

Akkerman Inc.

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**Model EX50 Backhoe Excavator
Parts Manual**

11030F00
BACKHOE FINAL ASSEMBLY
MODEL EX50

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PART NO. SUB ASSEMBLY DESCRIPTION

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11047A00.....	DIRT & SOFT ROCK BUCKET
23003A00.....	HIGH LEVERAGE BUCKET
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11027A00.....	HYDRAULIC ASSEMBLY
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11078A00.....	STEERING CYLINDER CONTROL
10975A01.....	CONTROL MODULE ASSEMBLY
22220A00.....	HYDRAULIC SCHEMATIC

FOREWORD

THE AKKERMAN EX50 BACKHOE EXCAVATOR IS THE RESULT OF THE COMBINATION OF EXPERIENCE, SKILL, MANUFACTURE AND THE FINEST OF MATERIALS. THOUSANDS OF PROFITABLE AND SATISFYING WORKING HOURS ARE BUILT INTO EACH MACHINE.

LIKE ANY MACHINE, IT'S SERVICE AND DEPENDABILITY RELY LARGELY UPON PROPER MAINTENANCE AND CARE IN OPERATION.

THE PURPOSE OF THIS MANUAL IS TO ACQUAINT THE OWNER/ OPERATOR WITH THE ESSENTIAL INSTALLATION, OPERATION, LUBRICATION AND MAINTENANCE PROCEDURES AS THEY ARE RECOMMENDED BY THE MANUFACTURER, THEREBY REDUCING DOWN-TIME TO A MINIMUM.

AKKERMAN BACKHOE EXCAVATOR MODEL EX50

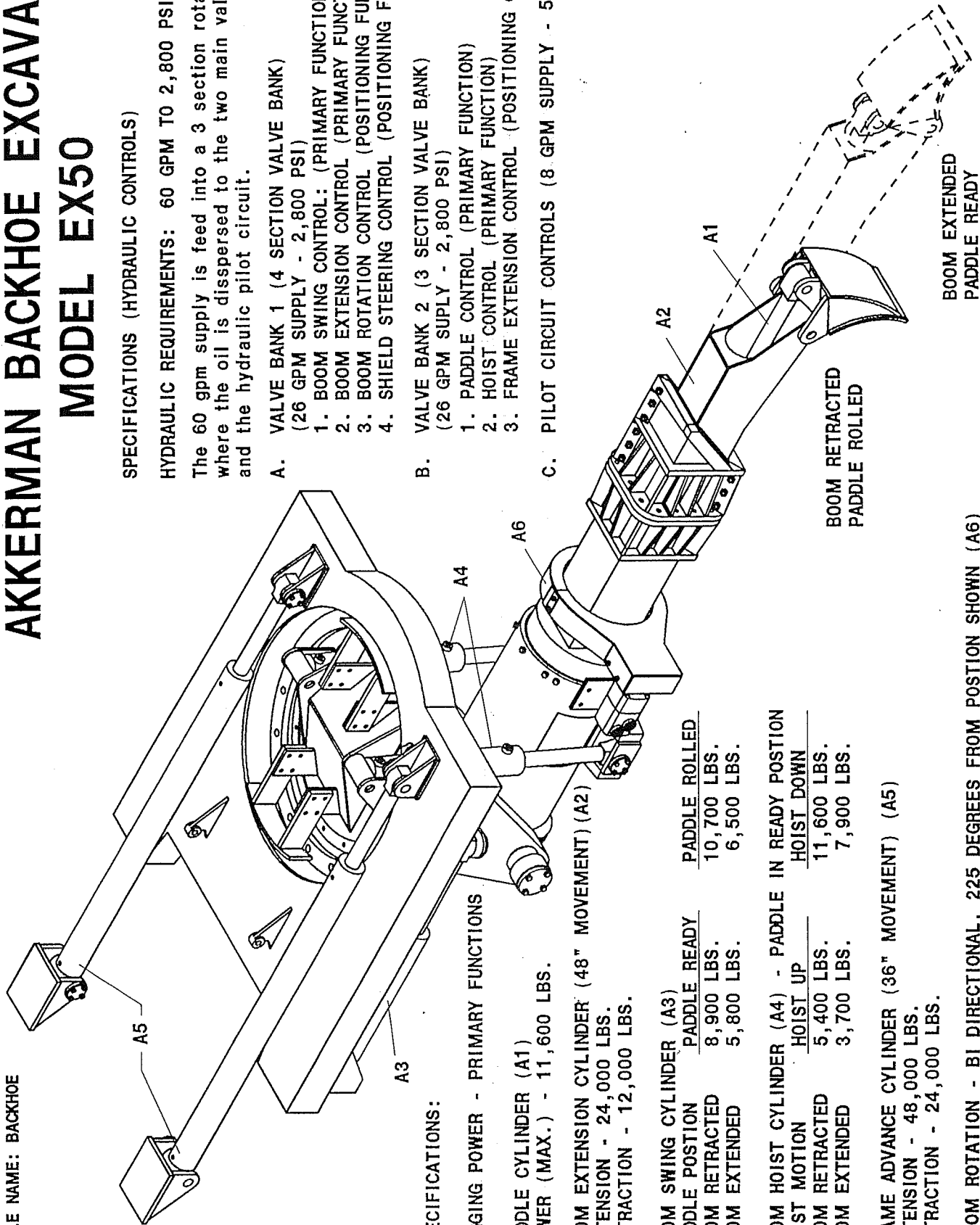
FILE NAME: BACKHOE

SPECIFICATIONS (HYDRAULIC CONTROLS)

HYDRAULIC REQUIREMENTS: 60 GPM TO 2,800 PSI

The 60 gpm supply is feed into a 3 section rotary pump where the oil is dispersed to the two main valve banks and the hydraulic pilot circuit.

- A. VALVE BANK 1 (4 SECTION VALVE BANK)
(26 GPM SUPPLY - 2,800 PSI)**
1. BOOM SWING CONTROL: (PRIMARY FUNCTION)
 2. BOOM EXTENSION CONTROL (PRIMARY FUNCTION)
 3. BOOM ROTATION CONTROL (POSITIONING FUNCTION)
 4. SHIELD STEERING CONTROL (POSITIONING FUNCTION)
- B. VALVE BANK 2 (3 SECTION VALVE BANK)
(26 GPM SUPPLY - 2,800 PSI)**
1. PADDLE CONTROL (PRIMARY FUNCTION)
 2. HOIST CONTROL (PRIMARY FUNCTION)
 3. FRAME EXTENSION CONTROL (POSITIONING CONTROL)
- C. PILOT CIRCUIT CONTROLS (8 GPM SUPPLY - 500 PSI)**



SPECIFICATIONS:

DIGGING POWER - PRIMARY FUNCTIONS

**PADDLE CYLINDER (A1)
POWER (MAX.) - 11,600 LBS.**

**BOOM EXTENSION CYLINDER (48" MOVEMENT) (A2)
EXTENSION - 24,000 LBS.
RETRACTION - 12,000 LBS.**

BOOM SWING CYLINDER (A3)	PADDLE READY	PADDLE ROLLED
BOOM RETRACTED	8,900 LBS.	10,700 LBS.
BOOM EXTENDED	5,800 LBS.	6,500 LBS.

BOOM HOIST CYLINDER (A4) - PADDLE IN READY POSITION	HOIST UP	HOIST DOWN
BOOM RETRACTED	5,400 LBS.	11,600 LBS.
BOOM EXTENDED	3,700 LBS.	7,900 LBS.

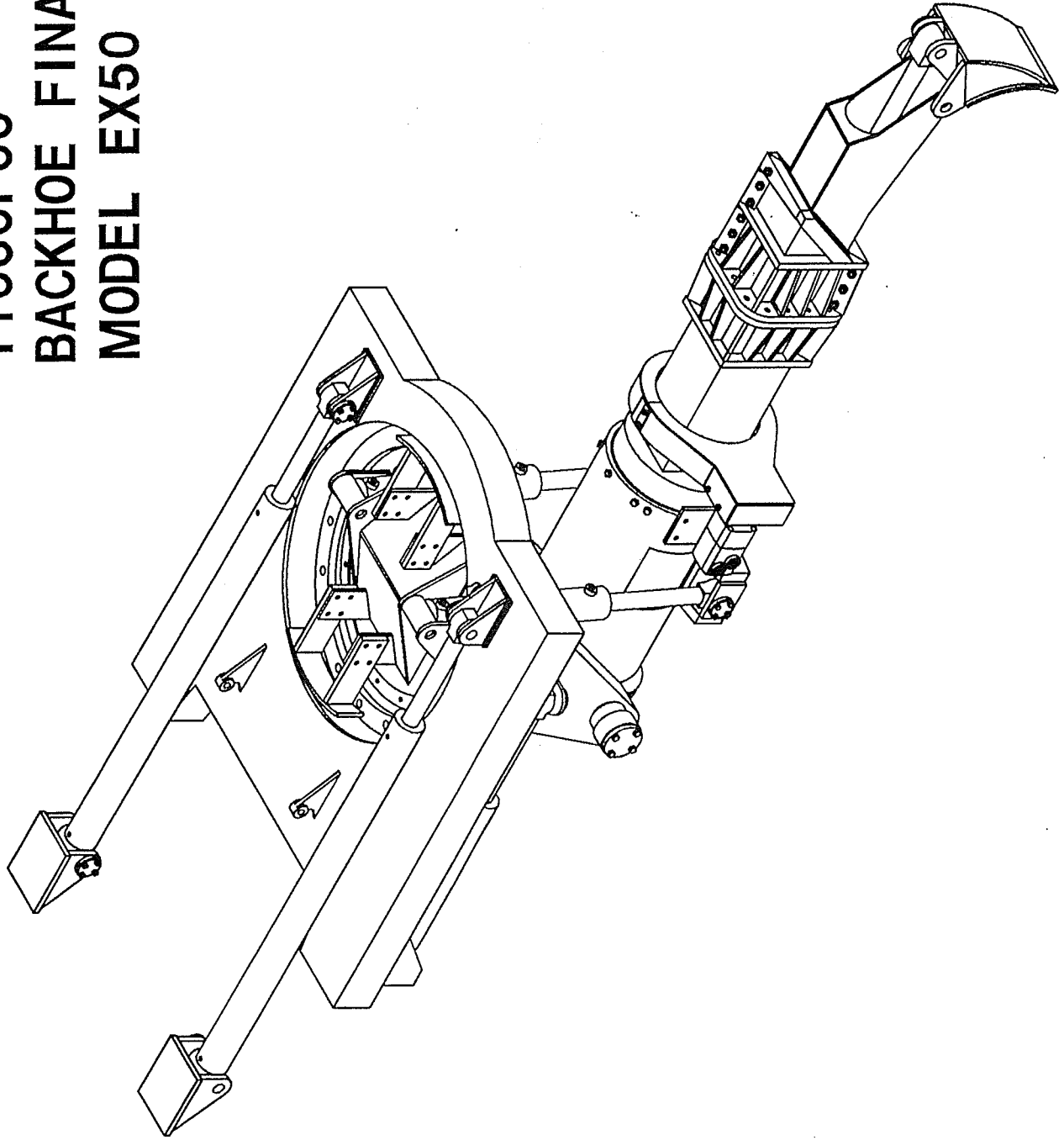
**FRAME ADVANCE CYLINDER (36" MOVEMENT) (A5)
EXTENSION - 48,000 LBS.
RETRACTION - 24,000 LBS.**

BOOM ROTATION - BI DIRECTIONAL, 225 DEGREES FROM POSITION SHOWN (A6)

**BOOM RETRACTED
PADDLE ROLLED**

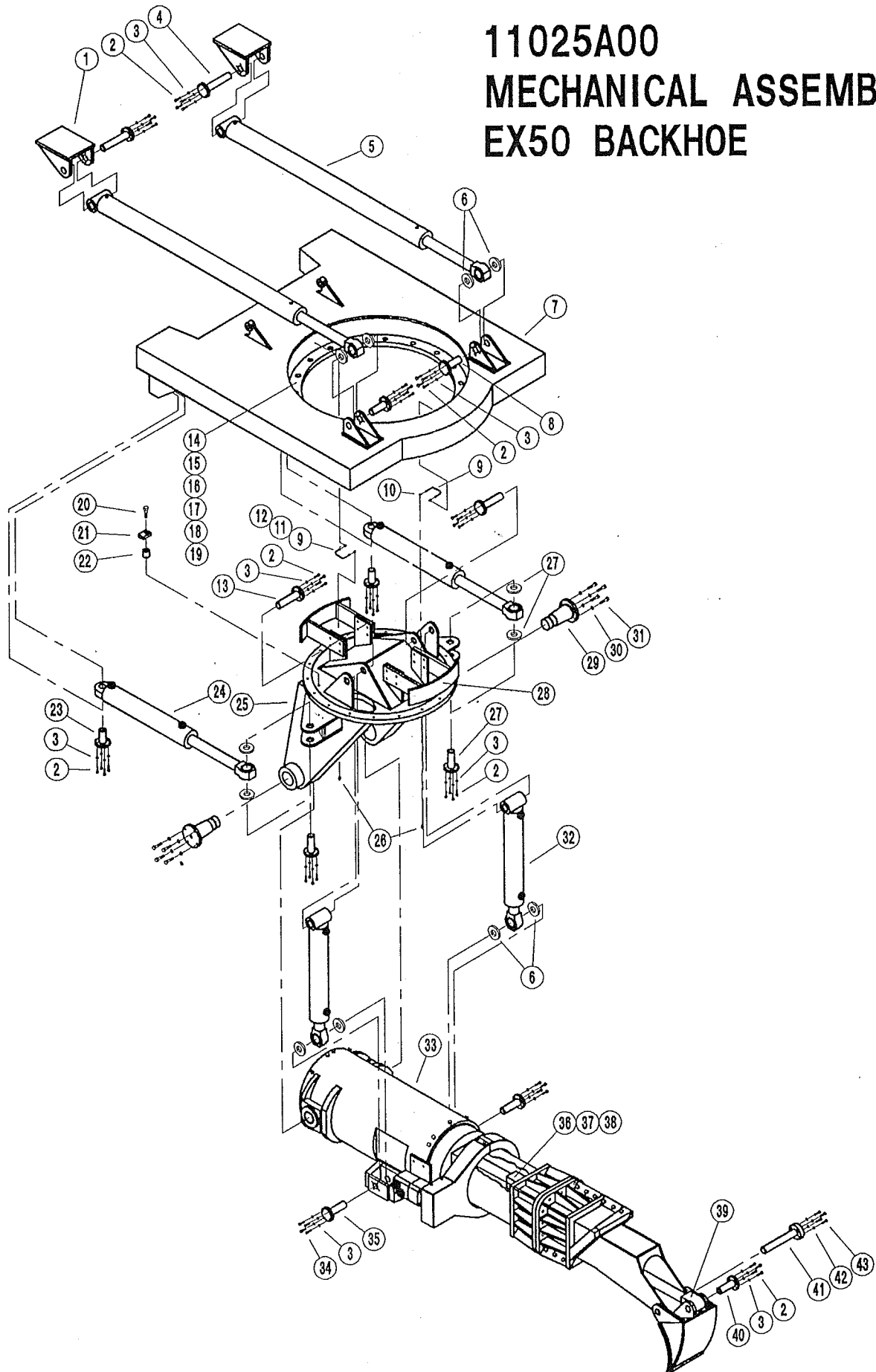
**BOOM EXTENDED
PADDLE READY**

**11030F00
BACKHOE FINAL ASSEMBLY
MODEL EX50**



NOTES

11025A00 MECHANICAL ASSEMBLY EX50 BACKHOE



11030F00
BACKHOE FINAL ASSEMBLY
MODEL EX50

<u>ITEM</u>	<u>QTY.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	11025A00	MECHANICAL ASSEMBLY
2	1	11027A00	HYDRAULIC ASSEMBLY

11025A00
MECHANICAL ASSEMBLY - BACKHOE
MODEL EX50

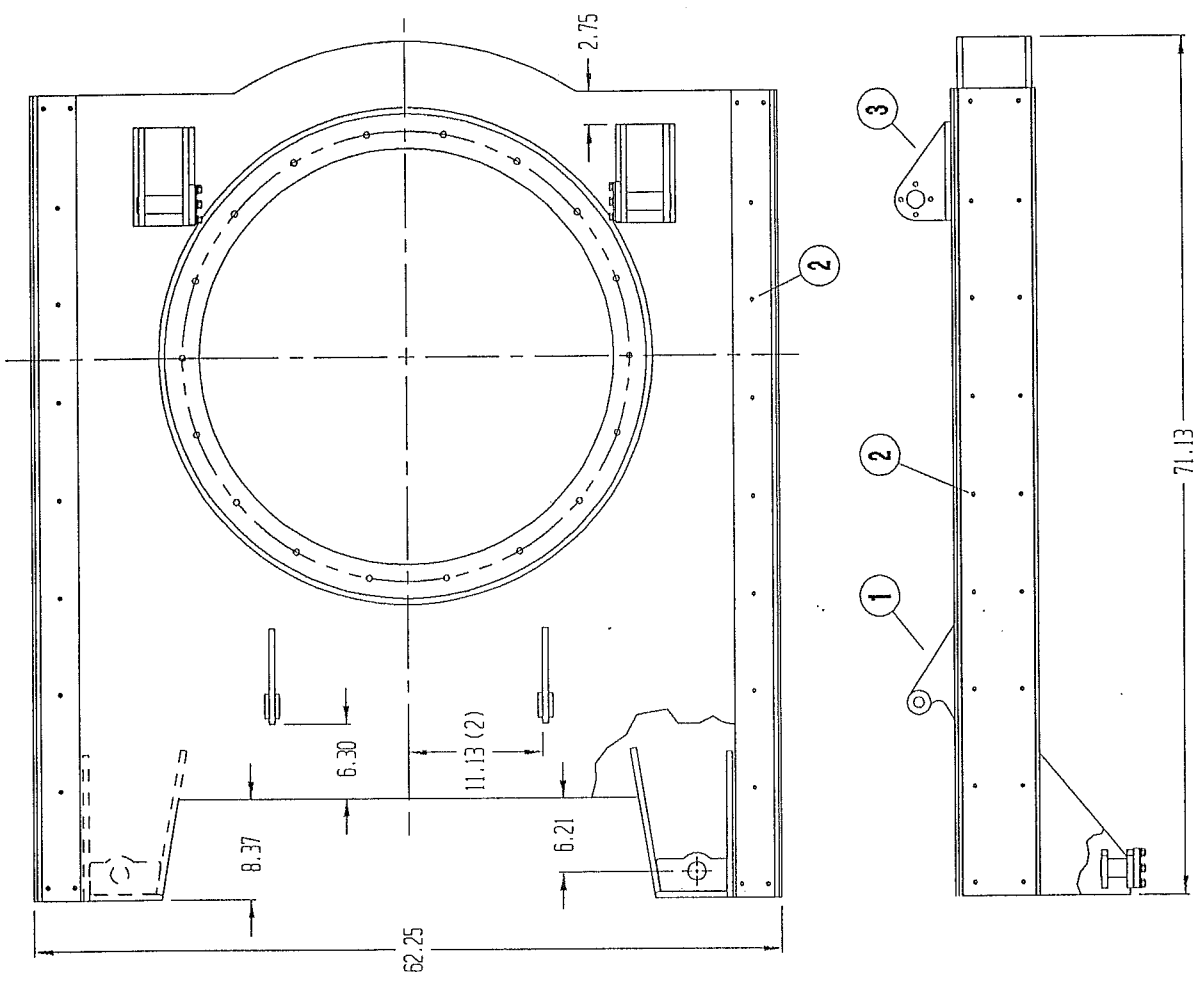
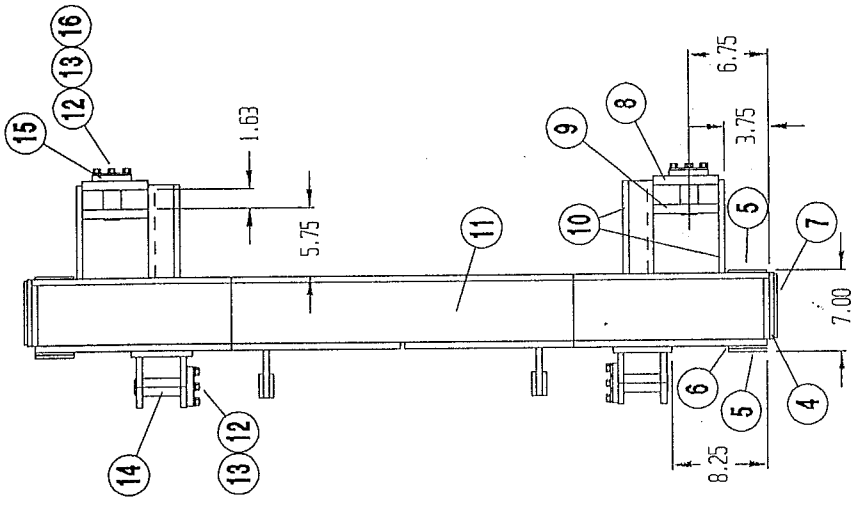
ITEM	QTY.	PART NO.	DESCRIPTION
1	REF	PER JOB	BACK CLEVIS - FRAME SLIDE (2)
2	REF	1-6-5	BOLT 3/8"-16UNC x 1-14" (48)
3	REF	45-6	LOCKWASHER 3/8" (52)
4	REF	8958P00	MOUNTING PIN - 3-1/2" DIA ROD x 8-3/8" (2)
5	2	21004A00	FRAME SLIDE CYLINDER ASSEMBLY
6	12	21057P00	WASHER 5/8" x 3-1/4" DIA
7	1	8805A01	FRAME SLIDE ASSEMBLY
8	REF	8957P00	MOUNTING PIN - 3-1/2" DIA ROD x 5" (2)
9	2	110-105	STEEL TUBING 3/16" x 7"
10	4	300-159	90 DEG ELBOW 3/16" TUBE x 1/8" NPT
11	4	300-154	TUBE SLEEVE 3/16"
12	4	300-155	TUBE NUT 3/16"
13	REF	8875P00	MOUNTING PIN - 3-1/2" x 6-7/8"
14	1	65-69	BEARING #834C5
15	18	1-8-12	BOLT 1/2"-13UNC x 3"
16	18	13-8	LOCK NUT 1/2"-13UNC HI-COLLAR
17	36	45-8	LOCKWASHER 1/2"
18	18	1-8-18	BOLT 1/2"-13UNC x 4-1/2"
19	18	15-8	LOCK NUT 1/2"-13UNC LOW-COLLAR
20	14	1-10-9	BOLT 5/8"-11UNC x 2-1/4"
21	14	11115P00	BAR 3/4" x 1-1/2"
22	14	11116P00	ROD 1-1/2" x 1-7/8"
23	REF	8879P00	MOUNTING PIN - 3-1/2" DIA ROD x 4" (2)
24	2	21003A00	SWING CYLINDER ASSEMBLY
25	1	8810A02	HOIST & SWING FRAME ASSEMBLY
26	2	63-4	GREASE FITTING 1/8" NPT
27	REF	8876P00	MOUNTING PIN - 3-1/2" DIA ROD x 5"
28	REF	9080A00	SAFETY HANGER WELDMENT
29	REF	11054P00	MOUNTING PIN - 5-1/2" DIA MAXELL ROD x 8"
30	REF	45-8	LOCKWASHER 1/2" (8)
31	REF	1-8-8	BOLT 1/2"-13UNC x 2" (8)
32	2	21002A00	HOIST CYLINDER ASSEMBLY
33	1	11075A00	DRIVE BOOM ROTATION (1)
34	REF	1-6-6	BOLT 3/8"-16UNC x 1-1/2" (8)
35	REF	8877P00	MOUNTING PIN - 3-1/2" DIA x 5-3/4"
36	REF	21001A00	BOOM EXTEND CYLINDER ASSEMBLY
37	REF	8878P00	MOUNTING PIN - 3-1/2" DIA x 10-5/8"
38	REF	9051P00	MOUNTING PIN - 2" DIA ROD x 5-5/8"

11025A00
MECHANICAL ASSEMBLY - BACKHOE
MODEL EX50

<u>ITEM</u>	<u>QTY.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
39	REF	21000A00	BUCKET CYLINDER ASSEMBLY
40	REF	9089P00	MOUNTING PIN - 3-1/2" DIA ROD x 5-1/2"
41	REF	8936P00	MOUNTING PIN - 3-1/2" DIA ROD x 10-5/8"
42	REF	46-6	LOCKWASHER 3/8" HIGH WASHER
43	REF	31-6-4	SHCS 3/8"-16UNC x 1"

21010A00
SEAL KIT ASSEMBLY - EX50 BACKHOE CYLINDERS

ITEM	DWG	PART NO.	DESCRIPTION	QTY
1	✓	48-43	3/16 X 1 1/2" COTTER PIN	1
2	✓	87-4	HD-2250 WIPER	1
3	✓	86-5	250-2.250-.375 POLY PACK	1
4	✓	84-234	234 BACKUP RING	1
5	✓	85-234	234 'O' RING	1
6	✓	85C-3	1704-52 POLYHONE PISTON SEAL	1
7	✓	85-149	149 'O' RING	1
8	✓	85-134	134 'O' RING	1

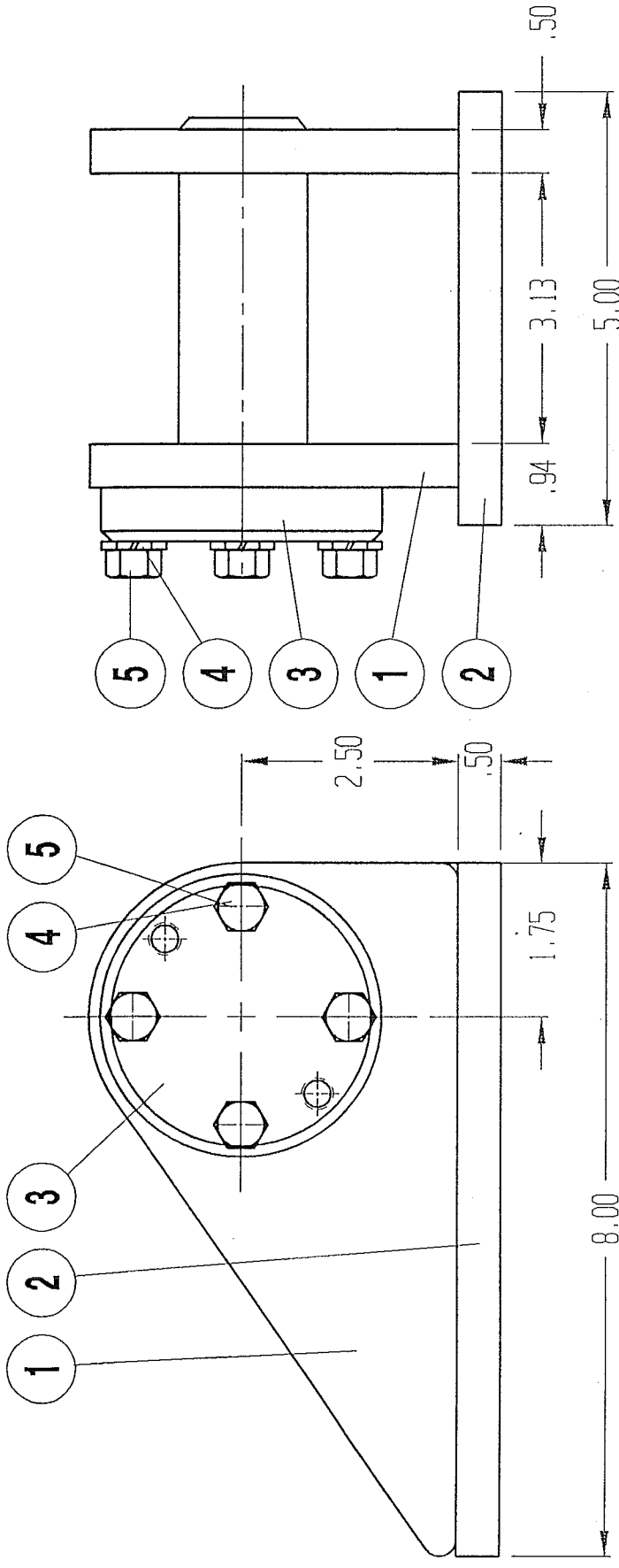


ITEM	QTY.	PART NO.	DESCRIPTION
1	2	9007400	HEMT, CONVEYER LIFT
2	80	30-4-3	1/4"-20X6 x 3/4" PROXES
3	2	9070600	FRONT CLEVIS ASSEMBLY
4	2	9070500	3/8" x 6" HR BAR x 66-3/4"
5	4	9057900	1/4" UHMW-PE (3-1/4" x 66-3/4")
6	2	9071900	1/4" x 3-1/4" HR BAR x 66-3/4"
7	2	9069900	1/4" UHMW-PE (6" x 66-3/4")
8	2	9069800	3/4" T-1 PLATE (4-1/8" x 6-7/8")
9	2	9031900	3/4" T-1 PLATE (4-1/8" x 6-7/8")
10	4	9029900	1/2" T-1 PLATE (8-3/4" x 13-1/4")
11	1	9040400	SLIDE FRAME SUB-ASSEMBLY
12	REF	1-6-5	3/8" X BOLT 1-1/4" (16)
13	REF	4-5-6	3/8" LOCKWASHER
14	REF	8579000	3-1/2" DIA STR PRF ROD x 5"
15	2	8029900	3-1/2" DIA STR PRF ROD x 4"
16	2	63-1	1/4" INF GREASE FITTING

NOTE:

- 1. WELD SPACER BARS IN PLACE (ITEMS #4 & #6)
- 2. USE ITEMS #5 & #7 TO LOCATE 1/4"-20 UNC HOLES IN ITEM #7

REV ECD	REVISION RECEIVED	BY	DATE	DRWING	DATE: 11-12-99	NEXT ASSEMBLY	FINAL ASSEMBLY
TITLE: SLIDE FRAME ASSEMBLY	CHECK	SCALE: 1 TO 1	DESIGN	SHEET	LIFE	NO.	8805A00
MATERIAL: SEE BILL OF MATERIAL ABOVE							
TO DIMENSIONS UNLESS NOTED							
DECIMAL XX 1/100 DIMENSIONS ALL DIMENSIONS UNLESS OTHERWISE NOTED							
FRACTIONS XX 1/16 DIMENSIONS UNLESS OTHERWISE NOTED							
11025400							



8978A00

FRONT CLEVIS WELDMENT - FRAME SLIDE ASSEMBLY

ITEM	DWG	PART NO.	DESCRIPTION	QTY
1	CAD	8972P00	1/2" T-1 PLATE (5 1/4" X 9")	2
2	CAD	8965P00	1/2" X 5" HR BAR X 8"	1
3	CAD	8957P00	3 1/2" DIA. STR PRF ROD X 5"	1
4	---	1-5-4	3/8" NC X 1 1/4" BOLT	4
5	---	45-6	3/8" LOCKWASHER	4

TOLERANCES UNLESS NOTED	
DECIMAL XX +/- .02	CHAMFER ALL SHARP
DECIMAL XXX +/- .005	EDGES 1/32 X 45°
ANGLES +/- 1°	ANGLES +/- 30°
FRACTIONS +/- 1/16	
8805A00	11030F00
8805A00	11030F00

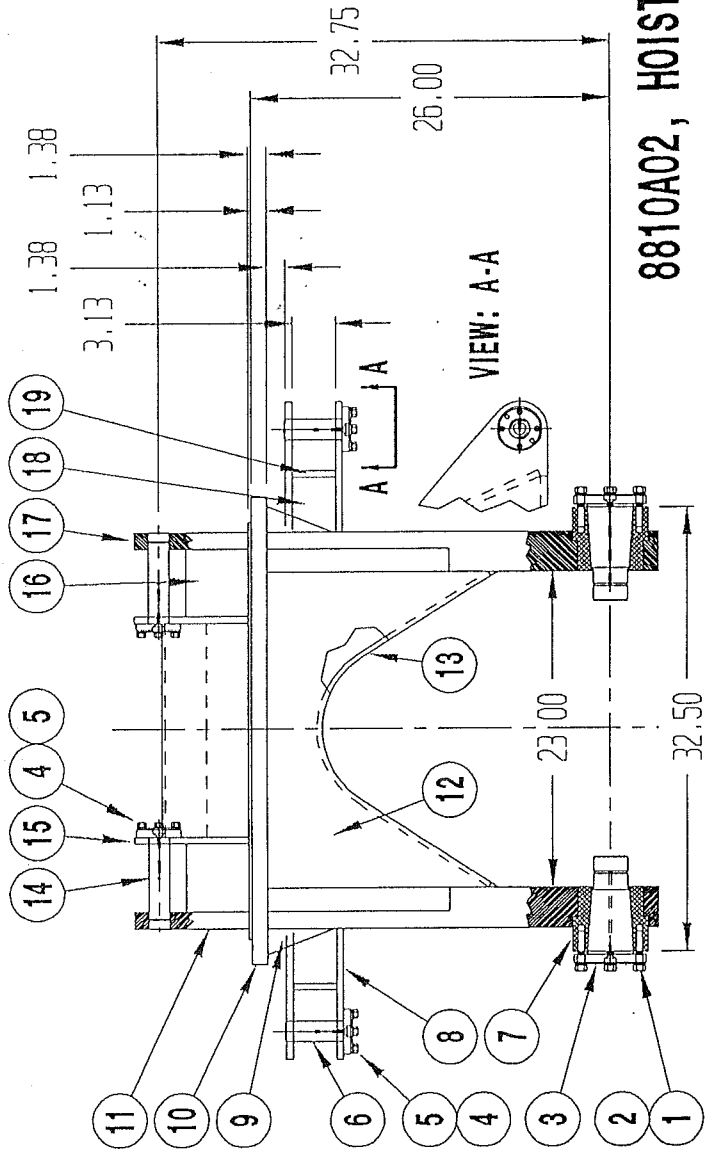
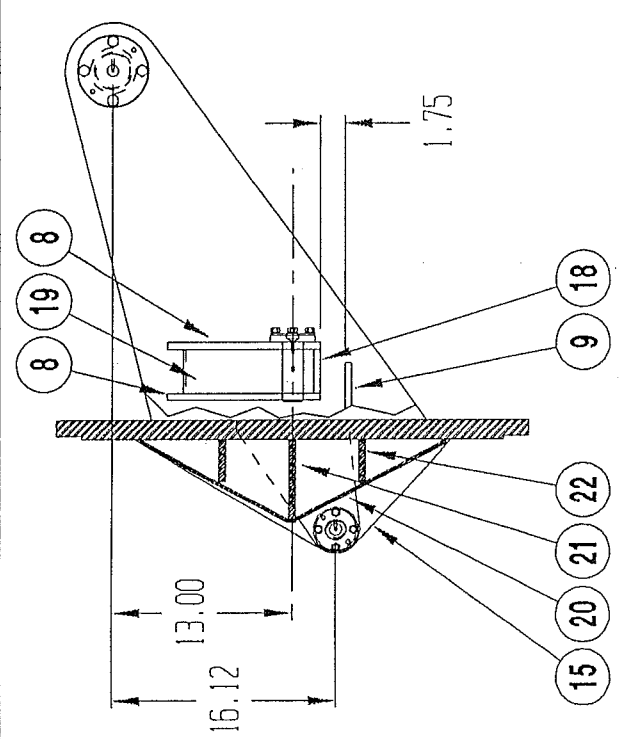
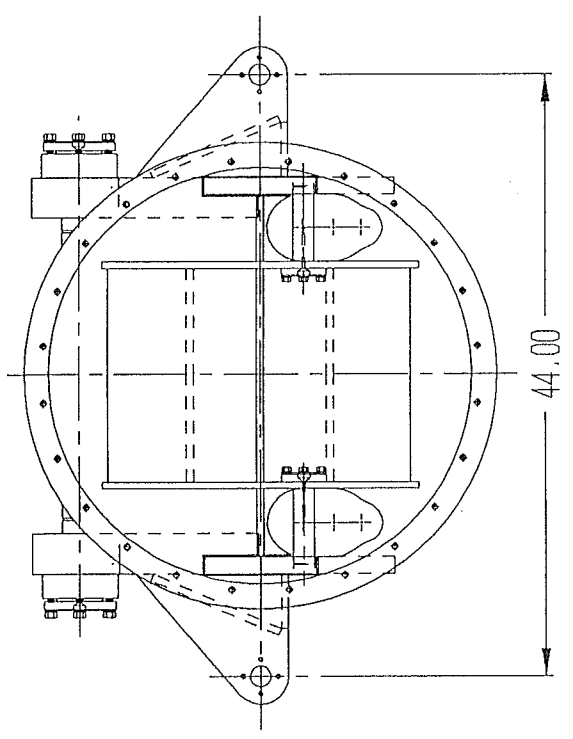
REV	ECO	REVISION RECORD	BY	DATE
TITLE		FRONT CLEVIS WELDMENT - SLIDE FRAME, EX50 BACKHIDE		
MATERIAL		NOTED		
DRAWN	FJL	DATE	5-93	
CHECK		SCALE	1 TO 1	
DESIGN		SHEET	1 OF 1	
NEXT ASSEMBLY		FINAL ASSEMBLY		

DWG. NO. **8978A00**

21010A00

SEAL KIT ASSEMBLY - EX50 BACKHOE CYLINDERS

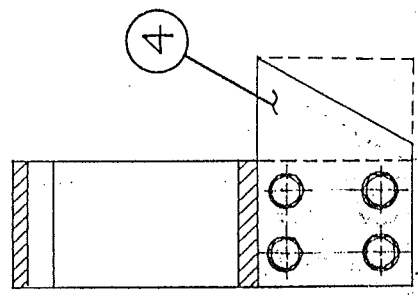
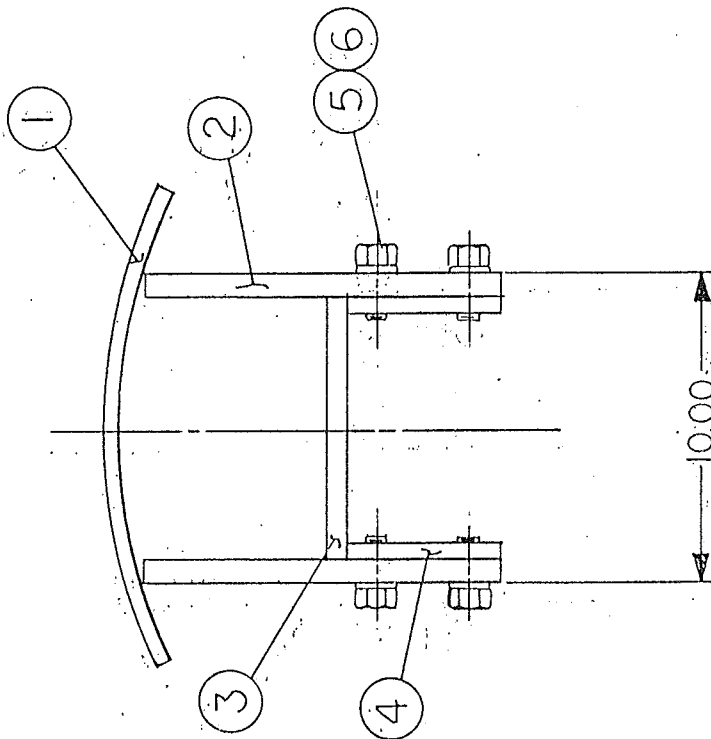
ITEM	DWG	PART NO.	DESCRIPTION	QTY
1	✓	48-43	3/16 X 1 1/2" COTTER PIN	1
2	✓	87-4	HD-2250 WIPER	1
3	✓	86-5	250-2.250-.375 POLY PACK	1
4	✓	84-234	234 BACKUP RING	1
5	✓	85-234	234 'O' RING	1
6	✓	85C-3	1704-52 POLYHONE PISTON SEAL	1
7	✓	85-149	149 'O' RING	1
8	✓	85-134	134 'O' RING	1



8810A02
HOIST AND SWING FRAME
BACK HOE EXCAVATOR

ITEM	QTY	DWG	PART NO.	DESCRIPTION
1	8	-	1-8-8	1/2-UNC HEX BOLT X 2"
2	8	-	45-8	1/2" LOCK WASHER
3	2	CA0	11054P00	5-1/2" DIA MAXELL ROD X 3"
4	16	-	1-6-5	3/8-16UNC HEX BOLT X 1-1/4"
5	16	-	45-8	3/8" LOCK WASHER
6	2	CA0	8876P00	3-1/2" DIA STR PRF ROD X 5"
7	2	CA0	11055P00	5-1/2" DIA MAXELL ROD X 5"
8	4	CA0	8834P02	1/2" HRS PLATE (10-1/2" X 11-3/4")
9	2	CA0	8843P01	1/2" HRS PLATE (2-7/8" X 5")
10	1	CA0	8832P02	1-1/2" HRS PLATE (35-1/2" X 35-1/2")
11	1	CA0	8837P02	3" HRS PLATE (17" X 42-1/4")
12	2	CA0	8839P00	1/2" HRS PLATE (17-3/4" X 24")
13	1	CA0	8841P00	3/8" X 6" BAR X 44-9/16"
14	2	CA0	8875P00	3-1/2" DIA STR PRF ROD X 6-7/8"
15	2	CA0	8836P01	1/2" T-1 PLATE (9-1/4" X 23-3/4")
16	2	CA0	8847P00	1/2" X 5" HRS BAR X 4-1/2"
17	1	CA0	8838P01	3" HRS PLATE (17" X 42-1/4")
18	2	CA0	11053P01	1/2" X 4" HRS BAR X 3-1/8"
19	2	CA0	11052P01	1/2" X 10" HRS BAR X 3-1/8"
20	2	CA0	8846P00	1/4" HRS PLATE 13-1/8" X 16-3/8"
21	1	CA0	8849P00	1/2" X 6" HRS BAR X 15-3/8"
22	1	CA0	8848P00	1/2" X 3" HRS BAR X 15-3/8"
23	2	CA0	9080A00	SAFETY HANGER ASSEMBLY (NOT SHOWN)

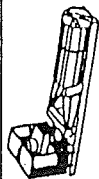
8810A02, HOIST AND SWING FRAME ASSEMBLY



NOTE: 1. CLUT ITEM 4 TO FIT AS SHOWN.

ITEM	QTY	DESCRIPTION
6	4	1/2" LOCKWASHER
5	4	1/2" NC x 1 1/2 BOLT
4	2	1/2 x 5HR BAR x 8
3	1	3/4 x 4HR BAR x 8 1/2
2	2	3/4 x 4HR BAR x 11 3/8
1	1	1/2 x 4HR BAR x 40 MAKE 2

ITEM	QTY	DESCRIPTION
MFG PART: NO		
<small> TOLERANCES UNLESS NOTED ANGLES .25 DECIMAL .005 FRACTIONS .0156 </small>		
<small> TITLE SAFETY HANGER ASSEMBLY DWN. BY FL SCALE 1/4 DATE 6-2-88 CHECKED BY </small>		



AKKERMAN MFG. (INTL), INC.
 TEL 507-357-2262
 BROWSDALE, MINNESOTA 55118

9080-00

21010A00

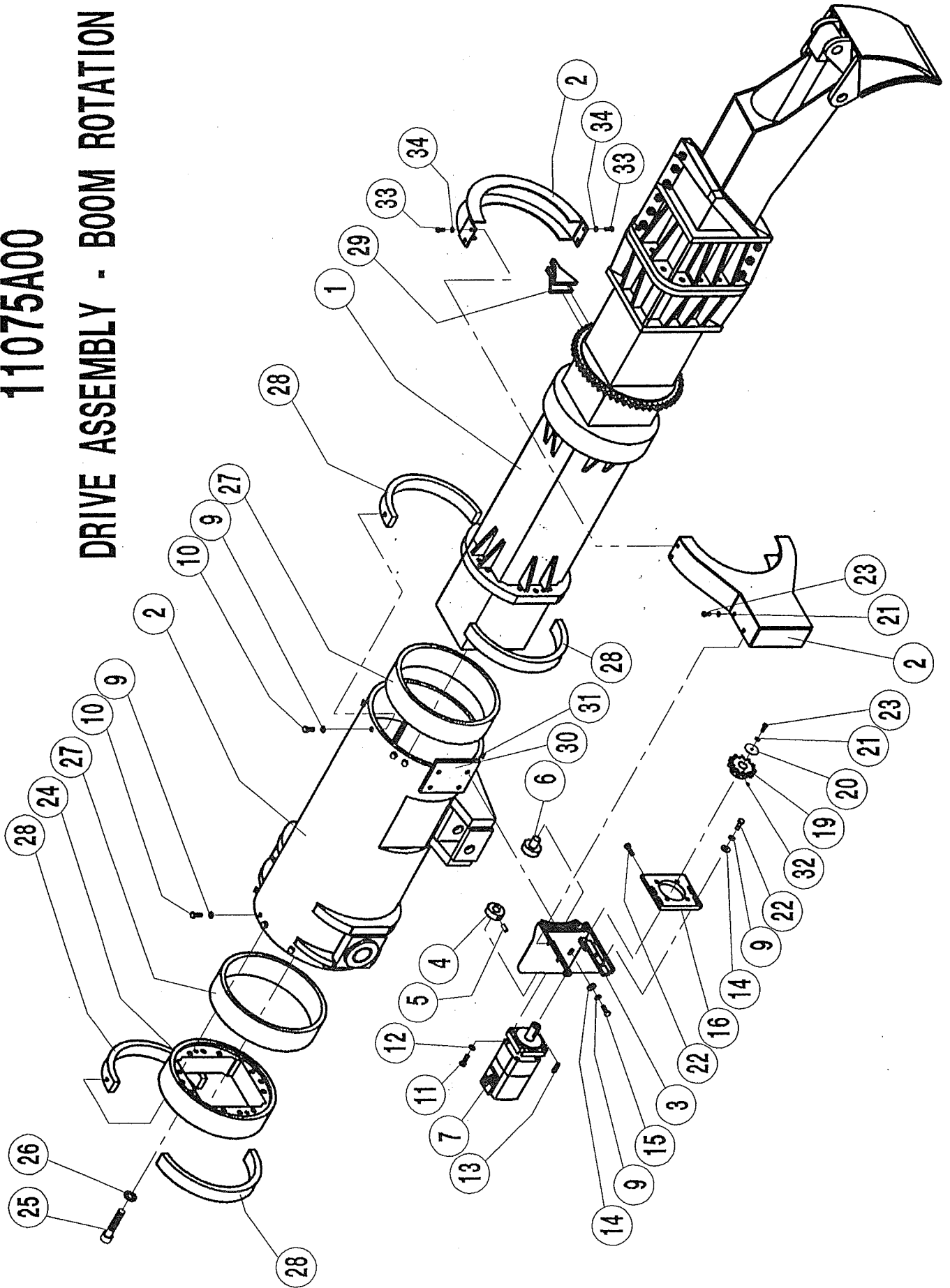
SEAL KIT ASSEMBLY - EX50 BACKHOE CYLINDERS

ITEM	DWG	PART NO.	DESCRIPTION	QTY
1	✓	48-43	3/16 X 1 1/2" COTTER PIN	1
2	✓	87-4	HD-2250 WIPER	1
3	✓	86-5	250-2.250-.375 POLY PACK	1
4	✓	84-234	234 BACKUP RING	1
5	✓	85-234	234 'O' RING	1
6	✓	85C-3	1704-52 POLYHONE PISTON SEAL	1
7	✓	85-149	149 'O' RING	1
8	✓	85-134	134 'O' RING	1

NOTES

11075A00

DRIVE ASSEMBLY - BOOM ROTATION



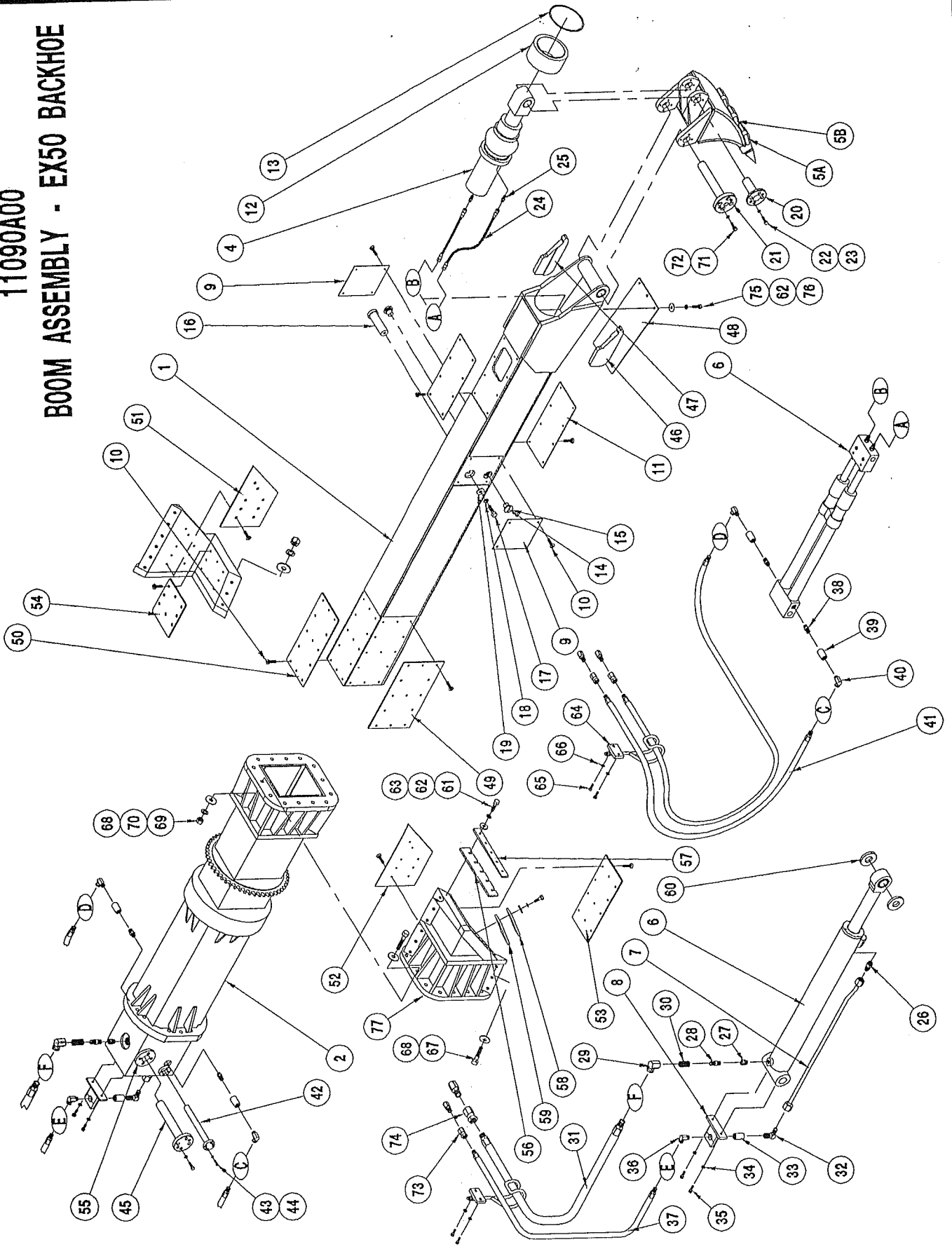
11075A00
 DRIVE ASSEMBLY, BOOM ROTATION - EX50 BACKHOE EXCAVATOR

ITEM	PART NO.	QTY	DESCRIPTION
1	11090A00	1	BOOM ASSEMBLY
2	9065A01	1	DRIVE COVER - BOOM ROTATION
3	11000A00	1	TUBE ASSY-BOOM ROTATION
4	11080A00	1	MOTOR MOUNT BRACKET
5	7552P00	1	1-1/4 DIA STR PRF ROD X 7/8
6	49-81	1	3/16 DIA ROLL PIN X 1-1/4"
7	7551P00	1	1-1/4 DIA STR PRF ROD X 2-1/4"
8	304-134	1	MOTOR 24 CU-IN (CHAR LYNN 109-1106)
9	45-8	*	1/2" LOCK WASHERS (31)
10	1-6-7	*	1/2"-13 UNC BOLT X 1-3/4" (23)
11	45-8	4	1/2" LOCKWASHERS
12	31-8-6	4	1/2-13 UNC SHCS X 1-1/2"
13	47-4-6	1	5/16 X 5/16 X 1-1/2 KEY
14	40-8	*	1/2" FLAT WASHER (8)
15	1-8-5	*	1/2"-13 UNC BOLT X 1-1/4" (4)
16	11081P00	*	3/4" HR PLATE (7 1/4" X 8 1/4")
17	78-3	1	# 80 ROLLER CHAIN 63 "
18	78-6	1	# 80 ROLLER CHAIN 1/2 LINK
19	11074P00	1	SPROCKET # 80B11
20	42-17	1	3/8 ID X 2" OD FENDER WASHER
21	45-6	5	3/8 LOCKWASHER
22	1-8-6	6	1/2 -13 UNC BOLTS x 1-1/2" (2)
23	1-6-3	5	3/8"-16 UNC BOLTS X 3/4"
24	11011A01	*	ROTATING PLATE BACKHOE BOOM (2)
25	31-10-16	*	5/8" UNC SHCS X 4" (12)
26	46-10	*	5/8" LOCKWASHER HI COLLAR (12)
27	11004P00	*	BUSHING (2)
28	11005P00	*	2" HR PLATE(17" X 17") (RETAINING RING) (2)
29	8874POO	*	1/2" PLATE (5" X 5-1/2") (1)
30	8926P00	*	1/2" X 6" HR PLATE X 7-1/2" (2)
31	8925P00	*	1/2" X 1/2" HR BAR X 6" (2)
32	33-4-5	1	1/4"-20UN SOCKET HD SET SCREW

* ALL ITEMS ARE FOR REFERENCE ONLY.

11090A00

BOOM ASSEMBLY - EX50 BACKHOE



11090A00
BOOM ASSEMBLY - BACKHOE
MODEL EX50

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	8830A01	EXTENSION BOOM
2	1	11085A01	ROTARY BOOM ASS'Y (SPLIT)
3	1	8990A01	OIL SUPPLY LINE ASSEMBLY
4	1	21000A00	BUCKET CYLINDER
5A	1	8935A01	BUCKET WITHOUT TEETH
5B	1	11047A00	BUCKET WITH TEETH
5C	1	11047A00	BUCKET - HIGH LEVERAGE
6	1	21001A00	BUCKET EXTENTION CYLINDER
7	1	9090A00	RETRACTION TUBE ASSY
8	1	9169A00	COUPLER CLAMP ASSY
9	*	9075P01	3/16 X 8 AR BAR X 7-5/8 (2)
10	*	30-4-3	1/4" NC FSHCS X 3/4" (76)
11	*	9077P01	3/16 X 7 AR BAR 15-3/4" (1)
12	1	65-75	PLAIN SPHERICAL BEARING
13	1	76-48	SNAP RING
14	*	9062P00	1-3/4 DIA STR PRF ROD X 1-5/8"
15	*	33-6-8	3/8 NC SET SCREW X 1/2"
16	*	9051P00	2" DIA STR PRF ROD X 5-5/8"
17	*	1-8-6	1/2 -13 NC BOLT X 1-1/2" (1)
18	*	45-8	1/2 " LOCKWASHER (1)
19	*	40-8	1/2" FLATWASHER (1)
20	*	9089P00	3-1/2 DIA STR PRF ROD X 5-1/4
21	*	8936P00	3-1/2 DIA STR PRF ROD X 10-5/8
22	*	45-6	3/8" LOCKWASHER
23	*	1-6-5	3/8" 16UNC BOLT X 1-1/4"
24	2	506-22	3/8" HOSE X 22"
25	2	300-121	1/4 NPTM X 3/8" JIC(M)STR
26	1	300-200	3/4"-16 ORB X 7/8" JIC X 90
27	1	300-220	3/4"-16 ORB X 1/2 NPT SWVL
28	1	300-48	1/2" NPT HEX NIPPLE
29	1	300-100	3/4" NPT FEMALE X 3/4 NPSM FEMALE SWIVEL X 90
30	1	401-3	3/4" NPT X 1/2" NPT ADAPTER
31	1	512-95	3/4" HOSE X 95"
32	1	300-143	5/8" JIC X 1/2" NPT X 90 MALE ELBOW
33	1	400-3	1/2" NPT COUPLER
34	2	45-6	3/8 LOCK WASHER
35	2	1-6-4	3/8" NC BOLT X 1"
36	1	300-18	1/2" NPT MALE X 1/2" NPSM F SWIVEL 90
37	1	508-92	1/2" HOSE X 92"
38	1	300-206	3/4" ORB X 1/2" ADAPTER

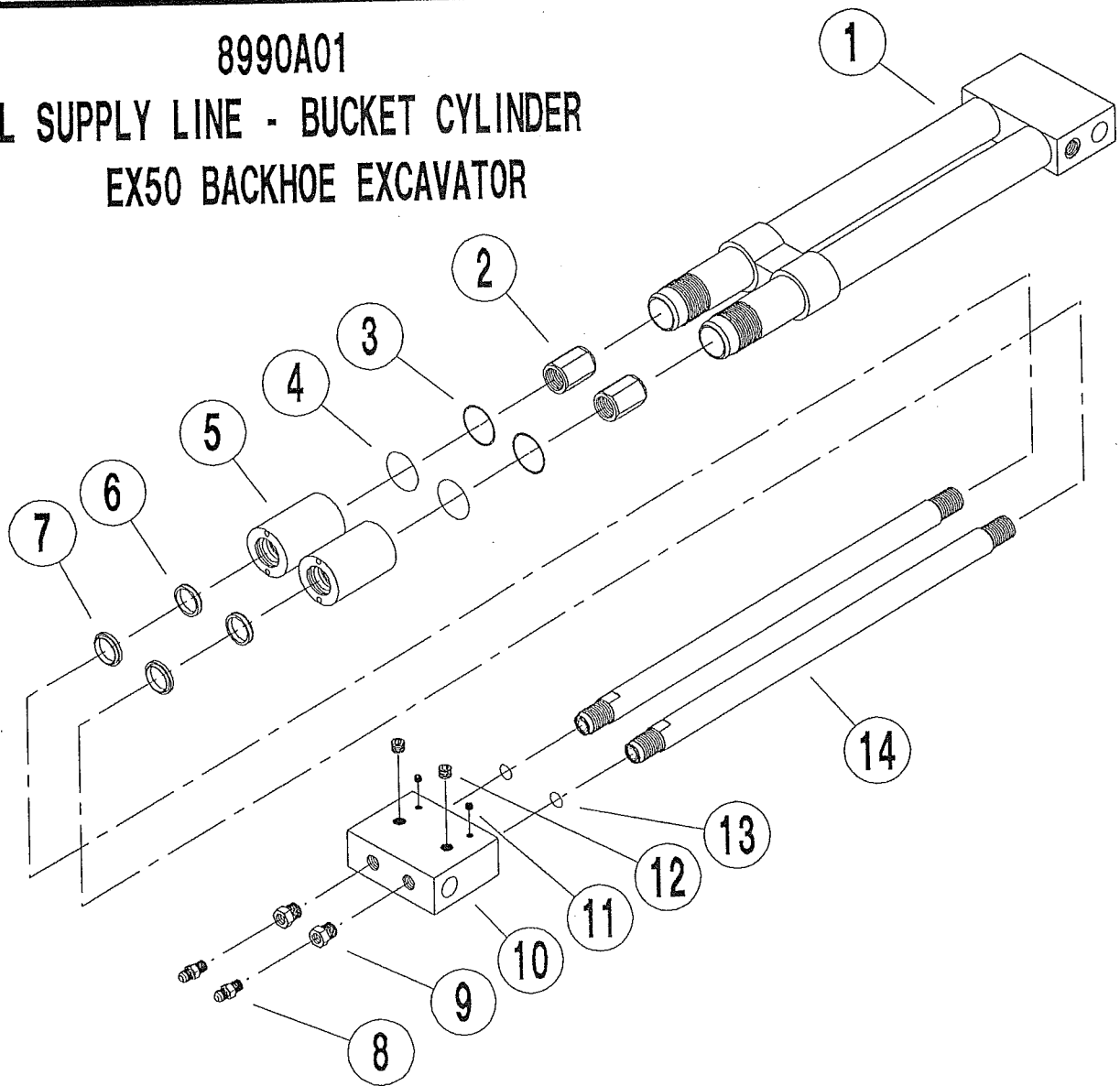
11090A00
BOOM ASSEMBLY - BACKHOE
MODEL EX50

ITEM	QTY.	PART NO.	DESCRIPTION
39	2	300-3	1/2" NPT COUPLER
40	2	300-18	1/2" NPT SWIVEL ELBOW
41	2	508-80	1/2" HOSE X 82"
42	*	9060P00	2-1/2 DIA MAXEL X 10-1/2
43	*	45-4	1/4" LOCKWASHER
44	*	1-4-5	1/4" NC BOLT X 1-1/4"
45	*	8878P00	3-1/2" DIA STR PRF X 10-5/8
46	1	10274P00	1" HR PLATE (4 3/4" X 10 1/2")
47	1	10275P00	1" HR PLATE (4 3/4" X 10 1/2")
48	*	11038P00	1/4" PVC BELTING (8 1/4" X 17") (CUT SQ.) (1)
49	*	9068P02	1/4" APCO # 8 (9" X 17") (CUT SQ.) (2)
50	*	9069P02	1/4" APCO # 8 (7" X 17") (CUT SQ.) (2)
51	*	11013P02	1/4" APCO # 8 (9" X 16") (1)
52	*	11014P02	1/4" APCO # 8 (9" X 15 3/4") (1)
53	*	11015P02	1/4" APCO # 8 (7" X 16 1/4") (CUT SQ.) (1)
54	*	11016P02	1/4" APCO # 8 (7" X 8 1/4") (CUT SQ.) (1)
55	*	8859P01	4" DIA. 1018 CR ROD X 2 1/4" (2)
56	*	10192P00	3/8" BELTING 68-6 (3 1/8" X 13") (2)
57	*	10193P00	3/8" X 1 1/2" HR BAR X 12 3/4" (2)
58	*	10194P00	3/8" X 1 1/2" HR BAR X 7 1/2" (2)
59	*	10195P00	3/8" BELTING (68-8) (3 1/8" X 15") (CUTS 2) (2)
60	*	9061P00	2 1/2" DIA. CR ROD X 2" (2)
61	*	1-6-6	3/8"-16 UNC BOLT X 1-1/2" (20)
62	*	45-6	3/8" LOCK WASHER (23)
63	*	40-6	3/8" FLAT WASHER (20)
64	*	11079A00	HOOK ASSEMBLY
65	*	1-6-6	3/8"-16 UNC BOLT X 1-1/2" (2)
66	*	45-6	3/8" LOCK WASHER (2)
67	*	1-10-10	5/8"-11 UNC BOLT X 2-1/2" (9)
68	*	40-10	5/8" FLAT WASHER (46)
69	*	5-10	5/8"-11 UNC NUT (23)
70	*	46-10	5/8" LOCK WASHER (37)
71	*	31-6-4	3/8"-16UNC SHCS X 1" (4)
72	*	46-6	3/8" HI-COLLAR LOCK WASHER (4)
73	3	300-59	1/2" NPT FEMALE SWIVEL
74	1	300-207	3/4" NPT FEMALE SWIVEL
75	*	1-6-4	3/8"-16 UNC BOLT X 1" (3)
76	*	42-12	13/32" ID X 31/32" OD FENDER WASHER (3)
77	1	23004A00	ROTARY BOOM EXTENSION 12"

* - REFERENCE

NOTES

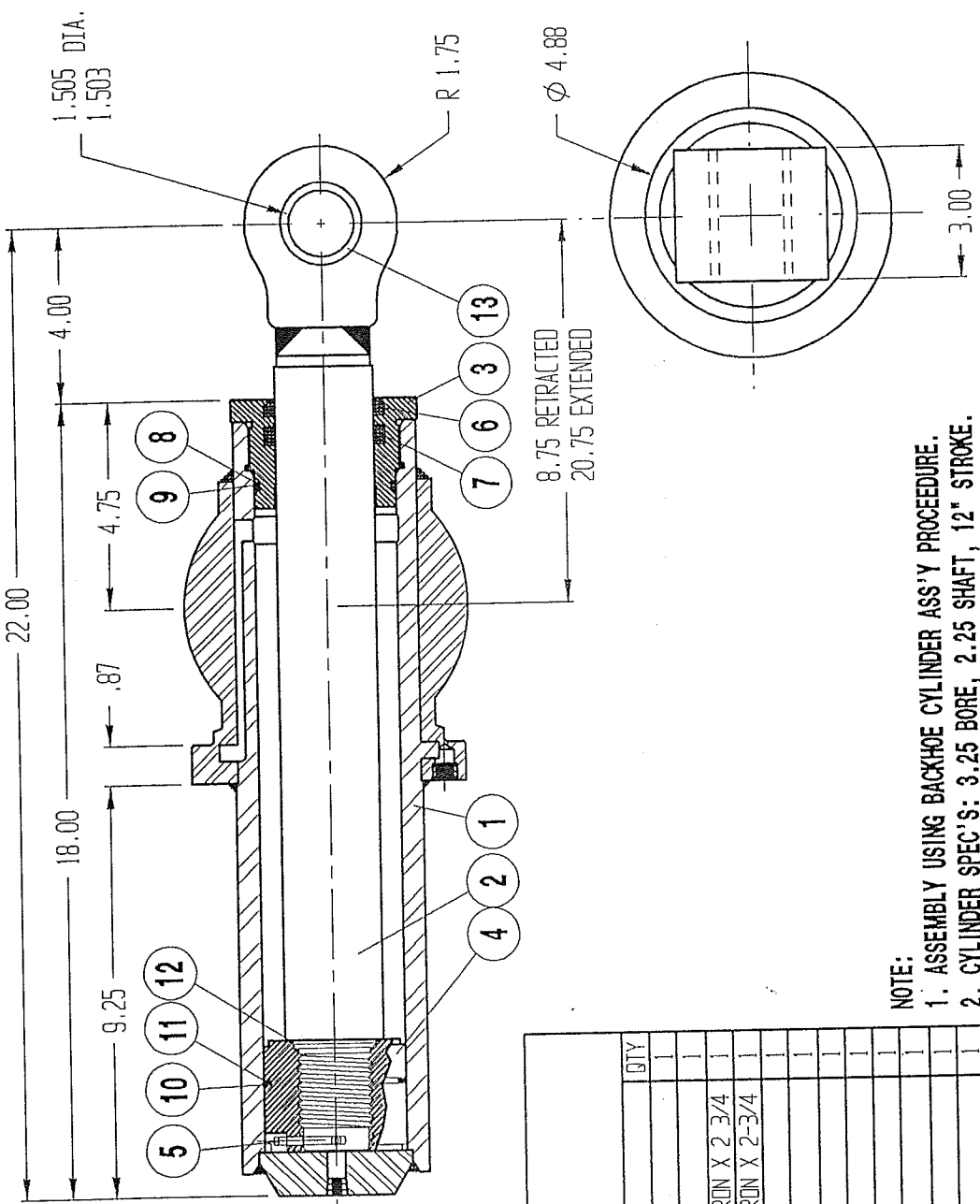
8990A01
 OIL SUPPLY LINE - BUCKET CYLINDER
 EX50 BACKHOE EXCAVATOR



ITEM	QTY.	PART NO.	DESCRIPTION
1	1	8995A00	BARREL WELDMENT
2	2	8993P00	PISTON 2-3/4" DIA x 2-1/4"
3	2	84-134	"O"-RING BACKUP
4	2	84-135	"O"-RING
5	2	8992P00	GLAND 2-3/4" DIA x 4"
6	2	86-16	POLYPACK .125" x .0125" x .25"
7	2	87-7	WIPER #D-1250
8	2	300-121	MALE ADAPTER 3/8" TUBE x 1/4" NPTF
9	2	14439P00	MODIFIED PLUG 3/4" (300-193)
10	1	8948P00	CLEVIS BLOCK
11	2	33-6-8	SET SCREW 3/8" NC x 1/2"
12	2	300-15	HOLLOW HEX PLUG 3/8" NPT
13	2	85-115	"O"-RING
14	2	8994P00	ROD 1-1/4" DIA x 54-1/2"
15	*	11071A00	SEAL KIT (NOT SHOWN)

11071A00
SEAL KIT ASSEMBLY - OIL SUPPLY LINE

ITEM	DWG	PART NO.	DESCRIPTION	QTY
1	---	84-134	134 BACKUP RING	2
2	---	85-134	134 O RING	2
3	---	86-16	POLYPACK	2
4	---	78-7	D-1250 WIPER	2
5	---	85-115	115 O RING	2



NOTE:
 1. ASSEMBLY USING BACKHOE CYLINDER ASS'Y PROCEDURE.
 2. CYLINDER SPEC'S: 3.25 BORE, 2.25 SHAFT, 12" STROKE.
 3. PRESSURE TESTED TO 3,000 PSI (EXTEND & RETRACT).

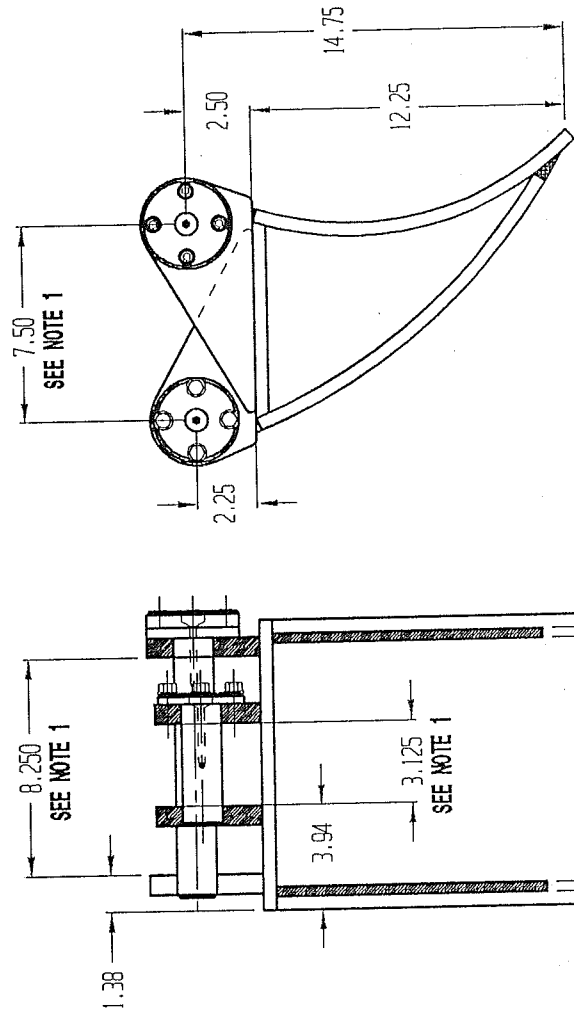
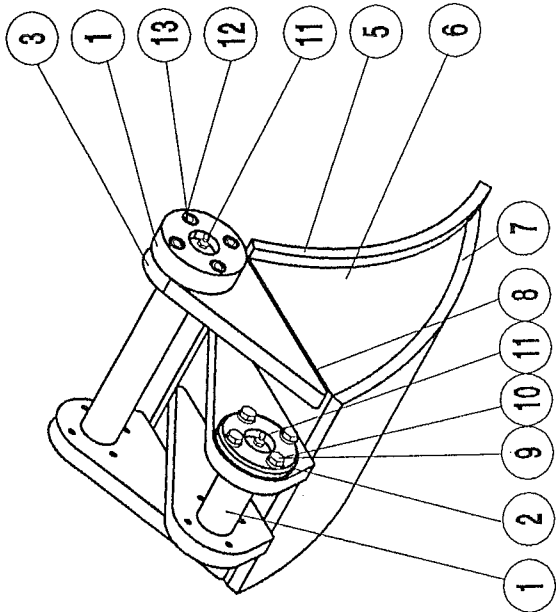
ITEM	DMG	PART NO.	DESCRIPTION	QTY
1	CAD	11059A00	BARREL WELDMENT	1
2	CAD	21005A00	SHAFT AND CLEVIS WELDMENT	1
3	CAD	8945P01	4-1/2" DIA 65-45-12 DUCTILE IRON X 2-3/4	1
4	CAD	14481P00	3-1/4" DIA 65-45-12 DUCTILE IRON X 2-3/4	1
5	-	48-43	3/16 X 1 1/2" COTTER PIN	1
6	-	87-4	HO-2250 WIPER	1
7	-	86-5	250-2.250-.375 POLY PACK	1
8	-	84-234	234 BACKUP RING	1
9	-	85-234	234 'O' RING	1
10	-	85C-3	1704-52 POLYHONE PISTON SEAL	1
11	-	85-149	149 'O' RING	1
12	-	85-134	134 'O' RING	1
13	-	66-8	1.75 OD X 1.50 ID BUSHING X 3"	1
14	-	21010A00	SEAL KIT ASS'Y	*

REV	ECO	REVISION RECORD	BY	DATE	DRAWN FJL	DATE 1-93	EX50
							BACKHOE
							11090A00
							11030F00
							FINAL ASSEMBLY

TOLERANCES UNLESS NOTED
 DECIMAL XX +/- .02 CHAMFER ALL SHARP
 DECIMAL XXX +/- .005 EDGES 1/32 X 45°
 ANGLES +/- 1° ANGLES +/- 30'
 FRACTIONS +/- 1/16

21000A00
 21000A00
 21000A00
 21000A00

21000A00
 21000A00
 21000A00
 21000A00

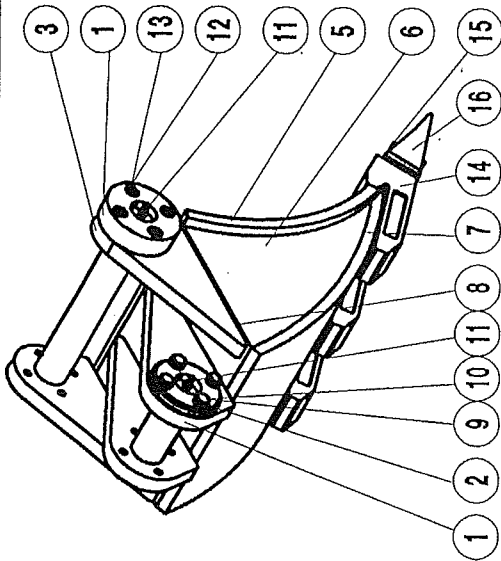


8935A01 SAND BUCKET - EX50 BACKHOE				
ITEM	DWG	PART NO.	DESCRIPTION	QTY
1	CAD	8936P01	3 1/2" DIA. STR PRF ROD X 11"	1
2	CAD	9089P00	3 1/2" DIA. STR PRF OD X 5 1/4"	1
3	CAD	8937P00	3/4" T-1 PLATE (5" X 10")	2
4	CAD	8938P00	3/4" T-1 PLATE (5 1/4" X 10")	2
5	CAD	8943P00	1/2" HR PLATE (12" X 14 1/2")	1
6	CAD	8942P00	3/8" HR PLATE (12" X 10 1/8")	2
7	CAD	8941P00	1/2" HR PLATE (12" X 16 3/4")	1
8	CAD	8939P00	1/2" HR PLATE (8 1/2" X 12")	1
9	---	1-6-5	3/8" NC X 1 1/4" BOLT	4
10	---	45-6	3/8" LOCKWASHER	4
11	---	63-1	1/4" NF GREASE FITTING	2
12	---	31-6-4	3/8" NC X 1" SHCS	4
13	---	46-6	3/8" HI-COLLAR LOCKWASHER	4

NOTE:

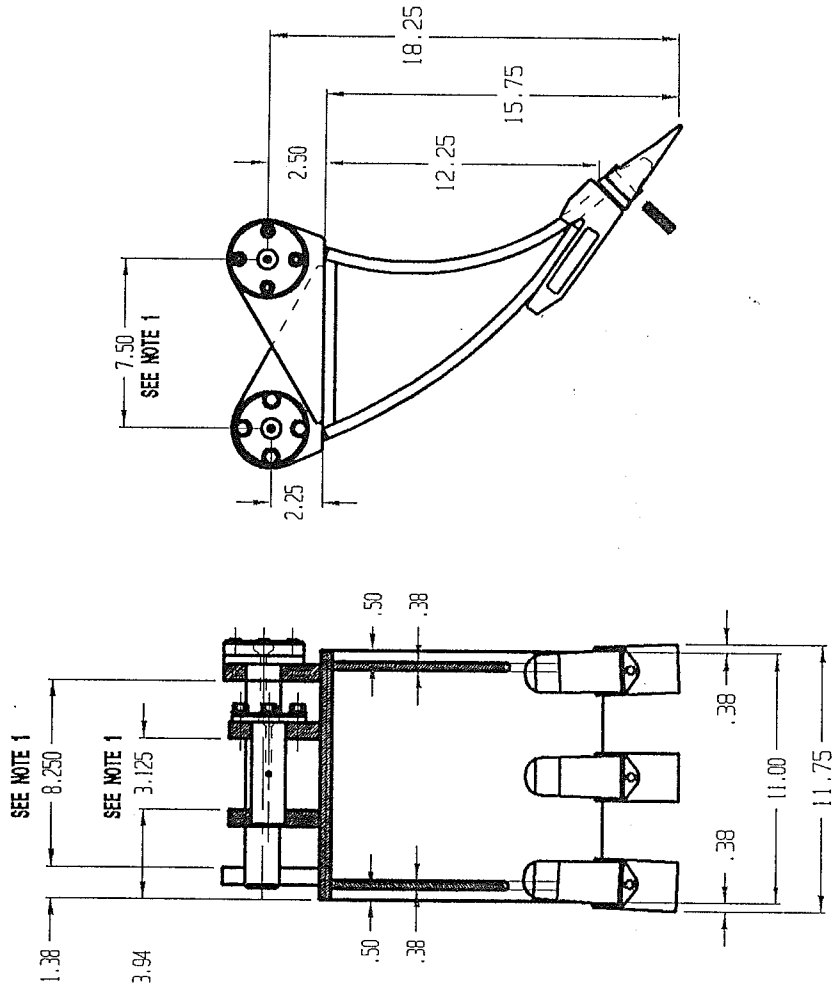
1. USE JIG TO HOLD ALL DIMENSIONS THAT HAVE BEEN INDICATED
2. CHECK PIN FIT AFTER BUCKET HAS BEEN WELDED.

TOLERANCES UNLESS NOTED		DRAWN FJL		DATE 01-93		NEXT ASSEMBLY		FINAL ASSEMBLY	
DECIMAL XX +/- .02		CHAMFER ALL SHARP		CHECK		SCALE 1 TO 1		DWG. NO.	
DECIMAL XXX +/- .005		EDGES 1/32 X 45°		DESIGN		SHEET 1 OF 1		11090A00	
ANGLES +/- 1°		ANGLES +/- 30'						11030F00	
FRACTIONS +/- 1/16									
		REVISION RECORD		BY		DATE			
REV		ECC							
TITLE		SAND BUCKET - EX50 BACKHOE						8935A01	
MATERIAL		NOTED							



11047A00
DIRT & SOFT ROCK BUCKET - EX50 BACKHOE

ITEM	DWG	PART NO.	DESCRIPTION	QTY
1	CAD	8936P01	3 1/2" DIA. SIR PRF ROD X 11"	1
2	CAD	9089P00	3 1/2" DIA. SIR PRF OD X 5 1/4"	1
3	CAD	8937P00	3/4" T-1 PLATE (5" X 10")	2
4	CAD	8938P00	3/4" T-1 PLATE (5 1/4" X 10")	2
5	CAD	8943P00	1/2" HR PLATE (12" X 14 1/2")	1
6	CAD	8942P00	3/8" HR PLATE (12" X 10 1/8")	2
7	CAD	8941P00	1/2" HR PLATE (12" X 16 3/4")	1
8	CAD	8939P00	1/2" HR PLATE (8 1/2" X 12")	1
9	---	1-6-5	3/8" NC X 1 1/4" BOLT	4
10	---	45-6	3/8" LOCKWASHER	4
11	---	63-1	1/4" NF GREASE FITTING	2
12	---	31-6-4	3/8" NC X 1" SHCS	4
13	---	46-6	3/8" HI-COLLAR LOCKWASHER	4
14	---	51-7	HENSLEY HOLDER (836X156)	3
15	---	51-8	HENSLEY TOOTH PIN (P-156)	3
16	---	50-23	HENSLEY STANDARD TOOTH (X156)	3
17	---	50-21	HENSLEY TIGER TOOTH (T-156)	*
18	---	50-22	HENSLEY HEAVY TIGER TOOTH (T-156HD)	*

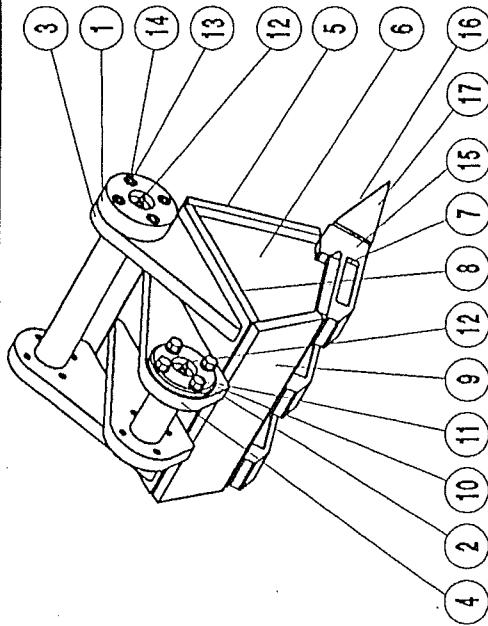


NOTE:

1. USE JIG TO HOLD ALL DIMENSIONS THAT HAVE BEEN INDICATED.
2. CHECK PIN FIT AFTER BUCKET HAS BEEN WELDED.
3. ITEMS 16-18 PER JOB & GROUND CONDITIONS.

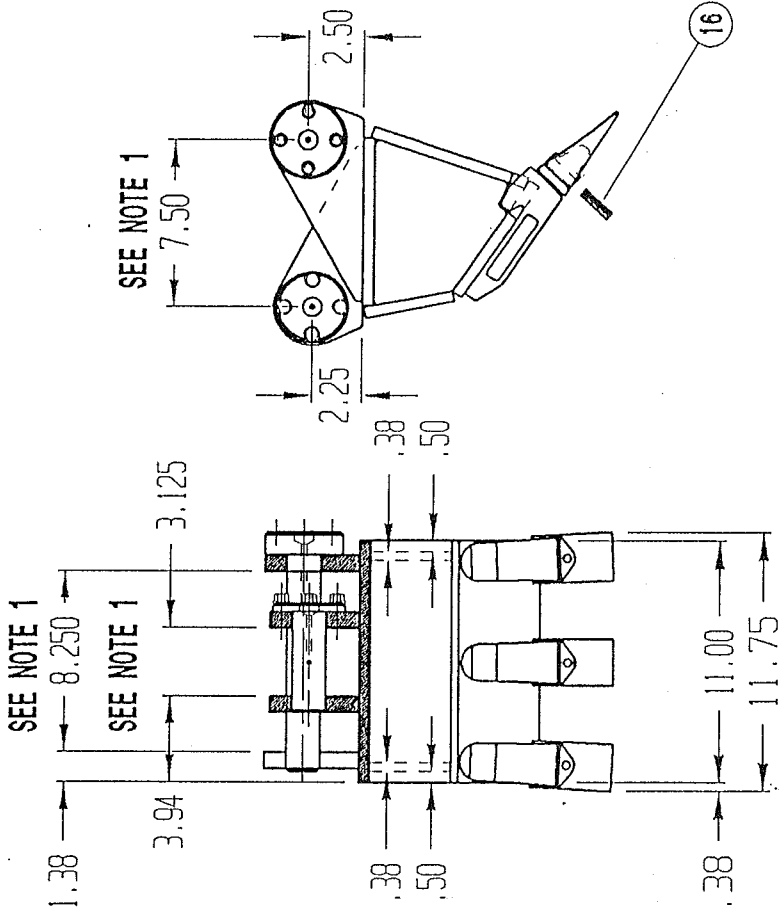
REV	ECO	REVISION RECORD	BY	DATE	DRAWN	FJL	DATE	01-93	NEXT ASSEMBLY	FINAL ASSEMBLY
									11090A00	11030F00
TOLERANCES UNLESS NOTED										
DECIMAL XX +/- .02 CHAMFER ALL SHARP										
DECIMAL XXX +/- .005 EDGES 1/32 X 45°										
ANGLES +/- 1° ANGLES +/- 30°										
FRACTIONS +/- 1/16										
DWG. NO. 11047A00										
SHEET 1 OF 1										

REV ECO REVISION RECORD BY DATE
 TITLE DIRT & SOFT ROCK BUCKET - EX50 BACKHOE
 MATERIAL NOTED



ITEM	DWG	PART NO.	DESCRIPTION	QTY
1	CAO	8936P01	3 1/2" DIA. STR PRF ROD X 11"	1
2	CAO	9089P00	3 1/2" DIA. STR PRF ROD X 5 1/4"	1
3	CAO	8937P00	3/4" T-1 PLATE (5" X 10")	2
4	CAO	8938P00	3/4" T-1 PLATE (5 1/4" X 10")	2
5	CAO	23060P00	1/2" HRS PLATE (8-1/4" X 12")	1
6	CAO	23061P00	3/8" HRS PLATE (7" X 8-1/2")	2
7	CAO	23062P00	1/2" HRS PLATE (7" X 12")	1
8	CAO	8939P00	1/2" HRS PLATE (8-1/2" X 12")	1
9	CAO	23063P00	1/2" X 4" HRS BAR X 11"	1
10	---	1-6-5	3/8" NC X 1 1/4" BOLT	4
11	---	45-6	3/8" LOCKWASHER	4
12	---	63-1	1/4" NF GREASE FITTING	2
13	---	31-6-4	3/8" NC X 1" SHCS	4
14	---	46-6	3/8" HI-COLLAR LOCKWASHER	4
15	---	51-7	HENSLEY HOLDER (836X156)	3
16	---	51-8	HENSLEY TOOTH PIN (P-156)	3
17	---	50-23	HENSLEY STANDARD TOOTH (X156)	3
18	---	50-21	HENSLEY TIGER TOOTH (T-156)	*
19	---	50-22	HENSLEY HEAVY TIGER TOOTH (T-156H0)	*

23003A00
HIGH LEVERAGE BUCKET - EX50 BACKHOE

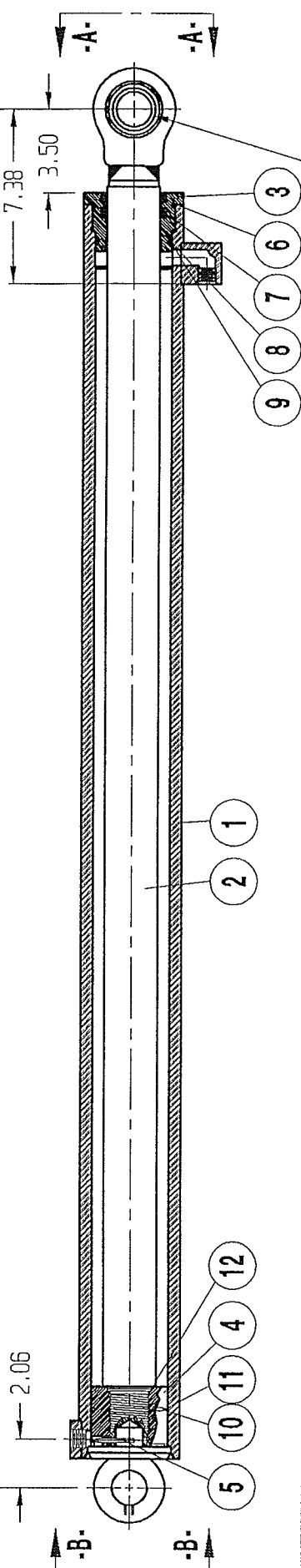


NOTE:

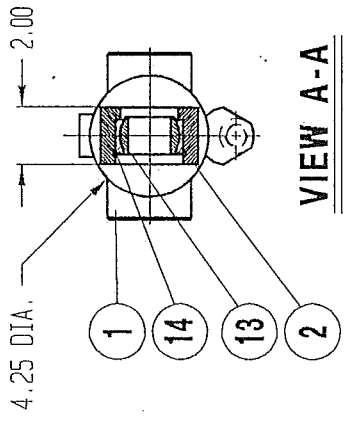
1. USE JIG TO HOLD ALL DIMENSIONS THAT HAVE BEEN INDICATED.
2. CHECK PIN FIT AFTER BUCKET HAS BEEN WELDED.
3. ITEMS 17-19 PER JOB & GROUND CONDITIONS.

TOLERANCES UNLESS NOTED		DRAWN DTP		DATE 7/6/93		NEXT ASSEMBLY		FINAL ASSEMBLY	
DECIMAL XX +/- .02		CHAMFER ALL SHARP		CHECK		SCALE 1 TO 1		DWG. NO.	
DECIMAL XXX +/- .005		EDGES 1/32 X 45°		DESIGN FJL		SHEET 1 OF 1		11090A00	
ANGLES +/- 1°		ANGLES +/- 30°						11030F00	
FRACTIONS +/- 1/16									
REV	ECD	REVISION RECORD		BY	DATE				
TITLE		HIGH LEVERAGE BUCKET - EX50 BACKHOE							
MATERIAL		NOTED							
		23003A00							

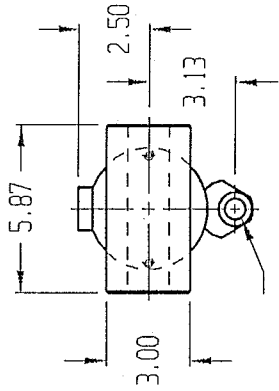
58.25 RETRACTED
106.25 EXTENDED



1.500 DIA. (2)
(3.50 OD)



VIEW A-A



VIEW B-B

3/4"-16 DRB (2)

21001A00
BOOM EXTEND CYLINDER ASS'Y - EX50 BACKHOE

ITEM	DWG	PART NO.	DESCRIPTION	QTY
1	CAD	8950A01	BARREL WELDMENT	1
2	CAD	21006A00	SHAFT AND CLEVIS WELDMENT	1
3	CAD	8945P01	4-1/2" DIA 65-45-12 DUCTILE IRON X 2 3/4	1
4	CAD	14481P00	3-1/4" DIA 65-45-12 DUCTILE IRON X 2-3/4	1
5	-	48-43	3/16 X 1 1/2" COTTER PIN	1
6	-	87-4	HD-2250 WIPER	1
7	-	86-5	250-2.250-.375 POLY PACK	1
8	-	84-234	234 BACKUP RING	1
9	-	85-234	234 'O' RING	1
10	-	85C-3	1704-52 POLYHONE PISTON SEAL	1
11	-	85-149	149 'O' RING	1
12	-	85-134	134 'O' RING	1
13	-	65-86	SPERICAL BEARING (15SF24)	1
14	-	76-50	SPIRAL SNAP RING (WHM-244)	1
15	-	21010A00	SEAL KIT ASS'Y	*

NOTE:

1. USE BACKHOE CYLINDER ASS'Y PROCEDURE.
2. CYLINDER SPEC'S: (3.25 BORE, 2.25 SHAFT, 48" STROKE)
3. PRESSURE TEST CYLINDER TO 3000 PSI ON (EXTEND & RETRACT).

REV	ECO	REVISION RECORD	BY	DATE	DRAWN	FJL	DATE	1-93	11090A00	11030F00
TOLERANCES UNLESS NOTED										
DECIMAL XX +/- .02 CHAMFER ALL SHARP										
DECIMAL XXX +/- .005 EDGES 1/32 X 45°										
ANGLES +/- 1° ANGLES +/- 30'										
FRACTIONS +/- 1/16										
NEXT ASSEMBLY FINAL ASSEMBLY										
DWG. 21001A00										
SHEET 1 OF 1										

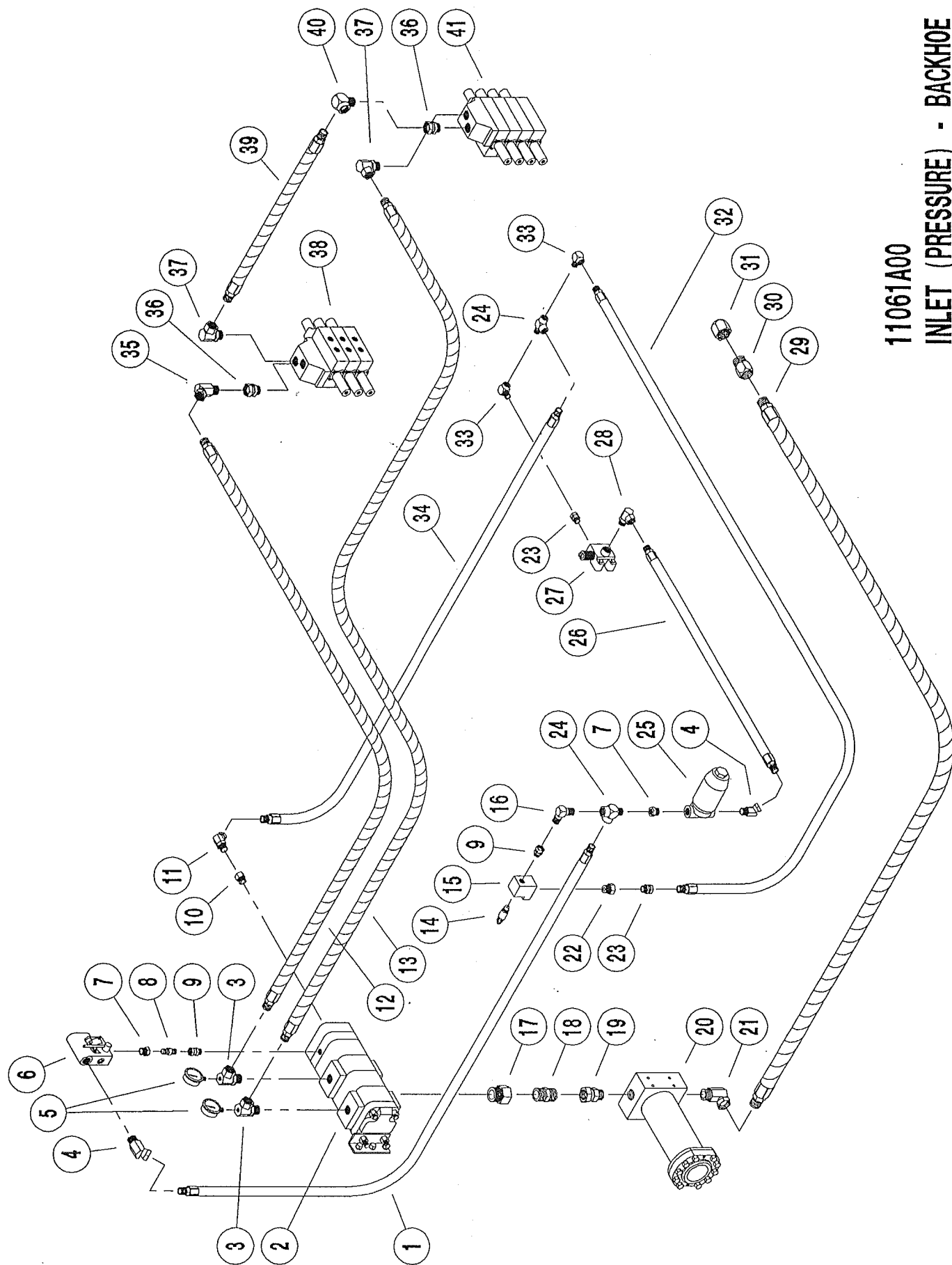
21010A00
SEAL KIT ASSEMBLY - EX50 BACKHOE CYLINDERS

ITEM	DWG	PART NO.	DESCRIPTION	QTY
1	~	48-43	3/16 X 1 1/2" COTTER PIN	1
2	~	87-4	HD-2250 WIPER	1
3	~	86-5	250-2.250-.375 POLY PACK	1
4	~	84-234	234 BACKUP RING	1
5	~	85-234	234 'O' RING	1
6	~	85C-3	1704-52 POLYHONE PISTON SEAL	1
7	~	85-149	149 'O' RING	1
8	~	85-134	134 'O' RING	1

11027A00
HYDRAULIC ASSEMBLY - BACKHOE

<u>ITEM</u>	<u>QTY.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	11061A00	INLET (PRESSURE) - BACKHOE
2	1	11062A00	OUTLET (TANK) - BACKHOE
3	1	11063A00	CONTROLS - PRESSURE & TANK SUPPLY LINES
4	1	11064A00	BACKHOE CONTROLS
5	1	11065A00	BACKHOE CONTROLS
6	1	11066A00	BUCKET CONTROL ASSEMBLY
7	1	11067A00	BOOM EXTENSION ASSEMBLY
8	1	11068A00	ROTATION CONTROL
9	1	11069A00	HOIST CONTROL
10	1	11076A00	SWING CONTROL
11	1	11077A00	FRAME SLIDE CONTROL
12	1	11078A00	STEERING CYLINDER CONTROL
13	1	10975A01	CONTROL MODULE ASSEMBLY (HYDRAULIC ASS'Y)
14	1	PER JOB	HYDRAULIC SCHEMATIC

11061A00
INLET (PRESSURE) - BACKHOE

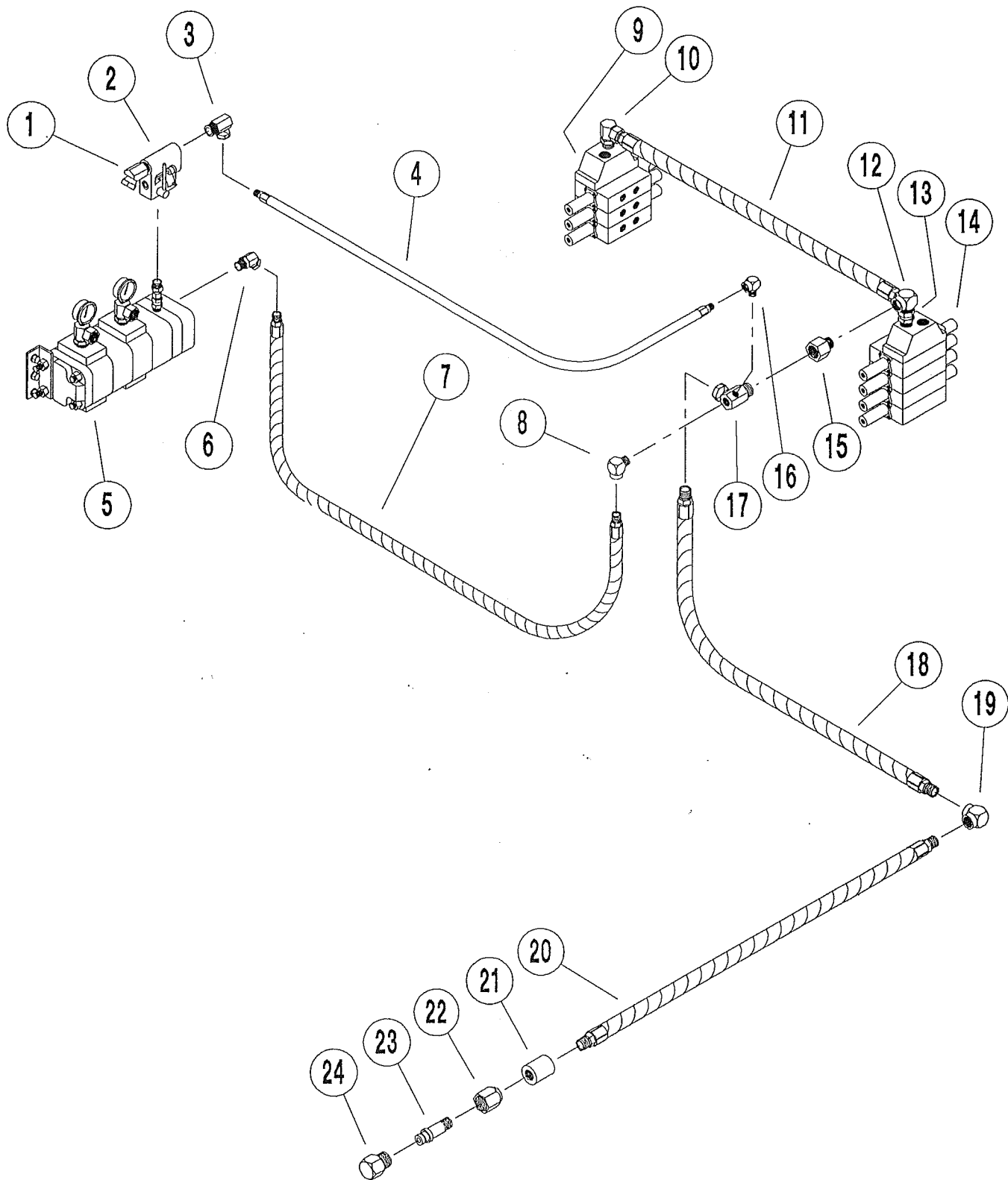


11061A00
INLET (PRESSURE) - BACKHOE

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	508-36	1/2" DIA HYDRAULIC HOSE x 36"
2	1	303-207	FLOW DIVIDER WITH SCAVENGER PUMP
3	2	300-52	1-5/16"-12 ORB x 1" NPSM - 90 DEG ELBOW
4	2	300-24	3/4" NPTF x 1/2" NPSM - 45 DEG SWIVEL
5	2	301-100	5,000 PSI GAUGE
6	1	302-111	FLOW CONTROL 3/4"
7	2	300-12	REDUCER BUSHING 3/4" x 1/2"
8	1	300-48	HEX NIPPLE 1/2"
9	1	300-94	7/8"-14 ORB x 1/2" NPSM STRAIGHT SWIVEL
10	1	300-167	7/8"-14 ORB x 1/2" NPTF ADAPTER
11	1	300-173	1/2" NPTF x 1/2" NPSM 45 DEG SWIV ELBOW
12	1	516-42	1" DIA HYDRAULIC HOSE x 42"
13	1	516-60	1" DIA HYDRAULIC HOSE x 60"
14	1	302-182	RELIEF VALVE CARTRIDGE (200 PSI)
15	1	10129P00	RELIEF VALVE BODY (302-220)
16	1	300-25	90 DEG MALE ELBOW 1/2"
17	1	300-85	1-5/8"-12 ORB x 1-1/4" NPTF FEM ADAPTER
18	1	300-66	HEX NIPPLE 1-1/4"
19	1	300-91	STRAIGHT SWIVEL 1-1/4" NPTF x 1-1/4" NPSM
20	1	4500A04	HIGH PRESSURE FILTER #120
21	1	300-179	90 DEG ELBOW 1-1/4" NPTF x 1-1/4" NPSM
22	1	8468P00	1-1/16"-12 ORB PLUG (300-145)
23	2	300-10	STRAIGHT SWIVEL 1/2" NPTF x 1/2" NPSM
24	1	300-49	PIPE TEE 1/2"
25	1	309-154	HIGH PRESSURE FILTER
	REF	309-155	ELEMENT
	REF	309-156	ELEMENT INDICATOR
26	1	508-32	1/2" HYDRAULIC HOSE x 32"
27	REF	302-193	S-10 SELECTOR VALVE W\SPRING
28	1	300-69	7/8"-14 ORB x 1/2" NPSM SWIVEL ADAPTER
29	1	520-102	1-1/4" DIA HYDRAULIC HOSE x 102"
30	1	5348P00	1-1/4" FEMALE COUPLER
31	1	7002P02	COUPLER CAP
32	1	508-48	1/2" HYDRAULIC HOSE x 48"
33	2	8475P00	90 DEG STREET ELBOW 1/2" (300-32)
34	1	508-36	1/2" HYDRAULIC HOSE x 36"
35	1	300-215	45 DEG SWIVEL ELBOW 1" NPTF x 1" NPSM
36	1	300-162	STRAIGHT SWIV 1-5/16"-12 ORB x 1" NPSM
37	1	300-52	1-5/16"-12 ORB x 1" NPSM FEMALE ADAPTER

11061A00
INLET (PRESSURE) - BACKHOE

ITEM	QTY.	PART NO.	DESCRIPTION
38	REF	302-187	3 SPOOL VALVE RIGHT
39	1	516-20	1" HYDRAULIC HOSE x 20"
40	1	14437P00	90 DEG STRT ELBOW 1" TAPPED 1" NPT (300-57)
41	REF	302-186	4 SPOOL VALVE LEFT
42	1	11098A00	MOUNTING BRACKET - FILTER
43	4	1-8-4	BOLT 1/2"-13UNC x 1"
44	1	309-121	20 MICRON ELEMENT
45	1	309-128	10 MICRON ELEMENT
46	1	301-108	PRESSURE INDICATOR
47	1	11095P00	BAR 1/4" X 3/4" X 3-3/4"
48	3	1-4-2	BOLT 1/4"-20UNC x 1/2"
49	3	46-4	LOCKWASHER 1/4"
50	2	300-158	STRAIGHT ADAPTER 3/16" TUBE x 1/8" PIPE
51	2	110-105	3/16" STEEL HYDRAULIC TUBING x 12"
52	4	300-155	TUBE NUT 3/16"
53	4	300-154	TUBE SLEEVE 3/16"
54	2	300-159	90 DEG ELBOW 3/16" TUBE x 1/8" PIPE
55	1	301-105	PRESSURE INDICATOR
56	2	11096P00	1-1/2" ANGLE x 6"
57	2	11097P00	MOUNTING BRACKET - GEAR DIVIDER
58	6	1-8-6	BOLT 1/2"-13UNC x 1-1/2"
59	6	45-8	LOCKWASHER 1/2"
60	4	3-10	NUT 5/8"-11UNC
61	4	45-10	LOCKWASHER 5/8"

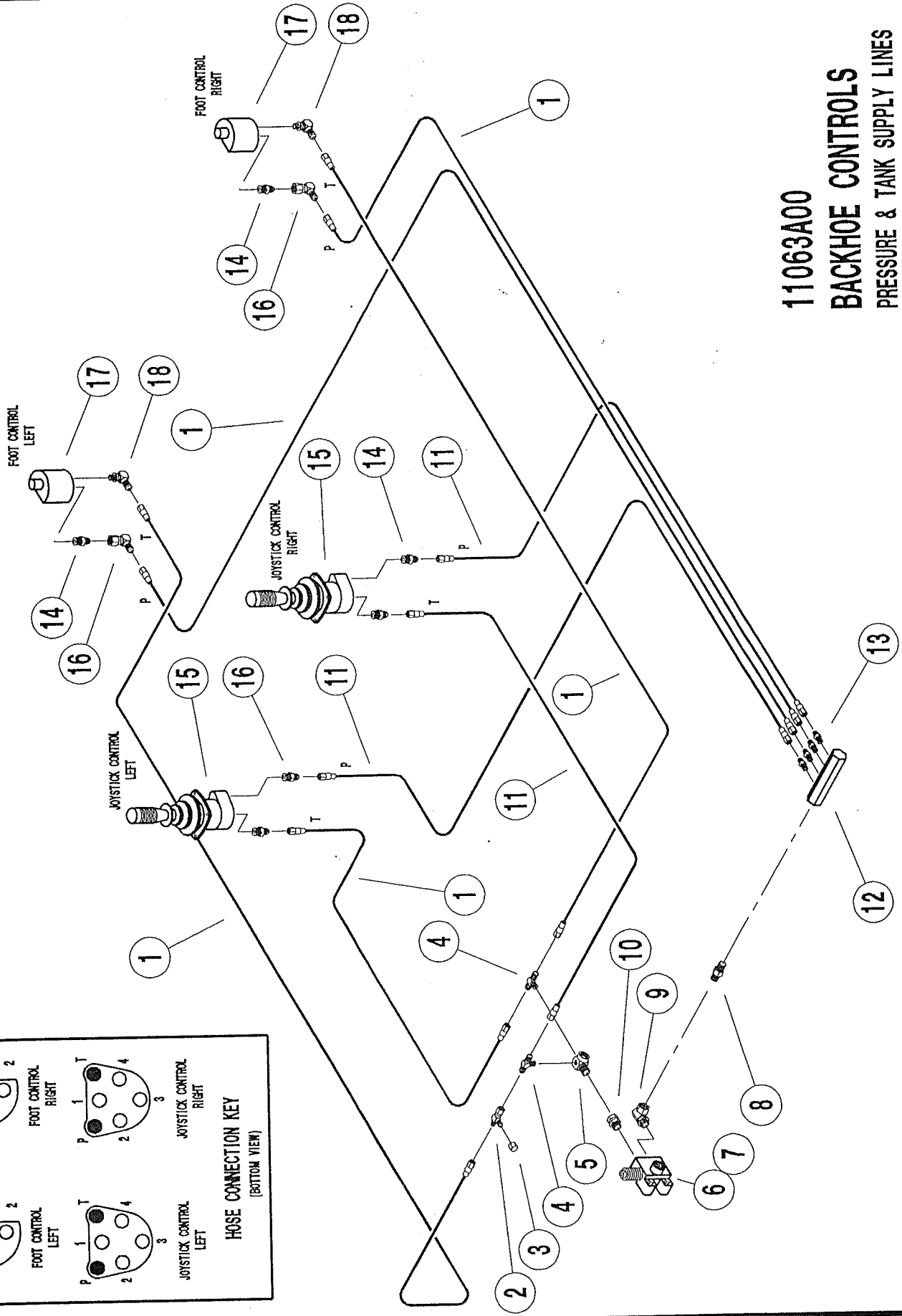
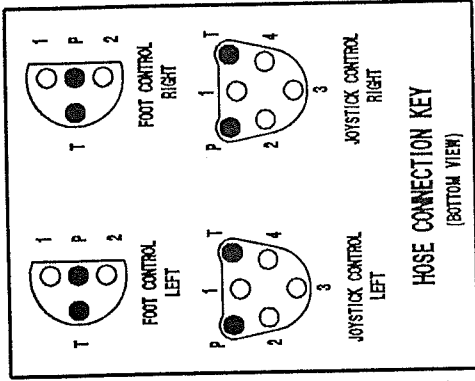


11062A00
 OUTLET (TANK) - BACKHOE

11062A00
 OUTLET (TANK) - BACKHOE

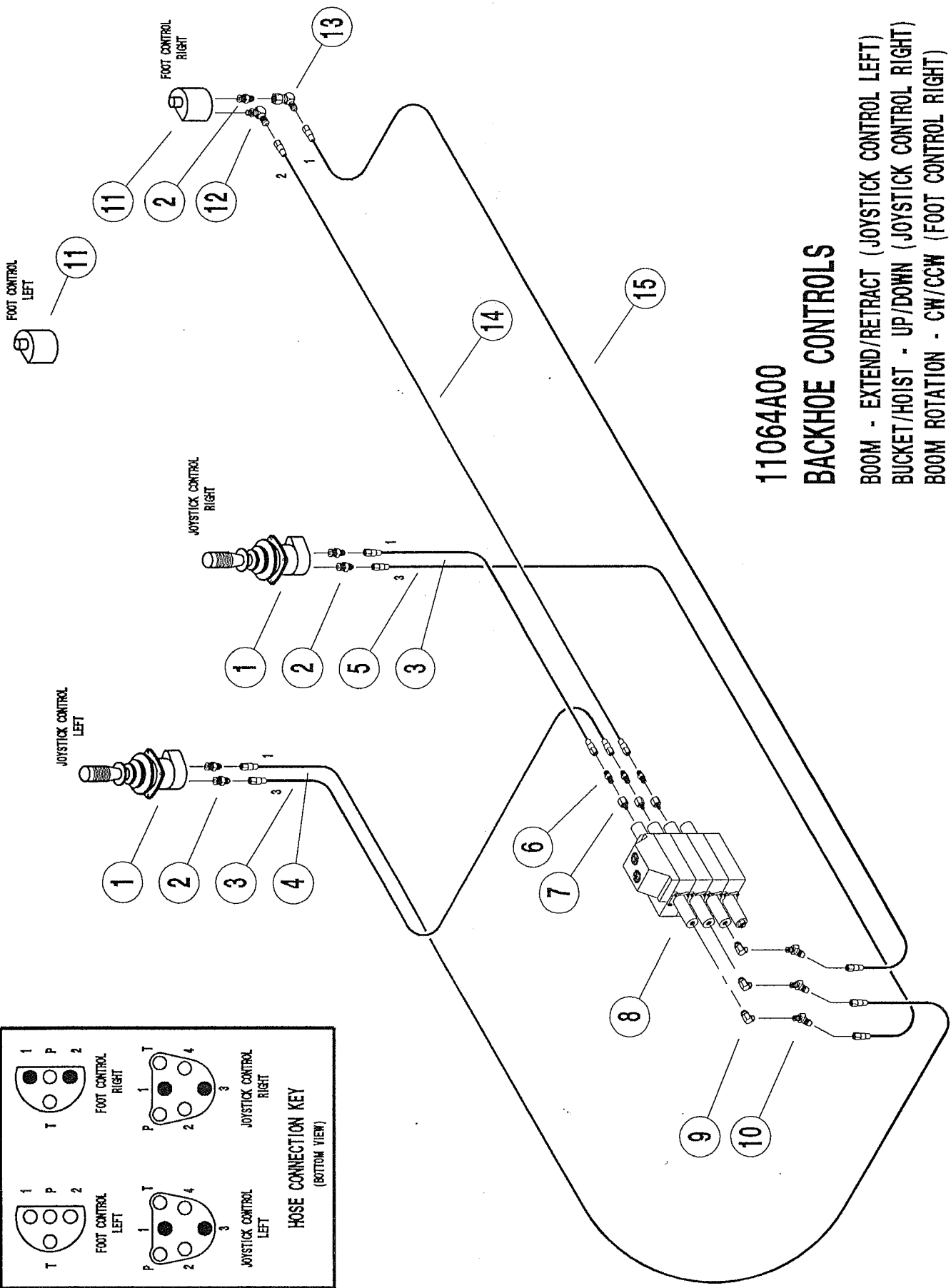
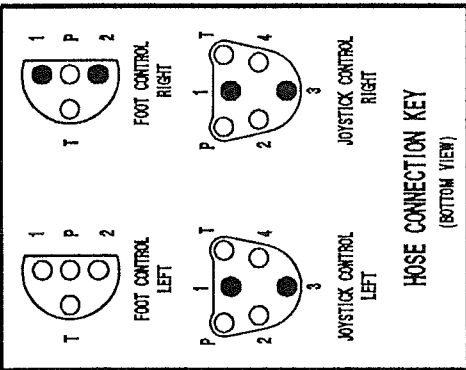
ITEM	QTY.	PART NO.	DESCRIPTION
1	REF	300-24	3/4" NPTF x 1/2" NPSM - 45 DEG SWIV (2)
2	REF	302-111	FLOW CONTROL 3/4" (1)
3	1	300-22	3/4" NPTF x 1/2" NPSM - 90 DEG SWIVEL
4	1	508-48	1/2" DIA HYDRAULIC HOSE x 48"
5	REF	303-207	FLOW DIVIDER WITH SCAVENGER PUMP (1)
6	1	300-135	1-1/16"-12 ORB x 3/4" NPSM - 90 DEG FEM SWIV
7	1	512-50	3/4" DIA HYDRAULIC HOSE x 50"
8	1	300-9	90 DEG STREET ELBOW - 3/4"
9	REF	302-187	3 SPOOL VALVE RIGHT (1)
10	REF	300-52	1-5/16"-12 ORB x 1" NPSM FEM ADAPTER (1)
11	REF	516-20	1" HYDRAULIC HOSE x 20" (1)
12	REF	14437P00	90 DEG STRT ELBOW 1" TAPPED 1" NPT (1)
13	REF	300-162	STRT SWIV 1-5/16"-12 ORB x 1" NPSM (1)
14	REF	302-186	4 SPOOL VALVE LEFT (1)
15	1	300-50	MALE ADAPTER 1-1/4" NPTF FEM x 1" NPTF
16	1	300-32	90 DEG STREET ELBOW - 1/2"
17	1	14438P00	MODIFIED 90 DEG ELBOW (300-179)
18	1	520-118	1-1/4" DIA HYDRAULIC HOSE x 118"
19	1	300-97	90 DEG FEM ELBOW - 1-1/4" NPTF
20	1	520-100	1-1/4" DIA HYDRAULIC HOSE x 100"
21	1	400-6	1-1/4" COUPLER
22	1	4901P00	COUPLER 1-7/8" x 2" HEX
23	1	4899P00	COUPLER UNION
24	1	5350P03	FEMALE CAP

**11063A00
BACKHOE CONTROLS
PRESSURE & TANK SUPPLY LINES**



11063A00
 BACKHOE CONTROLS - PRESSURE & TANK SUPPLY LINES
 (PILOT CONTROL VALVES)

ITEM	QTY.	PART NO.	DESCRIPTION
1	5	506-48	3/8" DIA HYDRAULIC HOSE x 48"
2	1	300-192	3/8" TUBE TEE SWIVEL OUTLET
3	1	300-126	3/8" TUBE CAP - 37 DEG
4	2	300-186	MALE TEE 3/8" TUBE x 1/4" NPTF
5	REF	8475P00	90 DEG STREET ELBOW - 1/2" NPT (1)
6	REF	302-193	S-10 SELECTOR VALVE W\SPRING (1)
7	REF	70-19	SPRING
8	1	300-48	1/2" HEX NIPPLE
9	1	300-35	90 DEG FEM SWIVEL 3/4"-16 ORB x 1/2"
10	REF	300-10	STRAIGHT SWIVEL 1/2" (1)
11	3	506-24	3/8" DIA HYDRAULIC HOSE x 24"
12	REF	10981P00	MANIFOLD - CONTROL VALVE (1)
13	4	300-121	MALE ADAPTER 3/8" TUBE x 1/4" NPTF
14	6	300-41	TUBE CONNECTOR 9/16"-18 ORB x 3/8" TUBE
15	REF	302-188	JOYSTICK CONTROL VALVE (2)
16	2	300-149	90 DEG SWIVEL ELBOW - 3/8" TUBE
17	REF	302-189	FOOT CONTROL VALVE (2)
18	2	300-42	90 DEG ELBOW 9/16-18 ORB x 3/8" TUBE

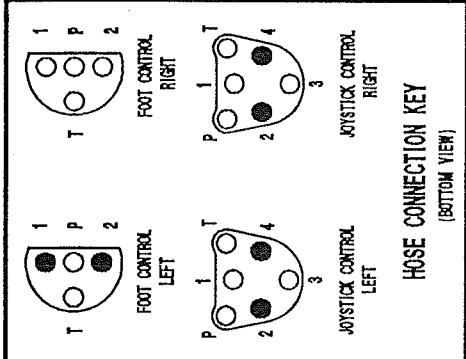
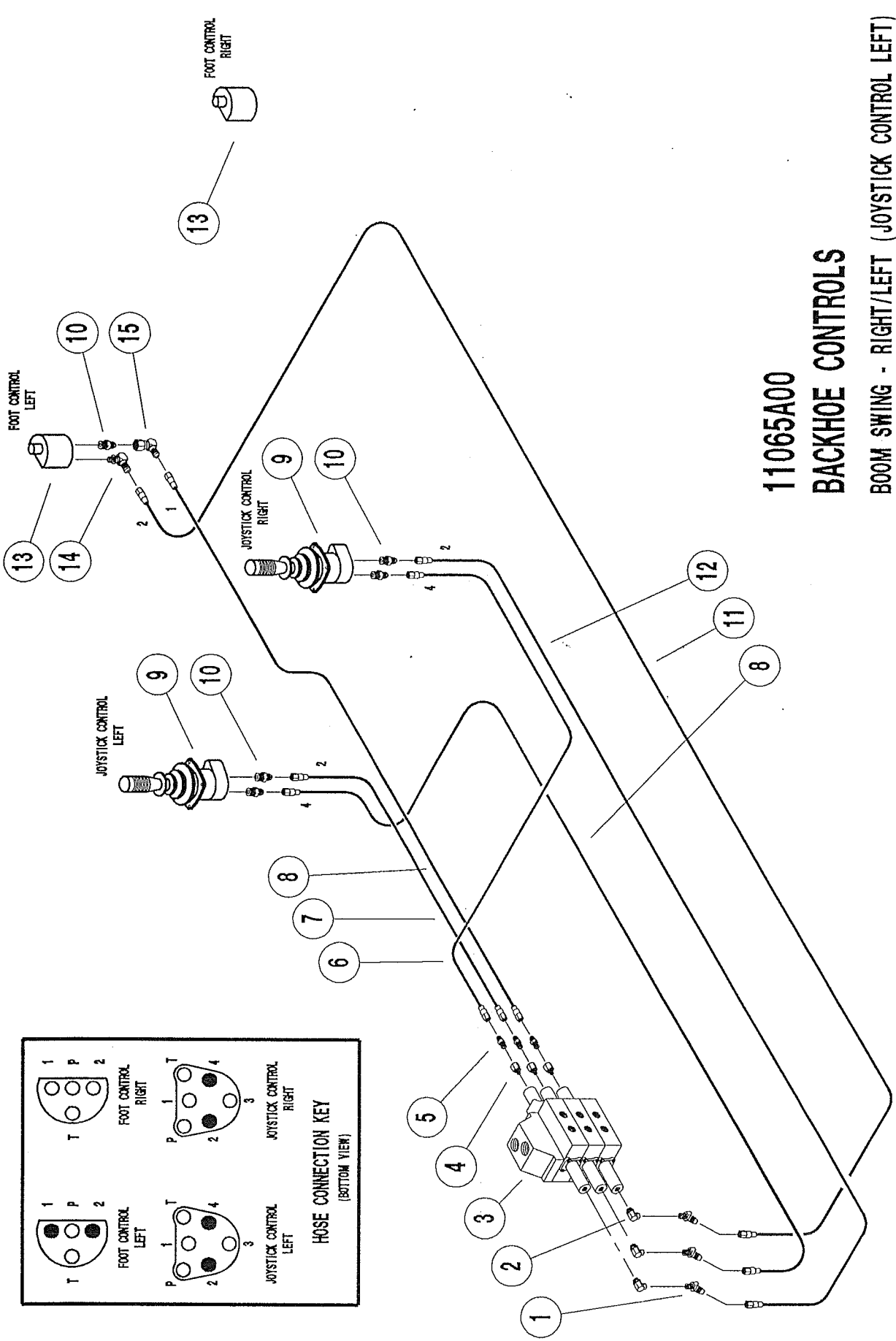


**11064A00
BACKHOE CONTROLS**

- BOOM - EXTEND/RETRACT (JOYSTICK CONTROL LEFT)
- BUCKET/HOIST - UP/DOWN (JOYSTICK CONTROL RIGHT)
- BOOM ROTATION - CW/CCW (FOOT CONTROL RIGHT)

11064A00
BACKHOE CONTROLS - (LEFT VALVE BANK)

<u>ITEM</u>	<u>QTY.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	REF	302-188	JOYSTICK CONTROL VALVE (2)
2	5	300-41	TUBE CONNECTOR 9/16"-18' ORB x 3/8" TUBE
3	2	506-54	3/8" DIA HYDRAULIC HOSE x 54"
4	1	506-42	3/8" DIA HYDRAULIC HOSE x 42"
5	1	506-24	3/8" DIA HYDRAULIC HOSE x 24"
6	3	300-121	MALE ADAPTER 3/8" TUBE x 1/4" NPTF
7	3	300-187	ADAPTER 7/16"-20 ORB x 1/4" NPTF
8	REF	302-186	4 SPOOL VALVE LEFT (1)
9	3	300-106	90 DEG MALE ELBOW 3/8" TUBE x 3/8" NPTF
10	3	300-212	45 DEG ELBOW 3/8" TUBE x 3/8" NPTF
11	REF	302-189	FOOT CONTROL VALVE (2)
12	1	300-42	90 DEG ELBOW 9/16-18 ORB x 3/8" TUBE
13	1	300-149	90 DEG SWIVEL ELBOW - 3/8" TUBE
14	1	506-48	3/8" DIA HYDRAULIC HOSE x 48"
15	1	506-60	3/8" DIA HYDRAULIC HOSE x 60"



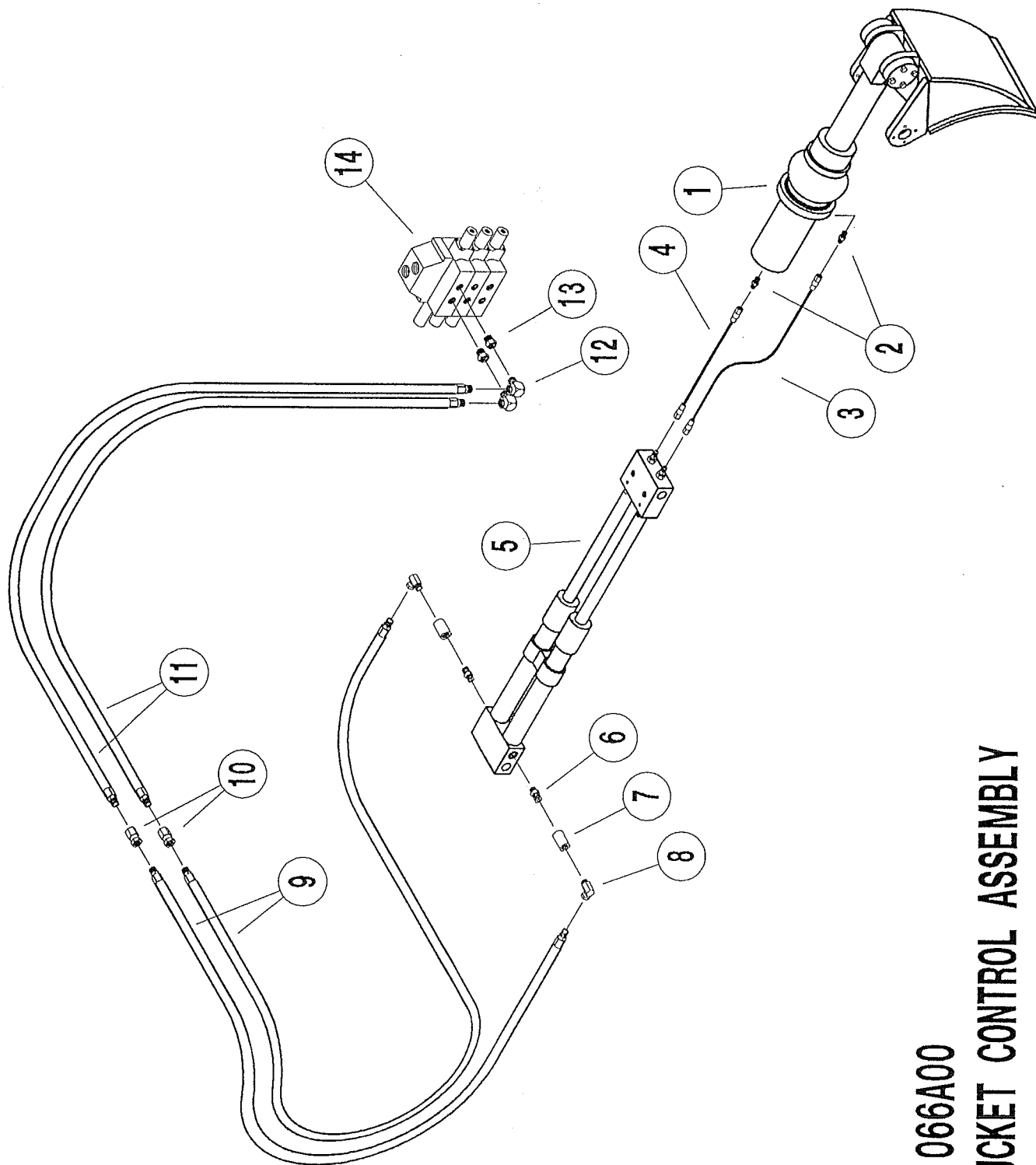
11065A00

BACKHOE CONTROLS

- BOOM SWING - RIGHT/LEFT (JOYSTICK CONTROL LEFT)
- BUCKET - EXTEND/RETRACT (JOYSTICK CONTROL RIGHT)
- FRAME - EXTEND/RETRACT (FOOT CONTROL LEFT)

11065A00
BACKHOE CONTROLS - (RIGHT VALVE BANK)

ITEM	QTY.	PART NO.	DESCRIPTION
1	3	300-212	45 DEG ELBOW 3/8" TUBE x 3/8" NPTF
2	3	300-106	90 DEG MALE ELBOW 3/8" TUBE x 3/8" NPTF
3	REF	302-187	3 SPOOL VALVE RIGHT (1)
4	3	300-187	ADAPTER 7/16"-20 ORB x 1/4" NPTF
5	3	300-121	MALE ADAPTER 3/8" TUBE x 1/4" NPTF
6	1	506-36	3/8" DIA HYDRAULIC HOSE x 36"
7	1	506-24	3/8" DIA HYDRAULIC HOSE x 24"
8	2	506-48	3/8" DIA HYDRAULIC HOSE x 48"
9	REF	302-188	JOY STICK CONTROL VALVE (2)
10	5	300-41	TUBE CONNECTOR 9/16"-18 ORB x 3/8" TUBE
11	1	506-60	3/8" DIA HYDRAULIC HOSE x 60"
12	1	506-54	3/8" DIA HYDRAULIC HOSE x 54"
13	REF	302-189	FOOT CONTROL VALVE (2)
14	1	300-42	90 DEG ELBOW 9/16-18 ORB x 3/8" TUBE
15	1	300-149	90 DEG SWIVEL ELBOW - 3/8" TUBE

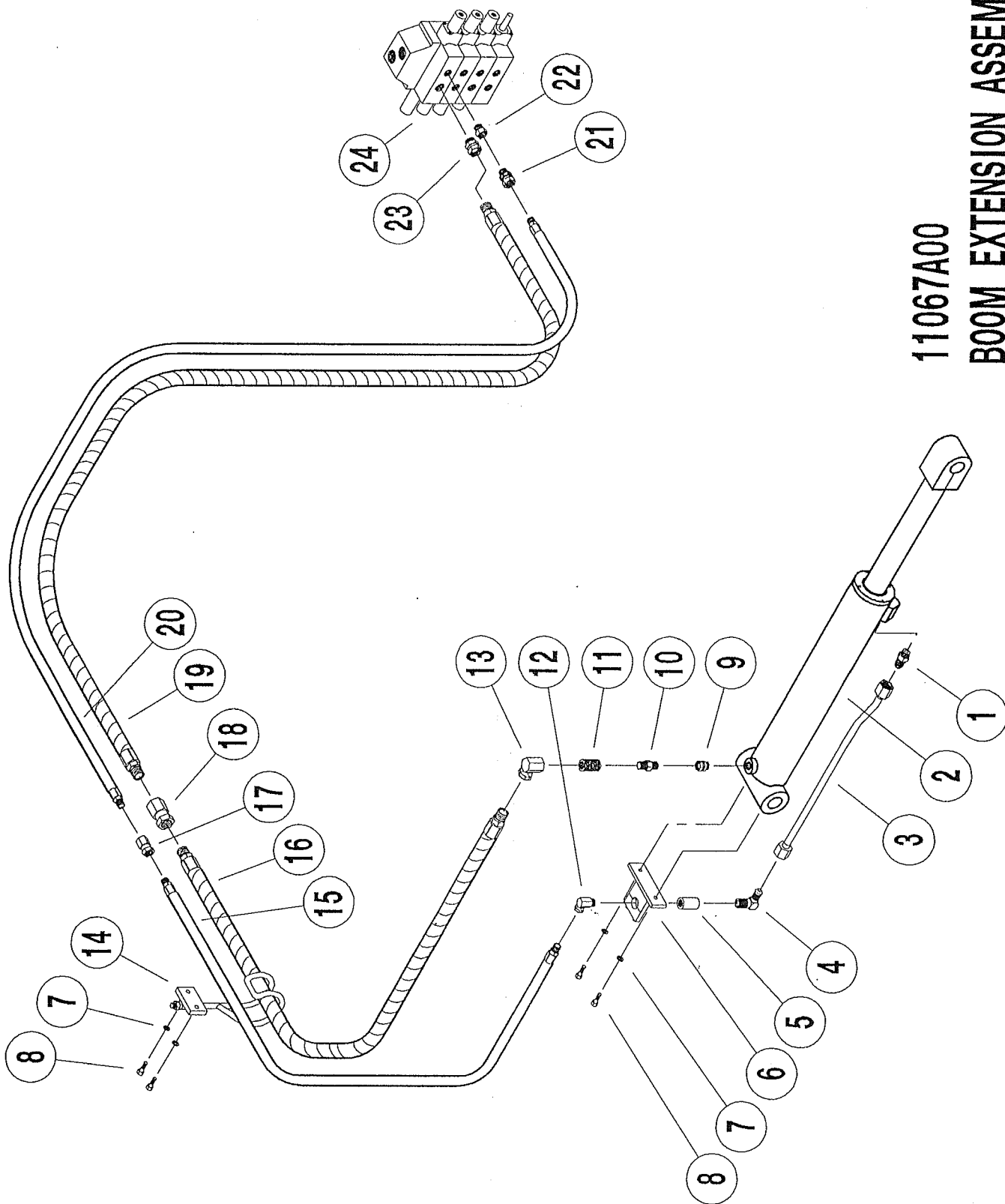


11066A00
BUCKET CONTROL ASSEMBLY

11066A00
BUCKET CONTROL ASSEMBLY

<u>ITEM</u>	<u>QTY.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	REF	11060A00	BUCKET CYLINDER ASSEMBLY (1)
2	2	300-121	MALE ADAPTER 3/8" TUBE x 1/4" NPTF
3	1	506-30	3/8" DIA HYDRAULIC HOSE x 30"
4	1	506-24	3/8" DIA HYDRAULIC HOSE x 24"
5	REF	8990A01	OIL SUPPLY LINE (1)
6	2	300-206	MALE ADAPTER 3/4"-16 ORB x 1/2" NPT
7	2	400-3	1/2" COUPLER
8	2	300-18	90 DEG SWIV 1/2" NPTF MALE x 1/2" NPSM
9	2	508-72	1/2" DIA HYDRAULIC HOSE x 72"
10	2	300-59	STRAIGHT SWIVEL 1/2" NPTF x 1/2" NPSM
11	2	508-102	1/2" DIA HYDRAULIC HOSE x 102"
12	2	300-32	90 DEG STREET ELBOW 1/2"
13	2	14440P00	PLUG 7/8"-14 ORB TAPPED 1/2" NPT
14	REF	302-187	3 SPOOL VALVE RIGHT (1)

11067A00
BOOM EXTENSION ASSEMBLY

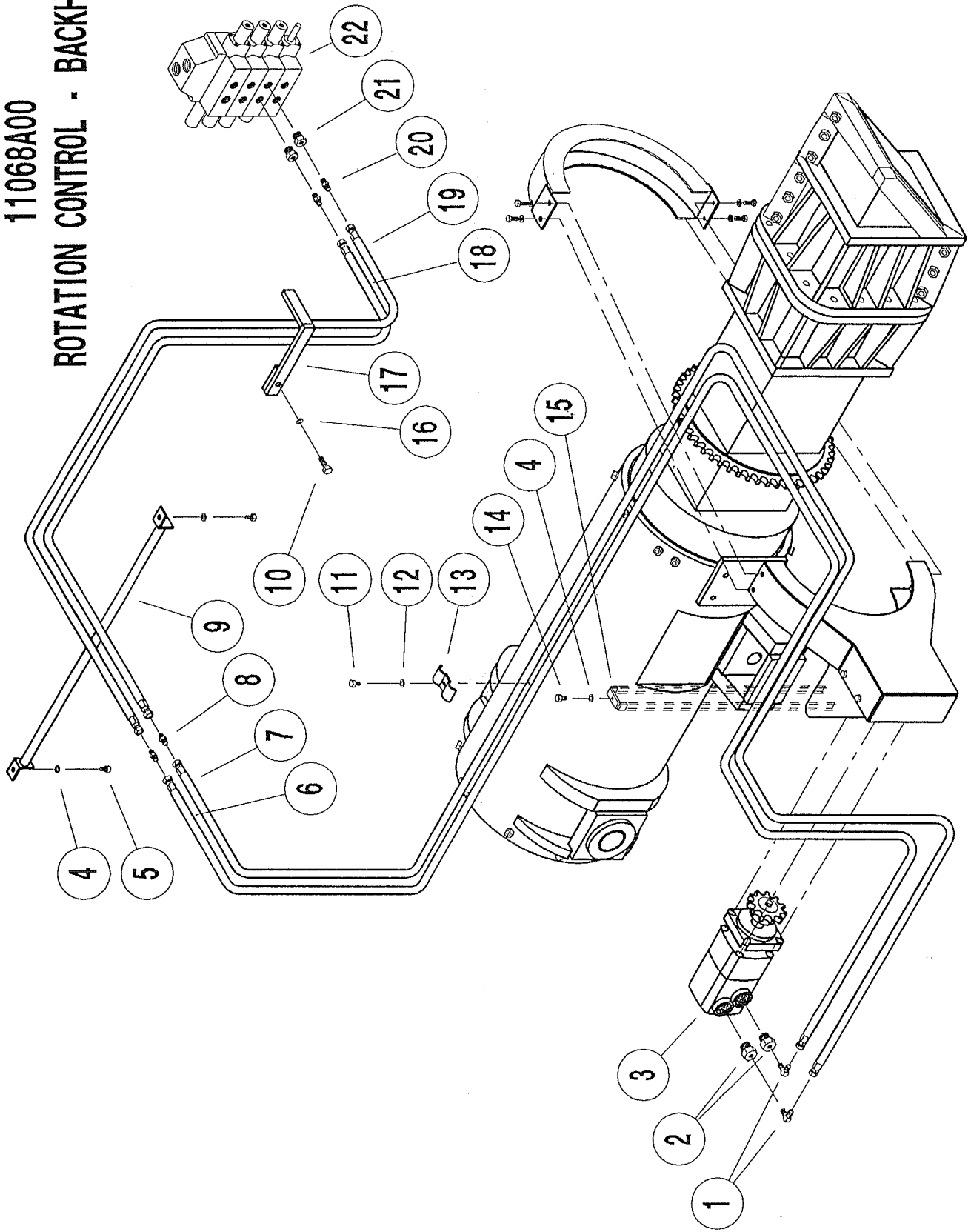


11067A00
BOOM EXTENSION ASSEMBLY

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	300-200	CONNECTOR 3/4"-16 ORB x 5/8" TUBE
2	REF	21001A00	BOOM EXTENSION CYLINDER
3	1	9090A00	RETRACTION TUBE ASSEMBLY
4	1	300-143	90 DEG ELBOW 5/8" TUBE x 1/2" NPTF
5	1	400-3	1/2" COUPLER
6	1	9169A00	COUPLER CLAMP ASSEMBLY
7	4	45-6	3/8" LOCKWASHER
8	4	1-6-4	3/8" BOLT x 1"
9	1	300-220	STRAIGHT SWIV 3/4"-16 ORB x 1/2" NPT
10	1	30-48	HEX NIPPLE 1/2"
11	1	401-3	FACE BUSHING 3/4" x 1/2"
12	1	300-100	90 DEG SWIVEL 3/4" NPTF x 3/4" NPSM
13	1	300-18	90 DEG SWIV 1/2" NPTF MALE x 1/2" NPSM
14	1	11079A00	HOSE HARNESS 1/2" ROD x 26"
15	1	508-72	1/2" DIA HYDRAULIC HOSE x 72"
16	1	512-78	3/4" DIA HYDRAULIC HOSE x 78"
17	1	300-59	STRAIGHT SWIVEL 1/2" NPTF x 1/2" NPSM
18	1	300-207	STRAIGHT SWIVEL 3/4" NPTF x 3/4" NPSM
19	1	512-108	3/4" DIA HYDRAULIC HOSE x 108"
20	1	508-120	1/2" DIA HYDRAULIC HOSE x 120"
21	1	300-10	STRAIGHT SWIVEL 1/2" NPTF x 1/2" NPSM
22	1	14441P00	PLUG 7/8"-14 ORB TAPPED 1/2" NPT
23	1	300-137	STRT SWIV 1-1/16"-12 ORB x 3/4" NPSM
24	REF	302-186	4 SPOOL VALVE LEFT (1)

11068A00

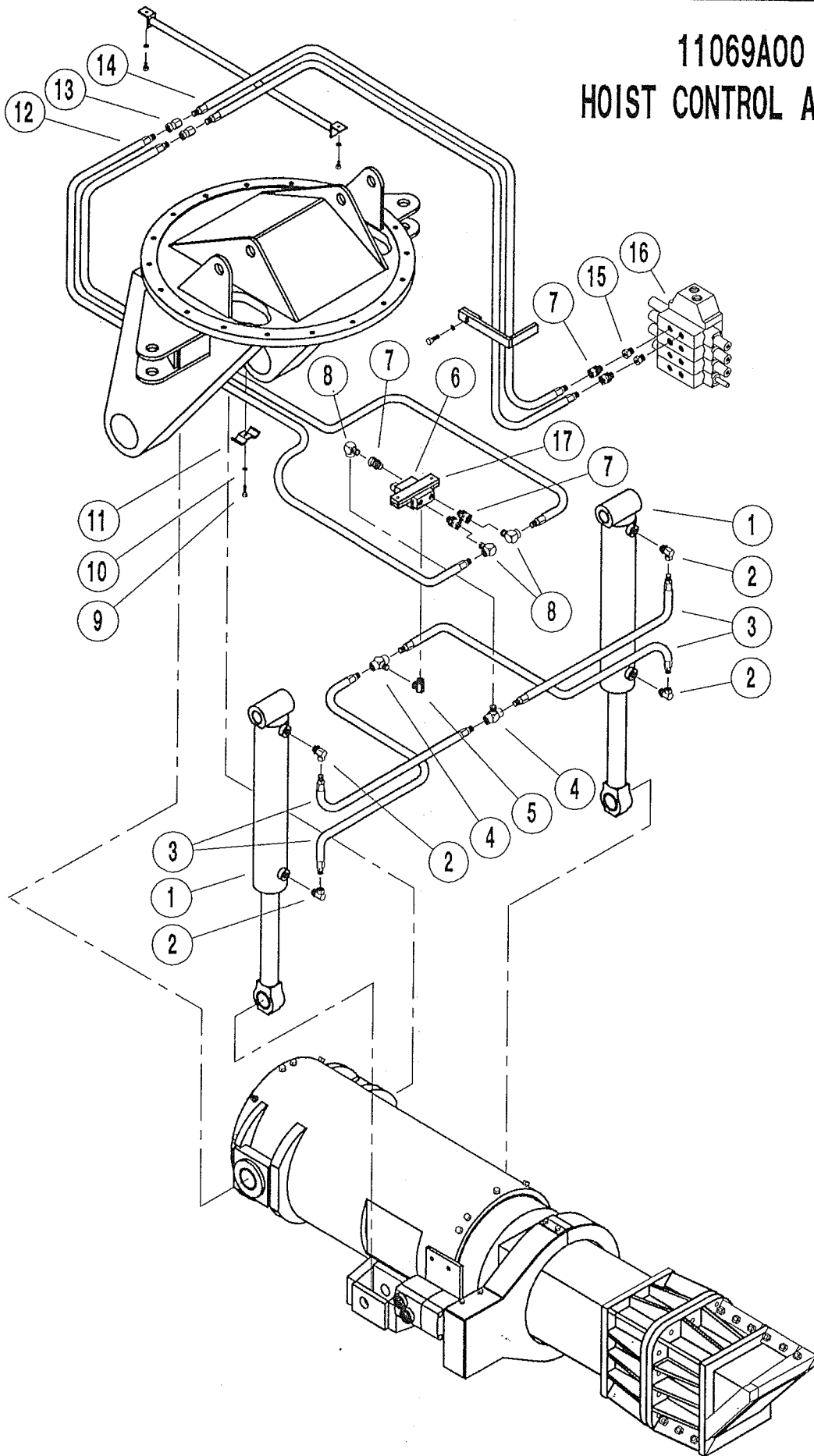
ROTATION CONTROL - BACKHOE



11068A00
ROTATION CONTROL - BACKHOE

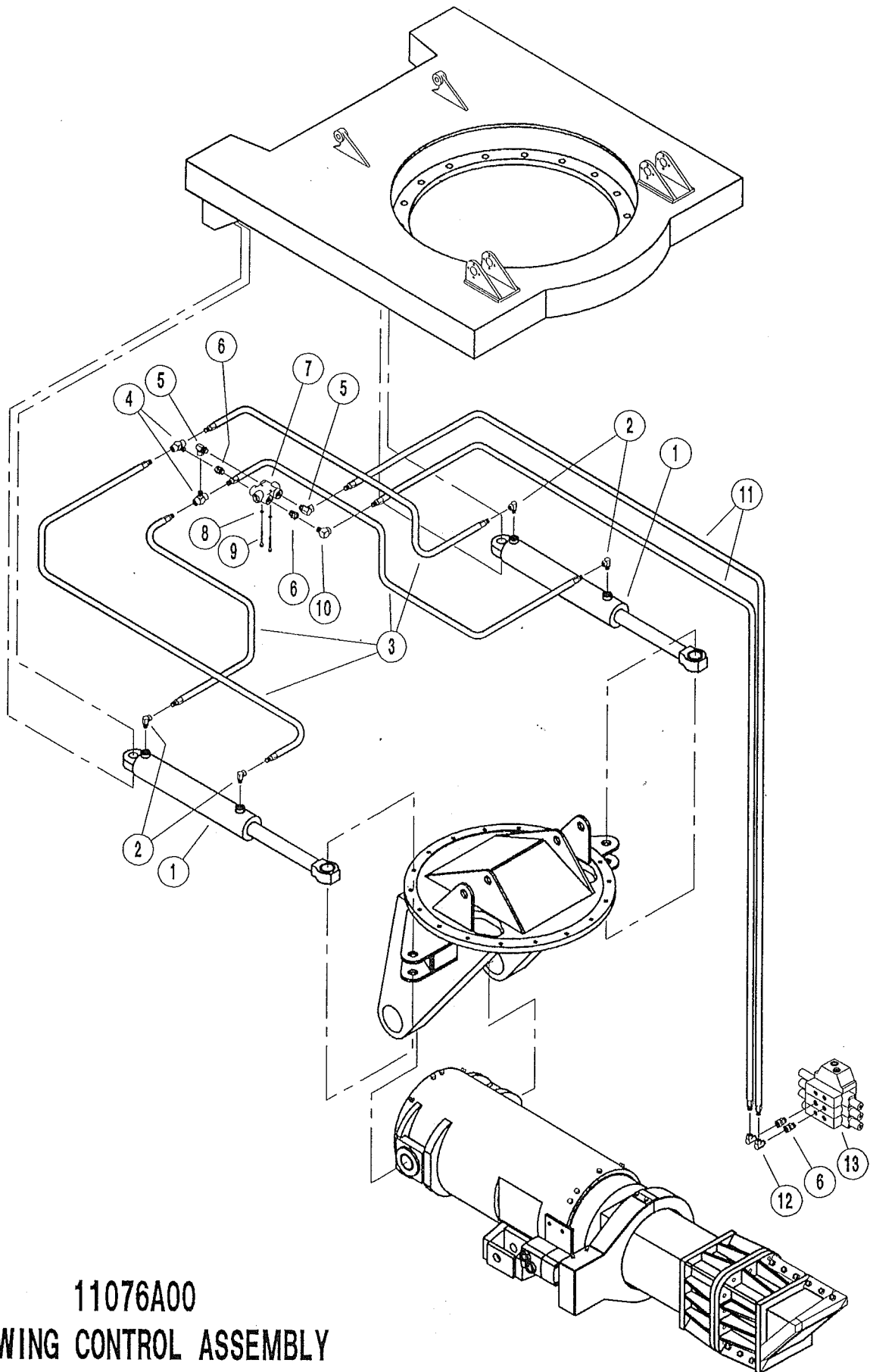
ITEM	QTY.	PART NO.	DESCRIPTION
1	2	300-125	90 DEG ELBOW 3/8" TUBE x 1/4" NPTF
2	2	8467P00	PLUG 1-1/16" ORB TAPPED 1/4" NPT (300-145)
3	REF	304-134	24 C.I.D. MOTOR
4	2	45-6	LOCKWASHER 3/8"
5	2	1-6-2	BOLT 3/8"-16UNC x 1/2"
6	1	506-76	3/8" DIA HYDRAULIC HOSE x 76"
7	1	506-54	3/8" DIA HYDRAULIC HOSE x 54"
8	2	300-129	MALE UNION 3/8" TUBE
9	1	11043A00	MOUNTING BRACKET/HARNESS
10	1	1-8-5	BOLT 1/2"-13UNC x 1-1/4"
11	1	1-4-3	BOLT 1/4"-20UNC x 3/4"
12	1	45-4	LOCKWASHER 1/4"
13	1	2269P01	MOUNTING BRACKET
14	1	1-6-5	3/8" UNC BOLT x 1-1/4"
15	1	11048P00	MOUNTING BRACKET 3/8" HOSE
16	1	45-8	LOCKWASHER 1/2"
17	1	11044A00	HOSE BRACKET
18	1	506-96	3/8" DIA HYDRAULIC HOSE x 96"
19	1	506-108	3/8" DIA HYDRAULIC HOSE x 108"
20	2	300-121	MALE ADAPTER 3/8" TUBE x 1/4" NPTF
21	2	5303P00	PLUG 7/8"-14 ORB TAPPED 1/4" NPT (300-60)
22	REF	302-186	4 SPOOL VALVE LEFT (1)

11069A00
HOIST CONTROL ASSEMBLY



11069A00
HOIST CONTROL - BACKHOE

<u>ITEM</u>	<u>QTY.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	REF	21002A00	HOIST CYLINDER ASSEMBLY (2)
2	4	300-35	90 DEG FEM SWIV 3/4"-16 ORB x 1/2" NPT
3	4	508-20	1/2" DIA HYDRAULIC HOSE x 20"
4	2	300-168	PIPE TEE 1/2"
5	1	300-18	90 DEG FEM SWIV 1/2" NPTF x 1/2" NPSM
6	1	302-174	COUNTER BALANCE VALVE
7	5	300-10	STRT FEM SWIV 1/2" NPTF x 1/2" NPSM
8	3	300-32	90 DEG STREET ELBOW 1/2"
9	1	1-4-3	1/4" UNC BOLT x 3/4"
10	1	45-4	LOCKWASHER 1/4"
11	1	2269P01	MOUNTING BRACKET
12	2	508-72	1/2" DIA HYDRAULIC HOSE x 72"
13	2	300-59	STRT FEM SWIV 1/2" NPTF x 1/2" NPSM
14	2	508-60	1/2" DIA HYDRAULIC HOSE x 60"
15	2	14440P00	PLUG 7/8"-14 ORB TAPPED 1/2" NPT
16	REF	302-186	4 SPOOL VALVE LEFT (1)
17	1	9172A00	HOIST VALVE CLAMP ASSEMBLY



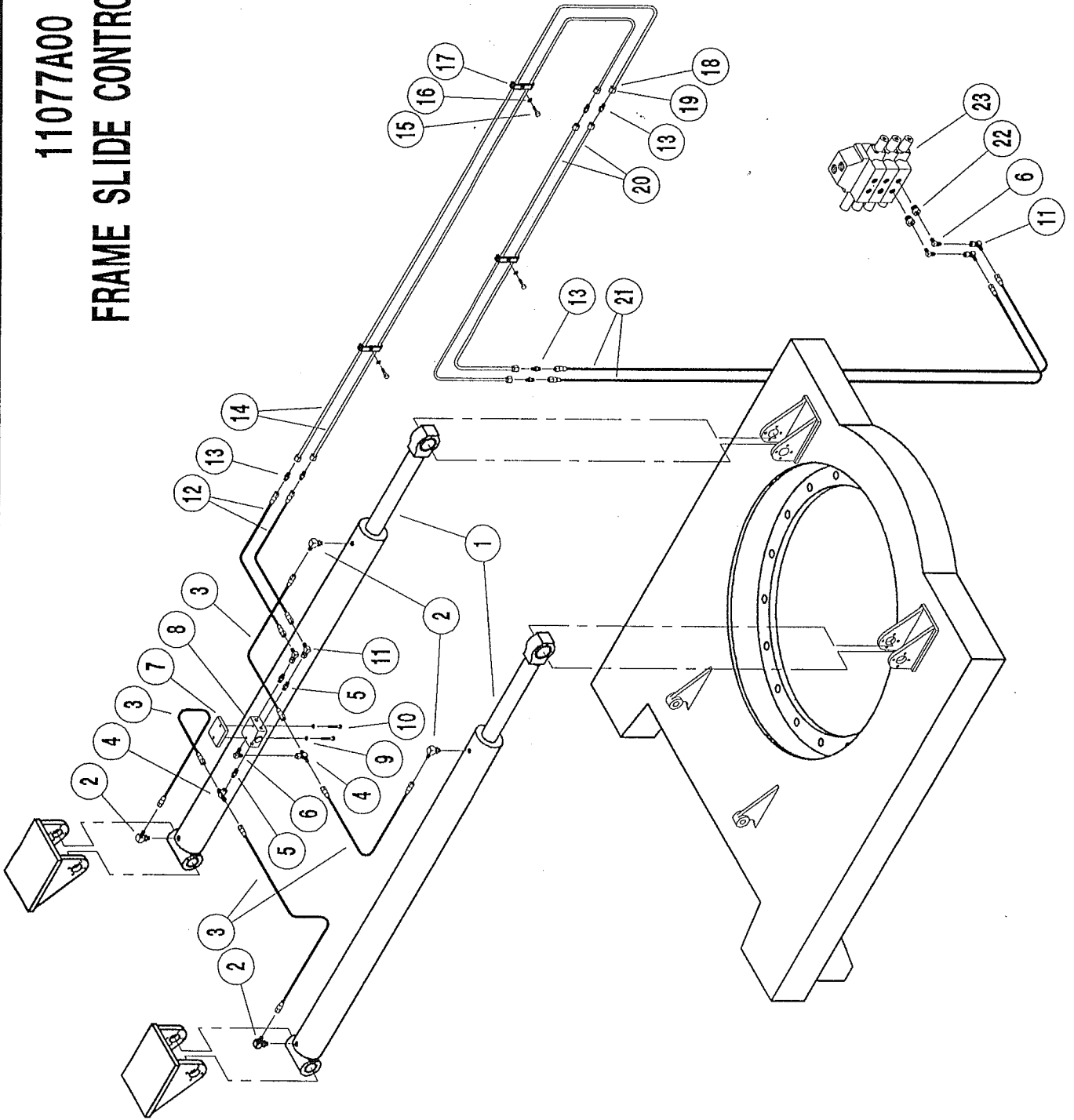
11076A00
SWING CONTROL ASSEMBLY

11076A00
SWING CONTROL - BACKHOE

<u>ITEM</u>	<u>QTY.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	REF	21003A00	SWING CYLINDER ASSEMBLY (2)
2	4	300-35	90 DEG FEM SWIV 3/4"-16 ORB x 1/2" NPT
3	4	508-30	1/2" DIA HYDRAULIC HOSE x 30"
4	2	300-168	PIPE TEE 1/2"
5	2	300-69	FEM SWIV ADAPTER 7/8"-14 ORB x 1/2" NPSM
6	4	300-94	STRT FEM SWIV 7/8"-14 ORB x 1/2" NPSM
7	1	302-171	LOCK VALVE
8	2	45-5	LOCKWASHER 5/16"
9	2	1-5-5	BOLT 5/16"-18UNC x 2-1/4"
10	1	300-32	90 DEG STREET ELBOW 1/2"
11	2	508-108	1/2" DIA HYDRAULIC HOSE x 108"
12	2	300-18	90 DEG FEM SWIV 1/2" NPTF x 1/2" NPSM
13	REF	302-187	3 SPOOL VALVE RIGHT (1)

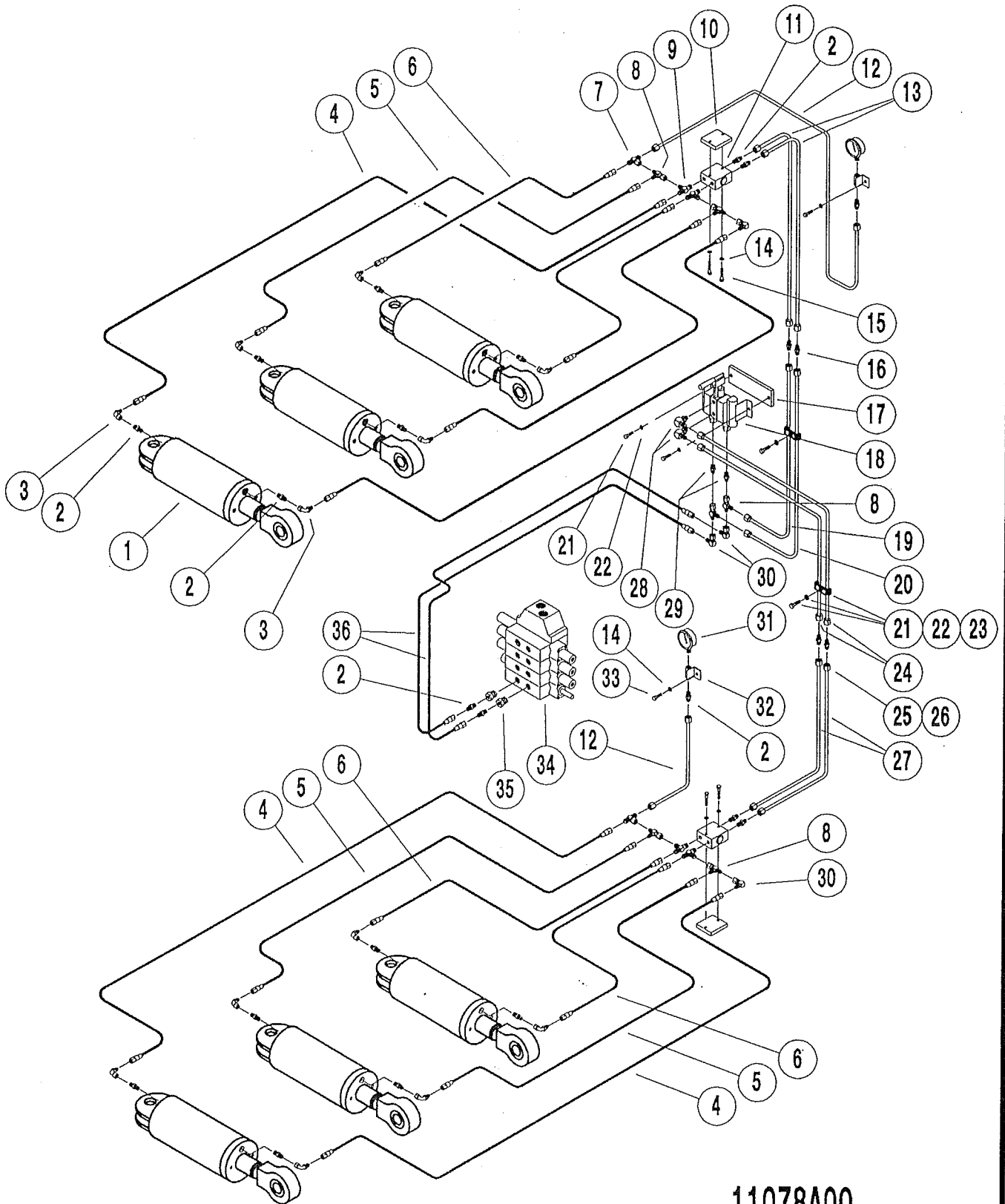
11077A00

FRAME SLIDE CONTROL ASS'Y



11077A00
 FRAME SLIDE CONTROL - BACKHOE

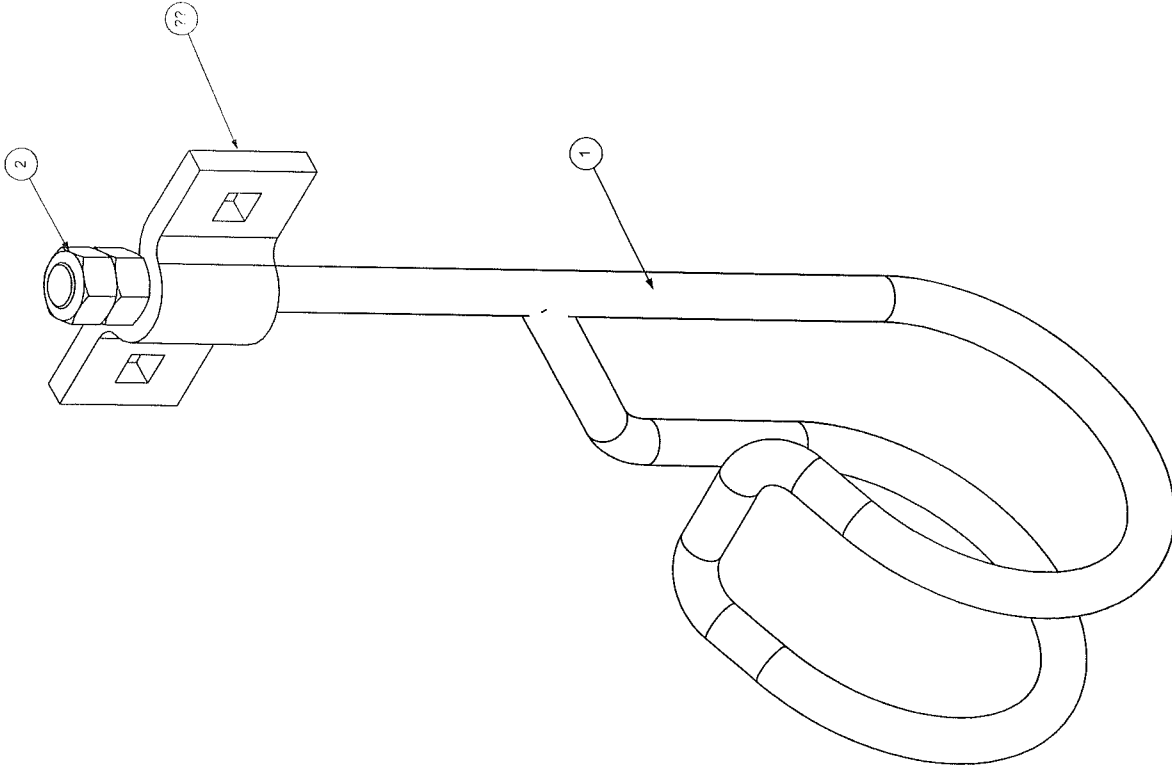
ITEM	QTY.	PART NO.	DESCRIPTION
1	REF	21004A00	FRAME SLIDE CYLINDER ASSEMBLY
2	4	300-42	90 DEG ELBOW 9/16"-18 ORB x 3/8" TUBE
3	4	506-36	3/8" DIA HYDRAULIC HOSE x 36"
4	2	300-131	TUBE TEE 3/8" WITH ONE SWIVEL OUTLET
5	3	300-121	MALE ADAPTER 3/8" TUBE x 1/4" NPTF
6	3	300-125	90 DEG ELBOW 3/8" TUBE x 1/4" NPTF
7	1	7192P00	CHECK VALVE MOUNTING PLATE
8	1	302-105	SINGLE PILOT OPERATED CHECK VALVE
9	2	45-5	LOCKWASHER 5/16"
10	2	1-5-7	BOLT 5/16"-18UNC x 1-3/4"
11	4	300-149	90 DEG SWIVEL ELBOW 3/8" TUBE
12	2	506-32	3/8" DIA HYDRAULIC HOSE x 32"
13	6	300-129	MALE UNION 3/8" TUBE
14	2	506-66	3/8" DIA HYDRAULIC HOSE x 66"
15	3	3024P00	TUBE MOUNTING BRACKET
16	3	1-6-5	BOLT 3/8"-16UNC x 1-1/4"
17	3	45-6	LOCKWASHER 3/8"
18	8	300-127	3/8" TUBE SLEEVE
19	8	300-128	3/8" TUBE NUT
20	2	506-54	3/8" DIA HYDRAULIC HOSE x 54"
21	2	506-62	3/8" DIA HYDRAULIC HOSE x 62"
22	2	5303P00	PLUG 7/8"-14 ORB TAPPED 1/4" NPT (300-60)
23	REF	302-187	3 SPOOL VALVE RIGHT (1)



11078A00
 STEERING CYLINDER CONTROL

11078A00
STEERING CYLINDER CONTROL - BACKHOE

ITEM	QTY.	PART NO.	DESCRIPTION
1	REF	11700A00	STEERING CYLINDER ASSEMBLY (6)
2	18	300-121	MALE ADAPTER 3/8" TUBE x 1/4" NPTF
3	12	300-123	90 DEG ADAPTER 3/8" TUBE x 1/4" NPTF
4	4	506-34	3/8" DIA HYDRAULIC HOSE x 34"
5	4	506-30	3/8" DIA HYDRAULIC HOSE x 30"
6	4	506-26	3/8" DIA HYDRAULIC HOSE x 26"
7	2	300-131	TUBE TEE WITH ONE SWIVEL OUTLET 3/8"
8	6	300-192	SWIVEL OUTLET 3/8" TUBE TEE
9	4	300-132	MALE RUN TEE 3/8" TUBE x 1/4" NPTF
10	2	7192P00	CHECK VALVE MOUNTING PLATE
11	2	302-104	SINGLE PILOT OPERATED CHECK VALVE
12	2	110-100	3/8" STEEL HYDRAULIC TUBE x 64"
13	2	110-100	3/8" STEEL HYDRAULIC TUBE x 40"
14	6	45-5	5/16" LOCKWASHER
15	4	1-5-7	BOLT 5/16"-18UNC x 1-3/4"
16	4	300-129	MALE UNION 3/8" TUBE
17	1	14442P00	MOUNTING PLATE
18	1	302-118	SELECTOR VALVE
19	1	110-100	3/8" STEEL HYDRAULIC TUBE x 54"
20	1	110-100	3/8" STEEL HYDRAULIC TUBE x 60"
21	2	1-6-4	BOLT 3/8"-16UNC x 1"
22	4	45-6	3/8" LOCKWASHER
23	2	3024P00	TUBE MOUNTING BRACKET
24	2	110-100	3/8" STEEL HYDRAULIC TUBE x 46"
25	20	300-127	3/8" TUBE SLEEVE
26	20	300-128	3/8" TUBE NUT
27	2	110-100	3/8" STEEL HYDRAULIC TUBE x 68"
28	2	300-42	90 DEG ELBOW 9/16"-18 ORB x 3/8" TUBE
29	2	300-41	CONNECTOR 9/16"-18 ORB x 3/8" TUBE
30	4	300-149	90 DEG SWIVEL ELBOW 3/8" TUBE
31	2	301-100	GAUGE - 5,000 PSI
32	2	8391P00	GAUGE MOUNTING BRACKET
33	2	1-5-3	BOLT 5/16"-18UNC x 3/4"
34	REF	302-186	4 SPOOL VALVE LEFT (1)
35	2	5303P00	PLUG 7/8"-14 TAPPED 1/4" NPT
36	2	506-66	3/8" DIA HYDRAULIC HOSE x 66"



REV	C.O.	DESCRIPTION	DATE
A	796	RELEASED TO PROD	4-18-03
		TAT	

TOLERANCES UNLESS NOTED
 DECIMAL XX +/- .02
 DECIMAL XXX +/- .005
 ANGLES +/- 1 DEG
 ROUNDS UNLESS NOTED
 CHAMFER ALL SHARPS
 EDGES 1/32 X 45 DEG
 ANGLES +/- 30'

SCALE: 1:1
 DRAWN: [blank]
 SHEET 1 OF 1
 DATE: 3-26-03

AKKERMAN INC
 BROWNSDALE MN 55918 USA
 TEL. (507) 567 2281

TITLE: HOOK ASSEMBLY
 MATERIAL: [blank]
 DWG NO: 11079A00
 REV: A

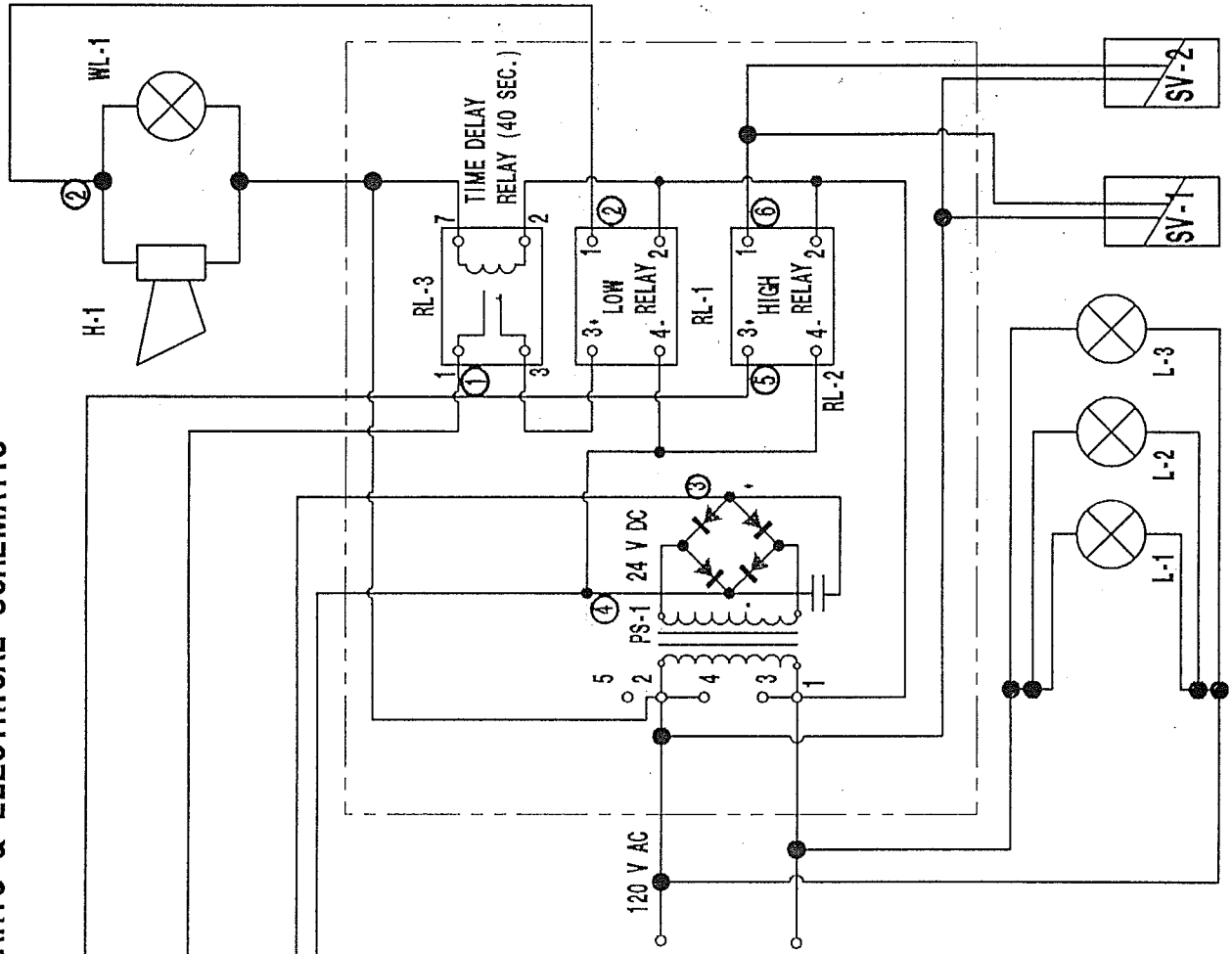
Item No.	Qty	Part Number	Description	Material
1	1	11045P	HOOK, HOSE HARNESS	1/2 DIA. HRS ROD X 45
2	2	P0003-008	1/2-13 HEX NUT	
3	1	P0079-003	1/2 D-RING STANDARD	11200-00800

(22220A00) BACKHOE EXCAVATOR SHIELD WITH QUAD STEERING AND OPTIONAL CIRCUITS

SYMBOL	PART NO.	QTY	DESCRIPTION	VENDER
C-1,2	21003A00	2	Swing Clinder	Akkerman Mfg.
C-3	21001A00	1	Boom Extension Cylinder	Akkerman Mfg.
C-4	21000A00	1	Bucket Cylinder	Akkerman Mfg.
C-5, 6	21002A00	2	Hoist Cylinder	Akkerman Mfg.
C-7, 8	21004A00	2	Frame Advance Cylinders	Akkerman Mfg.
C-9-12	12701A00	4	Steering Cylinder(3" Stroke)(6.38 Bore)	Akkerman Mfg.
C13-	2617A00	*	Jacking Can Cylinders (30" Stroke)(2.5 Bore)	Akkerman Mfg.
C13-	11720A00	*	Jacking Can Cylinders (38" Stroke)(2.5 Bore)	Akkerman Mfg.
C13-	307-122	*	Jacking Can Cylinders (54" Stroke)(4.0 Bore)	Victor Fluid
C13-22	307-111	10	Jacking Can Cylinders (18" Stroke)(5.0 Bore)	Victor Fluid
C26-32	13435A00	8	Closed Shelf Cylinders	Akkerman Mfg.
CB-1	302-174	1	Counter Balance Valve (CBEG-LJN-ZTX)	Applied Fluid
CC-1	102-102	1	Remote Valve Control Head (08-5900-01)	Component Tech.
CC-2	102-103	1	Cable (Wesson) (41.5-UNV-48)	Component Tech.
CC-3	102-104	1	Cable Bonnet Kit (01-5000-13)	Component Tech.
CK-1-4	302-100	4	Check Valve (CMM-30S) Deltrol	Air Hydraulics
CK-5	302-224	1	Check Valve (CV20)(092376)	Victor Fluid
CM-1	10960A01	1	Control Module Weldment	Akkerman Mfg.
DPC-1	302-171	1	Double Pilot Operated Check (LO-10-D)	Mid-America
DPC2-14	302-104	13	Double Pilot Operated Ccheck (LOA-25D)	Mid-America
DSL-1	8990A00	1	Double Supply Line Ass'y	Akkerman Mfg.
E 1,2	302-121	2	Filter Element (Stauff)(SE160F20B)	Oil Air Prod.
F 1,2	4500A03	2	60 Gallon Filter Ass'y	Akkerman Mfg.
F-3	309-154	1	Filter Housing (15CN220BM2504M4M)	Mid-America
E-3	309-128	1	Filter Element (20 Micron)(930370)	Mid-America
FC-1	302-111	1	3/4 Flow Control (Brand)(FC51-3/4)	Power Systems
FC-2	302-112	1	1 1/4" Flow Control (Brand)(FC51-1 1/4)	Power Systems
FD-1	303-207	1	Rotary Flow Divider (FD50-22-22-07/07)	Component Tech.
G 1-4	301-100	4	5,000 PSI Guage (CF-1P-350A)	Component Tech.
I 1,2	301-108	2	Filter Indicator (HP50)	Power Systems
I-3	309-157	1	Mechanical Indicator (929604)	Mid-America
M-1	304-134	1	4000 Charlyn MOTOR (109-1106-004)(24 CID)	Power Systems
M-2,3	304-121	1	MAE Ross Motor (29 CID)(MAE 34010-A1)	Nott. Company
MB-1		1	Tank Manifold Block	Akkerman Mfg.
MB-2		1	Conveyor Manifold Block	Akkerman Mfg.
PSV-1	302-193	1	Selector Valve (S-10-SRG-RET-W/CLEVIS)	Component Tech.
PJS-1,2	302-188	2	Pilot Joystick (Rexroth)(4TH6T06-10/5M)	Component Tech.
PJS-3,4	302-203	2	Pilot Joystick (Comercial) AD Line	Component Tech.
PFC-1,2	302-189	2	Pilot Foot Control (Rexroth)(2TH7R06-10/5M)	Component Tech.
Q 1-4	5349A00	2	1 1/4" AKKERMAN COUPLER (1 SET)	Akkerman Mfg.
Q-5	100-4	1	1/2" Snaptite Coupler(VHC-08-08F)	Snaptite
Q-6	100-4	1	1/2" Snaptite Nipple (VHN-08-08F)	Snaptite
Q-7	100-7	1	3/4" Snaptite Coupler(VHC-12-12F)	Snaptite
Q-8	100-7	1	3/4" Snaptite Nipple (VHC-12-12F)	Snaptite
RB-1,2	302-288	2	Compact Controls (220126)	Oil-Air
RV-1,2	302-289	2	Compact Controls (CP210-2-B-O-E-A)(25-800 PSI)	Oil-Air
RV-3-6	302-269	4	Sun Relief & block (RPEC-FCN-FAC/S)	Applied Fluid
SHV-1-8	302-209	9	Shuttle Valve (LSVI-2P-N)(Gresen)	Component Tech.
SV-1,2	302-245A	2	Solenoid Valve (DS201NA120H-C-16T)	Nott Co.
	302-245B	*	Coil Only for Above Valve (851018-120 VAC)	Nott Co.
V-1	302-186	1	4 Spool MP-18 (Rexroth)(Left Valve-Power Beyond)	Component Tech.
V-2	302-187	1	3 Spool Mp-18 (Rexroth)(Right Valve Bank)	Component Tech.
V-3	302-109	1	Conveyor Drive Valve (Brand)(DC75-04LD)	Power Systems
V-4	302-217	1	V20 5 section (Hyd. Remote)(Gresen)	Component Tech.
V-5	302-287	1	V20 8 Section (Mannual)(Gresen)	Component Tech.

* INDICATES ALL ITEMS OPTIONAL, OR REFERENCED ITEMS.

19385A00 METHANE WARNING SYSTEM MAJOR PARTS & ELECTRICAL SCHEMATIC



ITEM	QTY	PART NO.	DESCRIPTION
H-1	1	310-287	HORN 110VAC, .13A, 103DB
MD-1	1	310-283	GAS DETECTION SYSTEM 24VDC
	1	310-284	POISON RESISTANT SENSOR
	1	310-284A	POISON SENSOR CAP
RL-3	1	310-284B	TIME DELAY RELAY
PS-1	1	310-285	POWER SUPPLY 110VAC, 24VDC
RL-1,2	1	313-29	SOLID STATE RELY 24VDC, 110VAC 10A
SV-1,2	REF	302-245A	SOLENOID VALVE (DS201NA120H-C-16T) (2)
	REF	302-245B	COIL ONLY FOR ABOVE VALVE
WL-1	1	310-286	WARNING LIGHT 110VAC
	1	310-301	ENCLOSURE
	1	310-302	PANEL
L-1,2,3	3	53-9	BULB
	3	53-11	HOUSING
	3	53-12	BULB GUARD