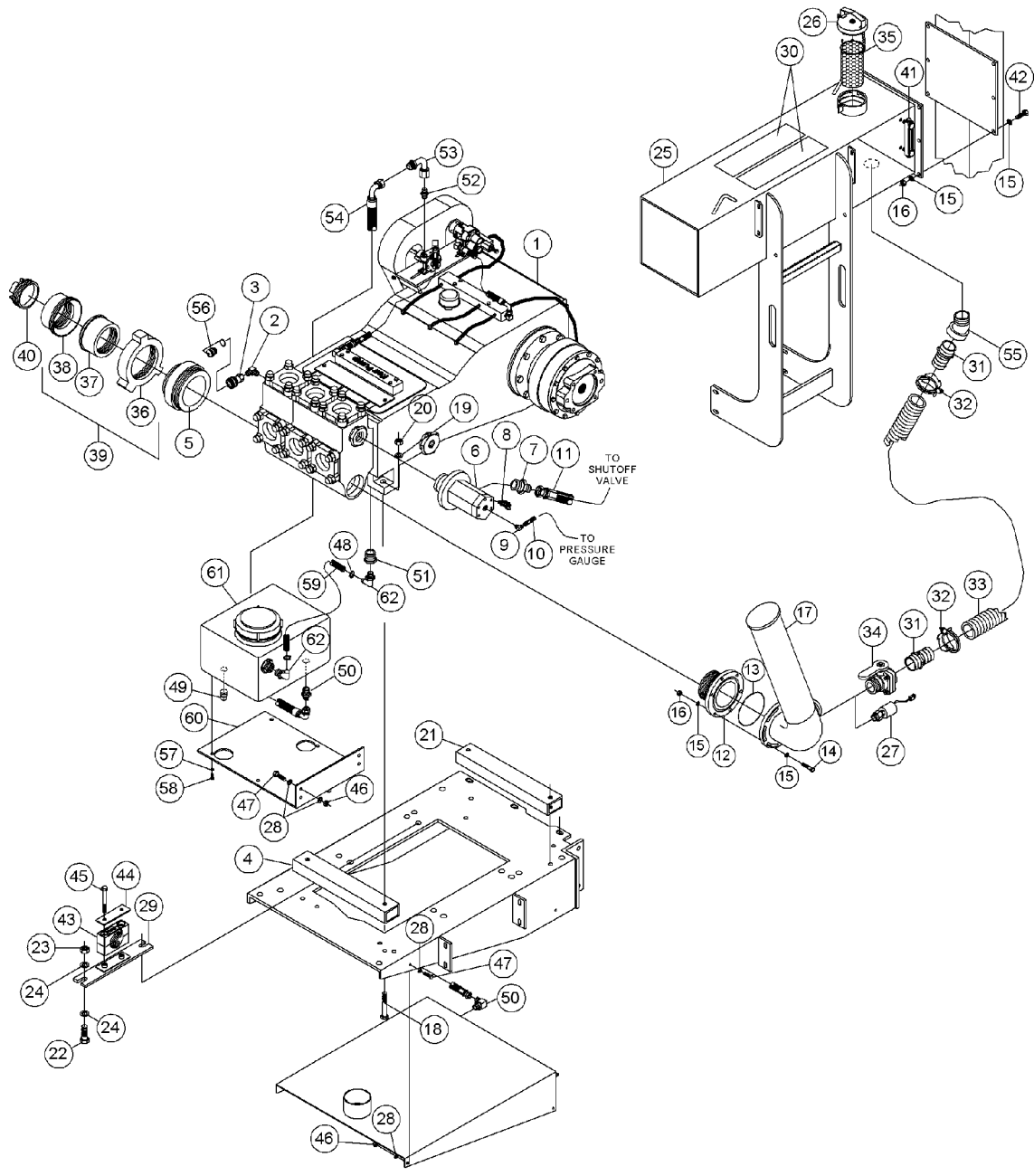
Water Pump Assembly - 150 Gal. (KT3350PT) Fig 6-16r01



Water Pump Assembly - 150 Gal. (KT3350PT) Fig 6-16r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		287078001	PUMP-KERR KT-3550PT	1	BREAKDOWN FIG. 6-18 THRU 6-22
2		904831001	FITTING-1/2MNPTX1/2MNPT 90	1	
3		227235001	COUPLER-1/2"NPT QUICK	1	FEMALE
4		287031001	TUBE-FLUID END PUMP SUPPORT	1	
5		287050001	FITTING-4"MPTX3"MPT REDUCER	1	
6	*	283641001	OUTLET ASSY-KT3350PT FLANGE	1	PN Changed, BREAKDOWN FIG. 6-17r01
7		94569001	FITTING-1 1/2MNPTX24M JIC STR	1	
8		75493001	COUPLER-MALE TCM20-7/16" UNF-V	1	
9		59423001	FIT-4M JICX4M ADJ 90 DEG ELBOW	1	
10		53843607	HOSE-1/4X258 4FS JIC 3000 PSI	1	
11		239496001	HOSE-1 1/2X92 24FS JIC ST/ST	1	
12		287010001	FLANGE-WATER PUMP INLET 3"	1	
13		228181001	O-RING-#243 70D BUNA-N	1	
14		250530001	BOLT-1/2-13X2 1/4" GR 8 HEX Y/Z	6	
15		485025	WASHER-1/2 FLAT HARDENED ZINC	26	
16		75382001	NUT-1/2 UNC GR 8 SLTL	5	
17		287033001	TUBE-SUCTION STABILIZER	1	KT3350
18		287009001	BOLT-5/8-11X4 1/2 GRD HEX YZN PLTD	4	
19		235715001	WASHER-5/8 SAE HARD ZINC PLTD	4	
20		238221001	NUT-5/8-11 GR 8 NC Y/ZIC	4	
21		287041001	TUBE-DRIVE END PUMP SUPPORT	1	
22		243921001	BOLT-3/4-10X2 1/4 GR 8 ZP	2	
23		235739001	NUT-3/4-10 GR 8 ZINC PLTD	4	
24		235717001	WASHER-3/4 SAE HARD ZINC PLTD	4	
25		287003001	TANK-WP ANTI-FREEZE	1	
26		224985001	CAP-VENTED FUEL TANK	1	
27		287069001	SWITCH-SEALED DIAPHRAM 10 PSI	1	
28		235713001	WASHER-3/8 SAE HARD ZINC PLTD	8	
29		287058001	BRACKET-HOSE CLAMP	1	
30		5776001	TAPE-SAFETY WALK 4 WIDE	25	
31		215426001	HOSE-BARB 2X2 MPT	2	POLY
32		238064001	CLAMP-2" POWERLOCK HOSE	2	
33		278116001	HOSE-2" HD SUCTION 45"	1	
34		236045001	VALVE-2"FPT X 2" MPT POLY BALL	1	BREAKDOWN FIG. 6-14
35		99998001	STRAINER-6" .030 STEEL	1	
36		287056007	NUT-4" HAMMER UNION WING 1000 PSI	1	
37		287056003	SUB-4" MALE HAMMER UNION 1000 PSI	1	
38		287056005	SUB-4" FEMALE HAMMER UNION 1000 PSI	1	
39		287056001	UNION-4" HAMMER 1000 PSI	1	

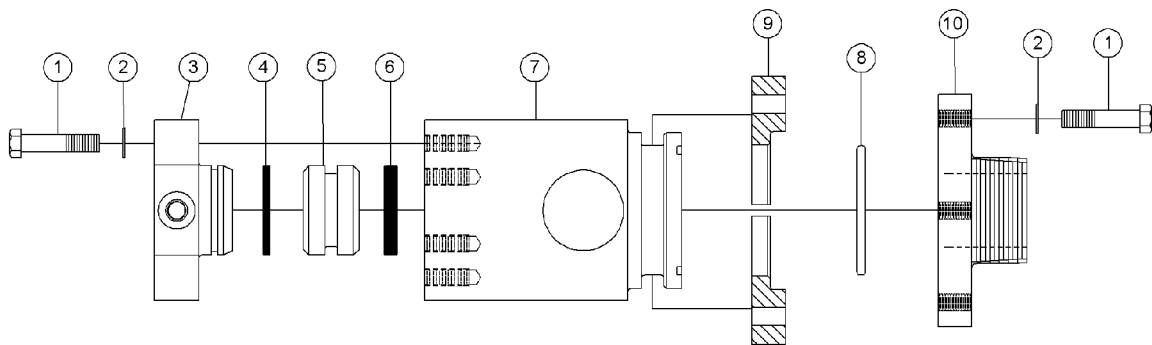
Water Pump Assembly - 150 Gal. (KT3350PT) (continued) Fig 6-16r01



Water Pump Assembly - 150 Gal. (KT3350PT) (continued) Fig 6-16r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
40		287057001	PLUG-4" NPT	1	
41		81590001	GAUGE-SIGHT	1	
42		235721001	BOLT-1/2-13X1 1/2 GR 8 ZINC PLT	10	
43		278186003	CLAMP-PAIR	1	2.11" ID
44		278186005	PLATE-COVER	1	
45		357040	BOLT-7/16-14X4 GR 5 HHCS PLATED	2	
46		235725001	NUT-3/8-16 GR 8 ZINC PLTD	4	
47		235736001	BOLT-3/8-16X1 1/4 ZINC PLTD	4	
48	*	1580007	HOSE CLAMP - 1 1/2"	2	PN Changed
49	*	735001	3/4" COUNTERSUNK PIPE PLUG	1	PN Changed
50	*	60828001	3/4MX8M JIC STR ADAPTER	1	PN Changed
51	*	215432001	BUSHING - 2 X 1 1/2 REDUCER	1	PN Changed
52		60922001	1/2M X 8M JIC ST ADAPTER	1	
53		53660001	#8M JIC X #8FS JIC 90 DEG TUBE	1	
54		68208047	HOSE-1/2X52 8FS JIC/8FS JIC 90	1	
55		224939001	ELBOW-2" 45 DEGREE STREET	1	POLY
56	*	234679001	CAP-DUST	1	PN Added
57	*	235716001	WASHER - 1-4 SAE HARD ZINC PLTD	4	PN Added
58	*	235734001	BOLT-1/4-20X3/4 GR8 ZINC PLTD	4	PN Added
59	*	285925001	HOSE - 1 1/2 X 52 LP SUCTION	1	PN Changed
60	*	285804001	PLATE- TANK MOUNT	1	PN Added
61	*	285850001	TANK - 6 GALLON POLY	1	PN Added
62	*	223756001	HOSE BARB-1 1/2 X 1 1/2 90M	2	PN Added

Water Pump Outlet Components (KT3350PT) Fig 6-17r01



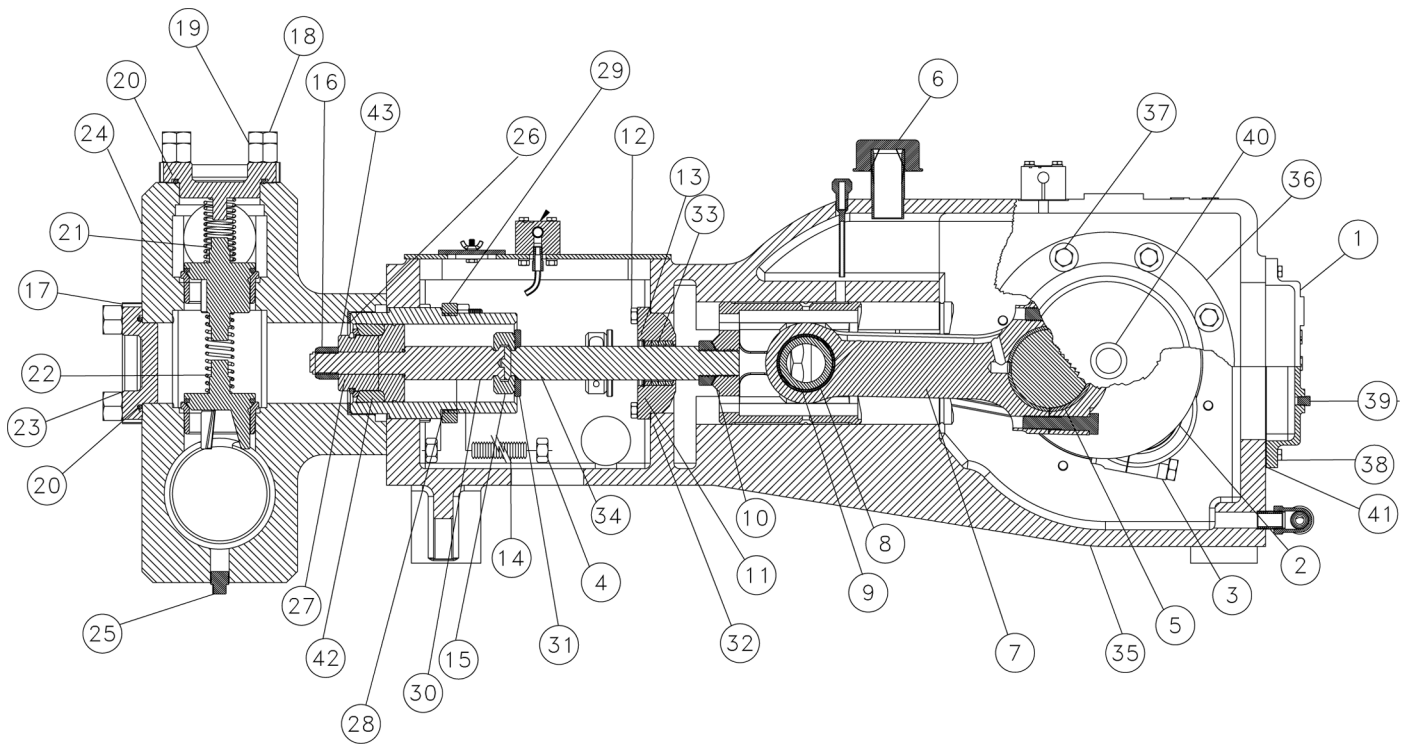
Water Pump Outlet Components (KT3350PT) Fig 6-17r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		235720001	BOLT-3/8-16X1 13/4 GR 8 ZINC PLT	12	
2		235713001	WASHER-3/8 SAE HARD ZINC PLT	12	
3	*	283638001	REPLACEMENT ASSY	1	PN Changed, SC115L OUTLET FITTING
4		51163001	O-RING	1	
5		239252001	PISTON-SC65 OUTLET FITTING	1	
6		51181001	O-RING	1	
7		277842001	FITTING-APLEX SC115L OUTLET	1	
8		227589001	O-RING	1	
9		277843001	FLANGE-SPLIT SC115L OUTLET	1	
10		287001001	FLANGE-KT3550PT OUTLET	1	
	*	283641001	OUTLET ASSY-KT3350 FLANGE		PN Changed

Water Pump Components (KT3350) Fig 6-18r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		287030054	MANIFOLD-OIL	1	
		287030055	GASKET-OIL MANIFOLD	1	
2		287030056	HOSE-8FS JIC/8FS JIC 90	1	
3		287030057	HOSE-8FS JIC/1/2M STR	1	
4		287030058	HOSE-4FS JIC 90/1/8M STR	2	
5		287030059	HOSE-4FS JIC STX/1/8 M STR	3	
6	*	287078002	PISTON CHAMBER COVER	1	
7	*	287078003	GASKET-PISTON CHAMBER COVER	1	
8	*	287078004	COVER-CHAMBER INSPECTION GLASS	1	
9		287030063	HOSE-8FS JIC STX 1/2M ST	1	
10		278030005	MANIFOLD-WATER	1	
11		287030075	HOUSING-BRG HYD DRIVE #8	1	
12		235721001	BOLT-12-13X1 1/2 GR 8 ZINC PLT	8	
13		277781021	GEARBOX-#8 KIT 5.5:1 RATIO AUBURN	1	BREAKDOWN FIG. 6-21
14		225838001	BUSHING-2X3/4 NPT REDUCER POLY	2	
15		735001	3/4" COUNTERSUNK PIPE PLUG	2	
16		287030064	BUSHING-3X2 HEX	1	
17		287030065	BUSHING-3" X 1/2" HEX	1	
18		53832001	1/2M PIPE'8M JIC 90 DEG	4	
19		904831001	FITTING-1'2M NPT X 1/2M NPT 90	1	
20		287030069	COUPLING-3/8" QUICK	1	
21		287030076	QUICK CONNECT-3/8"	1	
22		725003	1/2" PIPE TEE BLACK	1	
23		732007	1/2' PIPE PLUG BLACK STEEL	1	
24		707003	1/2" NPT HEX NIPPLE	1	
25		97491001	FITTING-1/8M X 4M JIC STR. CONN	2	
26		287030070	FITTING-INJECTOR	3	
27		250531001	BOLT-1/4-20X2 GR 8 HEX Y/ZINC	8	
28		480003	WASHER-1/4 S/T LOCK	8	
29		235734001	BLT-1/4-20X3'4 GR 8 ZINC PLTD	2	
30		287030056	FITTING-WATER JET	3	
31		287030067	WING NUT 5-118 UNC	2	
32		278030068	WING NUT-1/4-20 UNC	2	
33		524005	SSS 5/16-18X1	2	
34		287503001	PLUG-3/8" PIPE HOLLOW HEX	1	
35		235732001	NUT-1/4-20 UNC	8	
			Revised July 2000 due to update in parts list. Changed parts marked with *.		

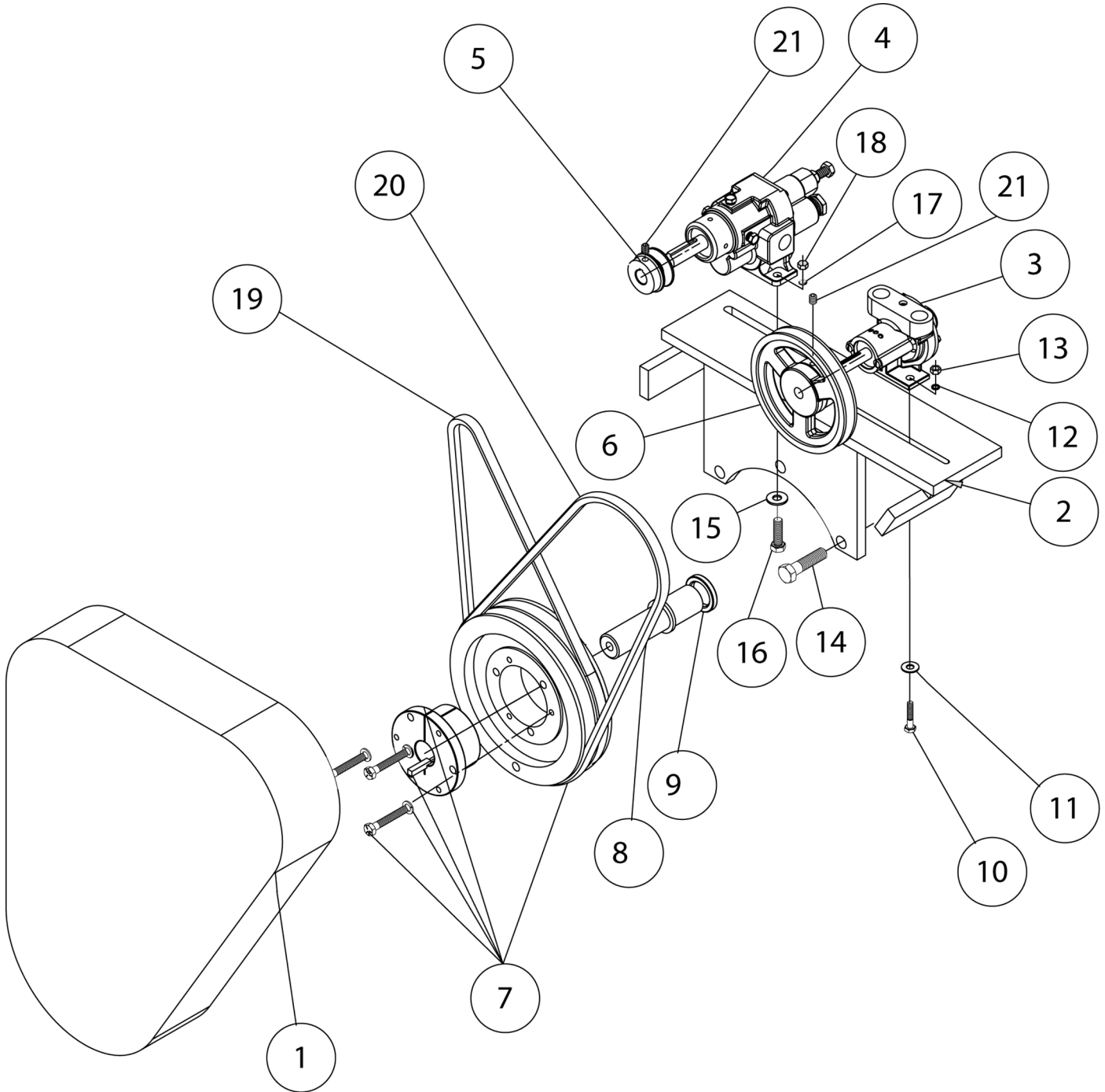
Water Pump Components (KT3350) Fig 6-19r01



Water Pump Components (KT3350) Fig 6-19r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1	*	287078005	COVER-PAN	1	
2	*	287078006	CRANKSHAFT, SPLINED HYD 21" TOOTH	1	
3		287030004	BOLT	6	
4		287030079	NUT-5/8-11 SS	4	
5	*	287078007	BUSHING-CONN. ROD	3	STD
6		287030007	CAP-OIL FILL/BREATHER	1	
7	*	287078008	ROD-CONNECTING	3	INSERTED
8		287030009	PIN-WRIST	3	
9		287030010	BUSHING-WRIST PIN	3	
10		287030011	CROSS HEAD	3	
11		287030012	GLAND-PONY ROD SEAL	3	
12		287030013	BOLT-7/16-14 X 1 1/4 SS	12	
13		287030014	SNAP RING	3	
14	*	287078009	STUD-RETAINER LINER	10	
	*	287078010	STUD-RETAINER LINER RETAINMENT	2	
15		287030016	CLAMP	3	
16		287030017	LOCK NUT	3	
17		287030018	CAP-TOP COVER	3	
18		287030019	STUD	24	
19		287030020	NUT	24	
20		287030021	O-RING	6	
21	*	287078011	VALVE-DISCHARGE	3	COMPLETE
22	*	287078012	VALVE-SUCTION	3	COMPLETE
23		287030024	COVER-END CAP	3	
24	*	287078013	FLUID END VESSEL ONLY	1	
25		287030026	PLUG-BRASS DRAIN	1	
26		287030027	GASKET-LINER	3	
27		287030028	PISTON-3 1/2"	3	
28	*	287078014	LINER-3 1/2 CERAMIC	3	
29		287030030	RETAINER-LINER	3	
30	*	287078015	ROD-PISTON EXTENSION	3	
31		287078032	SPLASH GUARD-PONY ROD	3	
32		287030033	GASKET-PONY ROD GLAND	3	
33		287030034	SEAL SET	3	INC. FOUR SEALS
34	*	287078016	ROD-PONY PISTON	3	PUMP TYPE
35	*	287078017	CASE-PUMP	1	
36	*	287078018	HOUSING-BEARING, EXT. SHAFT SIDE	1	
37		235721001	BOLT-1/2- 13 X 1 1/2 GR 8 ZINC PLT	8	
38		238209001	BOLT-5/16-18 X 1 GR 8 NEX ZINC YC	19	
39		287030040	PLUG-BRASS OIL LEVER	1	
40		287030053	SEAL-OIL	1	
41	*	287078019	GASKET-PAN COVER	1	
42	*	287078020	PISTON CUP KIT	3	
43	*	287078021	PISTON-BODY ONLY	3	
			Revised July 2000 due to update in parts list. Changed parts marked with *.		

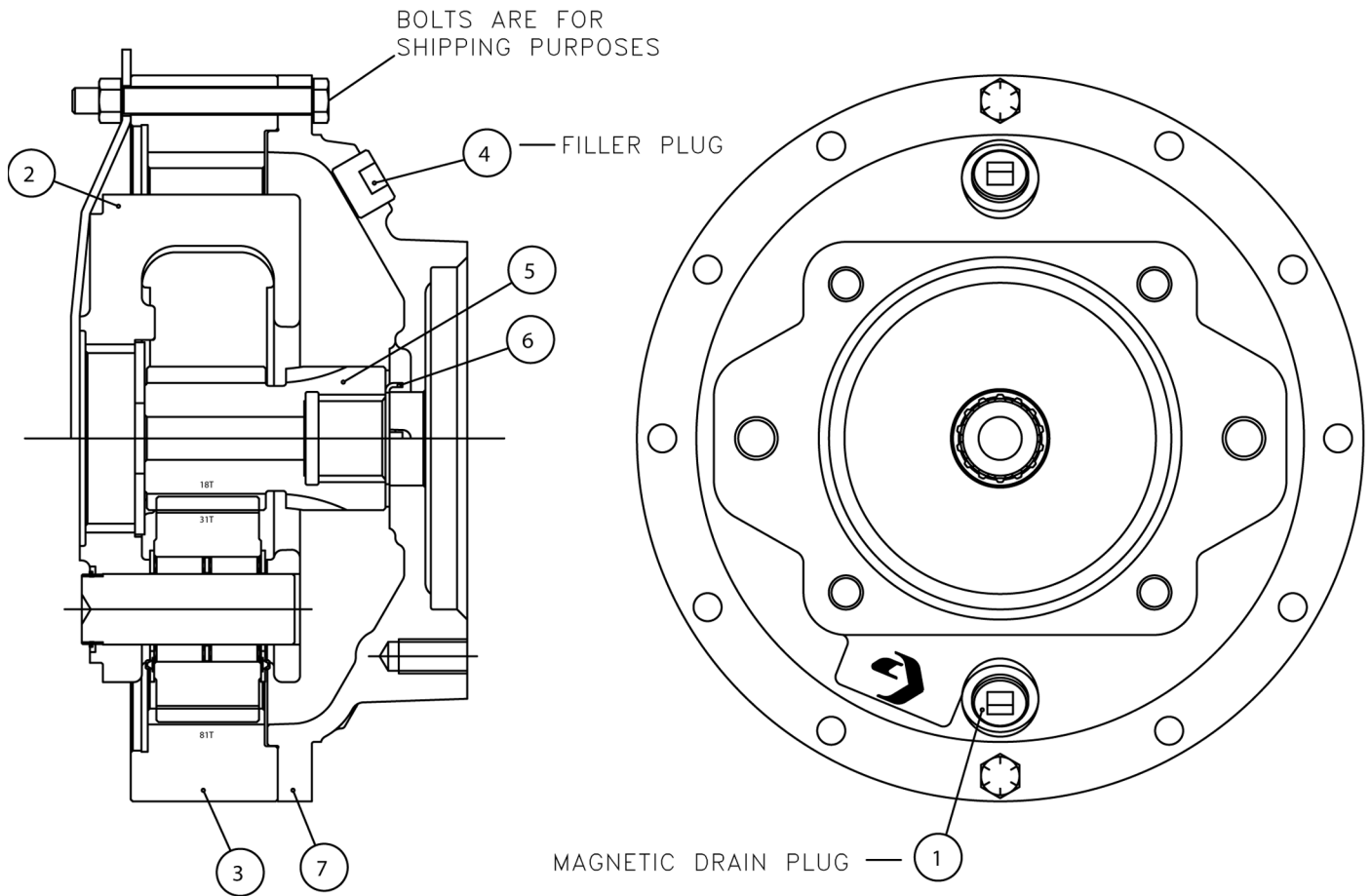
Piston Wash Pump Drive Fig 6-20r01



Piston Wash Pump Drive Fig 6-20r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1	*	287078022	BELT GUARD-PUMP DRIVE	1	
2	*	287078023	BRACKET-OIL/WATER PUMP	1	
3		287030043	PUMP-BRONZE WATER	1	
4		287030044	PUMP-HYD. CAST IRON REPAIR KIT	1	
5		287030045	SHEAVE-OIL PUMP	1	
6		287030046	SHEAVE-WATER PUMP	1	
7		287030047	SHEAVE-CRANKSHAFT	1	
8		NSS	SHAFT-AUXILIARY	1	COMES W/CRANKSHAFT
9		287030053	SEAL-OIL	1	
10		250008001	BOLT-1/4-20 X 1 1/4 ZINC PL	2	
11		485003	WASHER-1/4 FLAT	2	
12		480003	WASHER-1/4 S/T LOCK	2	
13		235732001	NUT-1/4-20 GR 8 ZINC PLTD	2	
14		235718001	BOLT-1/2-13 X 2 GR8 HEX ZINC PLT	3	
15		485007	WASHER-3/8 FLAT	2	
16		235736001	WASHER-3/8 FLAT	2	
17		480007	WASHER-3/8 S/T LOCK	2	
18		235725001	NUT-3/8-16 GR 8 ZINC PLTD	2	
19	*	287078024	BELT-OIL PUMP	1	
20	*	287078025	BELT-WATER PUMP	1	
21		528001	SSS-3/8-16 X 3/8 BRSS TIP	2	
			Revised July due to update in parts list. Changed parts marked with *.		

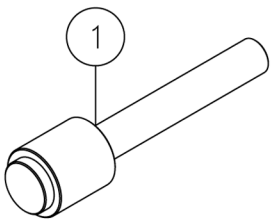
Water Pump Components - 150 Gal. (KT3350PT) Gearbox Fig 6-21



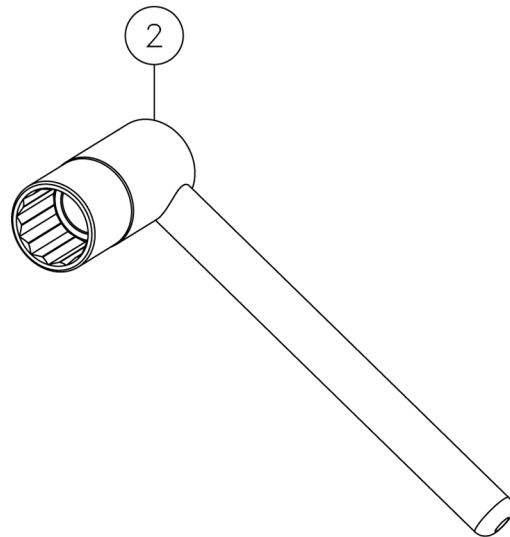
Water Pump Components - 150 Gal. (KT3350PT) Gearbox Fig 6-21

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		221652035	MAGNETIC PLUG	1	
2		277781027	SEC. CARRIER ASSY.	1	
3		277781029	GEAR-RING	1	
4		221652039	PIPE PLUG	1	
5		277781031	GEAR-SUN	1	
6		131488021	THRUST WASHER	1	
7		277781033	COVER	1	
		277781021	GEARBOX-#8 5.5:1 RATION AUBURN		INC. ALL ITEMS IN FIG.
			Revised June 2000 due to addition of figure to manual.		

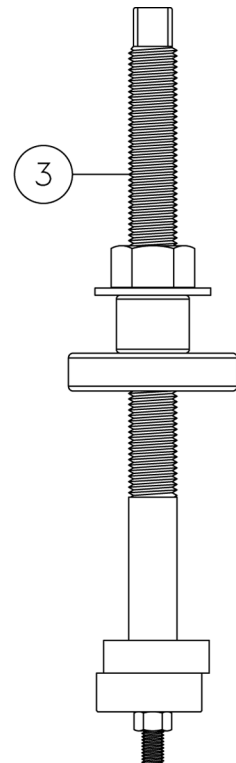
Water Pump Components (KT3350) Special Tools Fig 6-22



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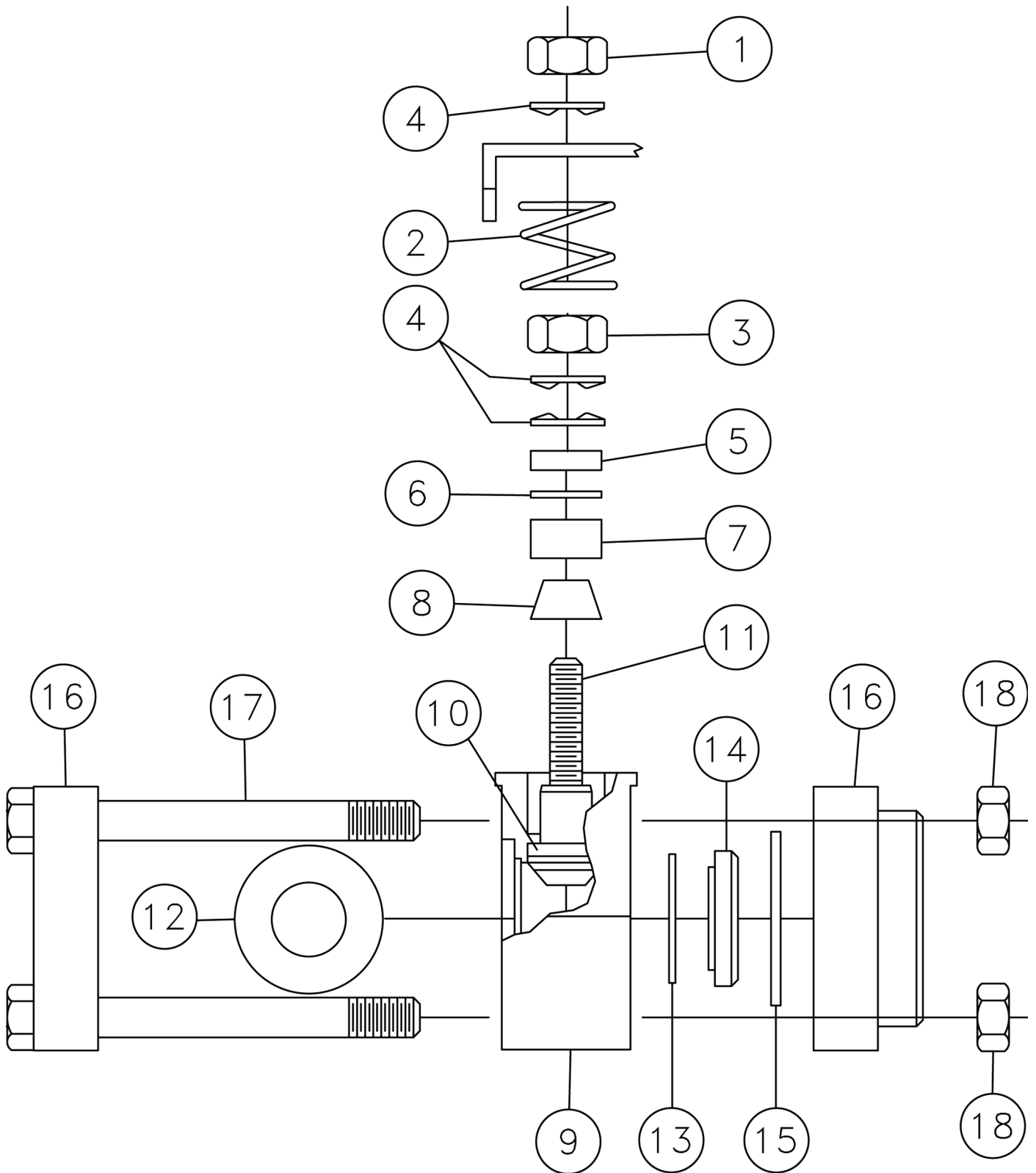


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Water Pump Components (KT3350) Special Tools Fig 6-22

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		287030071	INSTALLATION TOOL-PONY ROD SEAL	1	
2		287030072	INSTALLATION WRENCH-PONY ROD	1	
3		287030073	VALVE PULLER-WING TYPE	1	
			Revised June 2000 due to addition of figure to manual.		

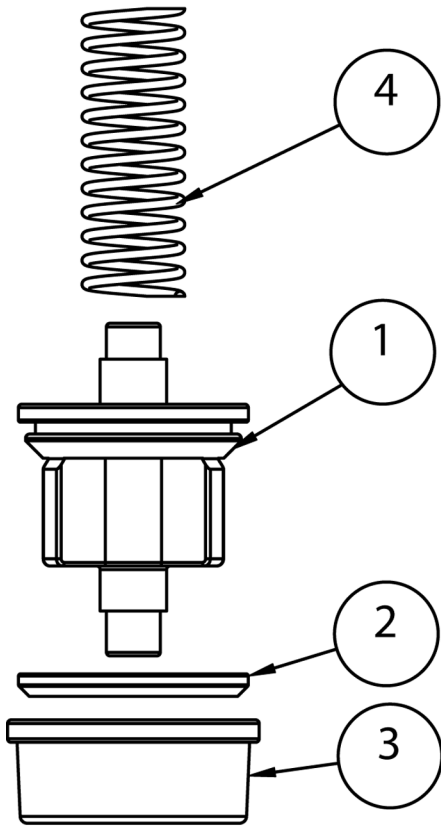
Water Shut-off Valve Components - SN317 Fig 6-23



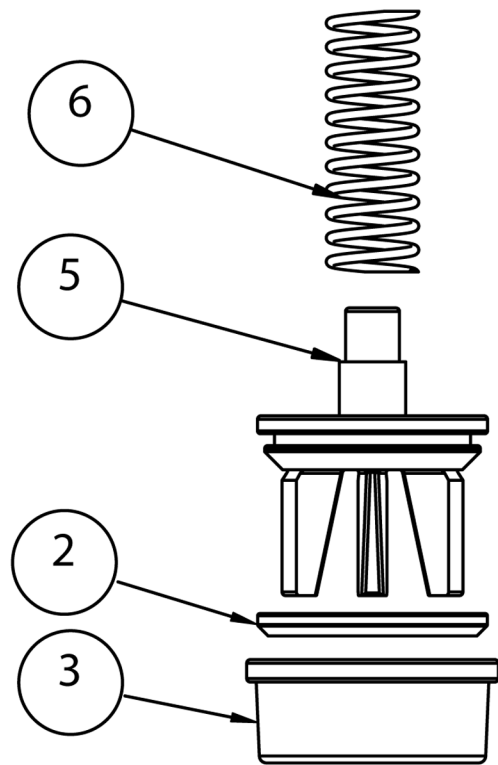
Water Shut-off Valve Components - SN317 Fig 6-23

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		287053002	STEM NUT	1	
2		287053003	GROUNDING SPRING	1	
3		287053004	NUT-STEM	1	
4		287053005	STEM SPRING	3	
5		287053006	GLAND	1	
6		287053007	PACKING SUPPORT	1	
7		287053008	TOP PACKING	1	
8		287053009	BOTTOM PACKING	1	
9		287053010	BODY CENTER	1	
10		287053011	BEARING-STEM	2	
11		287053012	STEM	1	
12		287053013	BALL	1	
13		287053014	SUPPORT RING	2	
14		287053015	SEAT/SEAT SPRING	2	
15		287053016	O-RING	2	
16		287053017	FLANGE	2	
17		287053018	BODY STUD	4	
18		287078019	BODY NUT	8	
		287053001	VALVE-1 1/2" BALL 2200 PSI		INC. ALL ITEMS IN FIG.
		287053020	KIT-MAINTENANCE		INC. REF. 4-8, 10 & 14-15
			Revised June 2000 due to addition of figure to manual.		

Water Pump Components (KT3350) Suction/Discharge Valve Fig 6-24



DISCHARGE
VALVE

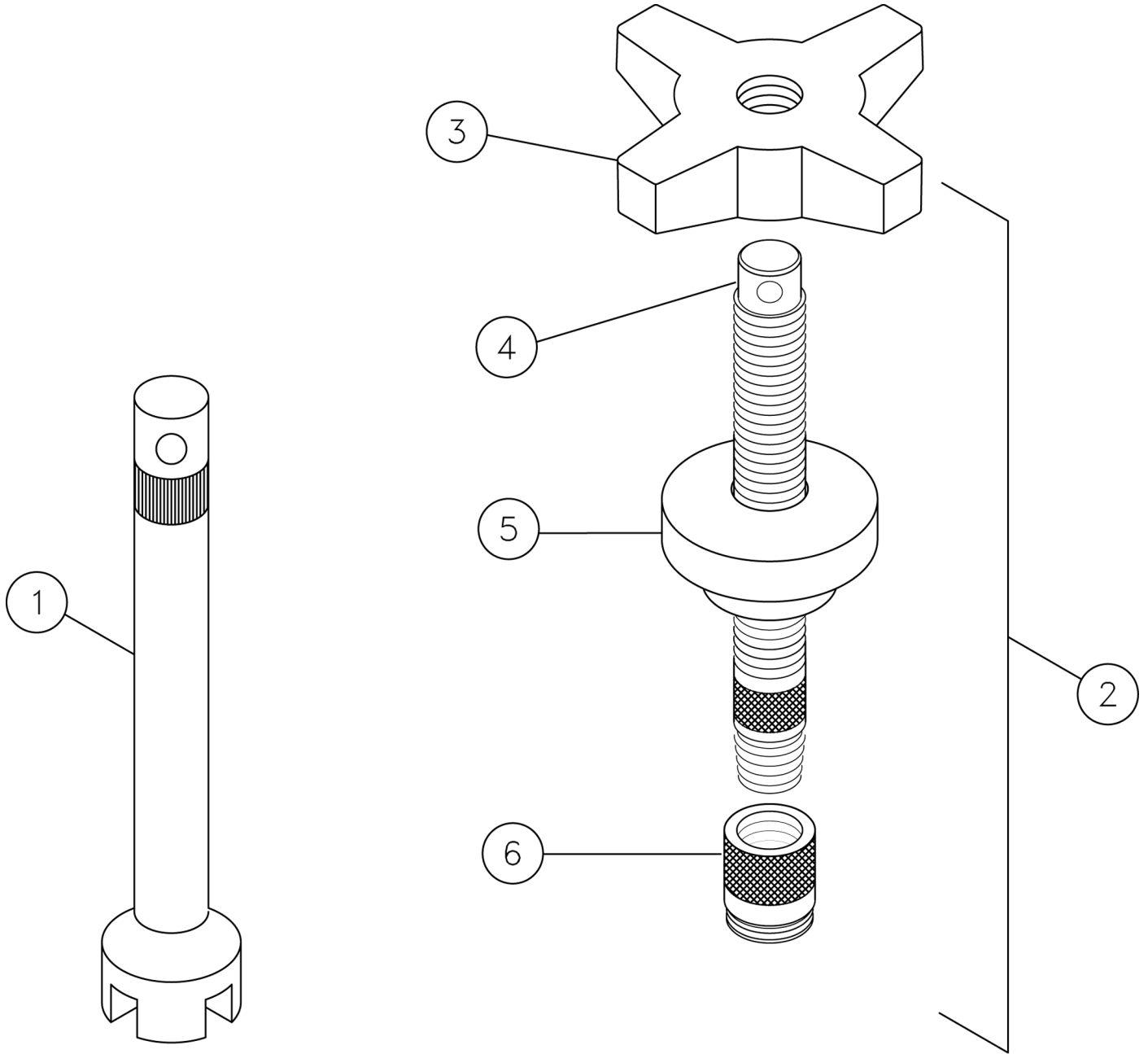


SUCTION
VALVE

Water Pump Components (KT3350) Suction/Discharge Valve Fig 6-24

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		287078026	DISCHARGE VALVE W/INSERT	3	
2		287078027	VALVE INSERT	6	
3		287078028	VALVE SEAT	6	
4		287078029	VALVE SPRING	3	DISCHARGE, LONG
5		287078030	SUCTION VALVE W/INSERT	3	
6		287078031	VALVE SPRING	3	SUCTION, SHORT
		287078011	VALVE ASSY.-DISCHARGE		INC. REF. 1-4
		287078012	VALVE ASSY.-SUCTION		INC. REF. 2, 3, 5, 6
			Revised July 2000 due to addition of figure to manual.		

SC115L Valve Seat Puller Tool Fig 6-25

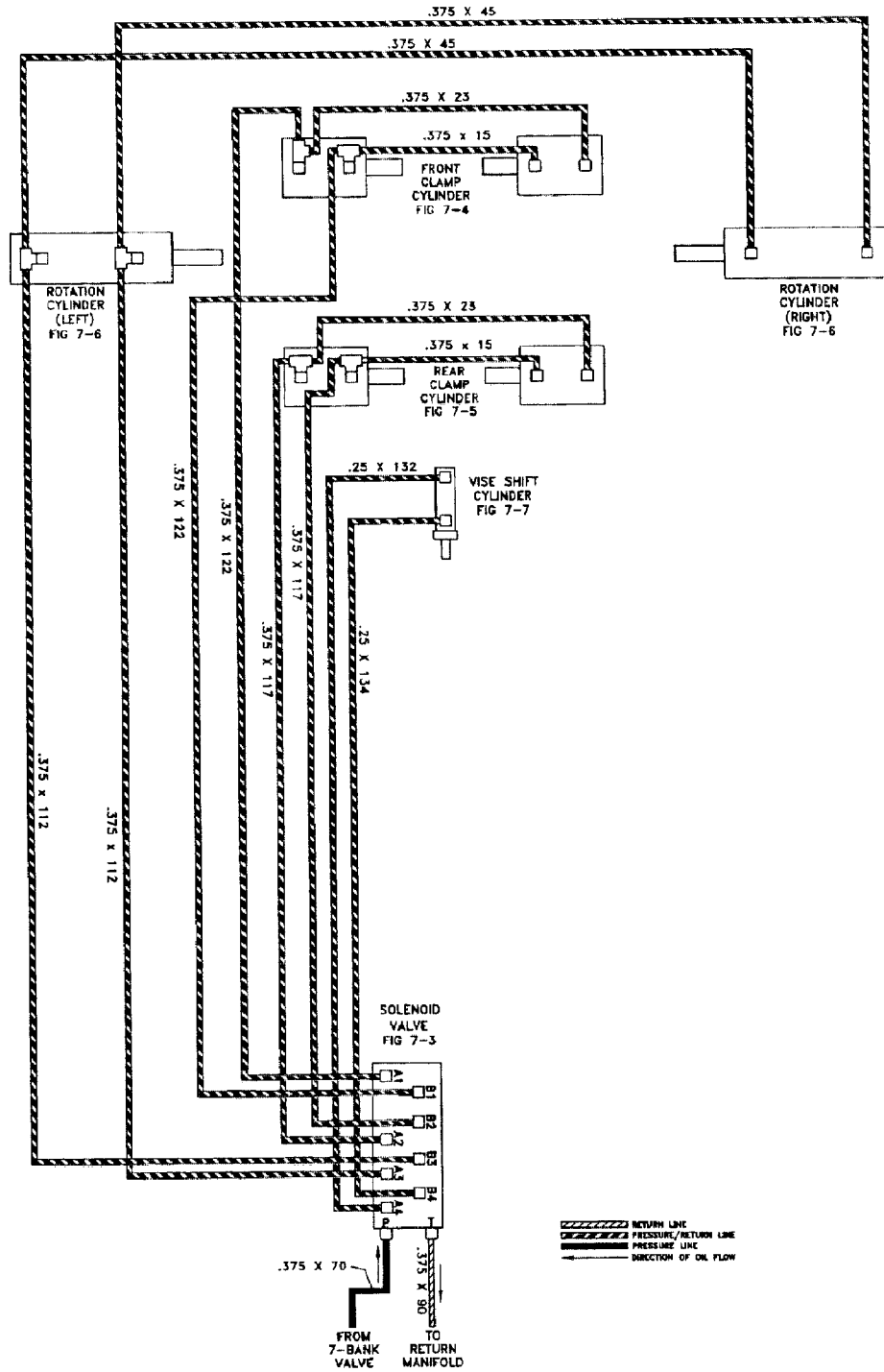


SC115L Valve Seat Puller Tool Fig 6-25

REF. NO.	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		New Figure Page Added
1		296251253	CAGE WRENCH	1	
2		296251275	SC115L VALVE SEAT PULLER TOOL	1	Inc Ref. 3-6
3		224893001	WING NUT	1	
4		296251252	STEM PULLER	1	
5		224891001	BRIDGE	1	
6		296251251	PULLER HEAD	1	

Hydraulic Components Location Diagram - Open Top Pipe Vise Fig 7-1r02

Revised February 2000 due to update in hose lengths.

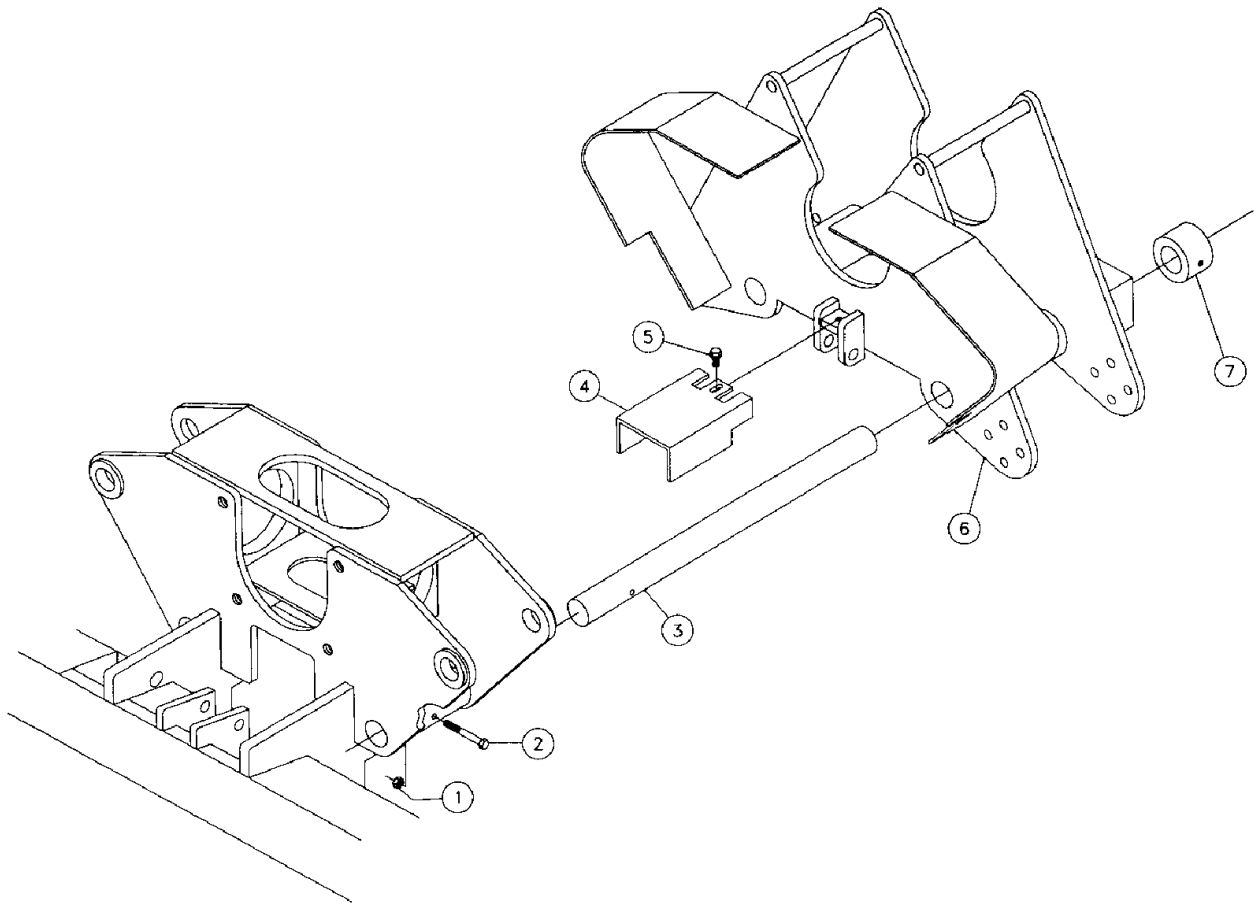


Hydraulic Components Location Diagram - Open Top Pipe Vise Fig 7-1r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
			Revised February 2000 due to update in hose lengths.		

Carriage - Rear Vise Fig 7-2r01

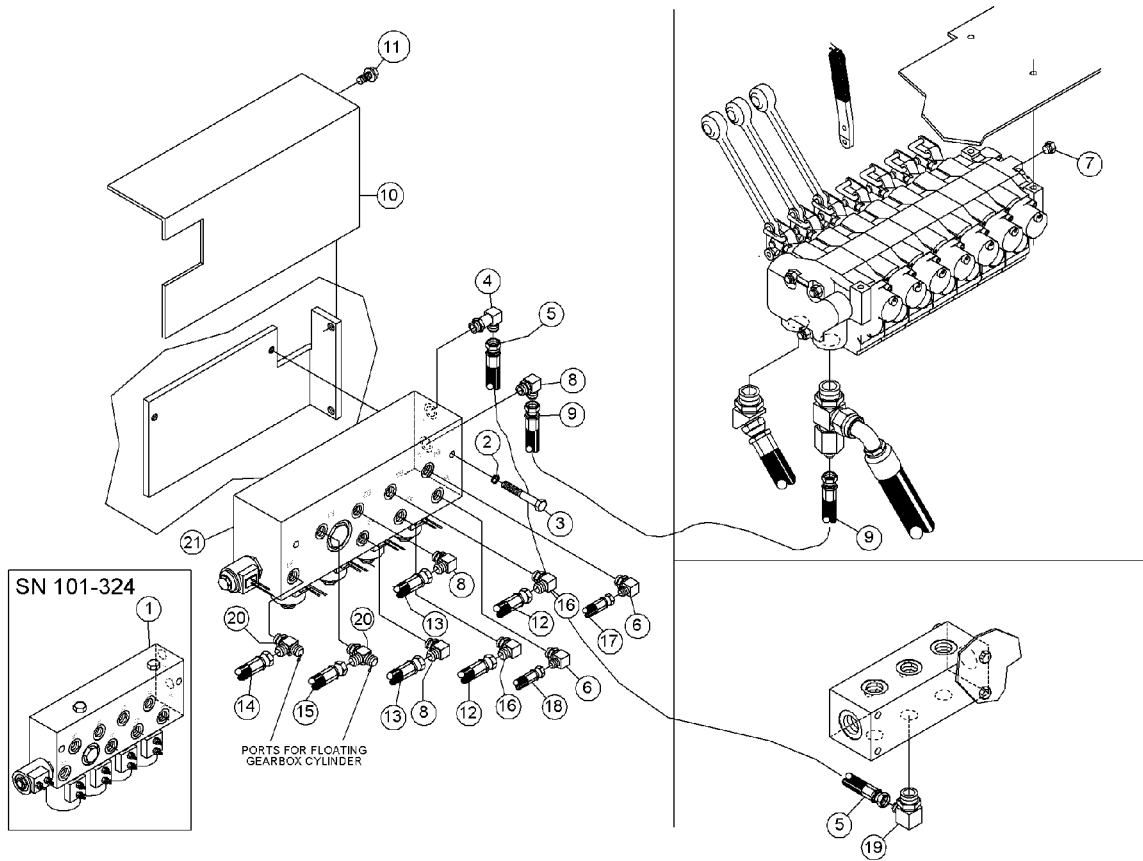
Revised February 1998 due to change
in slide pin. Changed part marked with *.



Carriage - Rear Vise Fig 7-2r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		409001	NUT-5/16 NC SLTL	2	
2		351030	5/16-18X3"GRADE #5 HEX BOLT	2	
3		234299001	PIN-VISE SLIDE	2	
4		234412001	SHIELD-CYLINDER	1	
5		4475006	BOLT-3/8-16X3/4 FLG WHIZ	2	
6		234294001	CARRIAGE-REAR VISE	1	
7	*	239462001	SPACER-VISE SLIDE	2	
			Revised February 1998 due to change in slide pin. Changed part marked with *.		

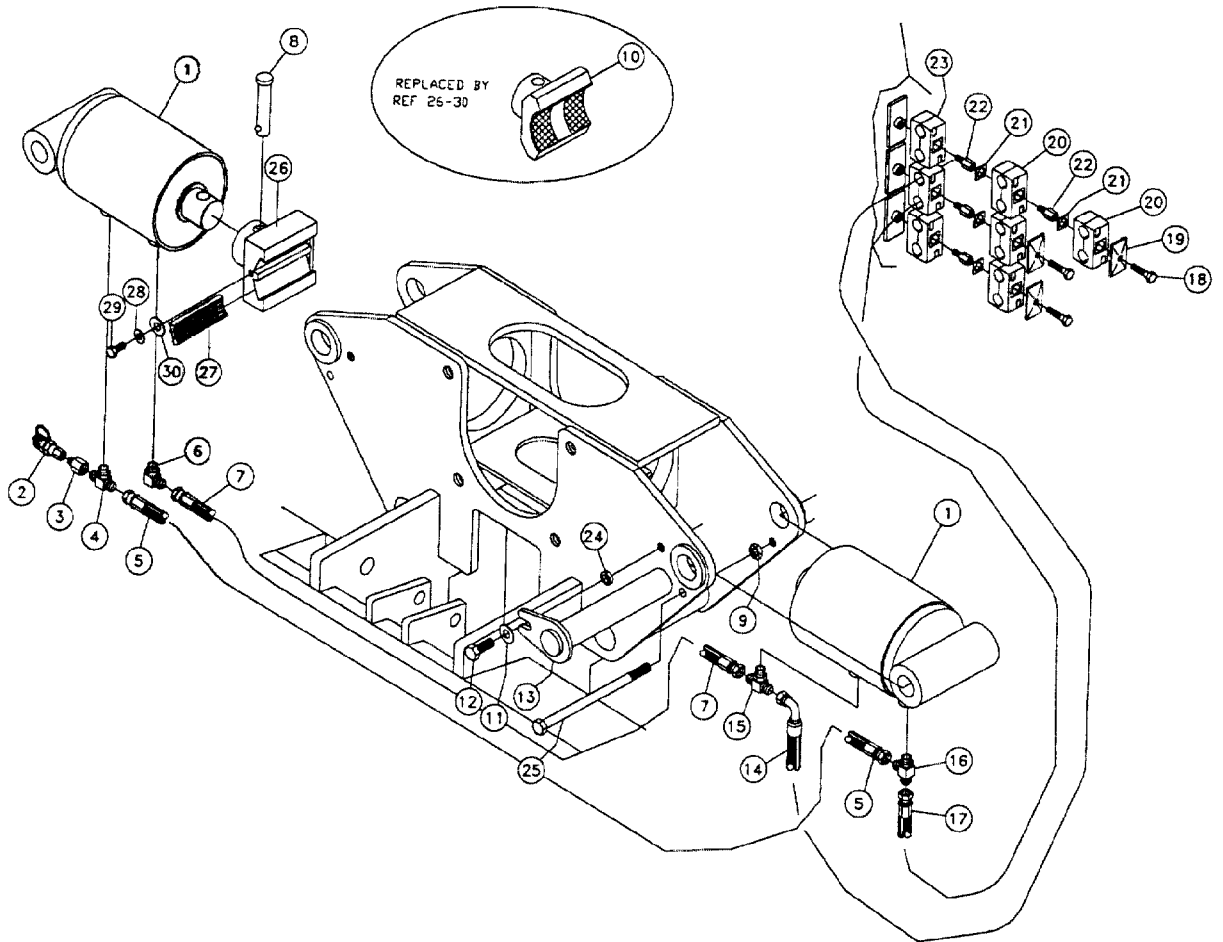
Solenoid valve - Pipe Vise Fig 7-3r05



Solenoid valve - Pipe Vise Fig 7-3r05

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		244462001	VALVE 4-BANK	1	SN101-324, BREAKDOWN FIG. 7-9
2		480007	WASHER-3/8 S/T LOCK	2	
3		354024	BOLT-3/8-16/X2 1/2" GRADE#5 HEX	2	
4		65570001	6M X 6M JIC 90 DEGREE LONG	1	
5		57940057	HOSE-3/8X90 6FS JIC 100R1	1	
6		600118001	FITTING-6M ORING X4M JIC 90	2	PARKER
7		83635001	PLUG-#6 JIC MALE	1	
8		59426001	FITTING-6M JIC X 6M ADJ 90 ELBOW	3	
9		57940169	HOSE-3/8X70 6FS JIC 100R2	1	
10		244599001	SHIELD-VISE VALVE	1	
11		4475006	BOLT-3/8-16X3/4 FLG WHIZ	2	
12		57940167	HOSE-3/8X112 6FS JIC 100R1	2	
13		57940485	HOSE-3/8X117 6FS JIC 3500 PSI	2	
14		57940547	HOSE-3/8X122 6 FS 3000 PSI	1	
15		239314001	HOSE-3/8X122 6FS JIC 90/ST	1	
16		122606001	FITTING-6MX6M JIC 90 DEG W/ RSTS	2	
17		53843215	HOSE-1/4X134 4FS JIC 3000 PSI	1	
18		53843201	HOSE-1/4X132 4FS JIC 3000 PSI	1	
19		59401001	6M JIC X 10M ADJ. 90 DEG. ELBOW	1	
20		68774001	FITTING-6M X 6M JIC (RUN)X 6M JIC	2	
21	*	280935001	VALVE - 4 BANK VISE	1	PN Added SN325-, BREAKDOWN FIG. 7-13

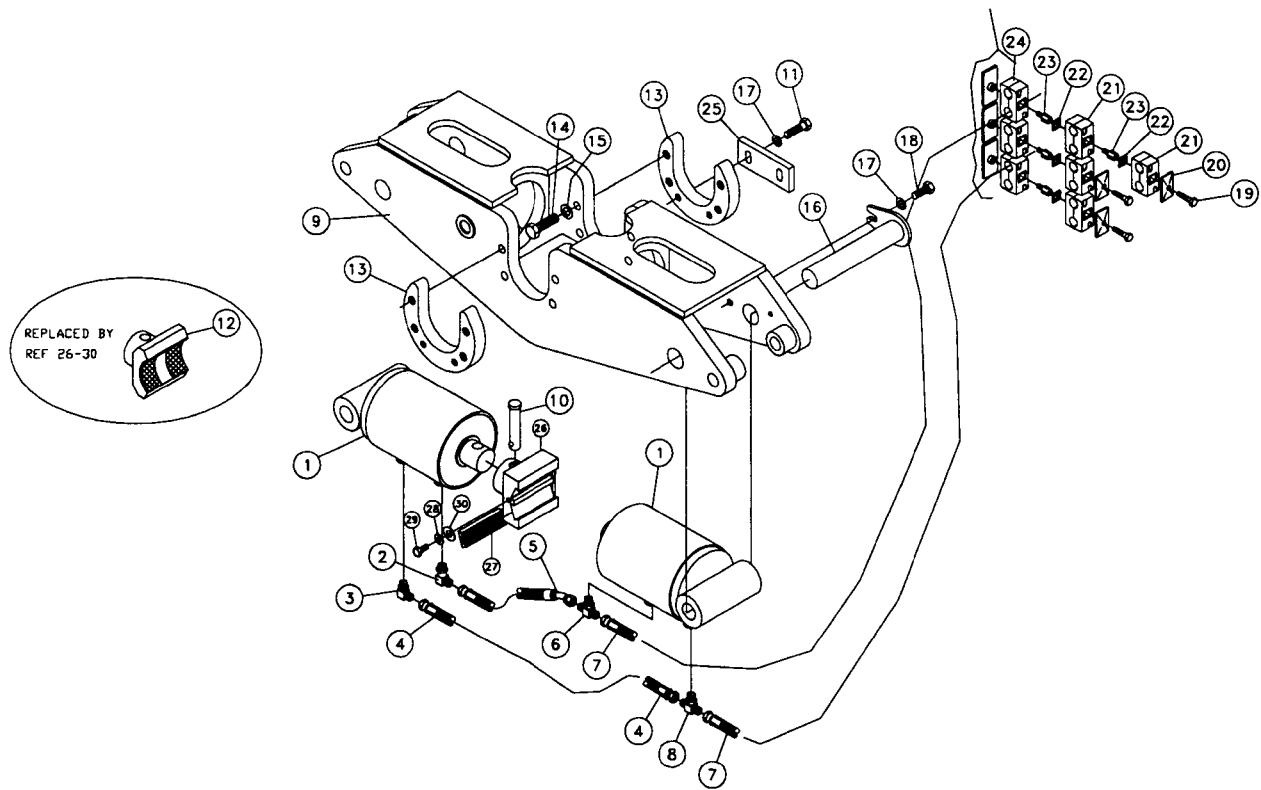
Clamp Cylinder Front Fig 7-4r05



Clamp Cylinder Front Fig 7-4r05

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1	*	283581001	CYLINDER-HYD 5" BORE X 2.25 ROD X 2" ST.	2	BREAKDOWN FIG. 7-10, REPLACES 27545800
2		83015001	FITTING-4F JIC DIAGNOSTIC	1	
3		59928001	6F JICX4M JIC ST REDUCER	1	
4		68787001	FITTING-6M (BCH)X6M JICX6M JIC	1	
5		57940553	HOSE-3/8 X 23 6FS JIC 3000 PSI	1	
6		122606001	FITTING-6MX6M JIC90 DEG W/RSTS	1	
7		57940617	HOSE-3/8 X 15 6FS JIC 3000 PSI	1	
8		275478001	PIN-1/2 X 3 1/4" BALL LOCK CLEVIS	2	
9		235722001	NUT-1/2-13 GR 8 JAM ZIN C PLT	2	
10		249879001	GRIP-JAW 3 1/4 CURVED	2	2 7/8" ROD, REPLACED W/ 285753001, INC. REF. 26-30
		249880001	GRIP-3 5/8 OD	2	3 1/2" ROD, REPLACED W/ 285754001, INC. REF. 26-30
11		485011	WASHER-1/2 FLAT	2	
12		358014	BOLT-1/2- 13 X 1 1/2" GRADE #5 HEX	2	
13		234402001	PIN-VISE CYLINDER	2	
14		239314001	HOSE-3/8 X 122 6FSJIC 90/ST	1	
15		122605001	FITTING-6M JIC BCH TEE W/ RSTS	1	
16		68774001	FITTING-6MX6M JIC (RUN)X6M JIC	1	
17		57940547	HOSE-3/8 X 122 6 FS 3000 PSI	1	
18		351012	BOLT-5/16"-18 X 1 1/4" GR5 HEX	6	
19		67846003	PLATE-TWIN COVER	6	
20		67846005	CLAMP-TWIN	8	
21		231758001	WASHER-SAFETY	8	1/2" HEX ID
22		231757001	BOLT-CLAMP STACKING 5/16 THREAD	8	
23		900035005	CLAMP-3/8" DOUBLE HOSE	6	
24		280535001	TUBE-SPACER	2	
25		249812001	BOLT-1/2"-13 X 7 1/2" GR 8 HEX ZINC	2	
26		278120001	HOLDER-2 1/4 RAM GRIP	2	3 5/8 UPSET
		278119001	HOLER-2" RAM GRIP	2	3 5/8 UPSET
		278081001	HOLDER-2 1/4" RAM GRIP	2	3 1/4" UPSET
27		278121001	GRIP VISE	4	3 5/8" UPSET
		222488001	GRIP VISE	4	3 1/4"-3 1/2" UPSET
28		235713001	WASHER 3/8 SAE HARD ZINC PLATED	4	
29		235726001	BOLT-3/8-16 X 3/4 GR 8 HEX ZINC PLATED	4	
30		485025	WASHER-1/2" FLAT HARDENED ZINC	4	
			Revised June 2000 due to update in parts list. Changed part marked with *.		

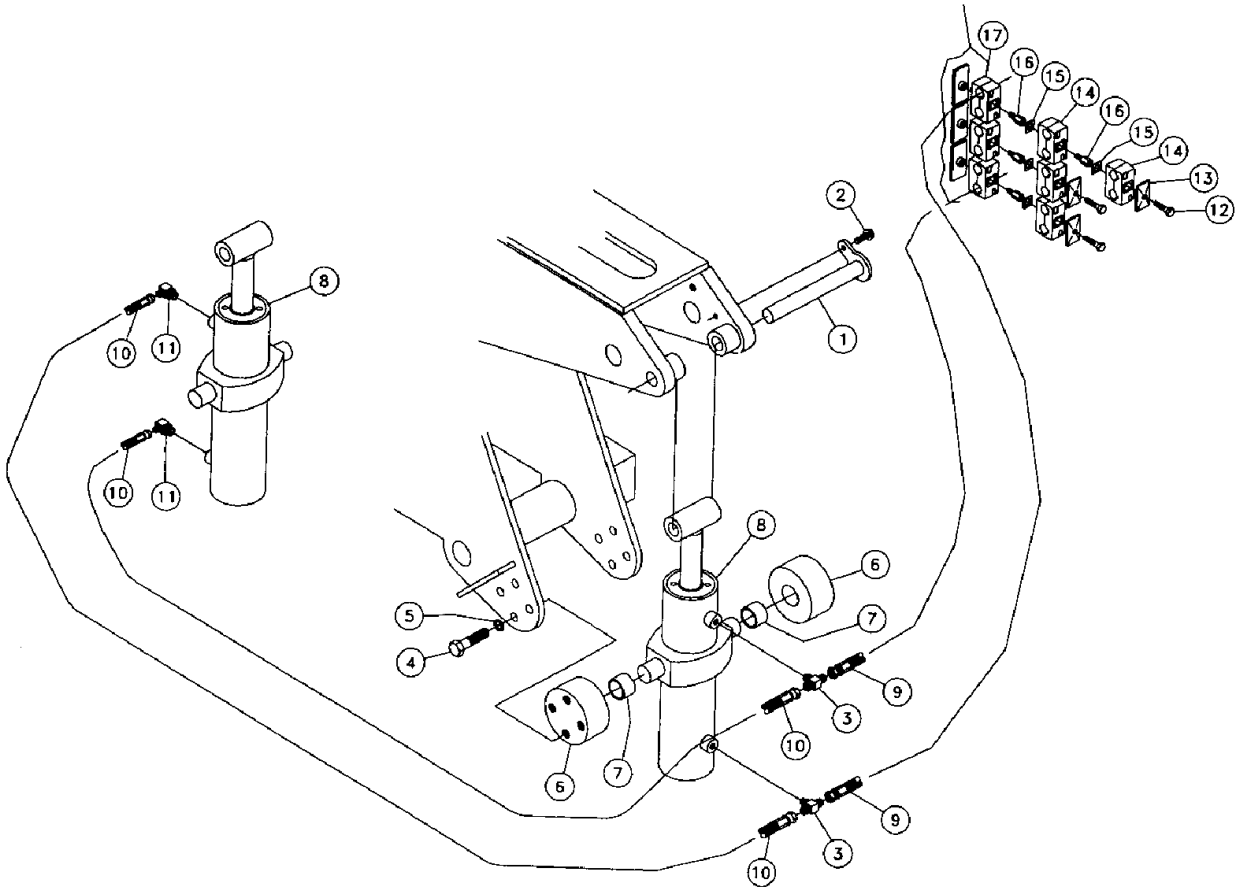
Clamp Cylinder Rear Fig 7-5r05



Clamp Cylinder Rear Fig 7-5r05

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1	*	283581001	CYLINDER-HYD.5" BORE X 2.25 ROD S 2" ST.	2	BREAKDOWN FIG. 7-10, REPLACES 275458001
2		122606001	FITTING-6MX6M JIC90 DEG W/ RSTS	1	
3		59426001	FITTING-6M JICX6M ADJ 90 ELBOW	1	
4		57940553	HOSE-3/8 X 23 6FS JIC 3000 PSI	1	
5		57940617	HOSE-3/8 X 15 6FS JIC 3000 PSI	1	
6		122605001	FITTING-6M JIC BCH TEE W/ RSTS	1	
7		57940485	HOSE-3/8 X 118 6FS JIC 3500 PSI	2	
8		68787001	FITTING-6M (BCH)X6M JICX6M JIC	1	
9		234295001	CRADLE-VISE	1	
10		275478001	PIN-1/2 X 3 1/4 BALL LOCK CLEVIS	2	
11		240334001	BOLT-1/2-13 X 1 3/4" GR 8 HEX ZINC	2	
12		249879001	GRIP-JAW 3 1/4 CURVED	2	2 7/8" ROD, REPLACED W/ 285753001, INC. REF. 26-30
		249880001	GRIP-3 5/8 OD	2	3 1/2" ROD, REPLACED W/ 285754001, INC. REF. 26-30
13		276524001	PLATE-VISE INSERT	2	
14		238245001	BOLT-5/8-11 X 2 1/4" GRADE #8 HEX ZINC	8	
15		235715001	WASHER-5/8 SAE HARD ZINC	8	
16		234407001	PIN-VISE CYLINDER	2	
17		485025	WASHER-1/2 FLAT HARDENED ZINC	4	
18		235737001	BOLT-1/2-13 X 1 1/4 GR #8 HEX ZINC	2	
19		248031001	BOLT-5/16"-18 X 1 1/4" GR8 HEX ZINC	6	
20		67846003	PLATE-TWIN COVER	6	
21		67846005	CLAMP-TWIN	8	
22		231758001	WASHER-SAFETY	8	1/2" HEX ID
23		231757001	BOLT-CLAMP STACKING 5/16 THREAD	8	
24		900035005	CLAMP-3/8" DOUBLE HOSE	6	
25		276525001	PLATE-WEAR	1	
26		278120001	HOLDER-2 1/4 RAM, GRIP	2	3 5/8
		278119001	HOLDER-2" RAM, GRIP	2	3 5/8
		278081001	HOLDER-2 1/4 RAM, GRIP	2	3 1/4
		278083001	HOLDER-2" RAM, GRIP	2	3 1/4
27		278121001	GRIP-VISE	4	3 5/8 UPSET
		222488001	GRIP-VISE	4	3 1/4 - 3 1/2 UPSET
28		235713001	WASHER-3/8 SAE HARD ZINC PLTD	4	
29		235726001	BOLT-3/8-16 X 3/4 GR8 HEX ZNCPLT	4	
30		485025	WASHER-12" FLAT HARDENED ZINC	4	
			Revised June 2000 due to update in parts list. Changed part marked with *.		

Rotation Carriage Cylinder Fig 7-6

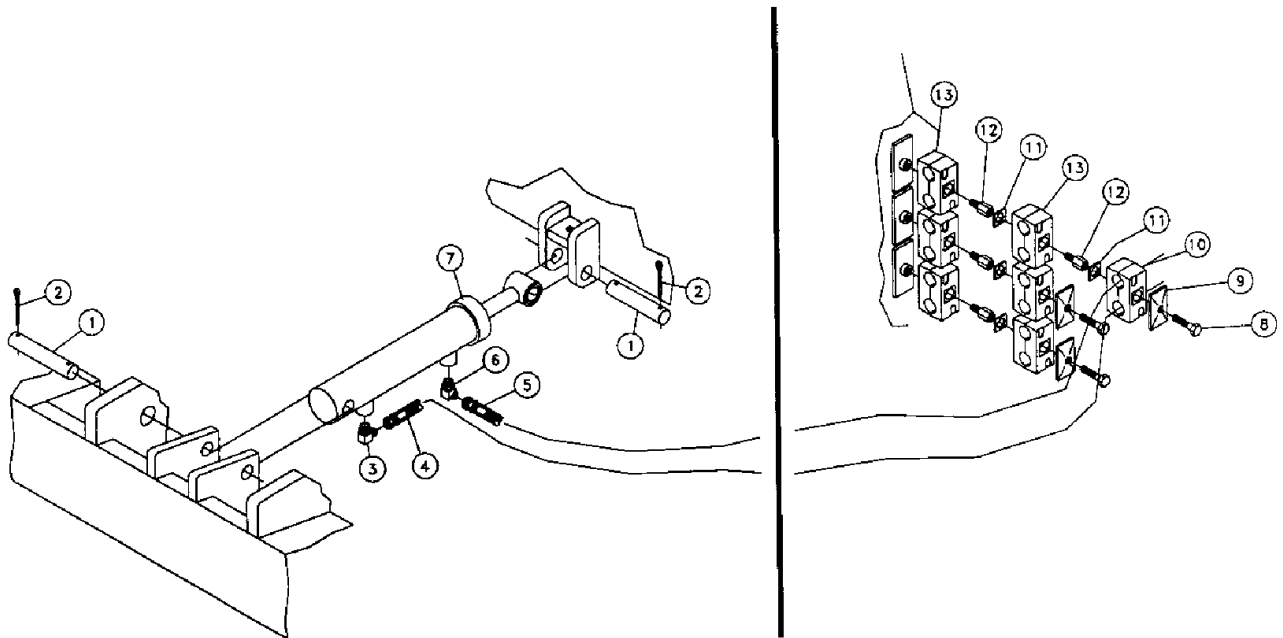


Rotation Carriage Cylinder Fig 7-6

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		230761001	ROTATION PIN	2	
2		4475006	BOLT-3/8-16X3/4 FLG WHIZ	2	
3		68787001	FITTING-6M (BCH)X6M JICX6M JIC	2	
4		366020	5/8-11X2"GRADE#5 HEX BOLT	16	
5		480015	WASHER-5/8 S/T LOCK	16	
6		222433001	MOUNT- TRUNION	4	
7		70070003	BEARING-COMPOSITE 1 LONG	4	
8		239275001	CYLINDER-2 1/2 X 5 TRN MNT	2	BREAKDOWN FIG. 7-11
9		57940167	HOSE-3/8X112 6FS JIC 100R1	2	
10		57940589	HOSE-3/8X45 6FS JIC 3000PSI	2	
11		59426001	FITTING-6M JICX6M ADJ 90 ELBOW	2	
12		351012	BOLT-5/16"-18X1 1/4"GR5 HEX	6	
13		67846003	PLATE-TWIN COVER	6	
14		67846005	CLAMP-TWIN	8	
15		231758001	WASHER-SAFETY	8	1/2" HEX ID
16		231757001	BOLT-CLAMP STACKING 5/16THREAD	8	
17		900035005	CLAMP-3/8"DOUBLE HOSE	6	

Vise Slide Cylinder Fig 7-7r03

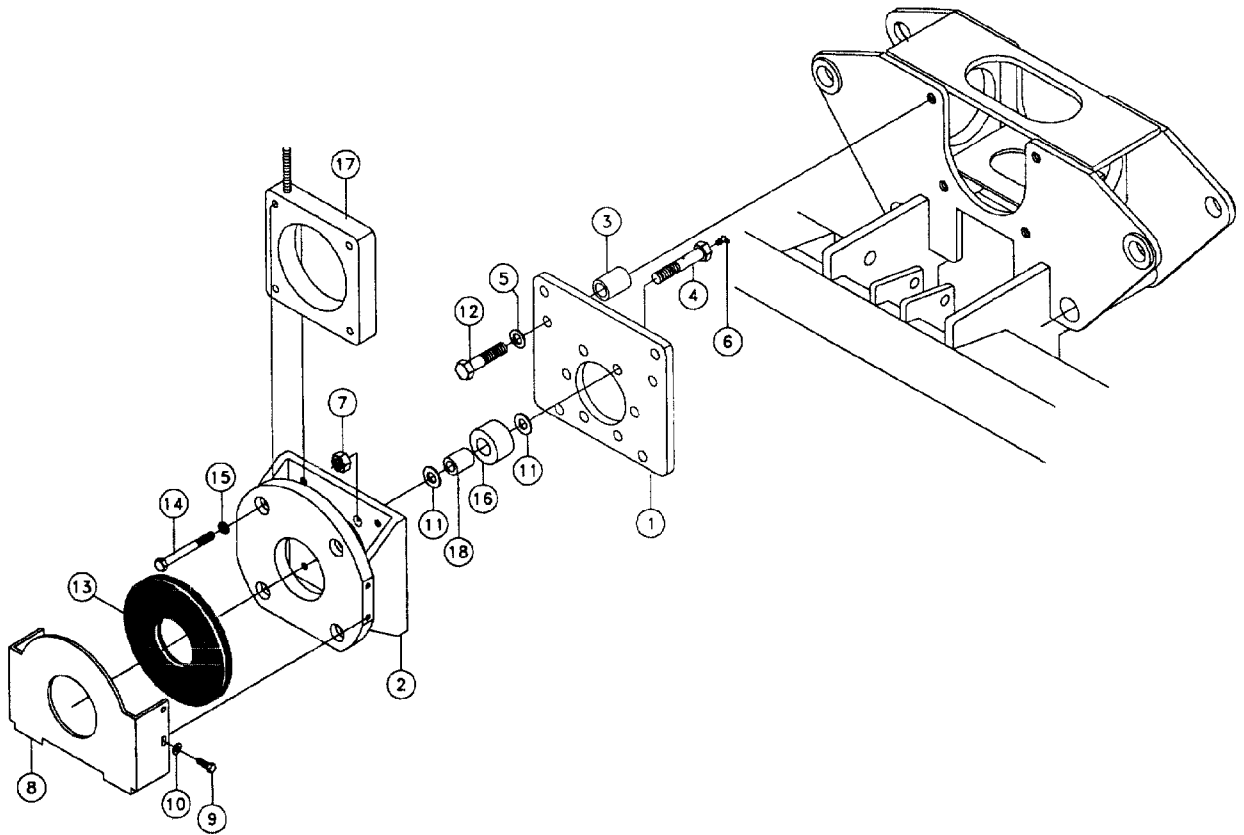
Revised July 1999 due to update
in parts list. Changed part marked
with *.



Vise Slide Cylinder Fig 7-7r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		239313001	PIN-CYLINDER	2	
2		510017	COTTER PIN-5/32" X 1 1/2"	4	
3	*	68821001	FIT-4M X4M JIC 90 .060 RF	1	
4		53843201	HOSE-1/4X132 4FS JIC 3000 PSI	1	
5		53843215	HOSE-1/4X134 4FS JIC 3000 PSI	1	
6		58295001	FITTING-4M OR X 4M JIC 45 DEG.	1	
7		223998001	CYLINDER- 1 1/2 X 6	1	BREAKDOWN FIG. 7-12
8		351012	BOLT-5/16"-18X1 1/4"GR5 HEX	6	
9		67846003	PLATE-TWIN COVER	6	
10		67846005	CLAMP-TWIN	8	
11		231758001	WASHER-SAFETY	8	1/2" HEX ID
12		231757001	BOLT-CLAMP STACKING 5/16THREAD	8	
13		900035005	CLAMP-3/8"DOUBLE HOSE	6	
			Revised July 1999 due to update in parts list. Changed part marked with *.		

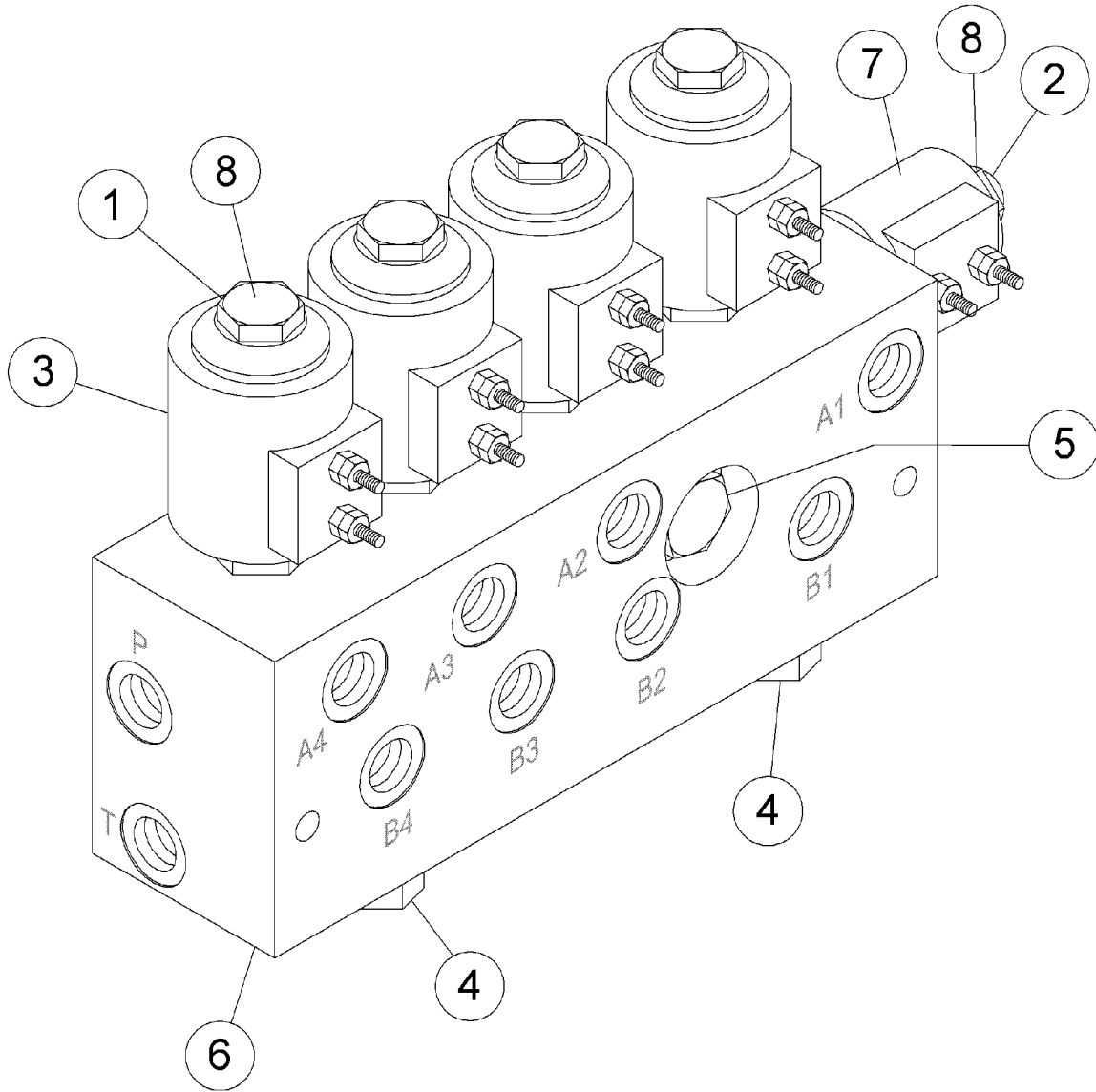
Zap Alert Fig 7-8r07



Zap Alert Fig 7-8r07

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		234486001	MOUNT-WIPER HOLDER	1	
2		234461001	HOLDER-ROD WIPER	1	
3		280536001	TUBE-LINKAGE-SHAFT CLAMP	4	
4		234426003	BOLT ASSEMBLY-ROLLER MOUNT	6	INC. REF. 6
5		235717001	WASHER-3/4 SAE HARD ZINC	4	
6		597001	ZERK-1/4" NF 90 DEG GREASE	6	
7		250510001	NUT-3/4 NC GR 8 SLTL Y/ZINC	6	
8		234462001	STOP-WIPER	1	
9		235727001	BOLT-3/8"-16 X 1" GR 8 HEX ZINC	4	
10		235713001	WASHER-3/8 SAE HARD	4	
11	*	48501	WASHER-3/4 FLAT	12	
12		250610001	BOLT-3/4-10 X 3 1/2"	4	
13		235925001	WIPER-2 7/8 OD ROD	1	
		235926001	WIPER-3 1/2D ROD	1	
14		250568001	BOLT-1/2-13 X 4 1/2" GR 8 HEX ZINC	4	
15		485025	WASHER-1/2 FLAT HARDENED ZINC	4	
16		244679001	ROLLER-GUIDE	6	
17		224922001	COIL-CURRENT W/17 COAX CABLE	1	SN101-235
		276856001	COIL-CURRENT W/ 17' COAX CABLE	1	SN236-
18		244678001	BUSHING-GUIDE ROLLER	6	
			Revised June 2000 due to update in parts list. Changed part marked with *.		

Solenoid Valve Components Fig 7-9r03



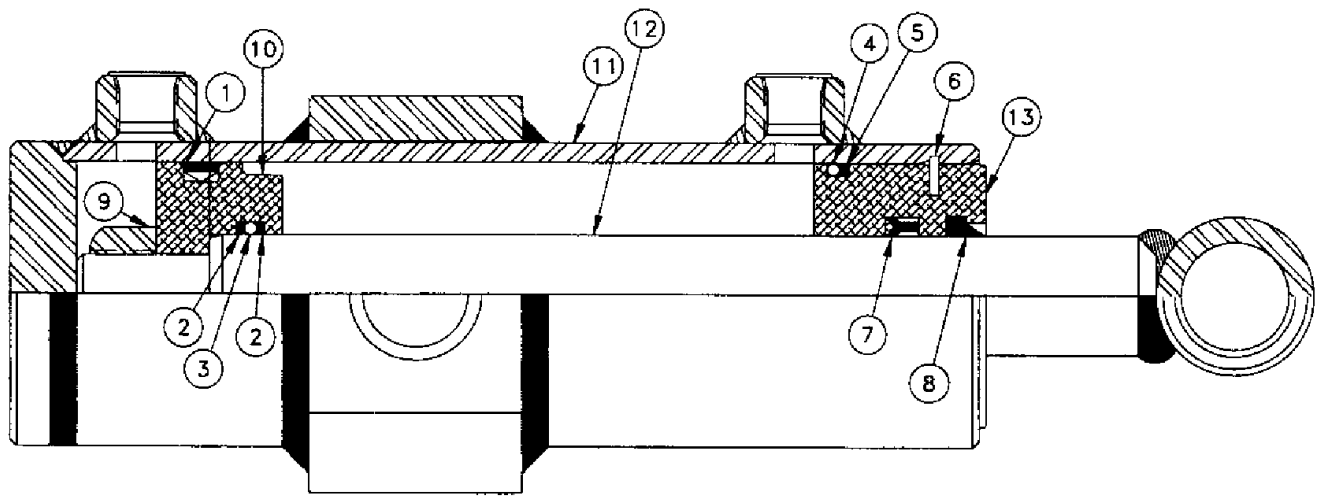
Solenoid Valve Components Fig 7-9r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	May, 2005		Page Title Update to Limit Use to SN101-324
1		228128003	CARTRIDGE-SOLENOID	3	INC. SEAL KIT & NUT REF. 8
		206271007	REPAIR KIT	3	
2		228128005	CARTRIDGE-SOLENOID	1	INC. SEAL KIT & NUT & REF. 8
		228128009	SEAL KIT	1	
3		206271005	COIL-12V DUAL POST	3	
4		228128013	SENSE CHECK	2	
		228128015	SEAL KIT	2	
5		228128017	CHECK VALVE	1	
		228128009	SEAL KIT	1	
6		NSS	BODY-VALVE	1	
7		228128007	COIL	1	
8		224886007	NUT	4	
		244462001	VALVE-4 BANK		INC. ALL ITEMS IN FIGURE
		NSS	NOT SOLD SEPARATELY		

Hydraulic Cylinder Components - 5" x 2" Fig 7-10r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		275458005	CYLINDER ROD	1	
2		221731007	HEAD GLAND	1	
3		221731009	PISTON	1	
4		85777031	NUT-1 1/2" 12 LOCK	1	
5	*	283581002	TUBE WELDMENT	1	REPLACES 275458003
6		104012005	LOCKING INSERT	2	
7		215799015	ROD WIPER	1	
8		215799013	POLYPAK	1	
9		221731011	WEAR BAND	1	
10		89540011	WASHER-BACKUP	1	
11		85777019	O-RING	1	
12		22173013	O-RING	1	
13		85777025	UNI-RING	1	
14		224445007	GREASE FITTING	1	
		234292005	SEAL KIT		INC. REF. 6-13
	*	283581001	CYLINDER-HYD 5" BORE X 2.25 ROD X 2" ST.		INC. REF. 1-14, REPLACES 275458001

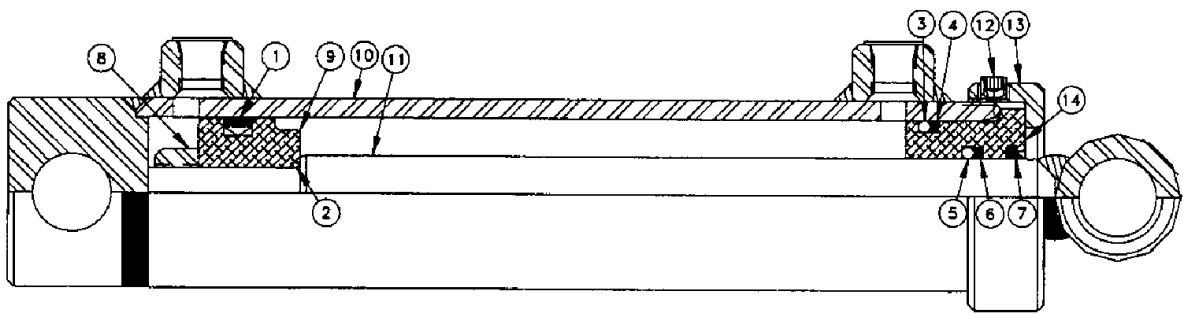
Hydraulic Cylinder Components - 2 1/2" x 5" Fig 7-11



Hydraulic Cylinder Components - 2 1/2" x 5" Fig 7-11

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		200769001	UNI-RING	1	
2		222440007	BACK-UP RING	2	
3		221256013	O-RING	1	
4		221766017	O-RING	1	
5		200841001	BACKUP WASHER #228	1	
6		222440009	INTERNAL SNAP RING	1	
7		205002001	1 1/8" LOADED U-CUP	1	
8		221256015	ROD WIPER	1	
9		95631011	LOCK NUT	1	
10		104628009	PISTON	1	
11		222440003	BARREL ASSY	1	
12		239275003	ROD ASSEMBLY	1	
13		200777001	GLAND	1	
		222440011	SEAL KIT		INC. REF. 1-8
		239275001	CYLINDER-2 1/2 X 5 TRN MNT		INC. REF. 1-13

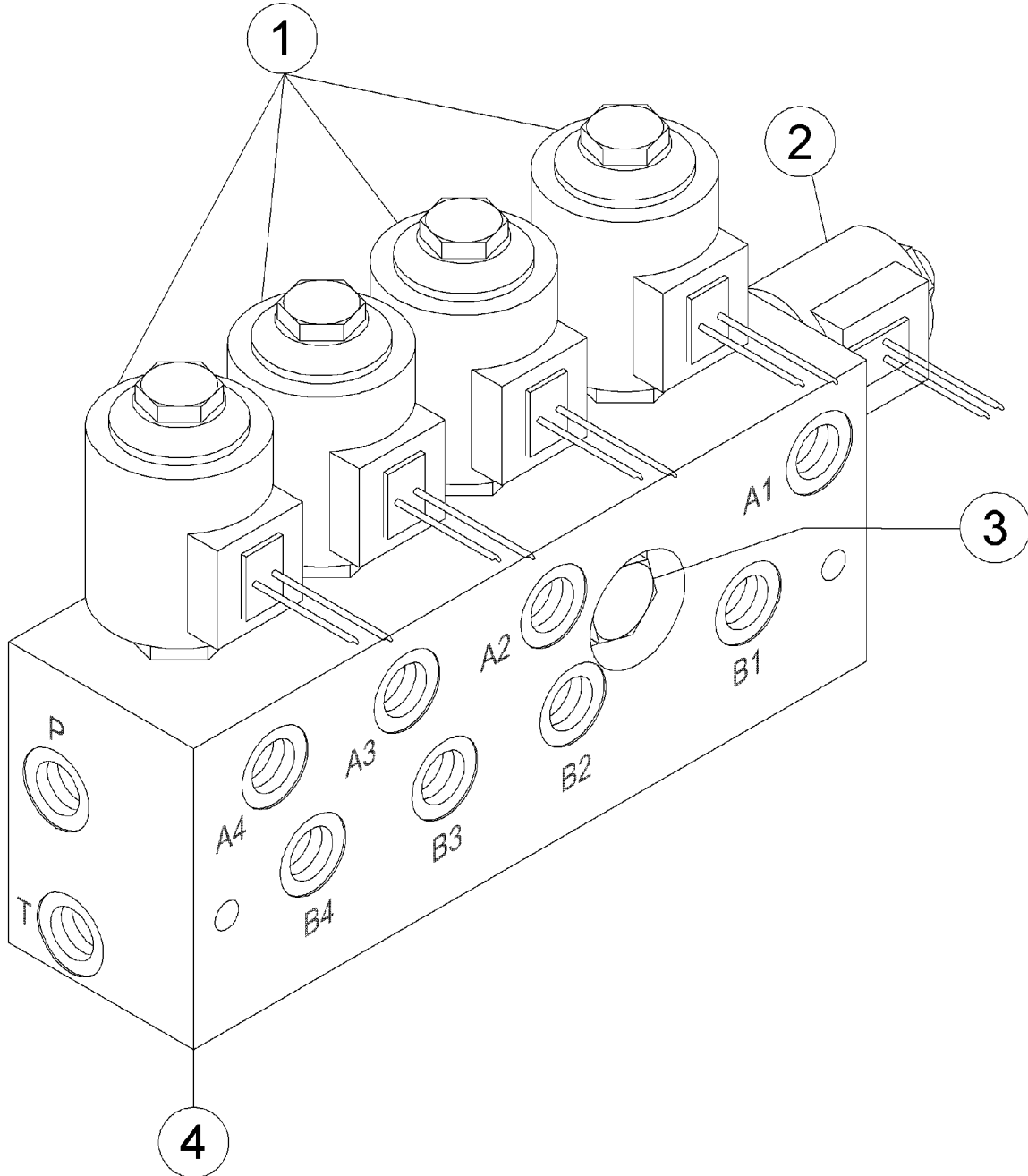
Hydraulic Cylinder Components - 1 1/2" x 6" Fig 7-12



Hydraulic Cylinder Components - 1 1/2" x 6" Fig 7-12

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		202721001	UNI-RING	1	
2		223998003	O-RING	1	
3		202727001	O-RING	1	
4		202726001	WASHER-BACK-UP	1	
5		223998005	O-RING	1	
6		223998007	BACK-UP RING	1	
7		202724001	WIPER-ROD	1	
8		202722001	LOCKNUT	1	
9		202720001	PISTON	1	
10		223998009	BARREL ASSEMBLY	1	
11		223998011	ROD ASSEMBLY	1	
12		223998013	SET SCREW	1	
13		223998015	THREAD CAP	1	
14		223998017	THREAD CAP HEAD	1	
		223998019	SEAL KIT		INC. REF. 1-7
		223998001	CYLINDER- 1 1/2 X 6		INC. REF. 1-14

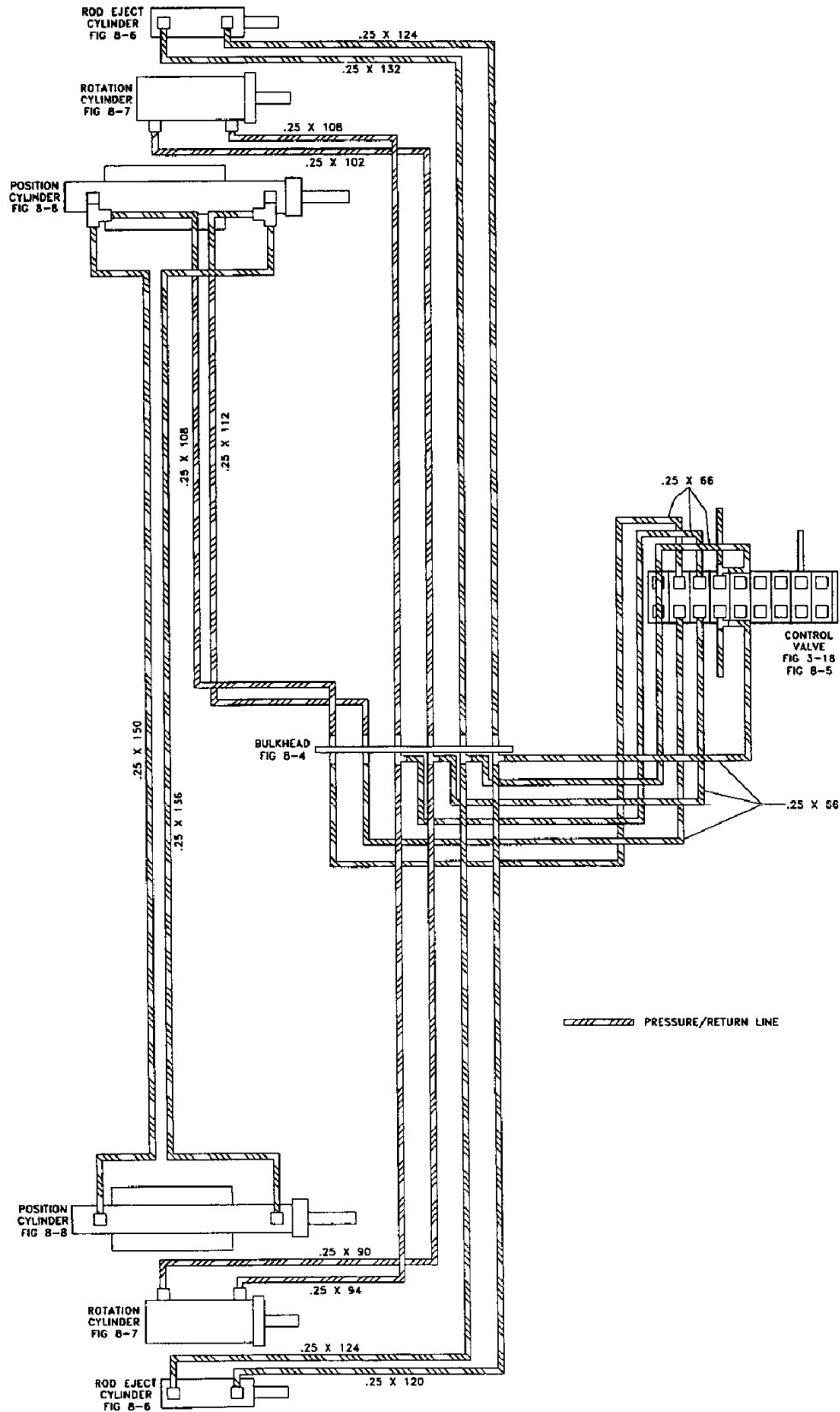
Vise Valve Fig 7-13



Vise Valve Fig 7-13

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		New Figure Added
1		228128003	CARTRIDGE-SOLENOID	4	
		206271007	REPAIR KIT	4	
		251112005	COIL - 10 DL 12V/SPL	4	
		251113007	NUT - RAIN PROOF COIL	4	
2		251113005	CARTRIDGE-SOLENOID	1	
		212821009	SEAL KIT	1	
		251117009	COIL - #8	1	
		251113007	NUT - RAIN PROOF COIL	1	
3		228128017	CHECK VALVE	1	
		228128009	SEAL KIT	1	
4		NSS	BODY-VALVE	1	
		280935001	VALVE - 4 BANK VISE		INC. ALL ITEMS IN THIS FIGURE
		NSS	NOT SOLD SEPARATELY		

Hydraulic Components Location Diagram - Rod Loader Fig 8-1

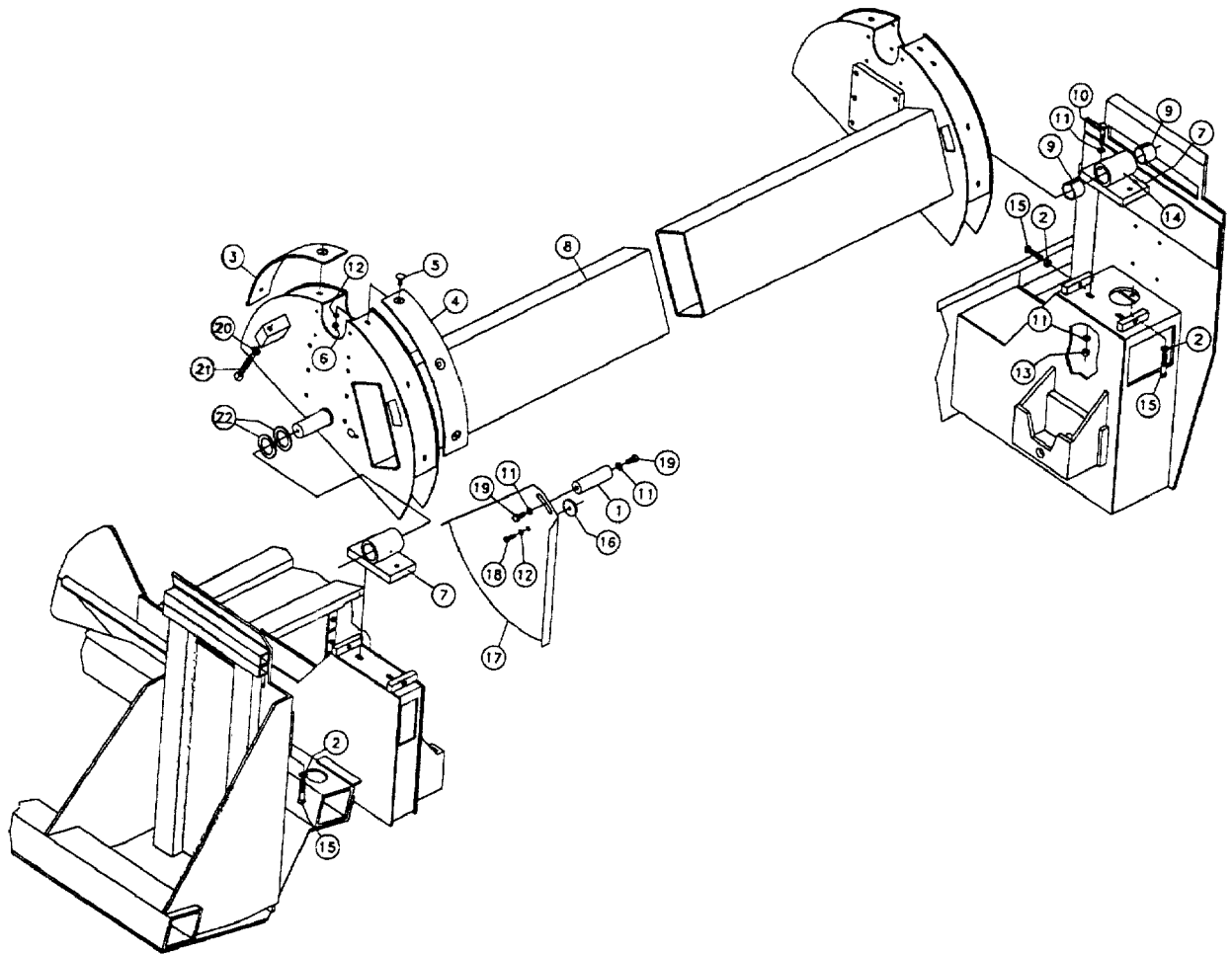


Hydraulic Components Location Diagram - Rod Loader Fig 8-1

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS

Rod Loader Frame Fig 8-2r02

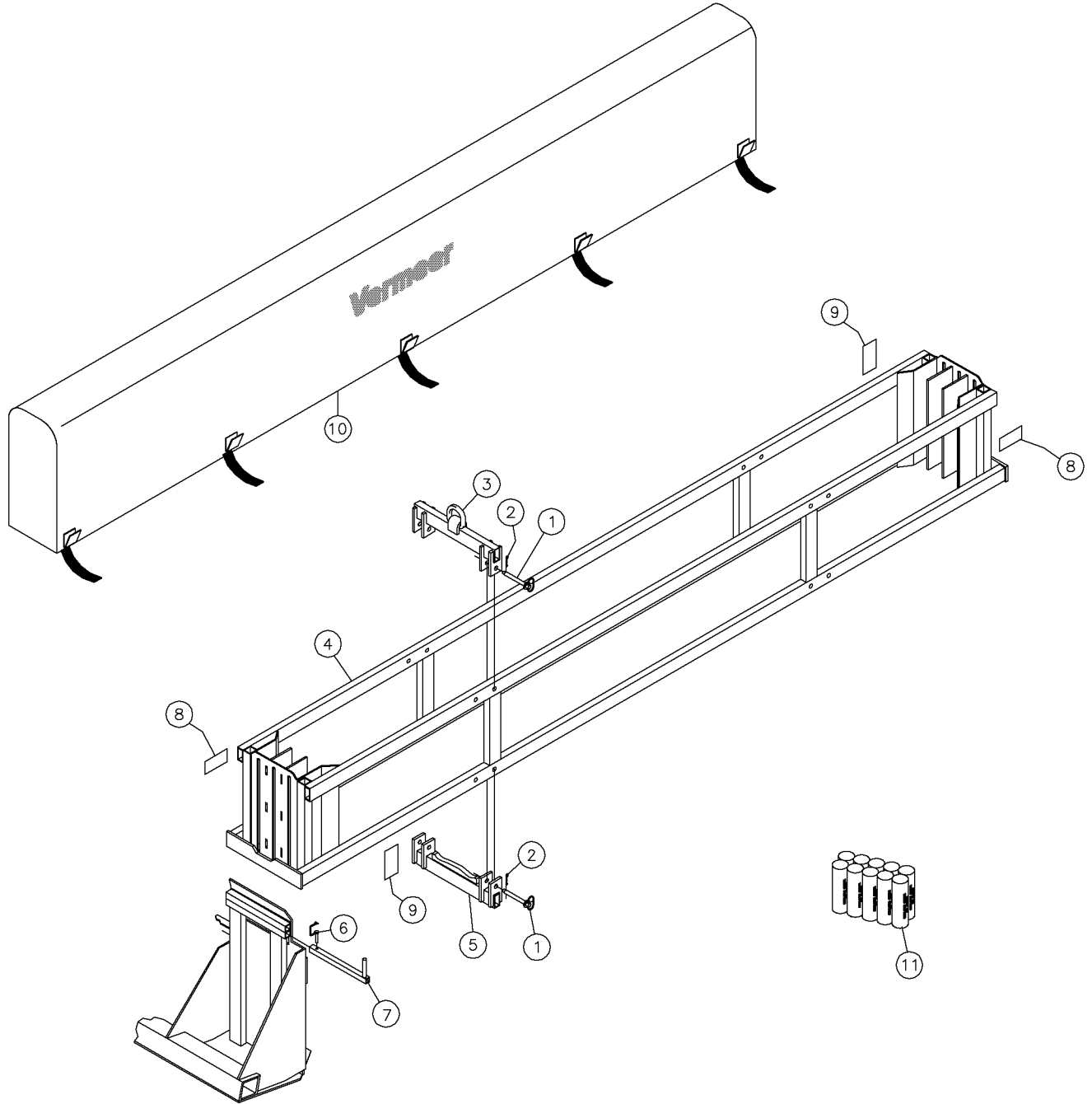
Revised October 1999 due to update in illustration.



Rod Loader Frame Fig 8-2r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		234252001	SPCER-LOADER INDICATOR	1	
2		235722001	NUT-1/2-13 GR 8 HEX JAM ZINC PLT	6	
3		227901001	WEAR BAR - ROD LOADER	2	
4		227900001	WEAR BAR-ROD LOADER	2	
5		601699012	3/3-16X1 1/4 ELEVATOR BOLT ZNC	10	
6		235725001	NUT-3/8-16 GR 8 HEX ZINC PLT	10	
7		227845001	LOADER PIVOT ASSY	2	INC. TWO OF REF.9 & ONE OF REF. 14
8		227899001	LOADER-ROD	1	
9		1835033	BSHG. STL.-2 X 1 3/4 X 1 1/2	4	
10		250573001	BOLT-1/2-13X2 1/2" GR 8 HEX ZINC PLT	4	
11		485025	WASHER-1/2 FLT HARDENED	10	
12		235713001	WASHER-3/8 SAE HARD ZINC	11	
13		235731001	NUT-1/2 13 GR 8 HEX ZINC PLT	4	
14		598001	ZERK-1/4" NF ST GREASE	2	
15		601698024	SQ HSS 1/2-13X2 1/2 ZNC PLT	6	
16		18150001	SLUG-2" DIA. 1/4"	1	
17		227995001	INDICATOR-ROD LOADER	1	
18		235727001	BOLT-3/8-16X1 GR 8 HEX ZINC PLT	1	
19		235729001	BOLT-1/2-13X1" GR 8 HEX ZINC	2	
20		250514001	NUT-5/8 NC JAM Y/ZINC	2	
21		601697030	SQ HSS-5/8-11X3 ZINC PLT	2	
22		505909001	WASHER-2 1/2X1 3/4X14 GA MB	2	

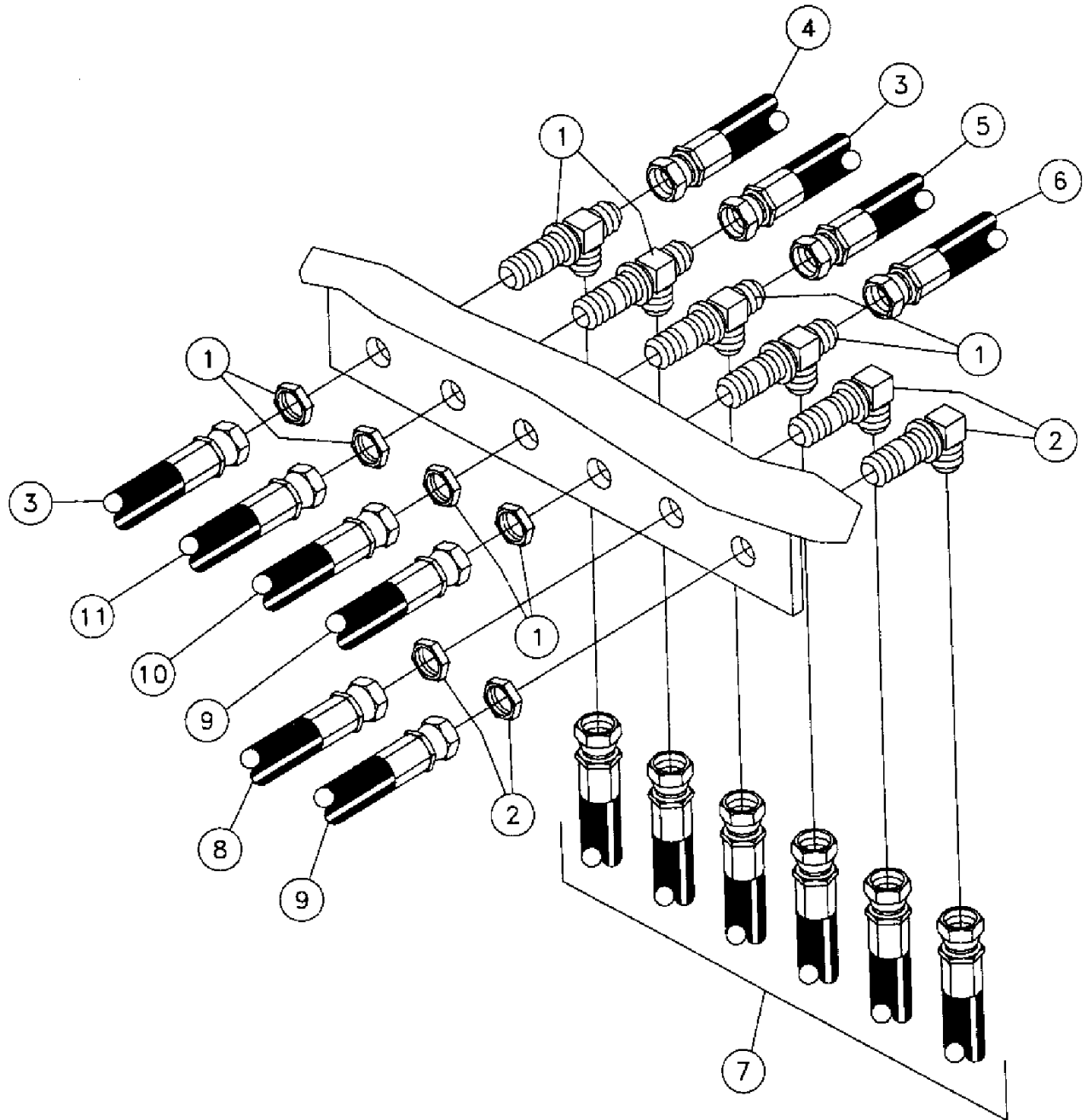
Rod Box Fig 8-3r03



Rod Box Fig 8-3r03

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		275482001	PIN 3/4 X 3 1/2 HITCH	8	
2		1794003	HAIR PIN COTTER -.148 WIRE	8	
3		251356001	BAR - ROD BOX LIFT	2	
4		275341003	ROD BOX ASS'Y D80	1	DOMESTIC, INC. TWO EACH OF REF. 8 & 9
		275341005	ROD BOX ASS'Y D80	1	INTERNATIONAL, INC. TWO EACH OF REF. 8 & 9
5		251355001	BAR - ROD BOX LIFT	2	
6		2108001	LYNCH PIN - 1/4 X 2	2	
7		227906001	PIN ROD BOX	2	
8		70000563	DECAL-WARNING	2	UND
		7000I563	DECAL-WARNING	2	UND, INT.
9		7000A392	DECAL - DANGER	2	
		700IA392	DECAL - DANGER	2	INT.
10		280651001	COVER-D40-TALL ROD BOX	1	
11	*	275927982	THREAD CMPD-PLUSCO 135 10 PACK	1	
	*	275928982	THREAD CMPD-PLUSCO 135 4/10 PACK	1	
			Revised June 2000 due to update in illustration & parts list. Added parts marked with *.		

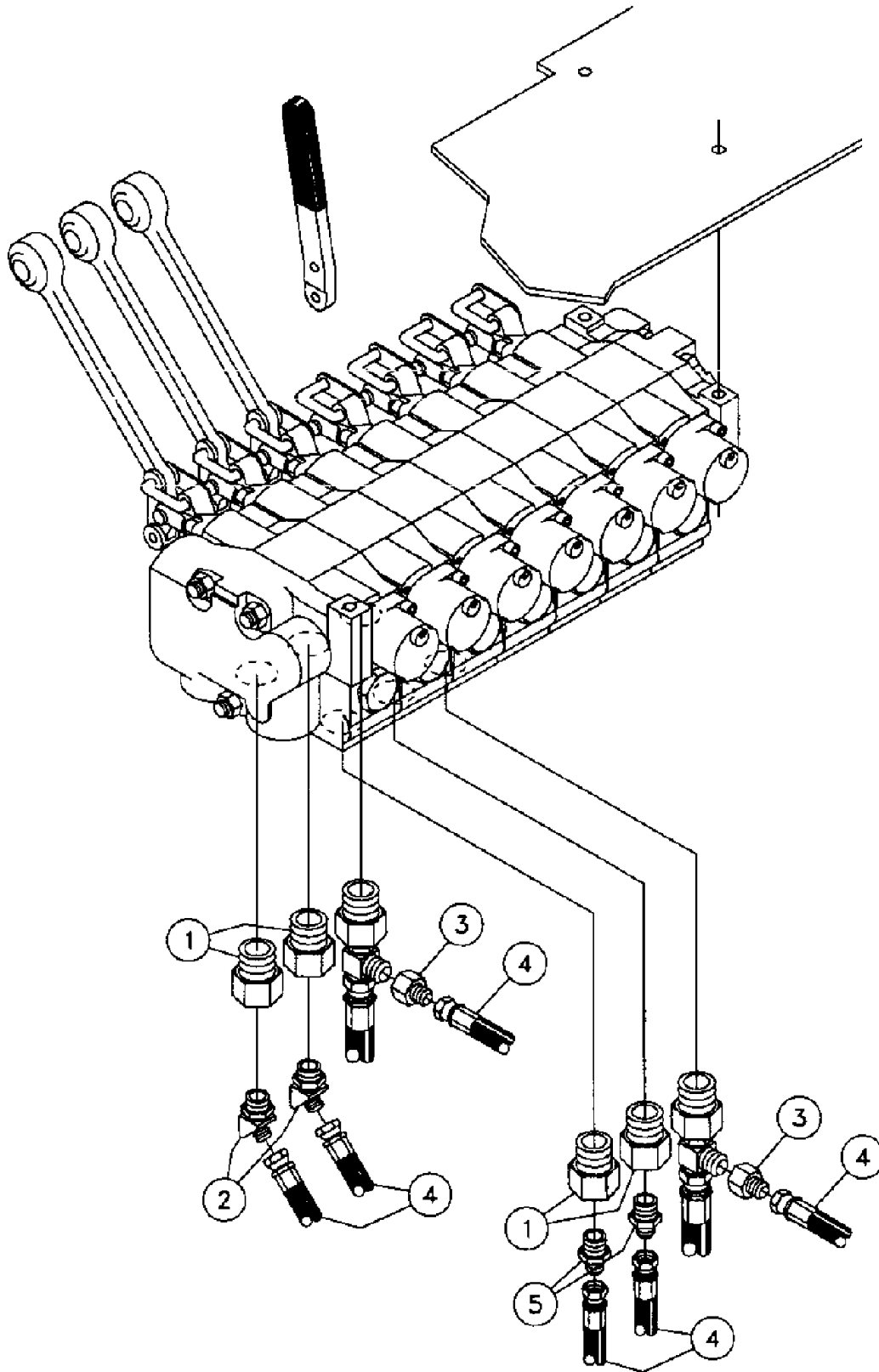
Bulkhead Fig 8-4



Bulkhead Fig 8-4

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		88545001	FITTING-4M JIC BLKHD RUN TEE	4	
2		61497001	FITTING-4M JIC BULKHEAD 90DEG.	2	
3		53843061	HOSE-1/4X124 4FS JIC 100R1	2	
4		53843205	HOSE-1/4X120 4FS JIC 3000 PSI	1	
5		53843257	HOSE-1/4X90 4FS JIC 3000 PSI	1	
6		53843163	HOSE-1/4X94 4FS JIC 100R1	1	
7		53843231	HOSE-1/4X66 4FS JIC 3000 PSI	6	
8		53843573	HOSE-1/4 X 112 4FS IC 3000 PSI	1	
9		53843233	HOSE-1/4X108 4FS JIC 3000 PSI	2	
10		53843039	HOSE-1/4X102 4FS JIC 100R1	1	
11		53843201	HOSE-1/4X132 4FS JIC 3000 PSI	1	

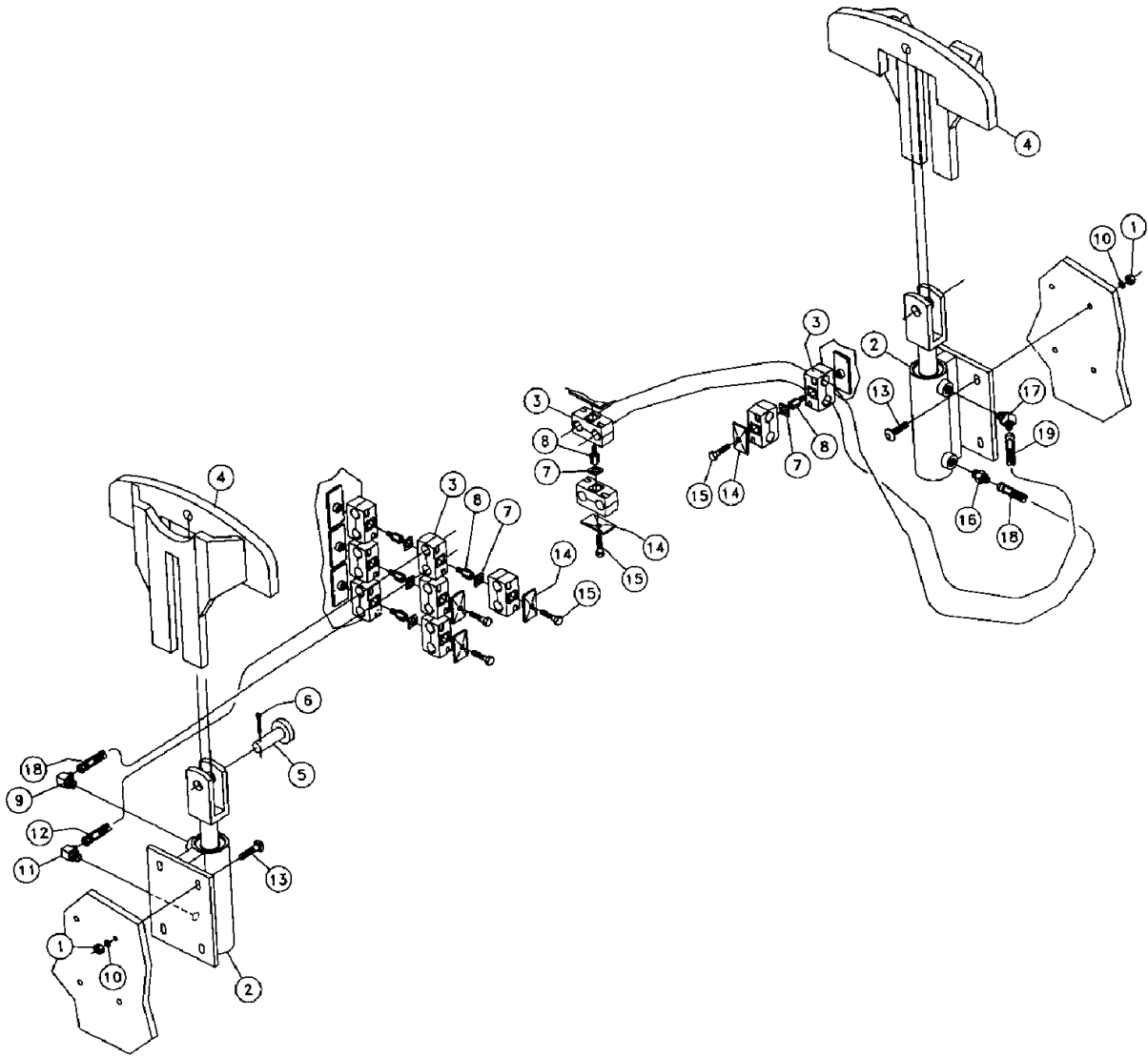
Control Valve - Rod Loader Plumbing Fig 8-5



Control Valve - Rod Loader Plumbing Fig 8-5

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		57967001	10M-6F O-RING BUSHING	4	
2		82931001	FITTING-6MX4M JIC 45DEG.ELBOW	2	
3		59928001	6F JICX4M JIC ST REDUCER	2	
4		53843231	HOSE-1/4X66 4FS JIC 3000 PSI	6	
5		57968001	6M O-RING 4M JIC STRAIGHT	2	

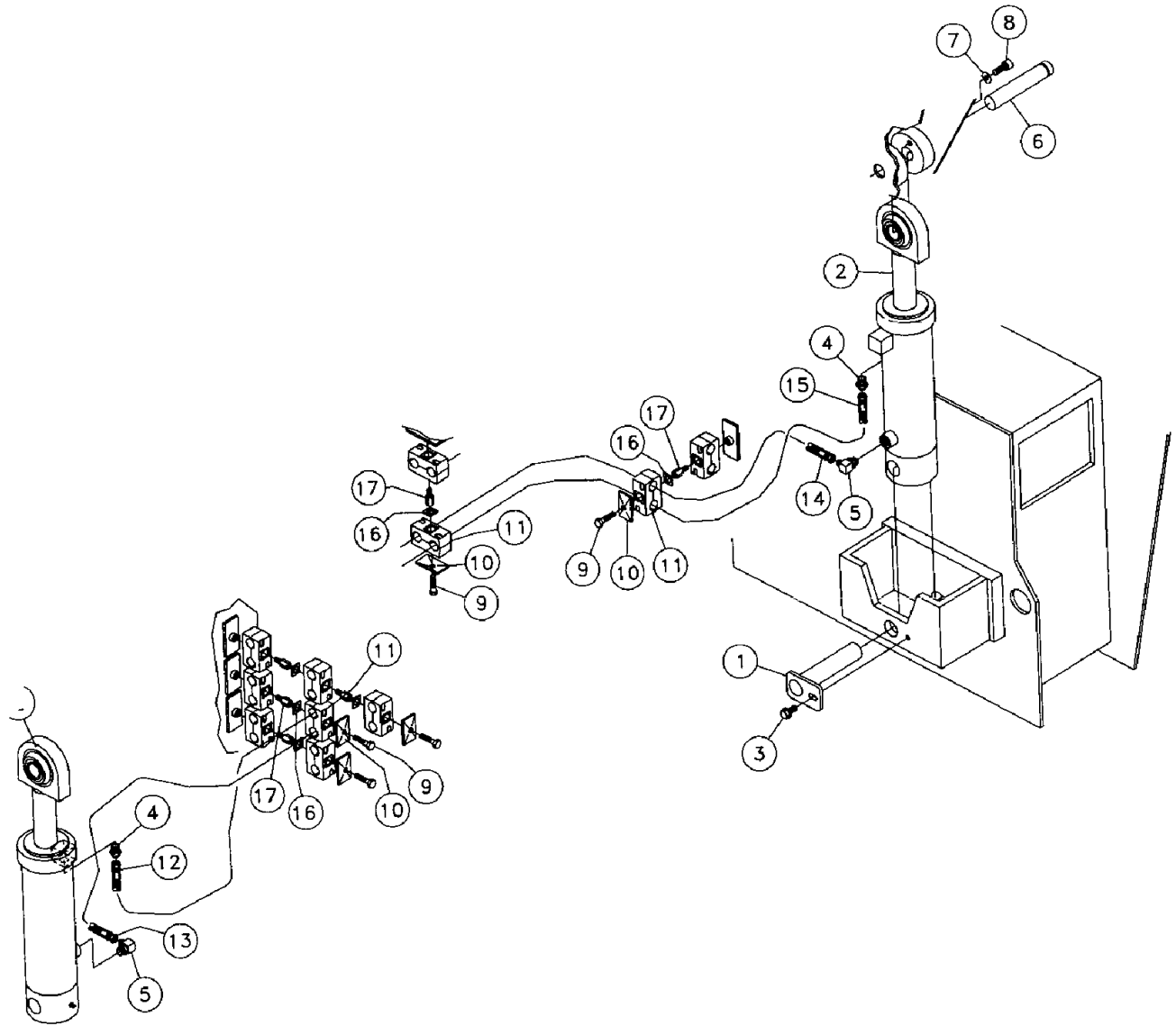
Rod Eject Cylinder Fig 8-6



Rod Eject Cylinder Fig 8-6

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		416001	NUT-3/8 NC SLTL	8	
2		224394001	CYLINDER-2X5	2	BREAKDOWN FIG. 8-9
3		67846005	CLAMP-TWIN	4	
4		239442001	LIFTER-ROD	2	
5		222815001	PIN-STEER CYLINDER	2	
6		510047	PIN - 3/16 X 1 1/4 COTTER	2	
7		231758001	WASHER-SAFETY	4	1/2" HEX ID
8		231757001	BOLT-CLAMP STACKING 5/16THREAD	4	
9		600118001	FITTING-6MORINGX4MJIC90PARKER	1	
10		480007	WASHER-3/8 S/T LOCK	8	
11		131008001	FITTING-4MJICX6MORING 90D.062R	1	
12		53843201	HOSE-1/4X132 4FS JIC 3000 PSI	1	
13		375014	BOLT-3/8-16X1 1/2"GD#5CARRIAGE	8	
14		67846003	PLATE-TWIN COVER	4	
15		351012	BOLT-5/16"-18X1 1/4"GR5 HEX	4	
16		57968001	6M O-RING 4M JIC STRAIGHT	1	
17		82931001	FITTING-6MX4M JIC 45DEG.ELBOW	1	
18		53843061	HOSE-1/4X124 4FS JIC 100R1	2	
19		53843205	HOSE-1/4X120 4FS JIC 3000 PSI	1	

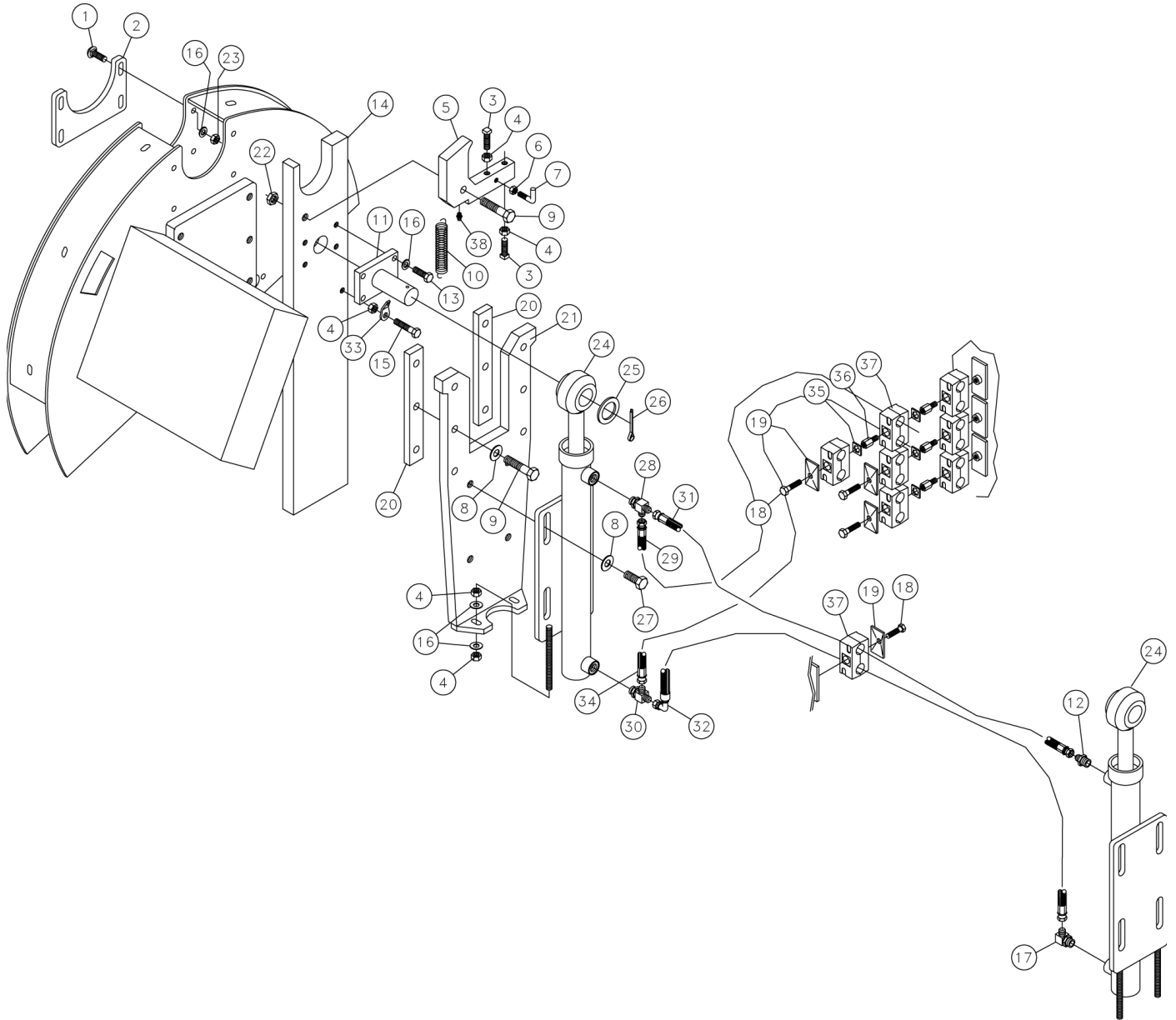
Rod Rotation Cylinder Fig 8-7



Rod Rotation Cylinder Fig 8-7

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		227880001	PIN-ROTATION CYLINDER	2	
2		227814001	CYLINDER-3 X 7 1/2	2	BREAKDOWN FIG. 8-10
3		4475006	BOLT-3/8-16X3/4 FLG WHIZ	2	
4		57968001	6M O-RING 4M JIC STRAIGHT	2	
5		600118001	FITTING-6MORINGX4MJIC90PARKER	2	
6		227902001	PIN-ROTATE CYLINDER	2	
7		485007	WASHER-3/8 FLAT	2	
8		601696010	SOCKET HD CAP SCREW 3/8-16X1 Z	2	
9		351012	BOLT-5/16"-18X1 1/4"GR5 HEX	3	
10		67846003	PLATE-TWIN COVER	3	
11		67846005	CLAMP-TWIN	3	
12		53843233	HOSE-1/4X108 4FS JIC 3000 PSI	1	
13		53843039	HOSE-1/4X102 4FS JIC 100R1	1	
14		53843257	HOSE-1/4X90 4FS JIC 3000 PSI	1	
15		53843163	HOSE-1/4X94 4FS JIC 100R1	1	
16		231758001	WASHER-SAFETY	3	1/2" HEX ID
17		231757001	BOLT-CLAMP STACKING 5/16THREAD	3	

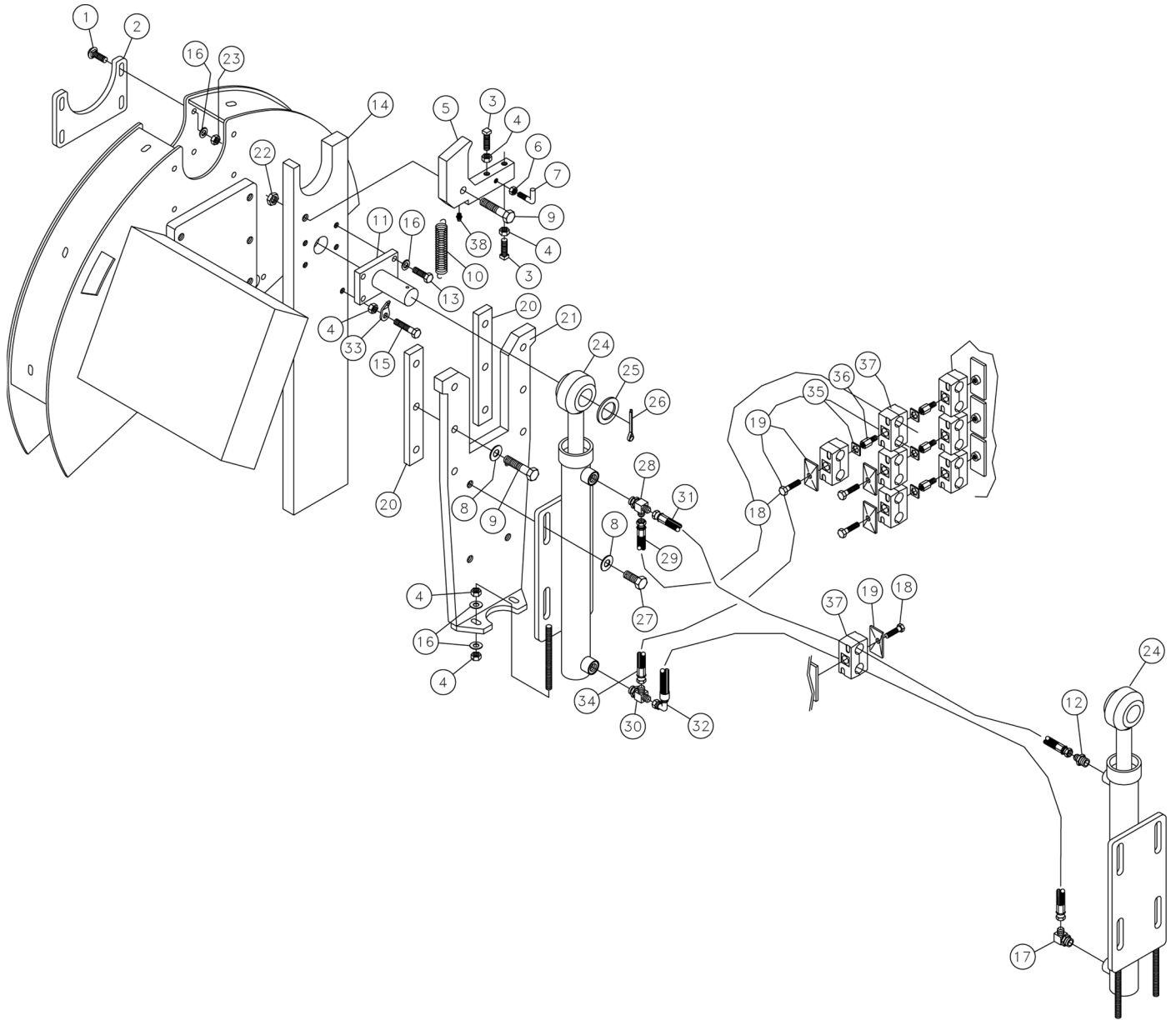
Rod Position Cylinder Fig 8-8r02



Rod Position Cylinder Fig 8-8r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
		Revision Date	April, 2005		Update in Illus. & Parts List
1		375012	3/8-16X1 1/4"GD#5CARRIAGE BOLT	8	
2		224335001	PLATE-LOADER INSERT	2	2 7/8" DRILL
3		249877001	SQ HSS-3/8-16X2	4	
4		250576001	NUT-3/8 -16 GR 8 JAM Y/ZINC	14	
5		224333003	PLATE ASSY-2 7/8 ROD FLIPPER	2	2 7/8" DRILL ROD, INC. ONE OF REF. 40
		216696003	PLATE ASSY-3 1/2 ROD FLIPPER	2	3 1/2" DRILL ROD, INC. ONE OF REF. 40
6		407001	NUT-5/16 NC HEX JAM	2	
7		227847001	HOOK-FLIPPER SPRING	2	
8		485025	WASHER-1/2 FLAT HARDENED ZINC	20	
9	*	124631026	BOLT-1/4-20X2 3/4 GR8 HEX ZINC	14	PN Changed
10		1789013	SPRING -EXT. #76 4" OA	2	
11		227752001	MOUNT-LOADER CYLINDER	2	
12		57968001	6M O-RING 4M JIC STRAIGHT	1	
13		235736001	BOLT-3/8-16X1 1/4 GR 8 HEX ZINC	8	
14		224326001	ARM-2 7/8" ROD	2	
		216635001	ARM-3 1/2" ROD	2	
15		235720001	BOLT-3/8-16X1 3/4 GR.8 HEX ZINC.	2	
16		235713001	WASHER-3/8 SAE HARD ZINC PLT	16	
17		600118001	FITTING-6MORINGX4MJIC90PARKER	1	
18		248031001	BOLT-5/16"-18X1 1/4"GR8 HEX ZINC	6	
19		67846003	PLATE-TWIN COVER	6	
20	*	292712001	SPACER - ROD ARM	4	PN Changed
21		227863001	MOUNT-POSITION CYLINDER	2	
22		235722001	NUT-1/2-13 GR 8 JAM ZINC PLT	2	
23		235725001	NUT-3/8-16 GR 8 HEX ZINC PLT	8	
24		227815001	CYLINDER 1 1/2 X 14 1/2	2	BREAKDOWN FIG. 8-11
25		249878001	WASHER-1 7/8X1 1/4X14 GA M.B.	2	
26		510025	COTTER PIN-3/16" X 2"	2	
27		235737001	BOLT-1/2-13 X 1 1/4 GR #8 HEX ZINC	8	
28		82930001	FIT-6MX4M JICX4M JIC (BCH) TEE	1	
29		53843573	HOSE-1/4 X 112 4FS IC 3000 PSI	1	
30		131007001	FIT-4MJICX6MORX4MJIC TEE R.062	1	
31		53843717	HOSE-1/4X136 4FS JIC ST 5000#	1	
32		53843729	HOSE-1/4X150 4FSJICST/90D 3000	1	
33		239421001	PLATE-SPRING HOOK	2	
34		53843233	HOSE-1/4X108 4FS JIC 3000 PSI	1	
35		231758001	WASHER-SAFETY(1/2" HEX ID)	2	

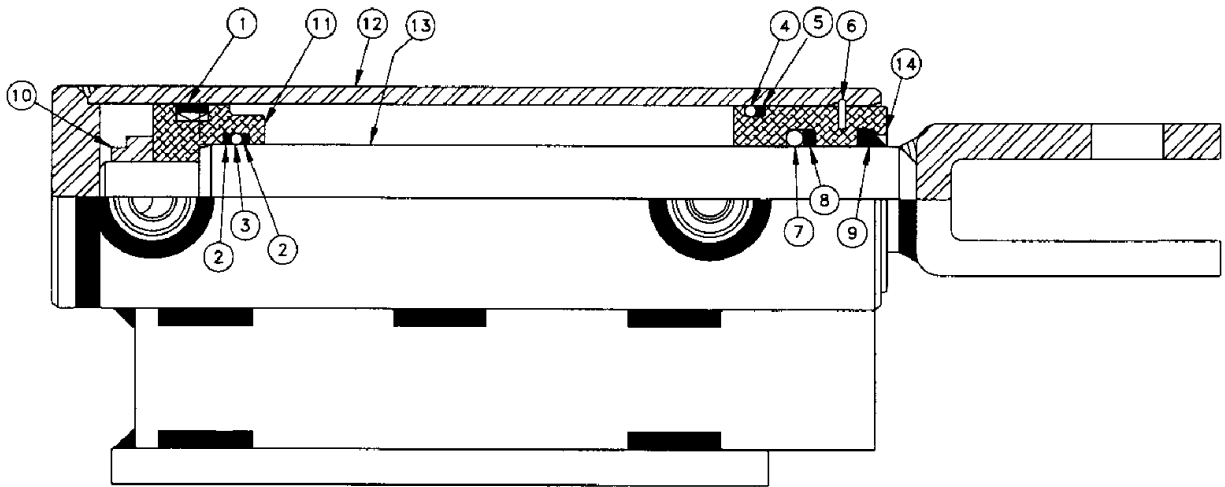
Rod Position Cylinder (continued) Fig 8-8r02



Rod Position Cylinder (continued) Fig 8-8r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
36		231757001	BOLT-CLAMP STACKING 5/16THREAD	2	
37		67846005	CLAMP-TWIN	6	
38		598001	ZERK-1/4 NF ST GREASE	2	

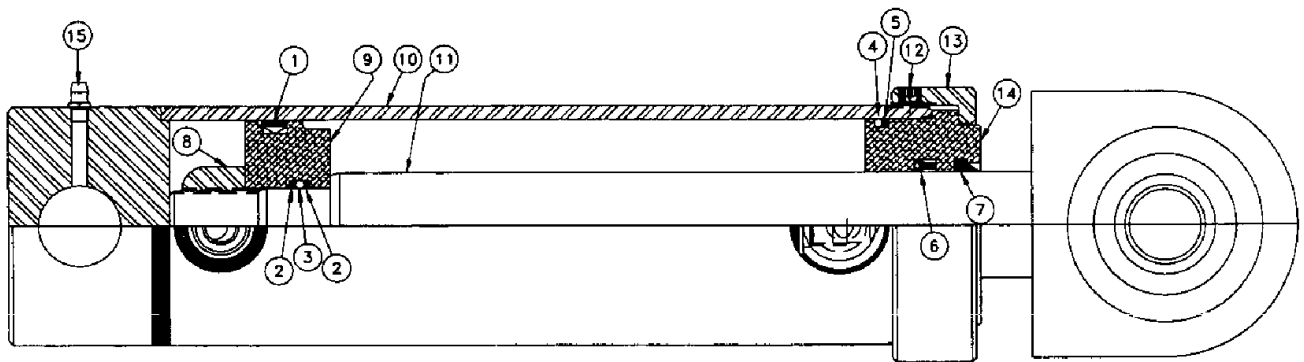
Hydraulic Cylinder Components - 2" x 5" Fig 8-9



Hydraulic Cylinder Components - 2" x 5" Fig 8-9

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		200833001	UNIRING 12G-200120-312	1	
2		222440007	BACK-UP RING	2	
3		221256013	O-RING	1	
4		51172001	O-RING	1	
5		200834001	BACKUP WASHER	1	
6		224394007	SNAP RING	1	
7		200771001	O-RING	1	
8		224394009	BACK-UP RING	1	
9		221256015	ROD WIPER	1	
10		224394011	THIN LOCKNUT	1	
11		218008009	PISTON	1	
12		224394003	BARREL ASSY	1	
13		224394005	ROD ASSY	1	
14		200831001	GLAND	1	
		224394013	SEAL KIT-2 X 5 CYLINDER		INC. REF. 1-9
		224394001	CYLINDER-2X5		INC. REF. 1-14

Hydraulic Cylinder Components - 3" x 7 1/2" Fig 8-10



Hydraulic Cylinder Components - 3" x 7 1/2" Fig 8-10

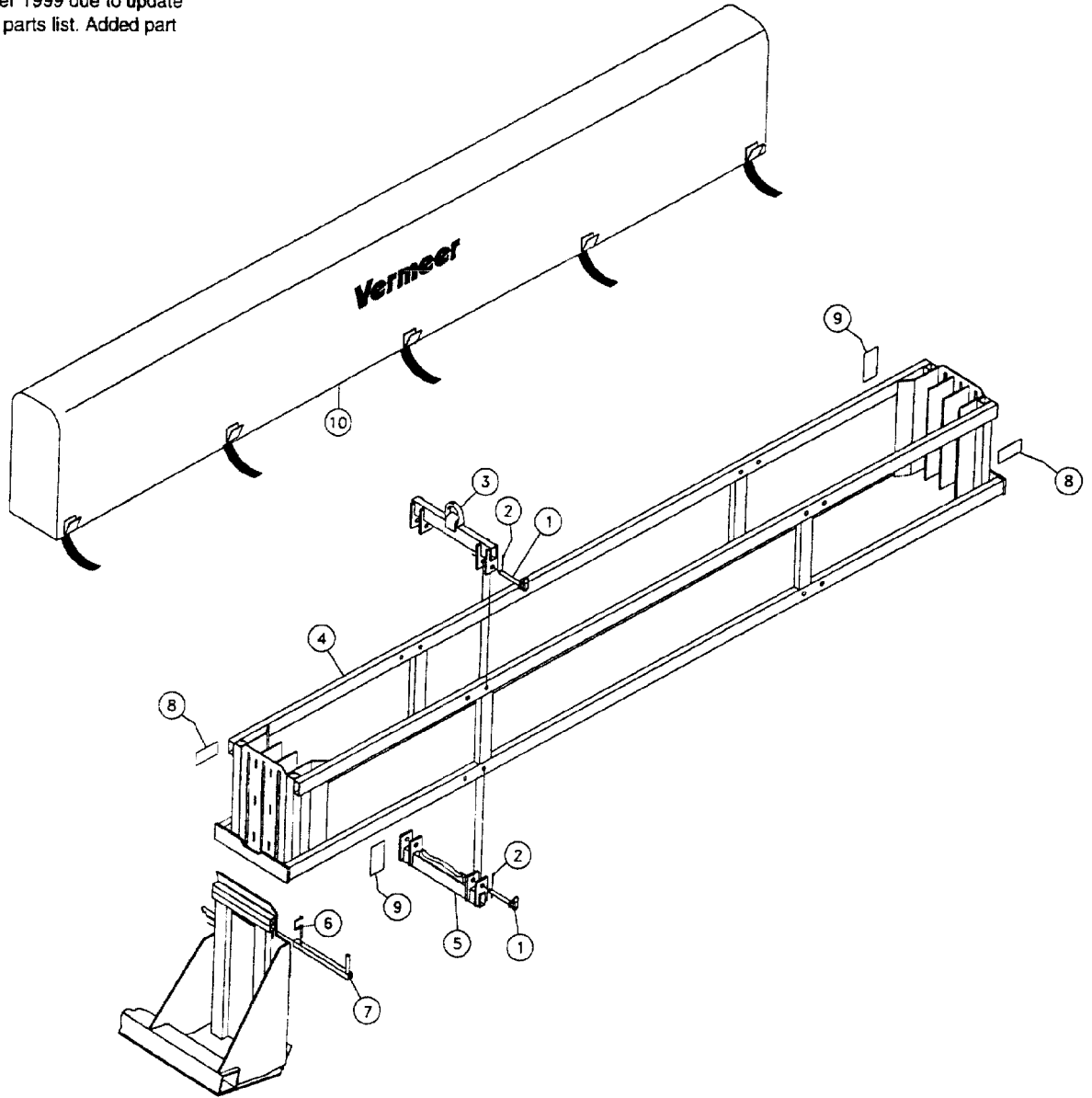
REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		200780001	UNI-RING 12G-300220-312	1	
2		208331001	RING-BACK UP	2	
3		208332001	O-RING	1	
4		200809001	O-RING	1	
5		200778001	WASHER-BACKUP	1	
6		204315001	1 1/2" LOADED U-CUP	1	
7		200808001	WIPER	1	
8		218496007	LOCK NUT	1	
9		227814007	PISTON	1	
10		227814003	BARREL ASSY	1	
11		227814005	ROD ASSY	1	
12		219125011	NT SH SET SCREW	1	
13		218496013	THREADED CAP	1	
14		89315007	GLAND-CYLINDER	1	
15		598001	ZERK-1/4" NF ST GREASE	1	
		227814009	SEAL KIT-3X7 1/2 CYLINDER		INC. REF. 1-7
		227814001	CYLINDER-3 X 7 1/2		INC. REF. 1-15

Hydraulic Cylinder Components - 1 1/2" x 14 1/2" Fig 8-11

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		227815007	TEFLON PISTON RING	1	
2		227815009	O-RING	1	
3		227815011	BACK-UP RING	2	
4		227815013	O-RING	1	
5		202727001	O-RING	1	
6		119510005	BACK-UP RING	1	
7		208178001	O-RING	1	
8		208177001	WASHER-BACKUP	1	
9		227815021	ROD WIPER	1	
10		202722001	LOCKNUT	1	
11		227815015	PISTON	1	
12		227815003	BARREL ASSY	1	
13		227815005	ROD ASSY	1	
14		219125011	NT SH SET SCREW	1	
15		215170019	CAP-THREADED	1	
16		215170017	ROD ASSEMBLY	1	
		227815019	SEAL KIT-1 1/2X14 1/2 CYLINDER		INC. REF. 1-9
		227815001	CYLINDER 1 1/2 X 14 1/2		INC. REF. 1-16

Rod Box Fig 8-12r02

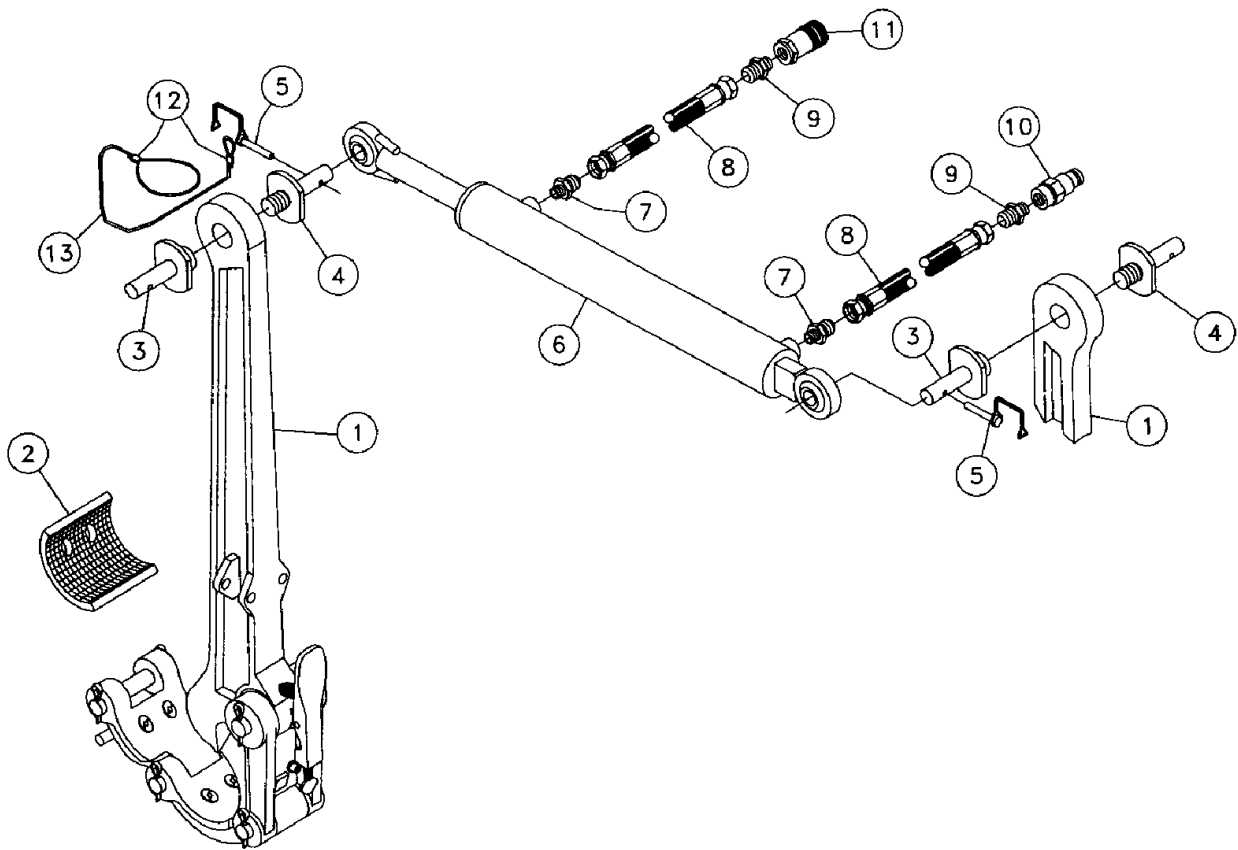
Revised October 1999 due to update in illustration & parts list. Added part marked with *.



Rod Box Fig 8-12r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		275482001	PIN - 3/4 X 3 1/2 HITCH	8	
2		1794003	HAIR PIN COTTER-.148 WIRE	8	
3		251356001	BAR - ROD BOX LIFT	2	
4		277800005	BOX ASSY-ROD	1	9-ROD, INTERNTL, INC. TWO EACH OF REF. 8 & 9
		277800003	BOX ASSY-ROD	1	9-ROD, DOMESTIC INC. TWO ECH OF REF. 8 & 9
5		251355001	BAR - ROD BOX LIFT	2	
6		2108001	LYNCH PIN-1/4X2	2	
7		227906001	PIN-ROD BOX	2	
8		70000563	DECAL-WARNING	2	UND, DOMESTIC
		7000I563	DECAL-WARNING	2	UND, INT.
9		7000A392	DECAL-DANGER	2	DOM
		700IA392	DECAL-DANGER	2	INT
10	*	280650001	COVER D40 SHORT ROD BOX	1	

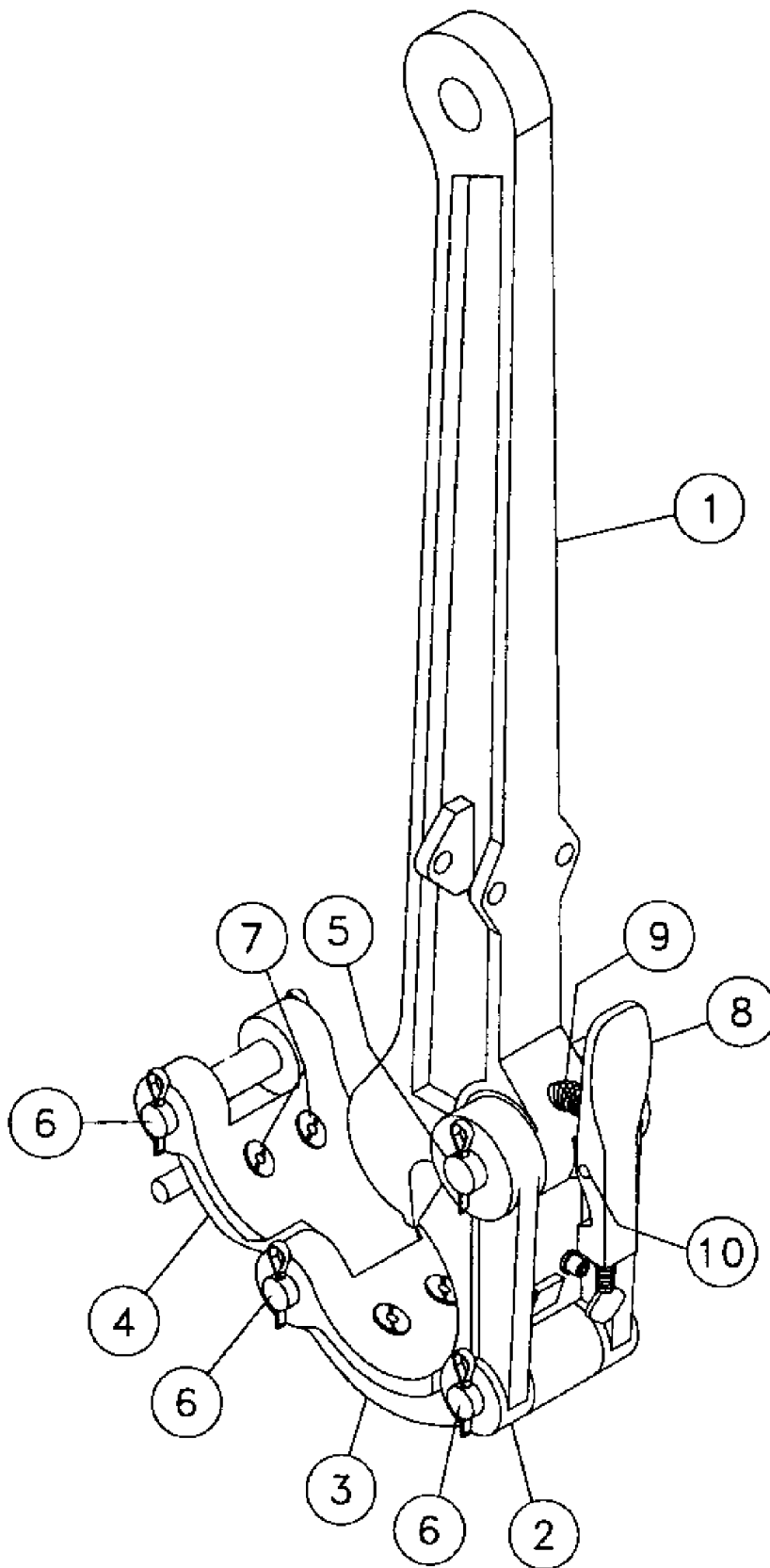
Tubing Tong Fig 9-1



Tubing Tong Fig 9-1

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
			[A] 2 3/8"		
			[B] 2 7/8"		
			[C] 3 1/2"		
1		230970001	TONG-K30 LIGHT WEIGHT TUBING	2	BREAKDOWN FIG. 10-9, [A] [B] [C]
2		235870001	K-30 2 5/8 DIES	1	3/SET, [A]
		230972001	DIES-3 1/4" TUBING TONG	1	3/SET, [B]
		230974001	DIES-3 5/8" TUBING TONG	1	3/SET, [C]
3		234967001	PIN-FEMALE CYLINDER	2	[A] [B] [C]
4		234966001	PIN-MALE CYLINDER	2	[A] [B] [C]
5		2108001	LYNCH PIN - 1/4 X 2	2	[A] [B] [C]
6		230977001	CYLINDER-2"X15"	1	BREAKDOWN FIG. 9-3) [A] [B] [C]
7		86235001	6M ORING X 8M JIC STR.	2	[A] [B] [C]
8		53844167	HOSE-1/2X240 8FS JIC 3000 PSI	2	[A] [B] [C]
9		68634001	FITTING-3/8MX8M JIC	2	STR, [A] [B] [C]
10		221503001	COUPLER-3/8 NPT QUICK	1	MALE) [A] [B] [C]
11		221504001	COUPLER-3/8 NPT QUICK	1	FEMALE, [A] [B] [C]
12		1838001	CONNECTOR-WIRE	4	ETC., [A] [B] [C]
13		240546001	CABLE-3/32 NYLON-18.00	2	[A] [B] [C]

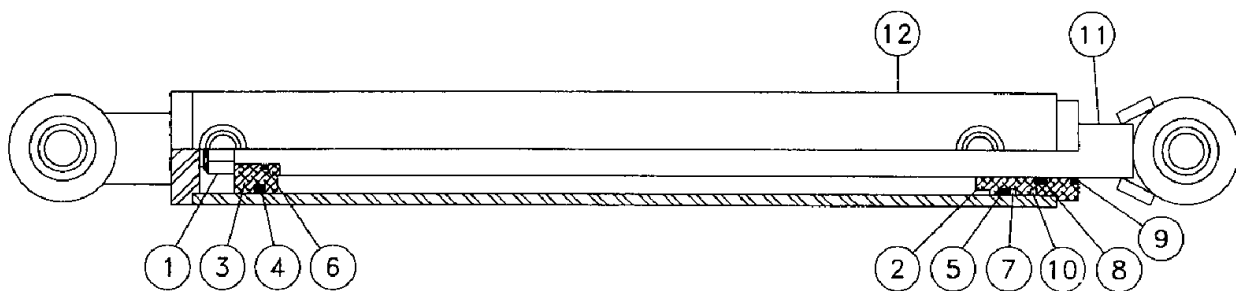
Tubing Tong Components Fig 9-2



Tubing Tong Components Fig 9-2

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		230970003	TONG HANDLE	1	
2		230970005	HANDLE JAW	1	
3		230970007	CENTER JAW	1	
4		230970009	LATCH JAW	1	
5		230970011	HANDLE PIN	1	
6		230970013	JAW PIN	3	
7		230970015	BUSHING AND SCREW	6	
8		230970017	ADJUSTABLE TONG LATCH	1	
9		230970019	LATCH SPRING	1	
10		230970021	LATCH RIVET	1	
		230970001	TONG-K30 LIGHT WEIGHT TUBING		COMPLETE, INC. REF. 1-10

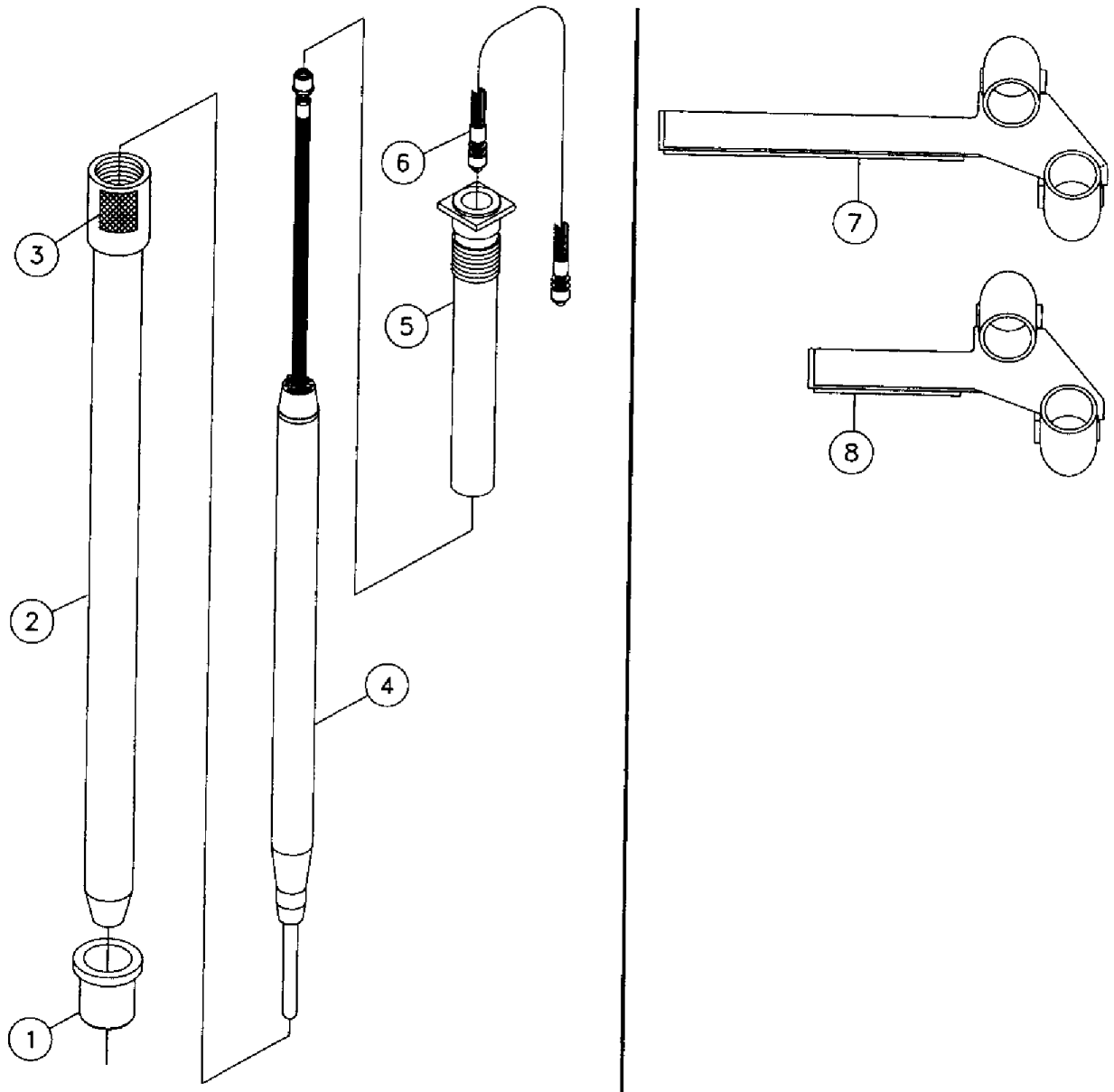
Hydraulic Cylinder Components - 2" x 15" Fig 9-3



Hydraulic Cylinder Components - 2" x 15" Fig 9-3

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		230977003	NUT	1	
2		230977005	HEAD	1	
3		230977007	PISTON	1	
4		230977009	PSP-SEAL	1	
5		51181001	O-RING #326	1	
6		792029	O-RING	1	
7		230977011	BACK-UP	1	
8		230977013	ROD SEAL	1	
9		230977015	DUST SEAL	1	
10		230977017	RETAINING RING1	1	
11		230977019	SHAFT	1	W/CLEVIS
12		230977021	BARREL	1	W/CLEVIS AND PORTS
		230977023	REPAIR KIT		INC. REF. 4-10
		230977001	CYLINDER-2"X15"		INC. REF. 1-12

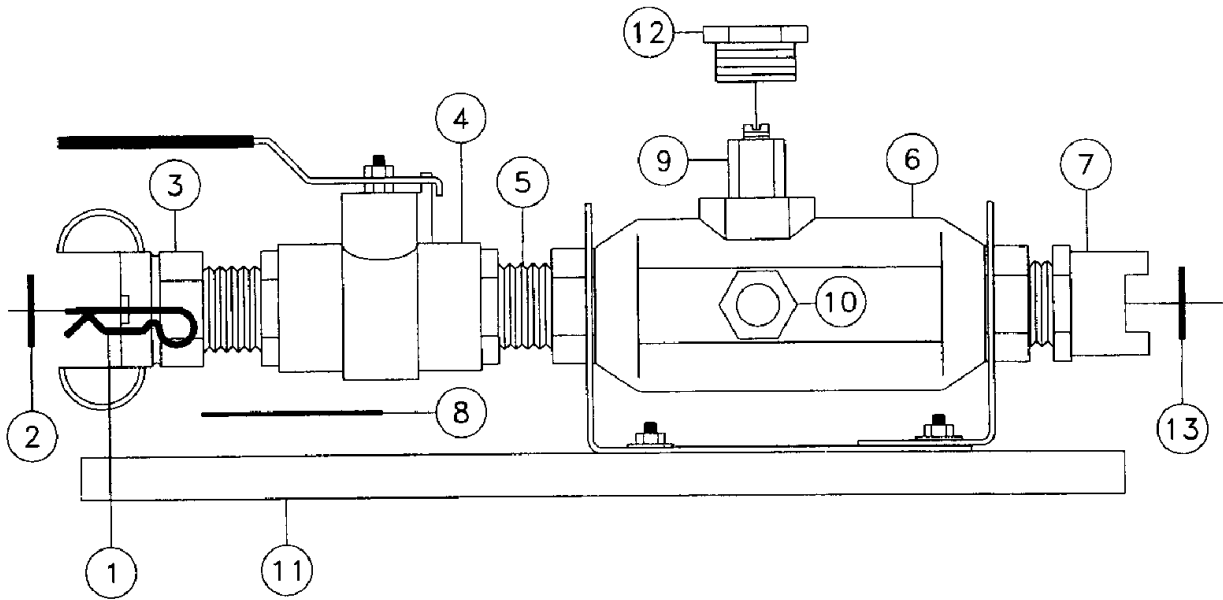
Stake/Driver Fig 10-1



Stake/Driver Fig 10-1

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		231898001	STAKE SLEEVE	4	
2		231897001	STAKE	4	
3		7000A549	DECAL-WARNING	4	
4		231900001	STAKE DRIVING MOLE	1	BREAKDOWN FIG. 10-3
5		231899001	EXTRACTION SLEEVE	1	
6		208267001	50'HOSE W/COUPLINGS	AR	
7		231202001	MOUNT-LONG PNEUMATIC STAKE	1	
8		231200001	MOUNT-PNEUMATIC STAKE	1	

Mist Oiler Fig 10-2



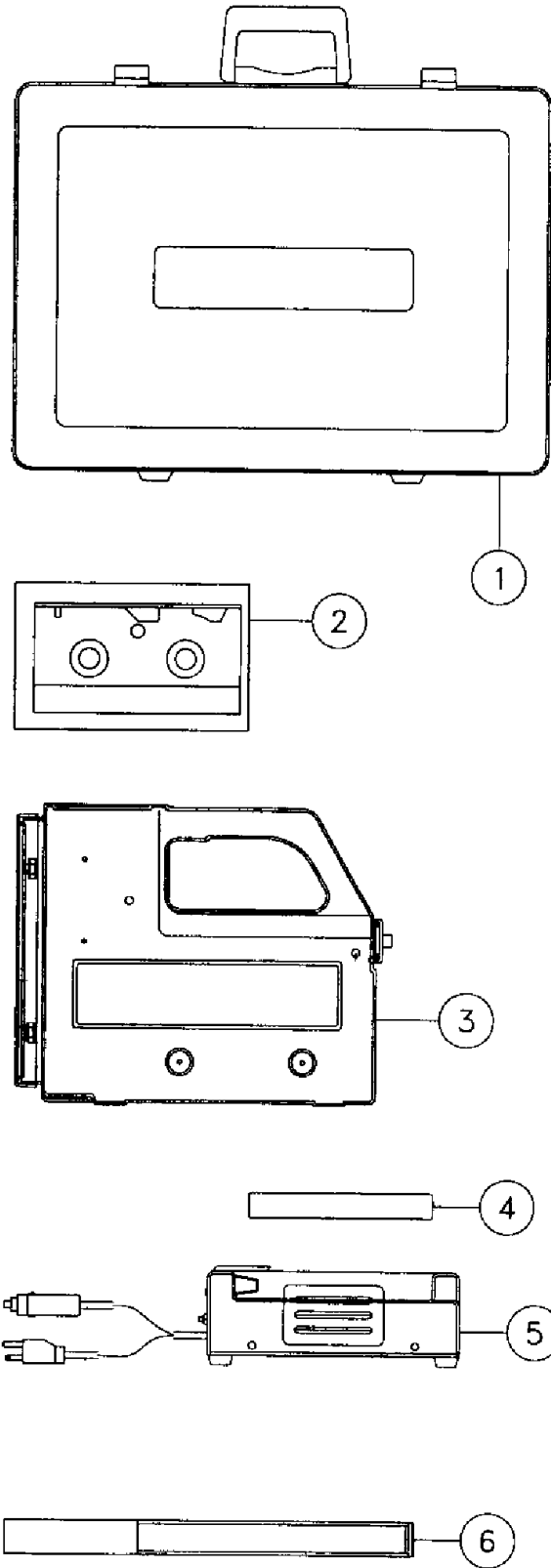
Mist Oiler Fig 10-2

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		205154007	SAFETY CLIP	1	
2		205154005	FITTING GASKET	1	
3		205154003	CLAW FITTING-MALE	1	
4		3379001	VALVE - 3/4" BALL - #101R NPT	1	
5		736007	3/4" CLOSE NIPPLE BLACK STEEL	1	
6		208566001	MIST OILER W/PRESSURE RELIEF	1	INC. REF. 1-13
		211713001	OILER ASSY-EUROPEAN STANDARD	1	
7		205154011	PNEUMATIC FITTING	1	
8		70000685	DECAL-WARNING	1	
9		208567001	OILER VALVE W/O-RING	1	
10		208569001	SIGHT WINDOW W/O-RING	2	
11		208570001	WOODEN BASE W/BRACKETS	1	
12		208599001	MANUAL RELIEVING SAFETY CAP AY	1	
13		208566003	RUBBER GASKET	1	

Stake Driving Mole Components Fig 10-3

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		231902001	BODY W/LONG FRONT ANVIL	1	
		215399001	WEAR FACE ASSEMBLY	1	
2		204933005	STRIKER	1	
3		204933007	STRIKER RING	2	
4		221594001	VALVE RETAINER	1	
5		204933011	VALVE RING	1	
6		221593001	VALVE	1	
7		204933015	REAR ANVIL	1	
8		207042001	VALVE END SERVICEABLE WHIP	1	
9		231901001	TAILCONE-MODIFIED	1	
10		204933021	TAIL BOLT	4	
11		231903001	EXTRA LONG SERVICE WHIP HOSE	1	
12		204933023	PNEUMATIC FITTING	1	
13		70000340	DECAL-RED VERMEER	2	
14		70000944	DECAL-WARNING UND MOLES	1	
15		209225001	NEVERSEEZ 1 OZ.	1	
16		207368001	7/16"LONG ARM HEX KEY	1	
17		207369001	SOCKET-3/8 12 POINT	1	
		231900001	STAKE DRIVING MOLE		INC. REF. 1-17

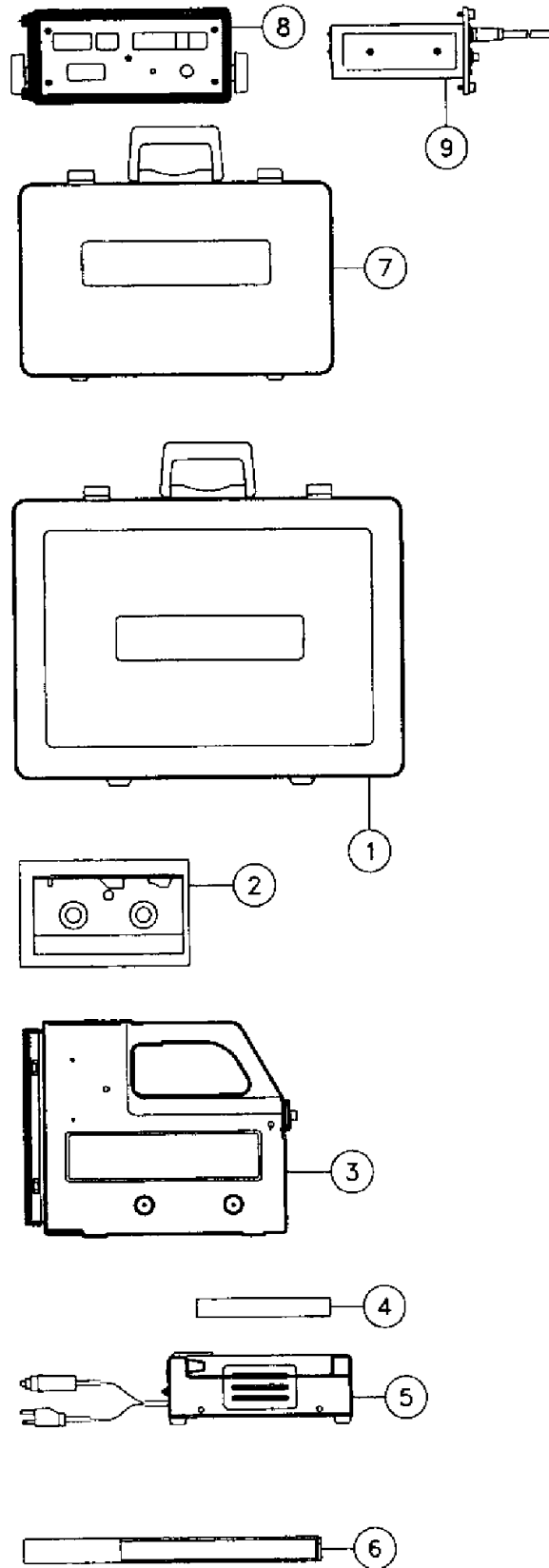
Location Package, Mark III - Digitrak - Domestic and International Fig 11-1



Location Package, Mark III - Digitrak - Domestic and International Fig 11-1

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		213389011	DIGITRAK CARRYING CASE	1	
2		231990001	DIGITRAK OP. MAN. TRAIN VIDEO	1	
3		231991001	DIGITRAK RECEIVER-ENGLISH/METR	1	
4		213389009	DIGITRAK BATTERY PACK	2	
5		213389007	DIGITRAK SMART CHARGER115/230V	1	
6		221806001	SONDE-15' BLUE	1	
		213389005	SONDE - 30' YELLOW	1	
		226196001	SONDE -50' RED	1	4 BATT
		221643001	SONDE-50' RED	1	
		213086001	O-RING	3	
		231212001	DIGITRAK STD.LOCATOR		US/CAN, INC. REF. 1-5

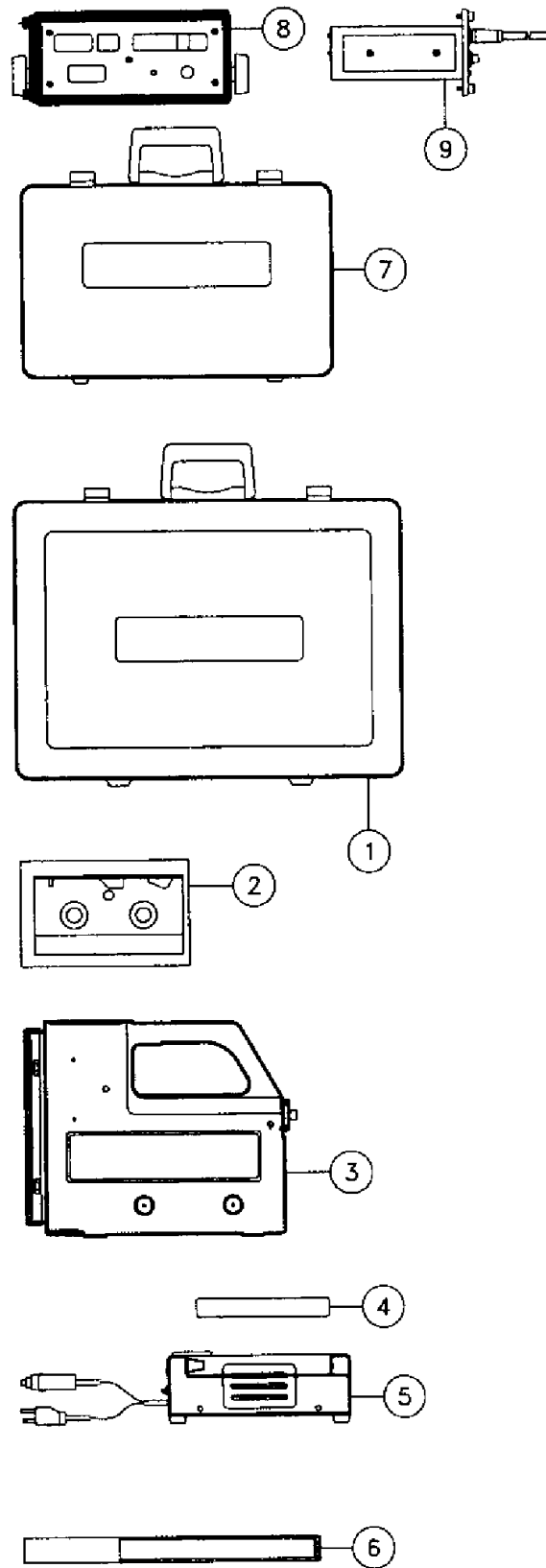
Location Package, Mark III - Digitrak (W/ Remote Display) Domestic Fig 11-2



Location Package, Mark III - Digitrak (W/ Remote Display) Domestic Fig 11-2

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
			[A] QTY. STD.		
			[B] CABLE SONDE		
1		213389011	DIGITRAK CARRYING CASE	1	[A] [B]
2		231990001	DIGITRAK OP. MAN. TRAIN VIDEO	1	[A] [B]
3		231992001	RECEIVER W/REMOTE ENGLISH/METR	1	[A] [B]
4		213389009	DIGITRAK BATTERY PACK	2	[A]
5		213389007	DIGITRAK SMART CHARGER115/230V	1	[A]
6		221806001	SONDE-15' BLUE	1	[A]
		213389005	SONDE - 30' YELLOW	1	[A]
		221643001	SONDE-50' RED	1	[A]
		226196001	SONDE -50' RED	1	4 BATT, [A]
		226197001	SONDE -50' .1P MAGENTA	1	[A]
		226198001	SONDE-50' .1P MAGENTA	1	4 BATT, [A]
		226199001	SONDE-100' CABLE GREEN	1	[B]
		226200001	SONDE-100' CABLE .1P GREEN	1	[B]
		213086001	O-RING #122	3	[A] [B]
7		221658001	REMOTE CARRYING CASE	1	[A] [B]
8		231993001	DIGITRAK REMOTE DISPLAY	1	[A] [B]
		231994001	REMOTE DISPLY FOR CABLE SONDE	1	[B]
9		226195001	CABLE SONDE POWER SUPPLY	1	[B]
		231218001	DCI REMOTE LOCATOR SYS		US/CAN, INC. REF. 1-5, 7 & 8
		231221001	DCI REM CABLE SONDE SYS		US/CAN, INC. REF. 1-3 & 7-9

Location Package, Mark III - Digitrak (W/ Remote Display) International Fig 11-3

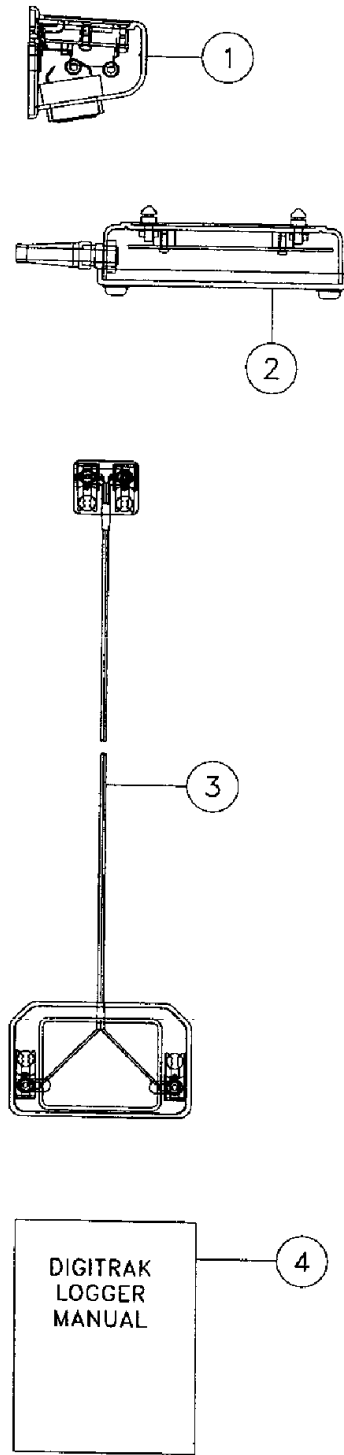


Location Package, Mark III - Digitrak (W/ Remote Display) International Fig 11-3

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
			[A] QTY. STD.		
			[B] CABLE SONDE		
1		213389011	DIGITRAK CARRYING CASE	1	[A] [B]
2		231990001	DIGITRAK OP. MAN. TRAIN VIDEO	1	[A] [B]
3		231995001	RECEIVER W/REMOTE FUNCTION AU	1	[A] [B]
		231996001	RECEIVER W/REMOTE FUNCTION UK	1	[A] [B]
4		213389009	DIGITRAK BATTERY PACK	2	[A]
5		213389007	DIGITRAK SMART CHARGER115/230V	1	[A]
6		221806001	SONDE-15' BLUE	1	[A]
		213389005	SONDE - 30' YELLOW	1	[A]
		221643001	SONDE-50' RED	1	[A]
		226196001	SONDE -50' RED	1	4 BATT, [A]
		226197001	SONDE -50' .1P MAGENTA	1	[A]
		226198001	SONDE-50' .1P MAGENTA	1	4 BATT, [A]
		226199001	SONDE-100' CABLE GREEN	1	[B]
		226200001	SONDE-100' CABLE .1P GREEN	1	[B]
		213086001	O-RING #122	3	[A] [B]
7		221658001	REMOTE CARRYING CASE	1	[A] [B]
8		231997001	REMOTE DISPLAY AU	1	[A]
		231998001	REMOTE DISPLAY FOR CBLE SOND AU	1	[A] [B]
		231999001	REMOTE DISPLAY UK	1	[A]
		238750001	REMOTE DISPLAY FOR CBLE SOND UK	1	[A] [B]
9		226195001	CABLE SONDE POWER SUPPLY	1	[A]
		231219001	DCI REMOTE LOCATOR SYS		AU, INC. REF. 1-5, 7 & 8
		231222001	DCI REM CABLE SONDE SYS		AU, INC. REF. 1-3 & 7-9
		231220001	DCI REMOTE LOCATOR SYS		UK, INC. REF. 1-5, 7 & 8
		231223001	DCI REM CABLE SONDE SYS		UK, INC. REF. 1-3 & 7-9

Data Logger, Mark III - Digitrak Fig 11-4r01

Revised July 1999 due to update
in parts list. Changed part marked with *.



Data Logger, Mark III - Digitrak Fig 11-4r01

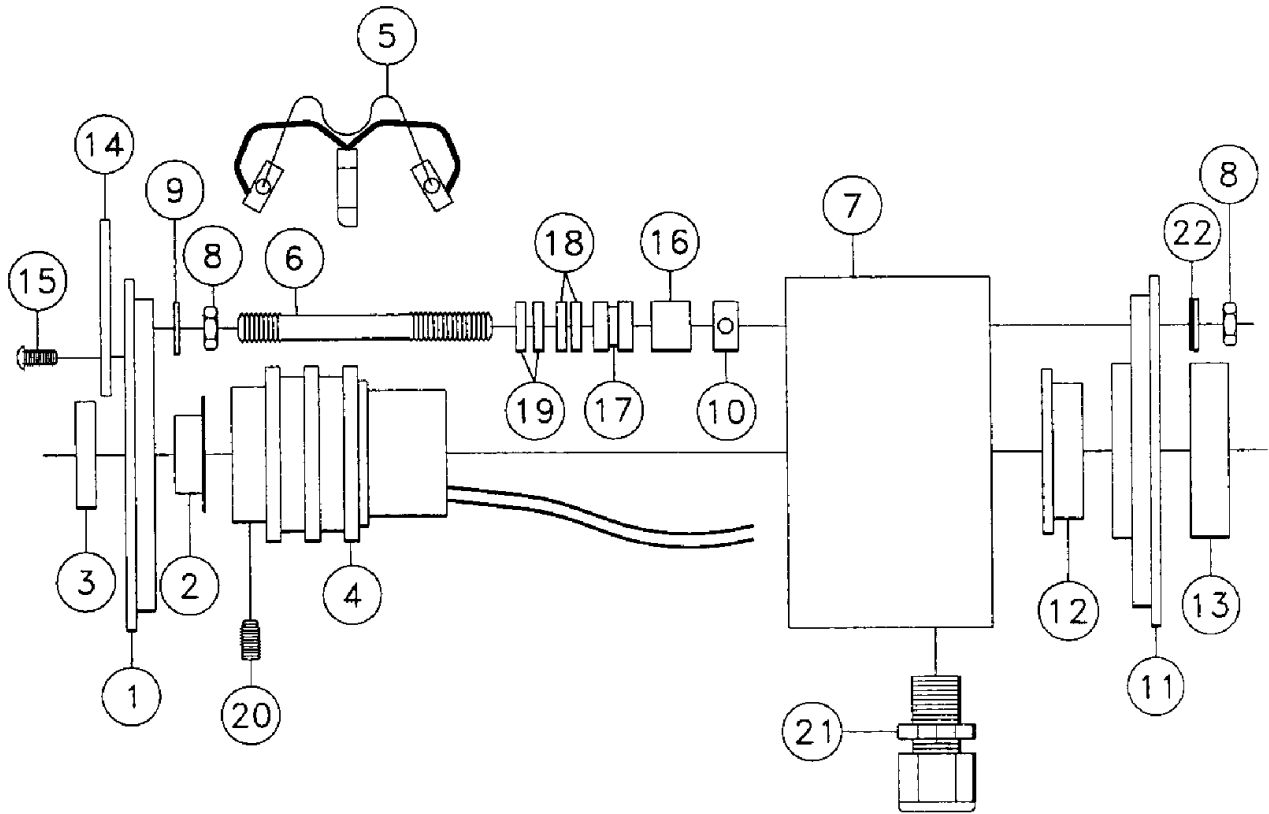
REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		231224001	DATA LOGGER MODULE	1	
2	*	231228001	DATA-LOG/PC INTERFACE	1	INC. REF. 3 & 4
3		238751001	DATA LOG REAL TIME CABLE	1	
4		238752001	DIGITRAK LOGGER MANUAL	1	
			Revised July 1999 due to update in parts list. Changed part marked with *.		

Cable Sonde Accessory Fig 11-5r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		240563001	SHAFT-SPOOL MOUNT	1	
2		240333001	NUT-5/16-18 GR8 TL ZINC PLTD	1	
3		238209001	BOLT-5/16-18X1 GR8 HEX ZINC YC	1	
4		523001	SSS-1/4-20X3/8	6	
5		234984001	MOUNT - ANTI-ROTATION	1	
6		234929001	SLIP RING-2 CIRCUIT	1	BREAKDOWN FIG. 11-6
7		250022001	CLIP-ALLIGATOR/RED	3	
8		240529001	WIRE-10 GA. RED 500"THHN	1	
9		234989001	WIRE HARNESS-D50X100 WIRE LINE	1	
10		234990001	MOUNT - ANTI-ROTATION SPOOL	1	
11		250021001	PLUNGER-HAND RETRACTABLE	1	
12		736003	3/8 CLOSE NIPPLE BLACK STEEL	1	
13		234887001	BASE-COMPRESSION FITTING	1	
14		792029	O-RING	1	
15		234957001	STOPPER-COMP.FITTING 12GA	3	
16		234888001	COVER-COMPRESSION FITTING	1	
17		279340001	ELASTIC CORD-12" W/HOOKS	1	
18		234856001	MICRO-TORCH	1	
19		234857001	CRIMPER	1	
20		279378001	3 BUTT CONNECTOR 10X12 GA W/O HEAT SHRINK	100	REPLACES 234858001
21	*	279380001	HEAT SHRINK 3/8X6 QTY 20	5	REPLACES 279339001
22		250052001	SPACER-WIRE LINE	1	
23	*	279379001	FISHTAPE-1/8 DIA X 50' W/ WINDER CASE	1	
			Revised February 2000 due to update in illustration & parts list. Changed/added parts marked with *.		

Slip Ring Components Fig 11-6

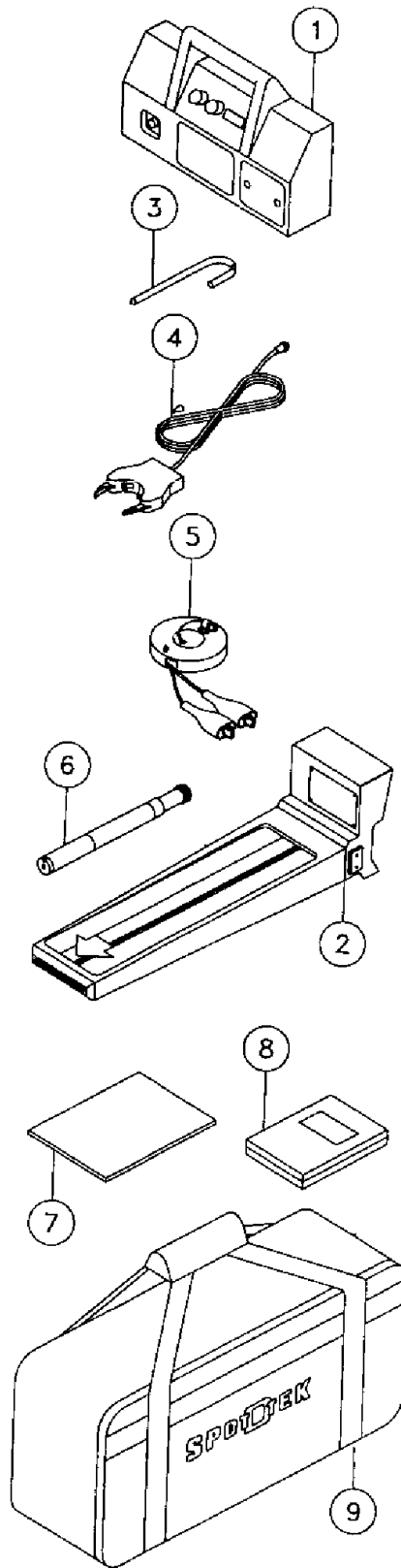
Revised July 1999 due to addition of figure to manual.



Slip Ring Components Fig 11-6

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		234925003	BASE-SLIP RING	1	
2		234929005	BEARING-NYLON	1	
3		234929007	SEAL-GREASE	1	
4		234929009	CORE ASSEMBLY	1	INC. REF. 20
5		234929011	BRUSH ASSEMBLY	2	
6		234929013	STUD-5/16-18 X 3 1/4	2	
7		234929015	COVER-PVC	1	
8		407001	NUT-5/16 NC HEX JAM	4	
9		485005	WASHER-5/16 FLAT	2	
10		234929017	COLLAR-5/16" SET	2	
11		234929019	PLATE-END	1	
12		234929021	BEARING-.05" IGUS	1	
13		234929023	SEAL-SHAFT	1	
14		234929025	BRACKET-TORQUE	1	
15		57200001	SCREW-#8-32X1/2 RND.HD.MACH.	2	
16		234929027	SPACER - .5 WIDE	2	
17		234929029	SPACER-GROOVED	2	
18		234929031	SPACER - .082 WIDE	4	
19		234929033	SPACER - .125 WIDE	4	
20		234929035	SSS-1/4-20X 1/2 KNURLED	2	
21		234929037	CONNECTOR-PLASTIC	1	
22		234929039	WASHER-SEALING	2	
		234929001	SLIP RING - 2 CIRCUIT		INC. ALL ITEMS IN FIGURE
			Revised July 1999 due to addition of figure to manual.		

Location Package, Spot D Tek II.2 Utility Fig 12-1

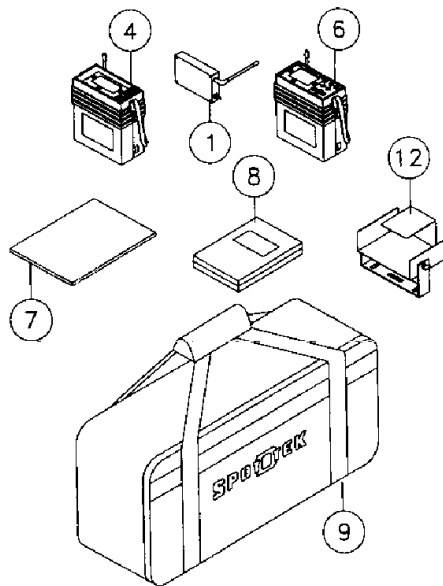
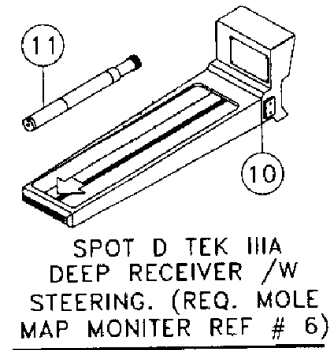
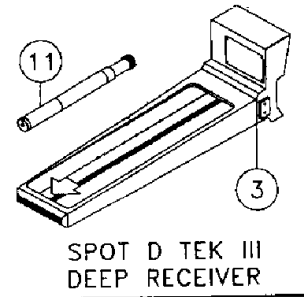
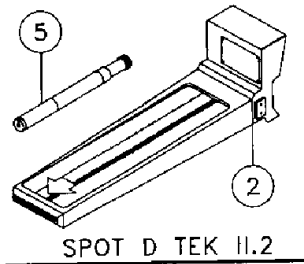


Location Package, Spot D Tek II.2 Utility Fig 12-1

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		213900003	TRANSMITTER FOR SPOT D TEK II	1	
		213900019	SUNSCREEN FOR TRANSMITTER	1	
2		215941001	RECEIVER II.2	1	
3		213900013	GROUND STAKE-SPOT D TEK II	1	
4		213900007	EXTERNAL COIL - SPOT D TEK II	1	
5		213900015	DIRECT CONNECTION CABLE	1	
6		215942001	DIR. PROBE II.2 W/ BATTERIES	1	
7		215938003	OPERATIONAL MANUAL	1	
8		213900021	VIDEO TAPE	1	
9		213900009	CASE FOR SPOT D TEK II	1	
		215938001	SPOT D TEK II.2 UTILITY LOC. PCK		INC. REF. 1-9
			ACCESSORIES		
		213900023	SUNSCREEN-RECEIVER/II.2 MONITOR		
		213900025	RAINCOVER-RECEIVER		

Location Package, Spot D Tek II.2, III & IIIA Fig 12-2r01

Revised February 1998 due to addition of remote monitor holder. Added part marked with *.

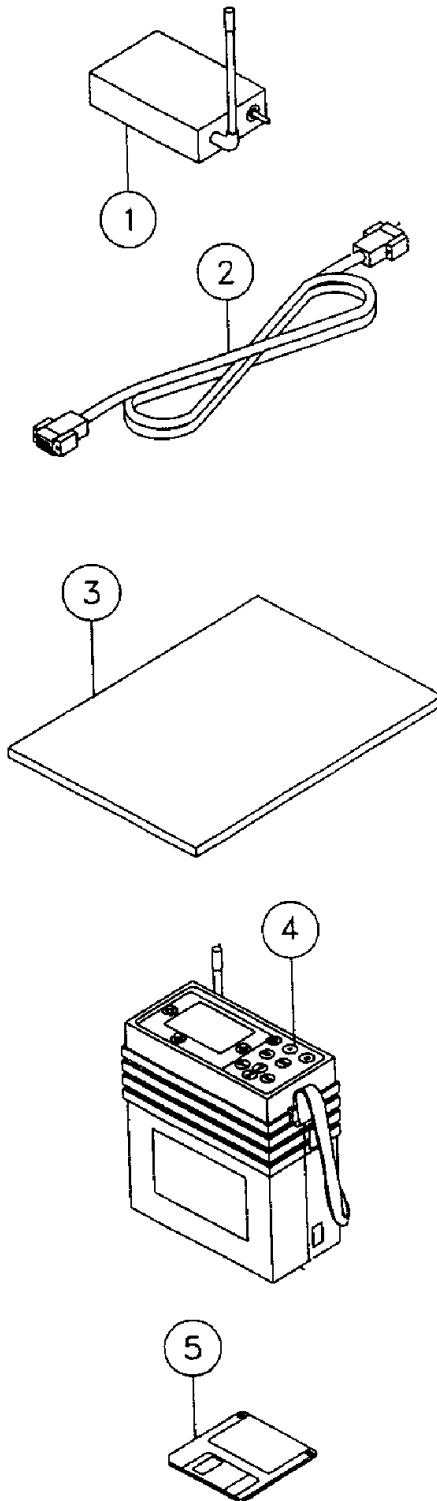


Location Package, Spot D Tek II.2, III & IIIA Fig 12-2r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		213902005	WIRELESS TRANSMITTER	1	
2		215941001	RECEIVER II.2	1	
3		231197003	RECEIVER-III	1	
4		215943001	WIRELESS MONITOR II.2	1	
5		215942001	DIR.PROBE II.2	1	
6		231109001	MONITOR-MOLE MAP	1	
7		215938003	OPERATIONAL MANUAL	1	
8		215940003	VIDEO TAPE-INSTRUCTIONAL	1	LOCATING W/PROBES
9		213900009	CASE FOR SPOT D TEK II	1	
10		231111003	RECEIVER-IIIA	1	
11		231110001	SPOT-D-TEK DEEP SONDE	1	
12	*	244935001	HOLDER ASSY.-REMOTE MONITOR	1	
		215940001	SPOTDTEK II.2 REMOTE MON. PKG.		INC. REF. 1 & 4
		215939001	SPOTDTEK II.2 DIRECT.BORE PKG.		INC. REF. 2, 5 & 7-9
		231197001	SPOT-D-TEK III DEEP RECEIVER		INC. REF. 3 & 7-9
		231111001	SPOT-D-TEK IIIA DEEP REC W/REM STEERING FUNCTION		INC. REF. 7-9 & 10
			ACCESSORIES		
		216871001	ANTENNA-TRANSMITTER/MONITOR		
		213900023	SUNSCREEN-RECEIVER II.2 MONIT		
		213900025	RAINCOVER-RECEIVER		
		213902011	RAINCOVER-II.2 MONITOR		
		238762001	SUNSCREEN-MOLE MAP MONITOR		
		238763001	RAIN COVER-MOLE MAP MONITOR		
			Revised February 1998 due to addition of remote monitor holder. Added part marked with *.		

Location Package, Spot D Tek Mole Mapping System Fig 12-3r01

Revised February 1998 due to correction in header.

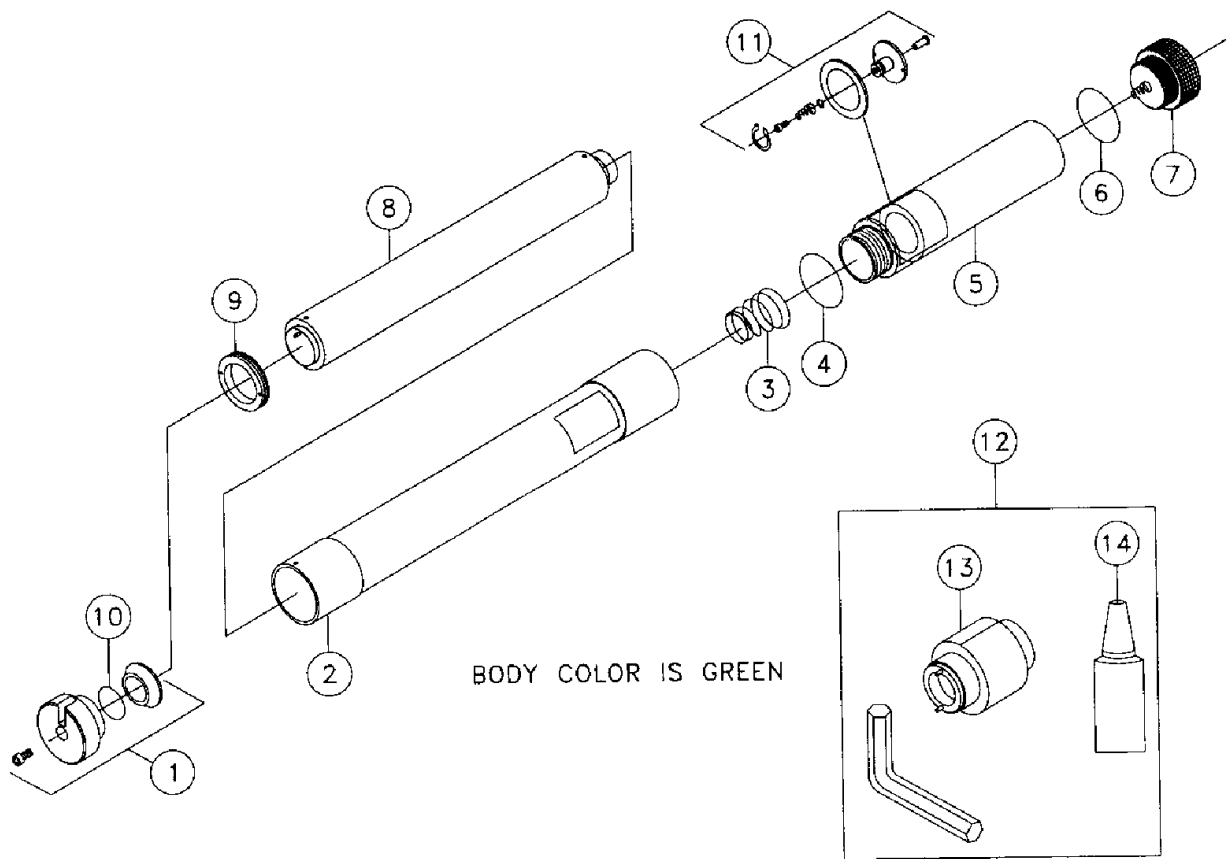


Location Package, Spot D Tek Mole Mapping System Fig 12-3r01

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		213902005	WIRELESS TRANSMITTER	1	INC. REF. 3
2		231109005	COMPUTER CORD	1	
3		231109007	OPERATIONAL MANUAL	1	
4		231109001	MONITOR-MOLE MAP	1	
5		231109003	MAPPING SOFTWARE REPLACE DISK	1	
		231113001	MAPPING SYSTEM COMPLETE		INC. REF. 1-5
			ACCESSORIES		
		238763001	RAIN COVER-MOLE MAP MONITOR		
		238762001	SUNSCREEN-MOLE MAP MONITOR		
		216871001	ANTENNA-TRANSMITTER/MONITOR		
			Revised February 1998 due to correction in header.		

Spot D Tek II.2 Directional Probe (Repairable) Components Fig 12-4

Revised February 1998 due to addition of figure to manual.

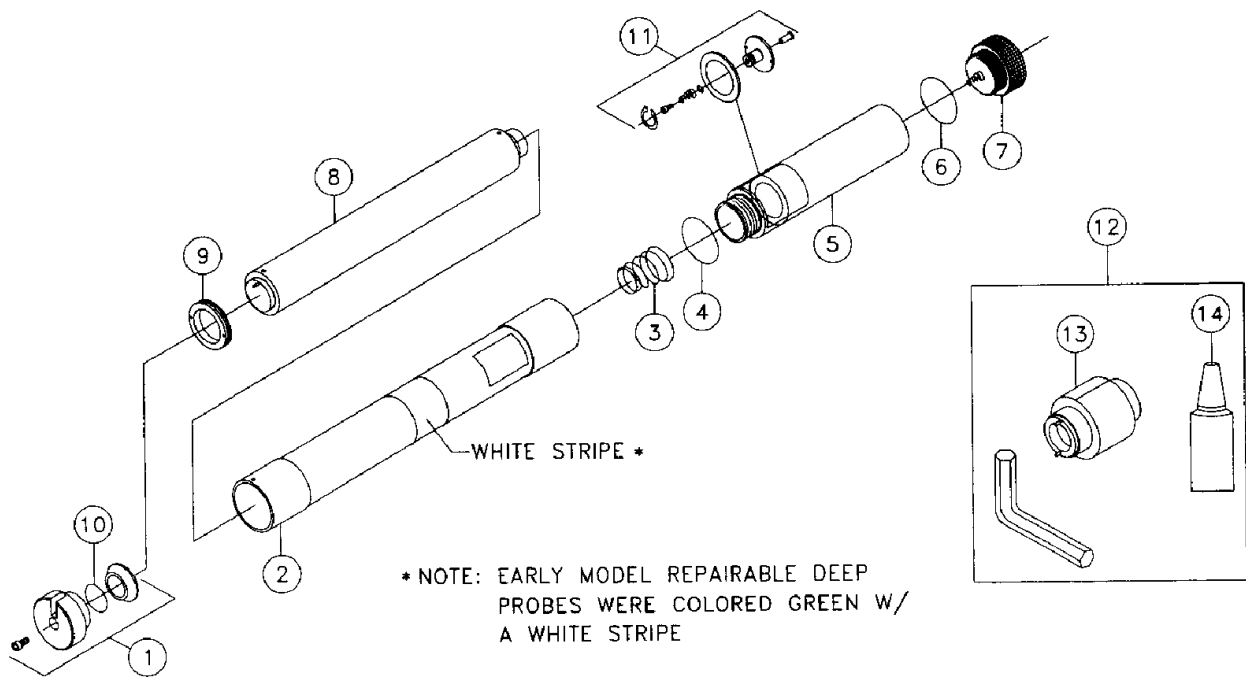


Spot D Tek II.2 Directional Probe (Repairable) Components Fig 12-4

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		215942003	SLOTTED HEAD ASSEMBLY	1	
2		215942005	FIBER PROBE BODY 11.2	1	
3		215942007	SPRING - SUSPENSION	1	
4		215942009	O-RING	1	
5		215942011	BATTERY COMPARTMENT ASSEMBLY	1	
6		215942013	O-RING	1	
7		215942015	BATTERY CAP ASSEMBLY	1	
8		215942017	SOLID STATE ELEC. CAPSULE 11.2	1	
9		215942019	ROUND SET NUT	1	
10		215942021	O-RING	1	
11		215942023	BATTERY CONTACT ASSEMBLY	1	
12		215942025	MAINTENANCE TOOL KIT	1	
13		215942027	TOOL-CAPSULE LINE-UP	1	
14		215942029	SEALANT-SILICONE	1	
		215942001	DIR.PROBE II.2		REPAIRABLE, INC. ALL ITEMS IN THIS FIGURE
			Revised February 1998 due to addition of figure to manual.		

Spot D Tek II.2 Deep Sonde (Repairable) Components Fig 12-5

Revised February 1998 due to addition of figure to manual.



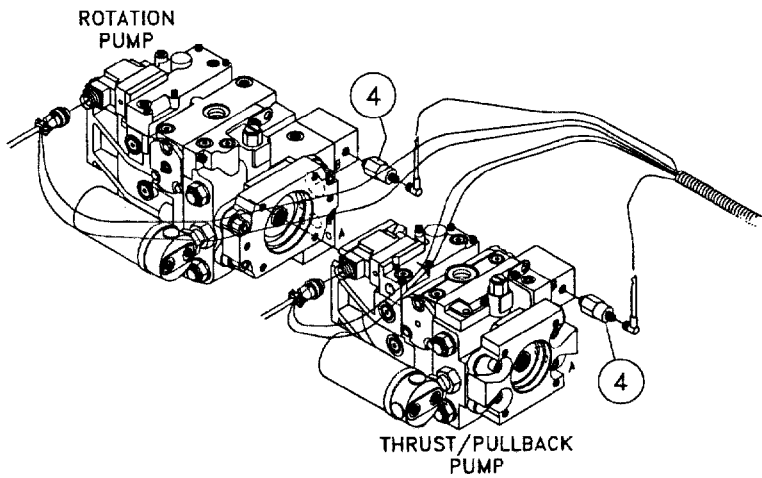
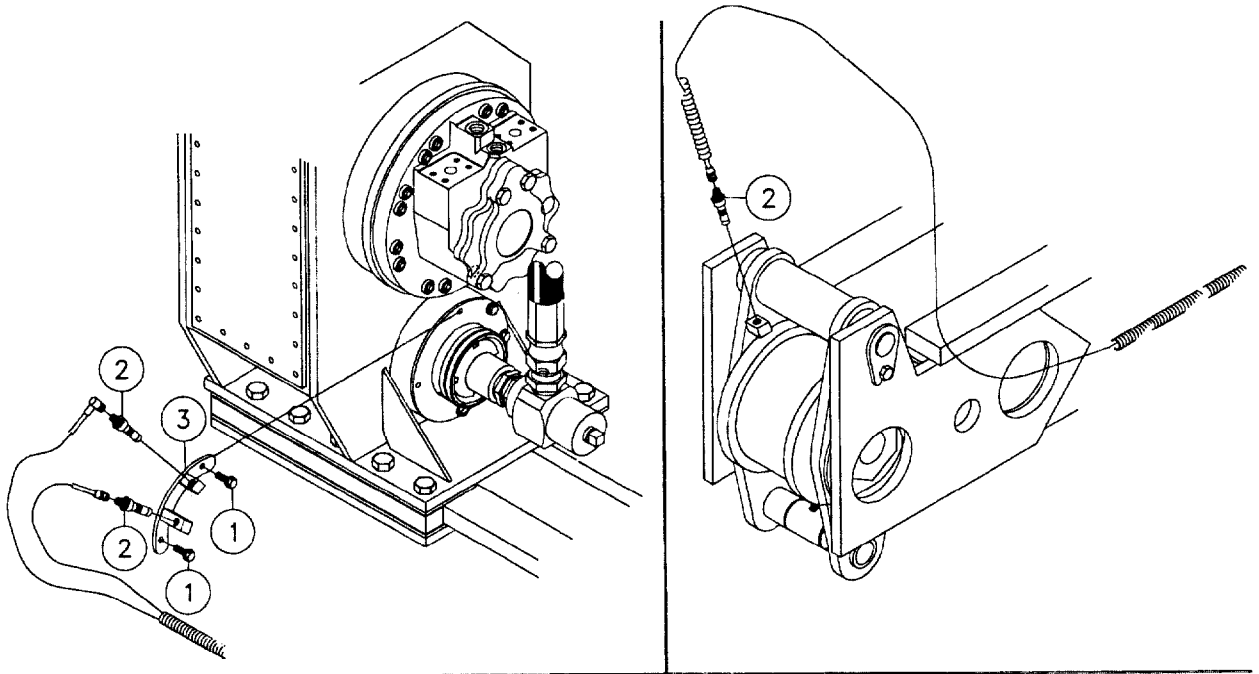
* NOTE: EARLY MODEL REPAIRABLE DEEP PROBES WERE COLORED GREEN W/ A WHITE STRIPE
LATER MODEL REPAIRABLE DEEP PROBES ARE COLORED PURPLE W/ NO STRIPE

Spot D Tek II.2 Deep Sonde (Repairable) Components Fig 12-5

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		215942003	SLOTTED HEAD ASSEMBLY	1	
2		231110003	FIBER PROBE BODY 11.2	1	DEEP
3		215942007	SPRING - SUSPENSION	1	
4		215942009	O-RING	1	
5		215942011	BATTERY COMPARTMENT ASSEMBLY	1	
6		215942013	O-RING	1	
7		215942015	BATTERY CAP ASSEMBLY	1	
8		231110005	SOLID STATE ELECT CAPSULE 11.2	1	
9		215942019	ROUND SET NUT	1	
10		215942021	O-RING	1	
11		215942023	BATTERY CONTACT ASSEMBLY	1	
12		215942025	MAINTENANCE TOOL KIT	1	
13		215942027	TOOL-CAPSULE LINE-UP	1	
14		215942029	SEALANT-SILICONE	1	
		231110001	SPOT-D-TEK DEEP SONDE		REPAIRABLE, INC. ALL ITEMS IN THIS FIGURE
			Revised February 1998 due to addition of figure to manual.		

Transducer/Speed Sensor Fig 13-1r02

Revised February 2000 due to update in illustration.

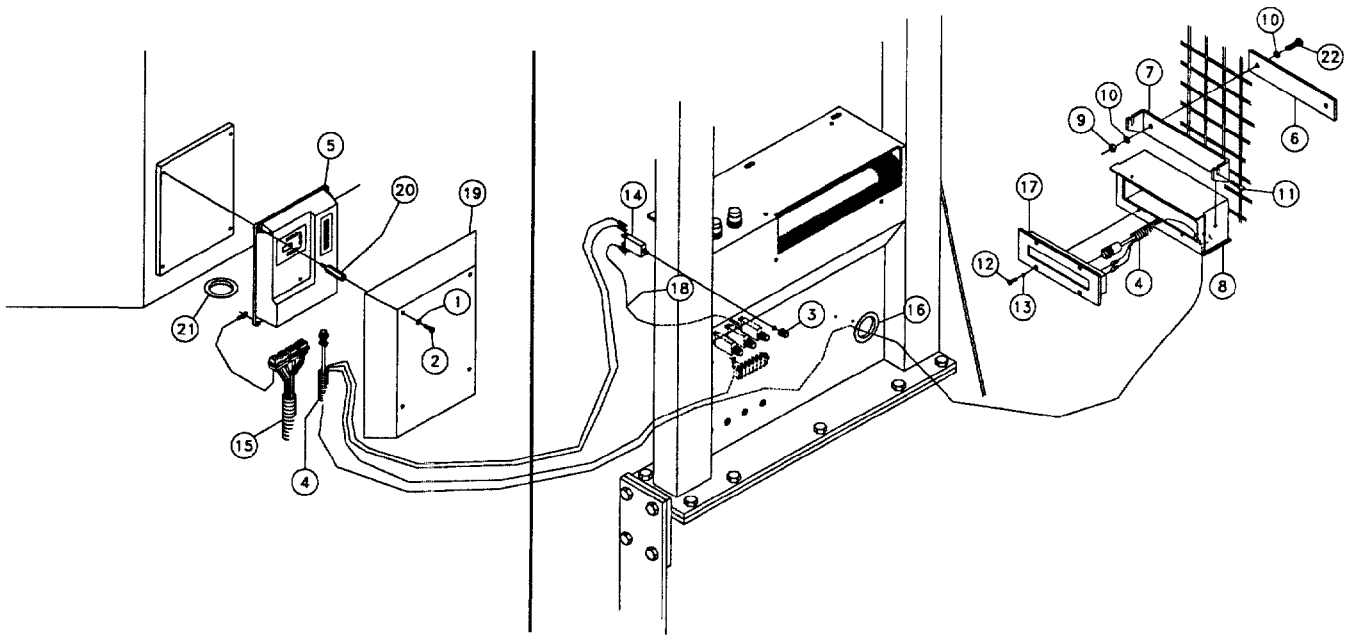


Transducer/Speed Sensor Fig 13-1r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		4475010	BOLT-3/8-16X1 FLANGE WHIZ	2	
2		114282009	SPEED SENSOR	3	
3		234812001	MOUNT-PPU	1	
4		234969001	TRANSDUCER-PRESSURE, 0-6000	2	

Microprocessor Fig 13-2r02

Revised February 2000 due to update
in parts list. Changed part marked with *.

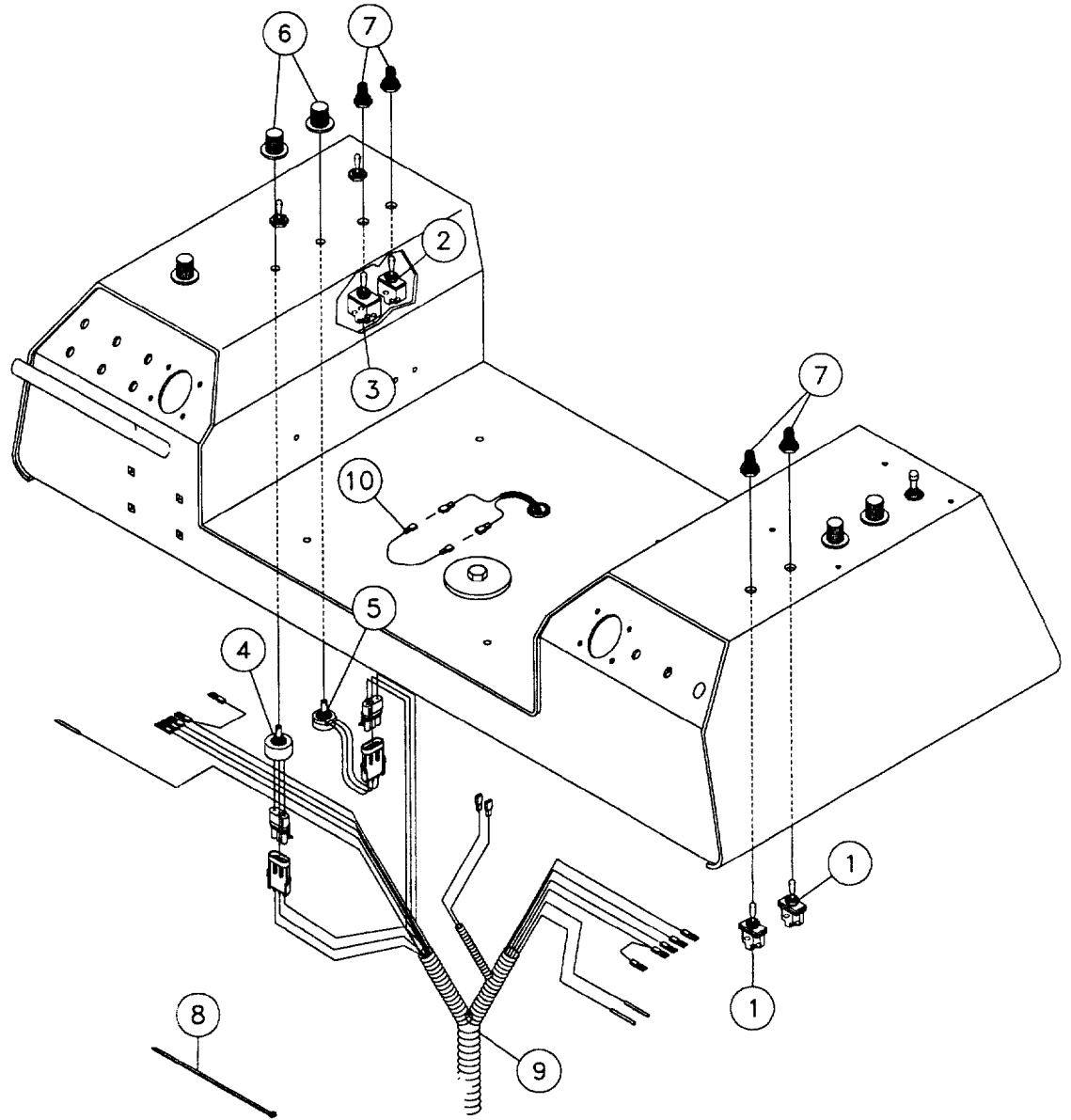


Microprocessor Fig 13-2r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		235716001	WASHER-1/4 SAE HARD ZINC PLTD	4	
2		235735001	BOLT-1/4-20X1 GR8 HEX ZNC PLTD	4	
3		89597001	COVER-BREAKER SWITCH	1	
4		234869001	DISPLAY HARNESS ASSY	1	
5		234872001	MICROPROCESSOR ASSEMBLY	1	
6		234799001	CLAMP	1	
7		234756001	BRACKET-DISPLAY	1	
8		234811001	MOUNT-DISPLAY	1	
9		235725001	NUT-3/8-16 GR8 ZINC PLTD	2	
10		235713001	WASHER-3/8 SAE HARD ZINC PLTD	4	
11		120021001	BOLT-1/4-20 X 3/4 THUMB SCREW	2	
12		533004	SCREW-10-24X1/2 RND. HD. SLTMACH	4	
13		480001	WASHER-3/16 S/T LOCK	4	
14		72079001	BREAKER 45-700-514-DD 5 AMP	1	
15	*	244535001	HARNESS-D50X1000A NAVTEC	1	SN101-235, SN236-, NAVT
16		212522003	TRIM-1/4"X10.00	1	
17		601422001	DISPLAY-2 X 24 LCD	1	
18		234868001	JUMPER ASSY-12V SUPPLY	1	
19		244965001	SHIELD-DC2	1	
20		244964001	BOLT-STAND OFF	4	
21		1863001	REIN BOTTOM CENTER	1	
22		235736001	BOLT-3/8-16X1 1/4 ZINC PLTD	2	

Control Panel Fig 13-3r02

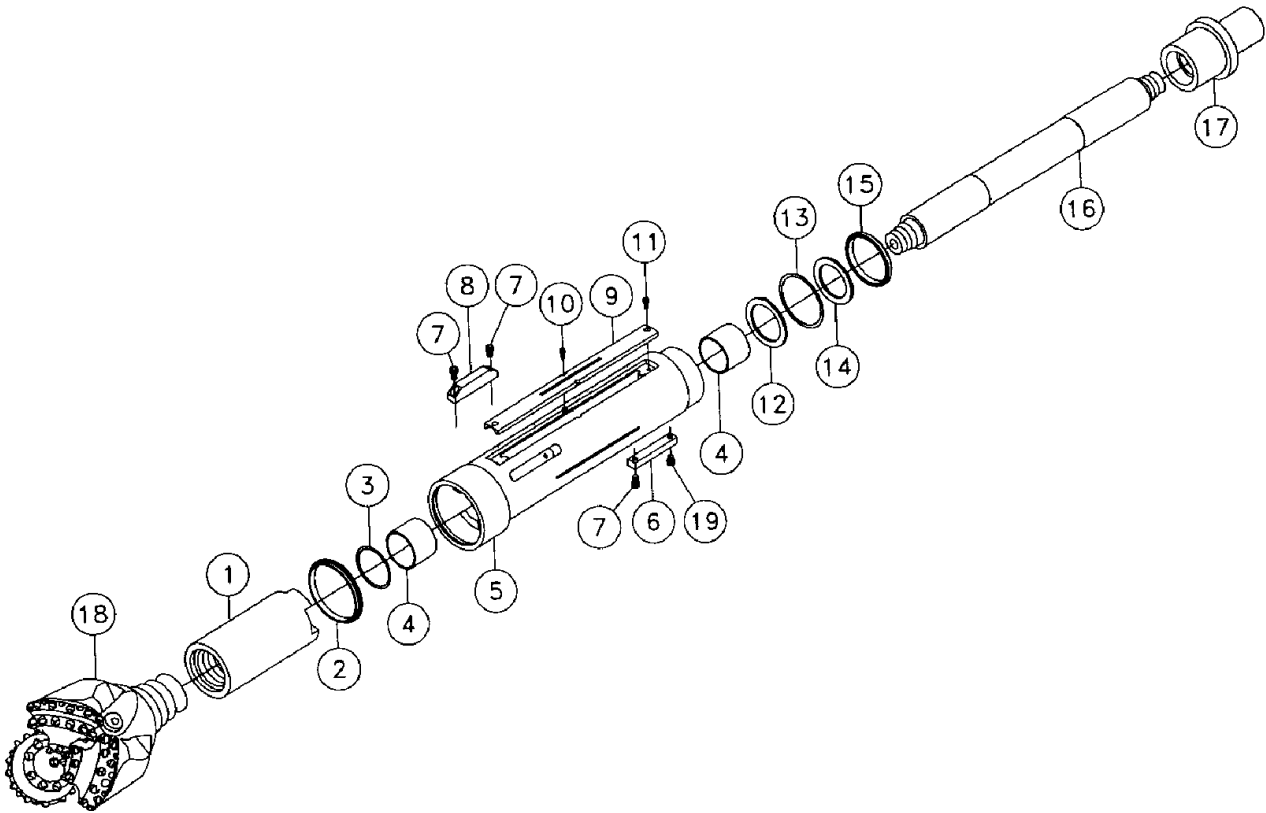
Revised February 2000 due to update in parts list. Changed part marked with *.



Control Panel Fig 13-3r02

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		57938001	SWITCH-8510K2	2	
2		67292001	SWITCH-TOGGLE 8500K9 SEALED	1	
3		67293001	SWITCH-TOGGLE 8511K14 SEALED	1	
4		234865001	STEERING POT ASSEMBLY	1	
5		234866001	PRESSURE SET POT ASSEMBLY	1	
6		78114001	CONTROL KNOB #409D2K1	2	
7		5537001	COVER-TOGGLE SWITCH	4	
8		59634001	NYLON TIE 8"	A/R	
		58151001	STRAP-CABLE TIE-T120R-0 15"	A/R	
9	*	244535001	HARNES-D50X100A NAVTEC	1	SN101-235, SN236-, NAVT
10		234867001	JUMPER ASSEMBLY-SEAT	1	

Rock Drilling Head Fig 14-1



Rock Drilling Head Fig 14-1

REF NO	*	PART NO.	DESCRIPTION	QTY.	REMARKS
1		234996001	DRIVE SUB-LOWER	1	
2		240555001	ROD WIPER-6.00 PARKER	1	
3		240552001	SNAP RING-3.125 EXT. SPIRAL	1	
4		240509001	BUSHING-D50X100 ROCK HEAD	2	
5		240580001	DRILL HEAD ASSY ROTARY	1	INC. TWO OF REF. 4
6		234999001	SLIDER-REAR	2	
7		4480001	1/2-13X3/4 SOCKET HD CAPSCREW	6	
8		234998001	SLIDER-FRONT	2	
9		240589001	LID ASSEMBLY	1	
10		240560001	BOLT-5/16-18 X 3/8 SOC HD CAP	2	
11		512006	3/8-16X3/4" SOCKET HEAD BOLT	2	
12		234997001	THRUST PLATE-D50X100	1	
13		240553001	SNAP RING-5.625 EXT. SPIRAL	1	
14		240551001	BEARING-THRUST	1	
15		240554001	ROD WIPER-5.00 PARKER	1	
16		234994001	DRIVE SHAFT-3 5/8"	1	
17		240592001	DRIVE SUB-UPPER 2 7/8	1	
		234995001	DRIVE SUB-UPPER 3 1/2	1	
18		240558001	TRICONE BIT-8 1/2 #3 CARBIDE	1	
19		240591001	CAPSCREW-1/2-13X1/2 SOCKET HD	2	

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Revision History

Revision	Date	Page(s)	Description
P1.01	May, 2005	TOC, 1-1-r05, 1-1r05=c, 1-2r05, 1-2r05=c, 1-3r04, 1-3r04=c, 1-10r05, 1-16x01r01, 1-18r03, 1-20r04, 1-20r04=c, 2-10r03, 3-6r05, 3-7r04, 3-8r03, 3-11r02, 3-26r05, 3-40r04, 3-41r01, 3-42r02, 3-43r01, 3-58r03, 4-2r05, 4-3r04, 4-9r04, 6-1r06, 6-1r06=c, 6-1x01r01, 6-1x01r01=c, 6-9r03, 6-13x01r01, 6-16r01, 6-17r01, 7-3r05, 7-9r03, 8-8r02 & 8-8r02=c Revised Figures. Pages 2-13, 6-25 & 7-13 Added	First Edition, First Revision. Converted to a two-page format.
P1.02	Nov, 2008	3-56r03 revised	First Edition, Second Revision

