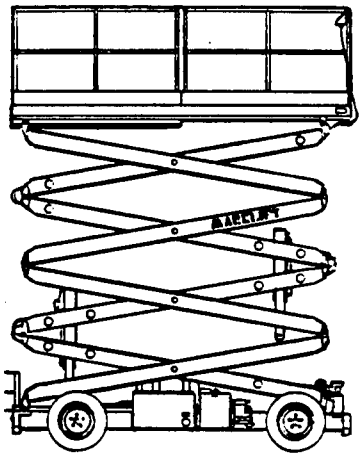
The Marklifts.®
A Product of Mark Industries

SELF-PROPELLED SCISSOR (MEDIUM SLAB MODELS)



OPERATION MAINTENANCE AND PARTS MANUAL

THIS TECHNICAL MANUAL APPLIES TO THE FOLLOWING ELECTRIC AND GAS

MODELS: 25E 25ETD 30E 36E 25GTD
30G 36G

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REV.2
10-83

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(MEDIUM SLAB MODELS)
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MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)
OPERATION MAINTENANCE AND PARTS MANUAL

The purpose of this manual is to provide the customer with operation maintenance and parts information that will enhance the reliable performance of the Marklift. Schematic and vendor information is also furnished.

WARNING: IMPROPER USAGE OF THIS MACHINE MAY RESULT IN SERIOUS PERSONNEL INJURY. TO PROTECT YOURSELF AND THE EQUIPMENT, STUDY THIS MANUAL BEFORE STARTING OPERATIONS.

The model capacity, pressure settings and serial number can be found on the ID Plate mounted on the rear of the main frame.

The serial number should be used when ordering parts. This will help our parts department in giving prompt and accurate service.

If additional information or service is needed, we urge the customer to contact his local dealer. If this is not possible, please get in touch with the Mark Industries Service Department.

All Marklifts are tested and operated to assure their proper operating condition before shipment. At this time, all necessary adjustments are made and an overall physical inspection is conducted. After the unit is delivered, some final minor adjustments and inspections must be made prior to putting the unit in service. These functions are outlined in the inspection and checkout instructions in the operation section of this manual.

MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

25E

DESCRIPTION	ENGLISH	METRIC
HEIGHT-WORKING (EXTENDED)	31'	9.45 m.
HEIGHT-PLATFORM (EXTENDED)	25'	7.62 m.
(LOWERED)	45"	114 cm.
LENGTH (OVERALL)	130"	330 cm.
WIDTH (OVERALL)	64"	162 cm.
PLATFORM-SIZE (INSIDE)	56 X 122"	132 cm X 310 cm.
PLATFORM-SAFETY RAILS (REMOVABLE)	42"	106.6 cm.
PLATFORM-TOE PLATE	6"	15.2 cm.
LIFT CAPACITY	1000#	453.6 kg.
WHEEL BASE	79.5"	210 cm.
WHEEL TRACK	56"	142 cm.
TURNING RADIUS (INSIDE)	11'	3.35 m.
DRIVE SPEED--CREEP	.5 MPH	.8 kms/hr.
DRIVE SPEED--LOW	1.5 MPH	2.4 kms/hr.
DRIVE SPEED--HIGH	3.5 MPH	5.6 kms/hr.
HIGH SPEED CUTOUT	12'	3.65 meters
LIFT/LOWER SPEED	35/29 sec.	35/29 sec.
POWER SYSTEM	24 VDC	24 VDC
BATTERY VOLTAGE	6 VDC	6 VDC
CAPACITIES-BATTERY	375 AMP/HR (4)	375 AMP/HR (4)
CAPACITIES-HYDRAULIC TANK	10 GAL.	37.8 Liters
CAPACITIES-FUEL TANK	--	--
ALTERNATOR	--	--
BATTERY CHARGER	40 AMP	40 AMP
TIRE SIZE	A70-13 (MF)	--
OUTRIGGERS/STABILIZERS	NOT REQ'D	NOT REQ'D
SHIPPING WEIGHT	4290#	1946 kg.
SHIPPING CUBE	240.63 cu.ft.	6.81 cu.m

MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

25E (1981)

DESCRIPTION	ENGLISH	METRIC
HEIGHT-WORKING (EXTENDED)	31'	9.45 m
HEIGHT-PLATFORM (EXTENDED)	25'	7.62 m
(LOWERED)	47.5"	1.21 m
LENGTH (OVERALL)	129"	3.28 m
WIDTH (OVERALL)	70.25	1.78 m
PLATFORM-SIZE (INSIDE)	64 X 122"	1.62 m X 3.09 m
PLATFORM-SAFETY RAILS (REMOVABLE)	42"	1.06 m
PLATFORM-TOE PLATE	6"	.15 m
LIFT CAPACITY	1000#	453.6 kg
WHEEL BASE	79.25	2.01 m
WHEEL TRACK	63"	1.60 m
TURNING RADIUS (INSIDE)	11'	3.35 m
DRIVE SPEED--CREEP	.5 MPH	.80 kms/hr
DRIVE SPEED--LOW	1.5 MPH	2.4 kms/hr
DRIVE SPEED--HIGH	3.5 MPH	5.6 kms/hr
HIGH SPEED CUTOUT	12'	3.65 meters
LIFT/LOWER SPEED	35/29 SEC.	35/29 sec.
POWER SYSTEM	24 VDC	24 VDC
BATTERY VOLTAGE	6 VDC	6 VDC
CAPACITIES-BATTERY	375 AMP/HR (4)	375 AMP/HR (4)
CAPACITIES-HYDRAULIC TANK	10 GAL.	37.8 Liters
CAPACITIES-FUEL TANK	--	--
ALTERNATOR	--	--
BATTERY CHARGER	40 AMP	40 AMP
TIRE SIZE	A70-13 (MF)	--
OUTRIGGERS/STABILIZERS	NOT REQ'D	NOT REQ'D
SHIPPING WEIGHT	4643#	2106.06 kg
SHIPPING CUBE	300.74 CU. FT.	8.25 cu. m

MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

25ETD

DESCRIPTION	ENGLISH	METRIC
HEIGHT-WORKING (EXTENDED)	31'5"	9.58 m
HEIGHT-PLATFORM (EXTENDED)	25'5"	7.75 m
(LOWERED)	52.5"	1.33 m
LENGTH (OVERALL)	129"	3.28 m
WIDTH (OVERALL)	70.25"	1.78 m
PLATFORM-SIZE (INSIDE)	64 X 122"	1.62 m X 3.09 m
TRAVERSES - FRONT	24"	.61 m
- REAR	48"	1.22 m
PLATFORM-SAFETY RAILS (REMOVABLE)	42"	1.06 m
PLATFORM-TOE PLATE	6"	.15 m
LIFT CAPACITY	1000#	453.59 kg
WHEEL BASE	79.25"	2.01 m
WHEEL TRACK	63"	1.60 m
TURNING RADIUS (INSIDE)	11'	3.35 m
DRIVE SPEED - CREEP	.5 MPH	.8 kms/hr
DRIVE SPEED - LOW	1.5 MPH	2.4 kms/hr
DRIVE SPEED - HIGH	3.5 MPH	5.6 kms/hr
HIGH SPEED CUTOUT	12'	3.66 m
LIFT/LOWER SPEED	35/29 sec.	35/29 sec.
POWER SYSTEM	24 VDC	24 VDC
BATTERY VOLTAGE	6 VDC	6 VDC
CAPACITIES - BATTERY	375 AMP/HR (4)	375 AMP/HR (4)
CAPACITIES - HYDRAULIC TANK	10 GAL.	37.85 Liters
CAPACITIES - FUEL TANK	--	--
ALTERNATOR	--	--
BATTERY CHARGER	40 AMP	40 AMP
TIRE SIZE	A70-13 (Monofilled)	--
OUTRIGGERS/STABILIZERS	NOT REQ'D	NOT REQ'D
SHIPPING WEIGHT	5450#	2472.12 kg
SHIPPING CUBE	492.85 cu. ft.	13.96 cu.m

MARKLIFT SELF-PROPELLED SCISSOR
(MEDIUM SLAB MODELS)
30E

DESCRIPTION	ENGLISH	METRIC
HEIGHT-WORKING (EXTENDED)	36'	10.97 meters
HEIGHT-PLATFORM (EXTENDED)	30'	9.14 meters
(LOWERED)	50"	127.0 cm.
LENGTH (OVERALL)	146"	370.8 cm.
WIDTH (OVERALL)	71"	180.3 cm.
PLATFORM-SIZE (INSIDE)	64 X 140"	162.5X355.6 cm.
PLATFORM-SAFETY RAILS (REMOVABLE)	42"	106.6 cm.
PLATFORM-TOE PLATE	6"	15.2 cm.
LIFT CAPACITY	1500#	680.3 kg.
WHEEL BASE	93"	236.2 cm.
WHEEL TRACK	63"	160 cm.
TURNING RADIUS (INSIDE)	13'	3.96 meters
DRIVE SPEED--CREEP	.5 MPH	.8 kms/hr.
DRIVE SPEED--LOW	1.5 MPH	2.4 kms/hr.
DRIVE SPEED--HIGH	2.5 MPH	4.0 kms/hr.
HIGH SPEED CUTOUT	12'	3.65 meters
LIFT/LOWER SPEED	45/35 sec.	45/35 sec.
POWER SYSTEM	24 VDC	24 VDC
BATTERY VOLTAGE	6 VDC	6 VDC
CAPACITIES-BATTERY	375 AMP/HR (4)	375 AMP/HR (4)
CAPACITIES-HYDRAULIC TANK	10 GAL	37.8 Liters
CAPACITIES-FUEL TANK	--	--
ALTERNATOR	--	--
BATTERY CHARGER	40 AMP	40 AMP
TIRE SIZE	F60-14 (MF)	--
OUTRIGGERS/STABILIZERS	NOT REQ'D	NOT REQ'D
SHIPPING WEIGHT	5640#	2558 kg.
SHIPPING CUBE	377.71 cu.ft	10.70 cu.m

MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

36E

DESCRIPTION	ENGLISH	METRIC
HEIGHT-WORKING (EXTENDED)	42'	12.8 meters
HEIGHT-PLATFORM (EXTENDED)	36'	10.97 meters
(LOWERED)	56.5"	143.5 cm.
LENGTH (OVERALL)	146"	370.8 cm.
WIDTH (OVERALL)	71"	180.3 cm.
PLATFORM-SIZE (INSIDE)	64 X 140"	162.5X355.6 cm.
PLATFORM-SAFETY RAILS (REMOVABLE)	42"	106.6 cm.
PLATFORM-TOE PLATE	6"	15.2 cm.
LIFT CAPACITY	1000#	453.6 kg.
WHEEL BASE	93"	236.2 cm.
WHEEL TRACK	63"	160.0 cm.
TURNING RADIUS (INSIDE)	13'	3.96 m.
DRIVE SPEED--CREEP	.5 MPH	.8 kms/hr.
DRIVE SPEED--LOW	1.5 MPH	2.4 kms/hr.
DRIVE SPEED--HIGH	2.5 MPH	4.00 kms/hr.
HIGH SPEED CUTOUT	12'	3.65 meters
LIFT/LOWER SPEED	45/35 sec.	45/35 sec.
POWER SYSTEM	24 VDC	24 VDC
BATTERY VOLTAGE	6 VDC	6 VDC.
APACITIES-BATTERY	375 AMP/HR (4)	375 AMP/HR (4)
CAPACITIES-HYDRAULIC TANK	10 GAL	37.8 Liters
CAPACITIES-FUEL TANK	--	--
ALTERNATOR	--	--
BATTERY CHARGER	40 AMP	40 AMP
TIRE SIZE	F60-14	--
OUTRIGGERS/STABILIZERS	NOT REQ'D	NOT REQ'D
SHIPPING WEIGHT	6220#	2821 kg.
SHIPPING CUBE	409.18 cu.ft.	11.59 cu.m

MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

25GTD

DESCRIPTION	ENGLISH	METRIC
HEIGHT-WORKING (EXTNEDED)	31'5"	9.58 m
HEIGHT-PLATFORM (EXTENDED)	25'5"	7.75 m
(LOWERED)	53.5"	1.36 m
LENGTH (OVERALL)	129"	3.28 m
WIDTH (OVERALL)	76.5"	1.94 m
PLATFORM-SIZE (INSIDE)	64 X 122"	1.62 m X 3.09 m
TRAVERSES - FRONT	24"	.61 m
- REAR	48"	1.22 m
PLATFORM-SAFETY RAILS (REMOVABLE)	42"	1.06 m
PLATFORM-TOE PLATE	6"	.15 m
LIFT CAPACITY	1000#	458.59 kg
WHEEL BASE	79.25"	2.01 m
WHEEL TRACK	64.5"	1.64 m
TURNING RADIUS (INSIDE)	11'	3.35 m
DRIVE SPEED - CREEP	--	--
DRIVE SPEED - LOW	1.0 MPH	1.6 kms/hr
DRIVE SPEED - HIGH	2.0 MPH	3.2 kms/hr
HIGH SPEED CUTOUT	12'	3.66 m
LIFT/LOWER SPEED	31/29 sec.	31/29 sec.
POWER SYSTEM	20 HP	20 hp.
BATTERY VOLTAGE	12 VDC	12 VDC
CAPACITIES - BATTERY	100 AMP/HR	100 amp/hr
CAPACITIES - HYDRAULIC TANK	10 GAL	37.85 liters
CAPACITIES - FUEL TANK	15 GAL	56.78 liters
ALTERNATOR	20 AMP	20 amp
BATTERY CHARGER	--	--
TIRE SIZE	F60-14 (MONOFILLED)	--
OUTRIGGERS/STABILIZERS	NOT REQ'D	NOT REQ'D
SHIPPING WEIGHT	5480#	2485.73 kg
SHIPPING CUBE	516.65 CU FT.	14.63 CU M

MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

30G

DESCRIPTION	ENGLISH	METRIC
HEIGHT-WORKING (EXTENDED)	36'	10.97 meters
HEIGHT-PLATFORM (EXTENDED)	30'	9.14 meters
(LOWERED)	50"	127.0 cm.
LENGTH (OVERALL)	146"	370.8 cm.
WIDTH (OVERALL)	71"	180.3 cm.
PLATFORM-SIZE (INSIDE)	64X140"	162.5X355.6 cm.
PLATFORM-SAFETY RAILS (REMOVABLE)	42"	106.6 cm.
PLATFORM-TOE PLATE	6"	15.2 cm.
LIFT CAPACITY	1500#	680.3 kg.
WHEEL BASE	93"	236.2 cm.
WHEEL TRACK	63"	160 cm.
TURNING RADIUS (INSIDE)	13'	3.96 meters
DRIVE SPEED--CREEP	.5 MPH	.8 kms/hr.
DRIVE SPEED--LOW	1.5 MPH	2.4 kms/hr.
DRIVE SPEED--HIGH	3.5 MPH	5.6 kms/hr.
HIGH SPEED CUTOUT	12'	3.65 meters
LIFT/LOWER SPEED	35/35 sec.	35/35 sec.
POWER SYSTEM	20 HP	20 hp.
BATTERY VOLTAGE	12 VDC	12 VDC.
CAPACITIES-BATTERY	100 AMP/HR	100 amp/hr.
CAPACITIES-HYDRAULIC TANK	10 GAL	37.8 liters
CAPACITIES-FUEL TANK	15 GAL	56.78 liters
ALTERNATOR	20 AMP	20 amp.
BATTERY CHARGER	--	--
TIRE SIZE	F60-14 (MF)	--
OUTRIGGERS/STABILIZERS	NOT REQ'D	NOT REQ'D
SHIPPING WEIGHT	5300#	2404. kg.
SHIPPING CUBE	377.71 CU.FT	10.70 CU.M

MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

36G

DESCRIPTION	ENGLISH	METRIC
HEIGHT-WORKING (EXTENDED)	42'	12.8 meters
HEIGHT-PLATFORM (EXTENDED)	36'	10.97 meters
(LOWERED)	56.5"	143.5 cm.
LENGTH (OVERALL)	146"	370.8 cm.
WIDTH (OVERALL)	71"	180.3 cm.
PLATFORM-SIZE (INSIDE)	64X140"	162.5X355.6 cm.
PLATFORM-SAFETY RAILS (REMOVABLE)	42"	106.6 cm.
PLATFORM-TOE PLATE	6"	15.2 cm.
LIFT CAPACITY	1000#	453.6 kg.
WHEEL BASE	93"	236.2 cm.
WHEEL TRACK	63"	160.0 cm.
TURNING RADIUS (INSIDE)	13'	3.96 m.
DRIVE SPEED--CREEP	.5 MPH	.8 kms/hr.
DRIVE SPEED--LOW	1.5 MPH	2.4 kms/hr.
DRIVE SPEED--HIGH	3.5 MPH	5.6 kms/hr.
HIGH SPEED CUTOUT	12'	3.65 meters
LIFT/LOWER SPEED	35/35 sec.	35/35 sec.
POWER SYSTEM	20 HP	20 hp
BATTERY VOLTAGE	12 VDC	12 VDC.
CAPACITIES-BATTERY	100 AMP/HR	100 amp/hr
CAPACITIES-HYDRAULIC TANK	10 GAL	37.8 liters
CAPACITIES-FUEL TANK	15 GAL	56.78 liters
ALTERNATOR	20 AMP	20 amp
BATTERY CHARGER	--	--
TIRE SIZE	F60-14 (MF)	--
OUTRIGGERS/STABILIZERS	NOT REQ'D	NOT REQ'D
SHIPPING WEIGHT	5940#	2490 kg.
SHIPPING CUBE	409.18 CU.FT	11.59 CU.M

MARKLIFT SELF-PROPELLED SCISSOR
(MEDIUM SLAB MODELS)

OPTION	TITLE
1.	ROTATING AMBER BEACON
2.	TRAVEL WARNING HORN
3.	MOVEMENT WARNING HORN
4.	DECK EXTENSION-BOLT
5.	SWING DECK
6.	2000 WATT GENERATOR, 110 VAC
7.	HOURMETER
8.	OUTRIGGERS

MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

OPERATION MAINTENANCE AND PARTS MANUAL

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MANUFACTURERS' LIMITED WARRANTY

MARK INDUSTRIES makes no warranty, express or implied, on any product manufactured or sold by MARK INDUSTRIES except for the following limited warranty against defects in materials and workmanship on products manufactured by MARK INDUSTRIES.

> MARK INDUSTRIES warrants the products manufactured by MARK INDUSTRIES to be free from defects in material and workmanship under normal use and service for a period of six (6) months from the date of shipment. This limited warranty does not extend to any product of another manufacturer or to any part, component, accessory or attachment not manufactured by MARK INDUSTRIES, The warranty, if any, with respect to any product of another manufacturer or to any part, component, accessory or attachment not manufactured by MARK INDUSTRIES is limited to the warranty, if any extended to MARK INDUSTRIES by the manufacturer of the other product, part, component, accessory or attachment.

This limited warranty does not extend to any product (or any part or parts of any product which has been subject to improper use or application, misuse, abuse, operation beyond its rated capacity, repair or maintenance except in accordance with the sales and service manuals and special instructions of MARK INDUSTRIES, or modification without the prior written authorization of MARK INDUSTRIES (whether by the substitution of nonapproved parts or otherwise).

The sole obligation and liability of MARK INDUSTRIES under this limited warranty (and the exclusive remedy for any purchaser, owner or user of MARK INDUSTRIES products) is limited to the repair or replacement, at the option of MARK INDUSTRIES, of any product (or any part or parts of any product) manufactured by MARK INDUSTRIES which, within six (6) months from the date of shipment, shall have been returned to the MARK INDUSTRIES facility in Brea, California (or any other location within the United States as shall be designated by MARK INDUSTRIES), at no expense to MARK INDUSTRIES, and demonstrated to the satisfaction of MARK INDUSTRIES as being defective in material or workmanship.

To make a claim under this limited warranty, contact MARK INDUSTRIES or the MARK INDUSTRIES distributor from whom the product was originally purchased. A statement giving the model and serial number of the allegedly defective product, the date and a description of the alleged defect, the date of the purchase and proof of the purchase and purchase date must accompany the returned product (or any part or parts of any product). Any product (or any part or parts of any product) determined by MARK INDUSTRIES to be defective will be repaired or replaced, at the option of MARK INDUSTRIES, free of charge, f.o.b. Brea, California. No credit will be given for any allegedly defective product (or any part or parts of any product) not returned to MARK INDUSTRIES.

There are no other warranties, express or implied, in addition to this limited warranty. **This limited warranty is exclusive and in lieu of all other warranties, express or implied (in fact or by operation of law or otherwise), including the implied warranties of merchantability and fitness for a particular purpose.**

MARK INDUSTRIES shall not be liable for any special, indirect or consequential damages. Further, no representation or warranty made by any person, including any representative of MARK INDUSTRIES, which is inconsistent or in conflict with, or in addition to the terms of the foregoing limited warranty (or the limitations of the liability of MARK INDUSTRIES as set forth above) shall be binding upon MARK INDUSTRIES unless reduced to writing and approved by an officer of MARK INDUSTRIES.

Tires, batteries, filter elements and electrical components are specifically excluded from this limited warranty.



Mark Industries

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714-879-6275 800-448-MARK
TELEX 194402 FAX 1-714-879-8884

REV.1
4-81

X

This is a reduced copy of the actual report that is sent with each Machine.

NEW EQUIPMENT CONDITION REPORT

(WARRANTY REGISTRATION)

BOOMS	YES	NO
1 CAPACITY DECAL IS _____		
2 ALL APPLICABLE WARNING DECALS ARE INSTALLED		
3 EMERGENCY DESCENT VALVE FUNCTIONS PROPERLY		
4 OPERATORS INSTRUCTIONS ARE PROPERLY INSTALLED		
5 OPERATORS GUIDE RECEIVED		
6 ELECTRIC SCHEMATIC RECEIVED		
7 ALL CONTROLS (UPPER & LOWER) ARE IDENTIFIED & OPERATE PROPERLY		
8 STOP SWITCHES OPERATE PROPERLY (UPPER & LOWER)		
9 CONDITION OF PLATFORM GUARD RAILS		
10 BASKET ACCESS GATE WORKS PROPERLY		
11 HORN/BEACON OPERATE PROPERLY (OPTIONAL)		
12 BRAKES ARE ADJUSTED AND OPERATE PROPERLY		
13 CIRCUIT BREAKERS OPERATE PROPERLY		
14 ENGINE RPM'S ARE _____ RPM'S		
15 ALL HYDRAULIC CYLINDERS ARE FREE OF LEAKS		
16 ALL HYDRAULIC CYLINDER RODS ARE FREE OF PAINT/SCRATCHES		
17 110V GENERATOR OPERATES PROPERLY (OPTIONAL)		
18 HYDRAULIC PUMP IS FREE OF LEAKS		
19 DRIVE MOTORS ARE FREE OF LEAKS		
20 ROTATION GEAR BOX OIL LEVEL IS _____		
21 ROTATION RING GEAR BOLTS (UNDERCARRIAGE) ARE TORQUED AT _____ FT. LBS.		
22 LUG NUTS ON WHEELS ARE TORQUED AT _____ FT. LBS.		
23 BATTERY FLUID LEVEL IS FULL		
24 HYDRAULIC HOSES & FITTINGS ARE TIGHT & FREE OF LEAKS		
25 AIR PRESSURE IN TIRES IS _____ PSI		
26 HYDRAULIC OIL LEVEL IS _____		
27 SYSTEM PRESSURE IS _____ PSIG		
28 PILOT PRESSURE IS _____ PSIG		
29 FUEL TANK AND FITTINGS ARE FREE OF LEAKS		
30 HYDRAULIC TANK AND FITTINGS FREE OF LEAKS		
31 MANUAL OVERRIDES OPERATE PROPERLY		
32 MUFFLER TIGHT AND FREE OF LEAKS		
33 ENGINE OIL LEVEL IS FULL		
34 ENGINE OIL FILTER IS FREE OF LEAKS		
35 ALL ELECTRICAL CONNECTIONS ARE TIGHT		
36 ENGINE ALTERNATOR FUNCTIONING PROPERLY		
37 VALVE MANIFOLD & FITTINGS ARE FREE OF LEAKS		
38 PROPER OIL LEVEL IN DRIVE WHEEL TORQUE HUB		
39 CABLE TENSION _____		

SCISSORS	YES	NO
1 CAPACITY DECAL IS _____		
2 ALL APPLICABLE WARNING DECALS ARE INSTALLED		
3 EMERGENCY DESCENT VALVE FUNCTIONS PROPERLY		
4 OPERATORS INSTRUCTIONS ARE PROPERLY INSTALLED		
5 OPERATORS GUIDE RECEIVED		
6 ELECTRICAL SCHEMATIC RECEIVED		
7 ALL CONTROLS (UPPER & LOWER) ARE IDENTIFIED AND OPERATE PROPERLY		
8 PLATFORM GUARD RAILS IN GOOD CONDITION AND ATTACHMENT BOLTS INCLUDED		
9 PLATFORM ACCESS GATE WORKS PROPERLY		
10 HORN/BEACON OPERATES PROPERLY (OPTIONAL)		
11 BRAKES (IF INSTALLED) OPERATE PROPERLY		
12 CIRCUIT BREAKER OPERATES PROPERLY		
13 ENGINE RPM'S ARE _____ RPM'S		
14 SCISSOR ARM SHAFT COLLARS ARE IN PLACE AND ARE TIGHT		
15 LIFT CYLINDER IS FREE OF LEAKS		
16 110V INVERTER OPERATES PROPERLY (OPTIONAL)		
17 110V GENERATOR OPERATES PROPERLY (OPTIONAL)		
18 HYDRAULIC PUMP IS FREE OF LEAKS		
19 SYSTEM PRESSURE IS SET AT _____ PSIG		
20 DRIVE MOTORS ARE FREE OF LEAKS		
21 DRIVE GEAR BOX OIL LEVEL (SRT MODELS)		
22 ALL NUTS & BOLTS ARE TIGHT		
23 (2) WHEEL NUTS ARE TORQUED AT ____ FT. LBS.		
24 LUG NUTS ON THE WHEELS ARE ___ FT. LBS		
25 BATTERY FLUID LEVEL IS CORRECT		
26 HYDRAULIC HOSES AND FITTINGS ARE FREE OF LEAKS		
27 AIR PRESSURE IN TIRES IS _____ PSI		
28 HYDRAULIC OIL LEVEL _____		
29 FUEL TANK & FITTINGS ARE FREE OF LEAKS		
30 HYDRAULIC OIL TANK & FITTINGS ARE FREE OF LEAKS		
31 STEERING CYLINDER IS FREE OF LEAKS		
32 MANUAL OVERRIDE ON VALVES OPERATE PROPERLY		
33 MUFFLER TIGHT & FREE OF LEAKS		
34 ENGINE OIL LEVEL FULL		
35 ENGINE OIL FILTER FREE OF LEAKS		
36 ALL ELECTRICAL CONNECTIONS ARE TIGHT		
37 ENGINE ALTERNATOR FUNCTIONS PROPERLY		
38 CHARGER FUNCTIONS PROPERLY (ELECT. MACH.)		
39 VALVE MANIFOLD & FITTINGS ARE FREE OF LEAKS		

MODEL NUMBER _____ SERIAL NUMBER _____

OPTIONS _____

INSPECTOR # _____

PURCHASER

_____
COMPANY NAME

_____
ADDRESS

_____
CITY STATE ZIP CODE

( )_____
AREA CODE TELEHONE NUMBER

DATE OF INVOICE _____ DATE SHIPMENT RECEIVED _____

DATE UNIT PUT INTO SERVICE _____

☐ UNIT WILL BE USED IN RENTAL FLEET

☐ UNIT WILL BE SOLD; THE INITIAL WORK APPLICATION WILL BE:

INSPECTION_____	GEN'L MAINTENANCE _____	PAINTING/SANDBLASTING_____
MINING _____	HEATING/AIR COND. _____	STEEL FABRICATION _____
WELDING _____	CARPENTRY _____	RIGGING _____
CONSTRUCTION _____	PLUMBING _____	ROOFING _____
SCAFFOLDING _____	ELECTRICAL _____	GLAZING _____
MECHANICAL _____	SPRINKLER _____	OTHER_____

COMMENTS:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

INSPECTION COMPLETED BY: _____
(Please print legibly)

WARRANTY WILL BE VOID UNLESS THIS INSPECTION REPORT IS POSTMARKED TO MARK INDUSTRIES NOT MORE THAN 14 DAYS FROM DATE SHIPMENT RECEIVED.

MARKLIFT SELF-PROPELLED SCISSOR
(MEDIUM SLAB MODELS)

UNLOADING

Before unloading the Marklift, inspect for any physical damage. Note any such damage on the freight bill and report same to carrier.

When a loading dock is unavailable and a fork lift must be used, make sure that the fork lift used has forks as long as the Marklift is wide. Do not attempt to lift the machine from under either the front or rear cross members. ALWAYS LIFT THE MACHINE FROM THE SIDE.

If a rollback truck with a winch is used, attach the winch cable to the tie down brackets and pull the unit onto the truck.

TRANSPORTING

The Marklift may be free wheeled for very short distances at a speed no greater than 5 mph. To transport the Marklift over long distances a truck or trailer must be used.

When securing the Marklift to the truck, put the chains or straps through the tie down brackets ONLY. DO NOT CHAIN OR STRAP OVER THE PLATFORM OR GUARD RAILS. Severe damage to the scissor arms may result from excess pressure due to securing the machine over the top of the platform.

Note: The emergency lowering valve must be OPEN whenever the Marklift is transported. This will prevent damage to the unit if a short occurs in the electrical system.

MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

All Marklift units are tested and operated to assure their proper operating condition before shipment.

At this time, all necessary adjustments are made and an overall physical inspection is conducted. After the unit is delivered, some minor adjustments and inspections must be made before putting the unit into service.

The following items should be reviewed:

1. Check gasoline power units.
   - A. Engine oil level
   - B. Air filter
   - C. Fuel filter
   - D. Fuel level
   - E. Fuel lines and valves

2. Check electrical system by plugging hand control box into platform receptacle.
   - A. Forward
   - B. Reverse
   - C. Left
   - D. Right
   - E. up
   - F. Down

3. Inspect all electrical connections.
   - A. See
   - B. Feel
   - C. Tighten

4. Check hydraulic system.
   - A. Hydraulic Fluid Level
   - B. In-Line Pressure Valve Filter
   - C. Hydraulic Lines
   - D. Hydraulic Pump
   - E. Hydraulic Cylinders
   - F. Emergency Lowering Valve

5. Check Tires & Wheels.
   A. For Cuts
   B. Correct pressure
   C. Tight Lugs

6. Structural connections and fittings.
   A. Check all nuts and bolts for tightness.

7. Brakes.
   A. Check for holding on incline up to four (4) degrees.

MARKLIFT SELF-PROPELLED SCISSOR
(MIDIUM SLAB MODELS)

Every operator of the Marklift must know, understand and follow the safety rules set forth herein.

1. The Marklift self-propelled aerial work platform is a personnel lifting device, and it is essential that it be properly maintained and operated to perform all functions with maximum safety and efficiency.

2. The operation of any new and unfamiliar equipment can be hazardous in the hands of untrained operators. Only trained operators must be assigned to operate the Marklift.

3. It is the responsibility of the operator to be familiar with this manual and to follow all recommendations made. Never exceed manufacturer's recommended platform load capacity.

4. Although the Marklift conforms to specified ANSI & OSHA requirements, it is the responsibility of the owner to instruct the operators with safety requirements made not only by Mark Industries, but by the various safety boards in your area, as well as additional requirements set forth by ANSI & OSHA.

5. The Marklift is a non-insulated personnel carrier and must not be operated with in 10 feet of a 50,000 volt line. (See page 7 & 8 articles)

6. Remember, the load capacity of the Marklift is total combined weight of personnel and tools, fixtures, accessories, etc.

7. Always distribute load evenly over platform floor area.

8. Make sure platform rail holding bolts are secured.

9. It is recommended that head gear (Hard Hats) be worn by all personnel in the work platform.

10. Under no conditions should horseplay be tolerated. Report any misuse of equipment to the proper personnel

11. The Marklift structure must not be used as a welding ground. Disconnect both battery leads prior to performing any welding operations.

12. Do not lean over platform guard railings to perform work.

13. Do not use ladders or scaffolding on the platform to obtain greater height.

14. Battery sulphuric acid can cause a serious burn. Flush away acid with water.

15. Hydrogen and oxygen gases are produced during normal battery operation. This gas mixture can explode if flames or sparks are near battery vents.

16. Monitor battery during charging. Do Not allow battery to overcharge and boil.

17. Do not override any hydraulic, mechanical, or electrical safety devices.

18. Do not drive on uneven, sloping or soft terrain, as this is hazardous and must be avoided.

19. Do not work on platform if your physical condition is such that you feel dizzy or unsteady in any way.

20. Do not jump start other vehicles using Marklift battery.

21. When machine is not in use, remove hand control box to prevent unauthorized use.

Article 86. Provisions for Preventing Accidents Due to Proximity to Overhead Lines

2946. Provisions for Preventing Accidents Due to Proximity to Overhead Lines. (a) **General.** No person, firm, or corporation, or agent of same, shall require or permit any employee to perform any function in proximity to energized high-voltage lines; to enter upon any land, building, or other premises and thereto engage in any excavation, demolition, construction, repair, or other operation; or to erect, install, operate, or store in or upon such premises any tools, machinery, equipment, materials, or structures (including scaffolding, house moving, well drilling, pile driving, or hoisting equipment) unless and until danger from accidental contact with said high-voltage lines has been effectively guarded against.

(b) **Clearances or Safeguards Required.** Except where electrical distribution and transmission lines have been de-energized and visibly grounded or effective barriers have been erected to prevent physical and arcing contacts with the high-voltage lines, the following provisions shall be met:

(1) **Over Lines.** The operation, erection, or handling of tools, machinery, apparatus, supplies, or materials, or any part thereof, over energized high-voltage lines shall be prohibited.

(2) **Equipment and Materials in Use.** The operation, erection, or handling of tools, machinery, equipment, apparatus, materials, or supplies, or any part thereof within the minimum clearances from energized lines set forth in Table X shall be prohibited.

Table X
Required Clearances from Overhead High-Voltage Lines

Nominal voltage (Phase to Phase)	*Minimum Required Clearance (Feet)*
750 - 50,000	10
over 50,000 - 75,000	11
over 75,000 - 125,000	13
over 125,000 - 175,000	15
over 175,000 - 250,000	17
over 250,000 - 370,000	21
over 370,000 - 550,000	27
over 550,000 - 1,000,000	42

(3) **Transportation or Transit.** The transportation or transit of any tool, machinery, equipment, or apparatus, or the moving of any house or other building in proximity to overhead high-voltage lines shall be expressly prohibited if at any time during such transportation or transit such tool, machinery, equipment, apparatus, or building, or any part thereof, can come closer to high-voltage lines than the minimum clearances set forth in Table Y.

Article 86. Provisions for Preventing Accidents

Except where the boom of boom-type equipment is lowered and no load is imposed thereon, the equipment in transit shall conform to the minimum required clearances set forth in Table X.

Table Y
Required Clearances from Energized High-Voltage Conductors
(While in Transit)

Nominal Voltage (Phase to Phase)	*Minimum Required Clearance (Feet)*
750– 50,000	6
over 50,000– 345,000	10
over 345,000– 750,000	16
over 750,000– 1,000,000	20

(4) Storage. The storage of tools, machinery, equipment, supplies, materials, or apparatus under, by, or near energized high-voltage lines is hereby expressly prohibited if at any time during such handling or other manipulation it is possible to bring such tools, machinery, equipment, supplies, materials, or apparatus, or any part thereof, within the minimum required clearances from high-voltage lines as set forth in Table X.

(c) The specified clearance shall not be reduced by movement due to any strains impressed (by attachments or otherwise) upon the structures supporting the high-voltage line or upon any equipment, fixtures, or attachments thereon.

(d) Insulated cage-type boom guards, boom stops, insulating links, or proximity warning devices may be used on cranes, but the use of such devices shall not alter the required clearances set forth in Table X.

(e) Any overhead conductor shall be considered to be energized unless and until the person owning or operating such line verifies that the line is not energized, and the line is visibly grounded at the work site

2947. Warning Signs Required. The owner, agent, or employer responsible for the operations of equipment shall post and maintain in plain view of the operator and driver on each crane, derrick, power shovel, drilling rig, hay loader, hay stacker, pile driver, or similar apparatus, a durable warning sign legible at 12 feet reading: "Unlawful To Operate This Equipment Within 10 Feet Of High-Voltage Lines of 50,000 Volts Or Less."

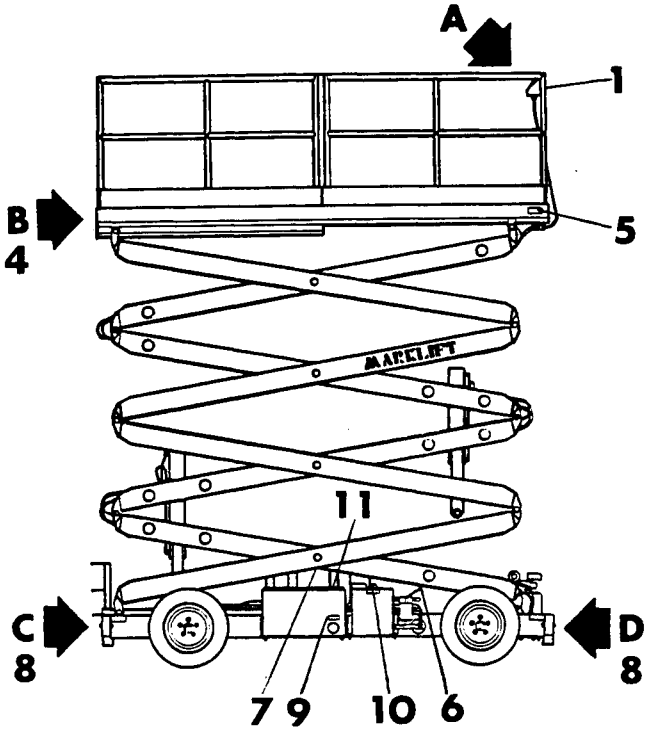
In addition to the above wording, the following statement in small lettering shall be provided on the warning sign: "For Minimum Clearances of High-Voltage Lines In Excess of 50,000 Volts, See Article 86, Title 8, High-Voltage Electrical Safety Orders."

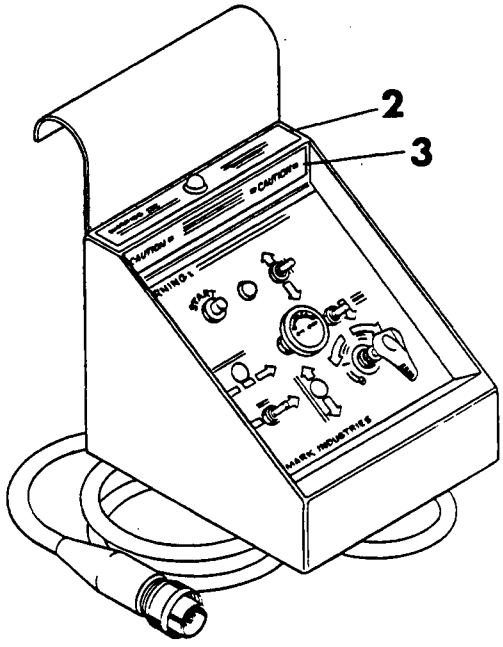
MARKLIFT SELF-PROPELLED SCISSOR

(MIDIUM SLAB MODELS)

Be completely familiar with all warning and caution decals that are posted on the unit.

Keep in mind to be alert and use common sense and judgement in responding to dangerous situations and conditions that might develope during unit operation.

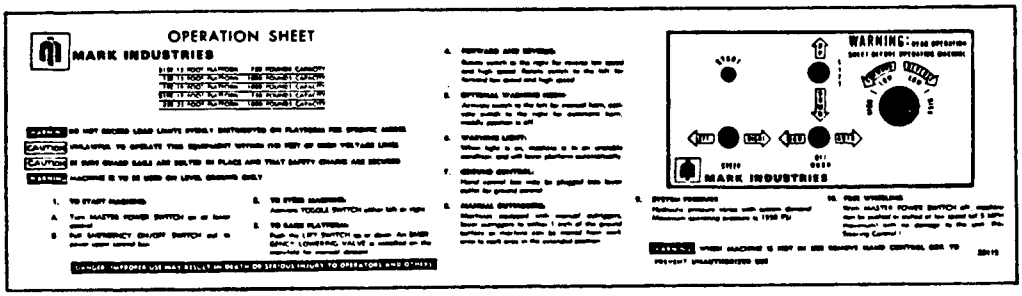




VIEW A

HAND CONTROL BOX

1



2

WARNING: LIGHT INDICATES UNSTABLE CONDITION ○ PLATFORM WILL LOWER AUTOMATICALLY

2015

3

CAUTION — UNLAWFUL TO OPERATE THIS EQUIPMENT WITHIN 10 FEET OF HIGH VOLTAGE LINES — CAUTION

2014

4 This machine has been designed and tested to meet these standards:
ANSI A92.2 1969
ANSI A92.3 1973
OSHA GISO 1910.67

2018-1

VIEW B

6 IMPORTANT

CHECK BATTERY WATER LEVEL AT LEAST ONCE A WEEK.

2003

ON BATTERY BOX COVER

7

USE VAPOR TANK ONLY

5 LOAD CAPACITY LBS.
(EVENLY DISTRIBUTED LOAD)

8 DO NOT LIFT FROM THIS END

2021

VIEW C&D

9 EMERGENCY LOWERING VALVE
↓ OPEN VALVE TO LOWER PLATFORM

10 THE HYDRAULIC SYSTEM OF THIS MACHINE IS DESIGNED TO USE G.M. TRANSMISSION FLUID TYPE "B" WITH DEXRON

2017

11 — WARNING —

DO NOT WORK UNDERNEATH THIS LIFT UNLESS IT IS MECHANICALLY LOCKED.

see service manual for location and use of mechanical locks

2016

MARKLIFT SELF-PROPELLED SCISSOR
(MEDIUM SLAB MODELS)

It shall be the responsibility of all users of the Marklift to read and comply with the following operating instructions. They are designed to promote safety and a better understanding of the operation of the self-propelled aerial platform.

1. STARTING

The Marklift can be started from either the hand control box or the switch panel located in the component box on the side of the machine. Before either position will function the Selector Switch must be activated. Push the Selector Switch in the component box to the left to activate the hand control box -- to the right to activate the component box switch panel.

A. HAND CONTROL BOX

After the Select Switch has been turned to the left, pull out the emergency ON/OFF button located in the middle of the hand control box. Electric models are now operational. For gas models, push the start button until the engine starts.

B. COMPONENT BOX SWITCH PANEL

After the Select Switch has been turned to the right, electric models are immediately operational. For gas models, push the start button on the component box switch panel until the engine starts. NOTE: The only functions that can be operated from the component box are ON/OFF and the lift curcuit.

2. STEERING

The steering of the machine is done from the hand control box only. When the engine is running, by pushing the toggle switch for the steering to the left, the front wheels will go left. Pushing the switch to the right, the front wheels will go to the right. Because a momentary type switch is used, when the operator releases the switch it will automatically return to the off position. The wheels will remain at an angle until returned, by pushing the toggle switch in the opposite direction.

3. LIFT

Raising and lowering of the platform is done from either the hand control box or the switch panel in the component box. A momentary switch has been positioned so that in order to raise the platform the operator must push the switch to the up position, and to lower the platform the operator must push the switch to the down position. When the switch is released, it will automatically return to the off position, and the platform will remain stationary.

There is an emergency lowering valve which can be reached through the hole in the front cover of the component box. This valve, as part of the hydraulic system, can be used to safely lower the platform if there is a loss of electrical power, or if the operator is injured while on the fully extended platform. Before the platform will lift again the emergency lowering valve must be closed.

4. TRAVEL

Forward and reverse travel of the machine is done from the hand control box only. The machine is capable of three speeds for both forward and reverse travel: Low speed, high speed and creep speed. Low and high speed travel is activated with a rotary switch. Turning the switch to forward travel; firt position is low speed; second position is high speed. Turning the switch to reverse travel; the first position is low speed; second position is high speed.

A. CREEP SPEED

Creep speed will automatically cut-in when the platform is raised over one half of its rated height. The hand control box has a creep speed switch in the middle right side. If creep speed is needed before the platform reaches one half of its extended height, the operator can manually activate the creep speed by pushing the switch to the up position. NOTE: If creep speed is left on, NORMAL, HIGH and LOW speed will not operate.

5. FREE WHEELING

In order to move the machine in a free wheeling condition for loading, unloading and positioning, make sure that the component box selector switch is in the OFF position. The Marklift can be free-wheeled at a low speed (5 mph maximum)without damage to any of the components or structure.

6. WARNING HORN (OPTION)

For some industrial applications, and to meet certain particular safety requirements, a warning horn may be needed. The warning horn option on the Marklift can be used as an automatic movement idicator, or manually activated, as required. The horn is activated by a 3-position switch on the hand control box. The middle position is OFF. When the switch is pushed to the right the horn will sound when either the drive or lift function is activated (forward and reverse up and down).

7. WARNING LIGHT

As a safety feature the Marklift has been equipped with a series of mercury switches that will cut-out the lift circuit whenever the unit is in an unstable condition. An unstable condition consists of a tilt of three (3) degrees side and six (6) degrees forward and aft. the platform is extended it will automatically descend. If the platform is already in the down position, it cannot be raised. This unstable condition is indicated by a light located in the top center of the control box.

8. HYDRAULIC SYSTEM PRESSURE

MARK INDUSTRIES has incorporated an integrated hydraulic system in all models. To prevent damage to either the pumps or any other part of the hydraulic system, the pump settings should be as follows:

Maximum pressure 1950 PSIG (25E) 2300 PSIG (30E) (36E) (30G) (36G).

9. MONO FILLED TIRES

To increase platform stability, the tires on the Medium Slab Marklift should be filled with urathane. Each wheel is equipped with a water-fill valve stem as standard equipment. The most widely recommended practice for liquid weighting of tires is 75% fill or to the level of the valve. Tire pressure should be maintained at 35 pounds.

MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

HYDRAULIC FLUID TABLE

Oil Company	Chevron	Gulf	Shell	Union
Brand Name	ATF Dexron 11	ATF Dexron 11	Donax-T6	ATF Dexron
Viscosity -				
Sus @ 100°F	187.4	195	200	200
Sus @ 210°F	49.2	50.4	50	52.3
Viscosity				
Index typical	153°	155°	160°	172°
Flash Point°F	400°	405°	390°	395°
Pour Point°F	-40°	-50°	-50°	-45°

SERVICE TOOLS

To properly and efficiently service your Marklift, several basic tools are required. The following list of tools should be available.

1. Volt/Ohm Meter
2. Hydraulic Pressure Guage (0-3000 PSI)
3. Female Quick Disconnect Coupler (P/N 842)
4. Battery Hydrometer
5. Battery Load Tester
6. Standard Mechanics Hand Tools
7. Scissor Arm Supports
8. Fuel Pump vac./pres. Gauge (Automotive Type)
9. Electrical Test Light
10. Hydraulic Pressure Gauge (0-1000 PSI)

MARKLIFT SELF-PROPELLED SCISSOR
(MEDIUM SLAB MODELS)

INTRODUCTION

Whenever trouble shooting any problem the initial consideration MUST be to "Check the basics".

Check the basics, means to insure that the batteries are in good shape, and have at least a three quarter charge, determined by use of a hydrometer, and battery maintenance instructions (page 24)

A large percentage of electrical problems can be attributed to insufficiently charged or defective batteries.

(Some Helpful Hints)

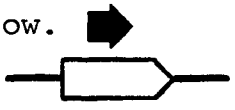
ELECTRICAL

1. If problem seems to be electrical, utilize your applicable schematic, and test light to trace power flow (electrical current) starting at battery and continuing through system until the problem is located.

2. Keep in mind, if you DO NOT have a good ground to a valve coil, relay etc., then even if you have proper electrical current to the coil or relay, the item will not function properly.

3. Diodes can be thought of as "One way electrical check valves" they permit current flow in one direction and stop it in the opposite direction.

Current Flow.



ACTUAL



SCHEMATIC

4. The basic purpose of a relay is to maintain full electrical current. When sending an electrical signal to the relay coil, the electrical current flows through relay contacts and to the desired valve coil.

HYDRAULIC

1. For the various functions the system pressure is utilized. If a slower drive speed is needed, a portion of the hydraulic fluid is dumped to tank by the creep or low speed valve.

2. Directional valves (Outriggers, Steering, Drive) have two opposite electrical coils with a moveable spool between the coils.

3. One way valves (Lift, Descent, Dump, Creep) can be both N/C (Normally Closed) or N/O (Normally Open) depending on if flow is desired or not.

(Trouble Shooting Check List)

LIFT

1. Will not lift. All other functions work.
   A. Emergency lowering valve is open.
   B. Loose electrical connections.
   C. Descent valve stuck open.
   D. Pressure limit switch out of adjustment.
   E. Tilt switches out of adjustment.
2. Will not lift rated load.
   A. Low system pressure.
   B. Pressure limit switch out of adjustment.
   C. Internal seal leaking in cylinder.

STEERING

1. Steers in one direction only.
   A. Loose electrical connection.
   B. Loss of ground to coil on affected direction.
   C. Spool sticking in one direction.
   D. Faulty steering switch in hand control box.
   E. Flow control valve to steering cylinder out of adjustment.
   F. Faulty diode.

DRIVE

1. Will drive forward. No reverse.
   A. Loose electrical connection in reverse circuit.
   B. Faulty drive switch.
   C. Valve spool sticking in one direction.
   D. Faulty diode.
2. No forward or reverse drive.
   A. Free wheeling valve open.
   B. Faulty drive switch
   C. Both forward and reverse diodes inoperative on terminal strip.
   D. Stuck valve spool
   E. Drive cut out switch in outrigger inoperative.
3. No high speed.
   A. Loose electrical connections.
   B. Low speed relay inoperative.
   C. High speed dump valve inoperative.
   D. High speed valve inoperative (3 speed machines only).
4. No creep speed.
   A. Loose electrical connections.
   B. Creep speed relay inoperative.
   C. Faulty creep switch.

D. Faulty creep dump valve.
E. Creep or low speed flow valve out of adjustment.

5. No functions working.
   A. Faulty circuit breaker.
   B. Loose power connections.
   C. Power relay inoperative (Electric Machines Only).
   D. Dump relay.
   E. Dump valve inoperative.

6. No system pressure.
   A. No hydraulic oil.
   B. Hydraulic tank valve is in "OFF" position.
   C. Loose electrical connections in dump circuit.
   D. Dump relay inoperative.
   E. Dump valve inoperative.
   F. Pressure relief valve inoperative.
   G. Hydraulic pump inoperative.

7. Low System pressure.
   A. Pressure relief valve out of adjustment.
   B. Dump valve faulty.
   C. Low speed dump valve faulty.
   D. Hydraulic pump faulty.
   E. Hydraulic tank sump filter obstructed.

If this trouble shooting check list does not help to solve your problem, contact your local MARKLIFT representative or the MARK INDUSTRIES Service Department.

MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

25E

QTY	PART NO.	DESCRIPTION
2	4014	MERCURY SWITCH
4	4045	6 AMP DIODE
2	16947	RETURN FILTER ELEMENT
1	3004	SUMP FILTER
1	66063	LIFT/LOWERING VALVE CARTRIDGE
1	66082	DUMP/CREEP VALVE
1	66059	EMERGENCY LOWERING NEEDLE VALVE
1	3065A (HCE)	MAIN LIFT CYLINDER SEAL KIT
1	3062-1 (HPWR)	STEERING CYLINDER SEAL KIT
1	44A (CE)	CUSHION CYLINDER SEAL KIT
2	4032	6 VOLT RELAY
1	4073	6 VOLT SHORT COIL
1	4074	6 VOLT LONG COIL
2	4021	MOMENTARY SWITCH
1	4106	DRIVE SWITCH
1	4018	EMERGENCY ON-OFF SWITCH
1	5300	EMERGENCY ON-OFF KNOB
1	2667	DRIVE SWITCH KNOB
1	16321	PUMP TO MOTOR COUPLING

MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

30E 36E

QTY	PART NO.	DESCRIPTION
2	4014	MERCURY SWITCH
4	4045	6 AMP DIODE
2	16947	RETURN FILTER ELEMENT
1	3004	SUMP FILTER
1	66063	LIFT/LOWERING VALVE CARTRIDGE
1	66082	DUMP/CREEP VALVE
1	66059	EMERGENCY LOWERING NEEDLE VALVE
1	66017 (SE)	MAIN LIFT CYLINDER SEAL KIT
1	3062-1 (HPWR)	STEERING CYLINDER SEAL KIT
1	44A (CE)	CUSHION CYLINDER SEAL KIT
1	4032	6 VOLT RELAY
1	4073	6 VOLT SHORT COIL
1	4074	6 VOLT LONG COIL
2	4021	MOMENTARY SWITCH
1	4106	DRIVE SWITCH
1	4018	EMERGENCY ON-OFF SWITCH
1	5300	EMERGENCY ON-OFF KNOB
1	2667	DRIVE SWITCH KNOB
1	16321	PUMP TO MOTOR COUPLING

MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

30G 36G

QTY	PART NO.	DESCRIPTION
2	4014	MERCURY SWITCH
4	4045	6 AMP DIODE
2	16947	RETURN FILTER ELEMENT
1	3004	SUMP FILTER
1	20930	SPIDER COUPLER
1	16975	MICRO VAC KIT
1	16925	FILTER LOCK
1	16974	GAS SHUT-OFF VALVE
1	66063	LIFT/LOWERING VALVE CARTRIDGE
1	66082	DUMP/CREEP VALVE
1	66059	EMERGENCY LOWERING NEEDLE VALVE
1	66017 (SE)	MAIN LIFT CYLINDER SEAL KIT
1	3062-1 (HPWR)	STEERING CYLINDER SEAL KIT
1	44A (CE)	CUSHION CYLINDER SEAL KIT
2	4032	6 VOLT RELAY
1	4073	6 VOLT SHORT COIL
1	4074	6 VOLT LONG COIL
1	4020	PUSH BUTTON START SWITCH
1	4021	MOMENTARY SWITCH
1	4106	DRIVE SWITCH
1	4018	EMERGENCY ON-OFF SWITCH
1	5300	EMERGENCY ON-OFF KNOB
2	2667	DRIVE SWITCH KNOB

To properly and efficiently service your scissor lifts, several basic tools are required. The following list of tools should be available:

1. Volt/Ohm Meter
2. Hydraulic Pressure Gauge (0-3000 PSI)
3. Female Quick Disconnect Coupler (P/N 842)
4. Battery Hydrometer
5. Electrical Jumper Wires
6. Standard Mechanics Hand Tools
7. Scissor Arm Supports
8. Fuel Pump Vac./Pres. Gauge (Automotive Type)
9. Electrical Test Light
10. Hydraulic Pressure Gauge (0-1000 PSI)

MARKLIFT SELF-PROPELLED SCISSOR
(MEDIUM SLAB MODELS)

A new fully charged battery will have a specific gravity of 1.260 or 1.280 at 80° F.

The tables (on page 25) show the specific gravity as a function of percentage battery charge.

1.260 Sp. Gr.	1.280	100% charged
1.230	1.250	75% charged
1.200	1.220	50% charged
1.170	1.190	25% charged
1.40	1.160	Very little useful capacity
1.110	1.130	Discharged

The percentage charge of a battery should be checked with a good hydrometer that has a thermometer and temperature correction scale built into it. This allows a temperature correction to be made readily. A correction of .04 points in gravity shall be made for each ten degrees either above or below 80° F. For every 10° F below 80° F, subtract .04 points; and for every 10° above 80° F, add .04 points.

Within every thirty day period, the cell of each battery should be checked to determine the percentage charge. If any cell has a hydrometer reading of more than .020 less than the other cells in the battery, that cell is bad and the battery should be removed from service.

Periodic checks by hydrometer after charging, but prior to any discharge, is recommended to determine if batteries are receiving a full charge.

Either excessive overcharge or moderate undercharge can shorten battery life.

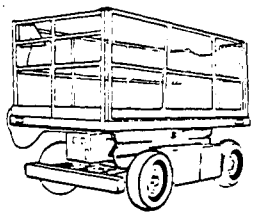
With proper attention to water level and charging time, compared to hydrometer reading, the batteries should give a long useful life.

TEMPERATURE/SPECIFIC GRAVITY CORRECTION TABLE FOR BATTERIES

Actual Hydrometer Reading at Actual Temperature*

80°F (27°C)	0°F (-18°C)	-10°F (-23°C)	-20°F (-29°C)	-30°F (-34°C)	-45°F (-43°C)	-65°F (-54°C)	Approx. State of Charge In %
1.280	1.312	1.316	1.320	1.324	1.330	1.338	100
1.250	1.282	1.286	1.290	1.294	1.300	1.308	75
1.220	1.252	1.256	1.260	1.264	1.270	1.278	50
1.190	1.222	1.226	1.230	1.234	1.240	1.248	25
1.160	1.192	1.196	1.200	1.204	1.210	1.218	0

Specific Gravity Corrected to 80°F (17°C)	Freezing Temperature	
1.280	-90°F	-68°C
1.250	-62°F	-52°C
1.200	-16°F	-27°C
1.150	+ 5°F	-15°C
1.000	+19°F	- 7°C



MARK INDUSTRIES

MARKLIFT SCISSOR
MAINTENANCE CHECK LIST

Model: _____ Serial No. _____

Date: _____ Equip. No. _____

Location: _____ Mechanic: _____

	ITEM	CODE	COMMENTS		ITEM	CODE	COMMENTS
1	Engine Oil			26	Safety Cut-outs		
2	Engine Oil Filter			27	Bushing		
3	Air Filter			28	Rollers		
4	Fuel Filter			29	Front End Assy.		
5	Tune-up			30	Tire Pressure		
6	Choke			31	Tire Condition		
7	Engine RPM			32	Lug Nuts		
8	Chargine System			33	Wheel Bearing		
9	Fuel System LPG-GAS			34	Nut & Bolts		
10	Batteries			35	Guard Rails		
11	Battery Terminals			36	Lubrication		
12	Motor Brushes			37	Warning Decals		
13	Hydraulic Fluid			38	Operation Sheet		
14	Hyd. Oil Filter			39	General Decals		
15	Hydraulic System			40	Paint		
16	Hydraulic Pressure			41	All Operations		
17	Hydraulic Hoses			42	Lift		
18	Cylinders			43	Steering		
19	Drive Motors			44	Creep Drive		
20	Brakes			45	Low Drive		
21	Emergency Lowering Valve			46	High Drive		
22	Hand Control Box			47	Tilt Switches		
23	Lower Controls			48	Fuel Level		
24	Relays			49	Literature		
25	Wire Connections			50	Options		

CODE

F - Filled
R - Repaired
C - Checked
A - Adjusted
X - Needs Repair

Other Comments:

MARK INDUSTRIES

MARKLIFT SERVICE MAINTENANCE RECORD

MODEL: _____

SER. NO.: _____

DATE SOLD _____

DATE IN SERVICE _____

OPTIONS _____

WARRANTY PERIOD _____

CODE:

C—CHECKED
A—ADJUSTED
R—REPAIRED
N—NEW PART
X—NEEDS REPAIR

DATE	W.O.	MECH.	HR METER	PREVENTATIVE MAINT.												ELECTRICAL						HYDRAULIC										FUEL				STEER				TIRE		MAJ.		MISC.					
				OIL CHANGE	OIL FILTER	AIR CLEANER	HYDRAULIC OIL CHANGE	HYDRAULIC OIL FILTER	WHEEL BEARING PACK	DRIVE MOTOR	PUMP MOTOR BRUSHES	ELECTRICAL CONTROLS	TRANS & DIFF OIL CHANGE	TUNE UP SPARK PLUGS	GENERATOR	VOLTAGE REGULATOR	BATTERY	STARTER	POINTS AND CONDENSER	HYDRAULIC SYSTEM	LEV CYL	LIFT CYL SEALS	HYDRAULIC CONTROL VALVE	HYD PUMP	ROTARY MANIFOLD	LIFT ROLLERS	HYD HOSES	BRAKES	FUEL SYS	CARBURATOR	FUEL PUMP	STEERING	STEER GEAR	STEER CYL	DRIVE TIRE	STEER TIRE	ENGINE O/H	DRIVE AXLE O/H								

DATE	REMARKS	DATE	REMARKS	AGENCY

MARK INDUSTRIES

MARKLIFT SERVICE MAINTENANCE RECORD

MODEL: _____

SER. NO.: _____

DATE SOLD _____

DATE IN SERVICE _____

OPTIONS _____

WARRANTY PERIOD _____

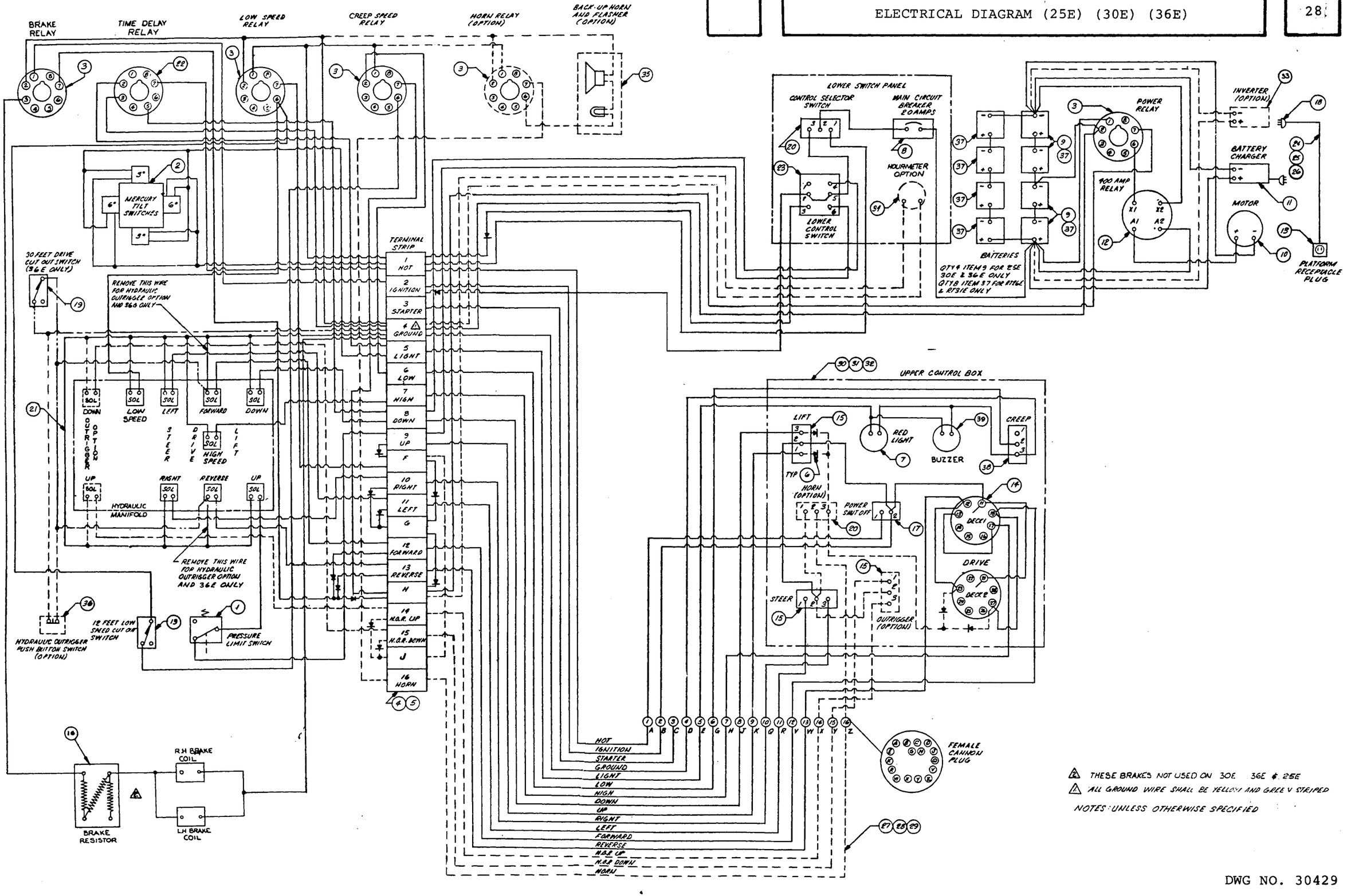
CODE:

C—CHECKED
A—ADJUSTED
R—REPAIRED
N—NEW PART
X—NEEDS REPAIR

DATE	W.O.	MECH.	HR METER	PREVENTATIVE MAINT.											ELECTRICAL						HYDRAULIC								FUEL				STEER			TIRE		MAJ.		MISC.				
				OIL CHANGE	OIL FILTER	AIR CLEANER	HYDRAULIC OIL CHANGE	HYDRAULIC OIL FILTER	WHEEL BEARING PACK	DRIVE MOTOR	PUMP MOTOR BRUSHES	ELECTRICAL CONTROLS	TRANS & DIFF OIL CHANGE	TUNE UP SPARK PLUGS	GENERATOR	VOLTAGE REGULATOR	BATTERY	STARTER	POINTS AND CONDENSER	HYDRAULIC SYSTEM	LEV CYL	LIFT CYL SEALS	HYDRAULIC CONTROL VALVE	HYD PUMP	ROTARY MANIFOLD	LIFT ROLLERS	HYD HOSES	BRAKES	FUEL SYS	CARBURATOR	FUEL PUMP	STEERING	STEER GEAR	STEER CYL	DRIVE TIRE	STEER TIRE	ENGINE O/H	DRIVE AXLE O/H						

DATE	REMARKS	DATE	REMARKS	AGENCY

ELECTRICAL DIAGRAM (25E) (30E) (36E)



⚠2 THESE BRAKES NOT USED ON 30E 36E & 25E

⚠1 ALL GROUND WIRE SHALL BE YELLOW AND GREEN STRIPED

NOTES: UNLESS OTHERWISE SPECIFIED

DWG NO. 30429

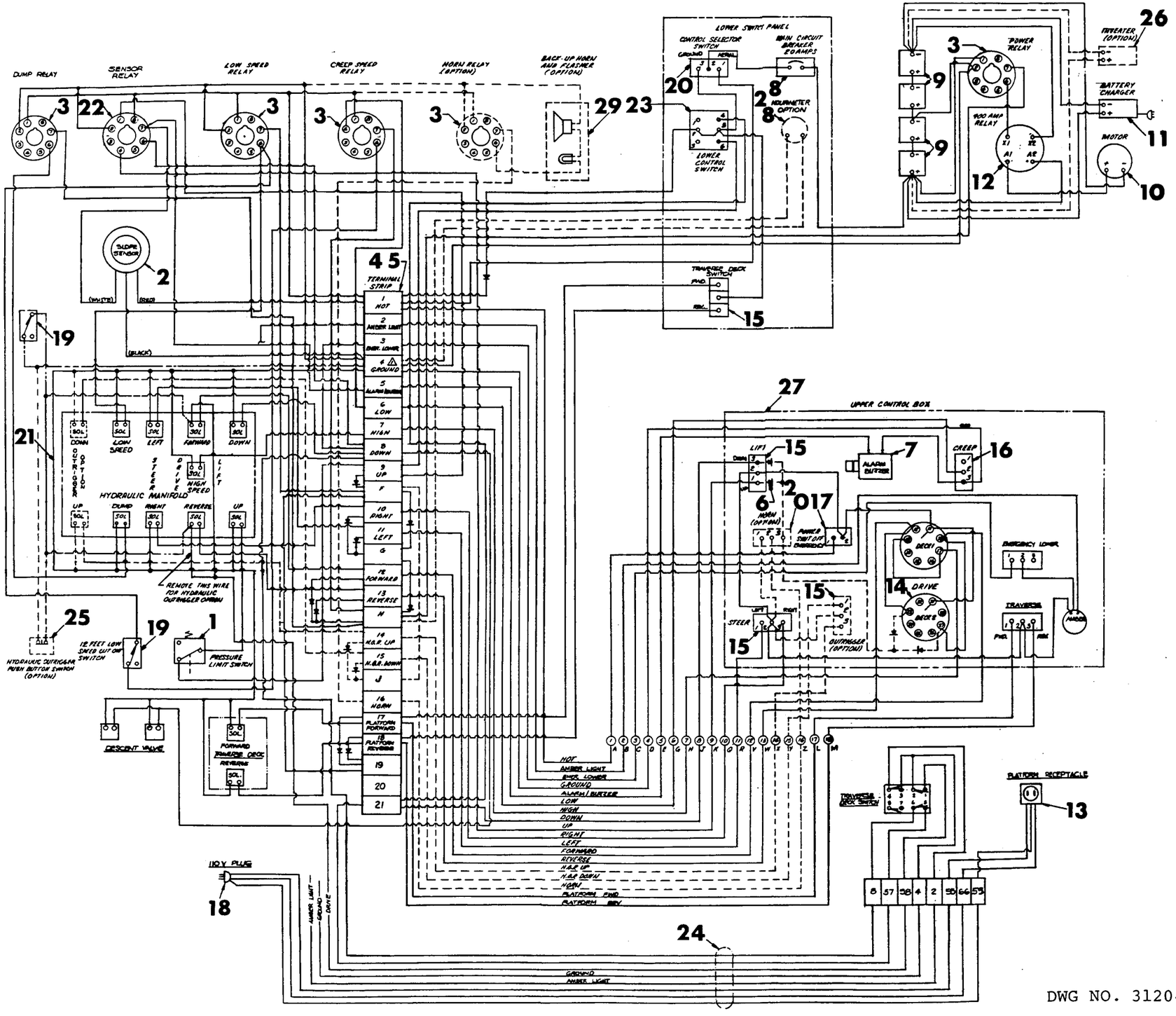
BILL OF MATERIAL IS FOR REFERENCE ONLY

							39		BUZZER	
				1	1	1	38	4017	ON OFF SWITCH	
							37	4007	BATTERY	6 V 250 AMPS
		1					36	4011	PUSH BUTTON SWITCH	
			1				35	30408	BACK UP HORN AND FLASHER	
1							34	20571	HOURMETER	
	1						33	446	INVERTER	
		1					32	4069-5	UPPER CONTROL BOX ASSEMBLY	
			1				31	4069-3	UPPER CONTROL BOX ASSEMBLY	
				1	1	1	30	4069-1	UPPER CONTROL BOX ASSEMBLY	
				1			29	4033-	CABLE HARNESS ASSEMBLY	
					1		28	4033-	CABLE HARNESS ASSEMBLY	
						1	27	4033-	CABLE HARNESS ASSEMBLY	
				1			26	4034-	CABLE	3 CONDUCTOR
					1		25	4034-	CABLE	3 CONDUCTOR
						1	24	4034-	CABLE	3CONDUCTOR
				1	1	1	23	20481	ON OFF SWITCH	
				1	1	1	22	20523	TIME DELAY RELAY	
				1	1	1	21		HYDRAULIC MANIFOLD	
			1	1	1	1	20	4019	ON OFF SWITCH	
				2	1	1	19	20803	LIMIT SWITCH	
				1	1	1	18	2624	PLUG 3 PRONG	
				1	1	1	17	4018	EMERGENCY ON OFF SWITCH	
						1	16		BRAKE RESISTOR	
		1		2	2	2	15	4021	MOMENTARY SWITCH	
				1	1	1	14	4106	DRIVE SWITCH	
				1	1	1	13	4060	RECEPTACLE	
				1	1	1	12	4083	RELAY	400 AMP
				1	1	1	11	4006	BATTERY CHARGER	
				1	1	1	10	3015	MOTOR	
				4	4	4	9	30297	BATTERY	6V 375 AMPS
				1	1	1	8	20562	CIRCUIT BREAKER	20 AMPS
				1	1	1	7	4031	LIGHT	RED
		2	4	9	9	9	6	4045	DIODE	6 AMPS
				1	1	1	5	117A	TERMINAL BLOCK END	
				20	20	20	4	4027	TERMINAL BLOCK	
			1	4	4	4	3	4032	RELAY	
				1	1	1	2	30387	TILT SWITCH ASSEMBLY	
				1	1	1	1	2297	PRESSURE LIMIT SWITCH	
11050	11021	11045	11011	36E	30E	25E	ITEM NO	PART OR IDENTIFYING NO.	DESCRIPTION	DATA: SPECIFICATIONS SIZES, NOTES, SUPPLIERS.
QTY PER OPTION				STD MACHINE			BILL OF MATERIAL			DWG NO. 30429

REV.3
7-84

ELECTRICAL DIAGRAM (25ETD)

29.1



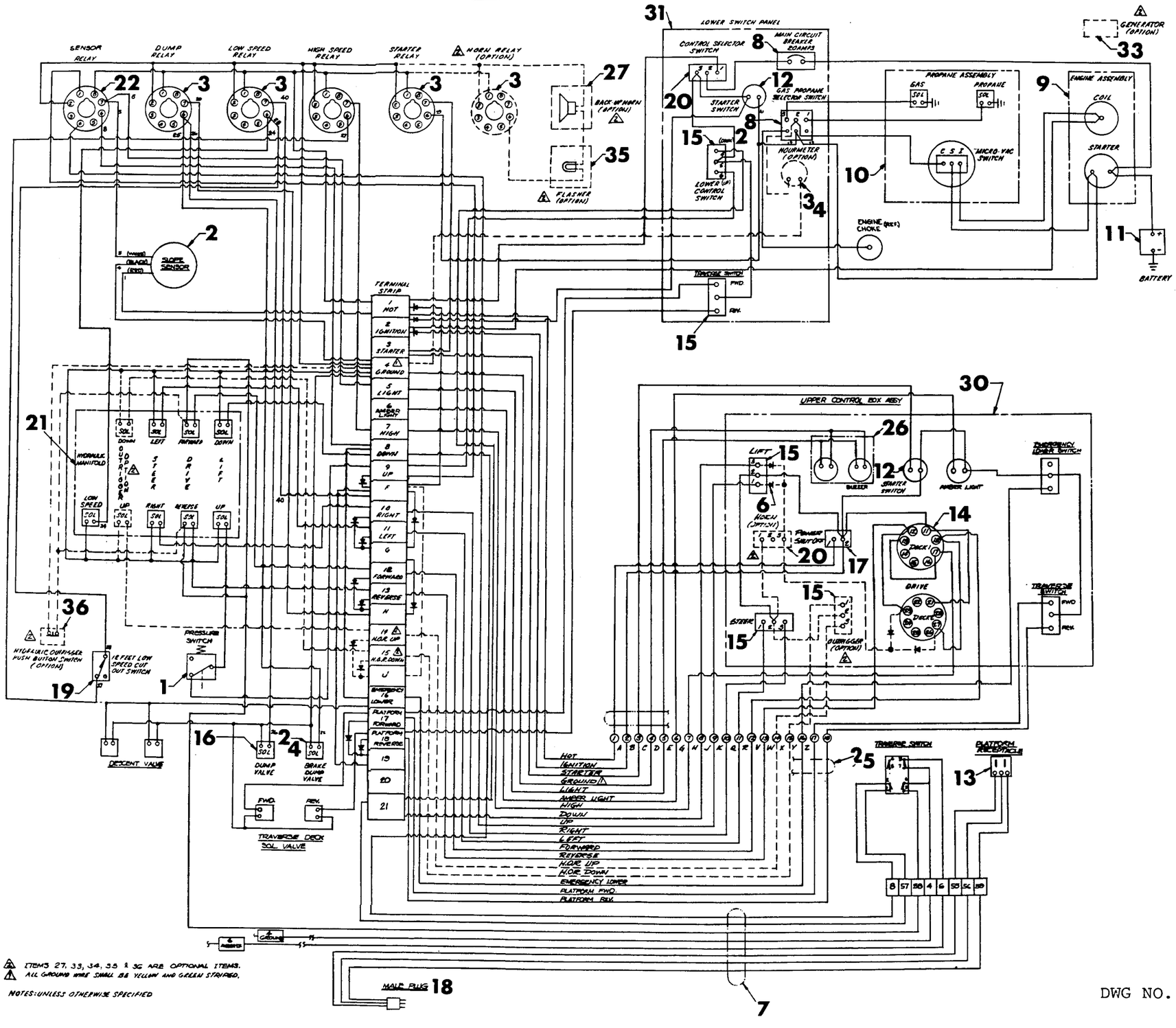
DWG NO. 31204

BILL OF MATERIAL IS FOR REFERENCE ONLY

ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION	DATA: SPECIFICATIONS SIZES, NOTES, SUPPLIERS.
29	30408	BACK-UP HORN AND FLASHER	
28	20571	HOURMETER	
27	31023	ASSEMBLY UPPER CONTROL BOX	
26	11020	INVERTER	2500 W
25	4011	PUSH BUTTON SWITCH	
24	31210	CABLE	
23	20481	ON OFF SWITCH	
22	70171	RELAY (6V)	POTTER & BRUMFIELD # KRP11DG (DPDT)
21	30715	HYDRAULIC MANIFOLD	
20	4019	ON OFF SWITCH	
19	20803	LIMIT SWITCH	
18	2624	PLUG 3 PRONG	
17	4018	PUSH - PULL SWITCH	
16	4017	ON-OFF SWITCH	
15	4021	TOGGLE SWITCH	
14	4106	5-POSITION SWITCH	
13	4060	RECEPTACLE	
12	4083	SOLENOID	400 AMP, 12V
11	4006	BATTERY CHARGER	
10	3015	MOTOR	
9	30297	BATTERY	6V 375 AMPS
8	20562	CIRCUIT BREAKER	20 AMPS
7	20805	ALARM / BUZZER	
6	4045	DIODE	6 AMPS
5	117A	TERMINAL BLOCK END	
4	4027	TERMINAL BLOCK	
3	4032	RELAY (6V)	
2	31074	SLOPE SENSOR	
1	2297	PRESSURE LIMIT SWITCH	

BILL OF MATERIAL DWG NO. 31204

ELECTRICAL DIAGRAM (25GTD)



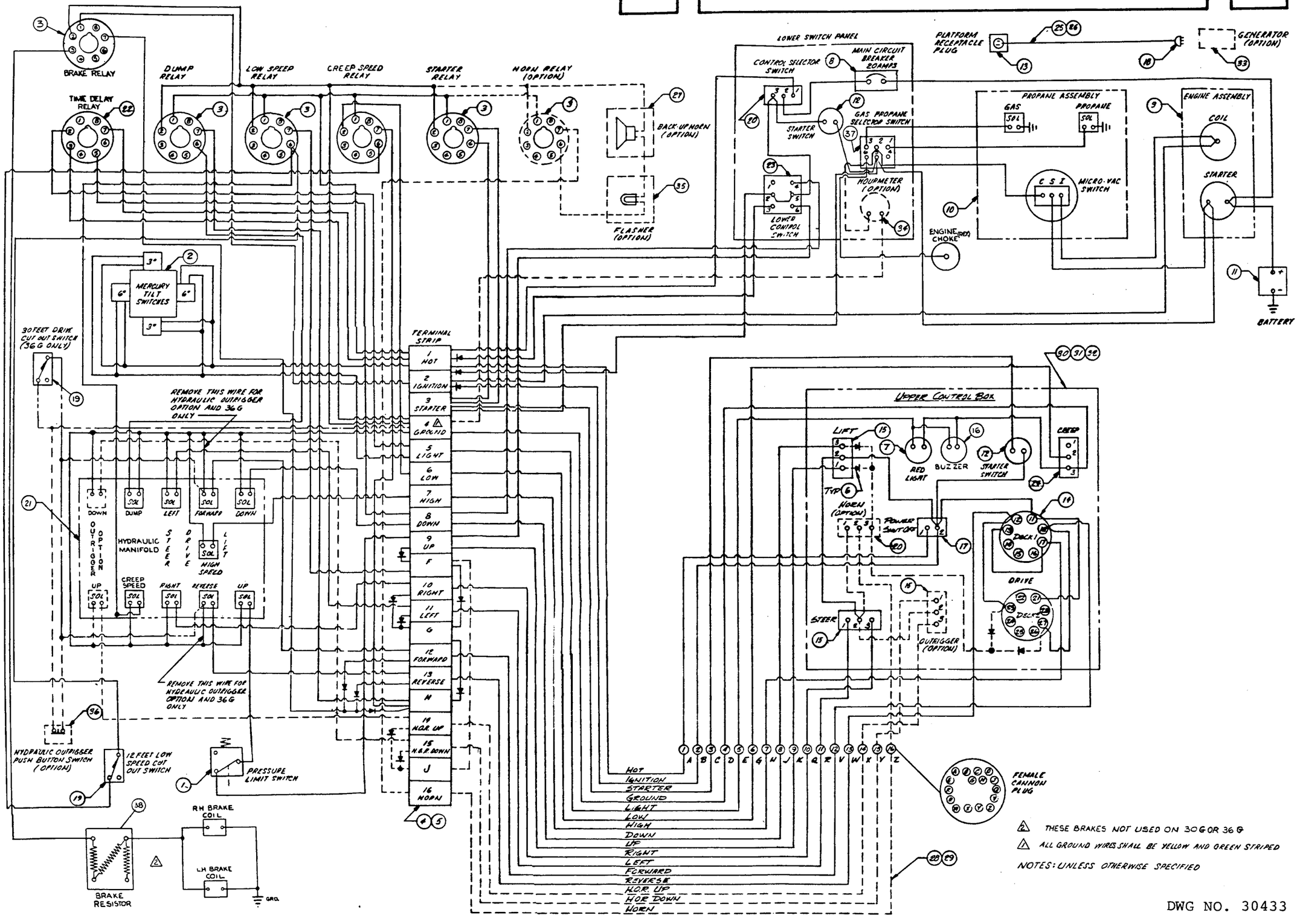
DWG NO. 31217

BILL OF MATERIAL IS FOR REFERENCE ONLY

	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION	DATA: SPECIFICATIONS SIZES, NOTES, SUPPLIERS.
2	1	36	4011	PUSH BUTTON SWITCH	
2	1	35	4029	FLASHER	
2	1	34	20571	HOURMETER	
2	1	33	4070	GENERATOR	
		32			
	1	31	31218	PANEL ASSEMBLY	
	1	30	31279	UPPER CONTROL BOX ASSEMBLY	
		29			
	1	28	J0015	SWITCH TOGGLE	
2		27	4028	BACK UP HORN	
	1	26	20805	BUZZER	
	1	25	30344	CABLE, CONTROL	
	1	24	30460	3 WAY VALVE	
		23			
	1	22	70171	RELAY (DPDT)	P & B #KRP11DG
	1	21	30714	HYDRAULIC MANIFOLD	
	1	20	4019	ON OFF SWITCH	
	1	19	20803	LIMIT SWITCH	
	1	18	2624	PLUG 3 PRONG	
	1	17	4018	EMERGENCY ON OFF SWITCH	
	1	16	410	DUMP VALVE	
	4	15	4021	MOMENTARY SWITCH	
	1	14	4106	DRIVE SWITCH	
	1	13	4060	RECEPTACLE	
	2	12	4020	STARTER SWITCH	
	1	11	4030	BATTERY	12 V 95 AMPS
	1	10	30226	DUAL FUEL KIT	
	1	9	20506	ENGINE ASSEMBLY	
	1	8	20562	CIRCUIT BREAKER	20 AMPS
	1	7	31210	CABLE	
	19	6	4045	DIODE	6 AMPS
	4	5	117A	TERMINAL BLOCK END	
	26	4	4027	TERMINAL BLOCK	
	4	3	4032	RELAY	
	1	2	31074	SLOPE SENSOR	
	1	1	2297	PRESSURE LIMIT SWITCH	

BILL OF MATERIAL DWG NO. 31217

ELECTRICAL DIAGRAM (30G) (36G)



△2 THESE BRAKES NOT USED ON 30G OR 36G

△1 ALL GROUND WIRES SHALL BE YELLOW AND GREEN STRIPED

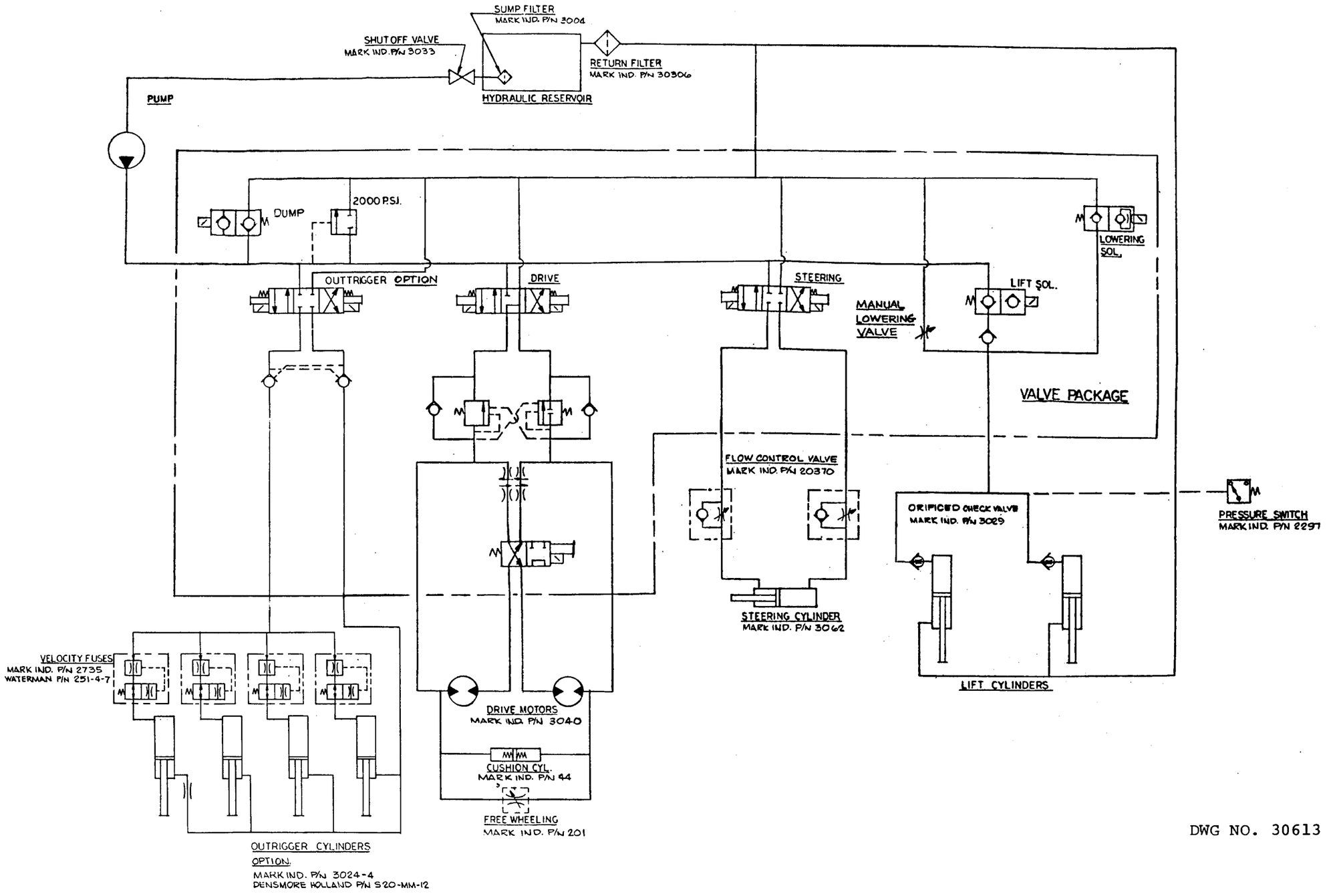
NOTES: UNLESS OTHERWISE SPECIFIED

DWG NO. 30433

BILL OF MATERIAL IS FOR REFERENCE ONLY

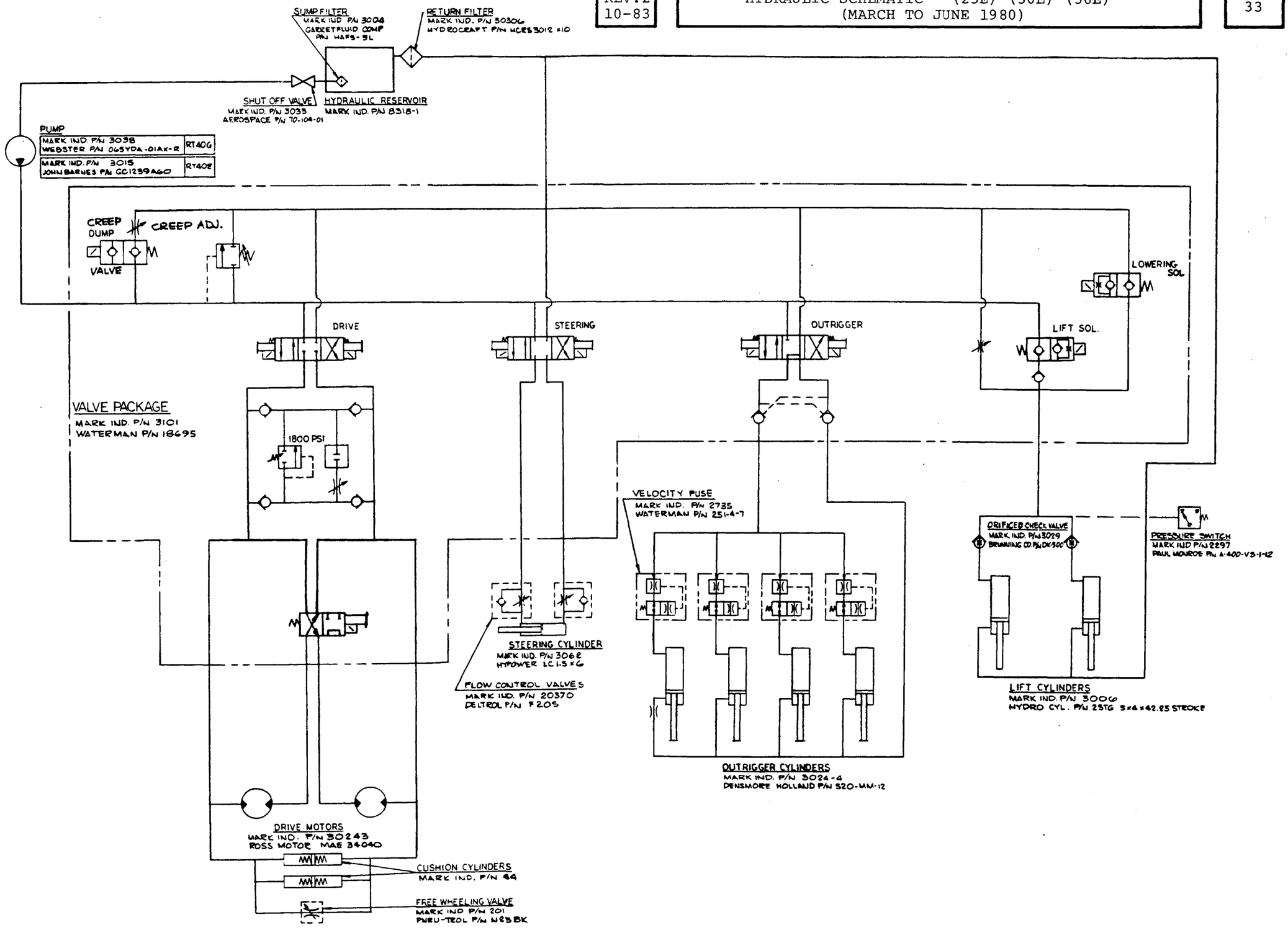
11050	11022	11015	11011	36G	30G	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION	DATA: SPECIFICATIONS SIZES, NOTES, SUPPLIERS.
						38		BRAKE RESISTOR	
				1	1	37	70015	GAS - PROPANE SELECTOR SWITCH	
		1				36	4011	PUSH BUTTON SWITCH	
			1			35	4029	FLASHER	
1						34	20571	HOURMETER	
	1					33	4070	GENERATOR	
		1				32	4068-5	UPPER CONTROL BOX ASSEMBLY	
			1			31	4068-3	UPPER CONTROL BOX ASSEMBLY	
				1	1	30	4068-1	UPPER CONTROL BOX ASSEMBLY	
				1		29	4033-	CABLE HARNESS ASSEMBLY	
					1	28	4033-	CABLE HARNESS ASSEMBLY	
			1			27	4028	BACK UP HORN	
				1		26	4034-	CABLE	3 CONDUCTOR
					1	25	4034-	CABLE	3 CONDUCTOR
				1	1	24	4017	ON OFF SWITCH	
				1	1	23	20481	ON OFF SWITCH	
				1	1	22	20523	TIME DELAY RELAY	
				1	1	21		HYDRAULIC MANIFOLD	
			1	1	1	20	4019	ON OFF SWITCH	
				2	1	19	20803	LIMIT SWITCH	
				1	1	18	2624	PLUG 3 PRONG	
				1	1	17	4018	EMERGENCY ON OFF SWITCH	
				1	1	16		BUZZER	
		1		2	2	15	4021	MOMENTARY SWITCH	
				1	1	14	4106	DRIVE SWITCH	
				1	1	13	4060	RECEPTACLE	
				2	2	12	4020	STARTER SWITCH	
				1	1	11	4030	BATTERY	12 V 95 AMPS
				1	1	10	30226	PROPANE ASSEMBLY	
				1	1	9	20506	ENGINE ASSEMBLY	
				1	1	8	20562	CIRCUIT BREAKER	80 AMPS
				1	1	7	4031	LIGHT	RED
		2	4	13	13	6	4045	DIODE	6 AMPS
				1	1	5	117A	TERMINAL BLOCK END	
				20	20	4	4027	TERMINAL BLOCK	
			1	5	5	3	4032	RELAY	
				1	1	2	30387	TILT SWITCH ASSEMBLY	
				1	1	1	2297	PRESSURE LIMIT SWITCH	

QTY PER OPTION | QTY PER STD | BILL OF MATERIAL DWG NO. 30433

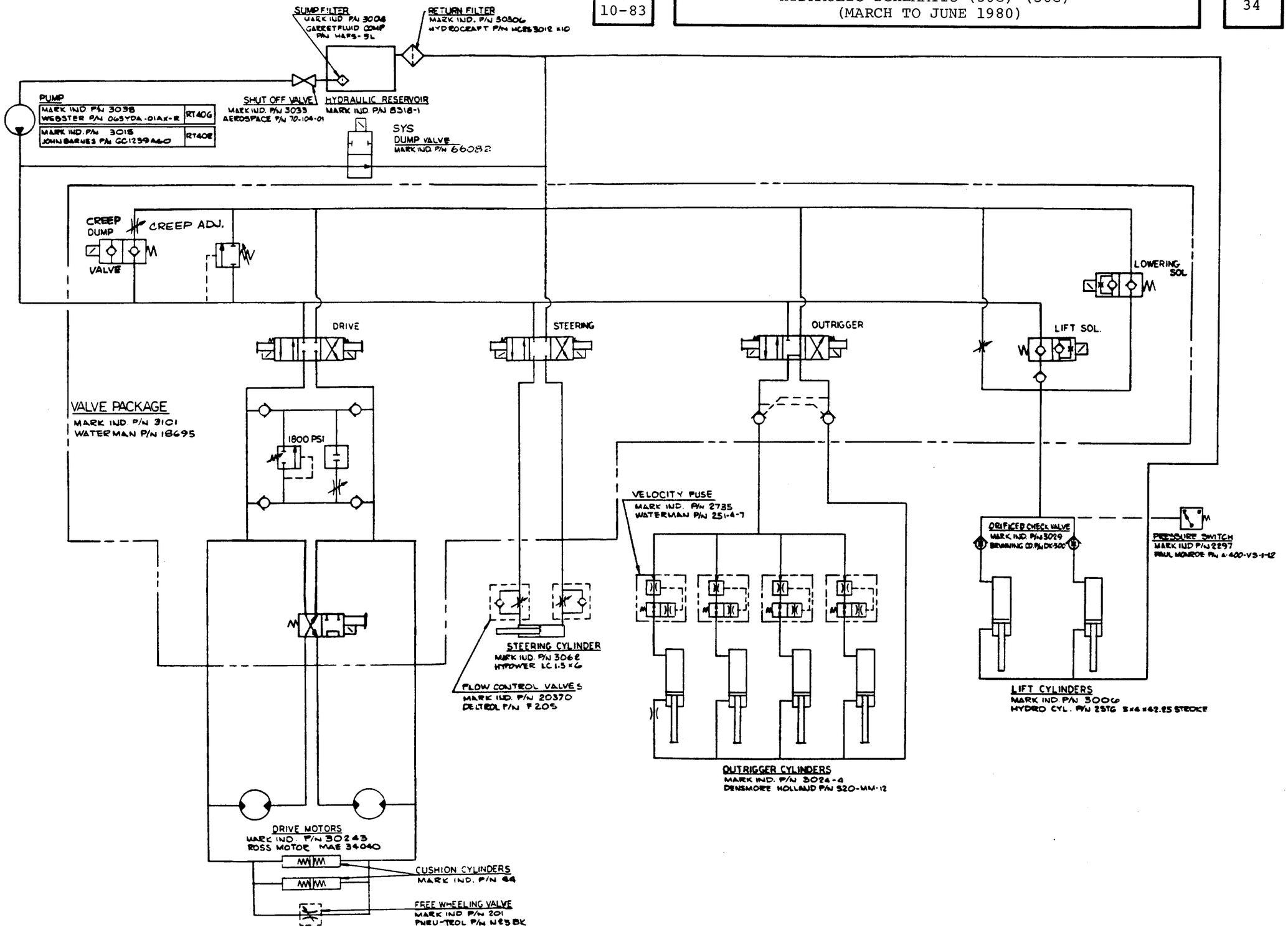

SUMP FILTER
MARK IND. P/N 3004
SHUTOFF VALVE
MARK IND. P/N 3033
RETURN FILTER
MARK IND. P/N 30306
PUMP
HYDRAULIC RESERVOIR
DUMP
2000 P.S.I.
LOWERING SOL.
OUTTRIGGER OPTION
DRIVE
STEERING
MANUAL LOWERING VALVE
LIFT SOL.
VALVE PACKAGE
FLOW CONTROL VALVE
MARK IND. P/N 20370
ORIFICED CHECK VALVE
MARK IND. P/N 3029
PRESSURE SWITCH
MARK IND. P/N 2297
STEERING CYLINDER
MARK IND. P/N 3062
LIFT CYLINDERS
VELOCITY FUSES
MARK IND. P/N 2735
WATERMAN P/N 251-4-7
DRIVE MOTORS
MARK IND. P/N 3040
CUSHION CYL.
MARK IND. P/N 44
FREE WHEELING
MARK IND. P/N 201
OUTRIGGER CYLINDERS
OPTION.
MARK IND. P/N 3024-4
DENSMORE HOLLAND P/N S20-MM-12

DWG NO. 30613

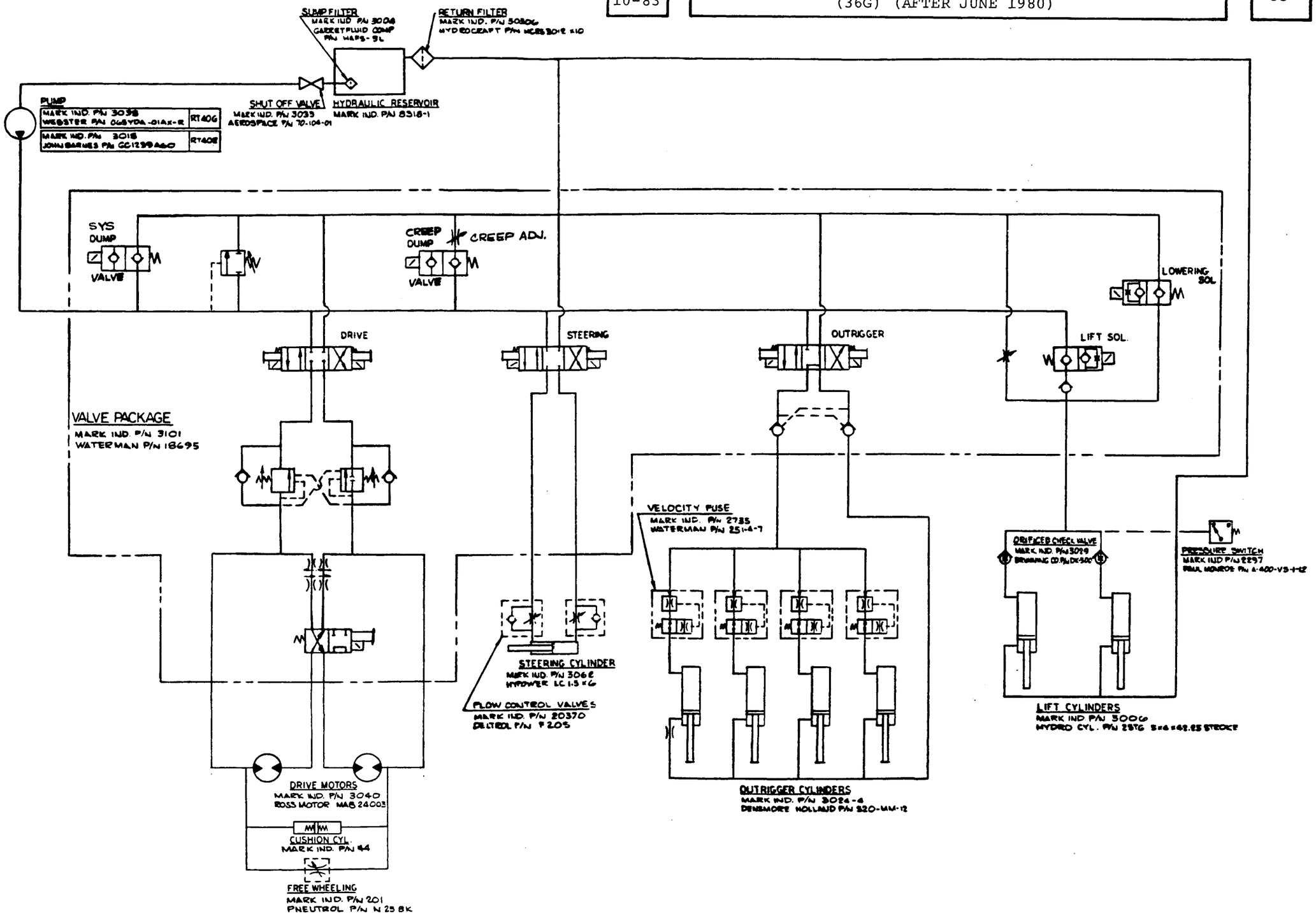
HYDRAULIC SCHEMATIC - (25E) (30E) (36E)
(MARCH TO JUNE 1980)

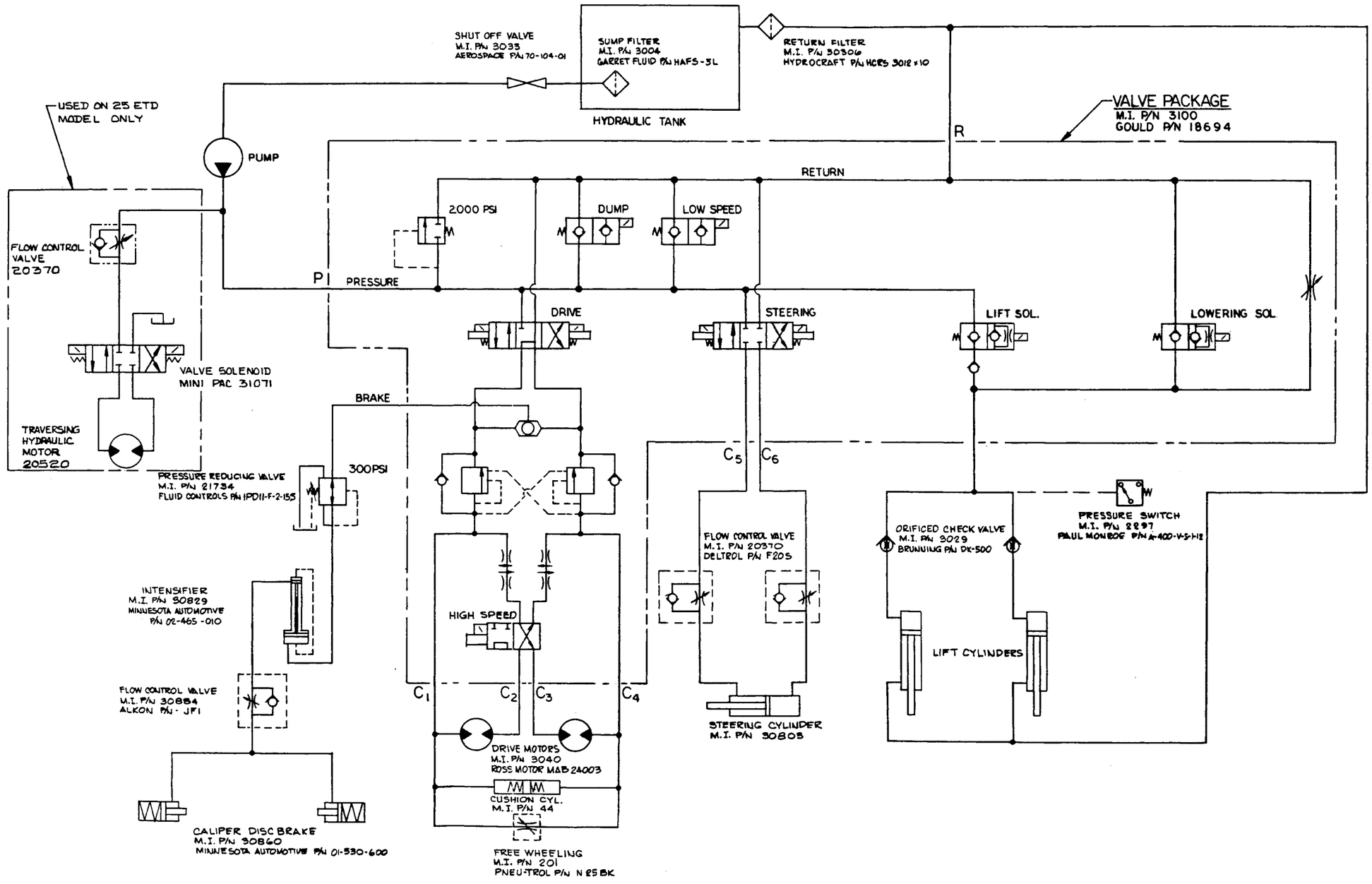


HYDRAULIC SCHEMATIC (30G) (36G)
(MARCH TO JUNE 1980)



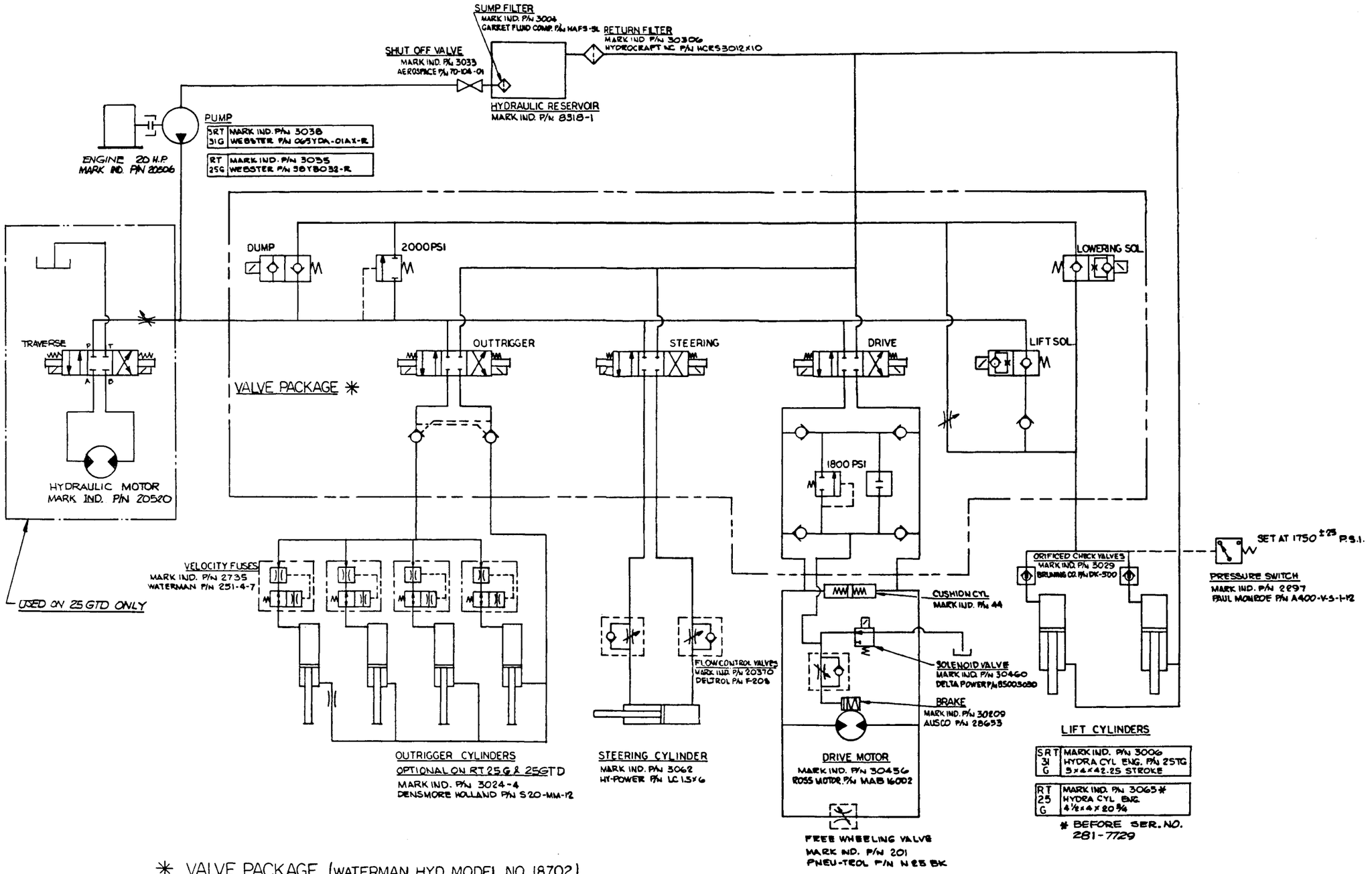
HYDRAULIC SCHEMATIC (25E) (30E) (36E) (30G) (36G) (AFTER JUNE 1980)




SHUT OFF VALVE
M.I. P/N 3033
AEROSPACE P/N 70-104-01
SUMP FILTER
M.I. P/N 3004
GARRET FLUID P/N HAFS-3L
HYDRAULIC TANK
RETURN FILTER
M.I. P/N 30306
HYDROCRAFT P/N HCRS 3012 x 10
VALVE PACKAGE
M.I. P/N 3100
GOULD P/N 18694
USED ON 25 ETD
MODEL ONLY
PUMP
R
RETURN
2000 PSI
DUMP
LOW SPEED
FLOW CONTROL
VALVE
20370
P
PRESSURE
DRIVE
STEERING
LIFT SOL.
LOWERING SOL.
VALVE SOLENOID
MINI PAC 31071
BRAKE
TRAVERSING
HYDRAULIC
MOTOR
20520
PRESSURE REDUCING VALVE
M.I. P/N 21734
FLUID CONTROLS P/N 1PD11-F-2-155
300PSI
INTENSIFIER
M.I. P/N 30829
MINNESOTA AUTOMOTIVE
P/N 02-465-010
HIGH SPEED
C1
C2
C3
C4
C5
C6
FLOW CONTROL VALVE
M.I. P/N 30884
ALKON P/N - JF1
FLOW CONTROL VALVE
M.I. P/N 20370
DELTROL P/N F20S
ORIFICED CHECK VALVE
M.I. P/N 3029
BRUNNING P/N DK-500
PRESSURE SWITCH
M.I. P/N 2897
PAUL MONROE P/N A-400-V-S-H2
LIFT CYLINDERS
STEERING CYLINDER
M.I. P/N 30805
DRIVE MOTORS
M.I. P/N 3040
ROSS MOTOR MAB 24003
CUSHION CYL.
M.I. P/N 44
CALIPER DISC BRAKE
M.I. P/N 30860
MINNESOTA AUTOMOTIVE P/N 01-530-600
FREE WHEELING
M.I. P/N 201
PNEU-TROL P/N N 85 BK

DWG. NO. 30592

HYDRAULIC SCHEMATIC (25GTD)



* VALVE PACKAGE (WATERMAN HYD. MODEL NO. 18702)
USE MARK IND. P/N 3069/3043 (WITH OUTRIGGER VALVE) FOR SRT 31G
USE MARK IND. P/N 3069 (WITH OUT OUTRIGGER VALVE) FOR RT 25G & 25GTD

DWG NO. 30591

MARKLIFT SELF-PROPELLED SCISSOR
(MEDIUM SLAB MODELS)

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MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

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MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

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MARKLIFT SELF-PROPELLED SCISSOR

(MEDIUM SLAB MODELS)

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NOTE: ALL NUMBERS LISTED IN THE FOLLOWING PARTS LIST "PART NUMBER" COLUMNS ARE MARK INDUSTRIES PART NUMBERS.

	FIGURE 1 - FINAL ASSEMBLY (25E)	1

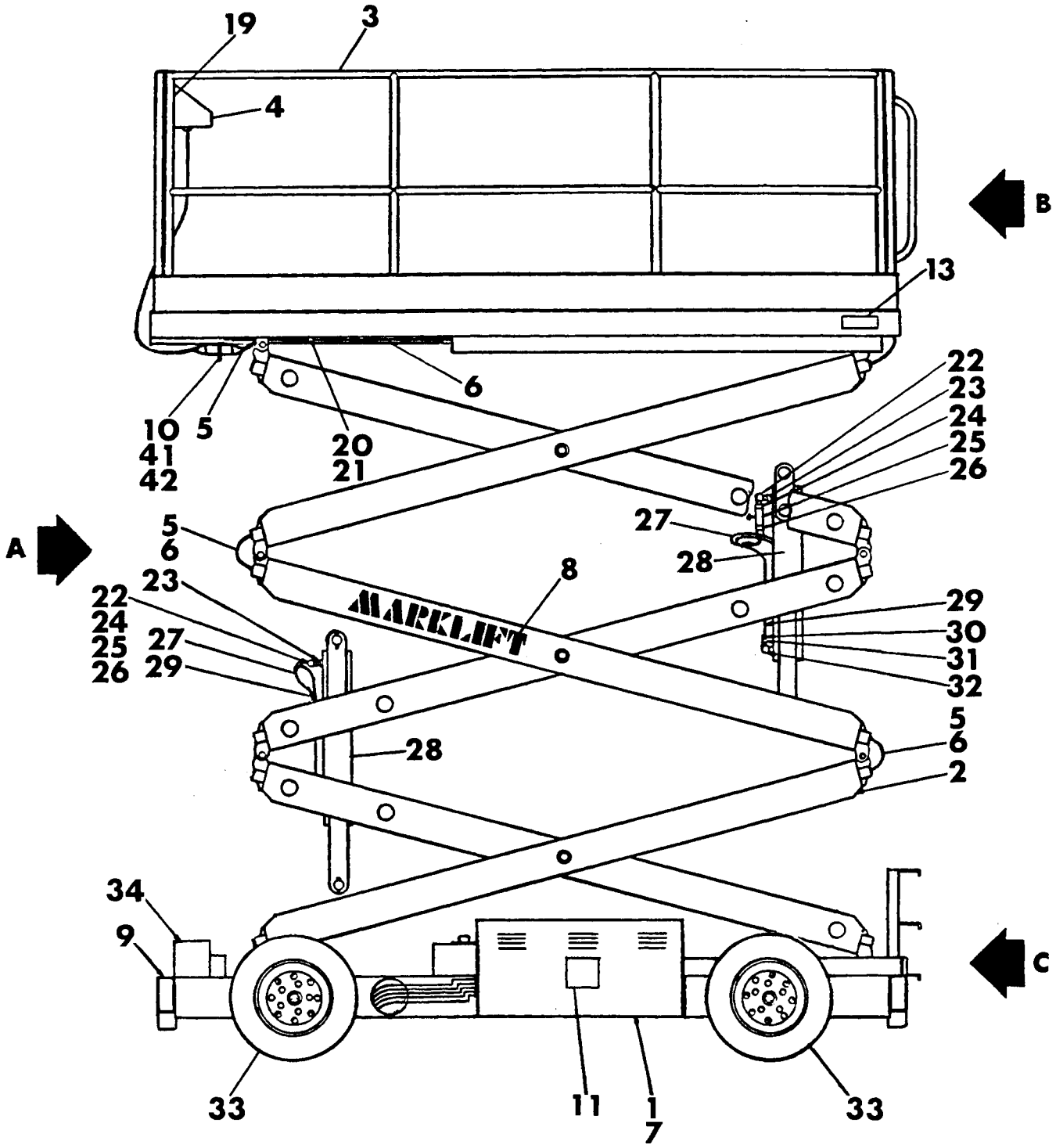


FIGURE 1 - FINAL ASSEMBLY (25E)

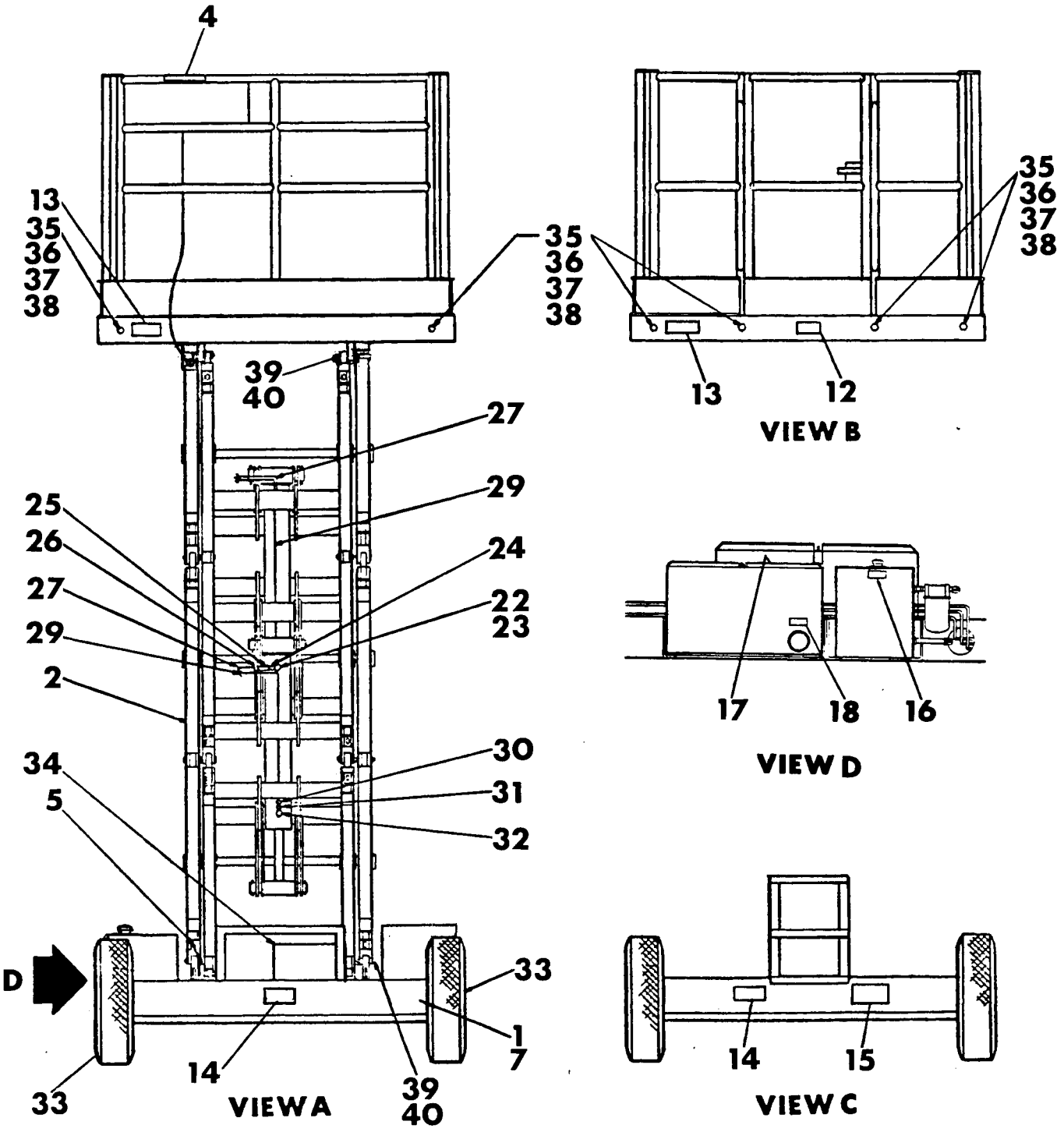


FIGURE 1 - FINAL ASSEMBLY (25E)

ITEM	PART NUMBER	DESCRIPTION	QTY
1-	30012	FINAL ASSEMBLY (1980)	1
-1	30589	FRAME ASSEMBLY (SEE FIG.5)	1
-2	30174	SCISSOR ASSEMBLY (SEE FIG.4)	1
-3	30615	DECK ASSEMBLY (SEE FIG.2)	1
-4	4069-1	HAND CONTROL BOX ASSEMBLY (SEE FIG.3)	
-5	30343	CONTROL CABLE ASSEMBLY	1
-6	30392	CABLE (3 COND. 12 AWG X 57 FT.)	1
-7	30612	HOSE KIT	1
-8	2048	DECAL - MARKLIFT	2
-9	2005	DECAL - "BATTERY CHARGER PLUG 115 VOLT ONLY"	1
-10	61502	HEX NUT 8-32 UNC	4
-11	2003	DECAL - BATTERY WATER LEVEL	1
-12	2018	DECAL - ANSI AND OSHA SPEC.	1
-13	2024	DECAL - "LOAD CAPACITY 1000 LBS."	4
-14	2041	DECAL - "DO NOT LIFT FROM THIS END"	2
-15	2012	PLATE - MODEL/SERIAL NUMBER	1
-16	2017	DECAL - HYDRAULIC FLUID SPEC.	2
-17	2016	DECAL - WARNING DO NOT WORK UNDERNEATH ETC.	2
-18	2019	DECAL - "EMERGENCY LOWERING VALVE"	1
-19	30416	DECAL - OPERATING INSTRUCTIONS	1
-20	764	HOSE CLAMP	24
-21	63655	POP RIVET 1/8 DIA. X 1	28
-22	2450	90° STREET ELBOW	2
-23	2477	REDUCER	2
-24	2498	ADAPTER	2
-25	750	CHECK VALVE	2
-26	2474	ADAPTER	2
-27		HOSE ASSEMBLY - LIFT CYLINDER	2
-28	3065	MAIN LIFT CYLINDER (SEE FIG.7D)	2
-29		HOSE ASSEMBLY - RETURN	2
-30	2496	TUBE END REDUCER	2
-31	2539	NUT	2
-32	2478	90° ELBOW	2

ITEM	PART NUMBER	DESCRIPTION	QTY
-33	9067	FRONT & REAR WHEEL INSTALLATION (SEE FIG.17)	1
-34	4006	BATTERY CHARGER	1
-35	60144	HEX HEAD CAPSCREW - ¼-20 X 2½	6
-36	60701	HEX NUT - ¼-20	14
-37	63401	FLAT WASHER - ¼	22
-38	63301	LOCK WASHER - ¼	14
-39	2375	EAR PIVOT BOLT	4
-40	61304	LOCK NUT - 3/4-10	4
-41	62603	ROUND HEAD SCREW - 6-32 X 1	4
-42	63311	LOCK WASHER NO. 6	4

FIGURE 1.1 - FINAL ASSEMBLY (25E) (1981)

SERIAL NUMBER EFFECTIVITY IS 281-7714 ON.

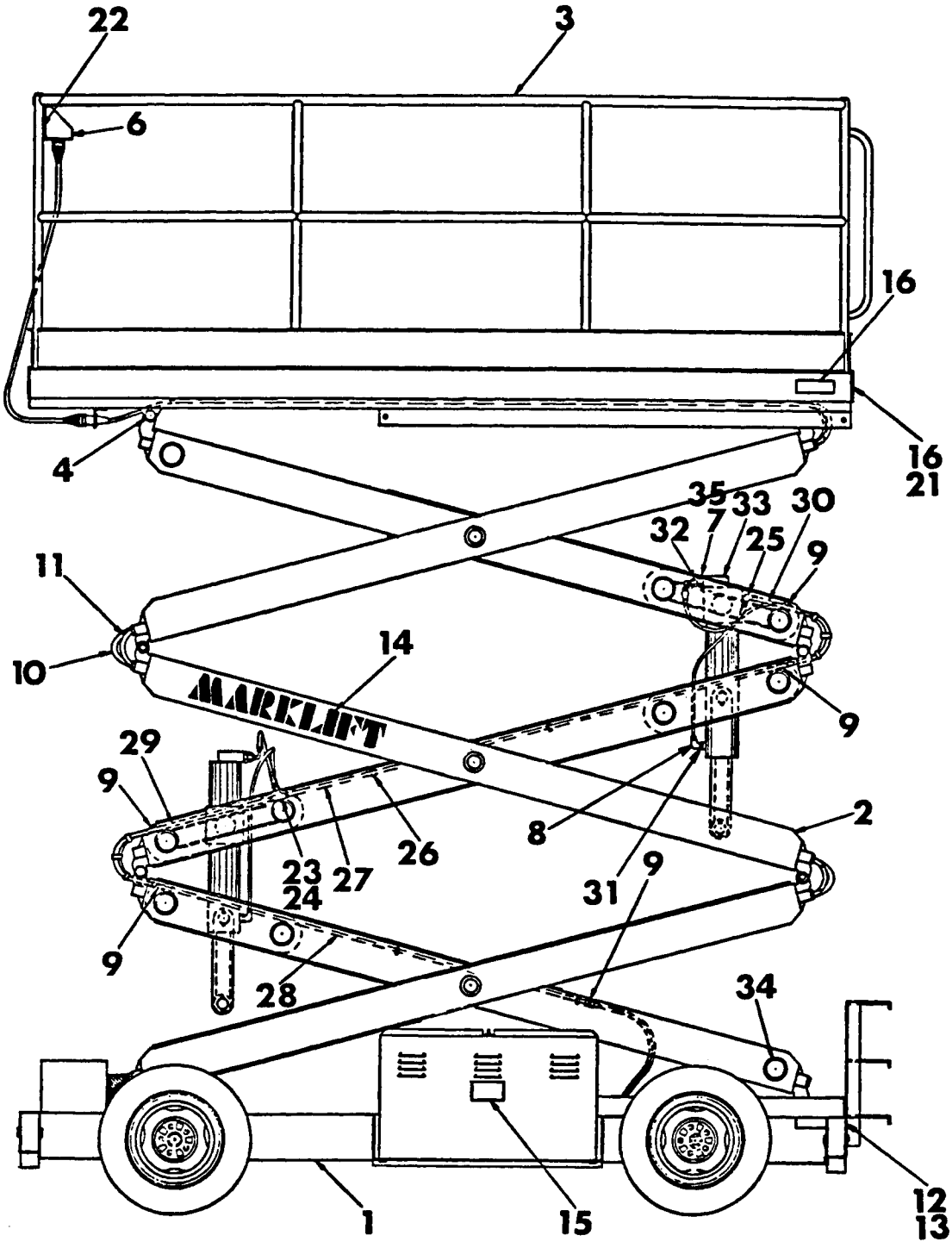
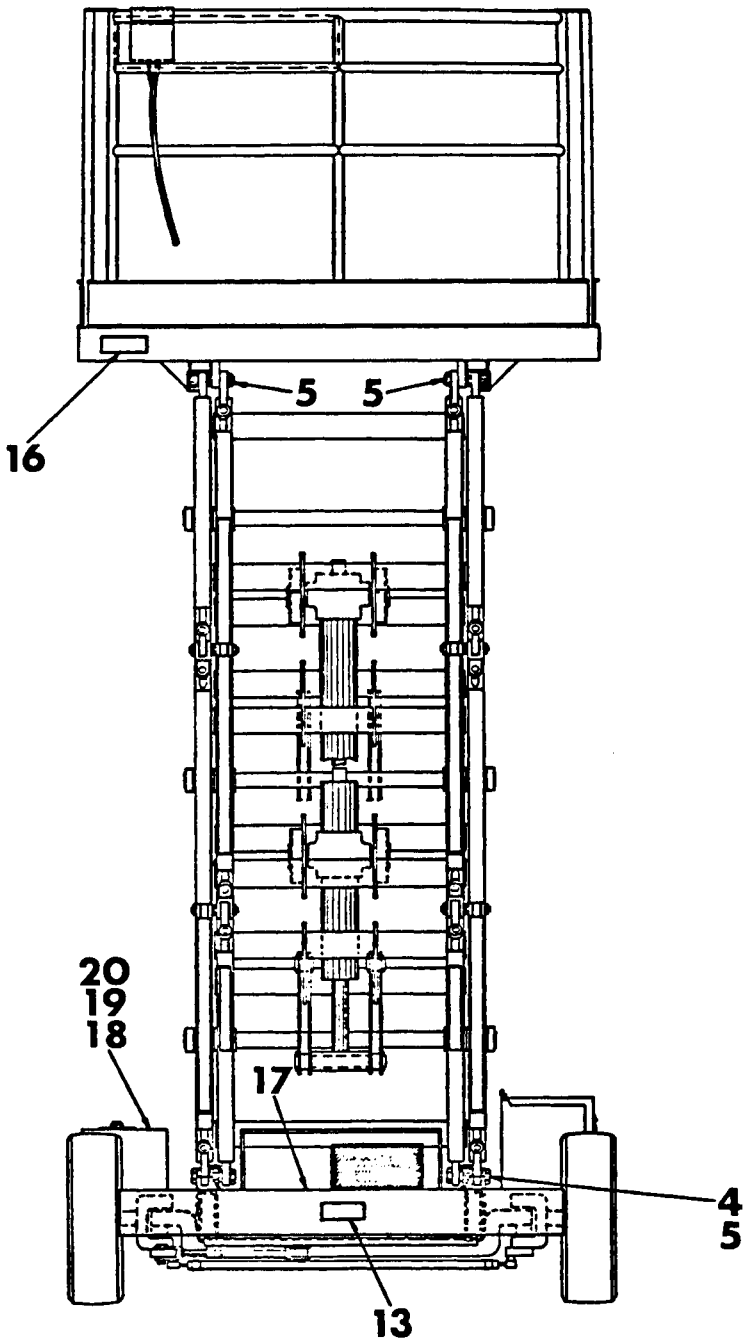


FIGURE 1.1 - FINAL ASSEMBLY (25E) (1981)

SERIAL NUMBER EFFECTIVITY IS 281-7714 ON.



REV.1 4-81	FIGURE 1.1 - FINAL ASSEMBLY (25E) (1981)	4.3

ITEM	PART NUMBER	DESCRIPTION	QTY
1.1-	30012	FINAL ASSEMBLY	1
-1	30689	FRAME ASSEMBLY (SEE FIG.5.1)	1
-2	30665	SCISSOR ASSEMBLY (SEE FIG.4.1)	1
-3	30657	DECK ASSEMBLY (SEE FIG.2.1)	1
-4	2375	EAR PIVOT BOLT	4
-5	61304	LOCK NUT	4
-6	4069-1	HAND CONTROL BOX ASSEMBLY (SEE FIG.3)	1
-7	780	ADAPTER	2
-8	2435	90° ELBOW	2
-9	2505	COUPLING	5
-10	30392	CONTROL CABLE	1
-11	4034	POWER TO PLATFORM CABLE	1
-12	2012	PLATE-MODEL/SERIAL NO.	1
-13	2041	DECAL - "DO NOT LIFT FROM THIS END"	2
-14	2048	DECAL - MARKLIFT	2
-15	2003	DECAL - BATTERY WATER LEVEL	1
-16	2024	DECAL - "LOAD CAPACITY 1000 LBS."	4
-17	2005	DECAL - "BATTERY CHARGER PLUG 115 VOLT ONLY"	1
-18	2017	DECAL - HYDRAULIC FLUID SPEC.	2
-19	2019	DECAL - "EMERGENCY LOWERING VALVE"	1
-20	2016	DECAL -"WARNING DO NOT WORK UNDERNEATH ETC."	1
-21	2018	DECAL - ANSI & OSHA SPEC.	1
-22	30416	DECAL - OPERATING INSTRUCTIONS	1
-23	2421	TEE	1
-24	2417	TEE	1
-25	2436	90° ELBOW	1
-26	765	HOSE CLAMP	9
-27		TUBE ASSEMBLY - 3/8	1
-28		TUBE ASSEMBLY - 3/8	1
-29		TUBE ASSEMBLY - 3/8	1
-30		TUBE ASSEMBLY - 3/8	1
-31	2600	REDUCER	2
-32	2578	REDUCER	2

FIGURE 1.1 - FINAL ASSEMBLY (25E) (1981)

ITEM	PART NUMBER	DESCRIPTION	QTY
-33	3059	CHECK VALVE	2
-34	65188	ACTUATOR TUBE PLUG	20
-35	2501	"B" NUT	1

SERIAL NUMBER EFFECTIVITY IS 281-7714 ON.

FIGURE 1.2 - FINAL ASSEMBLY (25ETD)

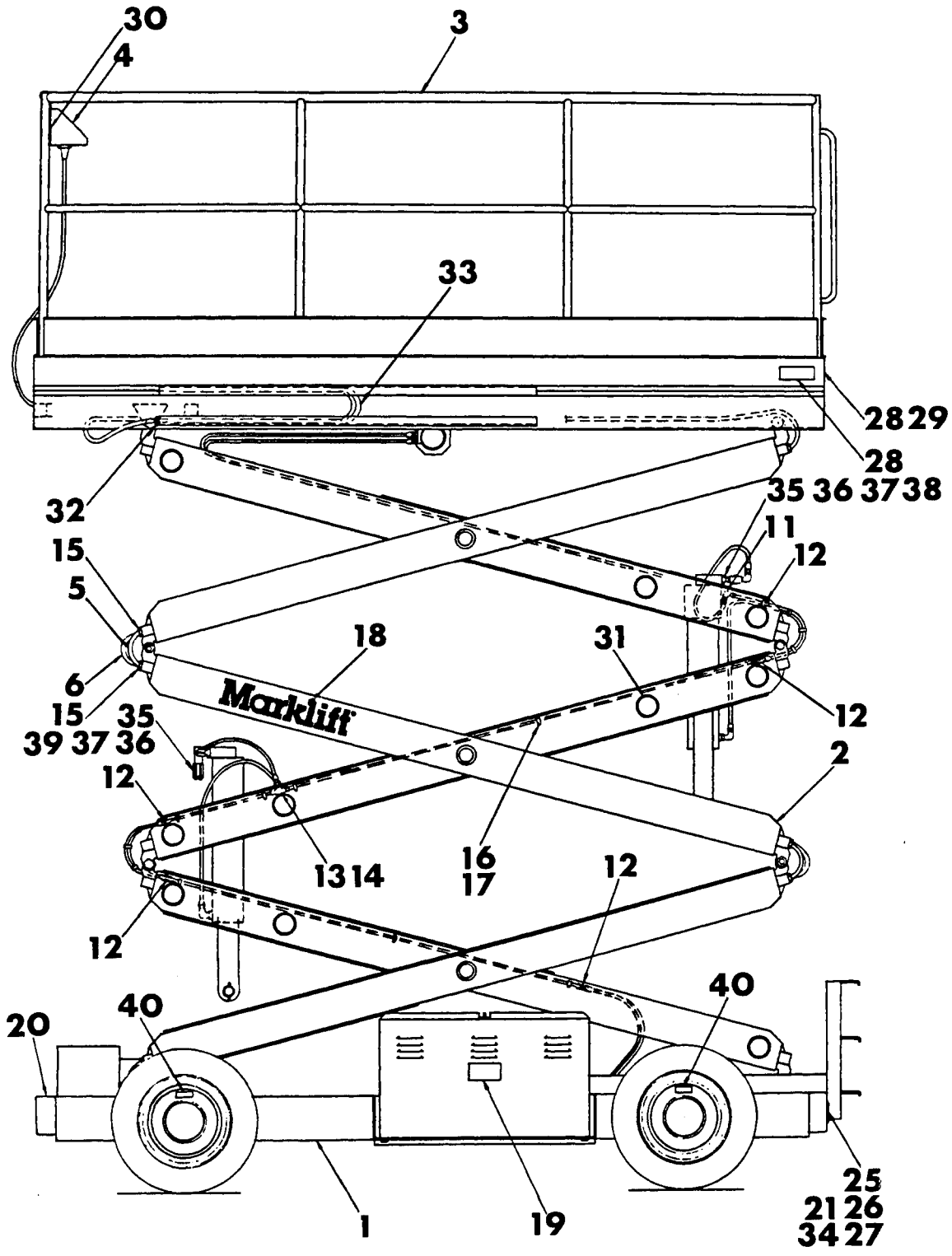


FIGURE 1.2 - FINAL ASSEMBLY (25ETD)

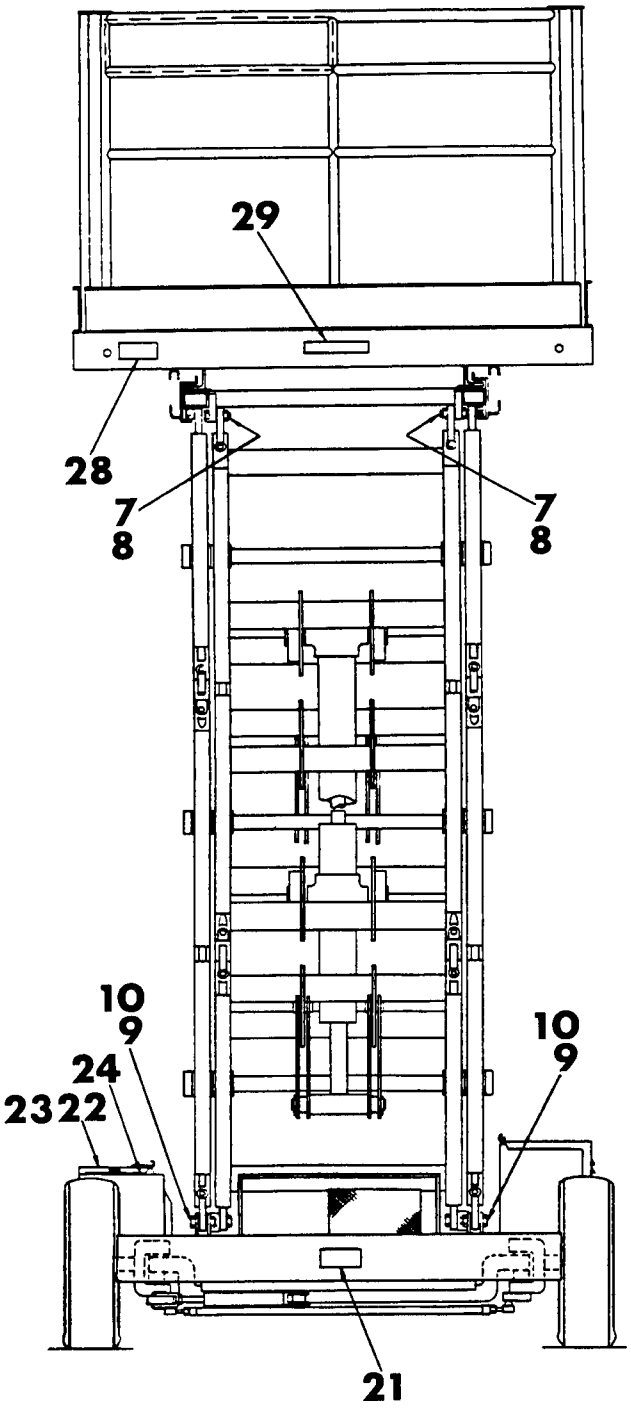


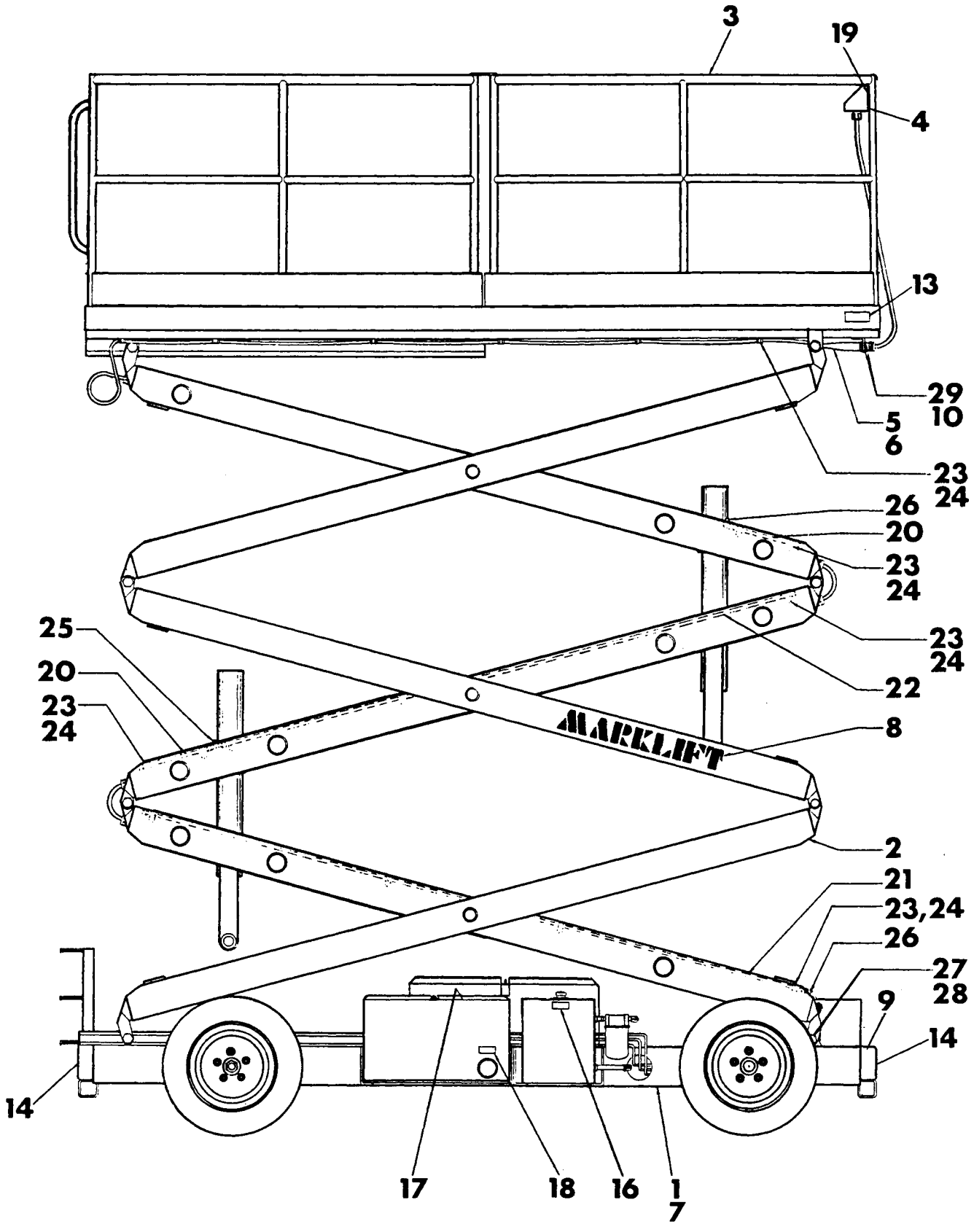
FIGURE 1.2 - FINAL ASSEMBLY (25ETD)

ITEM	PART NUMBER	DESCRIPTION	QTY
1.2-	30032	FINAL ASSEMBLY	1
-1	31202	FRAME ASSEMBLY (SEE FIG. 5.2)	1
-2	30665	SCISSOR ASSEMBLY (SEE FIG. 4.1)	1
-3	31195	DECK ASSEMBLY (SEE FIG. 2.2)	1
-4	31203	HAND CONTROL BOX ASSEMBLY (SEE FIG.3.1)	1
-5	30344	ARM CONTROL CABLE	1
-6	31210	CONTROL CABLE	1
-7	30706	EAR PIVOT BOLT	2
-8	61311	LOCK NUT - 5/8-11UNC (GR. 5)	
-9	30889	EAR PIVOT BOLT	2
-10	61304	LOCK NUT - 3/4-10UNC	2
-11	80014-05	UNION ELBOW	1
-12	80042-05	UNION	5
-13	80031-05	UNION TEE	1
-14	80031-03	UNION TEE	1
-15	16222	STRAIN RELIEF	6
-16	765	HOSE CLAMP	9
-17	63651	POP RIVET - 3/16 X 1/2	9
-18	31260	DECAL - MARKLIFT	2
-19	2003	DECAL - BATTERY WATER LEVEL	1
-20	2005	DECAL - "BATTERY CHARGER PLUG 115 VOLT ONLY"	1
-21	2041	DECAL - "DO NOT LIFT FROM THIS END"	2
-22	2019	DECAL - "EMERGENCY LOWERING VALVE"	1
-23	2016	DECAL - "WARNING - DO NOT WORK UNDER-NEATH ETC."	1
-24	2017	DECAL - HYDRAULIC FLUID SPEC.	1
-25	20661	PLATE - ANSI A92	1
-26	20660	PLATE - MODEL/SERIAL NUMBER	1
-27	30520	PLATE - PATENT NUMBER	1
-28	2024	DECAL - "LOAD CAPACITY 1000 LBS."	4
-29	31109	DECAL - " GUARD RAILS ARE FOR YOUR SAFETY - DO NOT REMOVE"	2

FIGURE 1.2 - FINAL ASSEMBLY (25ETD)

ITEM	PART NUMBER	DESCRIPTION	QTY
-30	30416	DECAL - OPERATING INSTRUCTIONS	1
-31	65188	ACTUATOR TUBE PLUG	20
-32	65451	HOSE CLAMP	4
-33	31034	HOSE	2
-34	375	POP RIVET	12
-35	31251	MODIFIED PLUG	2
-36	80052-04	PIPE NIPPLE	2
-37	31221	SOLENOID VALVE	2
-38	80008-08	MALE ELBOW	1
-39	80021-03	STREET ELBOW	1
-40	22175	DECAL - "CAUTION - MONOFILLED TIRES ONLY"	4

FIGURE 1A - FINAL ASSEMBLY (30E)



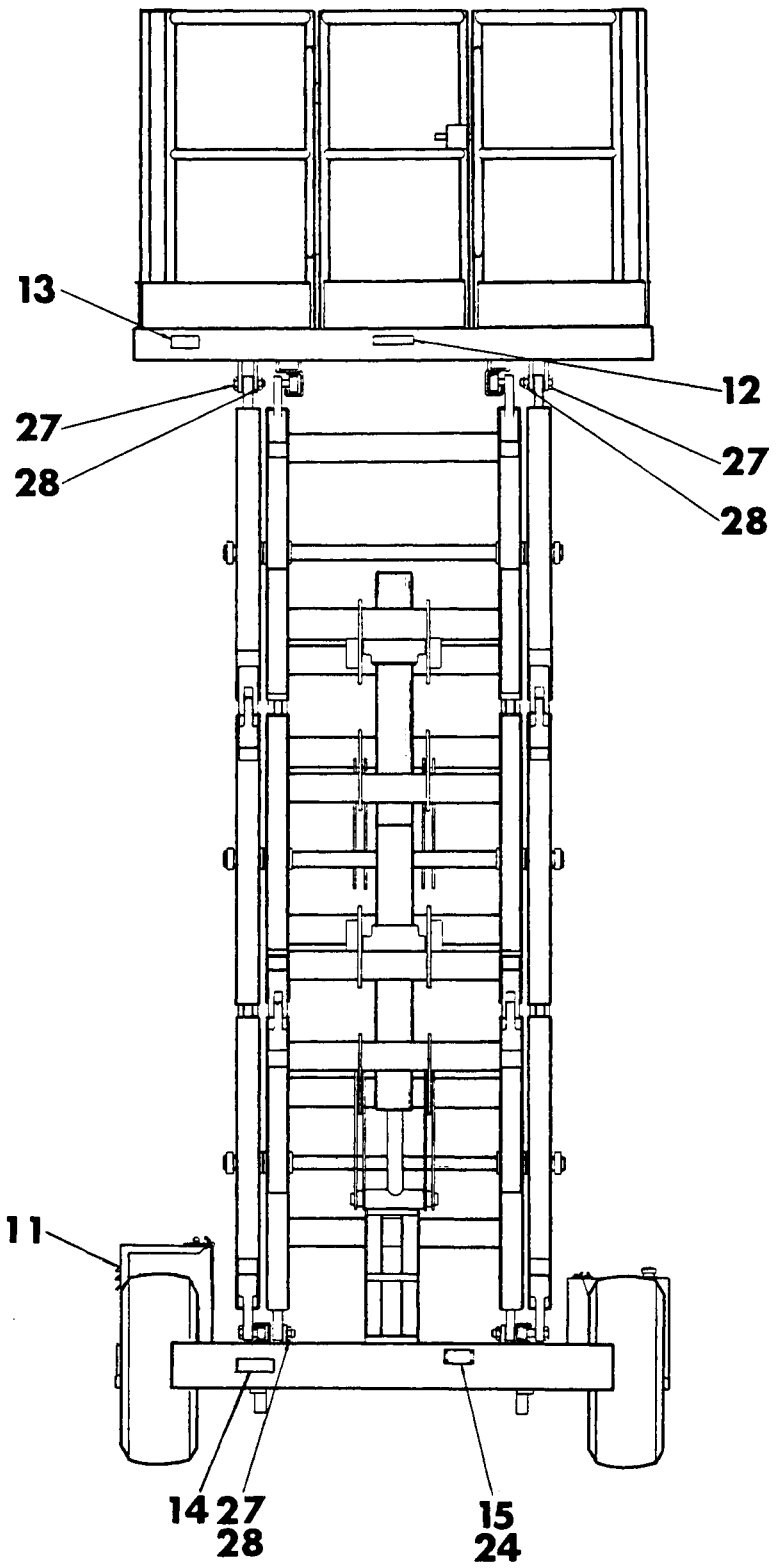
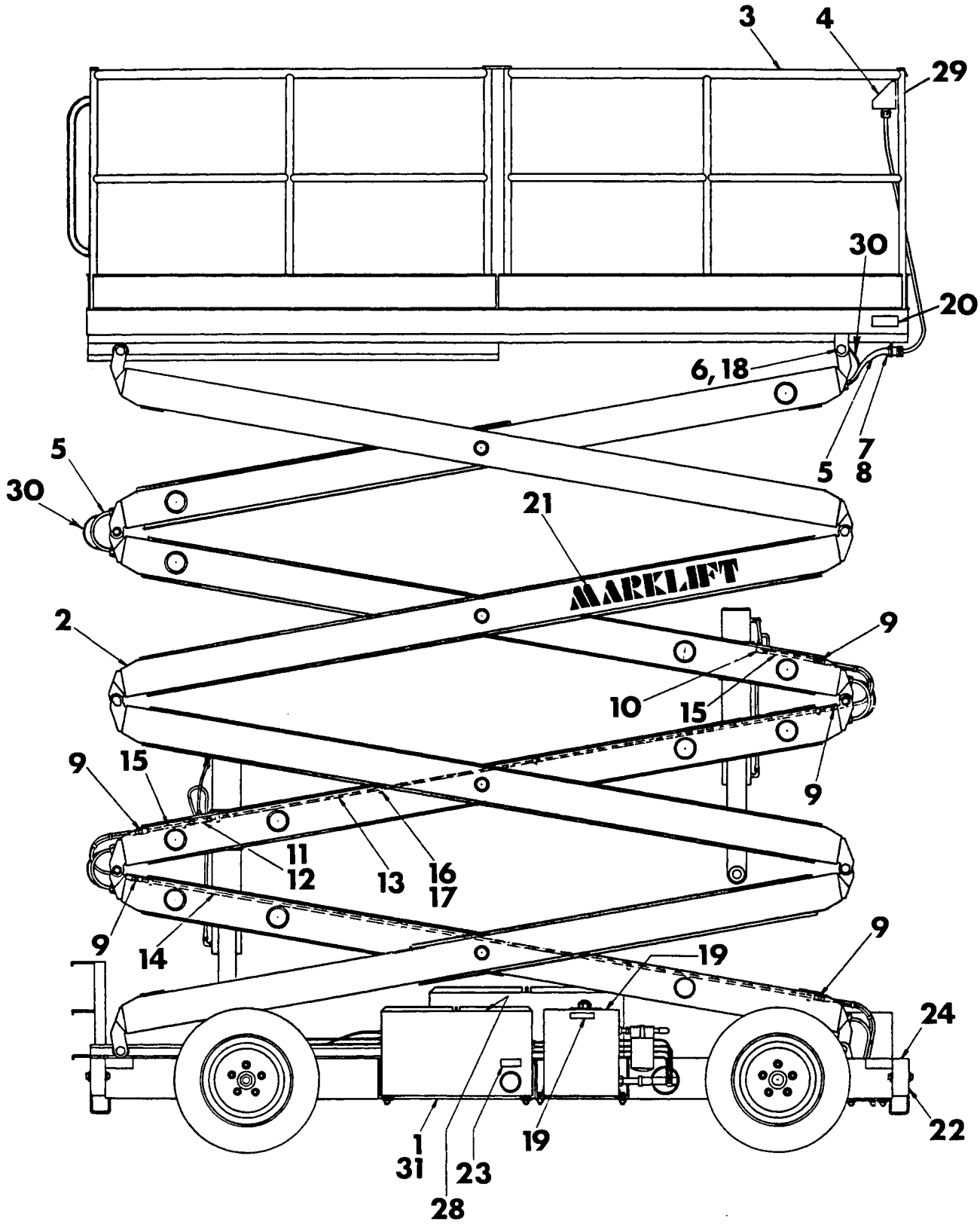

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FIGURE 1A - FINAL ASSEMBLY (30E)

ITEM	PART NUMBER	DESCRIPTION	QTY
1A-	30008	FINAL ASSEMBLY	1
-1	30565	FRAME ASSEMBLY (SEE FIG.5A)	1
-2	30231	SCISSOR ASSEMBLY (SEE FIG.4A)	1
-3	30497	DECK ASSEMBLY (SEE FIG.2A)	1
-4	4069-1	HAND CONTROL BOX ASSEMBLY (SEE FIG.3)	1
-5	30344	CONTROL CABLE ASSEMBLY (NEAR SIDE)	1
-6		CABLE (3 COND. 12 AWG X 63 FT.) (FAR SIDE)	1
-7	30608	HOSE KIT	1
-8	2049	DECAL-MARKLIFT	2
-9	2005	DECAL-"BATTERY CHARGER-PLUG 115 VOLT ONLY"	1
-10		HEX NUT 8-32 UNC	4
-11	2003	DECAL-BATTERY WATER LEVEL	1
-12	2018	DECAL-ANSI AND OSHA SPEC.	1
-13	2026	DECAL-"LOAD CAPACITY 1500 LBS."	4
-14	2041	DECAL-"DO NOT LIFT FROM THIS END"	2
-15	2012	PLATE-MODEL/SERIAL NUMBER	1
-16	2017	DECAL-HYDRAULIC FLUID SPEC.	2
-17	2016	DECAL-WARNING DO NOT WORK UNDERNEATH ETC.	2
-18	2019	DECAL-"EMERGENCY LOWERING VALVE"	1
-19	30416	DECAL-OPERATING INSTRUCTIONS	1
-20		TUBE ASSEMBLY ½	2
-21		TUBE ASSEMBLY ½	1
-22		TUBE ASSEMBLY ½	1
-23	765	HOSE CLAMP	24
-24	63655	POP RIVET 1/8 DIA. X 1	28
-25	2421	UNION TEE	1
-26	2436	UNION ELBOW	2
-27	30296	EAR PIVOT BOLT	4
-28	60707	HEX LOCK NUT 3/4 - 10 UNC	4
-29	62613	CAPSCREW 8-32 UNC X 1 RD. SLT. HD.	4

FIGURE 1B - FINAL ASSEMBLY (36E)



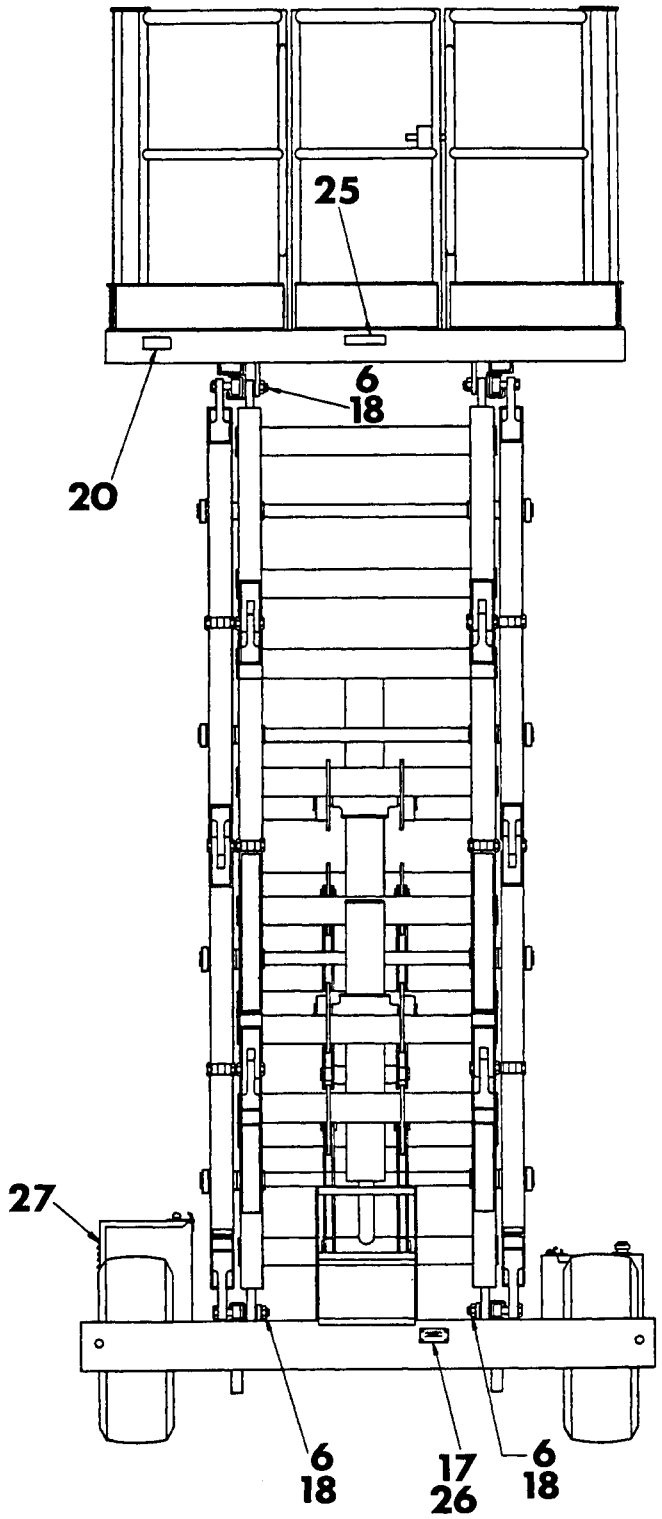

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	FIGURE 1B - FINAL ASSEMBLY (36E)	10

ITEM	PART NUMBER	DESCRIPTION	QTY
1B-	30003	FINAL ASSEMBLY	1
-1	30354	FRAME ASSEMBLY (SEE FIG.5A)	1
-2	30232	SCISSOR ASSEMBLY (SEE FIG.4B)	1
-3	30498	DECK ASSEMBLY (SEE FIG.2A)	1
-4	4069-1	HAND CONTROL BOX ASSEMBLY (SEE FIG.3)	1
-5	30344	CONTROL CABLE ASSEMBLY	1
-6	30296	EAR PIVOT BOLT	
-7	62613	ROUND HEAD SLOTTED CAP SCREW 8-32 UNCX1	4
-8	61502	HEX NUT 8-32 UNC	4
-9	2505	COUPLING	5
-10	2436	UNION ELBOW	1
-11	2421	TEE FITTING	1
-12	2417	TEE FITTING	1
-13		TUBE ASSEMBLY 3/8	1
-14		TUBE ASSEMBLY 3/8	1
-15		TUBE ASSEMBLY 3/8	2
-16	765	HOSE CLAMP	24
-17	63655	POP RIVET 1/8 DIA.X 1	28
-18	61304	HEX LOCK NUT 3/4-10 UNC	4
-19	2017	DECAL - HYDRAULIC FLUID SPEC.	2
-20	2024	DECAL -"LOAD CAPACITY 1000 LBS"	4
-21	2049	DECAL - MARKLIFT	2
-22	2041	DECAL -"DO NOT LIFT FROM THE END"	2
-23	2019	DECAL -"EMERGENCY LOWERING VALVE"	1
-24	2005	DECAL -"BATTERY CHARGER PLUG 115 VOLT ONLY"	1
-25	2018	DECAL - ANSI & OSHA SPEC.	1
-26	2012	PLATE - MODEL/SERIAL NUMBER	1
-27	2003	DECAL - BATTERY WATER LEVEL	1
-28	2016	DECAL - WARNING DO NOT WORK UNDERNEATH	2
-29	30416	DECAL - OPERATING INSTRUCTIONS	1
-30		CABLE (3 COND. 12 AWG. X 63 FT.)	1
-31	30603	HOSE KIT	1

FIGURE 1B.1 - FINAL ASSEMBLY (25GTD)

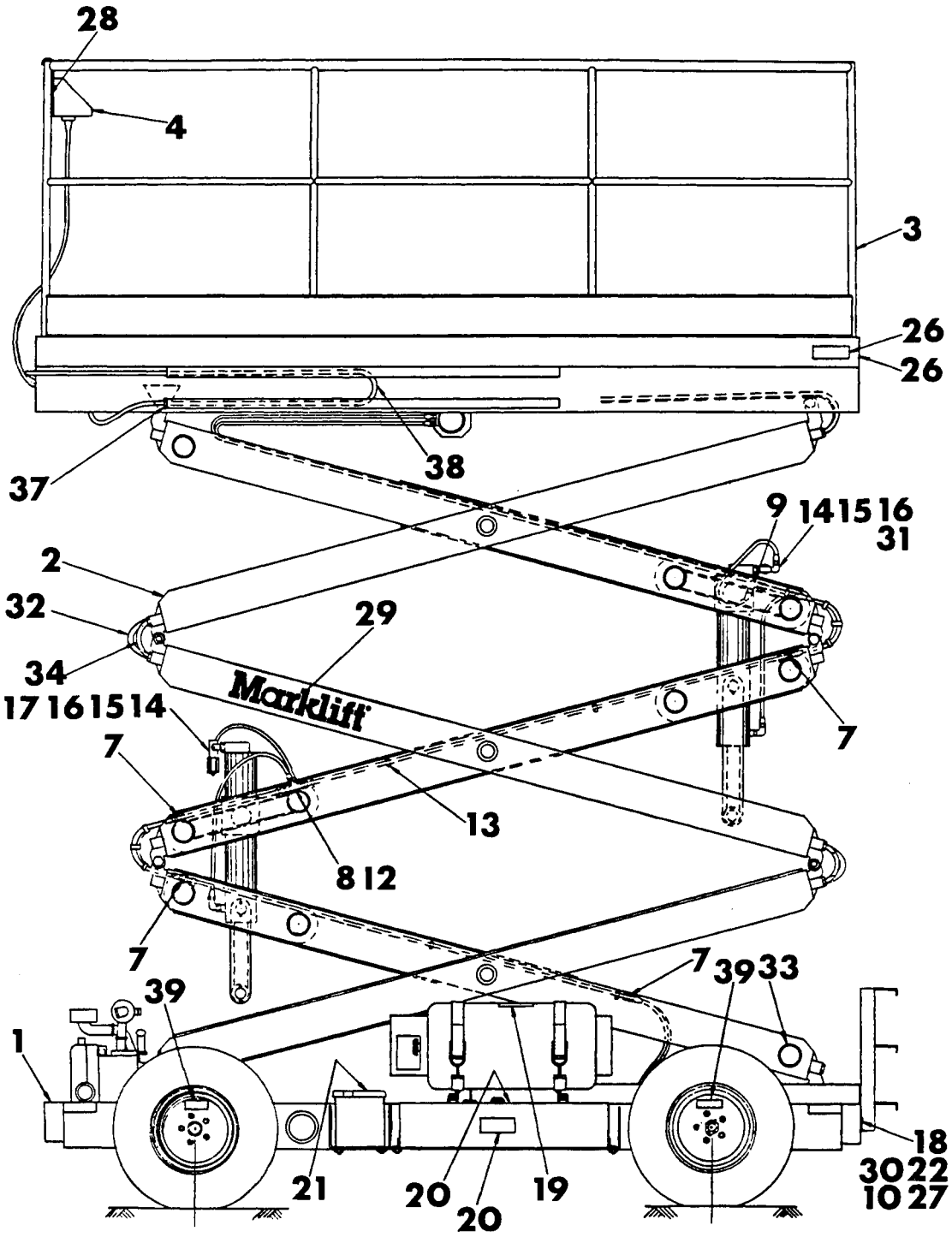


FIGURE 1B.1 - FINAL ASSEMBLY (25GTD)

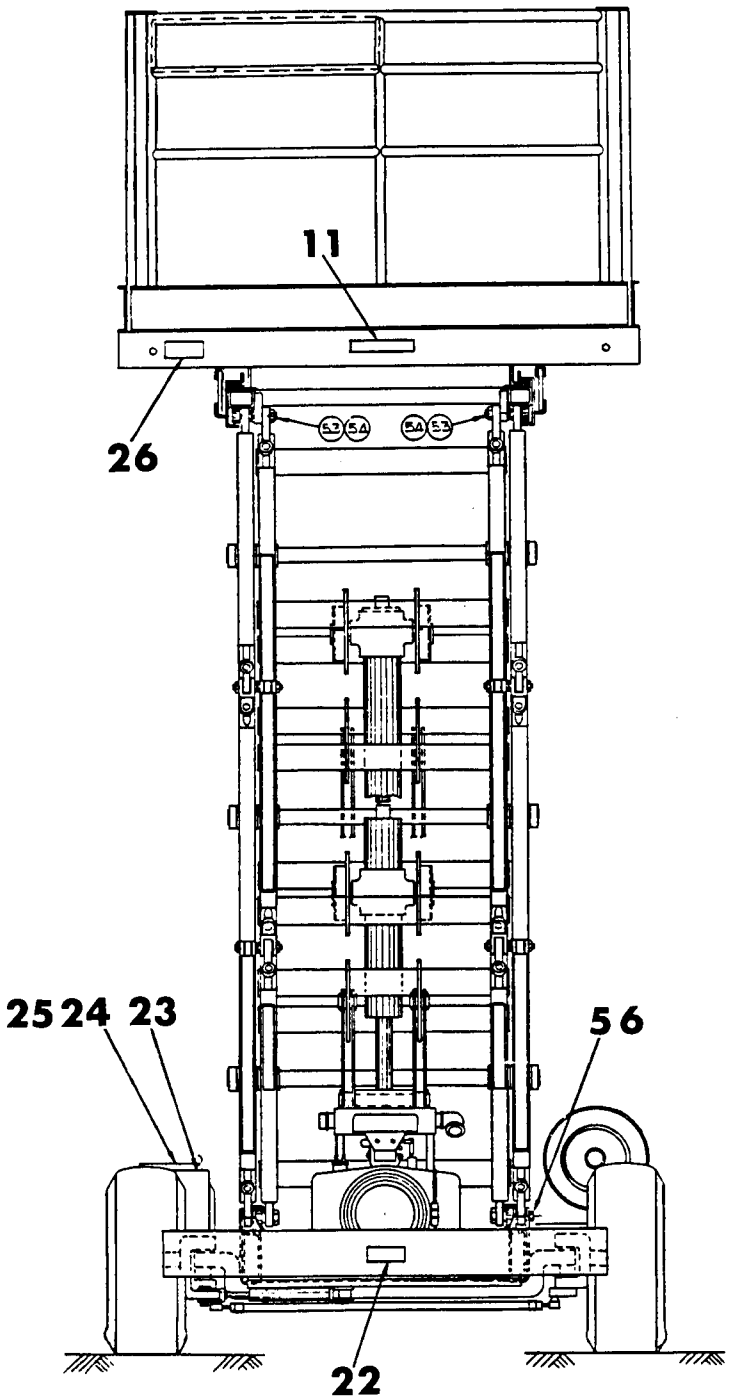
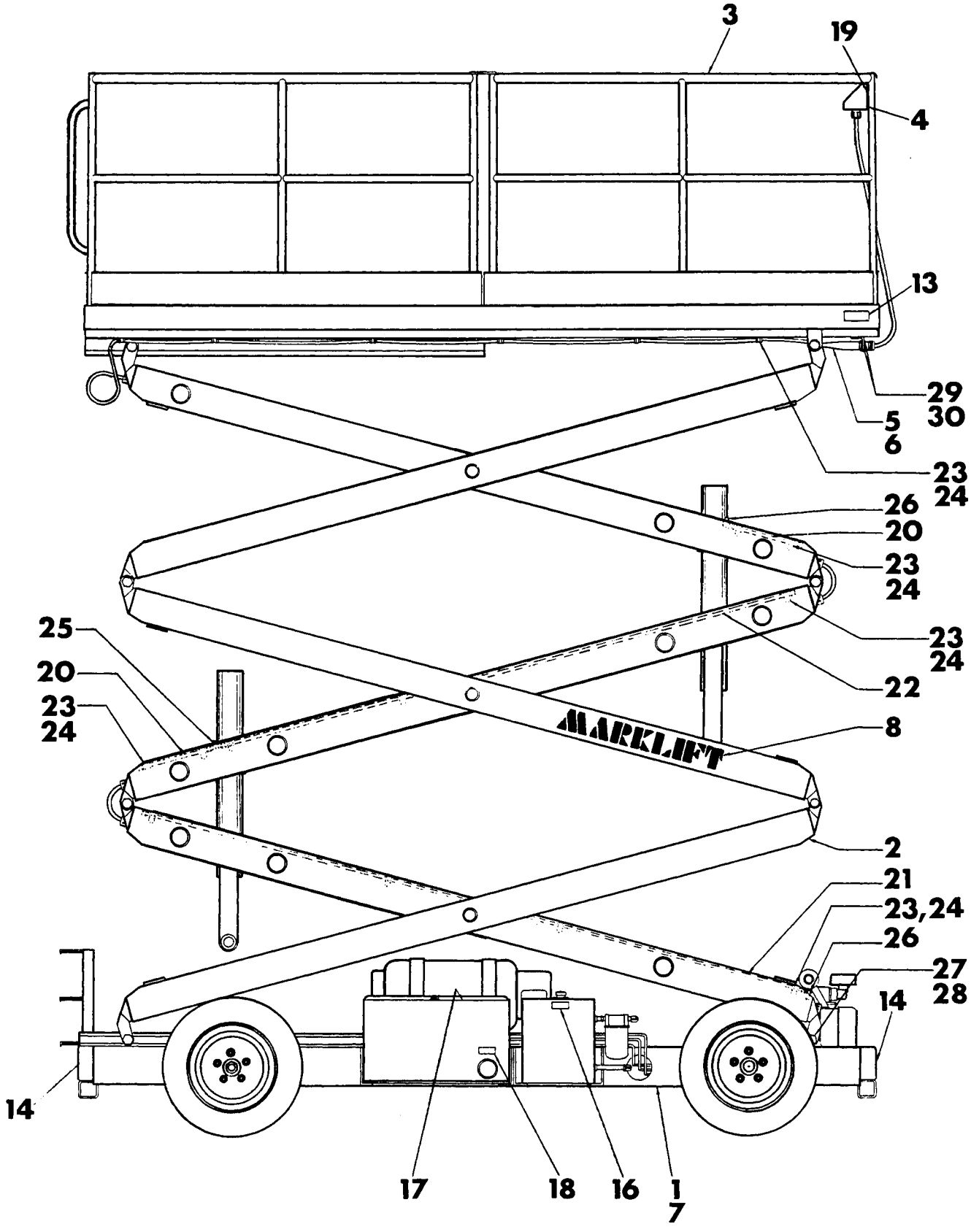


FIGURE 1B.1 - FINAL ASSEMBLY (25GTD)

ITEM	PART NUMBER	DESCRIPTION	QTY
1B.1-	30034	FINAL ASSEMBLY	1
-1	31275	FRAME ASSEMBLY (SEE FIG. 5A.1)	1
-2	30665	SCISSOR ASSEMBLY (SEE FIG. 4.1)	1
-3	31195	DECK ASSEMBLY (SEE FIG. 2.2)	1
-4	31279	HAND CONTROL BOX ASSEMBLY (SEE FIG. 3.2)	1
-5	30889	EAR PIVOT BOLT	2
-6	61304	LOCK NUT - 3/4-10UNC	2
-7	80042-05	UNION	5
-8	80031-05	UNION TEE	1
-9	80014-05	UNION ELBOW	1
-10	375	POP RIVET - 1/8	12
-11	31109	DECAL - "GUARD RAILS ARE FOR YOUR SAFETY - DO NOT REMOVE"	2
-12	80031-03	UNION TEE	1
-13	765	HOSE CLAMP	11
-14	31251	MODIFIED PLUG	2
-15	80052-04	PIPE NIPPLE	2
-16	31221	SOLENOID VALVE	2
-17	80021-03	STREET ELBOW	1
-18	30520	PLATE - PATENT NUMBER	1
-19	2004	DECAL - "USE VAPOR TANK ONLY"	1
-20	2020	DECAL - "GASOLINE OR PETROL"	2
-21	2003	DECAL - BATTERY WATER LEVEL	1
-22	2041	DECAL - "DO NOT LIFT FROM THIS END"	2
-23	2019	DECAL - "EMERGENCY LOWERING VALVE"	1
-24	2016	DECAL - "WARNING - DO NOT WORK UNDER-NEATH ETC."	1
-25	2017	DECAL - HYDRAULIC FLUID SPEC.	2
-26	2024	DECAL - "LOAD CAPACITY 1000 LBS."	4
-27	20661	PLATE - ANSI A92	1
-28	30416	DECAL - OPERATING INSTRUCTIONS	1
-29	31260	DECAL - MARKLIFT	2
-30	20660	PLATE - MODEL/SERIAL NUMBER	1

FIGURE 1B.1 - FINAL ASSEMBLY (25GTD)

ITEM	PART NUMBER	DESCRIPTION	QTY
-31	80008-08	MALE ELBOW	1
-32	31210	CONTROL CABLE	1
-33	65188	ACTUATOR TUBE PLUG	20
-34	30344	ARM CONTROL CABLE	1
-35	30706	EAR PIVOT BOLT	2
-36	60706	NUT - 5/8-11UNC (GR. 5)	2
-37	65451	HOSE CLAMP	4
-38	31034	HOSE	2
-39	22175	DECAL - "CAUTION - MONOFILLED TIRES ONLY"	4


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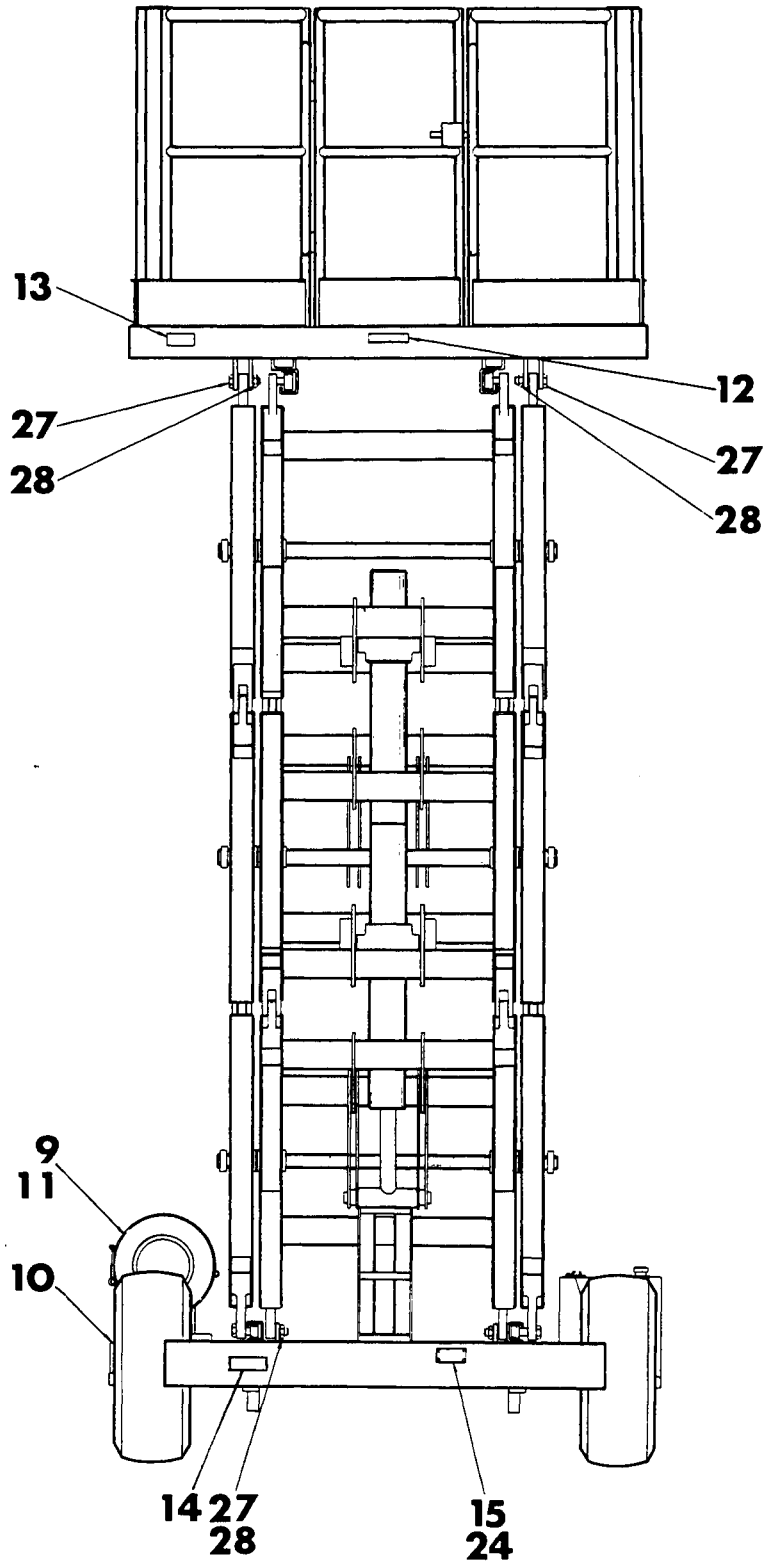
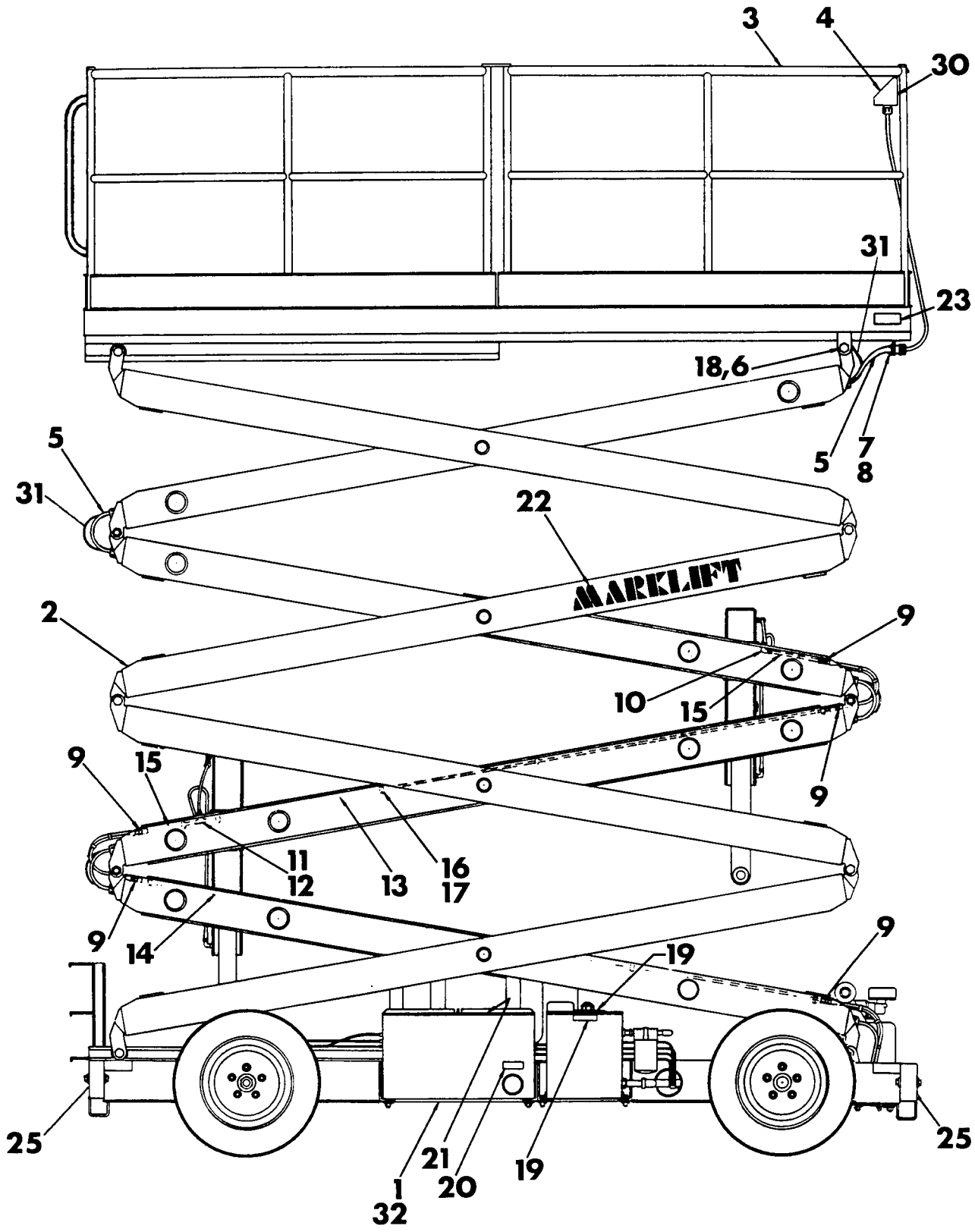

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	FIGURE 1C - FINAL ASSEMBLY (30G)	13

ITEM	PART NUMBER	DESCRIPTION	QTY
1C-	30007	FINAL ASSEMBLY	1
-1	30333	FRAME ASSEMBLY (SEE FIG.5B)	1
-2	30231	SCISSOR ASSEMBLY (SEE FIG.4A)	1
-3	30497	DECK ASSEMBLY (SEE FIG.2A)	1
-4	8325-1	HAND CONTROL BOX ASSEMBLY (SEE FIG.3A)	1
-5	30344	CONTROL CABLE ASSEMBLY (NEAR SIDE)	1
-6		CABLE (3 COND. 12 AWG X 63 FT.) (FAR SIDE)	1
-7	30607	HOSE KIT	1
-8	2049	DECAL-MARKLIFT	2
-9	2004	DECAL-"USE VAPOR TANK ONLY"	1
-10	2020	DECAL-"GASOLINE OR PETROL"	2
-11	2003	DECAL-BATTERY CHECK (LOCATED ON BATTERY BOX AT FAR END OF VAPOR TANK)	1
-12	2018	DECAL-ANSI AND OSHA SPEC.	1
-13	2026	DECAL-"LOAD CAPACITY 1500 LBS."	4
-14	2041	DECAL-"DO NOT LIFT FROM THIS END"	2
-15	2012	PLATE-MODEL/SERIAL NUMBER	1
-16	2017	DECAL-HYDRAULIC FLUID SPEC.	2
-17	2016	DECAL-WARNING DO NOT WORK UNDERNEATH ETC.	2
-18	2019	DECAL-"EMERGENCY LOWERING VALVE"	1
-19	30416	DECAL-OPERATING INSTRUCTIONS	1
-20		TUBE ASSEMBLY ½	2
-21		TUBE ASSEMBLY ½	1
-22		TUBE ASSEMBLY ½	1
-23	765	HOSE CLAMP	24
-24	63655	POP RIVET 1/8 DIA. X 1	28
-25	2421	UNION TEE	1
-26	2436	UNION ELBOW	2
-27	30296	EAR PIVOT BOLT	4
-28	60707	HEX LOCK NUT 3/4 - 10 UNC	4
-29	62613	CAPSCREW 8-32 UNC X 1 RD. SLT. HD.	4
-30	61502	HEX NUT 8-32 UNC	4


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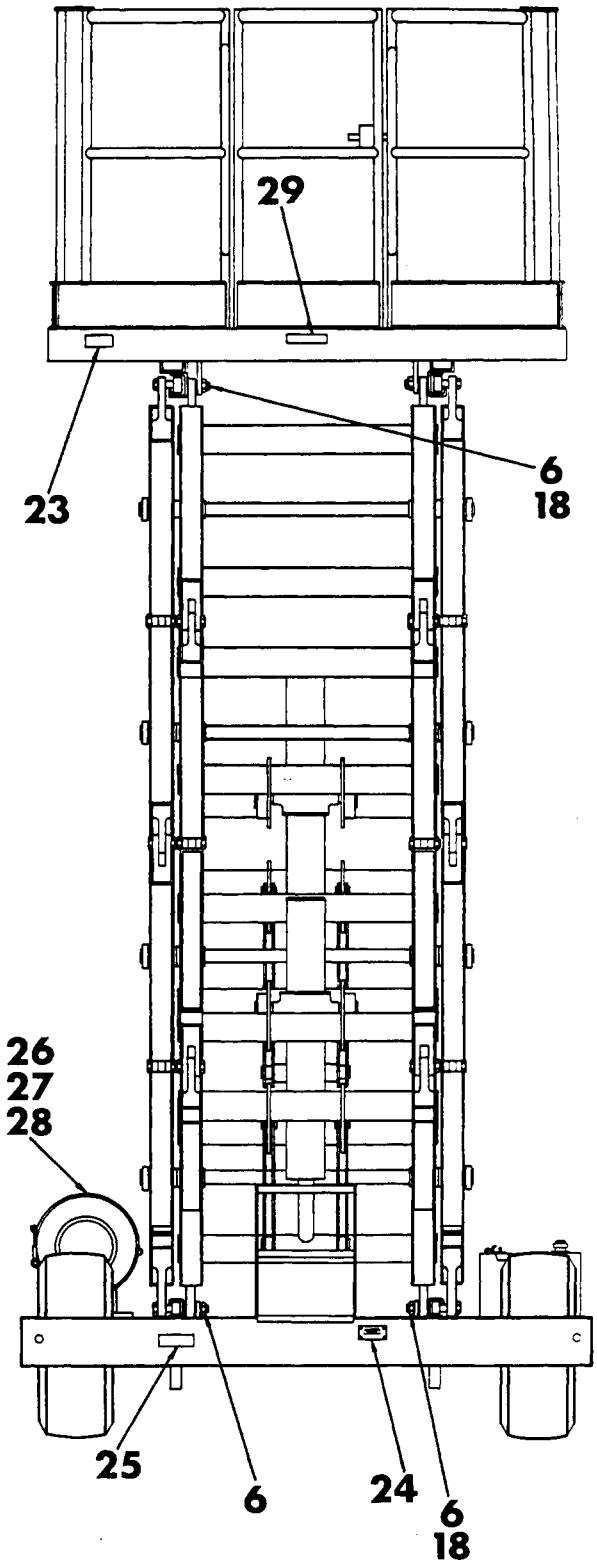

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	FIGURE 1D - FINAL ASSEMBLY (36G)	16

ITEM	PART NUMBER	DESCRIPTION	QTY
1D-	30002	FINAL ASSEMBLY	1
-1	30333	FRAME ASSEMBLY (SEE FIG.5B)	1
-2	30232	SCISSOR ASSEMBLY (SEE FIG.4B)	1
-3	30498	DECK ASSEMBLY (SEE FIG.2A)	1
-4	8325-1	HAND CONTROL BOX ASSEMBLY (SEE FIG.3A)	1
-5	30344	CONTROL CABLE ASSEMBLY	1
-6	30296	EAR PIVOT BOLT	4
-7	62613	CAPSCREW 8-32 UNC X 1 RD. SLT. HD.	4
-8	61502	HEX NUT 8-32 UNC	4
-9	2505	COUPLING	5
-10	2436	UNION ELBOW	1
-11	2421	TEE	1
-12	2417	TEE	1
-13		TUBE ASSEMBLY ½	1
-14		TUBE ASSEMBLY ½	1
-15		TUBE ASSEMBLY ½	2
-16	765	HOSE CLAMP	24
-17	63655	POP RIVET 1/8 DIA. X 1 LG.	28
-18	61304	HEX LOCK NUT 3/4-10 UNC	4
-19	2017	DECAL-HYDRAULIC FLUID SPEC.	2
-20	2019	DECAL-"EMERGENCY LOWERING VALVE"	1
-21	2016	DECAL-WARNING DO NOT WORK UNDERNEATH ETC.	2
-22	2049	DECAL-MARKLIFT	2
-23	2024	DECAL-"LOAD CAPACITY 1000 LBS."	4
-24	2012	PLATE-MODEL/SERIAL NUMBER	1
-25	2041	DECAL-"DO NOT LIFT FROM THIS END"	2
-26	2004	DECAL-"USE VAPOR TANK ONLY"	1
-27	2020	DECAL-"GASOLINE OR PETROL"	2
-28	2003	DECAL-BATTERY WATER LEVEL	1
-29	2018	DECAL-ANSI AND OSHA SPEC.	1
-30	30416	DECAL-OPERATING INSTRUCTIONS	1
-31		CABLE (3 COND. 12 AWG X 63 FT.)	1
-32	30602	HOSE KIT	1

FIGURE 2 - DECK ASSEMBLY (25E)

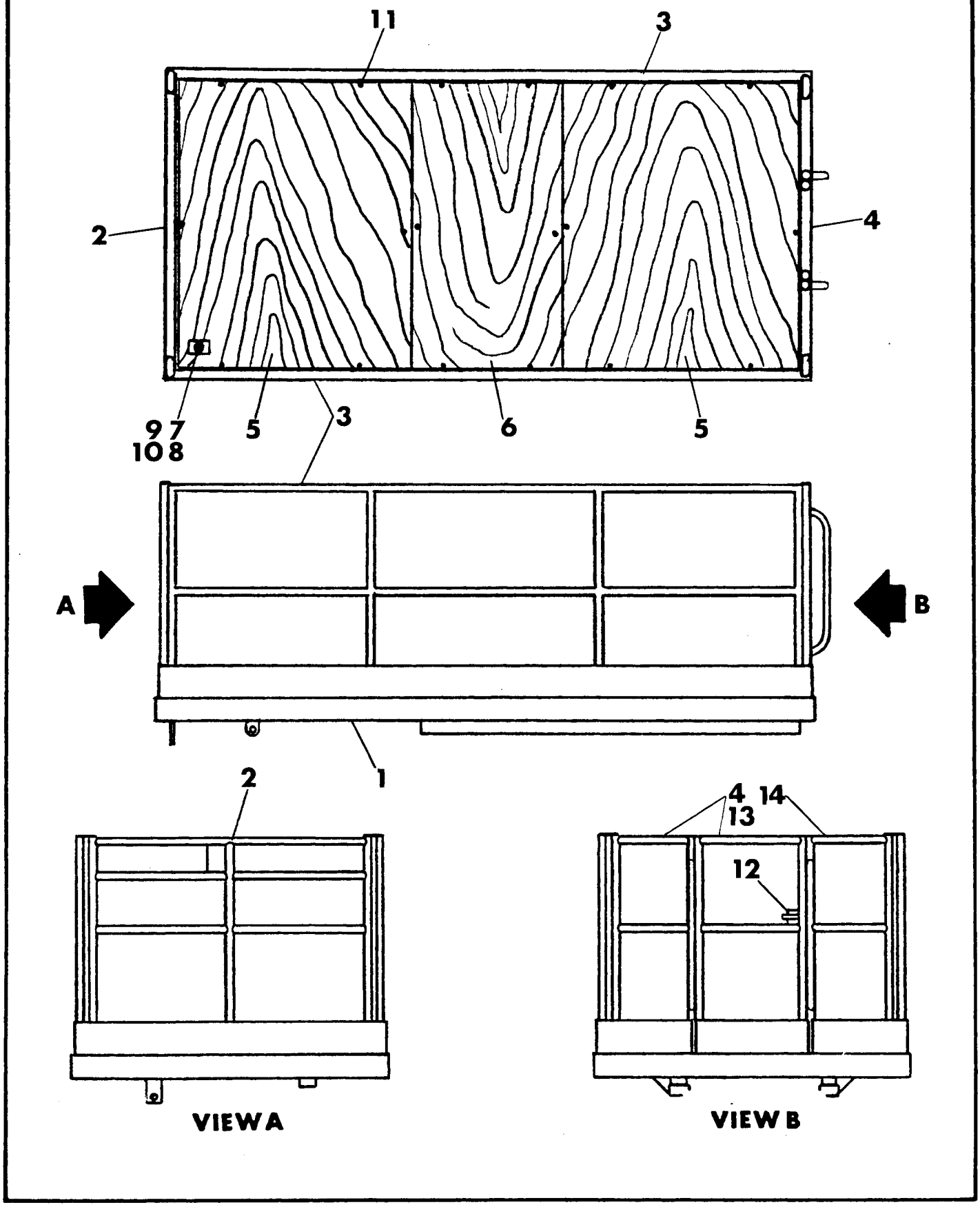
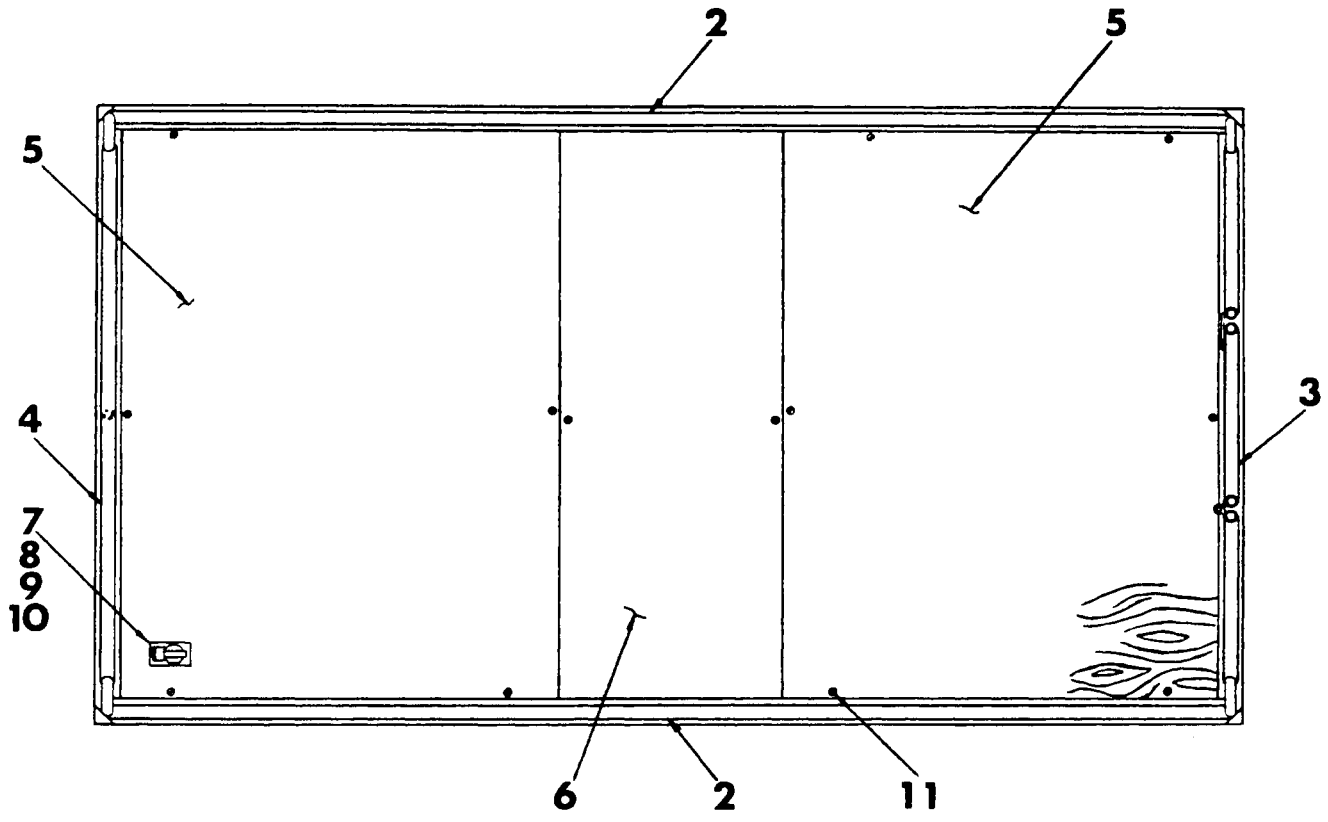


FIGURE 2 - DECK ASSEMBLY (25E)

ITEM	PART NUMBER	DESCRIPTION	QTY
2-	30615	DECK ASSEMBLY	1
-1	30116	DECK WELDMENT	1
-2	30145	GUARD RAIL ASSEMBLY-FRONT	1
-3	30146	GUARD RAIL ASSEMBLY-SIDE	2
-4	30668	REAR GUARD RAIL WITH GATE	1
-5	2248-A	PLYWOOD FLOOR SECTION-3/4 X 48 X 54	2
-6	2248-B	PLYWOOD FLOOR SECTION-3/4 X 24 X 54	1
-7	355	BELL BOX	1
-8	356	BELL BOX COVER	1
-9	4060	RECEPTACLE	1
-10	117G	ROMEX CONNECTOR	1
-11	61708	SELF TAPPING FLAT HEAD SCREW-¼ X 1¼	18
-12	16231	LATCH BOLT	1
-13	12005	GATE SPRING HINGE	2
-14	30669	REAR GUARD RAIL	1

FIGURE 2.1 - DECK ASSEMBLY (25E) (1981)

SERIAL NUMBER EFFECTIVITY IS 281-7714 ON.



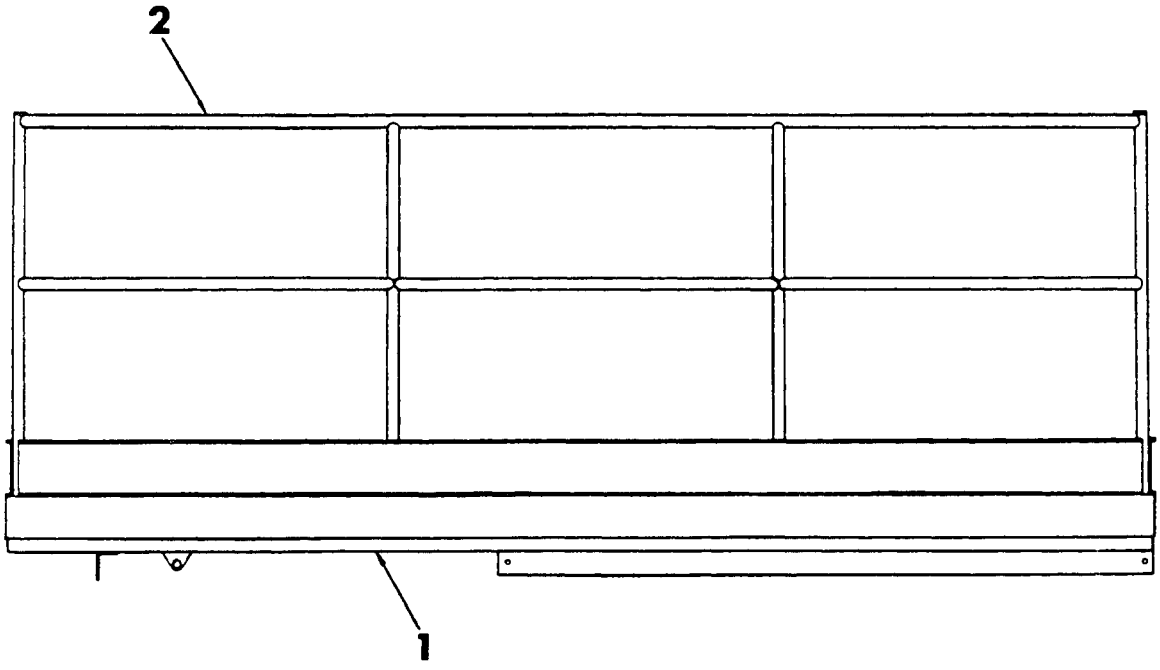


FIGURE 2.1 - DECK ASSEMBLY (25E) (1981)

ITEM	PART NUMBER	DESCRIPTION	QTY
2.1-	30657	DECK ASSEMBLY	1
-1	30654	DECK WELDMENT	1
-2	30146	GUARD RAIL ASSEMBLY - SIDE	2
-3	30281	GUARD RAIL ASSEMBLY - REAR	1
-4	30280	GUARD RAIL ASSEMBLY - FRONT	1
-5	30643	PLYWOOD FLOOR SECTION - 3/4 X 48x62 3/8	2
-6	30644	PLYWOOD FLOOR SECTION - 3/4 X 24 3/8 X 62 3/8	1
-7	4060	RECEPTACLE	1
-8	355	BELL BOX COVER	1
-9	355	BELL BOX	1
-10	117G	ROMEX CONNECTOR	1
-11	61706	FLAT HEAD SELF TAPPING SCREW - ¼ X 1¼	18

SERIAL NUMBER EFFECTIVITY IS 281-7714 ON.

FIGURE 2.2 - TRAVERSING DECK ASSEMBLY (25ETD) (25GTD)

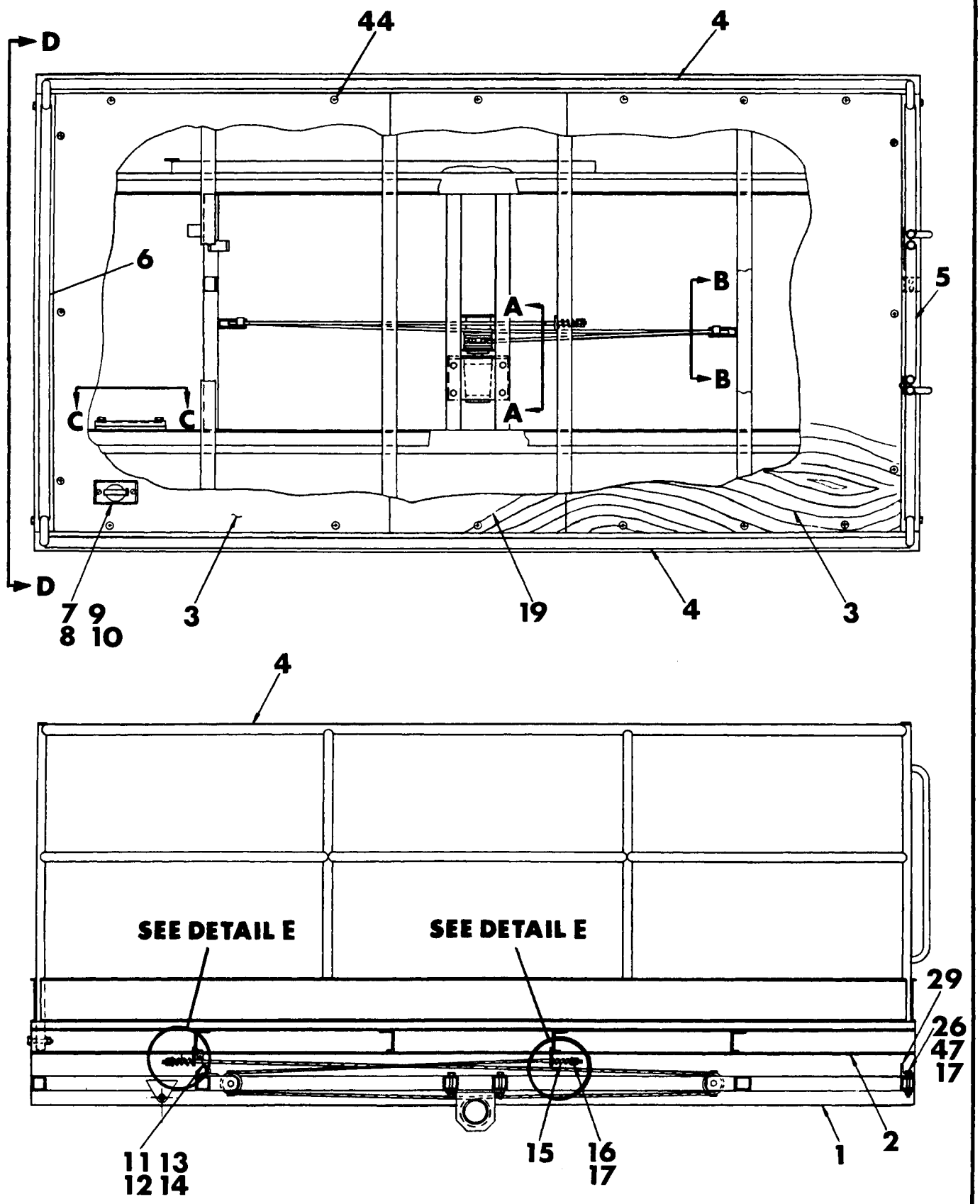
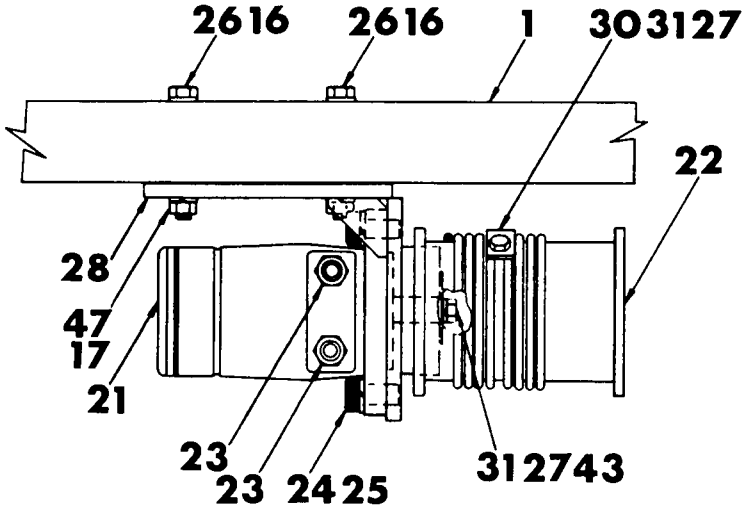
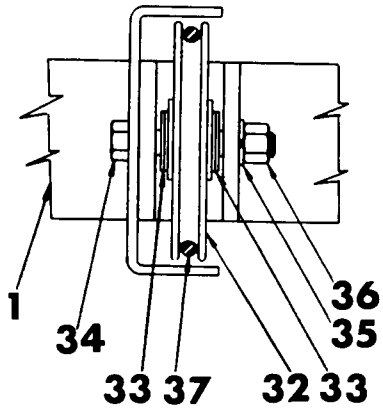


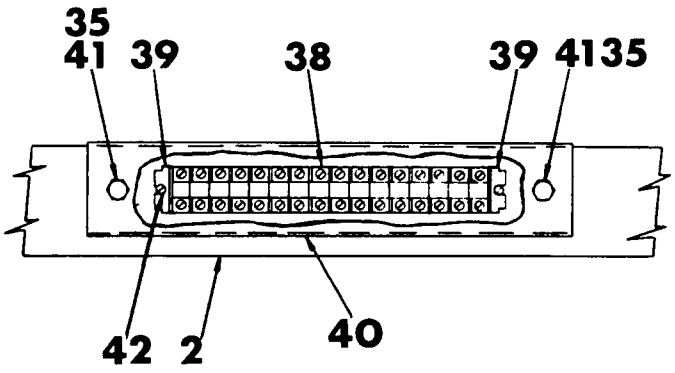
FIGURE 2.2 - TRAVERSING DECK ASSEMBLY (25ETD) (25GTD)



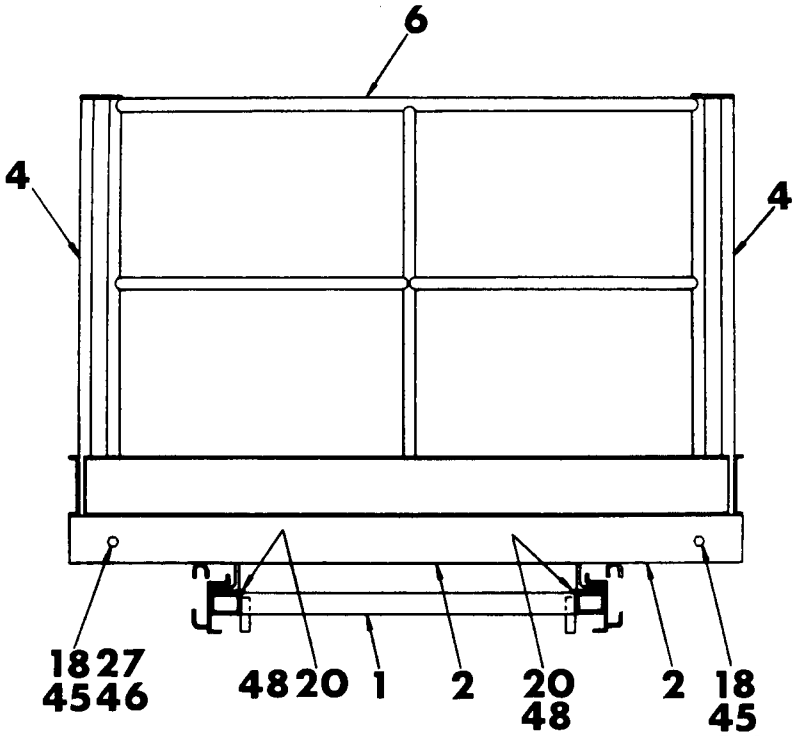
SECTION A



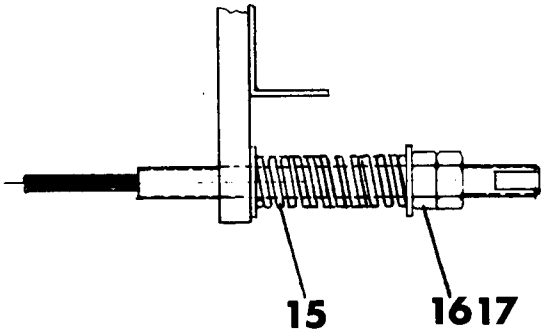
SECTION B



SECTION C



VIEW D



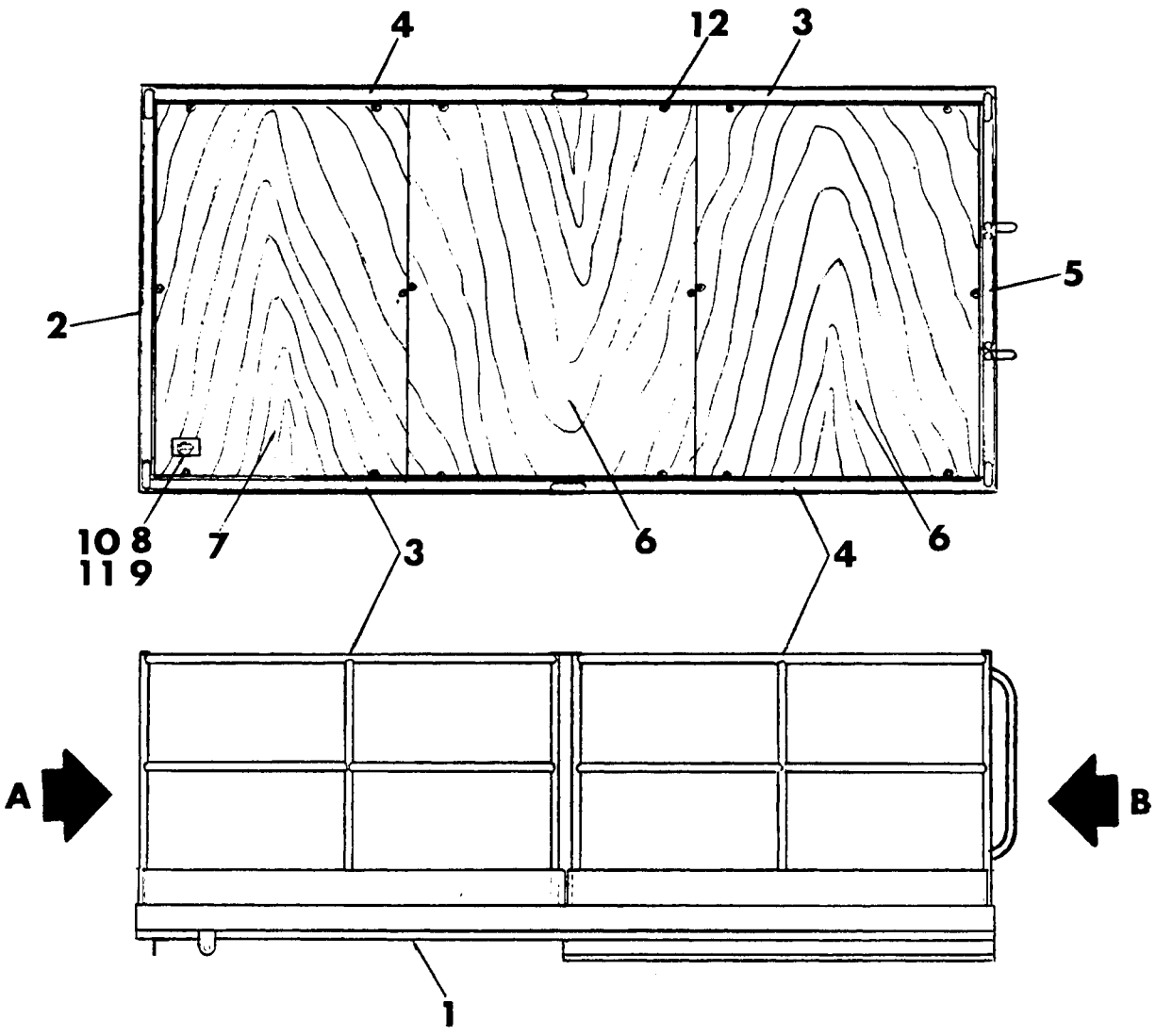
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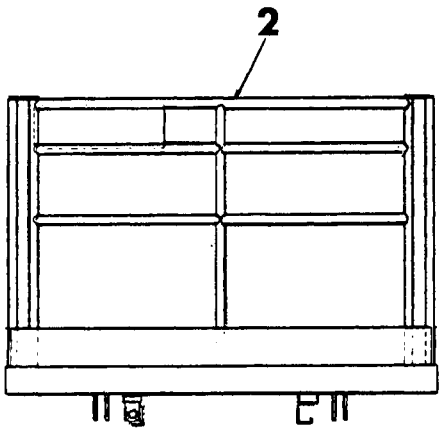
FIGURE 2.2 - TRAVERSING DECK ASSEMBLY
(25ETD) (25GTD)

ITEM	PART NUMBER	DESCRIPTION	QTY
2.2-	31195	TRAVERSING DECK ASSEMBLY	1
-1	31194	TOP FRAME WELDMENT	1
-2	31193	TRAVERSING DECK WELDMENT	1
-3	30643	PLYWOOD FLOOR	2
-4	30146	SIDE GUARD RAIL ASSEMBLY	2
-5	30281	REAR GUARD RAIL	1
-6	30280	FRONT GUARD RAIL	1
-7	4060	RECEPTACLE	1
-8	356	BELL BOX COVER PLATE	1
-9	355	BELL BOX	1
-10	117-G	ROMEX CONNECTOR	1
-11	70173	LIMIT SWITCH	1
-12	70169	LIMIT SWITCH ARM	1
-13	62615	ROUND HEAD MACHINE SCREW - NO. 10-32 UNF X 1 3/4	2
-14	63313	SPLIT LOCK WASHER - NO. 10	2
-15	30360	SPRING	2
-16	63403	FLAT WASHER - 3/8	8
-17	60703	HEX NUT - 3/8-16UNC	10
-18	60352	HEX HEAD CAP SCREW - 1/4-20UNC X 2 1/2	6
-19	30644	PLYWOOD FLOOR	1
-20	31197	WEAR PAD	2
-21	20520	HYDRAULIC MOTOR	1
-22	21037	DRUM WELDMENT	1
-23	80001-05	MALE CONNECTOR	2
-24	61930	SOCKET HEAD CAP SCREW - 1/2-13UNC X 1 1/4	2
-25	63305	SPLIT LOCK WASHER - 1/2	2
-26	60344	HEX HEAD CAP SCREW - 3/8-16UNC X 3	6
-27	63301	SPLIT LOCK WASHER - 1/4	9
-28	31026	WINCH BRACKET WELDMENT	1
-29	31200	STOP BRACKET	1
-30	31038	WIRE ROPE HOLDER	1
-31	60309	HEX HEAD CAP SCREW - 1/4-20UNC X 3/4	3

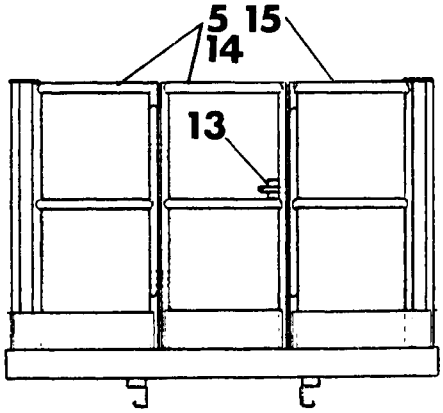
FIGURE 2.2 - TRAVERSING DECK ASSEMBLY
(25ETD) (25GTD)

ITEM	PART NUMBER	DESCRIPTION	QTY
-32	20387	SHEAVE	2
-33	63402	FLAT WASHER - 5/16	8
-34	60360	HEX HEAD CAP SCREW - 5/16-18UNC X 1 3/4	2
-35	63302	SPLIT LOCK WASHER - 5/16	10
-36	60702	HEX NUT - 5/16-18UNC	2
-37	31201	CABLE EXTENSION ASSEMBLY	1
-38	4027	TERMINAL BLOCK	14
-39	117-A	TERMINAL BLOCK END	2
-40	21386	TERMINAL STRIP COVER	1
-41	20346	HEX HEAD CAP SCREW - 5/16-18UNC X 1 1/4	2
-42	62621	MACHINE SCREW - NO. 8-32UNC X 3/8	2
-43	31061	DRUM WASHER	1
-44	61713	SELF TAPPING FLAT HEAD CAP SCREW - 1/4-20UNC X 1 1/4	14
-45	63401	FLAT WASHER - 1/4	6
-46	60701	HEX NUT - 1/4-20UNC	6
-47	63303	SPLIT LOCK WASHER - 3/8	6
-48	63651	POP RIVET - 3/16 X 1/2	12





VIEW A

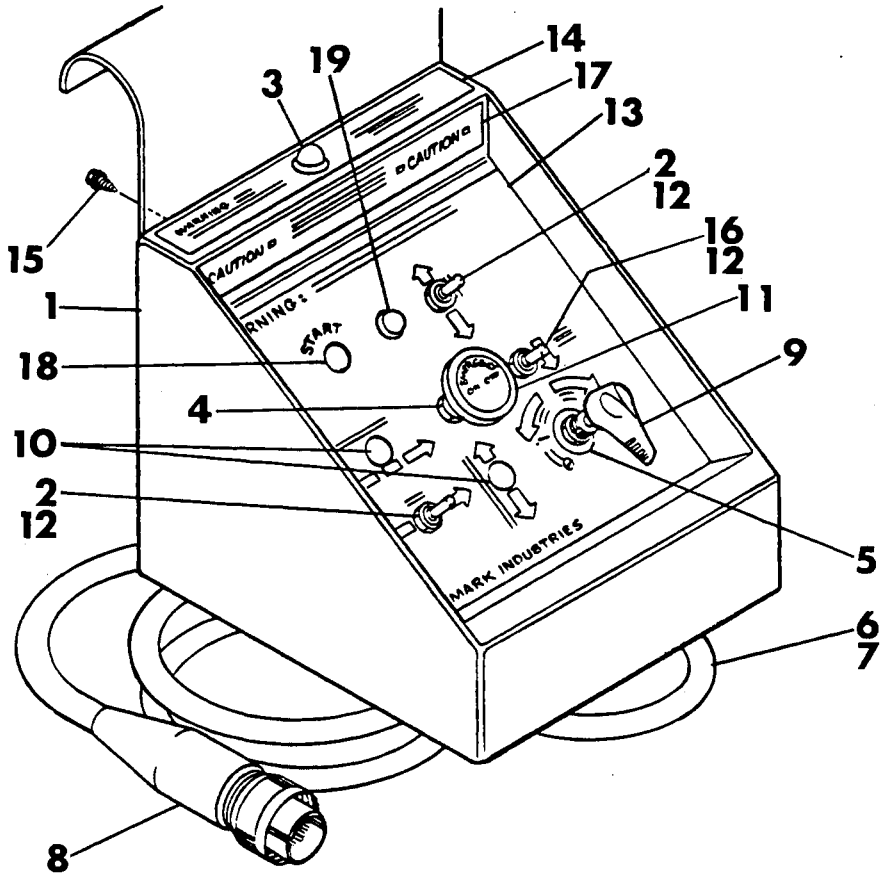


VIEW B

FIGURE 2A - DECK ASSEMBLY (30E) (36E) (30G) (36G)

ITEM	PART NUMBER	DESCRIPTION	QTY
NOTE:	UNLESS OTHERWISE STATED, PARTS ARE COMMON FOR (30E),(36E), (30G) & (36G)		
2-	30497	DECK ASSEMBLY (30E) (30G)	1
	30498	DECK ASSEMBLY (36E) (36G)	1
-1	30464	DECK WELDMENT (30E) (30G)	1
	30125	DECK WELDMENT (36E) (36G)	1
-2	30280	GUARD RAIL ASSEMBLY-FRONT	1
-3	30282-1	GUARD RAIL ASSEMBLY-SIDE	2
-4	30282-2	GUARD RAIL ASSEMBLY-SIDE	2
-5	30670	REAR GUARD RAIL WITH GATE	1
-6	16323	PLYWOOD FLOOR SECTION-3/4 X 48 X 62 3/8	2
-7	16324	PLYWOOD FLOOR SECTION-3/4 X 42 3/8 X 62 3/8	1
-8	355	BELL BOX	1
-9	356	BELL BOX COVER	1
-10	4060	RECEPTACLE-110 VAC	1
-11	117G	ROMEX CONNECTOR	1
-12	61706	SELF TAPPING FLAT HEAD SCREW-¼ X 1¼	18
-13	16231	LATCH BOLT	1
-14	12005	GATE SPRING HINGE	2
-15	30671	REAR GUARD RAIL	1

FIGURE 3 - HAND CONTROL BOX ASSEMBLY
(25E) (30E) (36E)

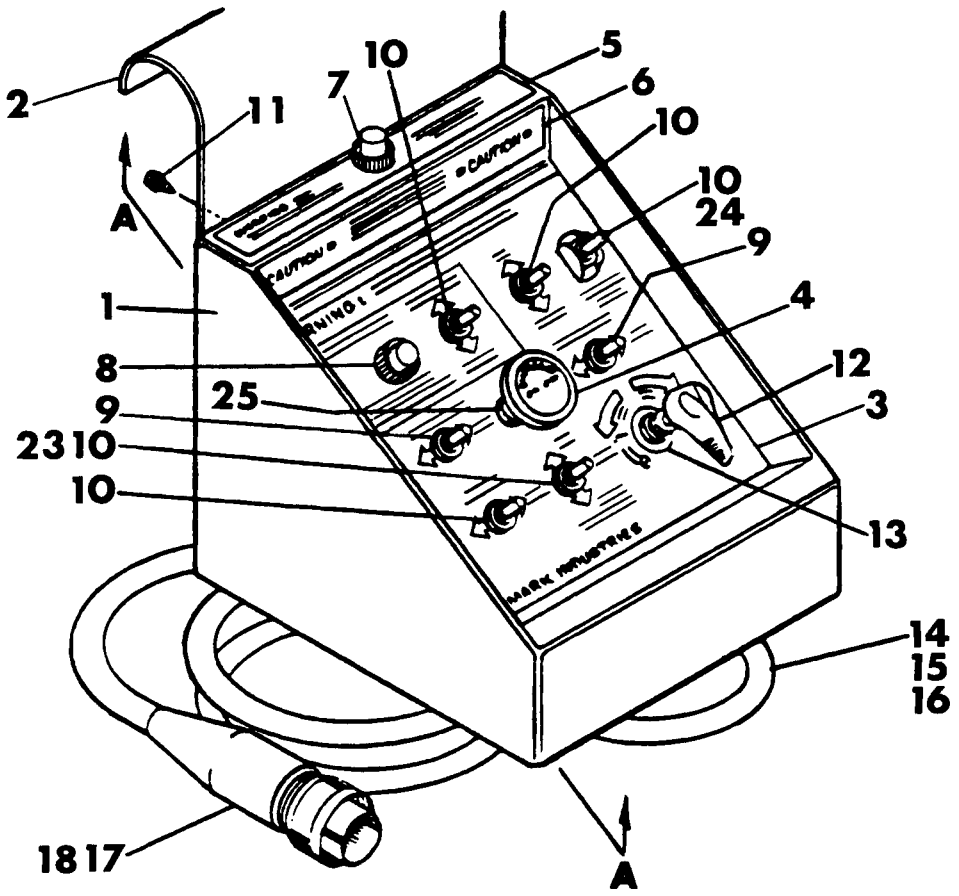


ITEM	PART NUMBER	DESCRIPTION	QTY
3-	4069-1	HAND CONTROL BOX ASSEMBLY	1
-1	8309	CONTROL BOX	1
-2	4021	MOMENTARY SWITCH	2
-3	4031	WARNING LIGHT-RED	1
-4	4018	EMERGENCY ON-OFF SWITCH	1
-5	4106	5 POSITION SPRING RETURN SWITCH-DRIVE	1
-6	800	CABLE-16/16 7 FT. LG.	1
-7	117G	STRAIN RELIEF	1
-8	4026-1	CANNON PLUG-MALE	1
-9	2667	KNOB	1
-10	772	HOLE PLUG	2
-11	5300	KNOB-EMERGENCY ON-OFF	1
-12	2305	KEY WASHER	3
-13	2008	DECAL-CONTROL BOX	1
-14	2015	DECAL-WARNING UNSTABLE CONDITION	1

FIGURE 3 - HAND CONTROL BOX ASSEMBLY
(25E) (30E) (36E)

ITEM	PART NUMBER	DESCRIPTION	QTY
-15	2720	HEX HEAD SELF TAPPING SCREW-NO.6-32X3/8	6
-16	4017	TOGGLE SWITCH	1
-17	2014	DECAL-WARNING HIGH VOLTAGE	1
-18	775	HOLE PLUG	1
-19	4107	POWER-ON LIGHT-GREEN	1

FIGURE 3.1 - HAND CONTROL BOX ASSEMBLY (25ETD)



ITEM		PART NUMBER	DESCRIPTION	QTY
3.1-		31203	HAND CONTROL BOX ASSEMBLY	1
-1		31106	CONTROL BOX MACHINING	1
-2		31107	COVER	1
-3		30896	DECAL (MODIFIED)	1
-4		31080	EMERGENCY KNOB	1
-5		2015	DECAL - WARNING UNSTABLE CONDITION	1
-6		2014	DECAL - WARNING HIGH VOLTAGE	1
-7		20805	ALARM BUZZER	1
-8		70195	AMBER LAMP	1
-9	*	4017	TOGGLE SWITCH	2
-10	**	4021	TOGGLE SWITCH	5
-11		61712	SELF TAPPING CAP SCREW - NO. 8-32UNC X 1/2	6
-12		65151	DRIVE SWITCH KNOB	1

FIGURE 3.1 - HAND CONTROL BOX ASSEMBLY (25ETD)

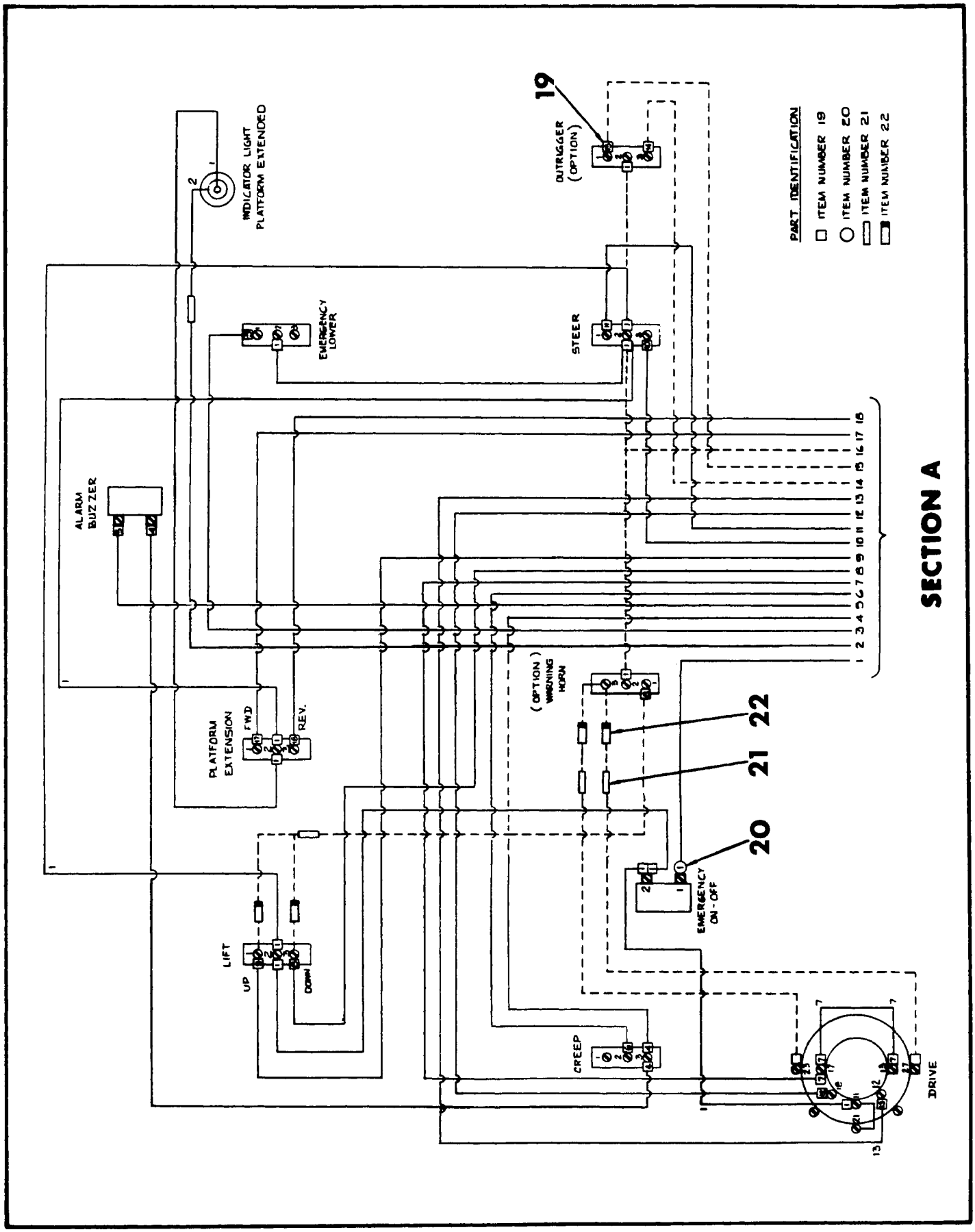


FIGURE 3.1 - HAND CONTROL BOX ASSEMBLY (25ETD)

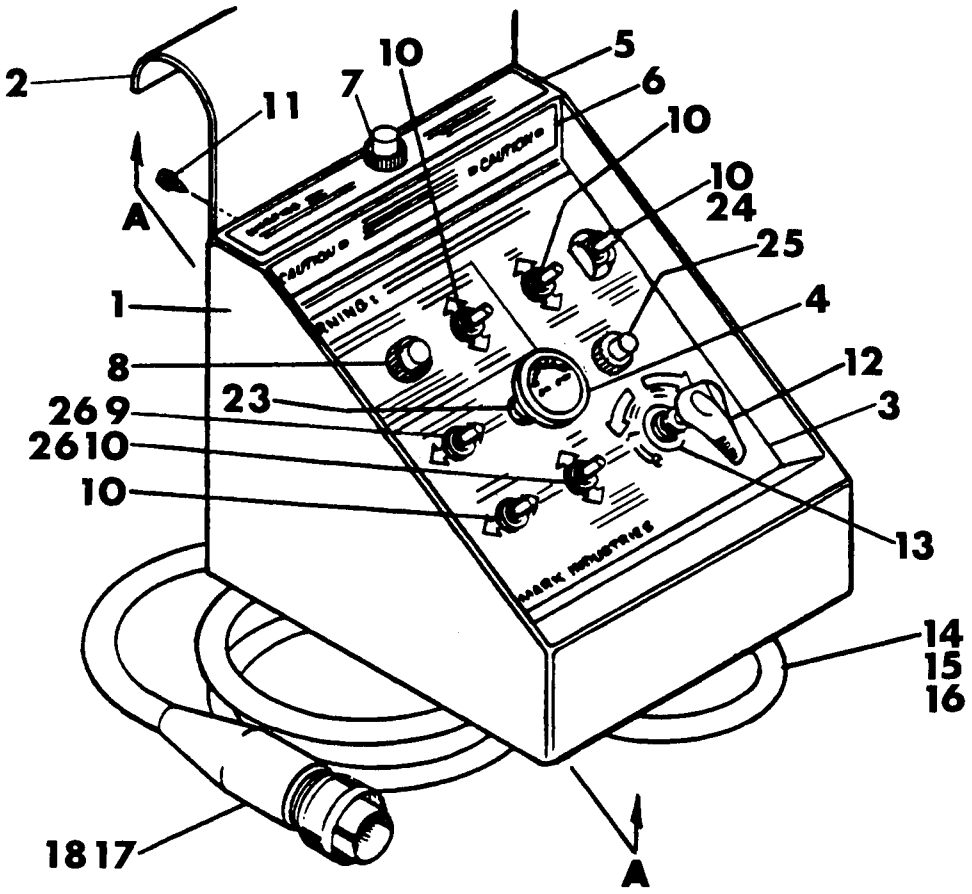
ITEM		PART NUMBER	DESCRIPTION	QTY
-13		4106	5 POSITION SWITCH	1
-14		2807	STRAIN RELIEF	1
-15		2809	LOCK NUT	1
-16		30392	CABLE - 18/16 7 FT. LG.	1
-17		4026-1	MALE CANNON PLUG	1
-18		16970	MALE ADAPTER	1
-19		70197	TERMINAL	32
-20		70198	TERMINAL	1
-21	*	70069	BUTT CONNECTOR	4
-22	*	4045	DIODE	1
-23		772	HOLE PLUG	1
-24		16912	SWITCH GUARD	1
-25		4018	PUSH PULL SWITCH	1

NOTES:

* ITEM 9,21, & 22 ARE OPTIONS.

** OUTRIGGER SWITCH IS AN OPTION. USE QUANTITY (4) FOR ITEM 10 STANDARD MACHINE.

FIGURE 3.2 - HAND CONTROL BOX ASSEMBLY (25GTD)



ITEM	PART NUMBER	DESCRIPTION	QTY
3.2-	31279	HAND CONTROL BOX ASSEMBLY	1
-1	31106	CONTROL BOX MACHINING	1
-2	31107	COVER	1
-3	31280	DECAL	1
-4	31080	EMERGENCY KNOB	1
-5	2015	DECAL - WARNING UNSTABLE CONDITION	1
-6	2014	DECAL - WARNING HIGH VOLTAGE	1
-7	20805	ALARM BUZZER	1
-8	70195	AMBER LAMP	1
-9	* 4017	TOGGLE SWITCH	1
-10	** 4021	TOGGLE SWITCH	5
-11	61712	SELF TAPPING CAP SCREW - NO. 8-32UNC X 1/2	6
-12	65151	DRIVE SWITCH KNOB	1

FIGURE 3.2 - HAND CONTROL BOX ASSEMBLY (25GTD)

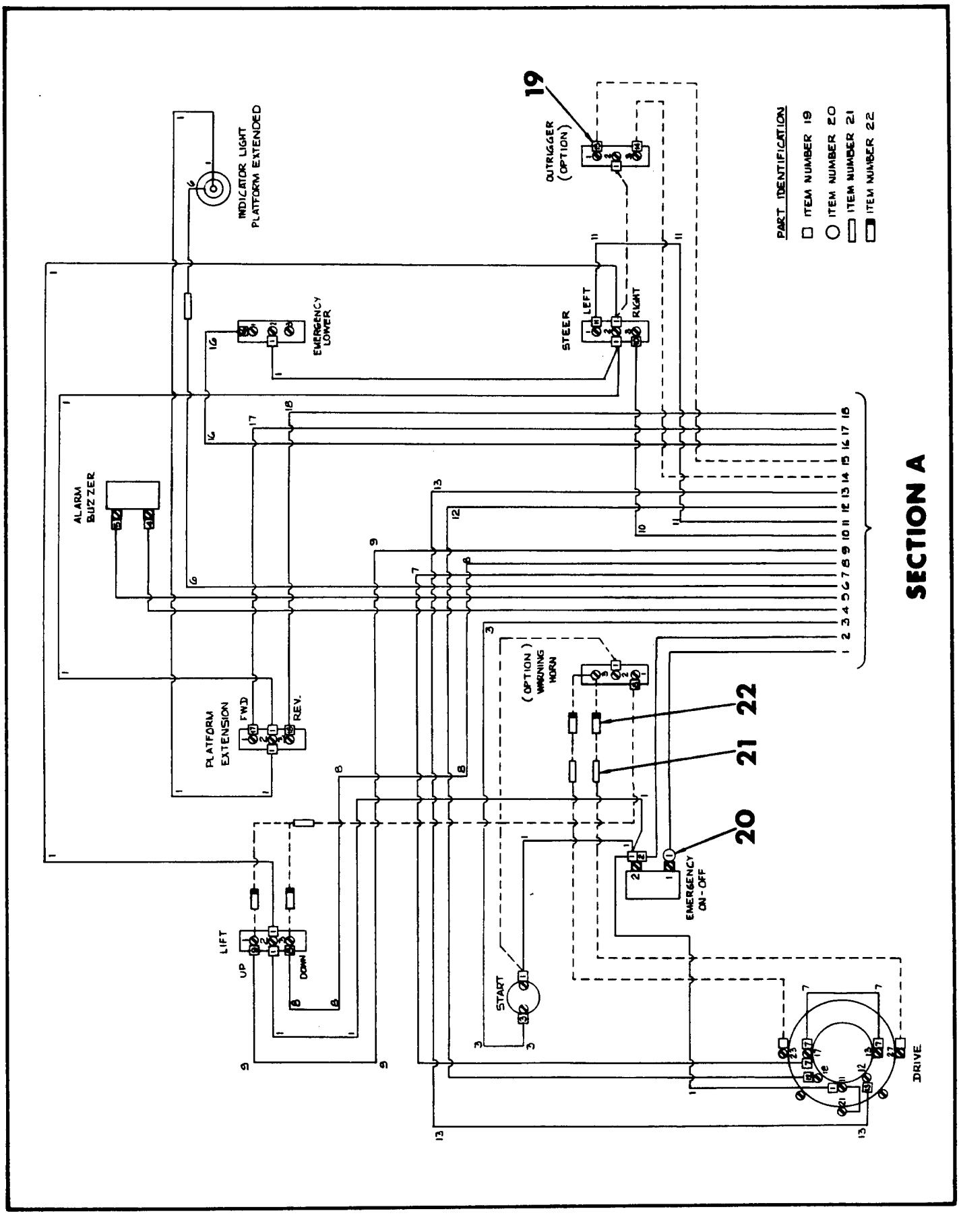


FIGURE 3.2 - HAND CONTROL BOX ASSEMBLY (25GTD)

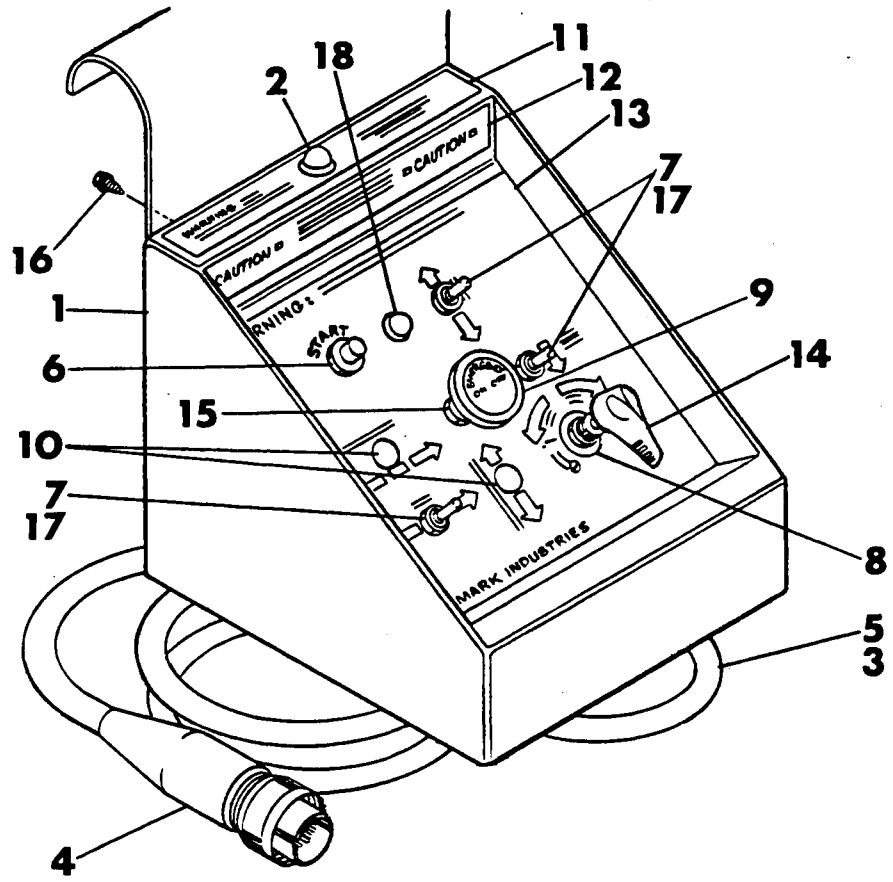
ITEM		PART NUMBER	DESCRIPTION	QTY
-13		4106	5 POSITION SWITCH	1
-14		2807	STRAIN RELIEF	1
-15		2809	LOCK NUT	1
-16		30392	CABLE - 18/16 7 FT. LG.	1
-17		4026-1	MALE CANNON PLUG	1
-18		16970	MALE ADAPTER	1
-19		70197	TERMINAL	32
-20		70198	TERMINAL	1
-21	*	70069	BUTT CONNECTOR	4
-22	*	4045	DIODE	4
-23		4018	PUSH PULL SWITCH	1
-24		16912	SWITCH GUARD	1
-25		4020	PUSH BUTTON START SWITCH	1
-26		772	HOLE PLUG	2

NOTES:

* ITEM 9,21, & 22 ARE OPTIONS.

** OUTRIGGER SWITCH IS AN OPTION. USE QUANTITY (4) FOR ITEM 10 STANDARD MACHINE.

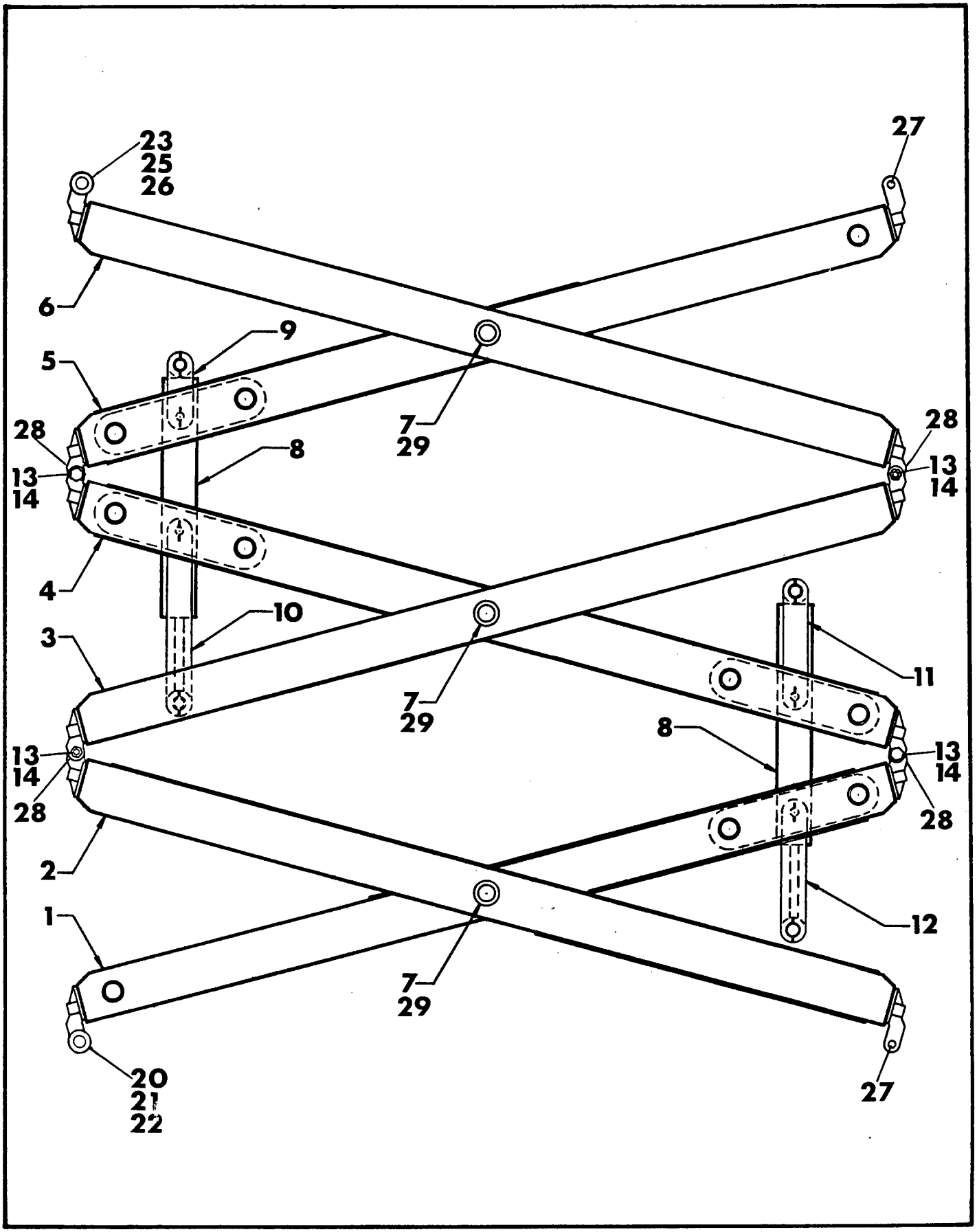
FIGURE 3A - HAND CONTROL BOX ASSEMBLY (30G) (36G)

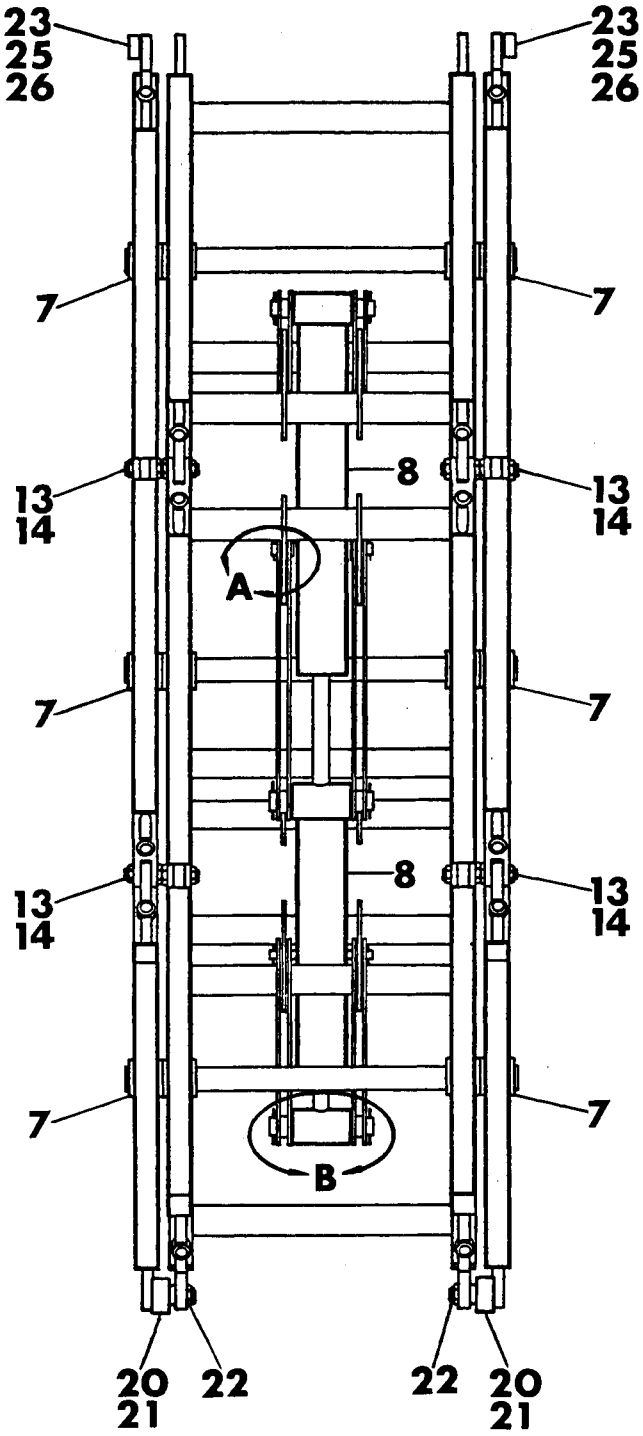


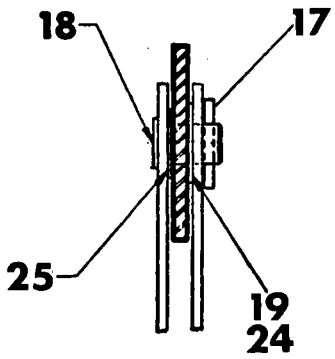
ITEM	PART NUMBER	DESCRIPTION	QTY
3A-	8325-1	HAND CONTROL BOX ASSEMBLY	1
-1	8309	CONTROL BOX	1
-2	4031	WARNING LIGHT-RED	1
-3	117G	STRAIN RELIEF	1
-4	4026-1	CANNON PLUG-MALE	1
-5	800	CABLE-16/16 X 7 FT. LG.	1
-6	4020	PUSH BUTTON START SWITCH	1
-7	4021	MOMENTARY SWITCH	3
-8	4106	5 POSITION SPRING RETURN SELECTOR SWITCH-DRIVE	1
-9	5300	KNOB-EMERGENCY ON-OFF	1
-10	772	HOLE PLUG	
-11	2015	DECAL-WARNING UNSTABLE CONDITION	1
-12	2014	DECAL-WARNING HIGH VOLTAGE	1
-13	2008	DECAL-CONTROL BOX	1

ITEM	PART NUMBER	DESCRIPTION	QTY
-14	2667	KNOB	1
-15	4018	EMERGENCY ON-OFF SWITCH	1
-16	2720	HEX HEAD SELF TAPPING SCREW-NO.6-32X3/8	6
-17	2305	KEY WASHER	3
-18	4107	POWER-ON LIGHT-GREEN	1

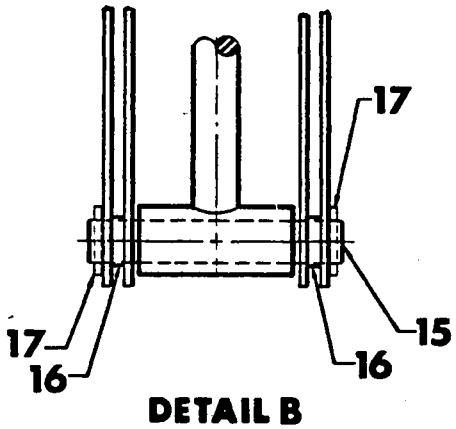
FIGURE 4 - SCISSOR ASSEMBLY (25E)







DETAIL A



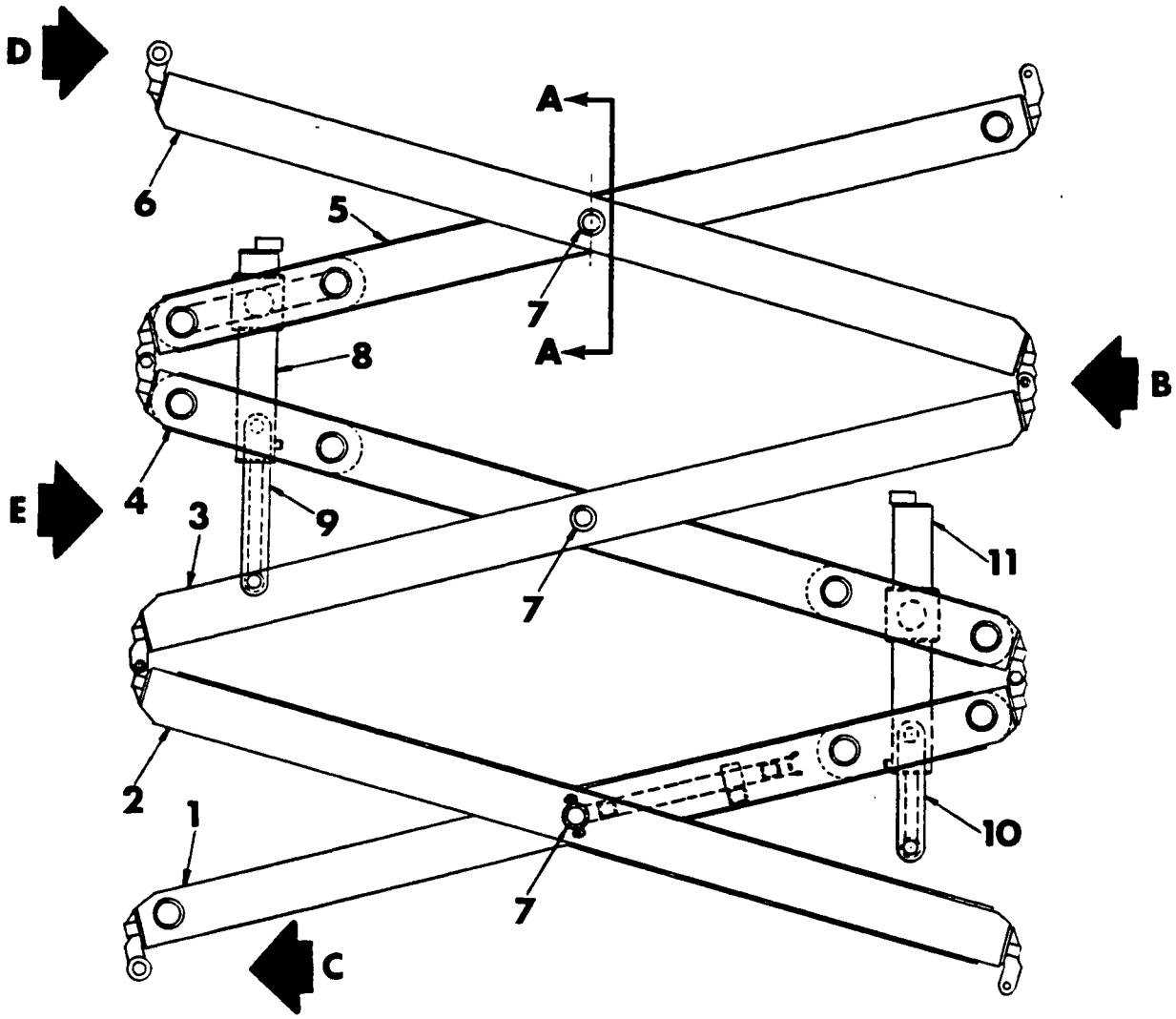
DETAIL B

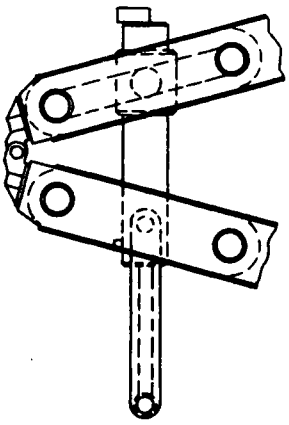
FIGURE 4 - SCISSOR ASSEMBLY (25E)

ITEM	PART NUMBER	DESCRIPTION	QTY
4-	30174	SCISSOR ASSEMBLY	1
-1	30168	LOWER INNER ARM ASSEMBLY	1
-2	30165	LOWER OUTER ARM ASSEMBLY	2
-3	30166	MIDDLE OUTER ARM ASSEMBLY	2
-4	30169	MIDDLE INNER ARM ASSEMBLY	1
-5	30170	UPPER INNER ARM ASSEMBLY	1
-6	30167	UPPER OUTER ARM ASSEMBLY	2
-7	2214	SHAFT COLLAR	6
-8	3065	MAIN LIFT CYLINDER (SEE FIG.7D)	2
-9	9030-3	ACTUATOR STRAP-UPPER REAR	2
-10	9030-4	ACTUATOR STRAP-LOWER REAR	2
-11	9030-1	ACTUATOR STRAP-UPPER FRONT	2
-12	9030-2	ACTUATOR STRAP-LOWER FRONT	2
-13	2375	EAR PIVOT BOLT	8
-14	61304	HEX LOCK NUT 3/4-10 UNC	8
-15	9034	CYLINDER PIVOT PIN	4
-16	9032-2	CYLINDER STRAP SPACER	4
-17	377	ROLL PIN	16
-18	9033	CYLINDER STRAP PIVOT PIN	8
-19	918	FLAT WASHER-LARGE	8
-20	2380	FRAME ROLLER	2
-21	9040	ROLLER SPACER	2
-22	16113	NYLON INSERT HEX LOCK NUT	2
-23	2273	DECK ROLLER	2
-24	913	FLANGE BUSHING	8
-25	2285	FLAT WASHER-SMALL	10
-26	6328-A	HEX LOCK NUT-5/8-18 UNF	2
-27	30172	BUSHING	4
-28	916	BUSHING	8
-29	30171	PIVOT SHAFT BUSHING	6

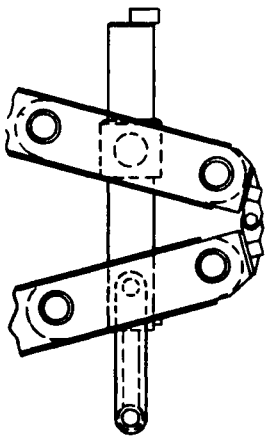
FIGURE 4.1 - SCISSOR ASSEMBLY (25E) (1981) (25ETD) (25GTD)

SERIAL NUMBER EFFECTIVITY IS 281-7714 ON. (25E)





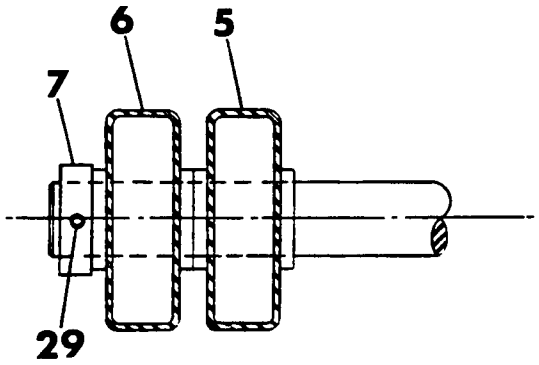
DETAIL MOUNTING LIFT CYLINDER USED FOR TRAVERSING DECK UNIT.



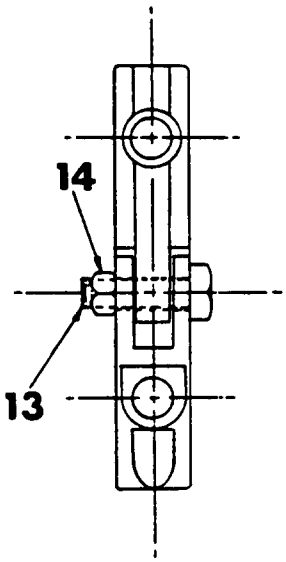
DETAIL MOUNTING LIFT CYLINDER USED FOR TRAVERSING DECK UNIT.

FIGURE 4.1 - SCISSOR ASSEMBLY (25E) (1981) (25ETD) (25GTD)

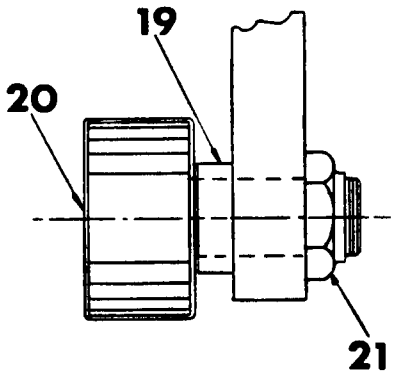
SERIAL NUMBER EFFECTIVITY IS 281-7714 ON. (25E)



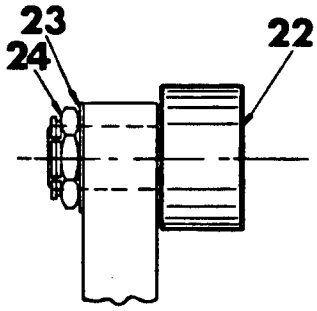
SECTION A



VIEW B



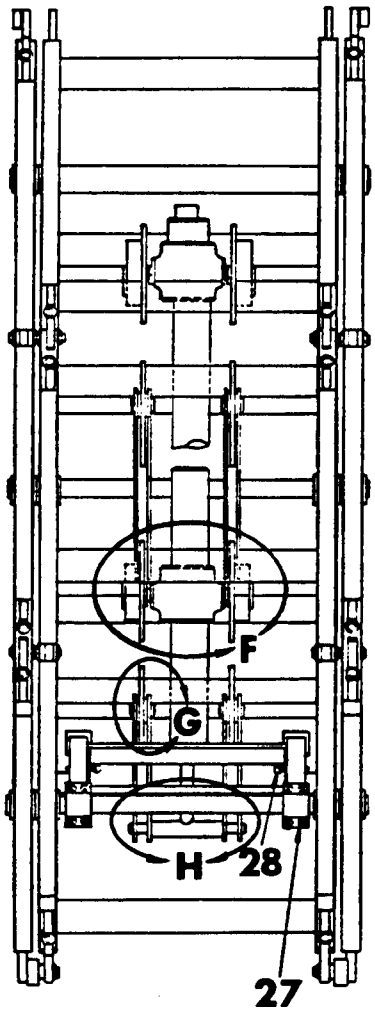
VIEW C



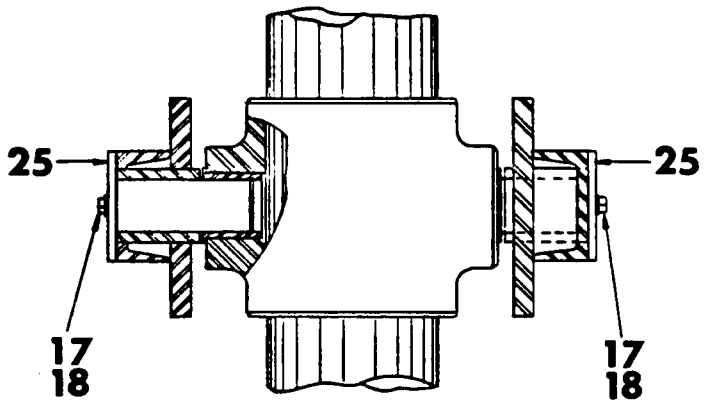
VIEW D

FIGURE 4.1 - SCISSOR ASSEMBLY (25E) (1981) (25ETD) (25GTD)

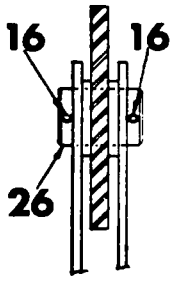
SERIAL NUMBER EFFECTIVITY IS 281-7714 ON. (25E)



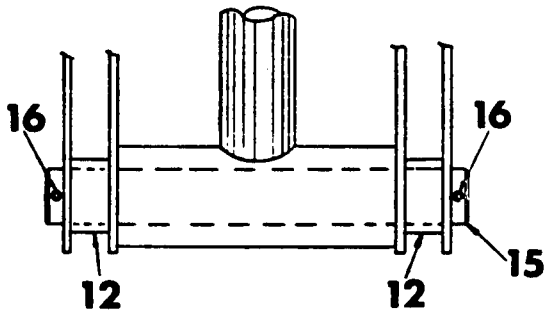
VIEW E



DETAIL F



DETAIL G



DETAIL H

FIGURE 4.1 - SCISSOR ASSEMBLY (25E) (1981) (25ETD) (25GTD)

ITEM	PART NUMBER	DESCRIPTION	QTY
4.1-	30665	SCISSOR ASSEMBLY	1
-1	30640	LOWER INNER ARM ASSEMBLY	1
-2	30165	LOWER OUTER ARM ASSEMBLY	2
-3	30166	MIDDLE OUTER ARM ASSEMBLY	2
-4	30639	MIDDLE INNER ARM ASSEMBLY	1
-5	30638	UPPER INNER ARM ASSEMBLY	1
-6	30167	UPPER OUTER ARM ASSEMBLY	2
-7	2214	SHAFT COLLAR	6
-8	31094	MAIN LIFT CYLINDER ASSEMBLY - REAR (SEE FIG. 6D)	1
-9	30664	ACTUATOR STRAP - REAR	4
-10	30663	ACTUATOR STRAP - FRONT	4
-11	31095	MAIN LIFT CYLINDER ASSEMBLY - FRONT (SEE FIG. 6E)	1
-12	30474	CYLINDER STRAP SPACER	4
-13	2375	EAR PIVOT BOLT	8
-14	61304	HEX LOCK NUT - 3/4-10UNC	8
-15	30196	CYLINDER PIVOT PIN	2
-16	64206	ROLL PIN - 1/4 DIA. X 2 1/4	12
-17	60160	HEX HEAD CAP SCREW - 5/16-18UNC-2B X 5/8	4
-18	63302	LOCK WASHER - 5/16	4
-19	35129	ROLLER SPACER	2
-20	2380	FRAME ROLLER	2
-21	61216	LOCK NUT	2
-22	2273	DECK ROLLER	2
-23	2285	THRUST WASHER	2
-24	61232	HEX LOCK NUT - 7/8-14UNF	2
-25	30151	TRUNNION PIN	4
-26	30195	CYLINDER STRAP PIVOT PIN	4
-27	30338	INNER ARM SUPPORT	1
-28	12007	QUICK RELEASE PIN	2
-29		SET SCREW (REF)	6

SERIAL NUMBER EFFECTIVITY IS 281-7714 ON. (25E)

FIGURE 4A - SCISSOR ASSEMBLY (30E) (30G)

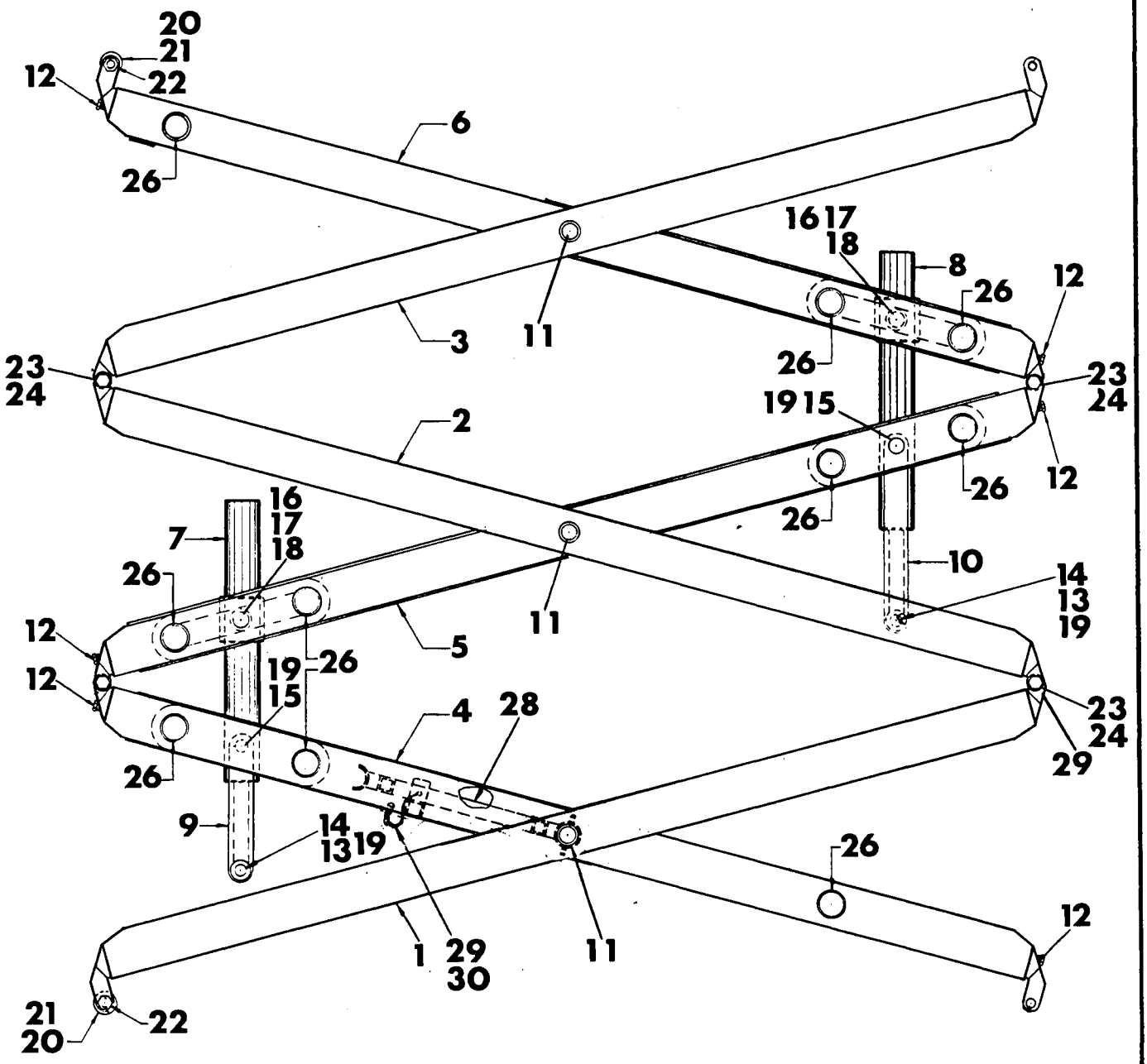


FIGURE 4A - SCISSOR ASSEMBLY (30E) (30G)

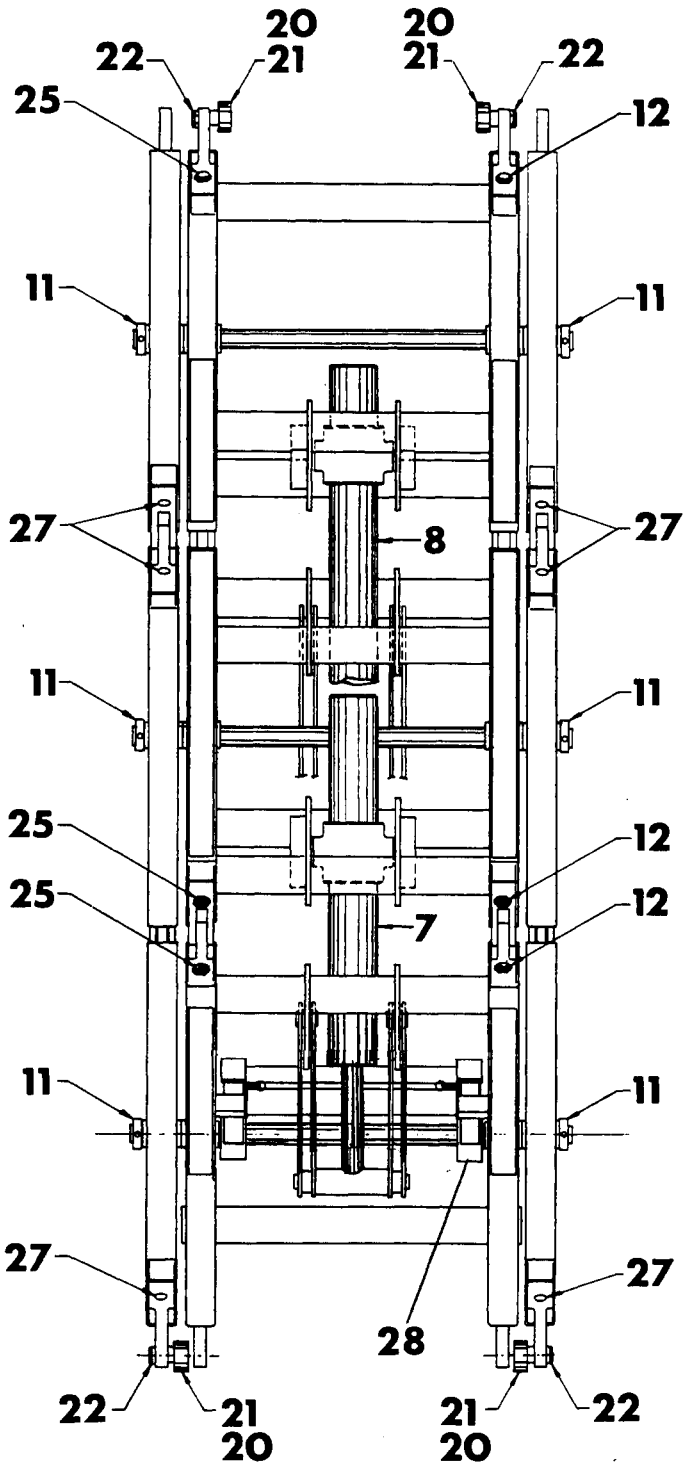


FIGURE 4A - SCISSOR ASSEMBLY (30E) (30G)

ITEM	PART NUMBER	DESCRIPTION	QTY
4A-	30231	SCISSOR ASSEMBLY	1
-1	30156	LOWER OUTER ARM ASSEMBLY	2
-2	30158	MIDDLE OUTER ARM ASSEMBLY	2
-3	30159	UPPER OUTER ARM ASSEMBLY	2
-4	30181	LOWER INNER ARM ASSEMBLY	1
-5	30182	MIDDLE INNER ARM ASSEMBLY	1
-6	30183	UPPER INNER ARM ASSEMBLY	1
-7	30325	MAIN LIFT CYLINDER ASSEMBLY-REAR (SEE FIG. 6)	1
-8	30326	MAIN LIFT CYLINDER ASSEMBLY-FRONT (SEE FIG. 6A)	1
-9	30199	CYLINDER STRAP-REAR	4
-10	30198	CYLINDER STRAP-FRONT	4
-11	2214	SHAFT COLLAR	6
-12	2807	STRAIN RELIEF CONNECTOR-STRAIGHT	6
-13	30474	SPACER	4
-14	30196	CYLINDER PIVOT PIN	2
-15	30195	CYLINDER STRAP PIVOT PIN	4
-16	30151	TRUNNION PIN	4
-17	60160	HEX. HD CAPSCREW 5/16-18 UNC, 2B THREAD 5/8	4
-18	63302	LOCK WASHER 5/16 SPLIT	4
-19	64206	ROLL PIN ¼ DIA. X 2¾	4
-20	2380	CAM ROLLER	4
-21	30475	ROLLER SPACER	4
-22	61216	LOCK NUT	4
-23	30296	EAR PIVOT BOLT	8
-24	61304	HEX LOCK NUT 3/4-10 UNC	8
-25	16326	STRAIN RELIEF CONNECTOR-STRAIGHT	12
-26	16334	ARM CROSS MEMBER CAP	20
-27	16335	EAR CAP	12
-28	30338	INNER ARM SUPPORT ASSEMBLY	1
-29	30701	BALL LOCK PIN	2
-30	63654	POP RIVET - 3/16 DIA. X 3/8	2

FIGURE 4B - SCISSOR ASSEMBLY (36E) (36G)

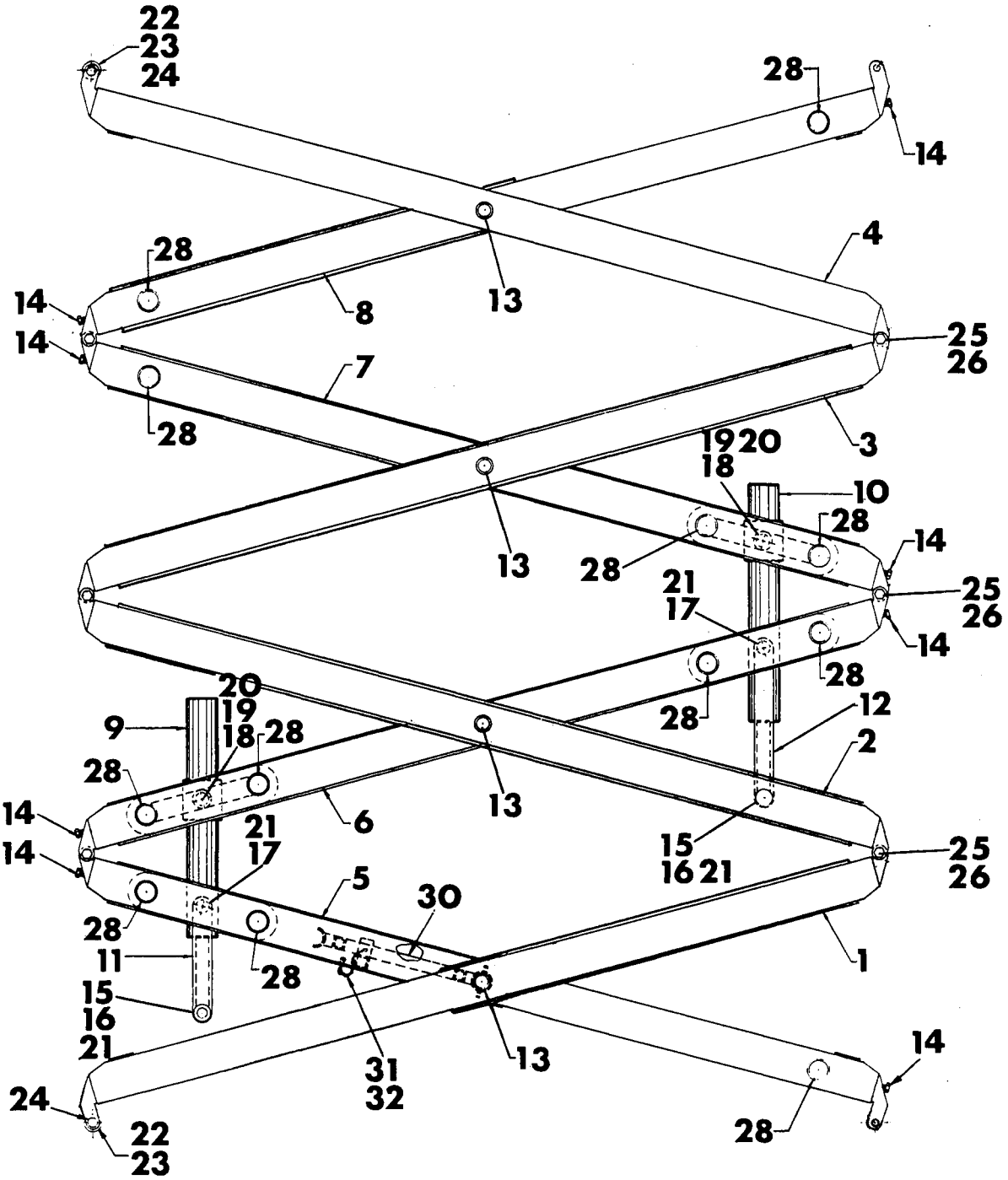


FIGURE 4B - SCISSOR ASSEMBLY (36E) (36G)

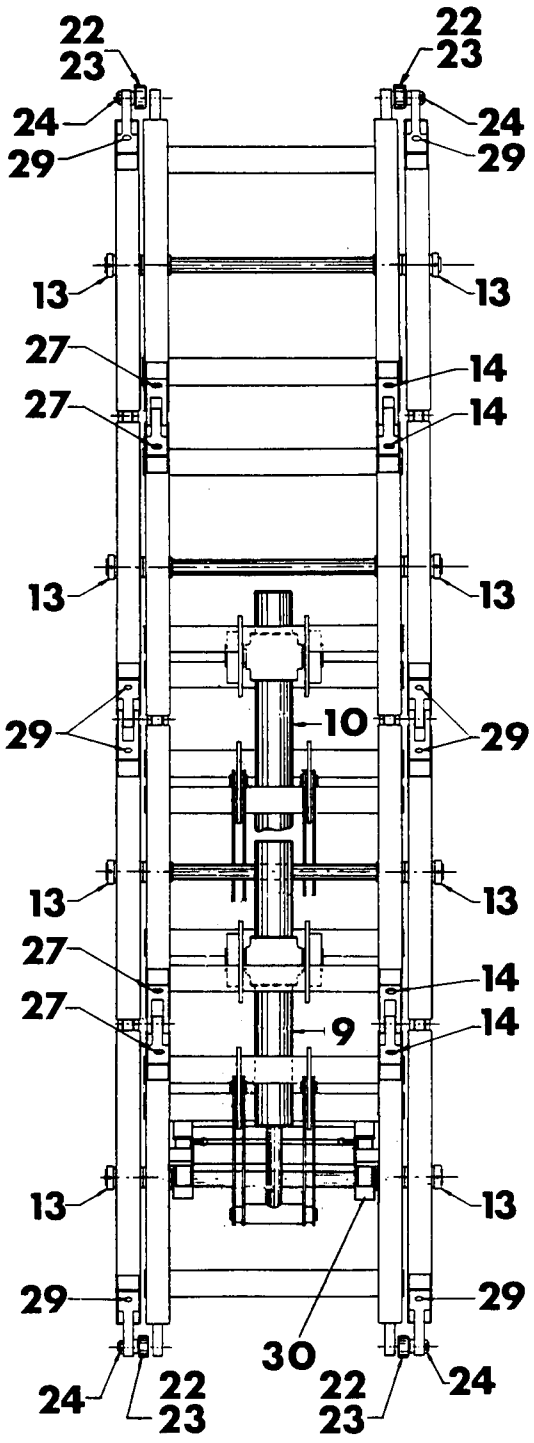
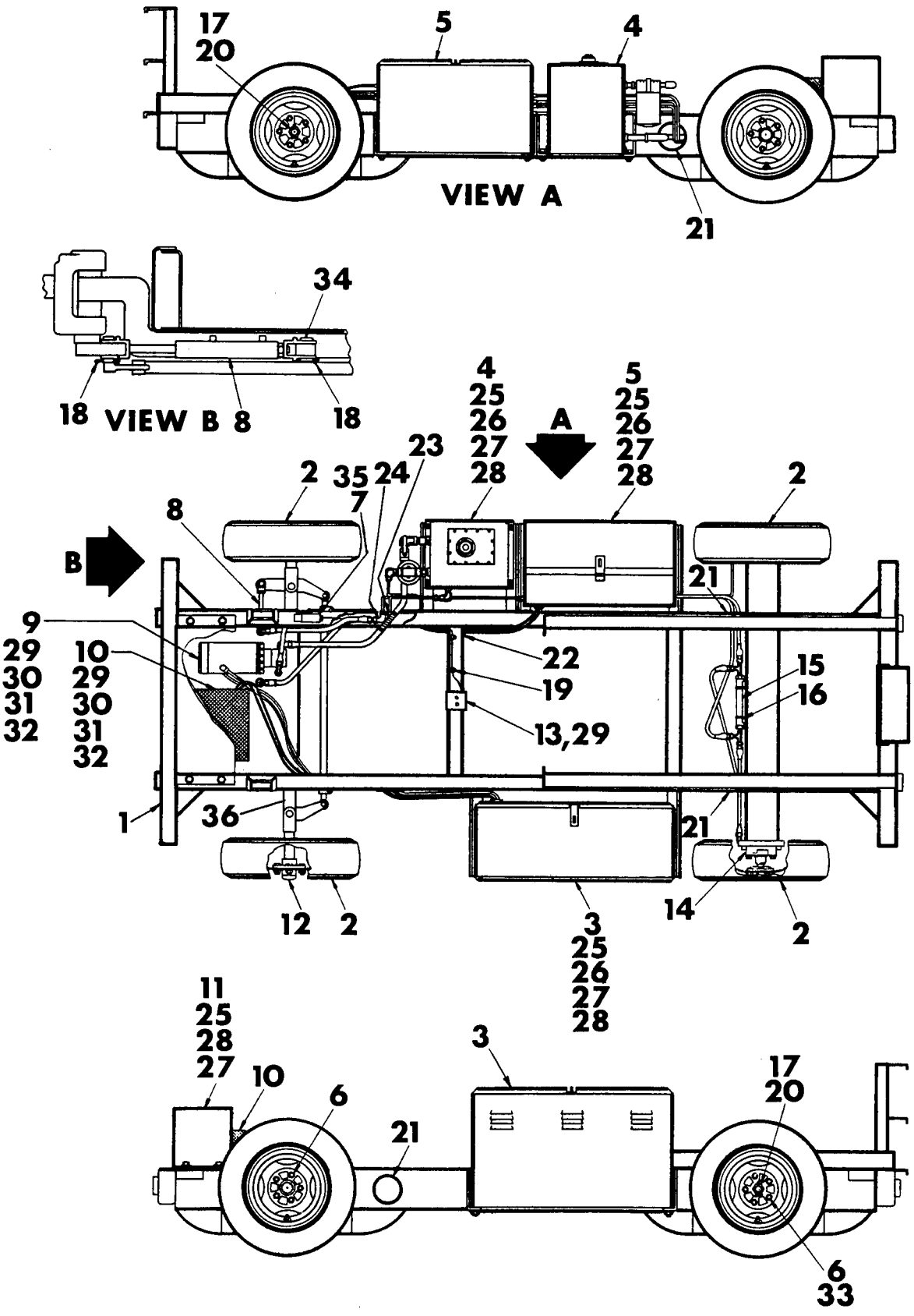


FIGURE 4B - SCISSOR ASSEMBLY (36E) (36G)

ITEM	PART NUMBER	DESCRIPTION	QTY
4B-	30232	SCISSOR ASSEMBLY	1
-1	30345	LOWER OUTER ARM ASSEMBLY	2
-2	30346	MIDDLE OUTER ARM ASSEMBLY	2
-3	30157	MIDDLE OUTER ARM ASSEMBLY	2
-4	30225	UPPER OUTER ARM ASSEMBLY	2
-5	30181	LOWER INNER ARM ASSEMBLY	1
-6	30182	MIDDLE INNER ARM ASSEMBLY	1
-7	30184	UPPER MIDDLE INNER ARM ASSEMBLY	1
-8	30185	UPPER INNER ARM ASSEMBLY	1
-9	30327	MAIN LIFT CYLINDER ASSEMBLY-REAR (SEE FIG.6B)	1
-10	30328	MAIN LIFT CYLINDER ASSEMBLY-FRONT (SEE FIG.6C)	1
-11	30199	CYLINDER STRAP-REAR	4
-12	30198	CYLINDER STRAP-FRONT	4
-13	2214	SHAFT COLLAR	8
-14	2807	STRAIN RELIEF CONNECTOR-STRAIGHT	8
-15	30474	SPACER	4
-16	30196	CYLINDER PIVOT PIN	2
-17	30195	CYLINDER STRAP PIVOT PIN	4
-18	30151	TRUNNION PIN	4
-19	60160	HEX HD. CAPSCREW 5/16-18 UNC 2B THREAD X 5/8	4
-20	63302	LOCKWASHER 5/16 SPLIT	4
-21	64206	ROLL PIN ¼ DIA X 2¼	12
-22	2380	CAM ROLLER	4
-23	30475	ROLLER SPACER	4
-24	61216	LOCK NUT	4
-25	30296	EAR PIVOT BOLT	12
-26	61304	HEX. LOCK NUT 3/4-10 UNC	12
-27	16326	STRAIN RELIEF CONNECTOR-STRAIGHT	8
-28	16334	ARM CROSS MEMBER CAP	24
-29	16335	EAR PLUG	16
-30	30338	INNER ARM SUPPORT ASSEMBLY	1
-31	30701	BALL LOCK PIN	2

FIGURE 4B - SCISSOR ASSEMBLY (36E) (36G)

ITEM	PART NUMBER	DESCRIPTION	QTY
-32	63654	POP RIVET - 3/16 DIA. X 3/8	2


17
20
5
4
VIEW A
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VIEW B
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6
33

ITEM	PART NUMBER	DESCRIPTION	QTY
5-	30589	FRAME ASSEMBLY	1
-1	30187	FRAME WELDMENT	1
-2	30465	TIRE & WHEEL ASSEMBLY (SEE FIG.18)	4
-3	30466	BATTERY BOX ASSEMBLY (SEE FIG.15)	1
-4	30329	HYDRAULIC TANK ASSEMBLY (SEE FIG.12)	1
-5	30481	COMPONENT BOX ASSEMBLY (SEE FIG.8)	1
-6	61301	WHEEL NUT ½-20 UNF	16
-7	20803	LIMIT SWITCH	1
-8	3062	STEERING CYLINDER (SEE FIG.19)	1
-9	3015	PUMP MOTOR	1
-10	4006	BATTERY CHARGER	1
-11	8326	INVERTER BRACKET	1
-12	9057	FRONT HUB ASSEMBLY (SEE FIG.17)	2
-13	30387	TILT SWITCH ASSEMBLY & INSTALLATION (SEE FIG.10)	1
-14	3040	HYDRAULIC DRIVE MOTOR (SEE FIG.17)	2
-15	30496	CUSHION CYLINDER ASSEMBLY (SEE FIG.20)	1
-16	55	CLAMP	2
-17	61005	SLOTTED JAM NUT 1"-8 UNC	4
-18	64309	COTTER PIN 3/16 X 1½ LG	2
-19	764	CLAMP	3
-20	16316	COTTER PIN 3/32 X 2 LG	4
-21	411	RUBBER MOULDING 12½ LG	4
-22	411	RUBBER MOULDING 7½ LG	2
-23	2451	90° ELBOW	1
-24	2436	90° ELBOW	1
-25	60123	HEX HEAD CAPSCREW ¼-20 UNC X 3/4 LG	16
-26	60701	HEX NUT ¼-20 UNC	12
-27	63301	LOCK WASHER ¼	16
-28	63402	FLAT WASHER 5/16	28
-29	882	MOTOR MOUNT	8
-30	60708	HEX NUT 5/16-18 UNC	16
-31	16156	LOCK WASHER 5/16	16
-32	63612	STUD 5/16-18 UNC X 2¼ LG	8

ITEM	PART NUMBER	DESCRIPTION	QTY
-33	30299	DRIVE HUB	2
-34	2356	STEERING CYLINDER CLEVIS PIN	2
-35	20807	LIMIT SWITCH ARM	1
-36	30143	FRONT AXLE ASSEMBLY (SEE FIG.16 OR 16A)	1

FIGURE 5.1 - FRAME ASSEMBLY (25E) (1981)

SERIAL NUMBER EFFECTIVITY
IS 281-7714 ON.

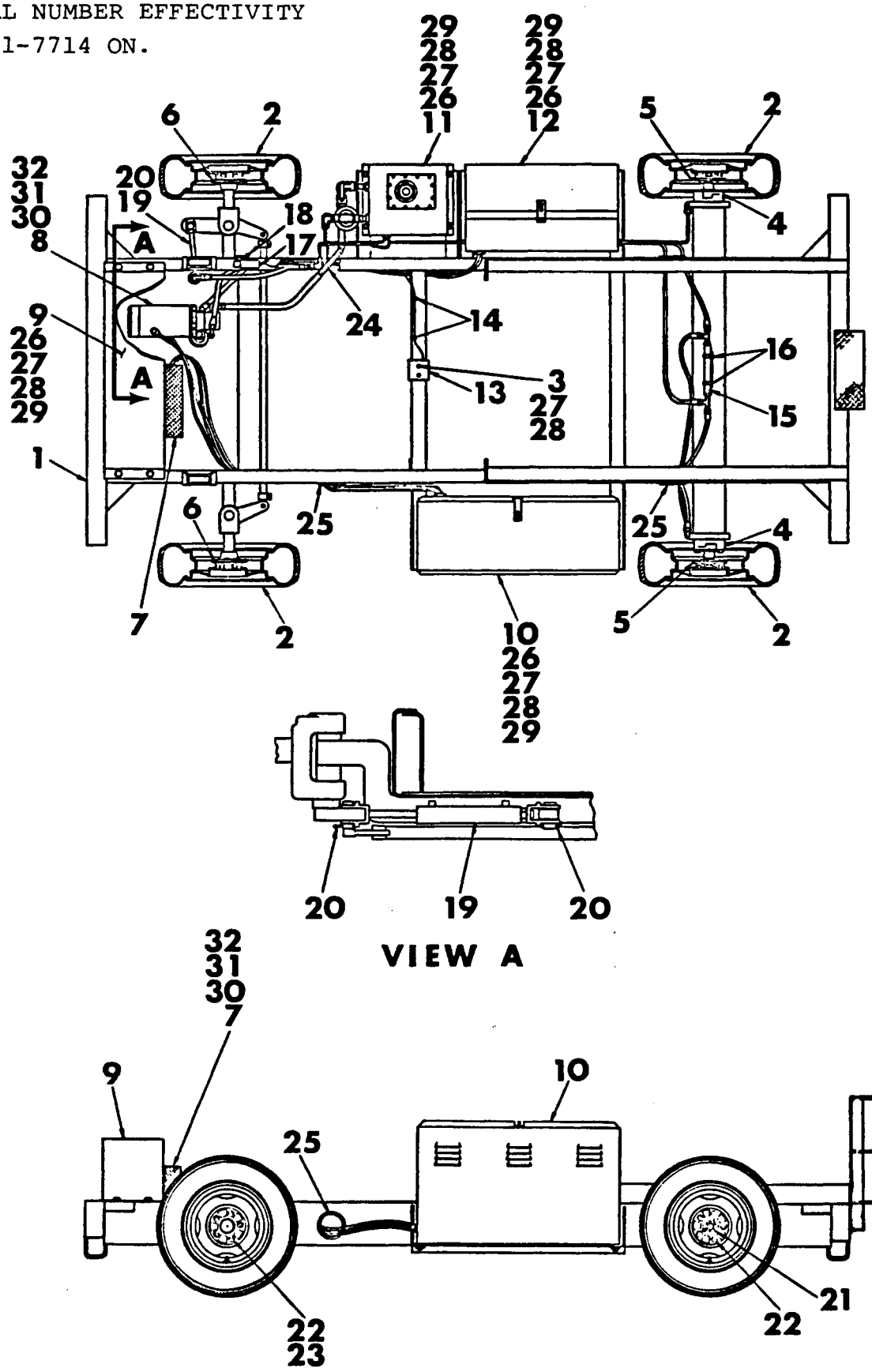


FIGURE 5.1 - FRAME ASSEMBLY (25E) (1981)

ITEM	PART NUMBER	DESCRIPTION	QTY
5.1-	30689	FRAME ASSEMBLY	1
-1	30655	FRAME WELDMENT	1
-2	30465	TIRE & WHEEL ASSEMBLY (SEE FIG.18)	4
-3	60159	HEX HEAD CAP SCREW - ¼-20 UNC X 2	2
-4	3040	HYDRAULIC DRIVE MOTOR	2
-5	30299	REAR HUB	2
-6	30410	FRONT HUB ASSEMBLY (SEE FIG.17A)	2
-7	4006	BATTERY CHARGER	1
-8	3015	PUMP MOTOR	1
-9	8326	INVERTER BRACKET	1
-10	30466	BATTERY BOX ASSEMBLY (SEE FIG.15)	1
-11	30329	HYDRAULIC TANK ASSEMBLY (SEE FIG.12)	1
-12	30481	COMPONENT BOX ASSEMBLY (SEE FIG.8)	1
-13	30387	TILT SWITCH ASSEMBLY & INSTALLATION (SEE FIG.10)	1
-14	764	CLAMP	3
-15	30496	CUSHION CYLINDER ASSEMBLY (SEE FIG.20)	1
-16	55	CLAMP	2
-17	20803	LIMIT SWITCH	1
-18	20807	LIMIT SWITCH ARM	1
-19	3062	STEERING CYLINDER (SEE FIG.19)	1
-20	64309	COTTER PIN - 3/16 DIA. X 1½	2
-21	64304	COTTER PIN - 3/32 DIA. X 2	2
-22	65156	WHEEL NUT	20
-23	63305	LOCK WASHER - ½	20
-24	862	SPRING	1
-25	411	RUBBER MOULDING	4
-26	60123	HEX HEAD CAP SCREW - ¼-20 UNC X 3/4	28
-27	60701	HEX NUT - ¼-20 UNC	38
-28	63301	LOCK WASHER - ¼	16
-29	63402	FLAT WASHER - 5/16	16
-30	882	MOTOR MOUNT	8
-31	60702	HEX NUT - 5/16-18 UNC	16
-32	63302	LOCK WASHER - 5/16	24

SERIAL NUMBER EFFECTIVITY IS 281-7714 ON.

FIGURE 5.2 - FRAME ASSEMBLY (25ETD)

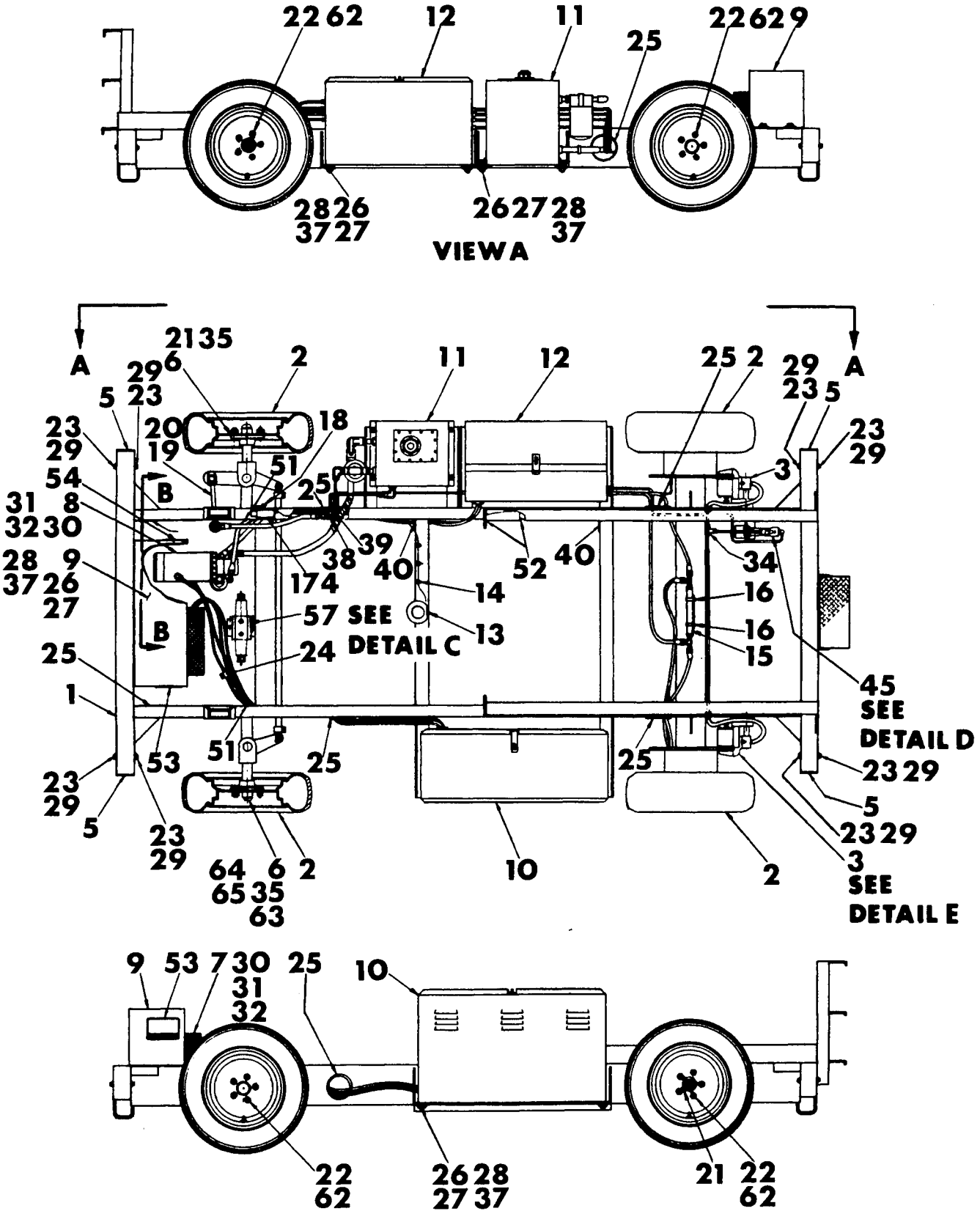
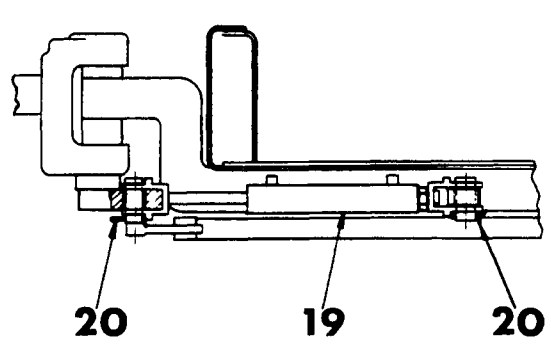
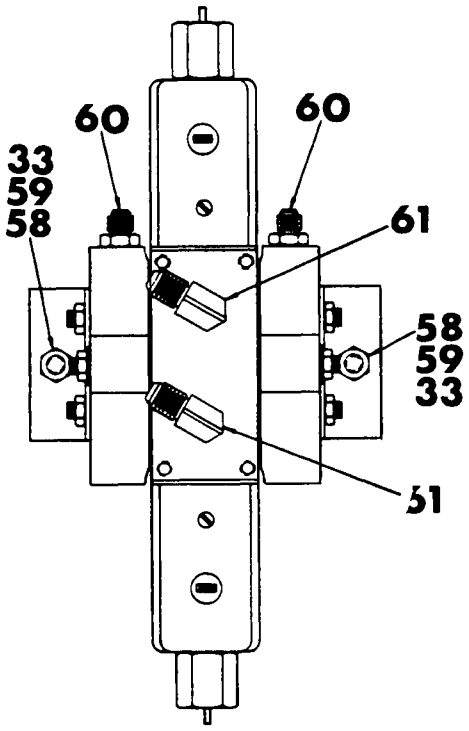


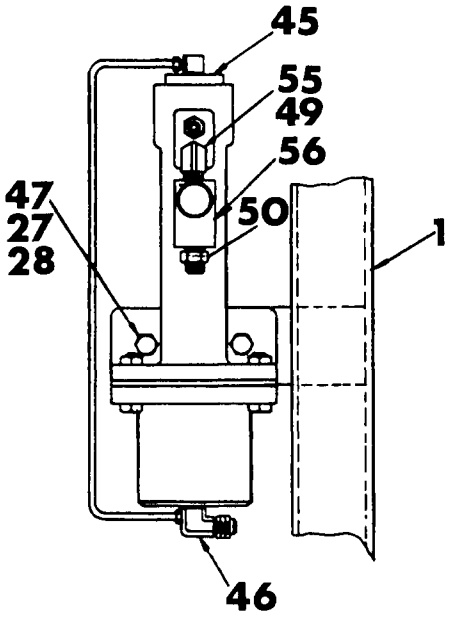
FIGURE 5.2 - FRAME ASSEMBLY (25ETD)



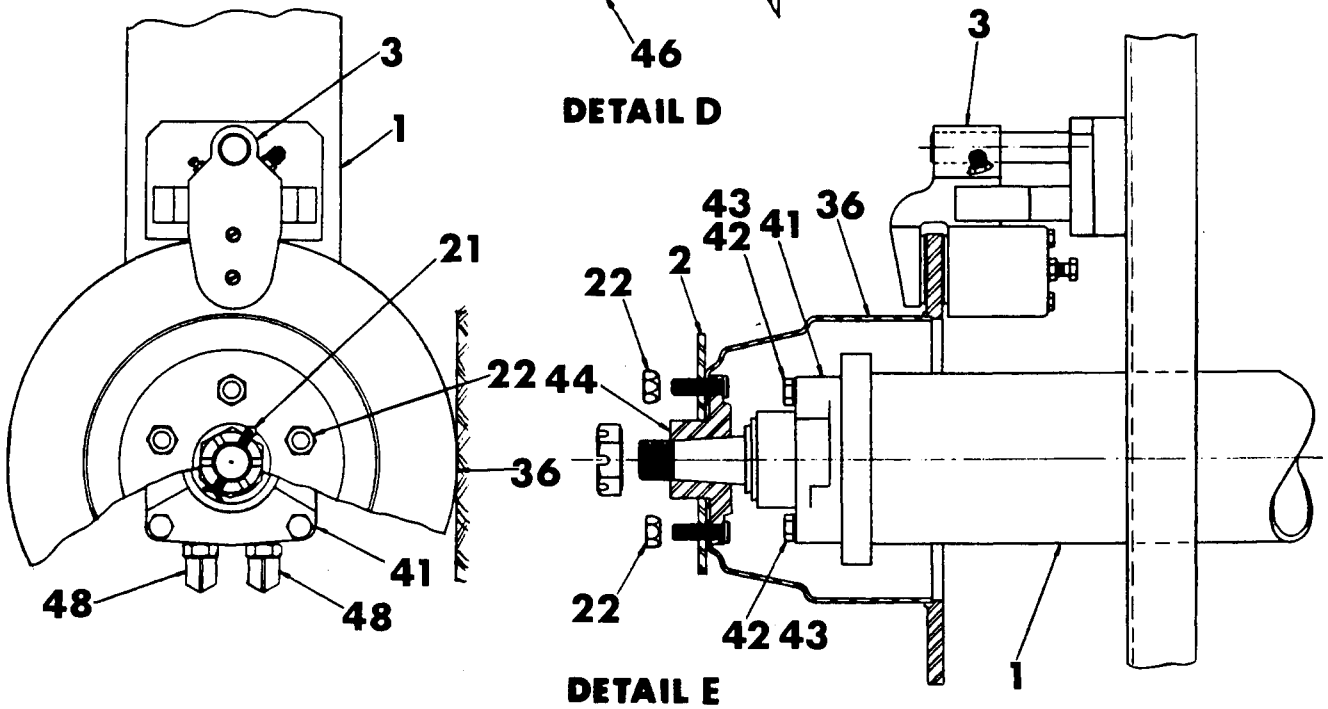
SECTION B



DETAIL C



DETAIL D



DETAIL E

FIGURE 5.2 - FRAME ASSEMBLY (25ETD)

ITEM	PART NUMBER	DESCRIPTION	QTY
5.2-	31202	FRAME ASSEMBLY	1
-1	30655	FRAME WELDMENT	1
-2	30358	TIRE & WHEEL ASSEMBLY (SEE FIG. 18A)	4
-3	30860	CALIPER DISC BRAKE (SEE FIG. 22)	2
-4	62708	ROUND HEAD CAP SCREW - NO. 10-32UNF X 1 3/4	2
-5	30448	BUMPER CAP	4
-6	31285	FRONT HUB ASSEMBLY (SEE FIG. 17B)	2
-7	4006	BATTERY CHARGER	1
-8	3015	PUMP MOTOR	1
-9	8326	INVERTER BRACKET	1
-10	30466	BATTERY BOX ASSEMBLY (SEE FIG. 15)	1
-11	30329	HYDRAULIC TANK ASSEMBLY (SEE FIG. 12)	1
-12	30481	COMPONENT BOX ASSEMBLY (SEE FIG. 8.1)	1
-13	31074	SLOPE SENSOR	1
-14	764	RUBBER CLAMP	3
-15	30496	CUSHION CYLINDER ASSEMBLY (SEE FIG. 20)	1
-16	55	HOSE CLAMP	2
-17	20803	LIMIT SWITCH	1
-18	70032	LIMIT SWITCH ARM	1
-19	30803	STEERING CYLINDER (SEE FIG. 19A)	1
-20	64309	COTTER PIN - 3/16 X 1 1/2	2
-21	64310	COTTER PIN - 1/8 X 2	4
-22	65156	WHEEL NUT - 1/2-20UNF (BOWMALOK)	20
-23	60324	HEX HEAD CAP SCREW - 5/16-18UNC X 3/4	8
-24	22	CLAMP	1
-25	411-12.5	RUBBER MOULDING - 12 1/2 LG.	6
-26	60123	HEX HEAD CAP SCREW - 1/4-20UNC X 3/4	16
-27	60701	NUT - 1/4-20UNC	18
-28	63301	SPLIT LOCK WASHER - 1/4	18
-29	63434	FLAT WASHER - 5/16	8
-30	882	SHOCK MOUNT	8
-31	60702	NUT - 5/16-18UNC	16
-32	63302	SPLIT LOCK WASHER - 5/16	16

ITEM	PART NUMBER	DESCRIPTION	QTY
-33	60703	HEX NUT - 3/8-16UNC	2
-34	80031-03	UNION TEE	1
-35	16115	JAM NUT - 3/4-16UNF	2
-36	30876	DRUM & DISC WELDMENT	2
-37	63401	FLAT WASHER - 1/4	16
-38	80014-05	90° ELBOW	2
-39	80008-14	90° ELBOW	1
-40	411-7.5	RUBBER MOULDING - 7 1/2 LG.	2
-41	3040	DRIVE MOTOR	2
-42	60512	HEX HEAD CAP SCREW - 1/2-13UNC X 2 1/2 (GR. 8)	8
-43	63305	SPLIT LOCK WASHER - 1/2	8
-44	30299	DRIVE HUB	2
-45	30829	INTENSIFIER (SEE FIG. 23)	1
-46	80008-03	MALE ELBOW	1
-47	60131	HEX HEAD CAP SCREW - 1/4-20UNC X 1	2
-48	80012-03	STRAIGHT THREAD ELBOW	4
-49	80052-02	MALE CONNECTOR	1
-50	80001-03	MALE CONNECTOR	1
-51	411-5.5	RUBBER MOULDING - 5 1/2 LG.	2
-52	411-6.2	RUBBER MOULDING - 6 1/4 LG.	2
-53	411-18.0	RUBBER MOULDING - 18 LG.	1
-54	411-8.7	RUBBER MOULDING - 8 3/4 LG.	1
-55	80021-01	STREET ELBOW	1
-56	30884	FLOW VALVE	1
-57	31071	SOLENOID VALVE	1
-58	60618	HEX HEAD CAP SCREW - 3/8-16UNC X 3/4	2
-59	63303	SPLIT LOCK WASHER - 3/8	2
-60	80004-08	STRAIGHT THREAD CONNECTOR	2
-61	80012-05	STRAIGHT THREAD ELBOW	2
-62	63501	FLAT WASHER - 1/2	20
-63	63408	FLAT WASHER - 3/4	2
-64	63453	KEY WASHER - 3/4	2
-65	16274	DUST CAP	2

FIGURE 5A - FRAME ASSEMBLY (30E) (36E)

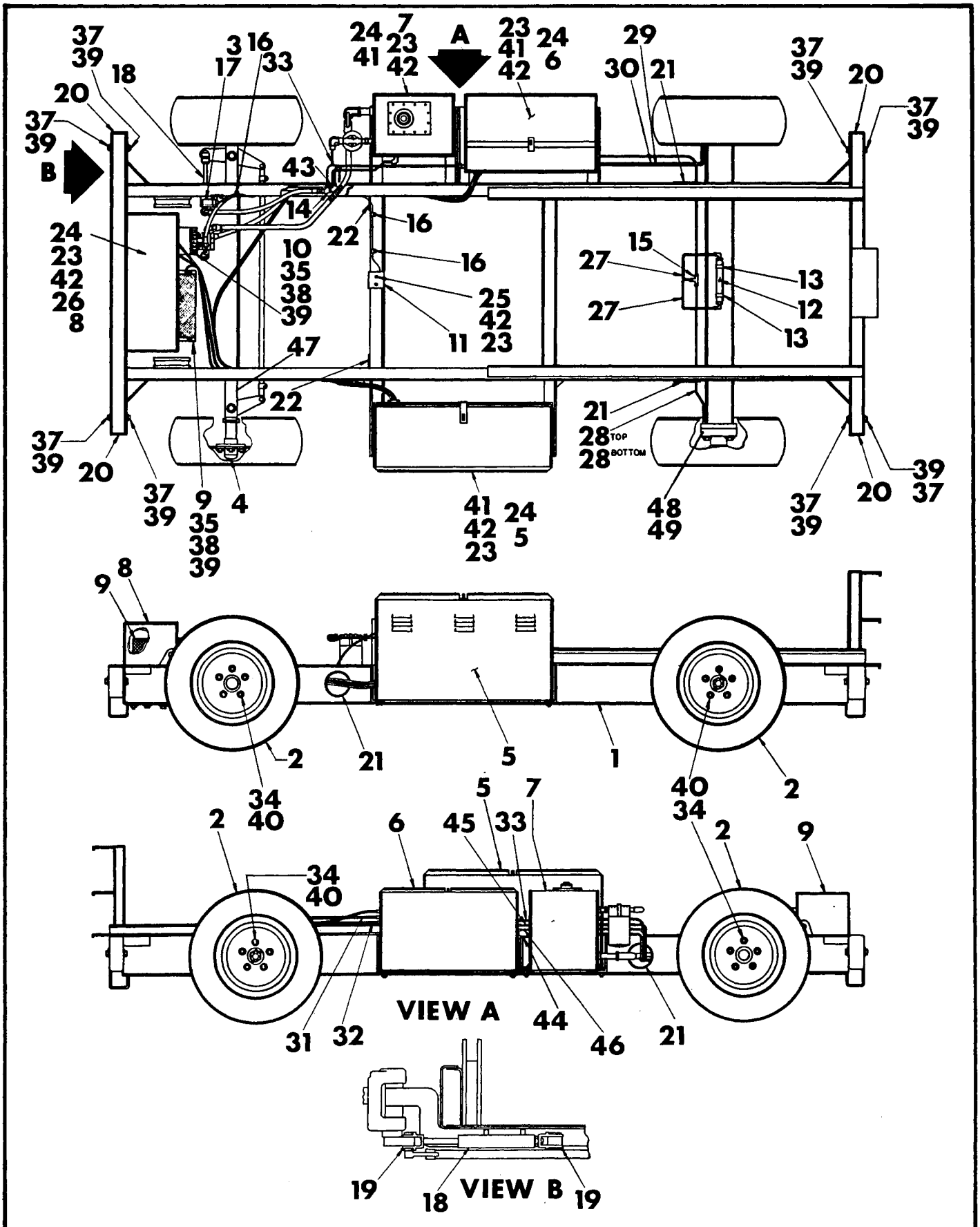


FIGURE 5A - FRAME ASSEMBLY (30E) (36E)

ITEM	PART NUMBER	DESCRIPTION	QTY
	NOTE: UNLESS OTHERWISE STATED, PARTS ARE COMMON FOR (30E) & (36E)		
5A-	30565	FRAME ASSEMBLY (30E)	1
	30354	FRAME ASSEMBLY (36E)	1
-1	30137	FRAME WELDMENT	1
-2	30358	TIRE & WHEEL ASSEMBLY (SEE FIG.18A)	4
-3	20807	LIMIT SWITCH ARM (30E)	1
		LIMIT SWITCH ARM (36E)	2
-4	30410	FRONT HUB ASSEMBLY (SEE FIG.17A)	2
-5	30466	BATTERY BOX ASSEMBLY (SEE FIG.15)	1
-6	30481	COMPONENT BOX ASSEMBLY (SEE FIG.8)	1
-7	30329	HYDRAULIC TANK ASSEMBLY (SEE FIG.12)	1
-8	8326	INVERTER BRACKET	1
-9	4006	BATTERY CHARGER	1
-10	3015	PUMP MOTOR	1
-11	30387	TILT SWITCH ASSEMBLY & INSTALLATION (SEE FIG.10)	1
-12	30496	CUSHION CYLINDER ASSEMBLY (SEE FIG.20)	1
-13	55	CLAMP	2
-14	2436	90° ELBOW	2
-15	2432	TEE FITTING	2
-16	764	CLAMP	3
-17	20803	LIMIT SWITCH (30E)	1
		LIMIT SWITCH (36E)	2
-18	3062	STEERING CYLINDER (SEE FIG.19)	1
-19	64309	COTTER PIN 3/16 X 1½	2
-20	30448	BUMPER CAP	4
-21	411	RUBBER MOULDING 12½ LG	4
-22	411	RUBBER MOULDING 7½ LG.	2
-23	63301	LOCK WASHER ¼	22
-24	63402	FLAT WASHER 5/16	16
-25	60159	HEX. HD. CAP SCREW ¼-20 UNC X 2	2
-26	60123	HEX. HD. CAP SCREW ¼-20 UNC X 3/4	16
-27		TUBE ASSEMBLY ½	2
-28		TUBE ASSEMBLY ½	2
-29		TUBE ASSEMBLY ½	1

ITEM	PART NUMBER	DESCRIPTION	QTY
-30		TUBE ASSEMBLY ½	1
-31		TUBE ASSEMBLY ½	1
-32		TUBE ASSEMBLY ½	1
-33		TUBE ASSEMBLY ½	1
-34	61301	WHEEL NUT ½-20 UNC	20
-35	882	MOTOR MOUNT	8
-36	411	RUBBER MOULDING 5 3/4 LG.	2
-37	60109	HEX. HD. CAP SCREW 5/16-18 UNC X ½	8
-38	60708	HEX. NUT 5/16-18 UNC	16
-39	16156	LOCK WASHER 5/16	24
-40	63305	LOCK WASHER ½	20
-41	60123	HEX. HD. CAPSCREW ¼-20 UNC X 3/4	12
-42	60701	HEX. NUT ¼-20 UNC	18
-43	2451	90° ELBOW	2
-44		TUBE ASSEMBLY 3/8	1
-45		TUBE ASSEMBLY ½	1
-46		TUBE ASSEMBLY 3/8	1
-47	30143	FRONT AXLE ASSEMBLY (SEE FIG.16 OR 16A)	1
-48	30243	DRIVE MOTOR	2
-49	30294	DRIVE HUB	2

FIGURE 5A.1 FRAME ASSEMBLY (25GTD)

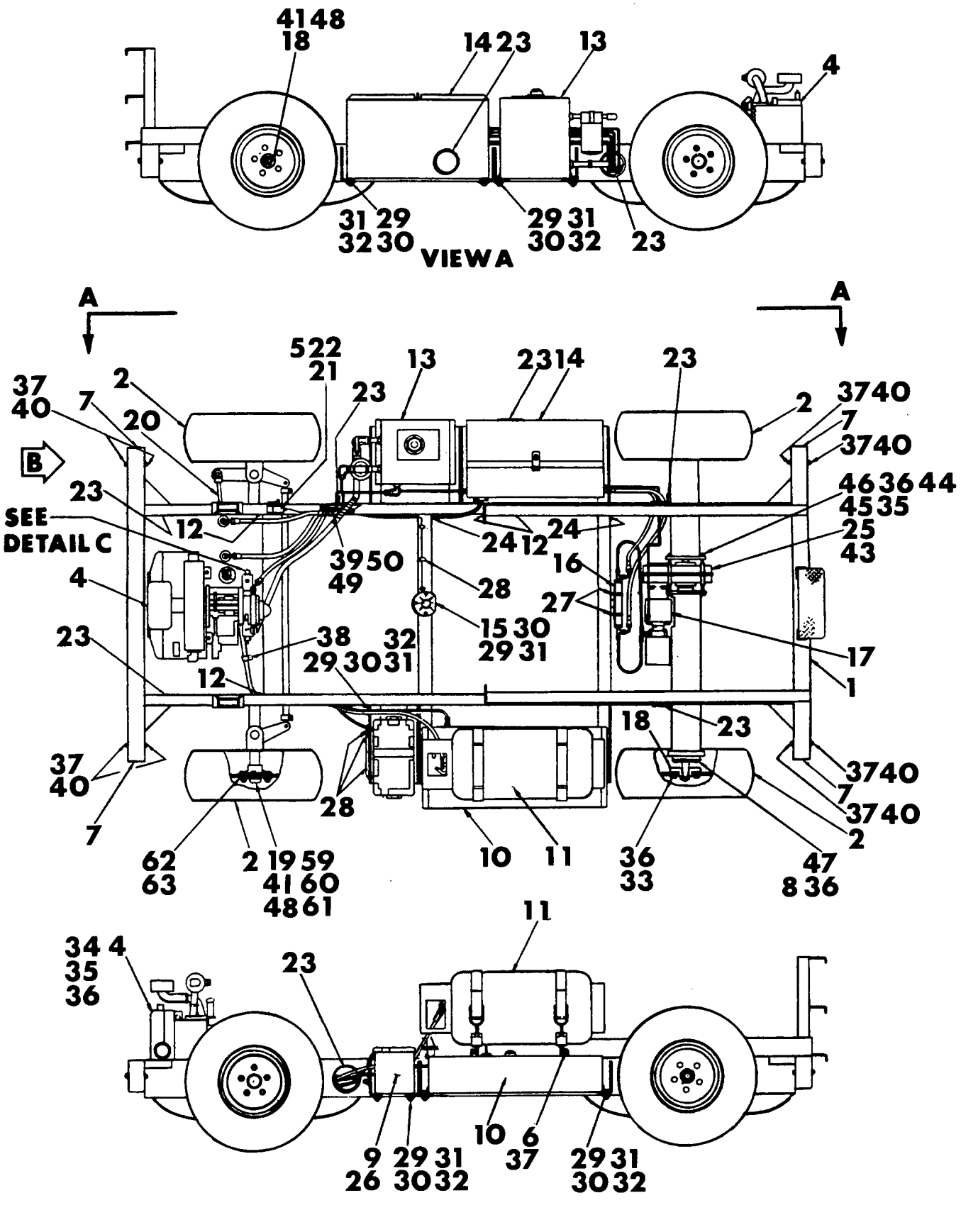
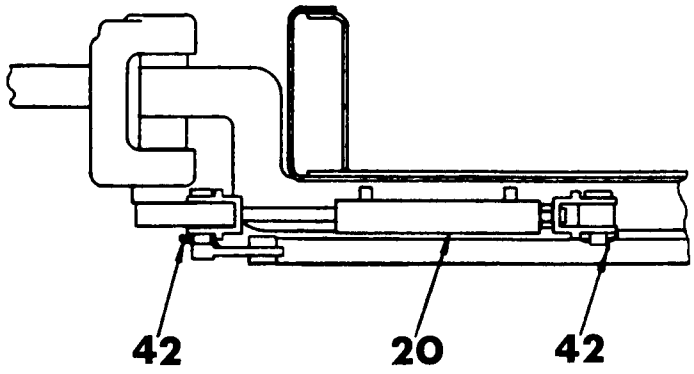
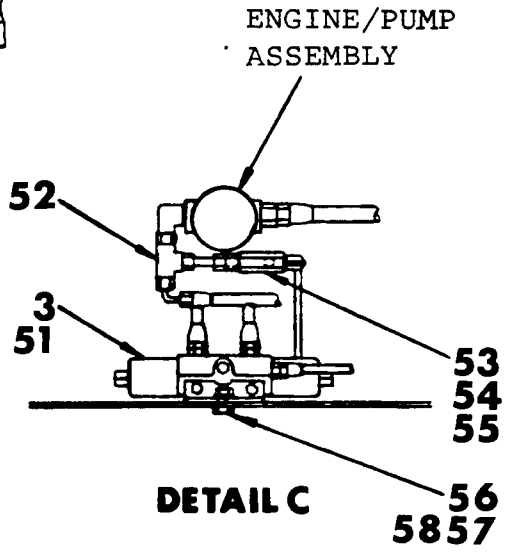


FIGURE 5A.1 - FRAME ASSEMBLY (25GTD)



VIEW B



DETAIL C

FIGURE 5A.1 - FRAME ASSEMBLY (25GTD)

ITEM	PART NUMBER	DESCRIPTION	QTY
5A.1-	31275	FRAME ASSEMBLY	1
-1	30659	FRAME WELDMENT	1
-2	30358	TIRE & WHEEL ASSEMBLY (SEE FIG. 18A)	4
-3	31071	SOLENOID VALVE	1
-4	30233	DUAL FUEL ENGINE & PUMP ASSEMBLY (SEE FIG. 14)	1
-5	62708	ROUND HEAD SLOTTED MACHINE SCREW - NO. 10-32UNF X 1 3/4	2
-6	63402	FLAT WASHER - 5/16	4
-7	30448	BUMPER CAP	4
-8	60512	HEX HEAD CAP SCREW - 1/2-13UNC X 2 1/2 (GR. 8)	8
-9	782	BATTERY BOX	1
-10	30285	GAS TANK ASSEMBLY (SEE FIG. 13)	1
-11	486-C	PROPANE TANK	1
-12	411-5.5	RUBBER MOULDING - 5 1/2 LG.	4
-13	30329	HYDRAULIC TANK ASSEMBLY (SEE FIG. 12)	1
-14	31276	COMPONENT BOX ASSEMBLY (SEE FIG. 8.2)	1
-15	31074	SLOPE SENSOR	1
-16	30496	CUSHION CYLINDER ASSEMBLY (SEE FIG. 20)	1
-17	30318	AUSCO BRAKE TO GEAR BOX ASSEMBLY (SEE FIG. 24)	1
-18	31281	REAR HUB	2
-19	31285	FRONT HUB ASSEMBLY (SEE FIG. 17B)	2
-20	30803	STEERING CYLINDER (SEE FIG. 19A)	1
-21	70107	LIMIT SWITCH	1
-22	70032	LIMIT SWITCH ARM	1
-23	411-12.5	RUBBER MOULDING - 12 1/2 LG.	7
-24	411-7.5	RUBBER MOULDING - 7 1/2 LG.	2
-25	417	GEAR REDUCTION BOX	1
-26	4030	BATTERY	1
-27	55	CLAMP	2
-28	764	CLAMP	10
-29	60123	HEX HEAD CAP SCREW - 1/4-20UNC X 3/4	20

ITEM	PART NUMBER	DESCRIPTION	QTY
-30	60701	HEX NUT - 1/4-20UNC	20
-31	63301	SPLIT LOCK WASHER - 1/4	20
-32	63401	FLAT WASHER - 1/4	17
-33	60532	HEX HEAD CAP SCREW - 1/2-20UNF X 1 (GR. 8)	10
-34	60308	HEX HEAD CAP SCREW - 1/2-13UNC X 1 1/2 (GR. 5)	4
-35	60705	HEX NUT - 1/2-13UNC	8
-36	63305	SPLIT LOCK WASHER - 1/2	36
-37	60324	HEX HEAD CAP SCREW - 5/16-18UNC X 1/2	12
-38	22	CLAMP	10
-39	80014-05	90° ELBOW	2
-40	63434	FLAT WASHER - 5/16	8
-41	64310	COTTER PIN - 3/16 X 1 1/2	4
-42	64309	COTTER PIN - 3/16 X 1 1/2	2
-43	1159	REAR AXLE	1
-44	35283	PIPE - 1/2 X 3/4 SCH. 40	4
-45	35282	PIPE - 1/2 X 1 5/8 SCH. 40	4
-46	60301	HEX HEAD BOLT - 1/2-13UNC X 8 (GR. 5)	4
-47	464	AXLE BLOCK BEARING	2
-48	16115	SLOTTED JAM NUT - 3/4-16UNF	2
-49	80060-05	"B" NUT	2
-50	80062-05	SLEEVE	2
-51	80004-08	STRAIGHT THREAD CONNECTOR	4
-52	80028-06	SWIVEL NUT RUN TEE	1
-53	20370	NEEDLE VALVE	1
-54	80001-13	MALE CONNECTOR	1
-55	80008-08	MALE ELBOW	1
-56	60618	HEX HEAD CAP SCREW - 3/8-16UNC X 3/4	2
-57	60703	HEX NUT - 3/8-16UNC	2
-58	63303	SPLIT LOCK WASHER - 3/8	2
-59	63408	FLAT WASHER - 3/4	2
-60	63453	KEY WASHER - 3/4	2
-61	16274	DUST CAP	2

ITEM	PART NUMBER	DESCRIPTION	QTY
-62	63501	FLAT WASHER - 1/2	10
-63	61314	WHEEL NUT - 1/2-20UNF	10

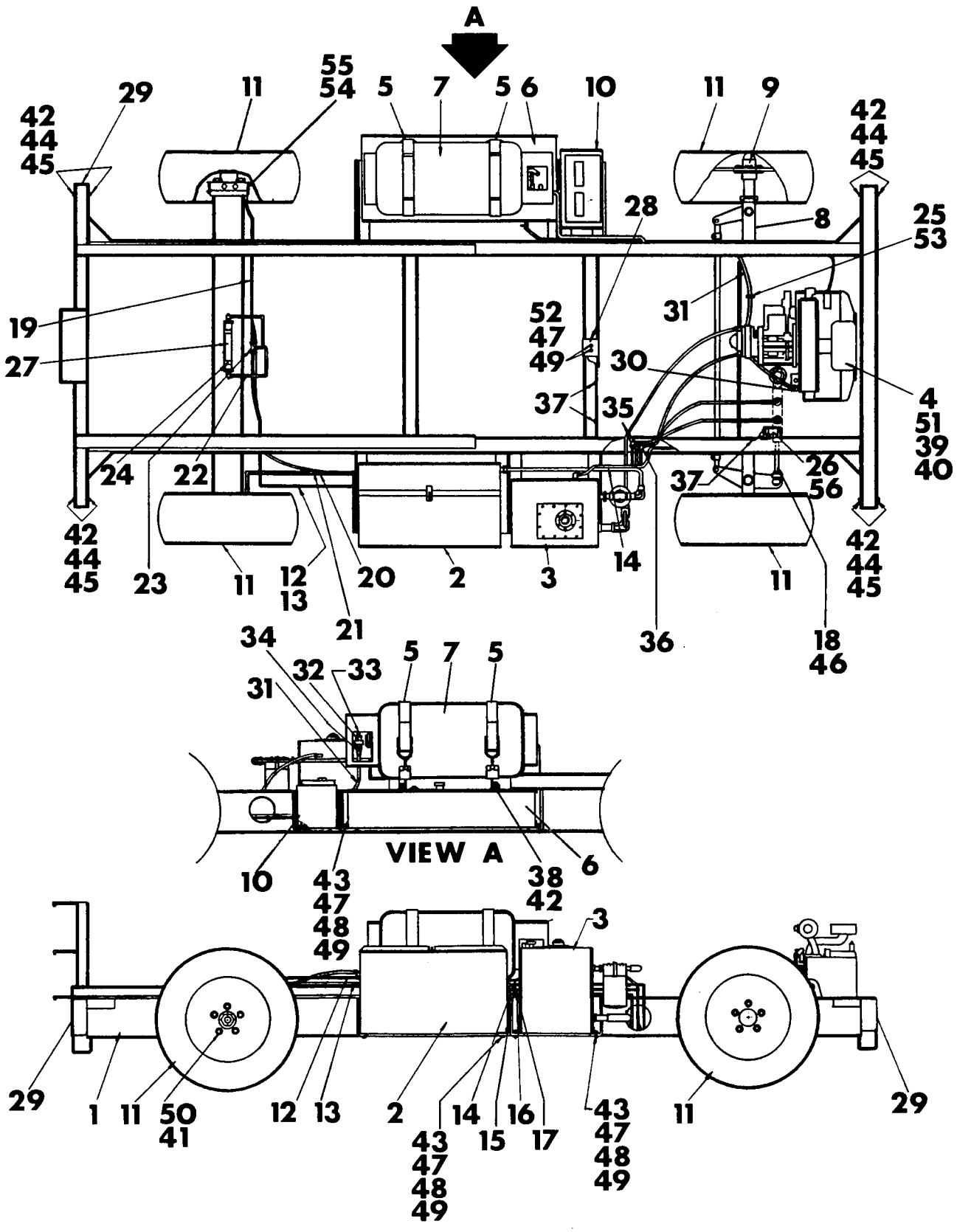

A
VIEW A

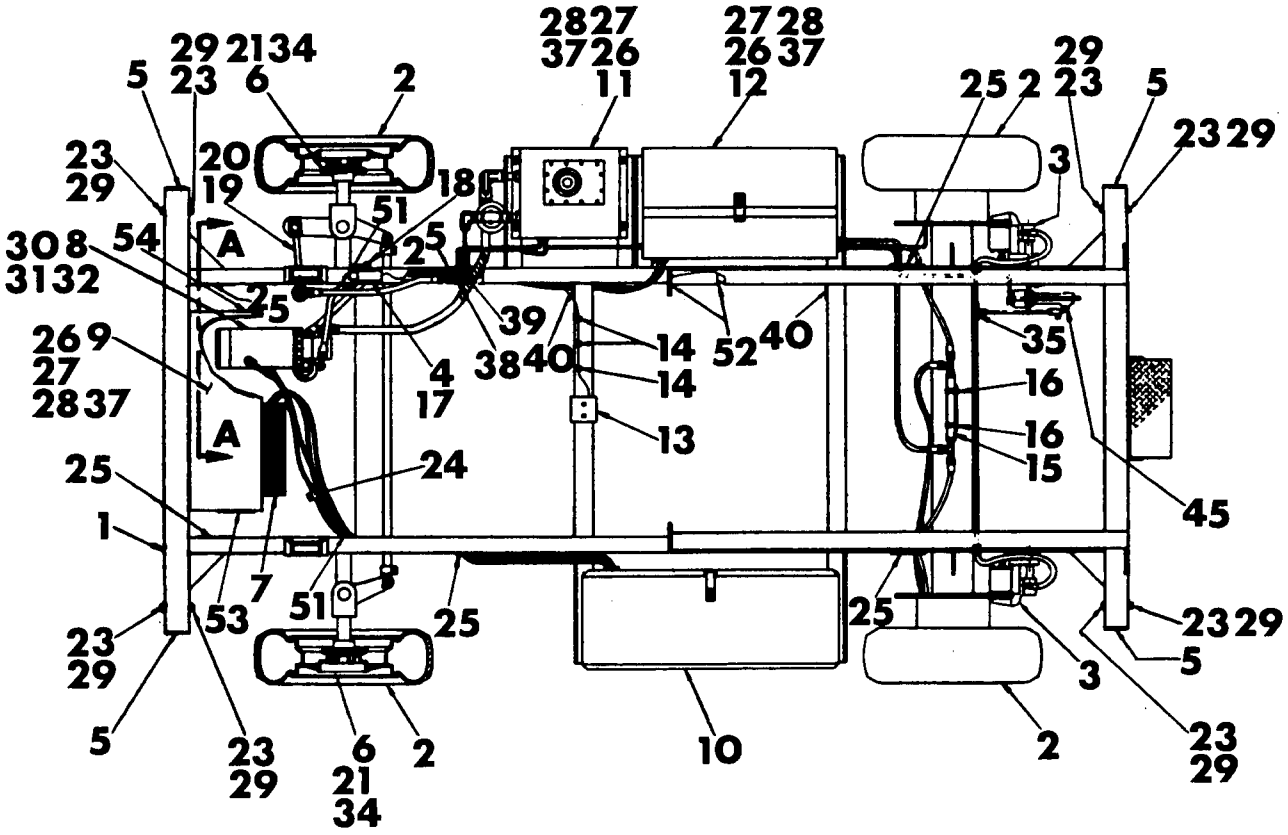
FIGURE 5B - FRAME ASSEMBLY (30G) (36G)

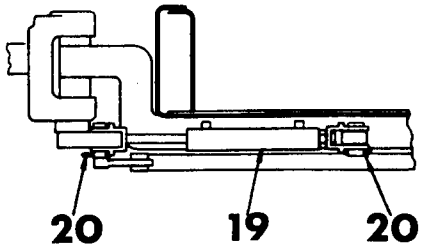
ITEM	PART NUMBER	DESCRIPTION	QTY
NOTE:	UNLESS OTHERWISE	STATED, PARTS ARE COMMON FOR 30G & 36G	
5B-	30388	FRAME ASSEMBLY (30G)	1
	30333	FRAME ASSEMBLY (36G)	1
-1	30217	FRAME ASSEMBLY WELDMENT	1
-2	30481	COMPONENT BOX ASSEMBLY (SEE FIG.8)	1
-3	30329	HYDRAULIC TANK ASSEMBLY (SEE FIG.12)	1
-4	30233	DUAL FUEL ENGINE & PUMP ASSEMBLY (SEE FIG.14)	1
-5	* 486-A	TANK BRACKET-33½ LB ICC TANK	1PR
-6	30285	GAS TANK ASSEMBLY (SEE FIG.13)	1
-7	486-C	PROPANE GAS TANK ASSEMBLY	1
-8	30143	FRONT AXLE ASSEMBLY (SEE FIG.16 OR 16A)	1
-9	30410	FRONT HUB ASSEMBLY (SEE FIG.17A)	2
-10	9064	BATTERY BOX INSTALLATION (SEE FIG.15A)	1
-11	30358	TIRE & WHEEL ASSEMBLY (SEE FIG.18A)	4
-12		TUBE ASSEMBLY-TOP ½	1
-13		TUBE ASSEMBLY-BOTTOM ½	1
-14		TUBE ASSEMBLY ½	1
-15		TUBE ASSEMBLY ½	1
-16		TUBE ASSEMBLY 3/8	1
-17		TUBE ASSEMBLY 3/8	1
-18	3062	STEERING CYLINDER (SEE FIG.19)	1
-19		TUBE ASSEMBLY ½	2
-20		TUBE ASSEMBLY-BOTTOM ½	1
-21		TUBE ASSEMBLY-TOP ½	1
-22		TUBE ASSEMBLY ½	2
-23	2432	TEE	2
-24	30355	CLAMP	2
-25	22	CLAMP	1
-26	20803	LIMIT SWITCH (30G)	1
		LIMIT SWITCH (36G)	2
-27	30496	CUSHION CYLINDER ASSEMBLY (SEE FIG.20)	1
-28	30387	TILT SWITCH ASSEMBLY & INSTALLATION (SEE FIG.10)	1

ITEM		PART NUMBER	DESCRIPTION	QTY
-29		30448	BUMPER CAP	4
-30	*	66148	HOSE FITTING-2F 237 5/16 HOSE X 3/8 FLARE	1
-31	*	66149	HOSE-HIGH PRESSURE-H-501 UL LPG FUEL	1
-32	*	61542	SOCKET-QUICK DISCONNECT-7141-F	1
-33	*	65141	NIPPLE-QUICK DISCONNECT-7141-M	1
-34	*	16425	HOSE FITTING 2F-238 5/16 HOSE X¼ NPT	1
-35		2436	90° ELBOW	1
-36		2451	90° ELBOW	1
-37		764	CLAMP	3
-38		60114	HEX HEAD CAPSCREW 5/16-18 UNC X 3/4	4
-39		60705	HEX NUT ½-13 UNC	4
-40		63305	SPRING LOCK WASHER ½	4
-41		63415	FLAT WASHER ½	20
-42		63402	FLAT WASHER 5/16	12
-43		60123	HEX HEAD CAPSCREW ¼-20 UNC X 3/4(GRD 5)	12
-44		60136	HEX HEAD CAPSCREW 5/16-18 UNC X 1	8
-45		16156	SPRING LOCK WASHER 5/16	8
-46		64309	COTTER PIN 3/16 X 1½	2
-47		60701	HEX NUT ¼-20 UNC	14
-48		63401	FLAT WASHER ¼	12
-49		63301	SPRING LOCK WASHER ¼	14
-50		61301	WHEEL NUT ½-20 UNF BOWMALOCK	20
-51		60308	HEX HEAD CAPSCREW ½-13 UNC X 1½ (GRADE 5)	4
-52		60319	HEX HEAD CAPSCREW ¼-20 UNC X 1 3/4	2
-53		63654	POP RIVET 3/16 DIA. X 3/8	1
-54		30243	DRIVE MOTOR	2
-55		30294	DRIVE HUB	2
-56		20807	LIMIT SWITCH ARM (30G) LIMIT SWITCH ARM (36G)	1 2

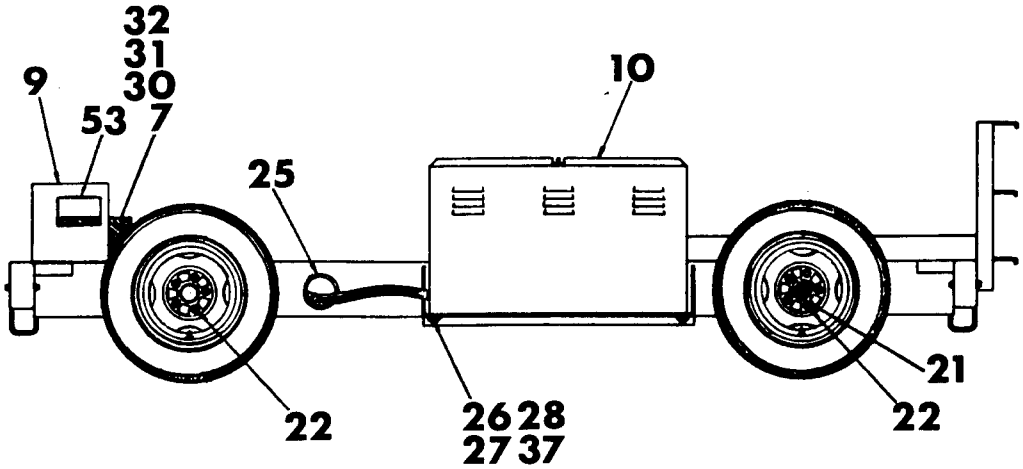
*NOTE: PART OF DUAL FUEL KIT 30226 (SEE FIG.14)

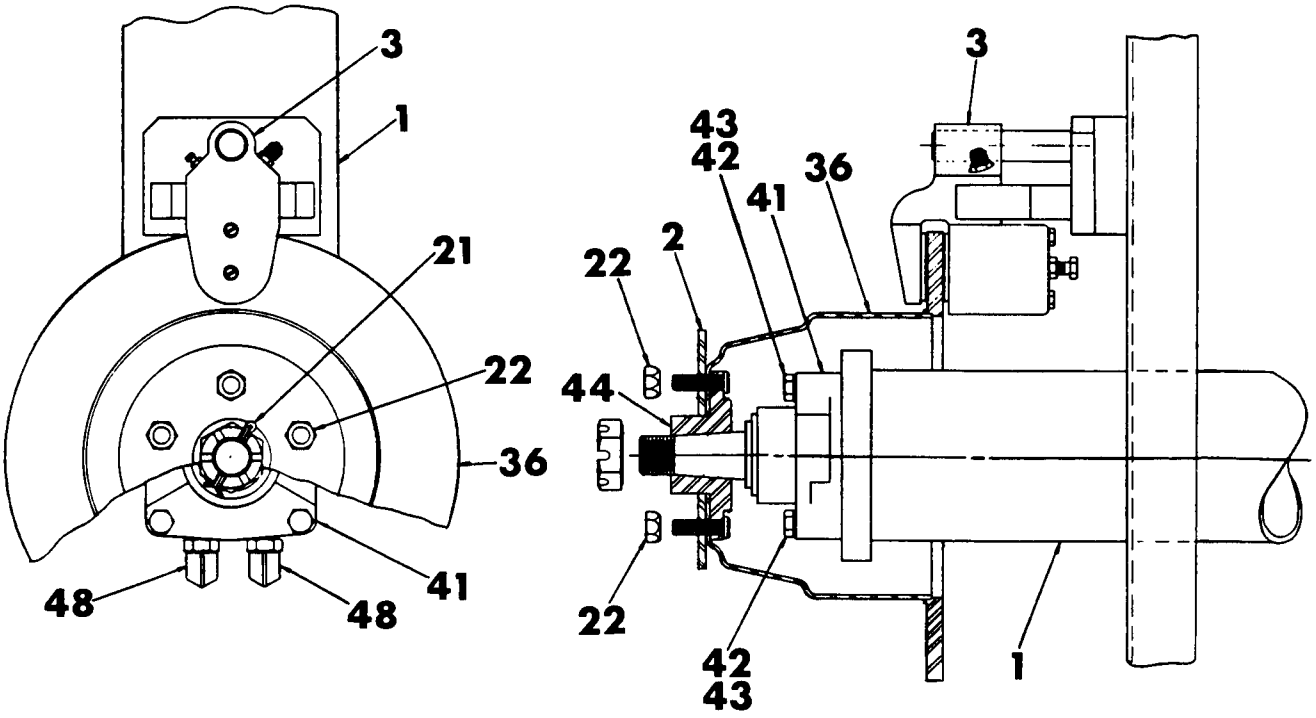
FIGURE 5C - FRAME ASSEMBLY (25E) (JULY 1982)



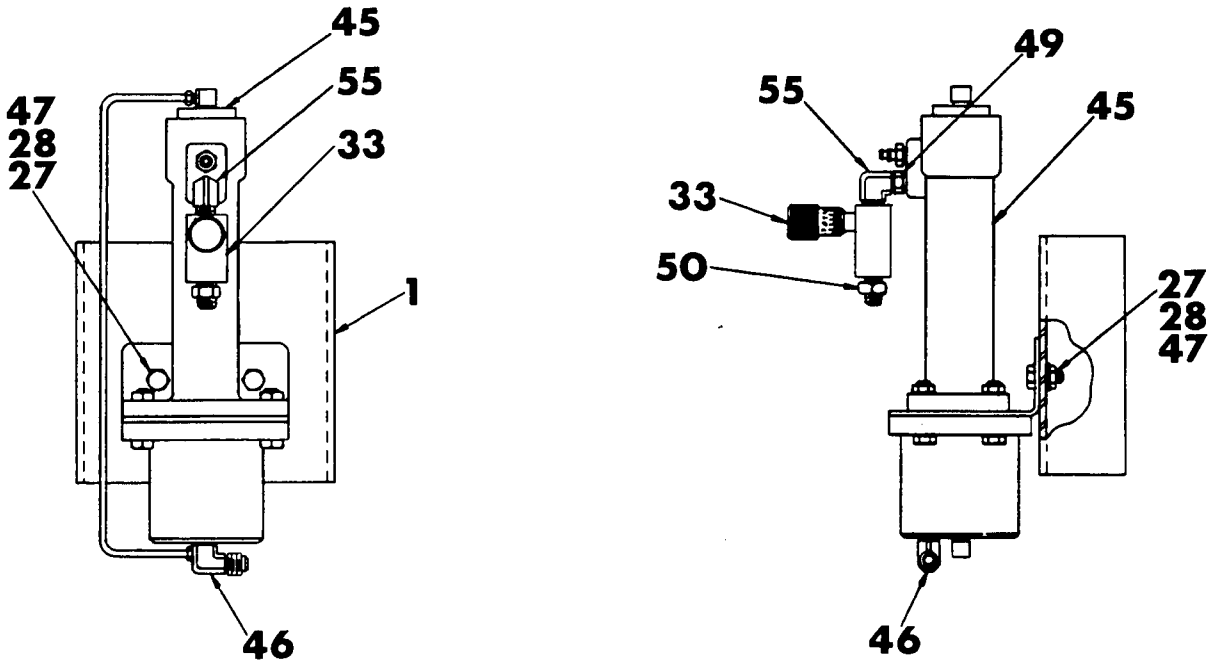


VIEW A





CALIPER DISC BRAKE ASSEMBLY DETAIL



INTENSIFIER ASSEMBLY DETAIL

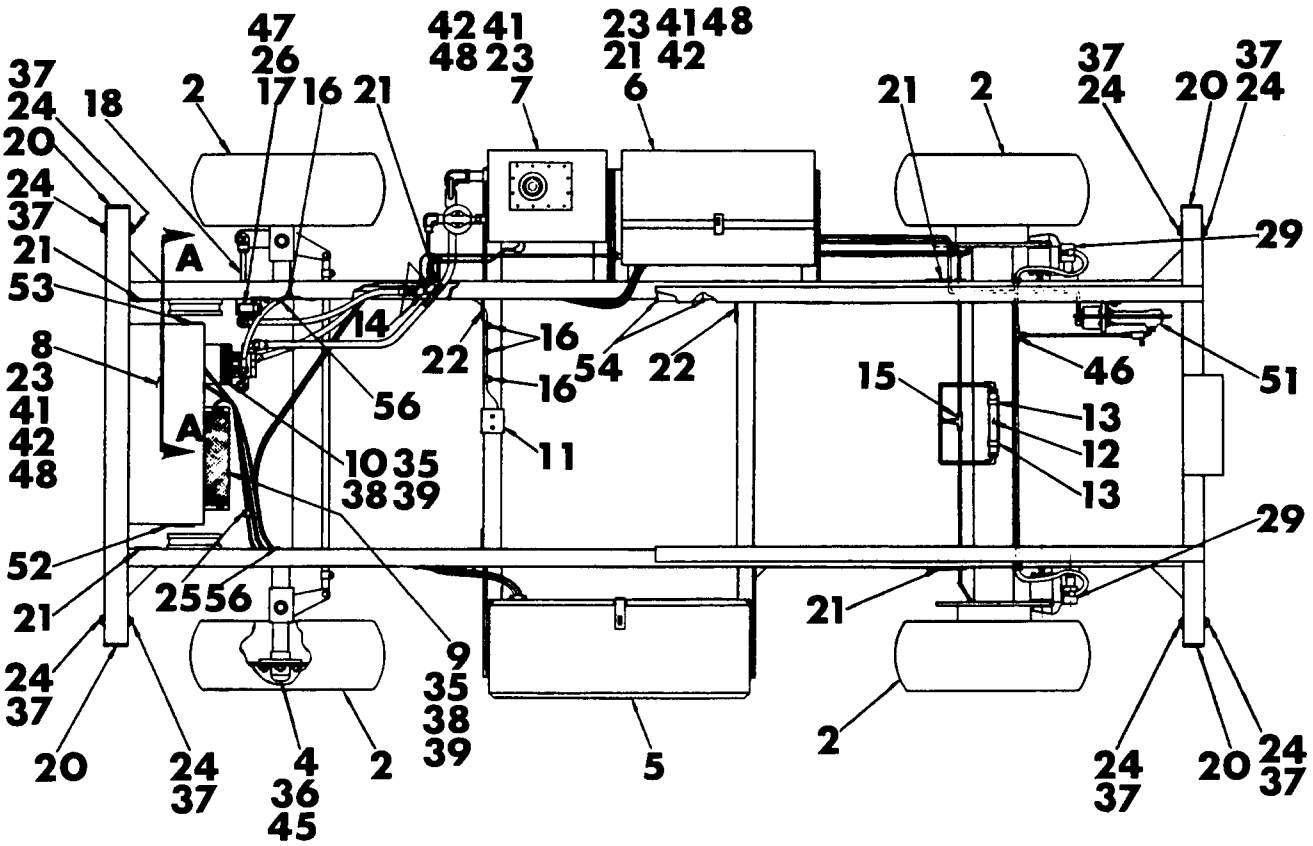
FIGURE 5C - FRAME ASSEMBLY (25E) (JULY 1982)

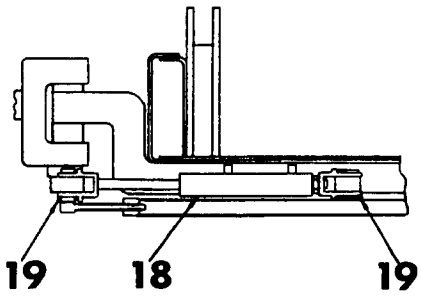
ITEM	PART NUMBER	DESCRIPTION	QTY
5C-	30689	FRAME ASSEMBLY	1
-1	30655	FRAME WELDMENT	1
-2	30465	TIRE & WHEEL ASSEMBLY (SEE FIG. 18)	4
-3	30860	CALIPER DISC BRAKE (SEE FIG. 22)	2
-4	62708	ROUND HEAD CAP SCREW NO. 10-32 UNF X 1 3/4	2
-5	30448	BUMPER CAP	4
-6	31144	FRONT HUB ASSEMBLY (SEE FIG. 17A)	2
-7	4006	BATTERY CHARGER	1
-8	3015	PUMP MOTOR	1
-9	8326	INVERTER BRACKET	1
-10	30466	BATTERY BOX ASSEMBLY (SEE FIG. 15)	1
-11	30329	HYDRAULIC TANK ASSEMBLY (SEE FIG. 12)	1
-12	30481	COMPONENT BOX ASSEMBLY (SEE FIG. 18)	1
-13	30387	TILT SWITCH ASSEMBLY & INSTALLATION (SEE FIG. 10)	1
-14	764	CLAMP	3
-15	30496	CUSHION CYLINDER ASSEMBLY (SEE FIG. 20)	1
-16	55	CLAMP	2
-17	20803	LIMIT SWITCH	1
-18	70032	LIMIT SWITCH ARM	1
-19	30803	STEERING CYLINDER (SEE FIG. 19A)	1
-20	64309	COTTER PIN - 3/16 X 1 1/2	2
-21	64310	COTTER PIN - 1/8 X 2	4
-22	65156	WHEEL NUT - 1/2-20 UNF	20
-23	60324	HEX HEAD CAP SCREW 5/16-18 UNC X 1/2	8
-24	22	CLAMP	1
-25	411-12.5	RUBBER MOULDING	6
-26	60123	HEX HEAD CAP SCREW - 1/4-20 UNC X 3/4	16
-27	60701	HEX NUT - 1/4-20 UNC	18
-28	63301	SPLIT LOCK WASHER - 1/4	18
-29	63434	FLAT WASHER - 5/16 (TYPE B PLAIN SERIES W)	8
-30	882	MOTOR MOUNT	8

FIGURE 5C - FRAME ASSEMBLY (25E) (JULY 1982)

ITEM	PART NUMBER	DESCRIPTION	QTY
-31	60702	HEX NUT - 5/16-18 UNC	16
-32	63302	SPLIT LOCK WASHER - 5/16	16
-33	30884	FLOW VALVE	1
-34	16115	SLOTTED JAM NUT - 3/4-16 UNF	2
-35	2417	UNION TEE	1
-36	30876	DRUM & DISC WELDMENT	2
-37	63401	FLAT WASHER - 1/4	16
-38	2436	90° ELBOW	2
-39	2451	90° ELBOW	1
-40	411-7.5	RUBBER MOULDING	2
-41	3040	DRIVE MOTOR	2
-42	60512	HEX HEAD CAP SCREW - 1/2-13 UNC X 2 1/2 (GR. 8)	8
-43	63305	SPLIT LOCK WASHER - 1/2	8
-44	30299	DRIVE HUB	2
-45	30829	DISC BRAKE INTENSIFIER (SEE FIG. 23)	1
-46	2434	MALE ELBOW	1
-47	60131	HEX HEAD CAP SCREW - 1/4-20 UNF X 1	2
-48	16511	STRAIGHT THREAD ELBOW	4
-49	51005	MALE CONNECTOR	1
-50	2414	MALE CONNECTOR	1
-51	411-5.5	RUBBER MOULDING	2
-52	411-6.2	RUBBER MOULDING	2
-53	411-18.0	RUBBER MOULDING	1
-54	411-8.7	RUBBER MOULDING	1
-55	52308	STREET ELBOW	1

FIGURE 5D - FRAME ASSEMBLY (30E) (JULY 1982)





VIEW A

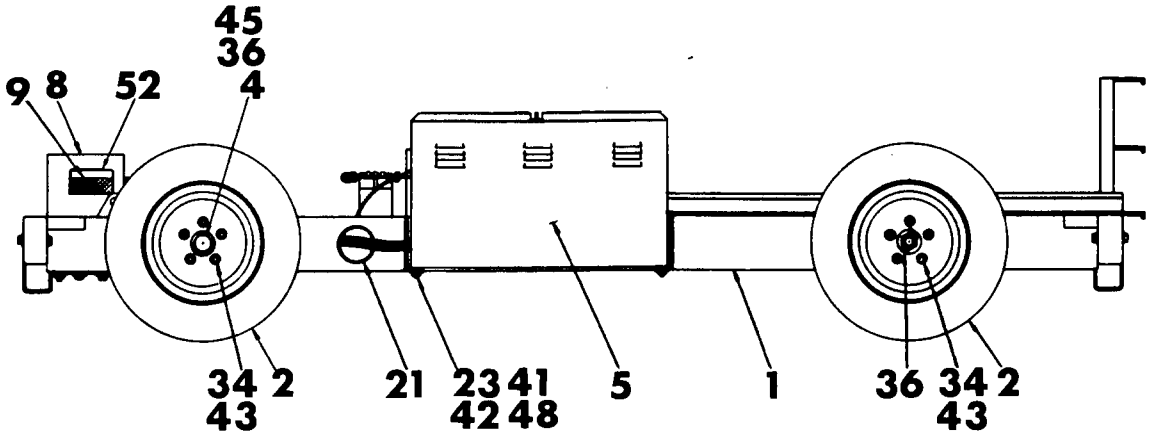
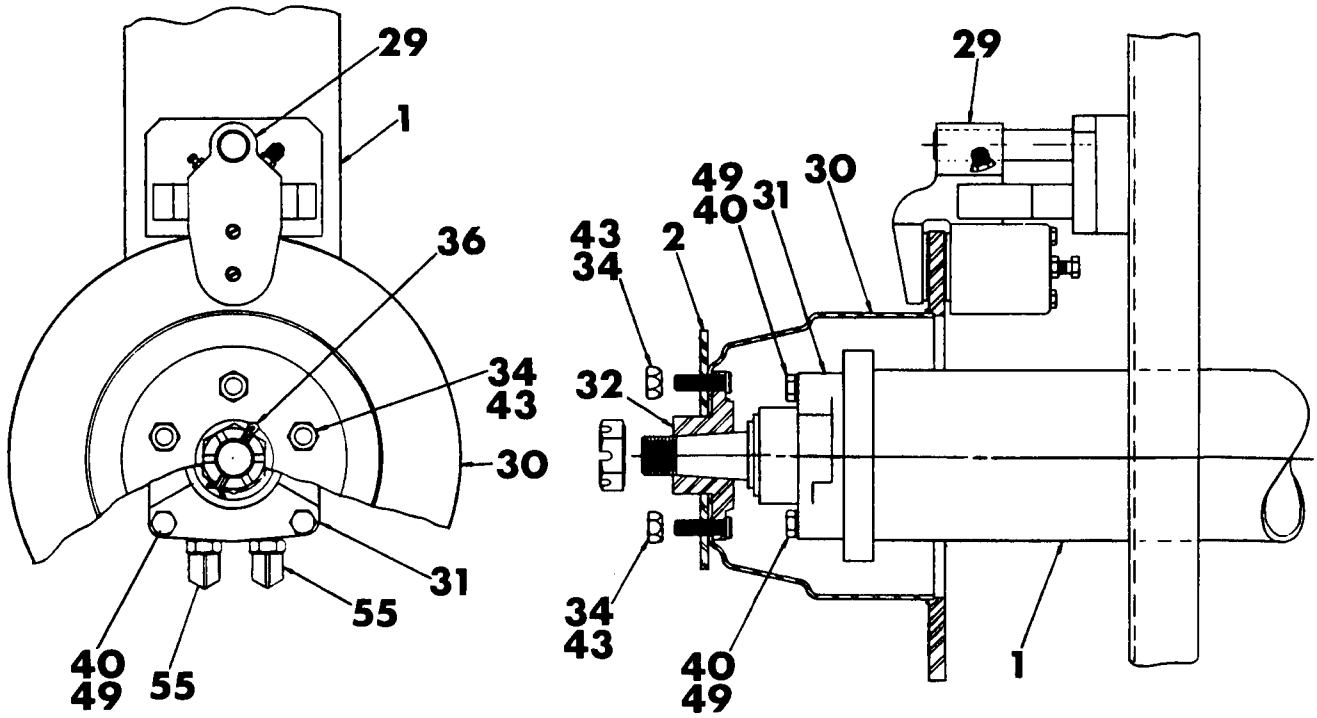
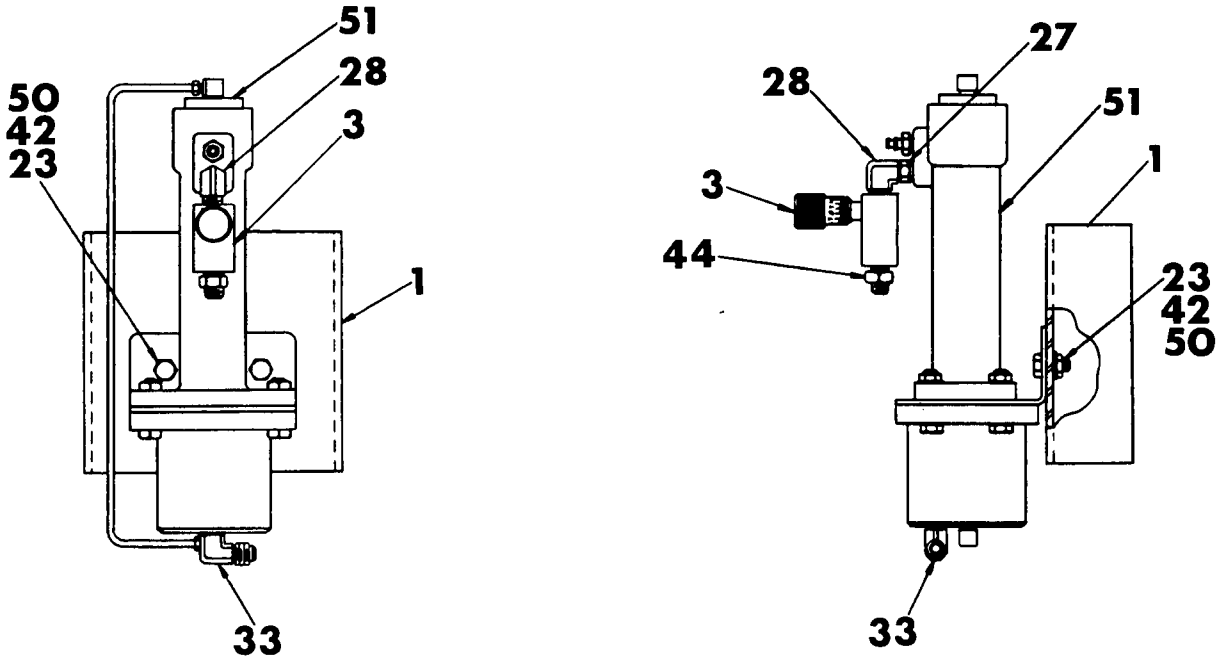


FIGURE 5D - FRAME ASSEMBLY (30E) (JULY 1982)



CALIPER DISC BRAKE ASSEMBLY DETAIL



INTENSIFIER ASSEMBLY DETAIL

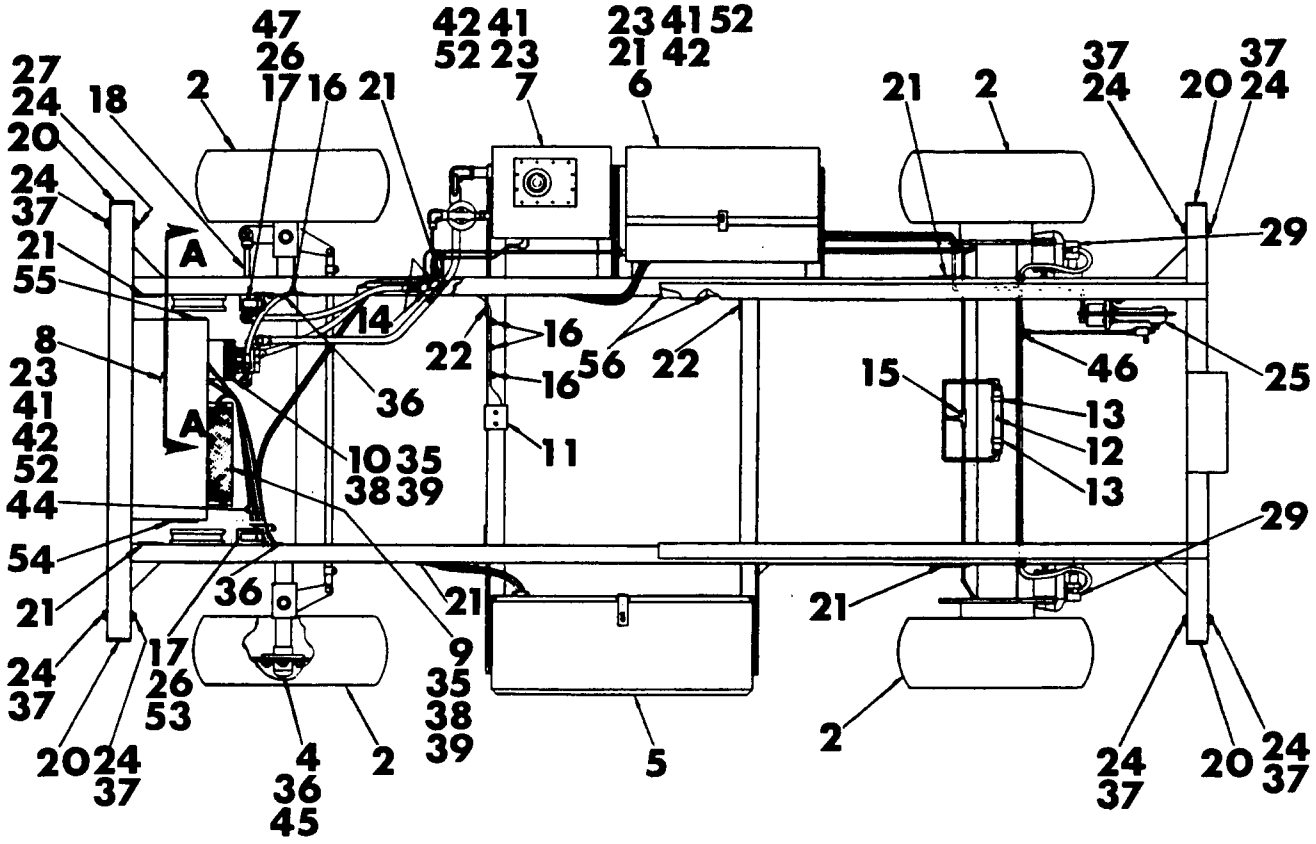
FIGURE 5D - FRAME ASSEMBLY (30E) (JULY 1982)

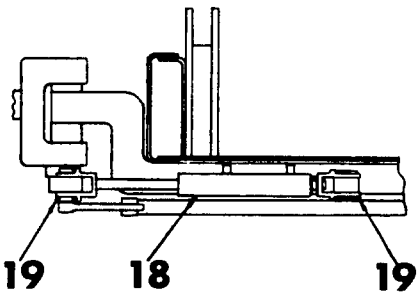
ITEM	PART NUMBER	DESCRIPTION	QTY
5D-	30565	FRAME ASSEMBLY	1
-1	30137	FRAME WELDMENT	1
-2	30358	TIRE & WHEEL ASSEMBLY (SEE FIG. 18A)	4
-3	30884	FLOW VALVE	1
-4	31144	FRONT HUB ASSEMBLY (SEE FIG. 17A)	2
-5	30466	BATTERY BOX ASSEMBLY (SEE FIG. 15)	1
-6	30481	COMPONENT BOX ASSEMBLY (SEE FIG. 8)	1
-7	30329	HYDRAULIC TANK ASSEMBLY (SEE FIG. 12)	1
-8	8326	INVERTER BRACKET	1
-9	4006	BATTERY CHARGER	1
-10	3015	PUMP MOTOR	1
-11	30387	TILT SWITCH ASSEMBLY & INSTALLATION (SEE FIG. 10)	1
-12	30496	CUSHION CYLINDER ASSEMBLY (SEE FIG. 20)	1
-13	55	CLAMP	2
-14	2436	90° ELBOW	2
-15	2432	TEE	2
-16	764	CLAMP	4
-17	20803	LIMIT SWITCH	1
-18	30803	STEERING CYLINDER (SEE FIG. 19A)	1
-19	64309	COTTER PIN - 3/16 X 1 1/2	2
-20	30448	BUMPER CAP	4
-21	411-12.5	RUBBER MOULDING	6
-22	411-7.5	RUBBER MOULDING	2
-23	63301	SPLIT LOCK WASHER - 1/4	18
-24	63434	FLAT WASHER - 5/16 (TYPE B PLAIN - SERIES W)	8
-25	22	CLAMP	1
-26	62708	ROUND HEAD CAP SCREW NO. 10-32 UNF X 1 3/4	2
-27	51005	MALE CONNECTOR	1
-28	52308	STREET ELBOW	1
-29	30860	CALIPER DISC BRAKE (SEE FIG. 22)	2
-30	30876	DRUM & DISC WELDMENT	2

FIGURE 5D - FRAME ASSEMBLY (30E) (JULY 1982)

ITEM	PART NUMBER	DESCRIPTION	QTY
-31	30243	DRIVE MOTOR	2
-32	30294	DRIVE HUB	2
-33	2434	MALE ELBOW	1
-34	61314	WHEEL NUT - 1/2-20 UNF	20
-35	882	MOTOR MOUNT	8
-36	64310	COTTER PIN - 1/8 X 2	4
-37	60324	HEX HEAD CAP SCREW - 5/16-18 UNC X 1/2	8
-38	60702	HEX NUT - 5/16-18 UNC	16
-39	63302	SPLIT LOCK WASHER - 5/16	16
-40	63305	SPLIT LOCK WASHER - 1/2	8
-41	60123	HEX HEAD CAP SCREW - 1/4-20 UNC X 3/4	16
-42	60701	HEX NUT - 1/4-20 UNC	18
-43	63501	FLAT WASHER - 1/2	20
-44	2414	MALE CONNECTOR	1
-45	16115	SLOTTED JAM NUT - 3/4-16 UNF	2
-46	2417	UNION TEE	1
-47	70032	LIMIT SWITCH ARM	1
-48	63401	FLAT WASHER - 1/4	16
-49	60512	HEX HEAD CAP SCREW - 1/2-13 UNC X 2 1/2 (GR. 8)	8
-50	60131	HEX HEAD CAP SCREW - 1/4-20 UNC X 1	2
-51	30829	DISC BRAKE INTENSIFIER (SEE FIG. 23)	1
-52	411-18.0	RUBBER MOULDING	1
-53	411-8.7	RUBBER MOULDING	1
-54	411-6.2	RUBBER MOULDING	2
-55	16511	STRAIGHT THREAD ELBOW	4
-56	411-5.5	RUBBER MOULDING	2

FIGURE 5E - FRAME ASSEMBLY (36E) (JULY 1982)





VIEW A

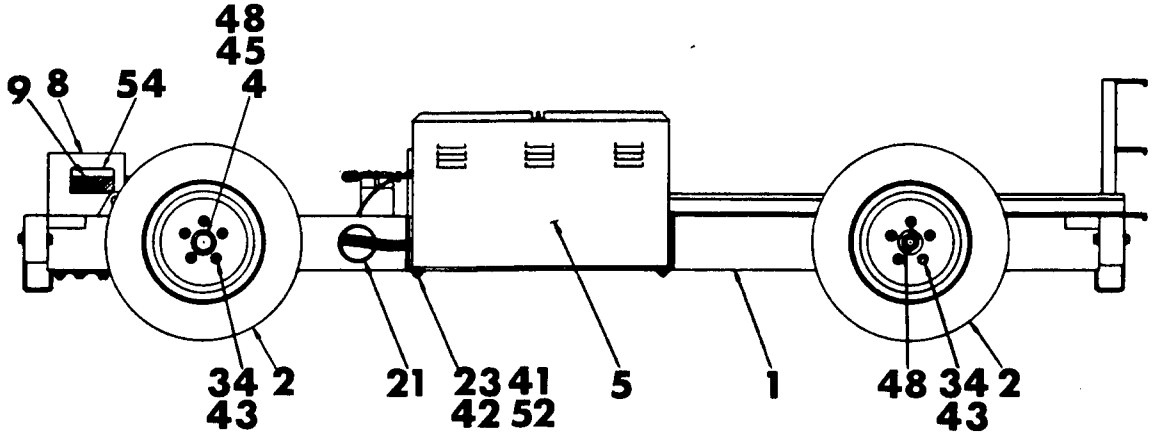
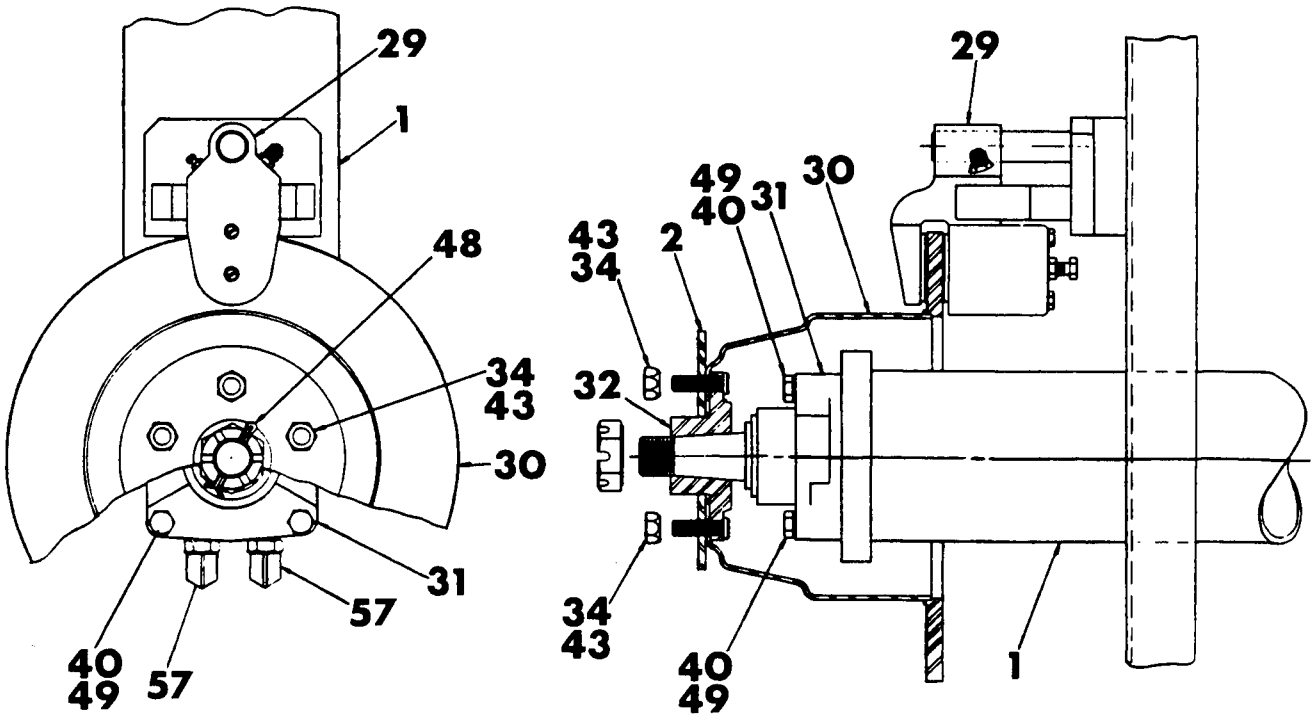
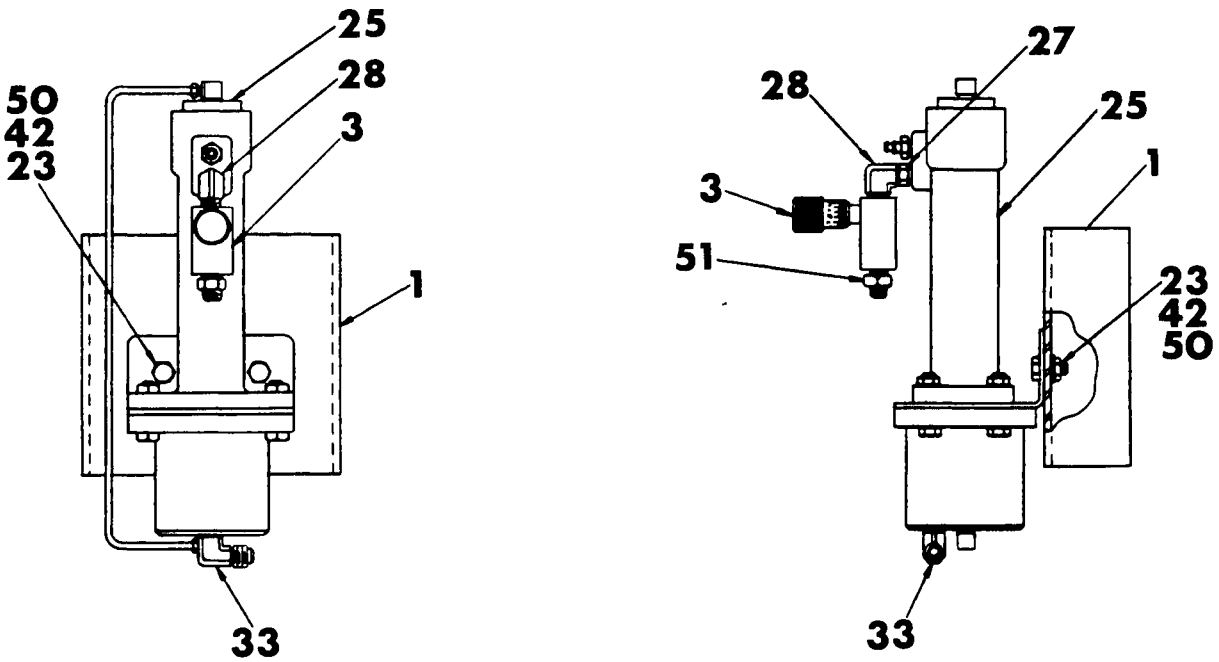


FIGURE 5E - FRAME ASSEMBLY (36E) (JULY 1982)



CALIPER DISC BRAKE ASSEMBLY DETAIL



INTENSIFIER ASSEMBLY DETAIL

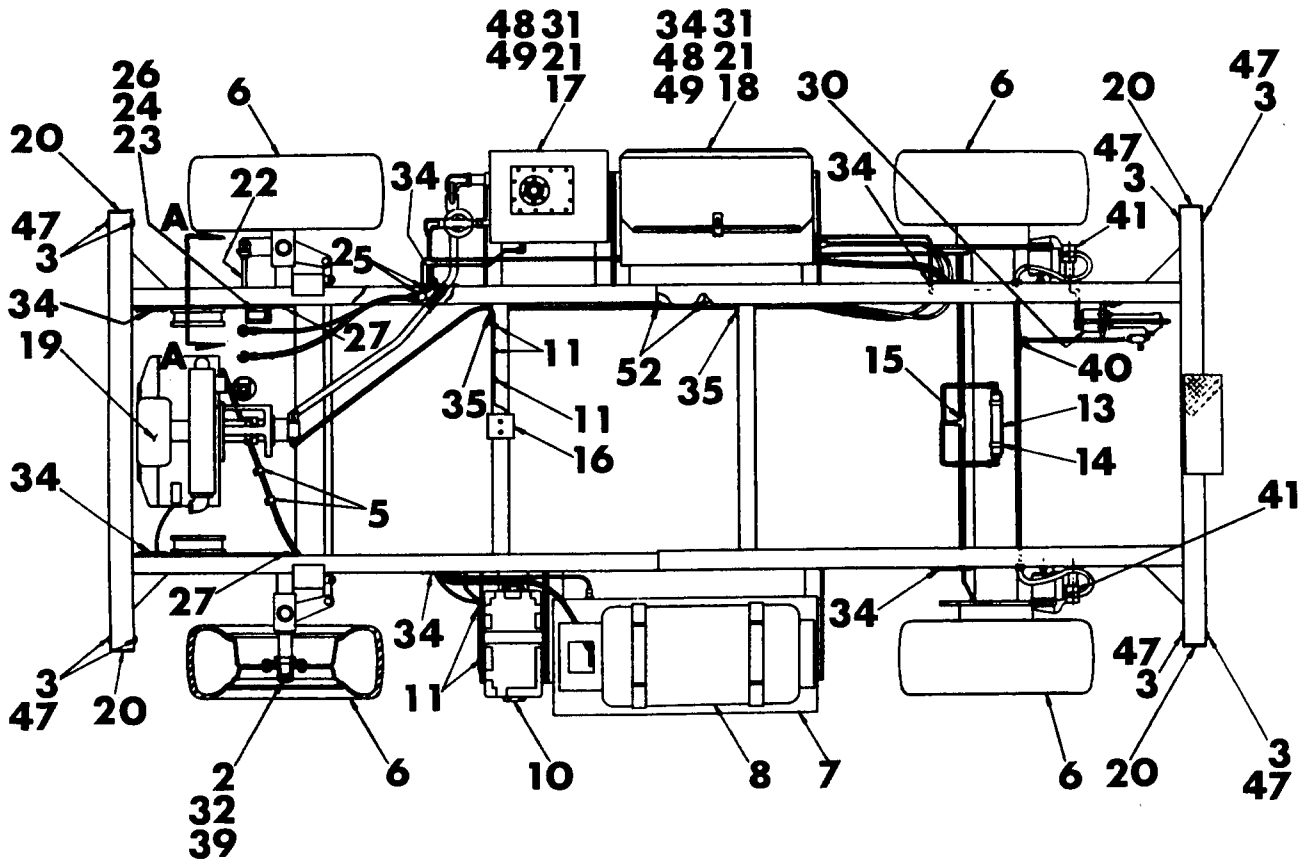
FIGURE 5E - FRAME ASSEMBLY (36E) (JULY 1982)

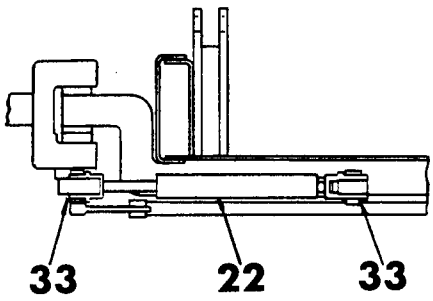
ITEM	PART NUMBER	DESCRIPTION	QTY
5E-	30354	FRAME ASSEMBLY	1
-1	30576	FRAME WELDMENT	1
-2	30358	TIRE & WHEEL ASSEMBLY	4
-3	30884	FLOW VALVE	1
-4	31144	FRONT HUB ASSEMBLY (SEE FIG. 17A)	2
-5	30466	BATTERY BOX ASSEMBLY (SEE FIG. 15)	1
-6	30481	COMPONENT BOX ASSEMBLY (SEE FIG. 8)	1
-7	30329	HYDRAULIC TANK ASSEMBLY	1
-8	8326	INVERTER BRACKET	1
-9	4006	BATTERY CHARGER	1
-10	3015	PUMP MOTOR	1
-11	30387	TILT SWITCH ASSEMBLY & INSTALLATION (SEE FIG. 10)	1
-12	30496	CUSHION CYLINDER ASSEMBLY (SEE FIG. 20)	1
-13	55	CLAMP	2
-14	2436	90° ELBOW	2
-15	2432	TEE	2
-16	764	CLAMP	4
-17	20803	LIMIT SWITCH	2
-18	30803	STEERING CYLINDER (SEE FIG. 19A)	1
-19	64309	COTTER PIN - 3/16 X 1 1/2	2
-20	30448	BUMPER CAP	4
-21	411-12.5	RUBBER MOULDING	7
-22	411-7.5	RUBBER MOULDING	2
-23	63301	SPLIT LOCK WASHER - 1/4	18
-24	63434	FLAT WASHER - 5/16 (TYPE B PLAIN - SERIES W)	8
-25	30829	DISC BRAKE INTENSIFIER (SEE FIG. 23)	1
-26	62708	ROUND HEAD CAP SCREW NO. 10-32 UNC X 1 3/4	4
-27	51005	MALE CONNECTOR	1
-28	52308	STREET ELBOW	1
-29	30860	CALIPER DISC BRAKE (SEE FIG. 22)	2
-30	30876	DRUM & DISC WELDMENT	2

FIGURE 5E - FRAME ASSEMBLY (36E) (JULY 1982)

ITEM	PART NUMBER	DESCRIPTION	QTY
-31	30243	DRIVE MOTOR	2
-32	30294	DRIVE HUB	2
-33	2434	MALE ELBOW	1
-34	61314	WHEEL NUT - 1/2-20 UNF	20
-35	882	MOTOR MOUNT	8
-36	411-5.7	RUBBER MOULDING	2
-37	60324	HEX HEAD CAP SCREW - 5/16-18 UNC X 1/2	8
-38	60702	HEX NUT - 5/16-18 UNC	16
-39	63302	SPLIT LOCK WASHER - 5/16	16
-40	63305	SPLIT LOCK WASHER - 1/2	8
-41	60123	HEX HEAD CAP SCREW - 1/4-20 UNC X 3/4	16
-42	60701	HEX NUT - 1/4-20 UNC	18
-43	63501	FLAT WASHER - 1/2	20
-44	22	CLAMP	1
-45	16115	SLOTTED JAM NUT - 3/4-16 UNF	2
-46	2417	UNION TEE	1
-47	70032	LIMIT SWITCH ARM	1
-48	64310	COTTER PIN - 1/8 X 2	4
-49	60512	HEX HEAD CAP SCREW- 1/2-13 UNC X 2 1/2 (GR. 8)	8
-50	60131	HEX HEAD CAP SCREW - 1/4-20 UNC X 1	2
-51	2414	MALE CONNECTOR	1
-52	63401	FLAT WASHER - 1/4	16
-53	70110	LIMIT SWITCH ARM	1
-54	411-18.0	RUBBER MOULDING	1
-55	411-8.7	RUBBER MOULDING	1
-56	411-6.2	RUBBER MOULDING	2
-57	16511	STRAIGHT THREAD ELBOW	4

FIGURE 5F - FRAME ASSEMBLY (30G) (JULY 1982)





VIEW A

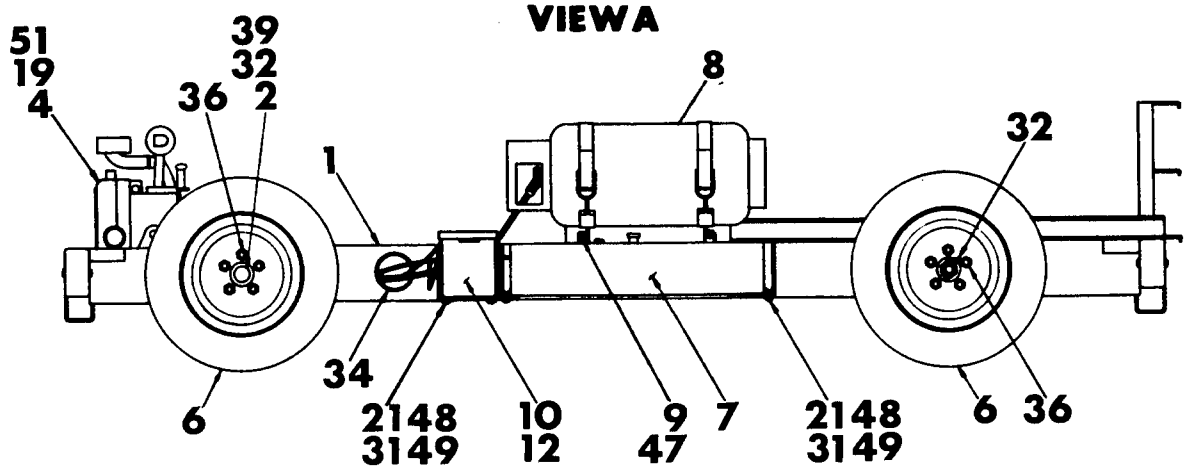
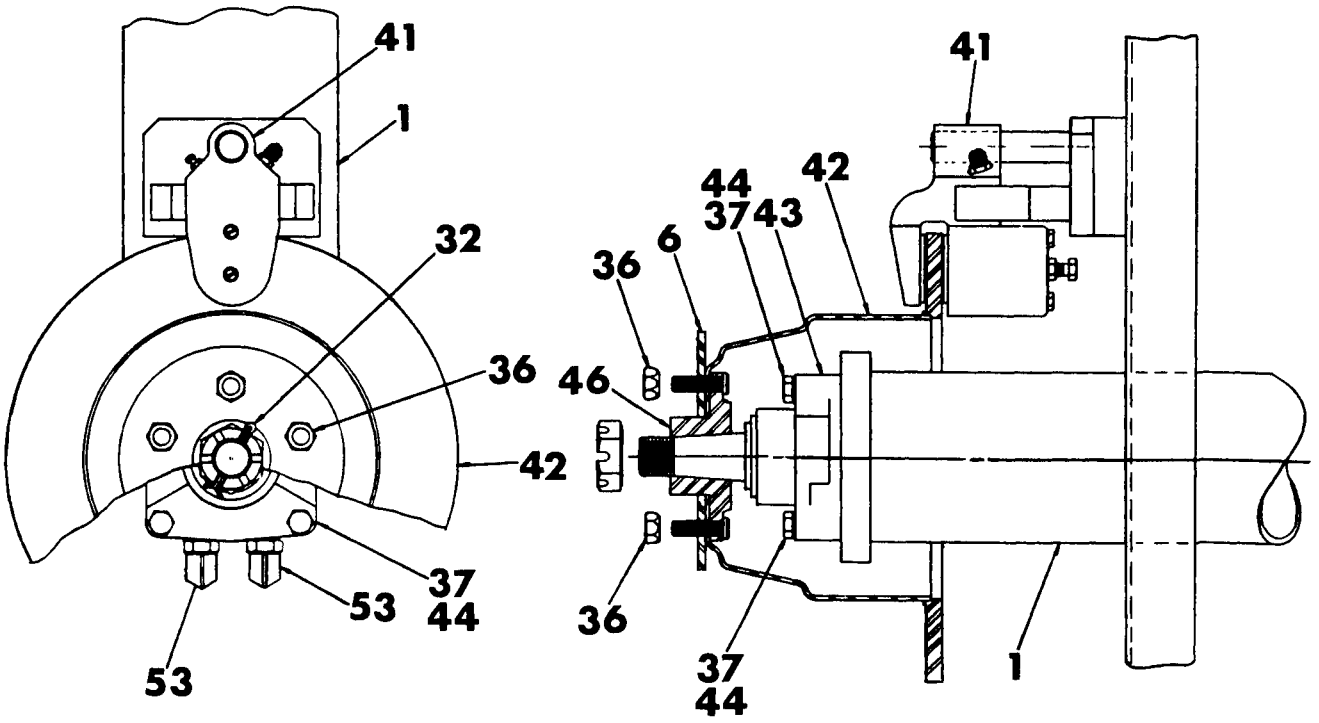
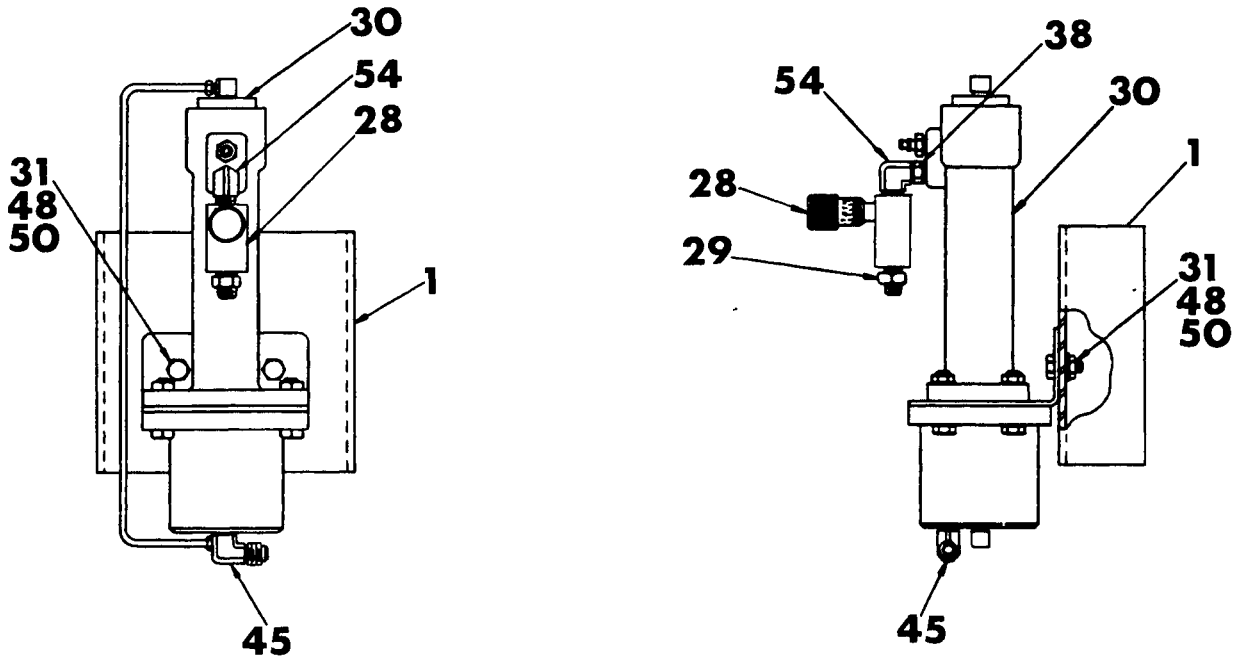


FIGURE 5F - FRAME ASSEMBLY (30G) (JULY 1982)



CALIPER DISC BRAKE ASSEMBLY DETAIL



INTENSIFIER ASSEMBLY DETAIL

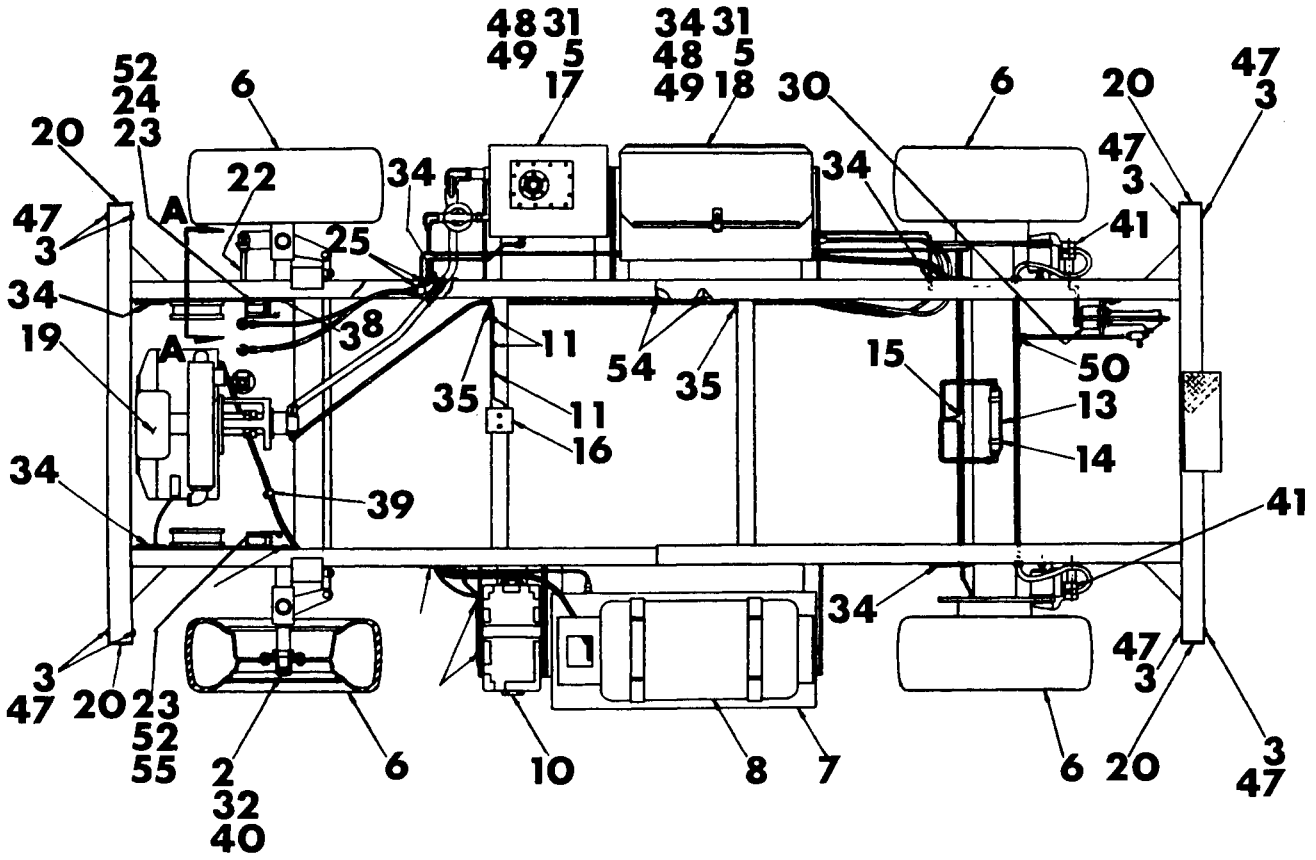
FIGURE 5F - FRAME ASSEMBLY (30G) (JULY 1982)

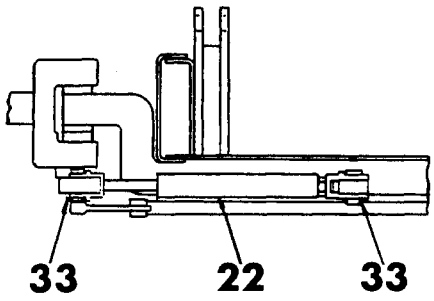
ITEM	PART NUMBER	DESCRIPTION	QTY
5F-	30388	FRAME ASSEMBLY	1
-1	30577	FRAME WELDMENT	1
-2	31144	FRONT HUB ASSEMBLY (SEE FIG. 17A)	2
-3	63434	FLAT WASHER - 5/16 (TYPE B PLAIN - SERIES W)	8
-4	60705	HEX NUT - 1/2-13 UNC	4
-5	22	CLAMP	2
-6	30358	TIRE & WHEEL ASSEMBLY (SEE FIG. 18A)	4
-7	30285	GAS TANK	1
-8	486-C	PROPANE GAS TANK	1
-9	63402	FLAT WASHER - 5/16	4
-10	782	BATTERY BOX	1
-11	764	CLAMP	6
-12	4030	BATTERY - 12V RV27-P-VT	1
-13	30496	CUSHION CYLINDER ASSEMBLY (SEE FIG. 20)	1
-14	55	CLAMP	2
-15	2432	TEE	2
-16	30387	TILT SWITCH ASSEMBLY & INSTALLATION (SEE FIG. 10)	1
-17	30329	HYDRAULIC TANK ASSEMBLY (SEE FIG. 12)	1
-18	30724	COMPONENT BOX ASSEMBLY (SEE FIG. 8)	1
-19	30233	ENGINE	1
-20	30448	BUMPER CAP	4
-21	63401	FLAT WASHER - 1/4	16
-22	30803	STEERING CYLINDER (SEE FIG. 19A)	1
-23	20803	LIMIT SWITCH	1
-24	70032	LIMIT SWITCH ARM	1
-25	2436	90° ELBOW	2
-26	62708	ROUND HEAD CAP SCREW - NO. 10-32 UNF X 1 3/4	2
-27	411-5.5	RUBBER MOULDING	2
-28	30884	FLOW VALVE	1
-29	2414	MALE CONNECTOR	1

FIGURE 5F - FRAME ASSEMBLY (30G) (JULY 1982)

ITEM	PART NUMBER	DESCRIPTION	QTY
-30	30829	DISC BRAKE INTENSIFIER (SEE FIG. 23)	1
-31	60701	HEX NUT - 1/4-20 UNC	18
-32	64310	COTTER PIN - 1/8 X 2	4
-33	64309	COTTER PIN - 3/16 X 1 1/2	2
-34	411-12.5	RUBBER MOULDING	7
-35	411-7.5	RUBBER MOULDING	2
-36	61314	WHEEL NUT - 1/2-20 UNF	20
-37	63305	SPLIT LOCK WASHER - 1/2	8
-38	51005	MALE CONNECTOR	1
-39	16115	SLOTTED JAM NUT - 3/4-16 UNF	2
-40	2417	UNION TEE	1
-41	30860	CALIPER DISC BRAKE (SEE FIG. 22)	2
-42	30876	DRUM & DISC WELDMENT	2
-43	30243	DRIVE MOTOR	2
-44	60512	HEX HEAD CAP SCREW - 1/2-18 UNC X 2 1/2 (GR. 8)	8
-45	2434	MALE ELBOW	1
-46	30294	DRIVE HUB	2
-47	60324	HEX HEAD CAP SCREW - 5/16-18 UNC X 1/2	12
-48	63301	SPLIT LOCK WASHER - 1/4	16
-49	60123	HEX HEAD CAP SCREW - 1/4-20 UNC X 3/4	16
-50	60131	HEX HEAD CAP SCREW - 1/4-20 UNC X 1	2
-51	60308	HEX HEAD CAP SCREW - 1/2-13 UNC X 1 1/2	4
-52	411-6.2	RUBBER MOULDING	2
-53	16511	STRAIGHT THREAD ELBOW	4
-54	52308	STREET ELBOW	1

FIGURE 5G - FRAME ASSEMBLY (36G) (JULY 1982)





VIEW A

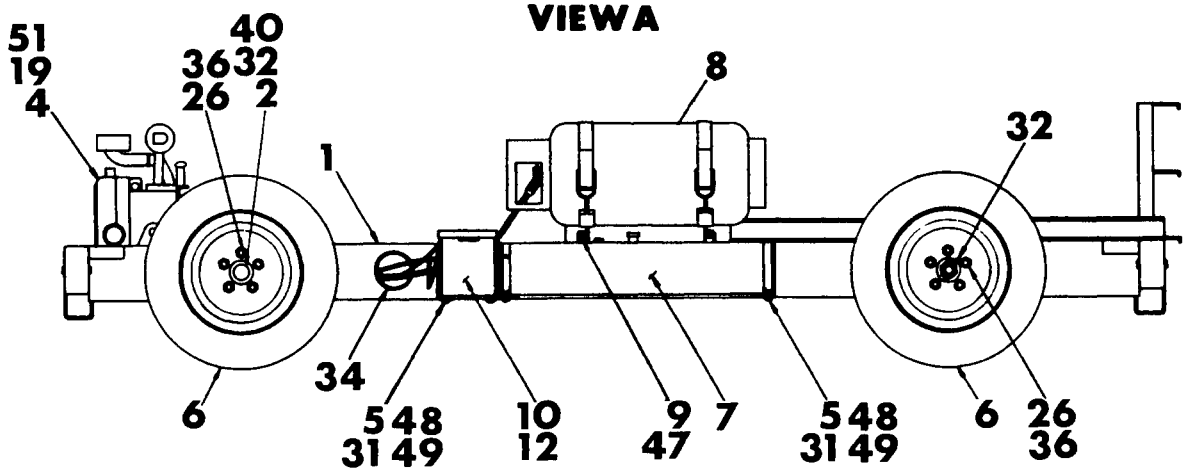
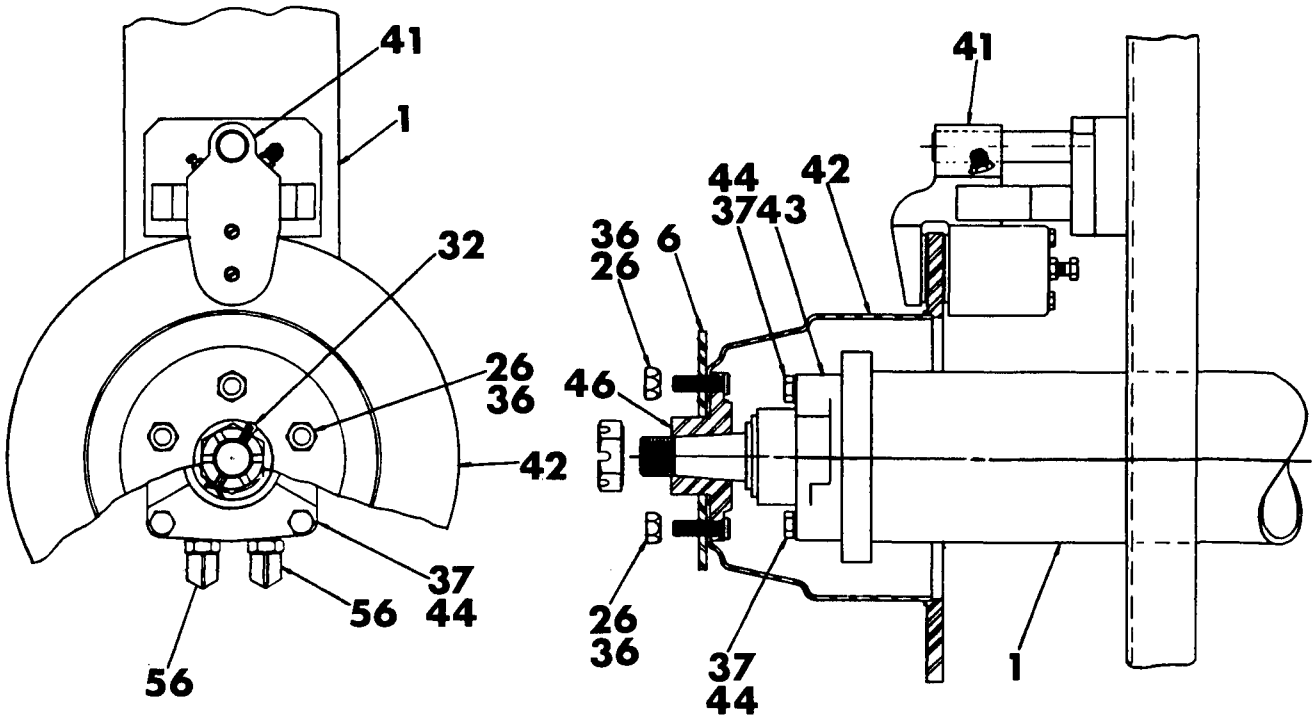
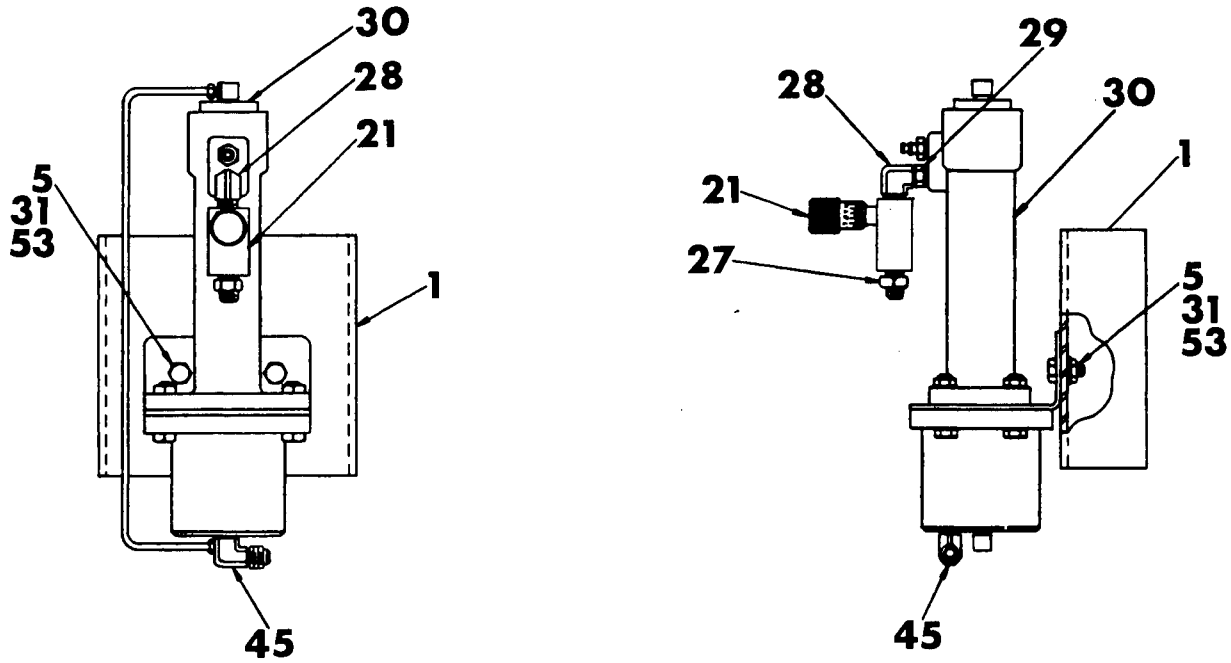


FIGURE 5G - FRAME ASSEMBLY (36G) (JULY 1982)



CALIPER DISC BRAKE ASSEMBLY DETAIL



INTENSIFIER ASSEMBLY DETAIL

FIGURE 5G - FRAME ASSEMBLY (36G) (JULY 1982)

ITEM	PART NUMBER	DESCRIPTION	QTY
5G-	30333	FRAME ASSEMBLY	1
-1	30217	FRAME WELDMENT	1
-2	31144	FRONT HUB ASSEMBLY	2
-3	63434	FLAT WASHER - 5/16 (TYPE B PLAIN - SERIES W)	8
-4	60705	HEX NUT - 1/2-13 UNC	4
-5	63301	SPLIT LOCK WASHER - 1/4	18
-6	30358	TIRE & WHEEL ASSEMBLY (SEE FIG. 18A)	4
-7	30285	GAS TANK	1
-8	486-C	PROPANE GAS TANK	1
-9	63402	FLAT WASHER - 5/16	4
-10	782	BATTERY BOX	1
-11	764	CLAMP	6
-12	4030	BATTERY	1
-13	30496	CUSHION CYLINDER ASSEMBLY (SEE FIG. 20)	1
-14	55	CLAMP	2
-15	2432	TEE	2
-16	30387	TILT SWITCH ASSEMBLY & INSTALLATION (SEE FIG. 10)	1
-17	30329	HYDRAULIC TANK ASSEMBLY (SEE FIG. 12)	1
-18	30724	COMPONENT BOX ASSEMBLY (SEE FIG. 8)	1
-19	30233	ENGINE	1
-20	30448	BUMPER CAP	4
-21	30884	FLOW VALVE	1
-22	30803	STEERING CYLINDER (SEE FIG. 19A)	1
-23	20803	LIMIT SWITCH	2
-24	70032	LIMIT SWITCH ARM	1
-25	2436	90° ELBOW	2
-26	63501	FLAT WASHER - 1/2	20
-27	2414	MALE CONNECTOR	1
-28	52308	STREET ELBOW	1
-29	51005	MALE CONNECTOR	1
-30	30829	DISC BRAKE INTENSIFIER (SEE FIG. 23)	1
-31	60701	HEX NUT - 1/4-20 UNC	18

ITEM	PART NUMBER	DESCRIPTION	QTY
-32	64310	COTTER PIN - 1/8 X 2	4
-33	64309	COTTER PIN - 3/16 X 1 1/2	2
-34	411-12.5	RUBBER MOULDING	7
-35	411-7.5	RUBBER MOULDING	2
-36	61314	WHEEL NUT - 1/2-20 UNF	20
-37	63305	SPLIT LOCK WASHER - 1/2	8
-38	411-5.7	RUBBER MOULDING	2
-39	22	CLAMP	1
-40	16115	SLOTTED JAM NUT - 3/4-16 UNF	2
-41	30860	CALIPER DISC BRAKE (SEE FIG. 22)	2
-42	30876	DRUM & DISC WELDMENT	2
-43	30243	DRIVE MOTOR	2
-44	60512	HEX HEAD CAP SCREW - 1/2-13 UNC X 2 1/2 (GR. 8)	8
-45	2434	MALE ELBOW	1
-46	30294	DRIVE HUB	2
-47	60324	HEX HEAD CAP SCREW - 5/16-18 UNC X 1/2	12
-48	63401	FLAT WASHER - 1/4	16
-49	60123	HEX HEAD CAP SCREW - 1/4-20 UNC X 3/4	16
-50	2417	UNION TEE	1
-51	60308	HEX HEAD CAP SCREW - 1/2-13 UNC X 1 3/4	4
-52	62708	ROUND HEAD CAP SCREW - NO. 10-32 UNF X 1 3/4	4
-53	60131	HEX HEAD CAP SCREW - 1/4-20 UNC X 1	2
-54	411-6.2	RUBBER MOULDING	2
-55	70110	LEVER SWITCH	1
-56	16511	STRAIGHT THREAD ELBOW	4

FIGURE 6 - MAIN LIFT CYLINDER ASSEMBLY—
REAR (30E) (30G)

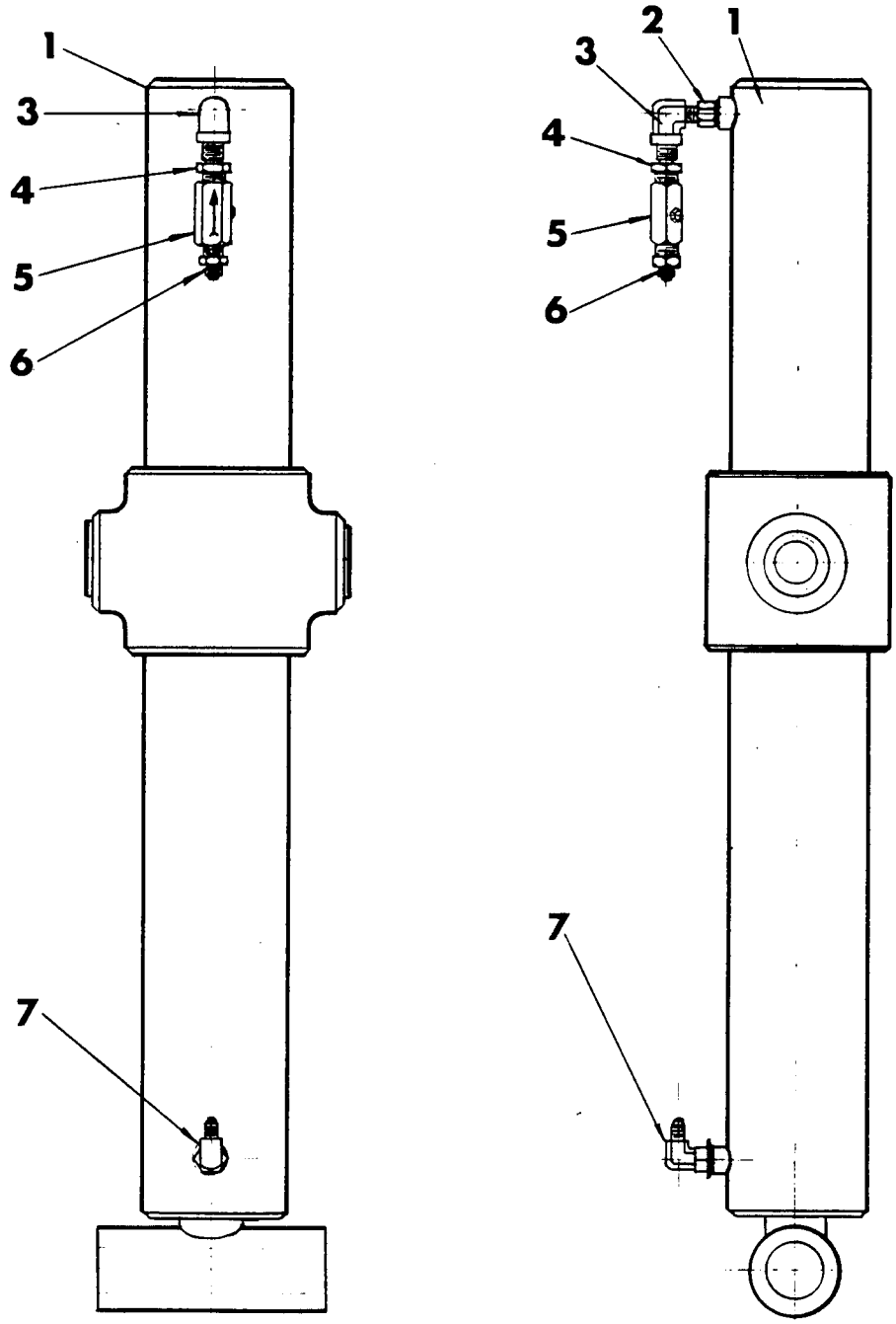


FIGURE 6 - MAIN LIFT CYLINDER ASSEMBLY—
REAR (30E) (30G)

ITEM	PART NUMBER	DESCRIPTION	QTY
6-	30325	MAIN LIFT CYLINDER ASSEMBLY - REAR	1
-1	30192	CYLINDER (SEE FIG.7)	1
-2	2498	"O" RING ADAPTER	1
-3	2450	90° STREET ELBOW	1
-4	2495	PIPE NIPPLE 3/8 X ¼ FFS	1
-5	750	CHECK VALVE	1
-6	2478	ADAPTER	1
-7	2447	90° O-RING ELBOW	1

FIGURE 6A- MAIN LIFT CYLINDER ASSEMBLY-
FRONT(30E) (30G)

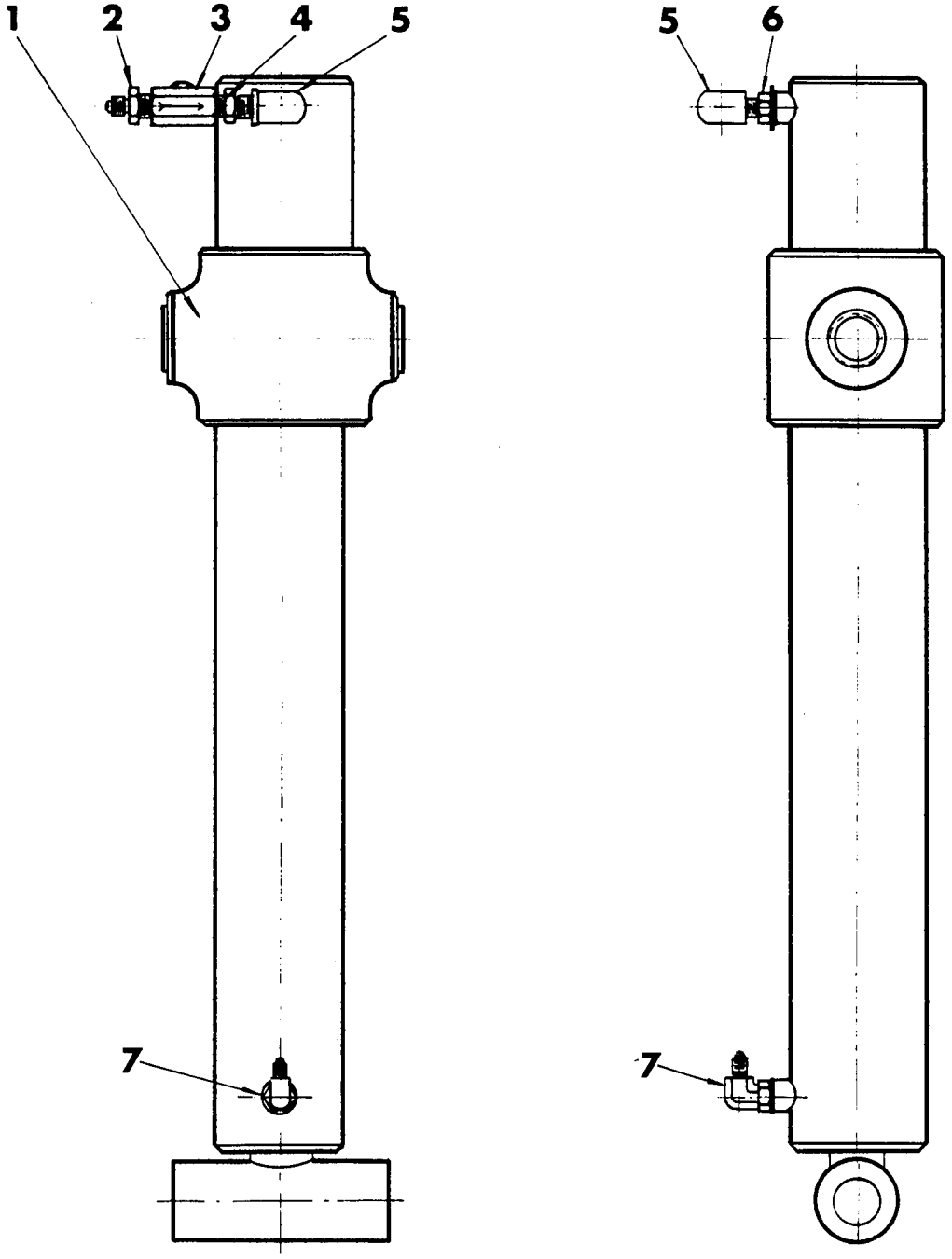


FIGURE 6A- MAIN LIFT CYLINDER ASSEMBLY – FRONT (30E) (30G)

ITEM	PART NUMBER	DESCRIPTION	QTY
6A-	30326	MAIN LIFT CYLINDER ASSEMBLY – FRONT	1
-1	30191	CYLINDER (SEE FIG.7A)	1
-2	2478	ADAPTER	1
-3	750	CHECK VALVE	1
-4	2495	PIPE NIPPLE 3/8 X ¼ FFS	1
-5	2450	90° STREET ELBOW	1
-6	2498	"O" RING ADAPTER	1
-7	2447	90° "O" RING ELBOW	1

FIGURE 6B - MAIN LIFT CYLINDER ASSEMBLY-
REAR (36E) (36G)

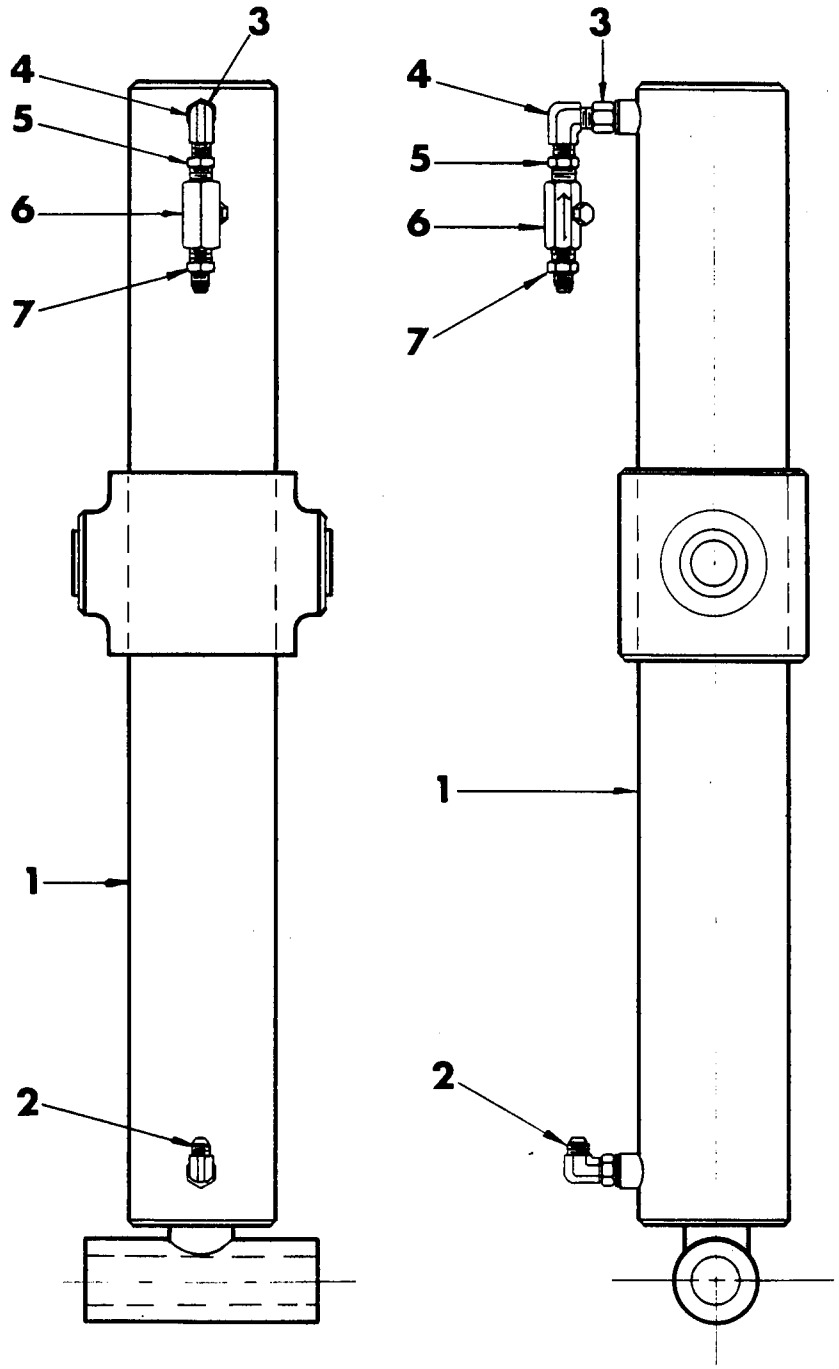


FIGURE 6B- MAIN LIFT CYLINDER ASSEMBLY- REAR (36E) (36G)

ITEM	PART NUMBER	DESCRIPTION	QTY
6B-	30327	MAIN LIFT CYLINDER ASSEMBLY - REAR	1
-1	30194	CYLINDER (SEE FIG. 7B)	1
-2	2447	90° "O" RING ELBOW	1
-3	2498	"O" RING ADAPTER	1
-4	2450	90° STREET ELBOW	1
-5	2495	NIPPLE 3/8 X ¼ FFS	1
-6	750	CHECK VALVE	1
-7	2478	ADAPTER	1

FIGURE 6C- MAIN LIFT CYLINDER ASSEMBLY-
FRONT (36E) (36G)

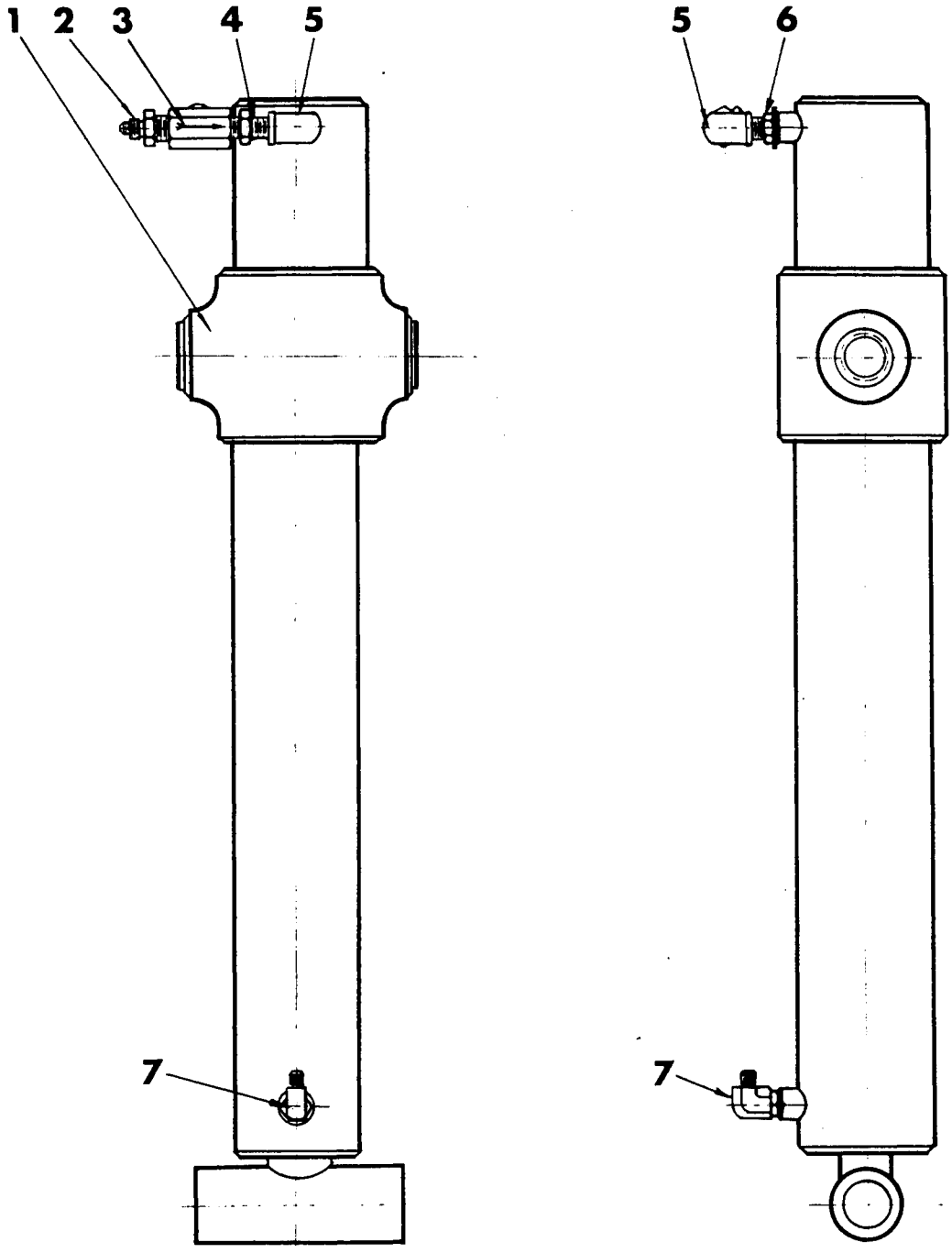
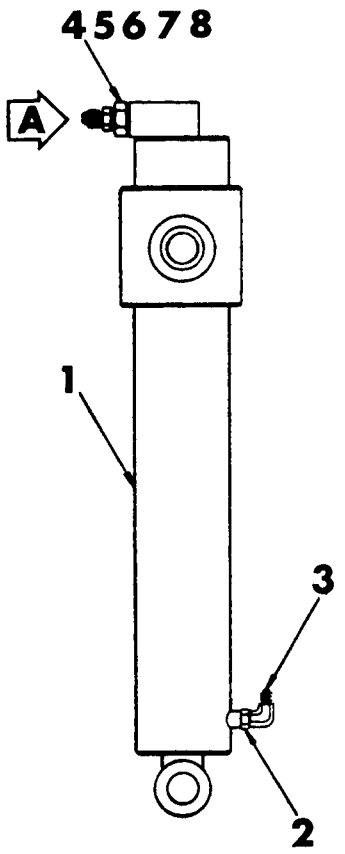
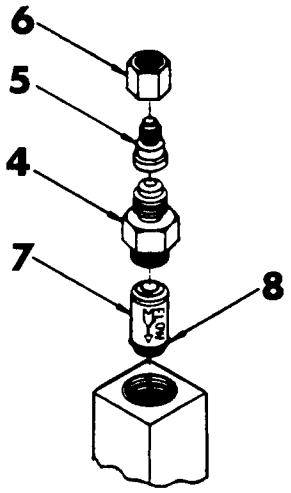


FIGURE 6C- MAIN LIFT CYLINDER ASSEMBLY - FRONT (36E) (36G)

ITEM	PART NUMBER	DESCRIPTION	QTY
6C-	30328	MAIN LIFT CYLINDER ASSEMBLY - FRONT	1
-1	30193	CYLINDER (SEE FIG.7C)	1
-2	2478	ADAPTER	1
-3	750	CHECK VALVE	1
-4	2495	PIPE NIPPLE	1
-5	2450	90^{O} STREET ELBOW	1
-6	2498	"O" RING ADAPTER	1
-7	2447	90^{O} "O" RING ELBOW	1

FIGURE 6D - MAIN LIFT CYLINDER ASSEMBLY - REAR (25E) (25ETD) (25GTD)

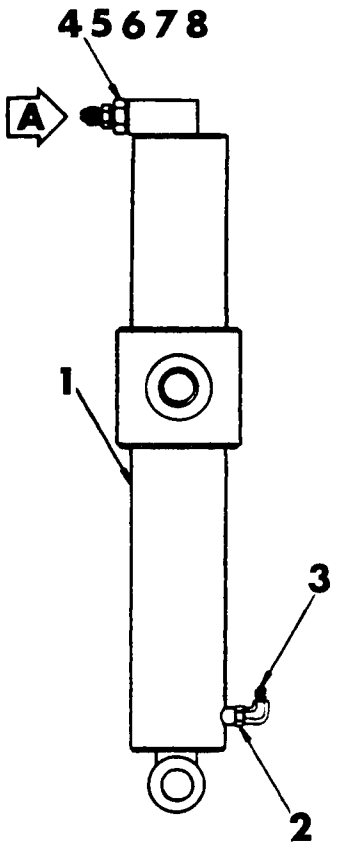


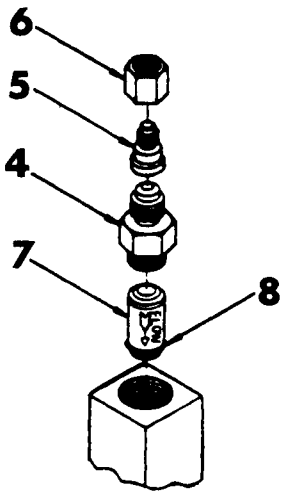


VIEW A

ITEM	PART NUMBER	DESCRIPTION	QTY
6D-	31094	MAIN LIFT CYLINDER ASSEMBLY - REAR	1
-1	30284	MAIN LIFT CYLINDER (SEE FIG. 7E)	1
-2	80063-02	FEMALE PIPE ADAPTER	1
-3	80008-04	MALE ELBOW	1
-4	80004-14	STRAIGHT THREAD CONNECTOR	1
-5	80056-03	TUBE END REDUCER	1
-6	80060-06	"B" NUT	1
-7	31091	CHECK VALVE (MODIFIED)	1
-8	880	O-RING	1

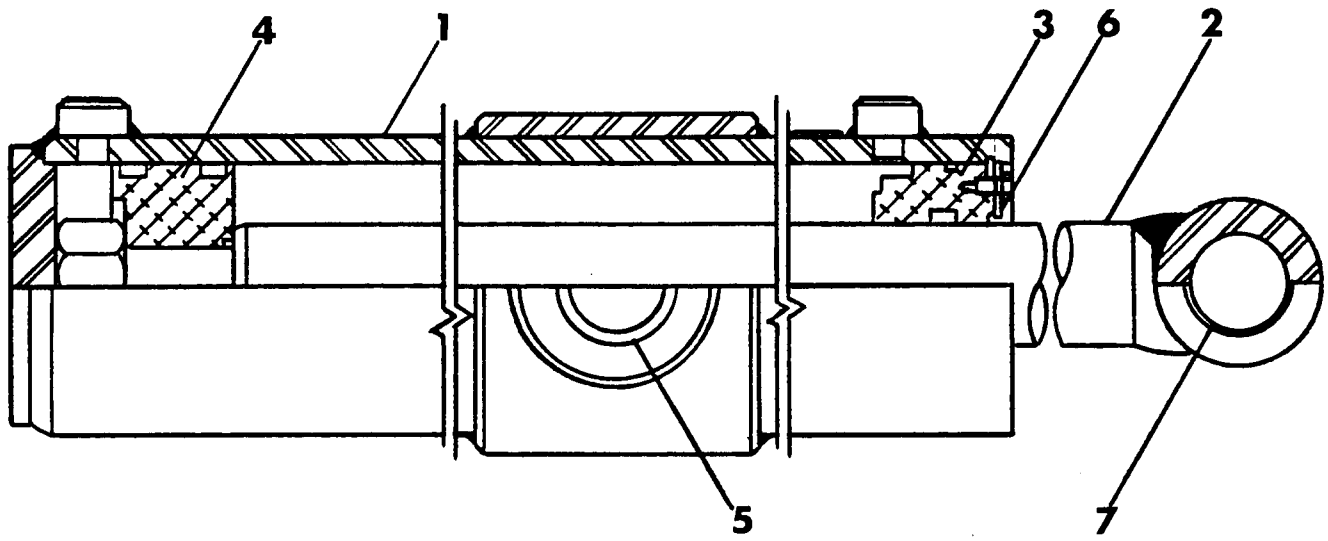
FIGURE 6E - MAIN LIFT CYLINDER ASSEMBLY - FRONT (25E) (25ETD) (25GTD)



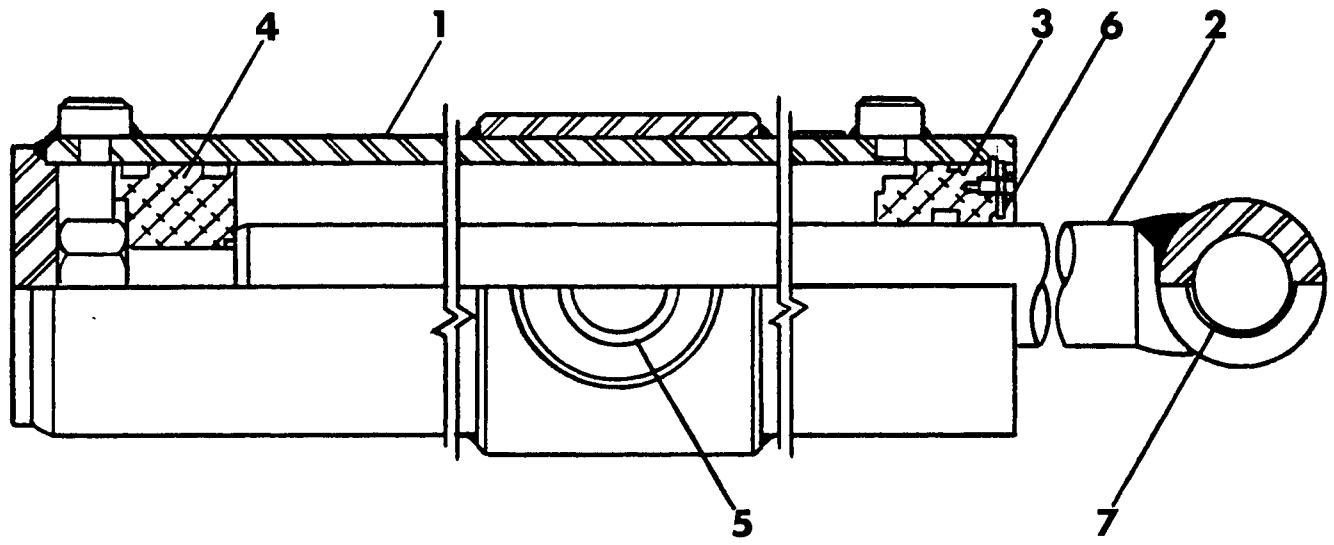


VIEW A

ITEM	PART NUMBER	DESCRIPTION	QTY
6E-	31095	MAIN LIFT CYLINDER ASSEMBLY - FRONT	1
-1	30283	MAIN LIFT CYLINDER (SEE FIG. 7F)	1
-2	80063-02	FEMALE PIPE ADAPTER	1
-3	80008-04	MALE ELBOW	1
-4	80004-14	STRAIGHT THREAD CONNECTOR	1
-5	80056-03	TUBE END REDUCER	1
-6	80060-06	"B" NUT	1
-7	31091	CHECK VALVE (MODIFIED)	1
-8	880	O-RING	1

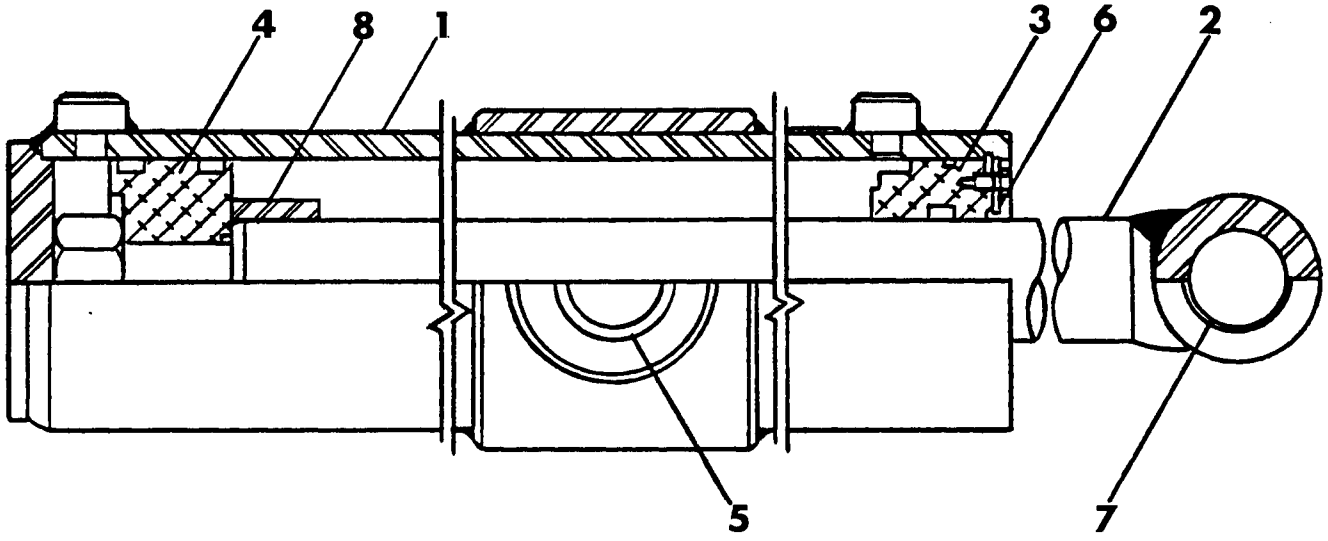


ITEM	PART NUMBER	DESCRIPTION	QTY
7-	30192	MAIN LIFT CYLINDER - REAR (SE)	1
-1		BARREL ASSEMBLY-SE30192BA	1
-2		ROD ASSEMBLY-SE30192RA	1
-3		HEAD-13028	1
-4		PISTON-14117	1
-5		BRONZE BUSHING-9625	2
-6		RETAINER PLATE-15020	1
-7		DU BUSHING-9509	2
-8	66017	SEAL KIT (SE)	1
	66018	SEAL KIT (HCE)	1



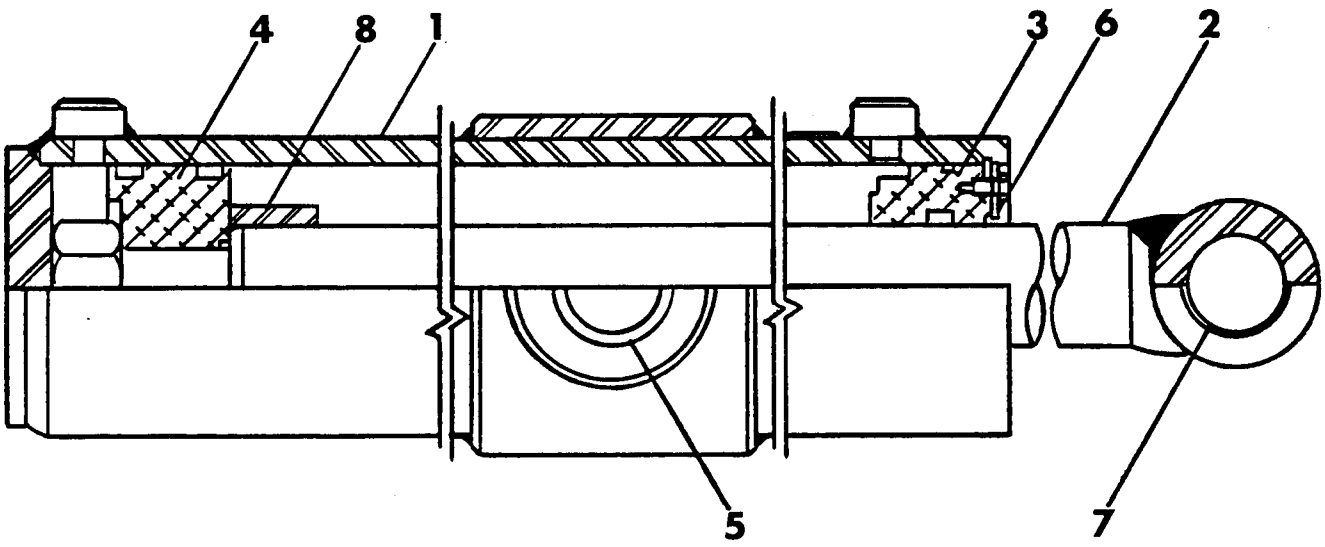
ITEM	PART NUMBER	DESCRIPTION	QTY
7A-	30191	MAIN LIFT CYLINDER-FRONT (SE)	1
-1		BARREL ASSEMBLY-SE30191BA	1
-2		ROD ASSEMBLY-SE30191RA	1
-3		HEAD-13028	1
-4		PISTON-14117	1
-5		BRONZE BUSHING-9625	2
-6		RETAINER PLATE-15020	1
-7		DU BUSHING-9509	2
-8	66017	SEAL KIT (SE)	1
	66018	SEAL KIT (HCE)	1

FIGURE 7B - MAIN LIFT CYLINDER-REAR (36E) (36G)



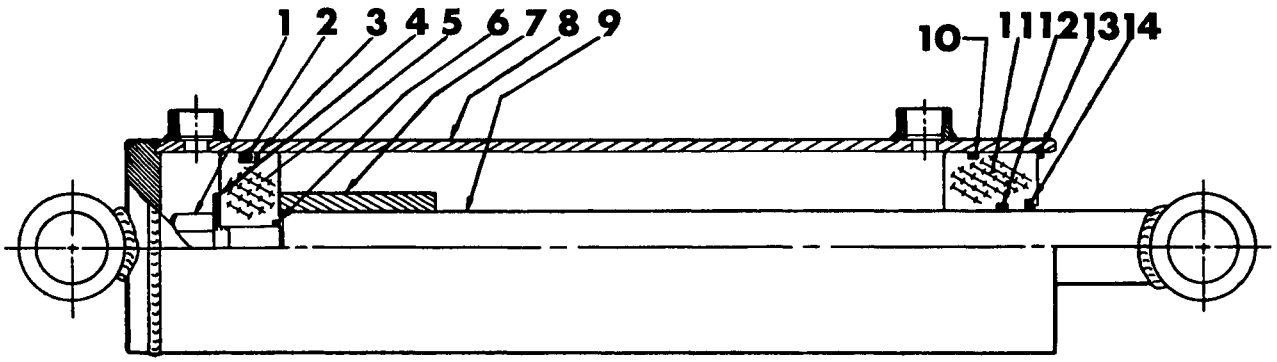
ITEM	PART NUMBER	DESCRIPTION	QTY
7B-	30194	MAIN LIFT CYLINDER-REAR (SE)	1
-1		BARREL ASSEMBLY-SE30194BA	1
-2		ROD ASSEMBLY-SE30194RA	1
-3		HEAD-13028	1
-4		PISTON-14117	1
-5		BRONZE BUSHING-9625	2
-6		RETAINER PLATE-13020	1
-7		DU BUSHING-9509	2
-8		STOP TUBE-18612	1
-9	66017	SEAL KIT (SE)	1
	66018	SEAL KIT (HCE)	1

FIGURE 7C - MAIN LIFT CYLINDER-FRONT (36E) (36G)



ITEM	PART NUMBER	DESCRIPTION	QTY
7C-	30193	MAIN LIFT CYLINDER-FRONT (SE)	1
-1		BARREL ASSEMBLY-SE30193BA	1
-2		ROD ASSEMBLY-SE30193RA	1
-3		HEAD-13028	1
-4		PISTON-14117	1
-5		BRONZE BUSHING-9625	2
-6		RETAINER PLATE-15020	1
-7		DU BUSHING-9509	2
-8		STOP TUBE-18612	1
-9	66017	SEAL KIT (SE)	1
	66018	SEAL KIT (HCE)	1

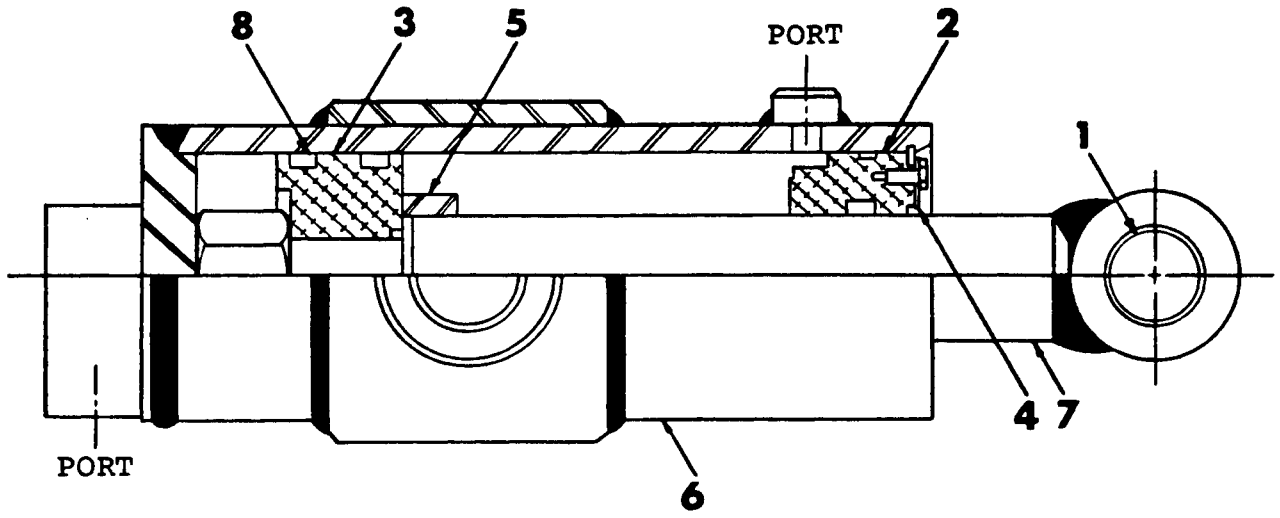
FIGURE 7D - MAIN LIFT CYLINDER (25E)



ITEM	PART NUMBER	DESCRIPTION	QTY
7D-	3065	MAIN LIFT CYLINDER (HCE)	1
-1		LOCK NUT 7814NF	1
-2		O-RING 15342	1
-3		BACK-UP RING 16342	1
-4		WASHER 78USS	1
-5		PISTON 54102	1
-6		O-RING 15118	1
-7		STOP TUBE 85141	1
-8		CYLINDER HOUSING 840200	1
-9		ROD ASSEMBLY 714200	1
-10		O-RING 15240	1
-11		GLAND 44108	1
-12		O-RING 15222	1
-13		RETAINER RING 30400-3	1
-14		EXCLUDER 10017	1
-15	3065A	SEAL KIT (HCE)	1

FIGURE 7E - MAIN LIFT CYLINDER-REAR (25E) (1981)

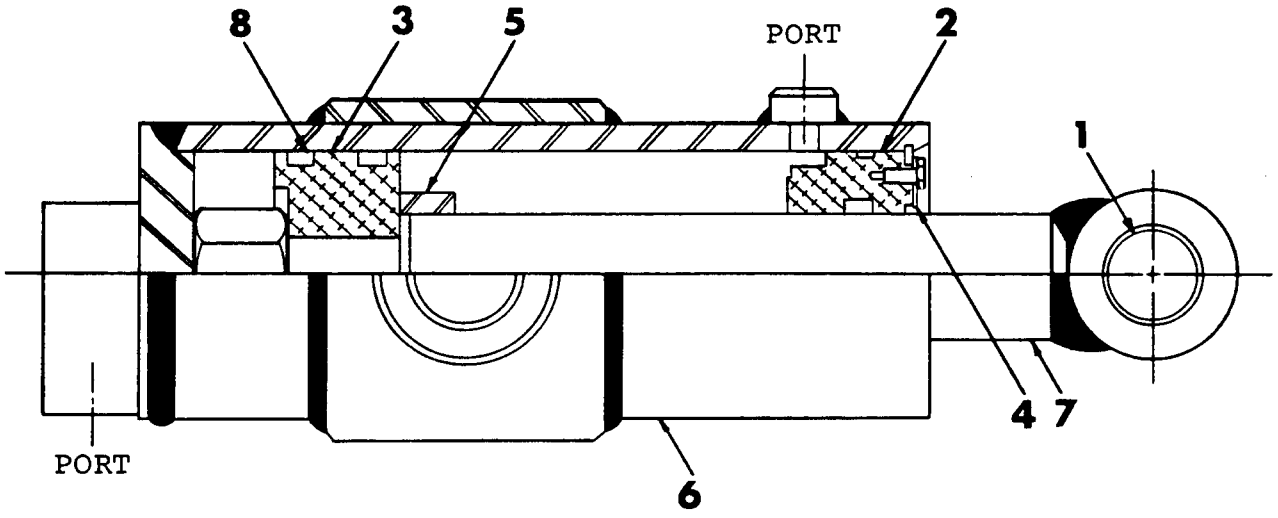
SERIAL NUMBER EFFECTIVITY IS 281-7714 ON.



ITEM	PART NUMBER	DESCRIPTION	QTY
7E-	30284	MAIN LIFT CYLINDER-REAR (SE)	1
-1		BRONZE BUSHING - 9625	2
-2		HEAD - 13028	1
-3		PISTON - 14117	1
-4		RETAINING PLATE - 15020	1
-5		STOP TUBE - 18622	1
-6		BARREL ASSEMBLY - SE30284BA (EARLY BARRELS HAVE BOTH PORTS AT ROD END)	1
-7		ROD ASSEMBLY - SE30284RA	1
-8	66017	SEAL KIT - 25120	1

FIGURE 7F - MAIN LIFT CYLINDER-FRONT (25E) (1981)

SERIAL NUMBER EFFECTIVITY IS 281-7714 ON.



ITEM	PART NUMBER	DESCRIPTION	QTY
7F-	30283	MAIN LIFT CYLINDER-FRONT (SE)	1
-1		BRONZE BUSHING - 9625	2
-2		HEAC - 13028	1
-3		PISTON - 14117	1
-4		RETAINING PLATE - 15020	1
-5		STOP TUBE - 18622	1
-6		BARREL ASSEMBLY - SE30283BA (EARLY BARRELS HAVE BOTH PORTS AT ROD END)	1
-7		ROD ASSEMBLY - SE30283RA	
-8	66017	SEAL KIT - 25120	

FIGURE 8 - COMPONENT BOX ASSEMBLY (25ETD) (25E) (30E) (36E)

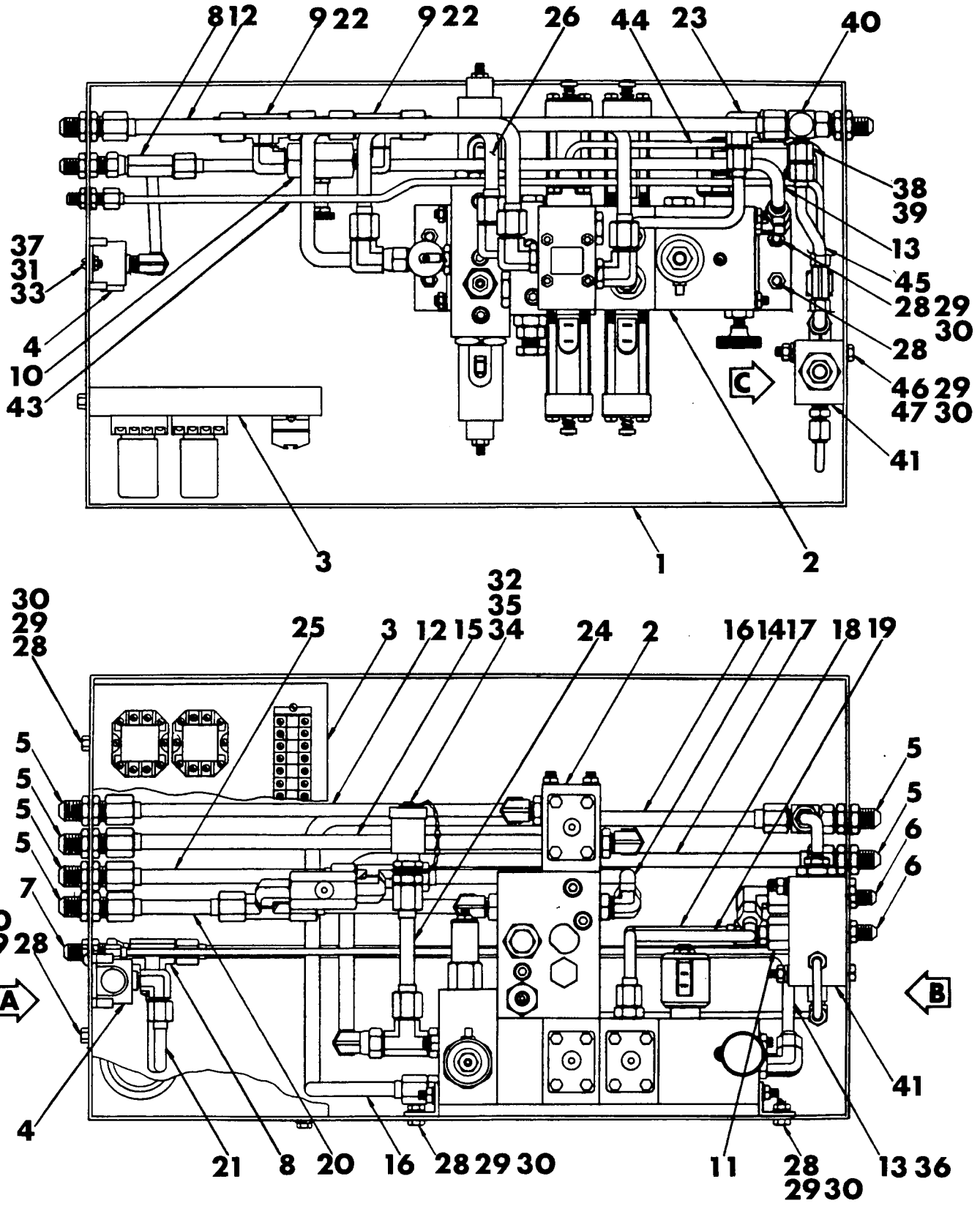
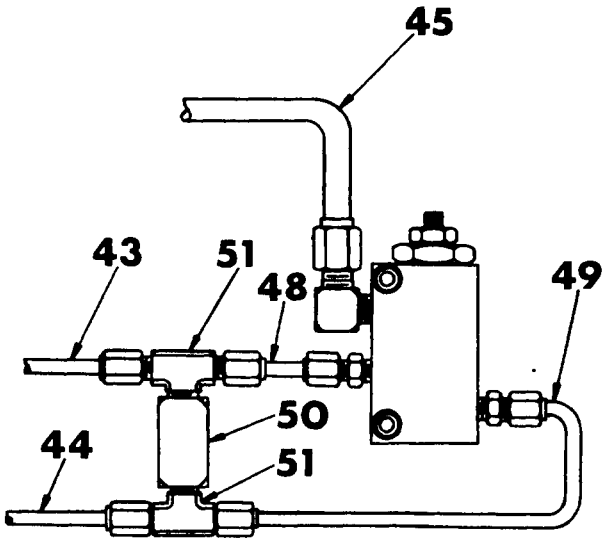


FIGURE 8 - COMPONENT BOX ASSEMBLY (25ETD) (25E) (30E) (36E)



VIEW C

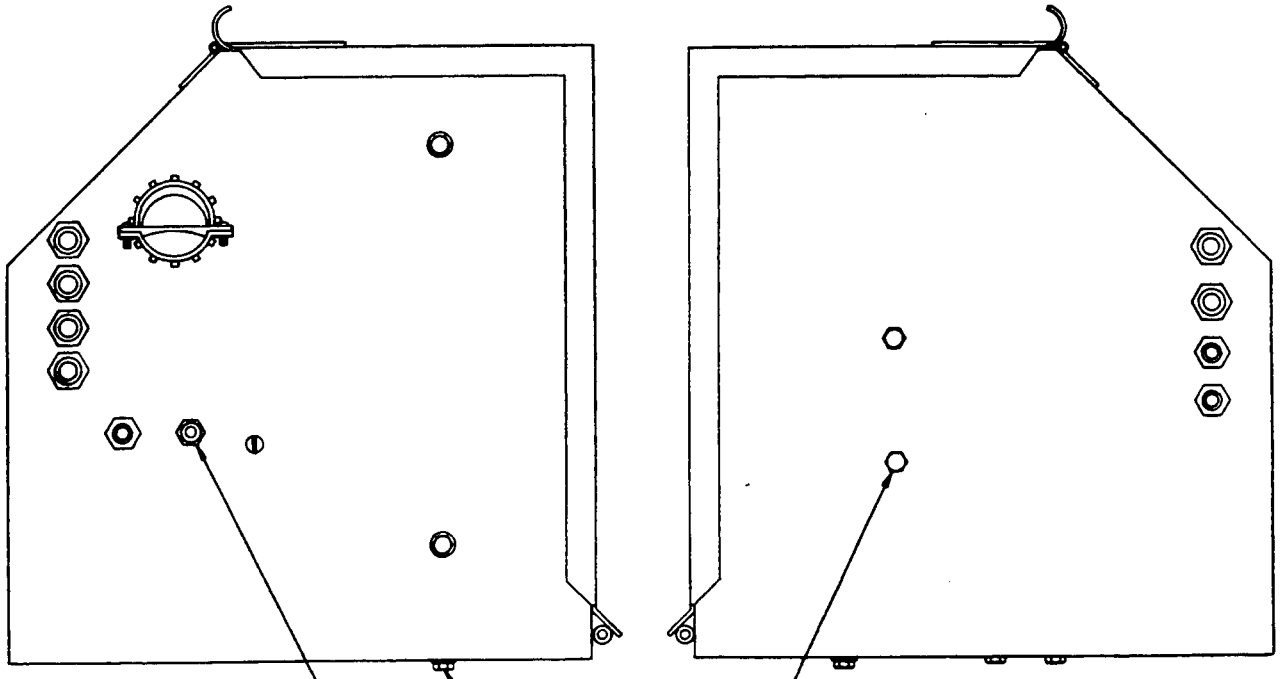


FIGURE 8 - COMPONENT BOX ASSEMBLY
(25ETD) (25E) (30E) (36E)

ITEM	PART NUMBER	DESCRIPTION	QTY
8-	30481	COMPONENT BOX ASSEMBLY	1
-1	30288	COMPONENT BOX	1
-2	30715	MANIFOLD ASSEMBLY (SEE FIG. 9)	1
-3	30769	PANEL ASSEMBLY (SEE FIG. 8A)	1
-4	30495	PRESSURE LIMIT SWITCH ASSEMBLY (SEE FIG. 11)	1
-5	80045-06	BULKHEAD UNION	6
-6	50207	BULKHEAD UNION	2
-7	80045-05	BULKHEAD UNION	1
-8	80028-05	SWIVEL NUT RUN TEE	1
-9	80034-12	UNION TEE	2
-10	201	NEEDLE VALVE - FREE WHEELING	1
-11	20370	NEEDLE VALVE - STEERING	2
-12	30481-12	TUBE ASSEMBLY - 1/2	1
-13	30481-13	TUBE ASSEMBLY - 3/8	1
-14	30481-14	TUBE ASSEMBLY - 1/2	1
-15	30481-15	TUBE ASSEMBLY - 1/2	1
-16	30481-16	TUBE ASSEMBLY - 1/2	1
-17	30481-17	TUBE ASSEMBLY - 1/2	1
-18	30481-18	TUBE ASSEMBLY - 3/8	1
-19	30481-19	TUBE ASSEMBLY - 3/8	1
-20	30481-20	TUBE ASSEMBLY - 1/2	1
-21	30481-21	TUBE ASSEMBLY - 3/8	1
-22	80021-06	90° ELBOW	2
-23	80008-08	90° ELBOW	1
-24	30481-24	TUBE ASSEMBLY - 1/2	1
-25	30481-25	TUBE ASSEMBLY - 1/2	1
-26	30481-26	TUBE ASSEMBLY - 1/2	1
-27	213	ROMEX CONNECTOR	1
-28	60131	HEX HEAD CAP SCREW - 1/4-20 UNC X 3/4	10
-29	63301	LOCK WASHER - 1/4	9
-30	60701	HEX NUT - 1/4-20 UNC	9
-31	61502	HEX NUT - NO. 8-32 UNC	2
-32	80001-13	MALE CONNECTOR	1

FIGURE 8 - COMPONENT BOX ASSEMBLY
(25ETD) (25E) (30E) (36E)

ITEM	PART NUMBER	DESCRIPTION	QTY
-33	62612	ROUND HEAD CAP SCREW - NO. 8-32 X 1/2	2
-34	845	CAP	1
-35	2527	QUICK DISCONNECT	1
-36	80001-08	MALE CONNECTOR	1
-37	63312	LOCK WASHER - NO. 8	2
-38	80056-03	REDUCER	1
-39	80056-06	"B" NUT	1
-40	80026-06	SWIVEL NUT RUN TEE	1
-41	30743	PRESSURE REDUCING VALVE ASSEMBLY (SEE FIG. 11A)	1
-42	80045-03	BULKHEAD UNION	1
-43	30481-43	TUBE ASSEMBLY - 1/4	1
-44	30481-44	TUBE ASSEMBLY - 1/4	1
-45	30481-45	TUBE ASSEMBLY - 3/8	1
-46	60352	HEX HEAD CAP SCREW - 1/4-20 UNC X 2 1/2	2
-47	63401	FLAT WASHER - 1/4	2
-48	30481-48	TUBE ASSEMBLY - 1/4	1
-49	30481-49	TUBE ASSEMBLY - 1/4	1
-50	30893	CHECK VALVE	1
-51	80034-03	MALE BRANCH TEE	2

FIGURE 8.1 - COMPONENT BOX ASSEMBLY (25GTD)

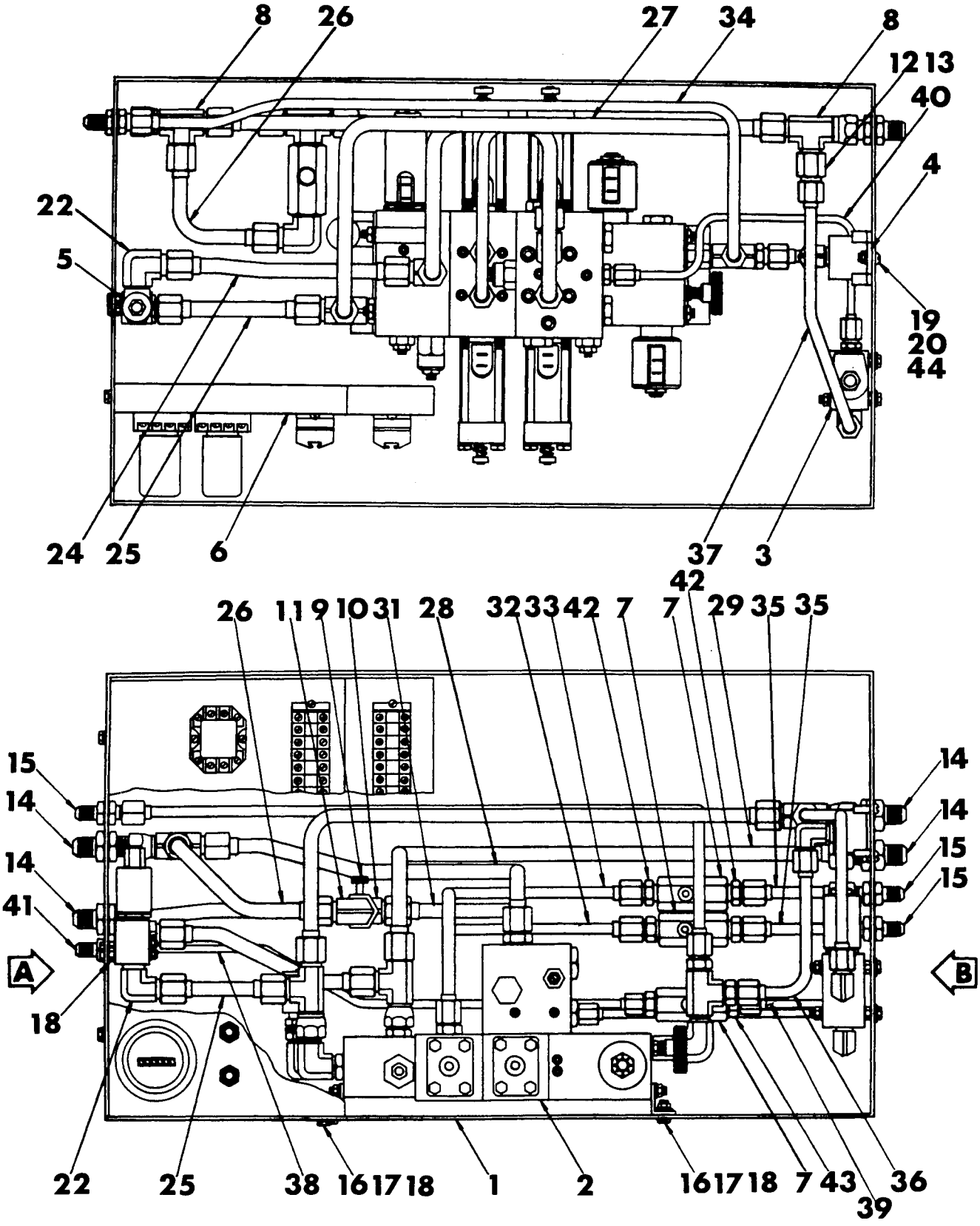


FIGURE 8.1 - COMPONENT BOX ASSEMBLY (25GTD)

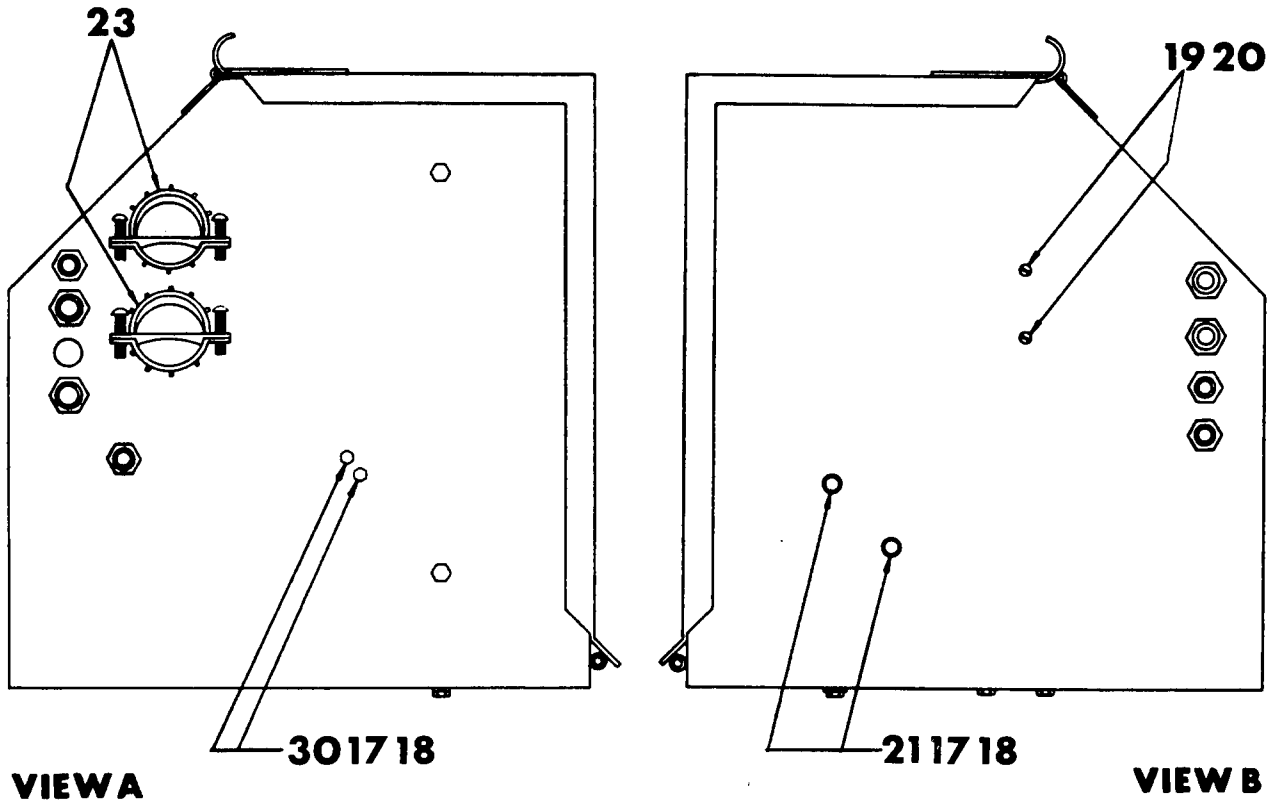


FIGURE 8.1 - COMPONENT BOX ASSEMBLY (25GTD)

ITEM	PART NUMBER	DESCRIPTION	QTY
8.1-	31276	COMPONENT BOX ASSEMBLY	1
-1	30288	COMPONENT BOX	1
-2	30714	MANIFOLD ASSEMBLY (SEE FIG. 9.1)	1
-3	30330	SOLENOID VALVE ASSEMBLY (SEE FIG. 25)	1
-4	30495	PRESSURE LIMIT SWITCH ASSEMBLY (SEE FIG. 11)	1
-5	410	FLUID CONTROL VALVE	1
-6	31218	COMPONENT BOX PANEL ASSEMBLY (SEE FIG. 8B.1)	1
-7	20370	NEEDLE VALVE	3
-8	80028-06	SWIVEL NUT RUN TEE	2
-9	201	CHECK VALVE	1
-10	80034-12	MALE BRANCH TEE	1
-11	80008-12	MALE ELBOW	1
-12	80060-06	"B" NUT	1
-13	80056-03	TUBE END REDUCER	1
-14	80045-06	BULKHEAD UNION	4
-15	80045-05	BULKHEAD UNION	3
-16	60150	HEX HEAD CAP SCREW - 1/4-20UNC X 1/2	7
-17	63301	LOCK WASHER - 1/4	13
-18	60701	NUT - 1/4-20UNC	13
-19	62612	ROUND HEAD CAP SCREW - NO. 8-32UNC X 1/2	2
-20	61502	NUT - NO. 8-32UNC	2
-21	60352	HEX HEAD CAP SCREW - 1/4-20UNC X 2 1/2	2
-22	80008-13	MALE ELBOW	2
-23	213	ROMEX CONNECTOR	2
-24	30725-24	TUBE ASSEMBLY - 1/2	1
-25	30725-25	TUBE ASSEMBLY - 1/2	1
-26	30725	TUBE ASSEMBLY - 1/2	1
-27	30725-27	TUBE ASSEMBLY - 1/2	1
-28	30725-28	TUBE ASSEMBLY - 1/2	1
-29	30725-29	TUBE ASSEMBLY - 1/2	1
-30	60340	HEX HEAD CAP SCREW - 1/4-20UNC X 2	2

FIGURE 8.1 - COMPONENT BOX ASSEMBLY (25GTD)

ITEM	PART NUMBER	DESCRIPTION	QTY
-31	30725-31	TUBE ASSEMBLY - 1/2	1
-32	30725-32	TUBE ASSEMBLY - 3/8	1
-33	30725-33	TUBE ASSEMBLY - 3/8	1
-34	30725-34	TUBE ASSEMBLY - 3/8	1
-35	30725-35	TUBE ASSEMBLY - 3/8	2
-36	30725-36	TUBE ASSEMBLY - 3/8	1
-37	30725-37	TUBE ASSEMBLY - 3/8	1
-38	30725-38	TUBE ASSEMBLY - 1/4	1
-39	30725-39	TUBE ASSEMBLY - 1/4	1
-40	30725-40	TUBE ASSEMBLY - 1/4	1
-41	80045-03	BULKHEAD UNION	1
-42	80001-08	MALE CONNECTOR	4
-43	80001-03	MALE CONNECTOR	2
-44	63312	LOCK WASHER - NO. 8	2

FIGURE 8.2 - COMPONENT BOX ASSEMBLY (30G) (36G)

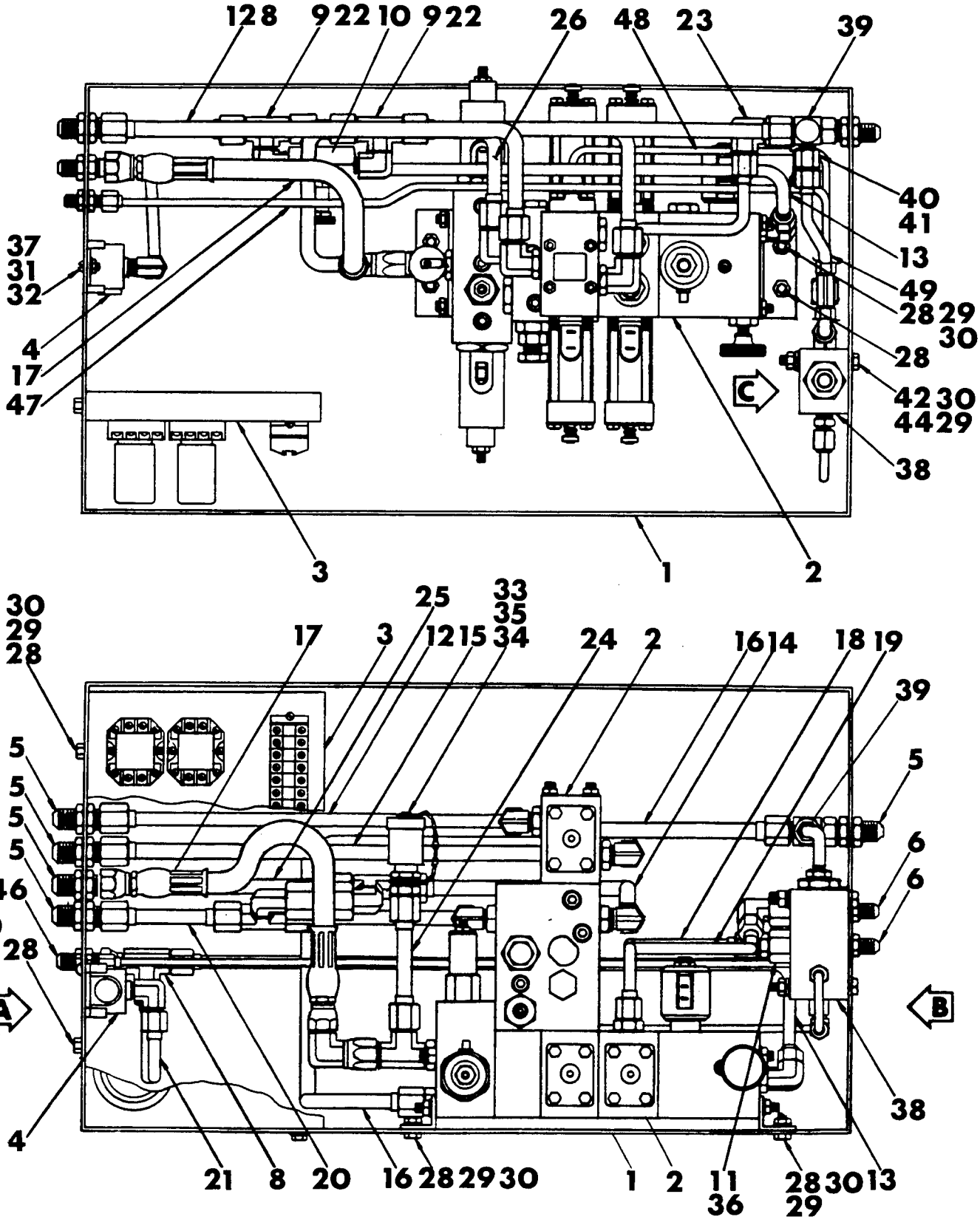
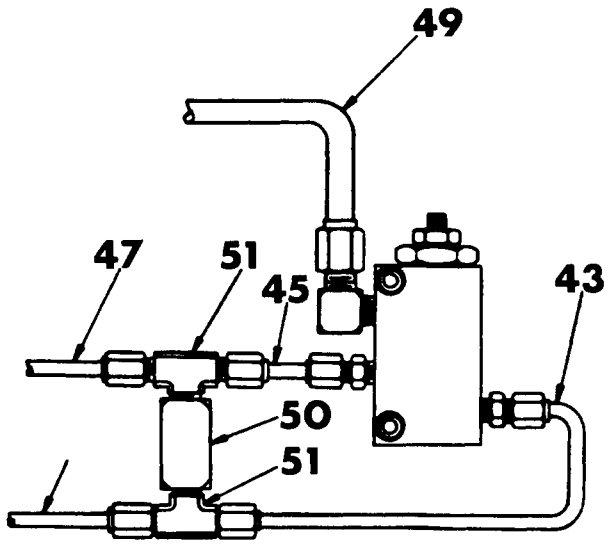
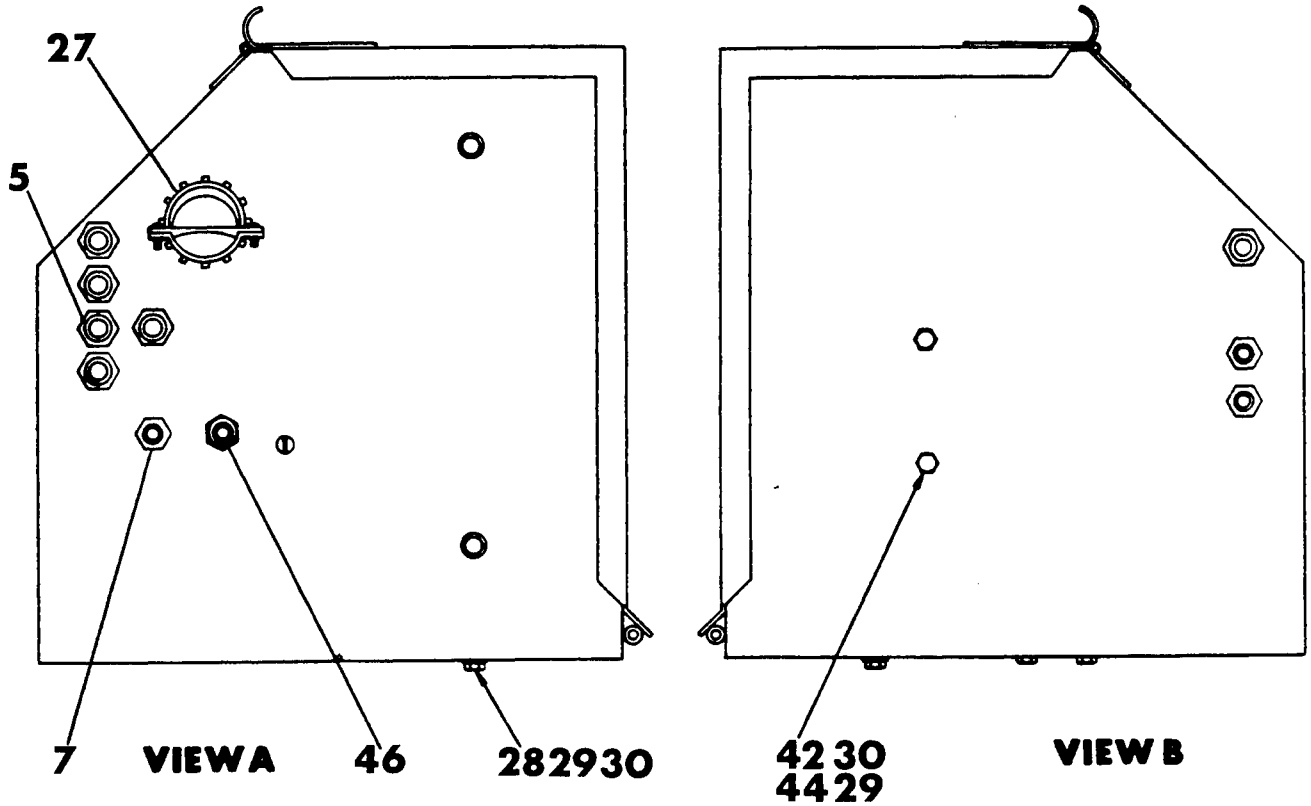


FIGURE 8.2 - COMPONENT BOX ASSEMBLY (30G) (36G)



VIEW C



VIEW A

VIEW B

FIGURE 8.2 - COMPONENT BOX ASSEMBLY (30G) (36G)

ITEM	PART NUMBER	DESCRIPTION	QTY
8.2-	30724	COMPONENT BOX ASSEMBLY	1
-1	30288	COMPONENT BOX	1
-2	30715	MANIFOLD ASSEMBLY (SEE FIG. 9)	1
-3	30651	PANEL ASSEMBLY (SEE FIG. 8C)	1
-4	30495	PRESSURE SWITCH ASSEMBLY (SEE FIG. 11)	1
-5	80045-06	BULKHEAD UNION	6
-6	50202	BULKHEAD UNION	2
-7	80045-05	BULKHEAD UNION	1
-8	80028-05	SWIVEL NUT RUN TEE	1
-9	80034-12	UNION TEE	2
-10	201	NEEDLE VALVE	1
-11	20370	NEEDLE VALVE	2
-12	30724-12	TUBE ASSEMBLY - 1/2	1
-13	30724-13	TUBE ASSEMBLY - 3/8	1
-14	30724-14	TUBE ASSEMBLY - 1/2	1
-15	30724-15	TUBE ASSEMBLY - 1/2	1
-16	30724-16	TUBE ASSEMBLY - 1/2	1
-17	13213-03-0125	HOSE ASSEMBLY (HIGH PRESSURE)	1
-18	30724-18	TUBE ASSEMBLY - 3/8	1
-19	30724-19	TUBE ASSEMBLY - 3/8	1
-20	30724-20	TUBE ASSEMBLY - 1/2	1
-21	30724-21	TUBE ASSEMBLY - 3/8	1
-22	80021-06	90° STREET ELBOW	2
-23	80008-08	90° MALE ELBOW	1
-24	30724-24	TUBE ASSEMBLY - 1/2	1
-25	30724-25	TUBE ASSEMBLY - 1/2	1
-26	30724-26	TUBE ASSEMBLY - 1/2	1
-27	213	ROMEX CONNECTOR	1
-28	60309	HEX HEAD CAP SCREW - 1/4-20UNC X 3/4	7
-29	63301	SPLIT LOCK WASHER - 1/4	9
-30	60701	NUT - 1/4-20UNC	9
-31	61502	NUT - NO. 8-32UNC	2
-32	62612	ROUND HEAD CAP SCREW - NO. 8-32UNC X 1/2	2

FIGURE 8.2 - COMPONENT BOX ASSEMBLY
(30G) (36G)

ITEM	PART NUMBER	DESCRIPTION	QTY
-33	80001-13	MALE CONNECTOR	1
-34	845	CAP	1
-35	2527	QUICK DISCONNECT	1
-36	80001-08	MALE CONNECTOR	1
-37	63312	SPLIT LOCK WASHER - NO. 8	2
-38	30743	PRESSURE REDUCING VALVE ASSEMBLY (SEE FIG. 11A)	1
-39	80028-06	SWIVEL NUT RUN TEE	1
-40	80056-03	REDUCER	1
-41	80060-06	"B" NUT	1
-42	60318	HEX HEAD CAP SCREW - 1/4-20UNC X 2 1/4	2
-43	30724-43	TUBE ASSEMBLY - 1/4	1
-44	63401	FLAT WASHER - 1/4	2
-45	30724-45	TUBE ASSEMBLY - 1/4	1
-46	80045-03	BULKHEAD UNION	1
-47	30724-47	TUBE ASSEMBLY - 1/4	1
-48	30724-48	TUBE ASSEMBLY - 1/4	1
-49	30724-49	TUBE ASSEMBLY - 3/8	1
-50	30893	CHECK VALVE	1
-51	80034-03	MALE BRANCH TEE	2

FIGURE 8A - COMPONENT BOX PANEL ASSEMBLY (25ETD) (25E) (30E) (36E)

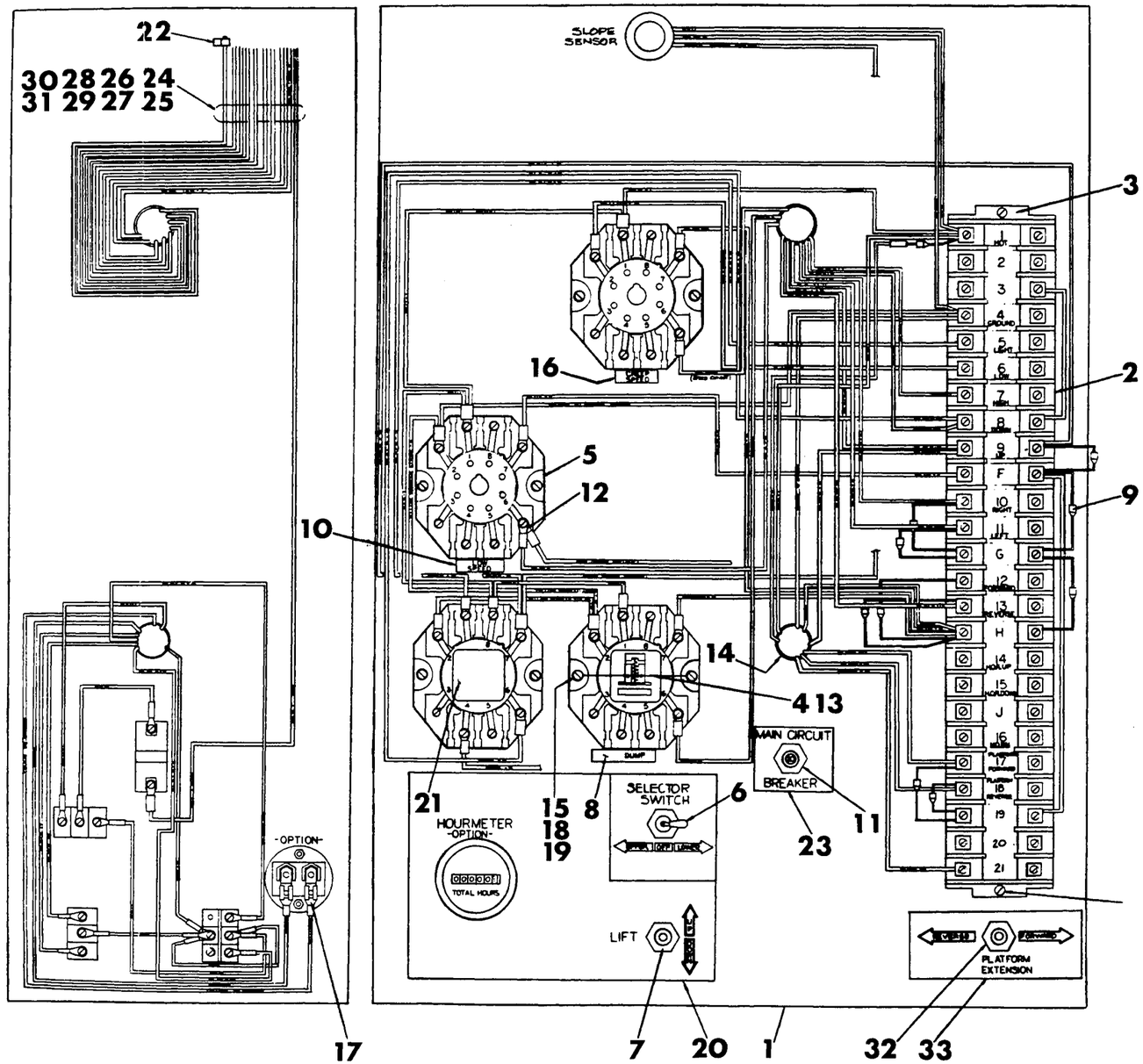


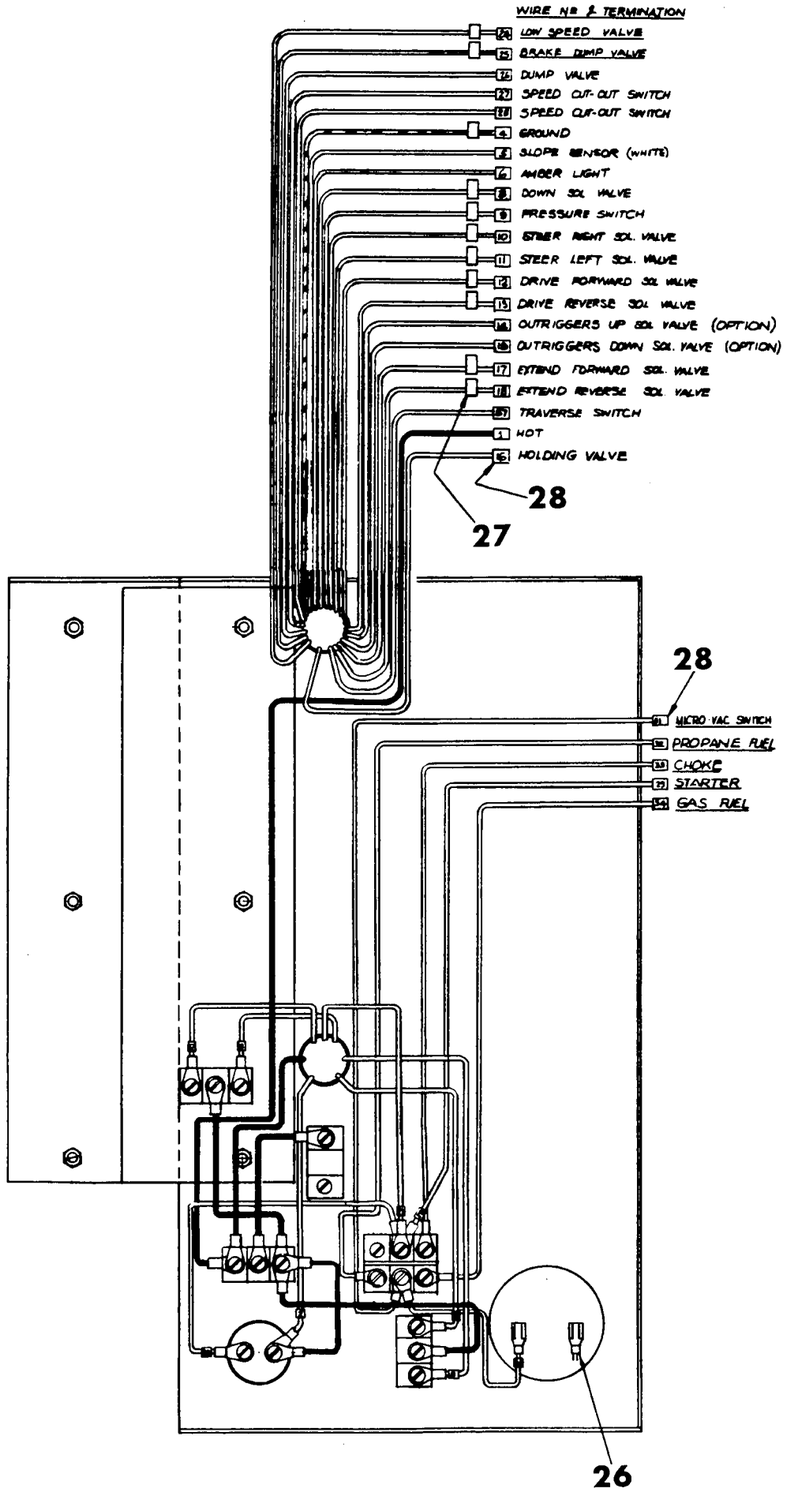
FIGURE 8A - COMPONENT BOX PANEL ASSEMBLY
(25ETD) (25E) (30E) (36E)

ITEM	PART NUMBER	DESCRIPTION	QTY
8A-	30769	COMPONENT BOX PANEL ASSEMBLY	1
-1	30312	RELAY MOUNTING BRACKET	1
-2	4027	TERMINAL BLOCK	25
-3	117-A	TERMINAL BLOCK END	2
-4	4032	RELAY	3
-5	784-A	8 PIN SOCKET	4
-6	4019	SELECTOR SWITCH	1
-7	20481	LIFT SWITCH	1
-8	30315	DECAL - DUMP RELAY	1
-9	4045	DIODE	1
-10	30314	DECAL - LOW SPEED RELAY	1
-11	20562	CIRCUIT BREAKER	1
-12	117-C	RING TONGUE CONNECTOR	36
-13	30215	RELAY HOLD DOWN	4
-14	70016	GROMMET	2
-15	62623	SLOTTED ROUND HEAD SCREW - NO. 8-32UNC X 3/4	11
-16	30572	DECAL - CREEP SPEED	1
-17	70207	FEMALE PUSH-ON CONNECTOR	2
-18	61502	NUT - NO. 8-32UNC	11
-19	63312	LOCK WASHER - NO. 8	11
-20	30310	DECAL - SWITCHES (MODIFY AS SHOWN)	1
-21	70171	RELAY - 6 VOLT	1
-22	70029	CONNECTOR	17
-23	30405	DECAL - CIRCUIT BREAKER	1
-24	70004	WIRE - BLUE (16 GA. X 80)	1
-25	70005	WIRE - BROWN (16 GA. X 96)	1
-26	70008	WIRE - YELLOW WITH GREEN (16 GA. X 80)	1
-27	829	WIRE - BLACK (16 GA. X 80)	1
-28	831	WIRE - BLACK (16 GA. X 80)	1
-29	830	WIRE - BLACK (16 GA. X 80)	1
-30	833	WIRE - BLACK (16 GA. X 80)	1
-31	834	WIRE - BLACK (16 GA. X 80)	1

FIGURE 8A - COMPONENT BOX PANEL ASSEMBLY
(25ETD) (25E) (30E) (36E)

ITEM	PART NUMBER	DESCRIPTION	QTY
-32	4021	TOGGLE SWITCH	1
-33	31270	DECAL - PLATFORM EXTENSION	1

FIGURE 8B - COMPONENT BOX PANEL ASSEMBLY (25GTD)



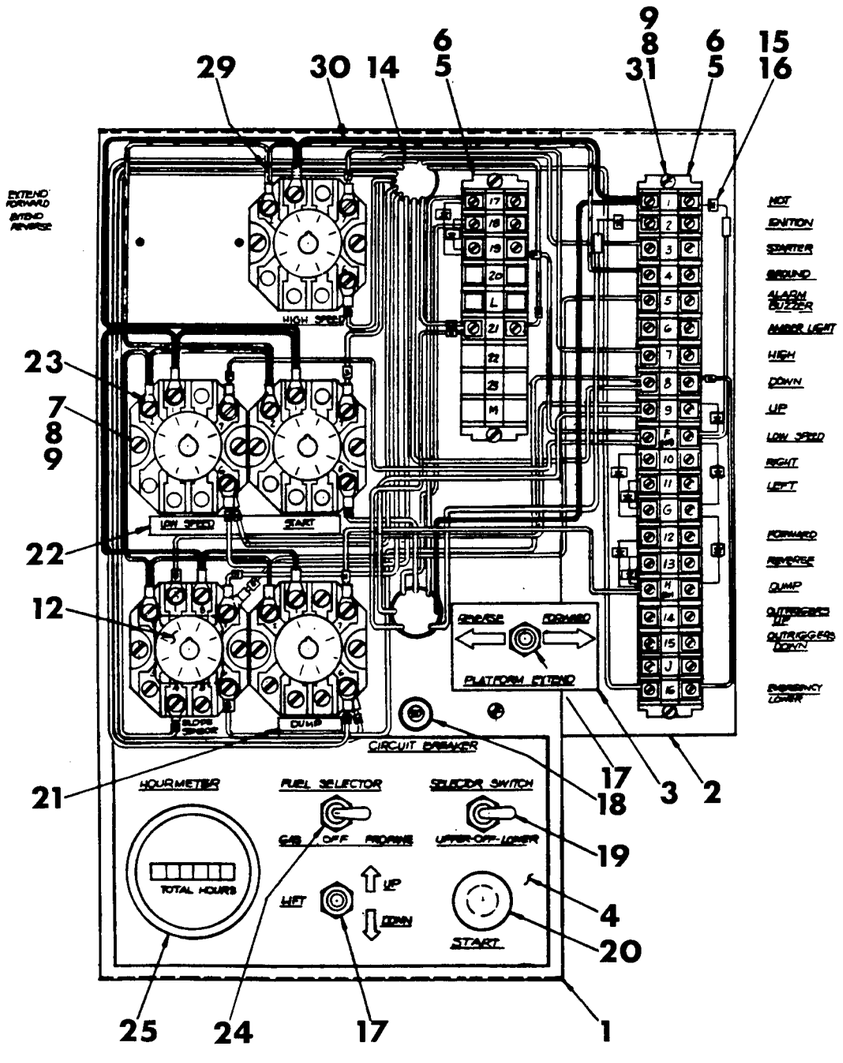


FIGURE 8B - COMPONENT BOX PANEL ASSEMBLY
(25GTD)

ITEM	PART NUMBER	DESCRIPTION	QTY
8B-	31218	COMPONENT BOX PANEL ASSEMBLY	1
-1	30312	RELAY MOUNTING BRACKET	1
-2	31272	RELAY MOUNTING BRACKET WELDMENT	1
-3	31270	DECAL - PLATFORM EXTEND	1
-4	30310	DECAL - SWITCHES	1
-5	117-A	TERMINAL BLOCK END	4
-6	4027	TERMINAL BLOCK	26
-7	62623	ROUND SLOTTED HEAD MACHINE SCREW - NO. 8 - 32UNC X 3/4	10
-8	61502	HEX NUT - NO. 8 - 32UNC	16
-9	63312	LOCK WASHER - NO. 8	16
-10	4032	RELAY - 6 VOLT	4
-11	784-A	8 PIN SOCKET	5
-12	70171	RELAY - 6 VOLT	1
-13	30215	HOLD DOWN CLIP	5
-14	70016	GROMMET	2
-15	877	BUTT CONNECTOR	2
-16	4045	DIODE	11
-17	4021	TOGGLE SWITCH	2
-18	20562	CIRCUIT BREAKER	1
-19	4019	TOGGLE SWITCH	2
-20	4020	PUSH BUTTON SWITCH	1
-21	30315	DECAL - DUMP RELAY	1
-22	30314	DECAL - LOW SPEED RELAY	1
-23	117-C	RING TONGUE CONNECTOR	60
-24	70015	TOGGLE SWITCH	1
-25	20511	HOUR METER (OPTION)	1
-26	70208	FEMALE PUSH-ON TERMINAL (OPTION)	2
-27	70029	CONNECTOR	24
-28	70215	WIRE MARKER	2
-29	70008	WIRE - YELLOW WITH GREEN STRIPE (AWG 16 X 80)	1
-30	70009	WIRE - RED (AWG 16 X 120)	1
-31	62612	ROUND SLOTTED HEAD MACHINE SCREW - NO. 8 - 32UNC X 1/2	6

FIGURE 8C - COMPONENT BOX PANEL ASSEMBLY
(30G) (36G)

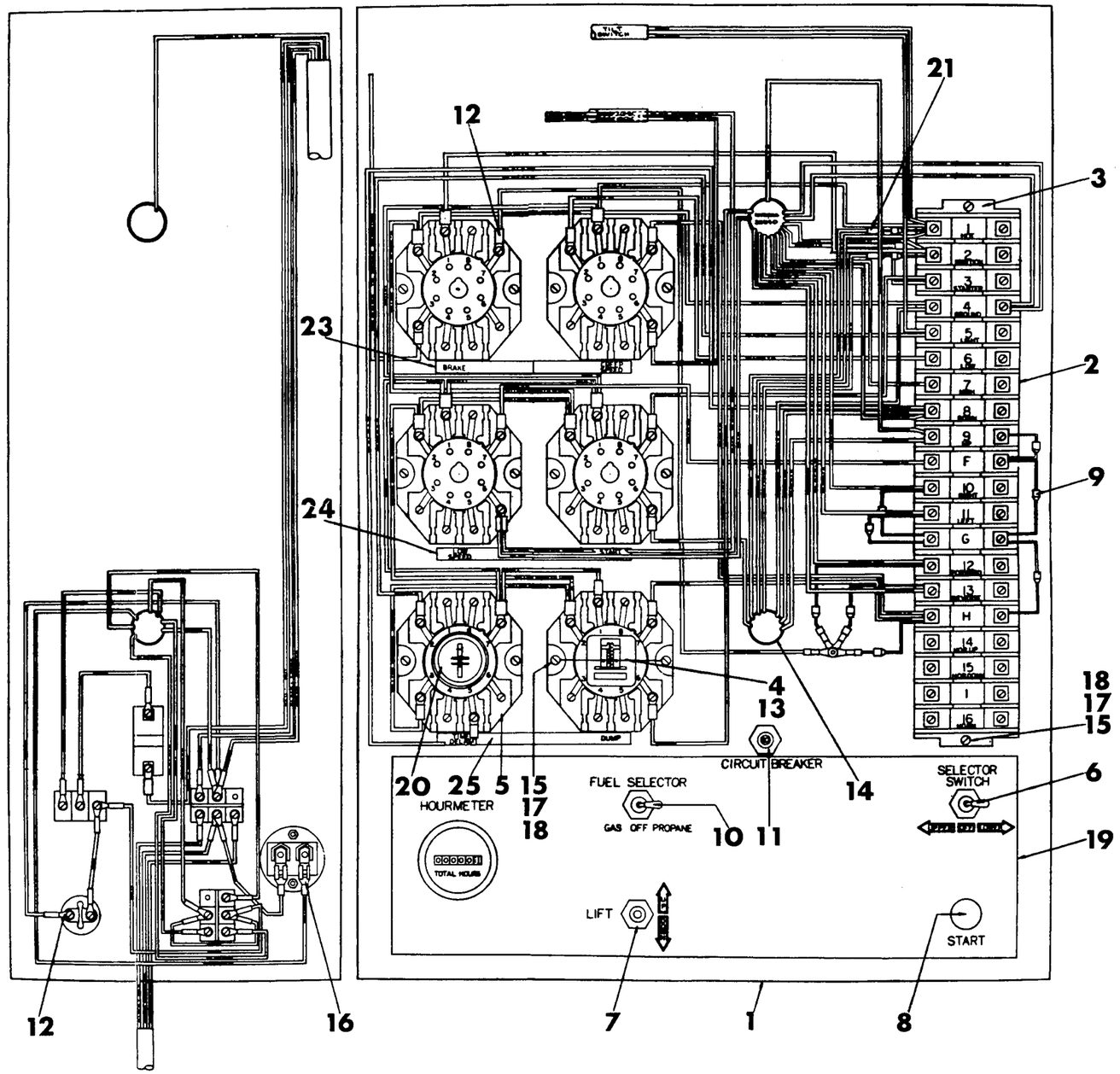
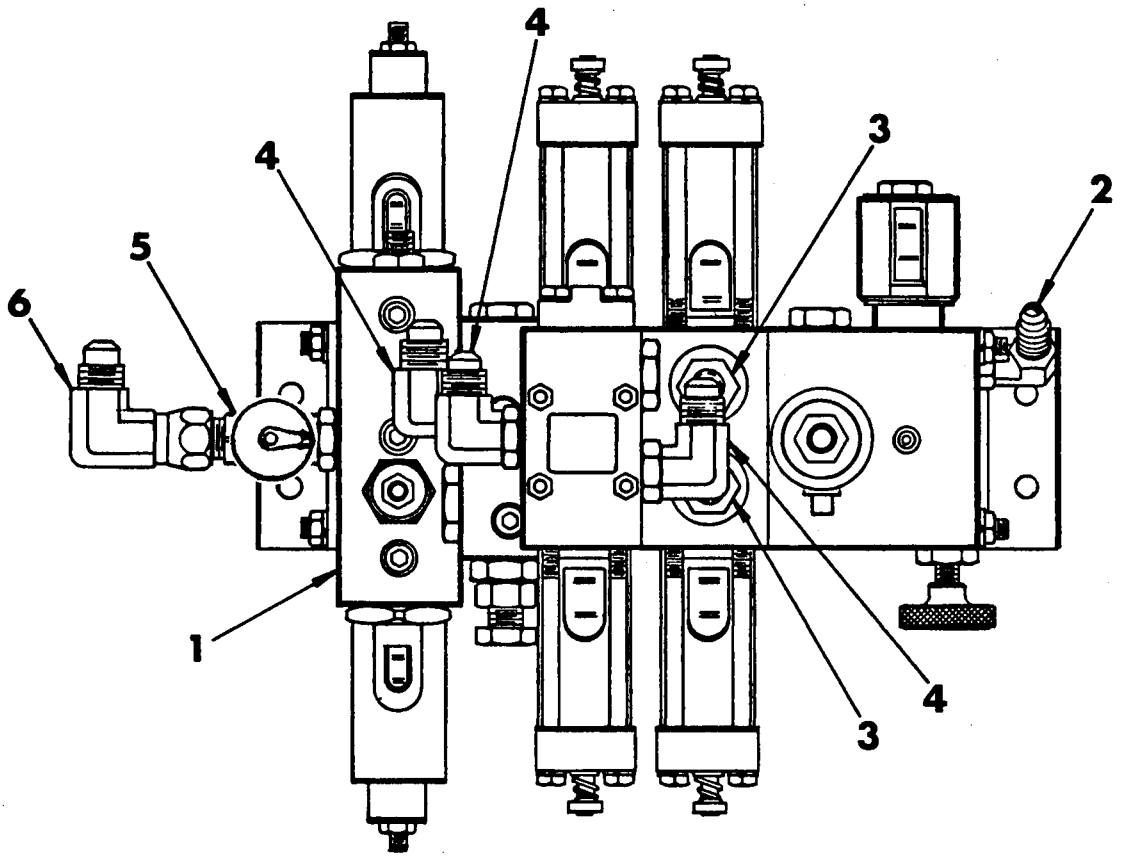


FIGURE 8C - COMPONENT BOX PANEL ASSEMBLY (30G) (36G)

ITEM	PART NUMBER	DESCRIPTION	QTY
8C-	30651	COMPONENT BOX PANEL ASSEMBLY	1
-1	30312	RELAY MOUNTING BRACKET	1
-2	4027	TERMINAL BLOCK	20
-3	117-A	TERMINAL BLOCK END	1
-4	4032	RELAY	5
-5	784-A	8 PIN SOCKET	6
-6	4019	SELECTOR SWITCH	1
-7	20481	LIFT SWITCH	1
-8	4020	START SWITCH	1
-9	4045	DIODE	10
-10	20482	FUEL SELECTOR SWITCH	1
-11	20562	CIRCUIT BREAKER	1
-12	117-C	RING TONGUE CONNECTOR	44
-13	30215	RELAY HOLD DOWN	5
-14	70016	GROMMET	2
-15	62623	ROUND SLOTTED HEAD CAP SCREW - NO. 8-32UNC X 3/4	15
-16	70208	FEMALE PUSH-ON TERMINAL	2
-17	61502	NUT - NO. 8-32UNC	15
-18	63312	LOCK WASHER - NO. 8	15
-19	30310	DECAL - SWITCHES	1
-20	20523	TIME DELAY RELAY	1
-21	877	BUTT CONNECTOR	1
-22	30340	MANIFOLD HARNESS	1
-23	30572	DECAL - BRAKE & CREEP SPEED RELAYS	1
-24	30314	DECAL - LOW SPEED & START RELAYS	1
-25	30315	DECAL - TIME DELAY & DUMP RELAYS	1

FIGURE 9 - MANIFOLD ASSEMBLY (25ETD) (25E) (30E) (36E) (30G) (36G)



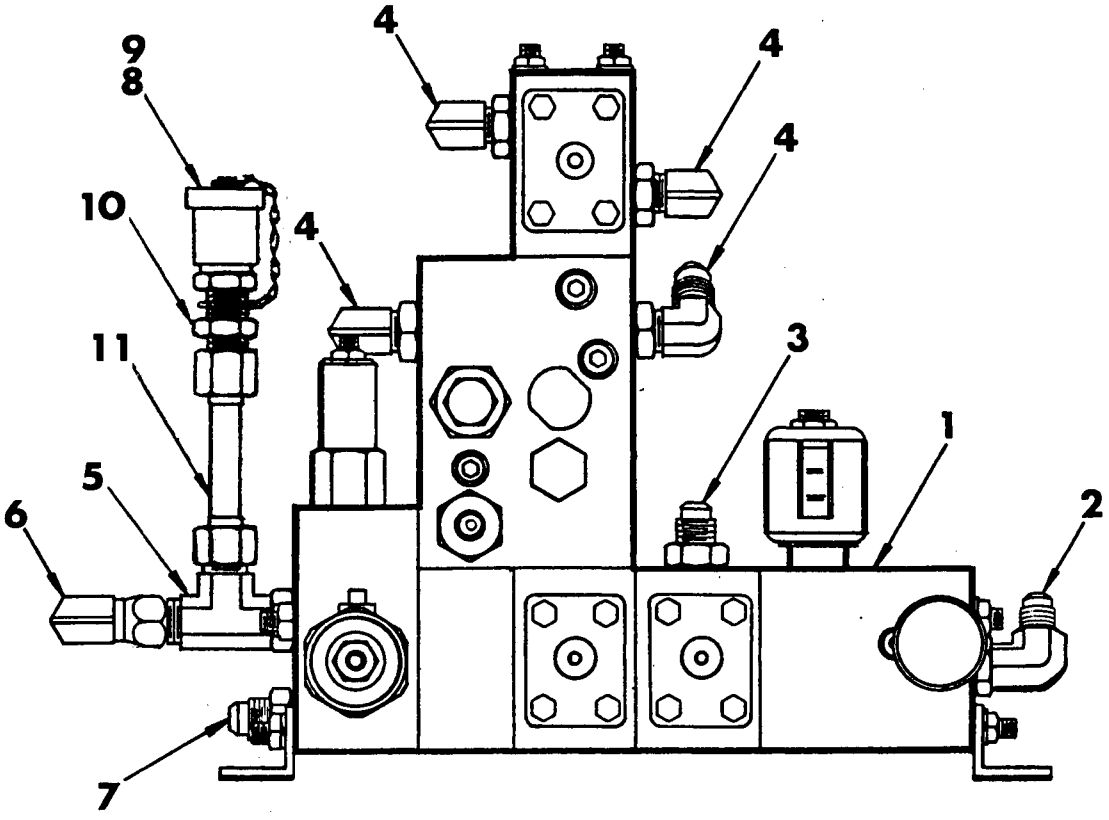
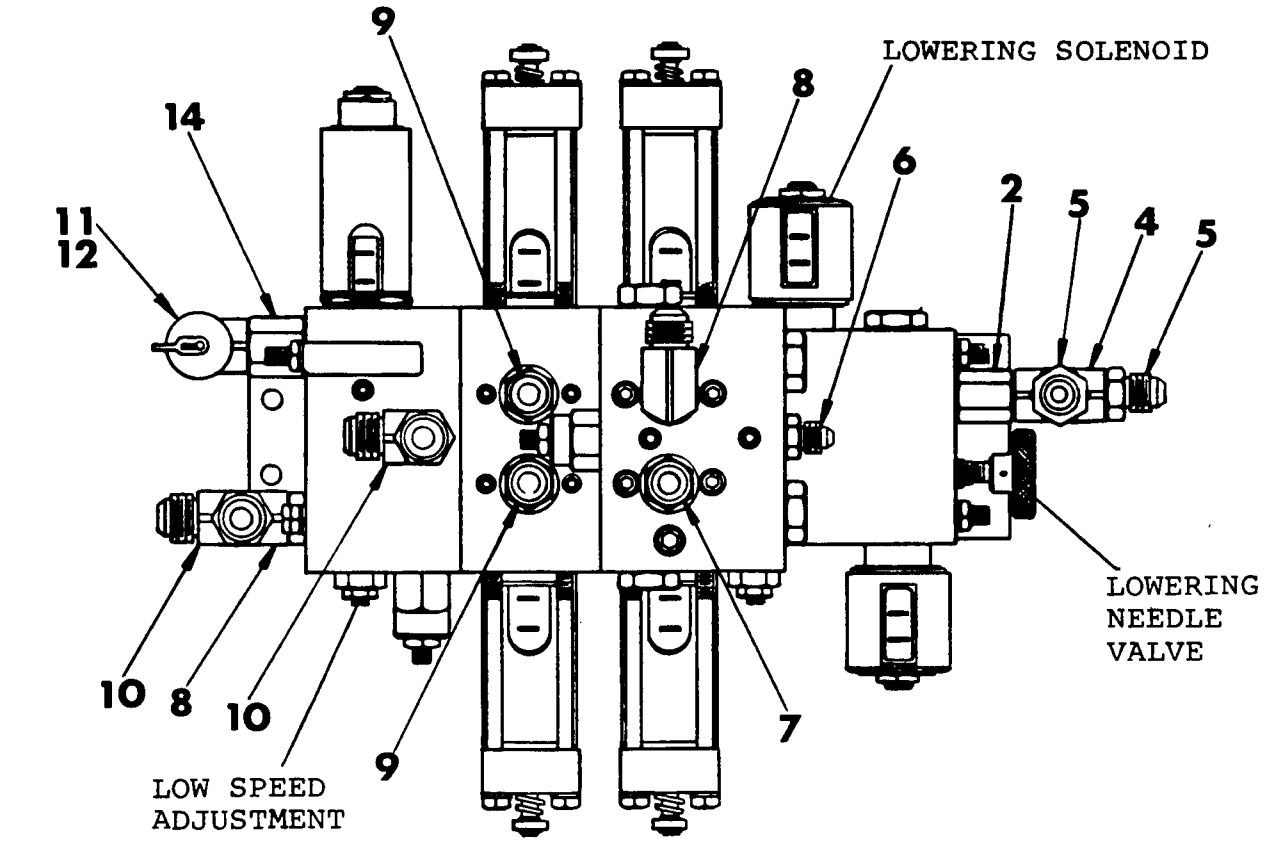


FIGURE 9 - MANIFOLD ASSEMBLY (25ETD) (25E) (30E) (36E) (30G) (36G)

ITEM	PART NUMBER	DESCRIPTION	QTY
9-	30715	MANIFOLD ASSEMBLY	1
-1	3100	MANIFOLD PACKAGE (SEE FIG. 9A)	1
-2	80012-08	STRAIGHT THREAD ELBOW	1
-3	80004-09	STRAIGHT THREAD CONNECTOR	2
-4	80012-11	STRAIGHT THREAD ELBOW	4
-5	80015-06	STRAIGHT THREAD RUN TEE	1
-6	80004-11	SWIVEL NUT ELBOW	1
-7	80004-05	STRAIGHT THREAD CONNECTOR	1
-8	2527	MALE QUICK DISCONNECT	1
-9	845	QUICK DISCONNECT CAP	1
-10	80001-13	MALE CONNECTOR	1
-11	30715-11	TUBE ASSEMBLY - 1/2	1

FIGURE 9.1 - MANIFOLD ASSEMBLY (25GTD)



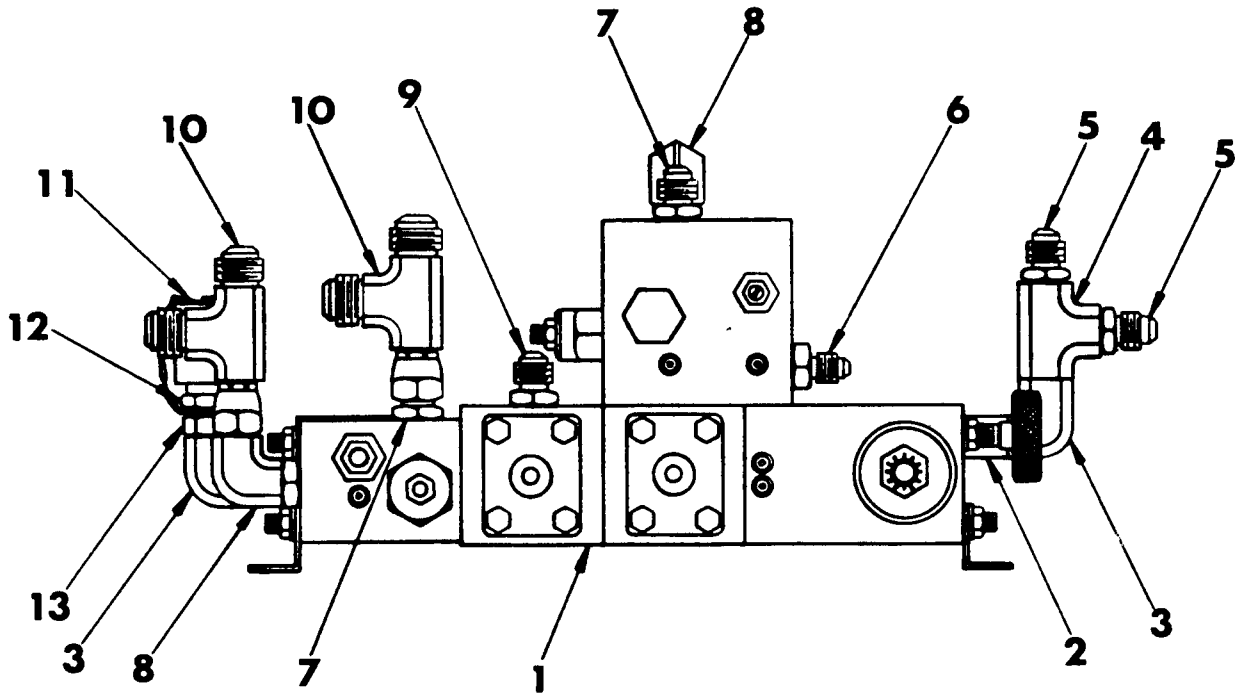
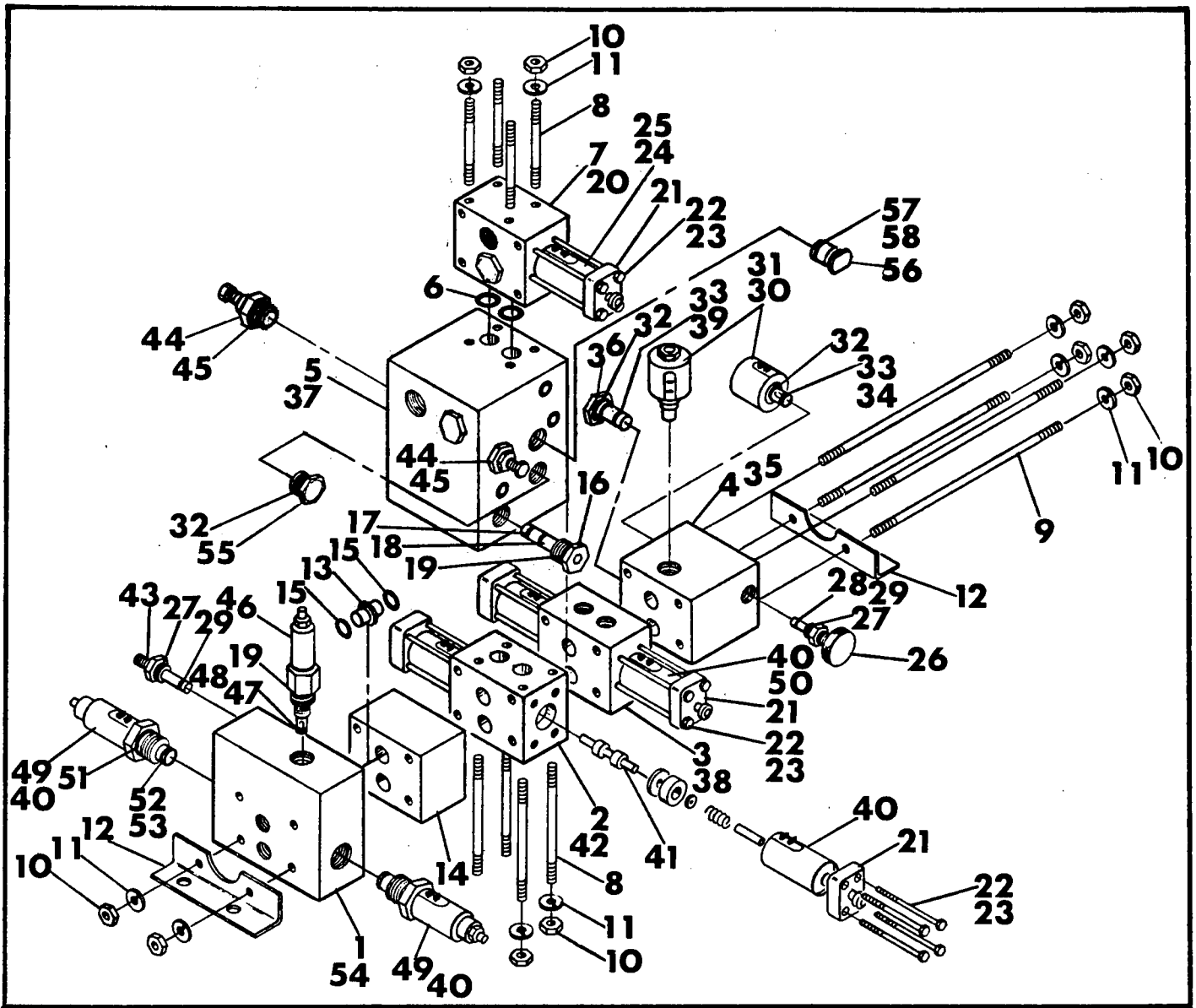


FIGURE 9.1 - MANIFOLD ASSEMBLY (25GTD)

ITEM	PART NUMBER	DESCRIPTION	QTY
8-	30714	MANIFOLD ASSEMBLY	1
-1	3069 (6355A	MANIFOLD PACKAGE (SEE FIG. 9B)	1
-2	80063-01	FEMALE PIPE ADAPTER	1
-3	80021-03	STREET ELBOW	2
-4	80041-03	STREET TEE	1
-5	80001-08	MALE CONNECTOR	2
-6	80004-03	STRAIGHT THREAD CONNECTOR	1
-7	80004-12	STRAIGHT THREAD CONNECTOR	2
-8	80012-12	STRAIGHT THREAD ELBOW	2
-9	80004-08	STRAIGHT THREAD CONNECTOR	2
-10	80028-06	SWIVEL NUT RUN TEE	2
-11	845	QUICK DISCONNECT CAP	1
-12	2527	MALE QUICK DISCONNECT	1
-13	80052-04	PIPE NIPPLE	1
-14	80002-04	FEMALE CONNECTOR	1

FIGURE 9A - MANIFOLD PACKAGE (25ETD) (25E) (30E) (36E) (30G) (36G)



ITEM	PART NUMBER	DESCRIPTION	QTY
9A-	3100	MANIFOLD PACKAGE	1
-1	66001	DUMP VALVE SUB-ASSEMBLY	1
-2	66002	SOLENOID VALVE-DRIVE	1
-3	66003	SOLENOID VALVE-STEERING	1
-4	66004	LIFT CONTROL ASSEMBLY	1
-5	66005	DRIVE PACKAGE	1
-6	66006	O-RING	4
-7	66007	SOLENOID VALVE-HI SPEED	1
-8	66008	TIE ROD (3 3/4 LONG)	8
-9	66009	TIE ROD	4

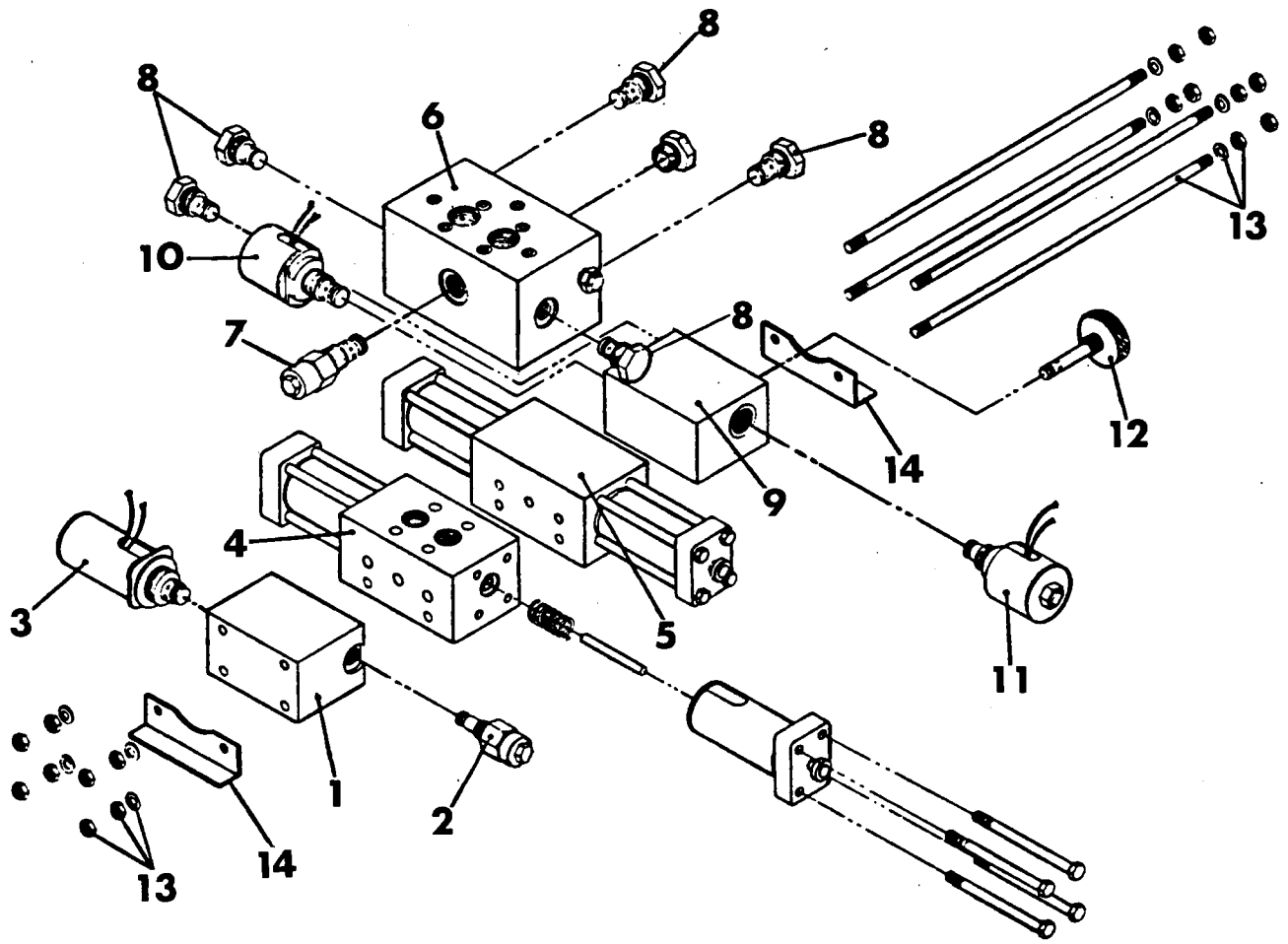
FIGURE 9A - MANIFOLD PACKAGE (25ETD) (25E) (30E) (36E) (30G) (36G)

ITEM	PART NUMBER	DESCRIPTION	QTY
-10	66010	HEX JAM NUT	16
-11	66011	LOCKWASHER	16
-12	66012	FOOT	2
-13	66013	BANKING SEAL	8
-14	66014	SPACER BLOCK	1
-15	66016	O-RING	16
-16	66050	SHUTTLE VALVE CARTRIGE	1
-17	66051	O-RING (A-112)	1
-18	66052	O-RING (A-113)	1
-19	66053	O-RING GASKET	2
-20	66054	BLOCK	1
-21	66055	MANUAL RELEASE ASSEMBLY	5
-22	66056	HEX HEAD CAP SCREW	20
-23	63301	LOCKWASHER (MED) ¼	20
-24	66057	COIL	1
-25	66058	SPOOL ASSEMBLY	1
-26	66059	NEEDLE VALVE-EMERGENCY LOWERING	1
-27	66060	O-RING	2
-28	66061	BACK-UP RING	2
-29	66062	O-RING	2
-30	66063 or 3051	SOLENOID VALVE CARTRIDGE-LIFT/LOWERING	2
-31	66064 or 4074	COIL-SHORT	2
-32	66065	O-RING GASKET	5
-33	66066	O-RING	3
-34	66067	BACK-UP RING	2
-35	66068	BLOCK	1
-36	66069	CHECK VALVE	1
-37	66070	BLOCK	1
-38	66071	BLOCK	1
-39	66072	BACK-UP RING	1
-40	66073 or 4073	COIL-LONG	6
-41	66074	SPOOL-DRIVE	1
-42	66075	BLOCK	1
-43	66076	NEEDLE VALVE	1

FIGURE 9A - MANIFOLD PACKAGE (25ETD) (25E) (30E) (36E) (30G) (36G)

ITEM	PART NUMBER	DESCRIPTION	QTY
-44	66077	ADJUSTMENT HOUSING-DYNAMIC BRAKE	2
-45	66078	O-RING (A-117)	2
-46	66079	RELIEF VALVE CARTRIDGE-(MAIN SYS. PRESS. ADJ.)	1
-47	66080	O-RING	1
-48	66081	BACK-UP RING	1
-49	66082	SOLENOID VALVE-DUMP/CREEP	2
-50	66083	SPOOL	1
-51	66084	O-RING GASKET	2
-52	66085	O-RING	2
-53	66086	BACK-UP RING	2
-54	66087	BLOCK	1
-55	66088	TUBE PLUG	2
-56	66089	PLUG	2
-57	66090	O-RING	2
-58	66091	BACK-UP RING	2

FIGURE 9B - MANIFOLD PACKAGE
(TO JUNE 1980) (25E) AND (25GTD)

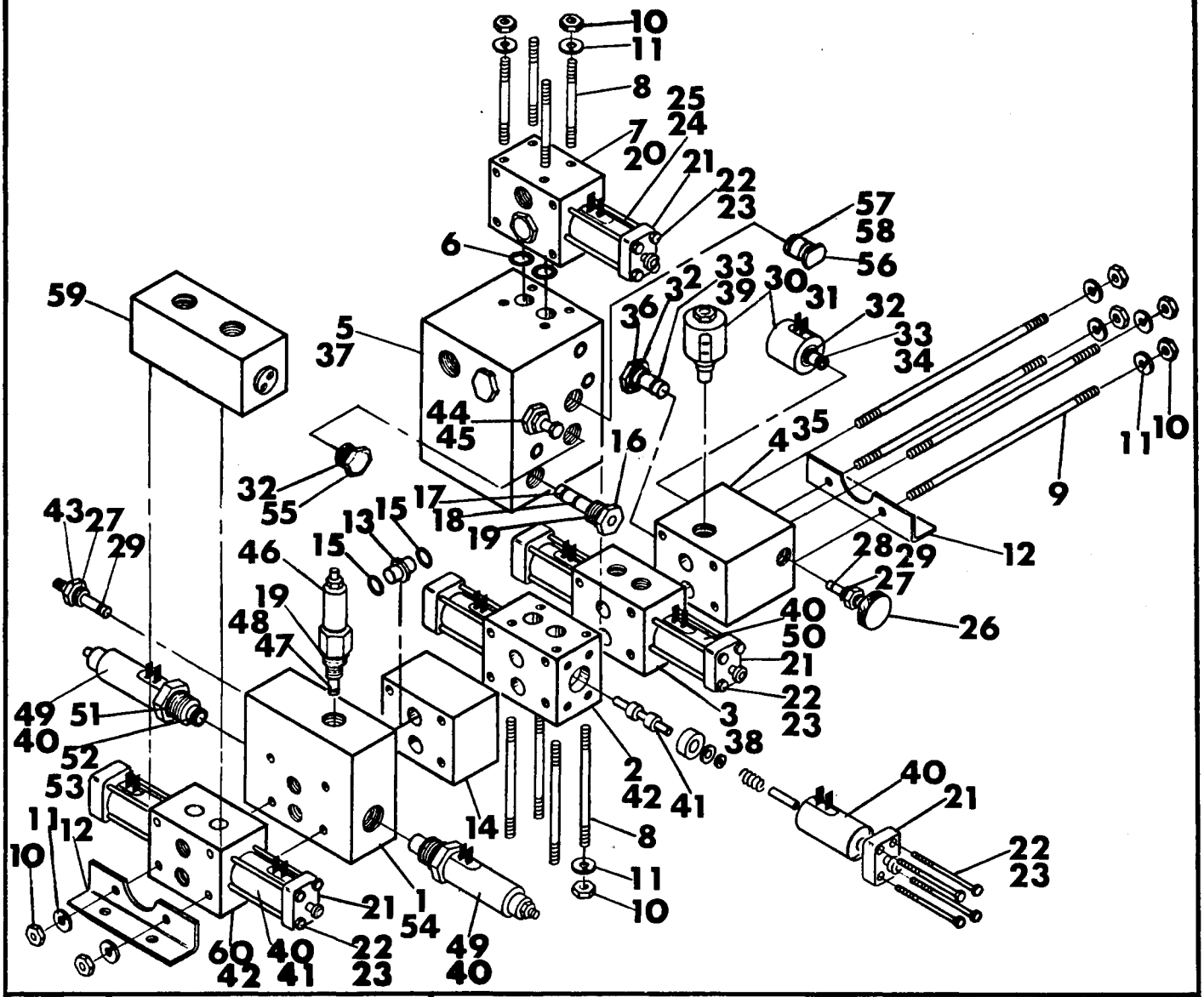


ITEM	PART NUMBER	DESCRIPTION	QTY
9B-	3069 (6355A)	MANIFOLD PACKAGE	1
-1	3064	DUMP/RELIEF VALVE ASSEMBLY	1
-2	3044	RELIEF VALVE	1
-3	3045	HIGH SPEED VALVE	1
-4	3019-2	STEERING VALVE ASSEMBLY	1
-5	3019-3	DRIVE VALVE ASSEMBLY	1
-6	3019-4	LOW SPEED-CUSHION VALVE ASSEMBLY	1
-7	3046	CUSHION RELIEF VALVE	1
-8	3048	CHECK VALVE	5
-9	3019-5	LIFT VALVE ASSEMBLY	1
-10	3051	LOWERING VALVE	1
-11	3051	LIFT VALVE	1
-12	3053	EMERGENCY LOWERING VALVE	1

FIGURE 9B - MANIFOLD PACKAGE
(TO JUNE 1980) (25E) AND (25GTD)

ITEM	PART NUMBER	DESCRIPTION	QTY
-13	3054	TIE RODS-WITH WASHERS & NUTS	4
-14	3019-6	FOOT	2

FIGURE 9C - MANIFOLD PACKAGE-WITH OUTRIGGER BANK (ALL MODELS) (OPTION)



ITEM	PART NUMBER	DESCRIPTION	QTY
9C-	3101	MANIFOLD PACKAGE-WITH OURIGGER BANK	1
-1	66001	DUMP VALVE SUB-ASSEMBLY	1
-2	66002	SOLENOID VALVE-DRIVE	1
-3	66003	SOLENOID VALVE-STEERING	1
-4	66004	LIFT CONTROL ASSEMBLY	1
-5	66005	DRIVE PACKAGE	1
-6	66006	O-RING	6
-7	66007	SOLENOID VALVE-HI SPEED	1
-8	66008	TIE ROD (3 3/4 LONG)	8
-9	66093	TIE ROD	4

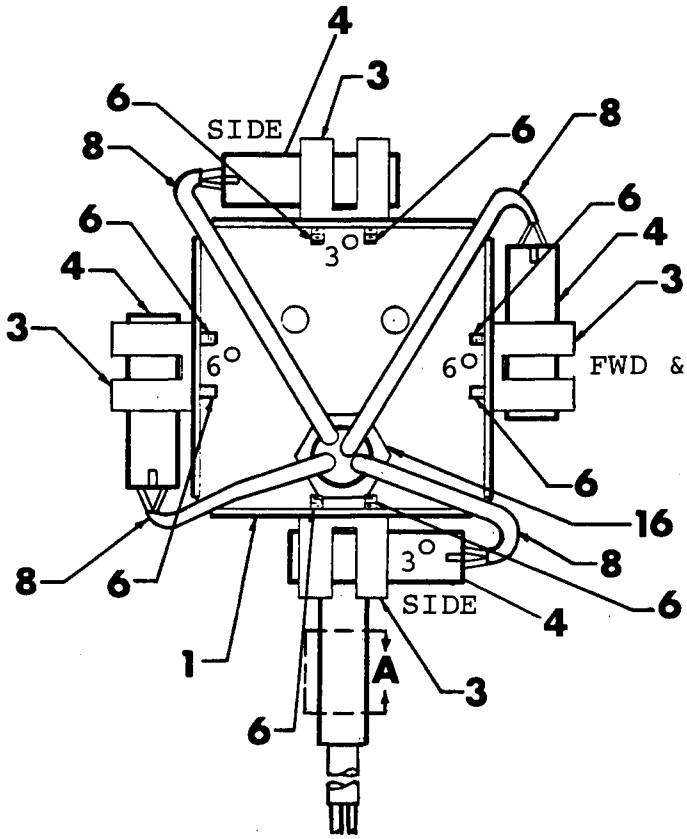
FIGURE 9C - MANIFOLD PACKAGE-WITH OUTRIGGER BANK (ALL MODELS) (OPTION)

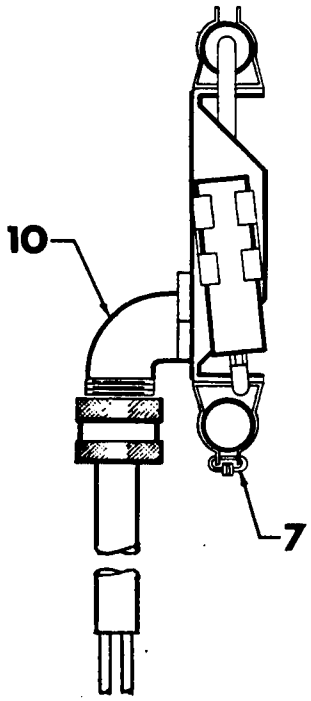
ITEM	PART NUMBER	DESCRIPTION	QTY
-10	66010	HEX JAM NUT	20
-11	66011	LOCKWASHER	20
-12	66012	FOOT	2
-13	66013	BANKING SEAL	10
-14	66014	SPACER BLOCK	1
-15	66016	O-RING	20
-16	66050	SHUTTLE VALVE CARTRIGE	1
-17	66051	O-RING (A-112)	1
-18	66052	O-RING (A-113)	1
-19	66053	O-RING GASKET	2
-20	66054	BLOCK	1
-21	66055	MANUAL RELEASE ASSEMBLY	7
-22	66056	HEX HEAD CAP SCREW	28
-23	63301	LOCKWASHER (MED) ¼	28
-24	66057	COIL	1
-25	66058	SPOOL ASSEMBLY	1
-26	66059	NEEDLE VALVE-EMERGENCY LOWERING	1
-27	66060	O-RING	2
-28	66061	BACK-UP RING	2
-29	66062	O-RING	2
-30	66063 or 3051	SOLENOID VALVE CARTRIDGE-LIFT/LOWERING	2
-31	66064 or 4074	COIL-SHORT	2
-32	66065	O-RING GASKET	5
-33	66066	O-RING	3
-34	66067	BACK-UP RING	2
-35	66068	BLOCK	1
-36	66069	CHECK VALVE	1
-37	66070	BLOCK	1
-38	66071	BLOCK	1
-39	66072	BACK-UP RING	1
-40	66073 or 4073	COIL-LONG	8
-41	66074	SPOOL-DRIVE	2
-42	66075	BLOCK	2
-43	66076	NEEDLE VALVE	1

FIGURE 9C - MANIFOLD PACKAGE-WITH OUTRIGGER BANK (ALL MODELS) (OPTION)

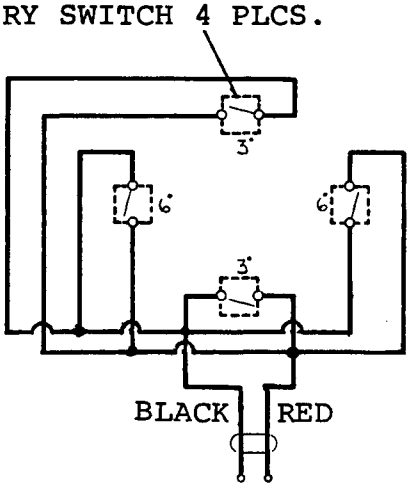
ITEM	PART NUMBER	DESCRIPTION	QTY
-44	66077	ADJUSTMENT HOUSING-DYNAMIC BRAKE	2
-45	66078	O-RING (A-117)	2
-46	66079	RELIEF VALVE CARTRIDGE-(MAIN SYS. PRESS. ADJ.)	1
-47	66080	O-RING	1
-48	66081	BACK-UP RING	1
-49	66082	SOLENOID VALVE-DUMP/CREEP	2
-50	66083	SPOOL	1
-51	66084	O-RING GASKET	2
-52	66085	O-RING	2
-53	66086	BACK-UP RING	2
-54	66087	BLOCK	1
-55	66088	TUBE PLUG	2
-56	66089	PLUG	2
-57	66090	O-RING	2
-58	66091	BACK-UP RING	2
-59	66094	LOCK VALVE	1
-60	66095	SOLENOID VALVE-OUTRIGGER	1

FIGURE 10 - TILT SWITCH ASSEMBLY & INSTALLATION (ALL MODELS)

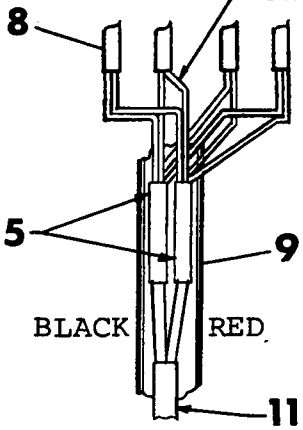




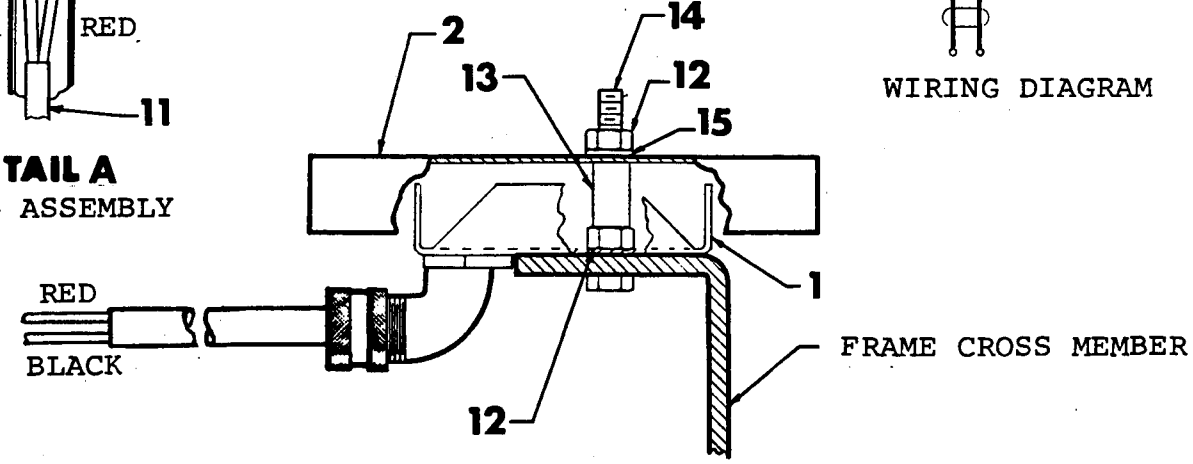
MERCURY SWITCH 4 PLCS.



WIRING DIAGRAM



DETAIL A
WIRING ASSEMBLY

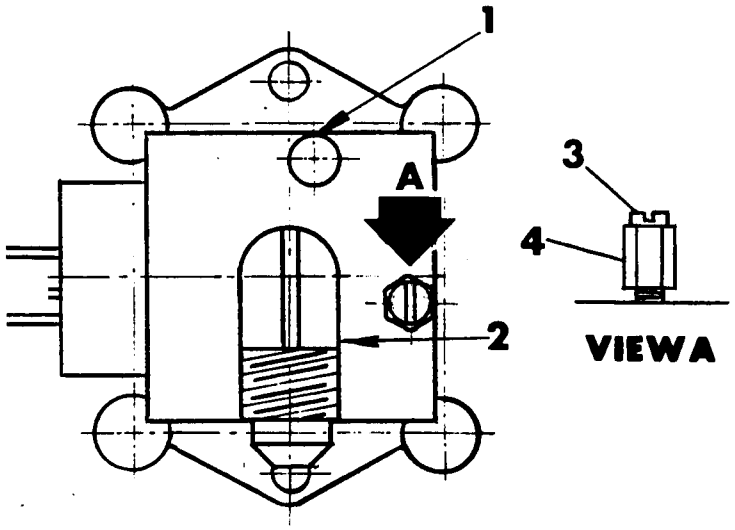


TILT SWITCH INSTALLATION

FIGURE 10 - TILT SWITCH ASSEMBLY & INSTALLATION (ALL MODELS)

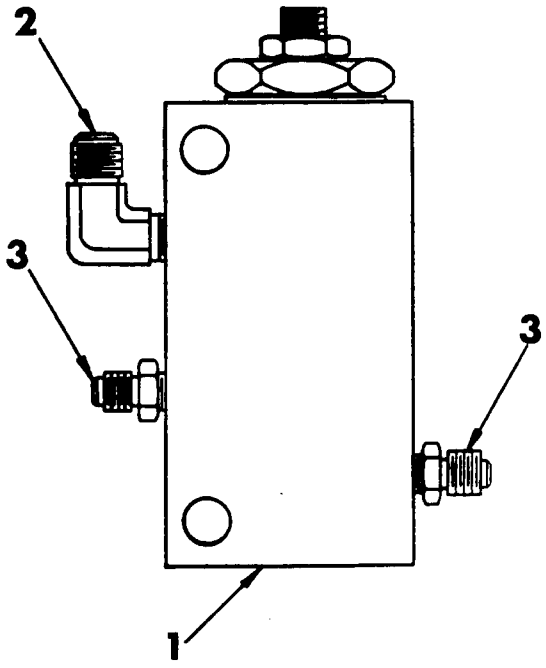
ITEM	PART NUMBER	DESCRIPTION	QTY
10-	30387	TILT SWITCH ASSEMBLY	1
-1	30385	TILT SWITCH BRACKET	1
-2	30386	TILT SWITCH COVER	1
-3	199 A	SWITCH BRACKET	4
-4	4014	MERCURY SWITCH	4
-5	117-D	BUTT CONNECTOR	2
-6	62605	ROUND HEAD SCREW 4-40 X ¼	8
-7		SAFETY WIRE	8
-8		ELECTRICAL SLEEVING	4
-9		ELECTRICAL SLEEVING	2
-10	16308	90° CONNECTOR	1
-11		ELECTRIC CABLE - 2 CONDUCTOR X 16 AWG	1
-12	60701	HEX NUT ¼-20	4
-13	35158	SPACER 3/8 O.D. X ¼ I.D. X 3/4	2
-14	60119	HEX HEAD CAP SCREW	2
-15	63301	LOCK WASHER ¼	2
-16	65129	HEX LOCK NUT - ½ BL 50 BONDING TYPE	1

FIGURE 11 - PRESSURE LIMIT SWITCH ASSEMBLY (ALL MODELS)



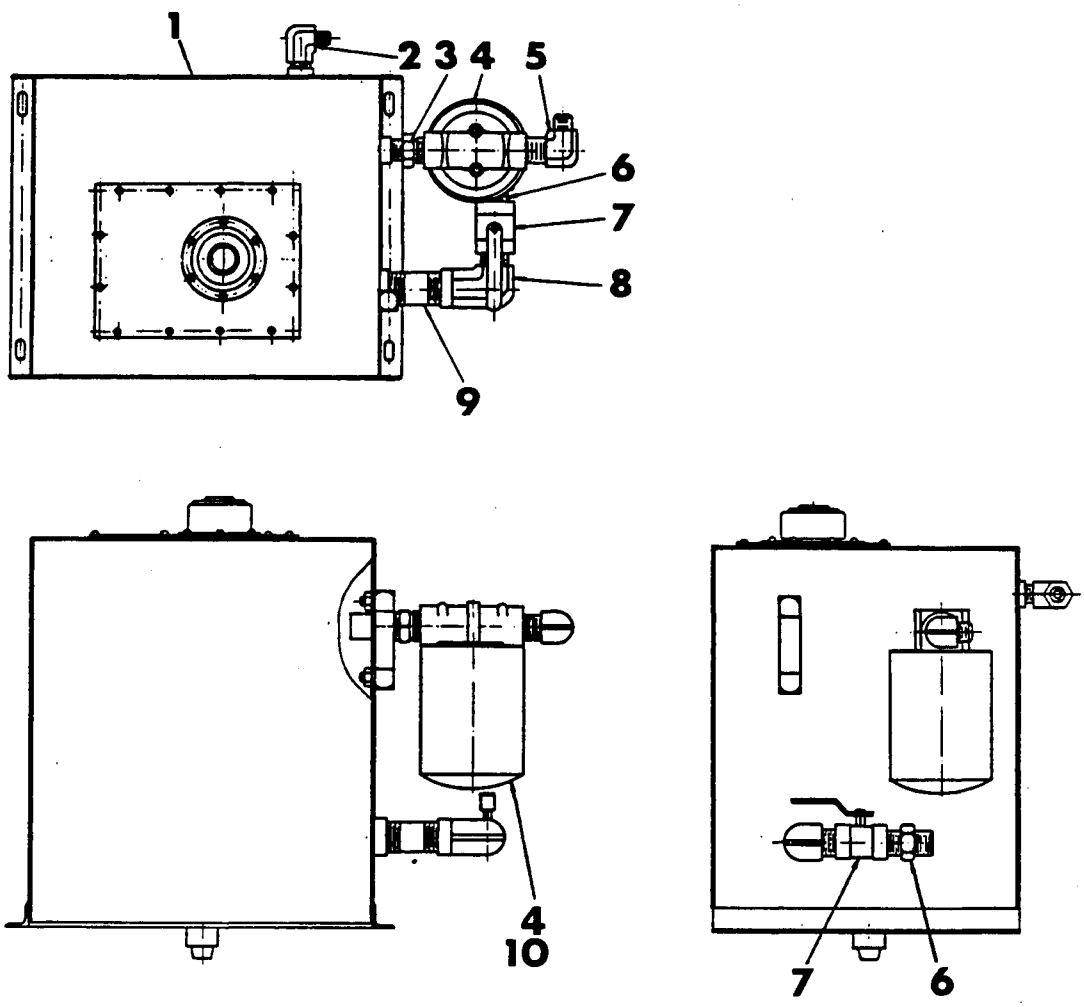
ITEM	PART NUMBER	DESCRIPTION	QTY
11-	30495	PRESSURE LIMIT SWITCH ASSEMBLY	1
-1	2297	PRESSURE SWITCH	1
-2	2407	90° MALE ELBOW	1
-3		ADJUSTMENT SCREW (REF.)	1
-4		LOCKING NUT (REF.)	1

FIGURE 11A - PRESSURE REDUCING VALVE ASSEMBLY (25ETD) (25E) (30E) (36E) (30G)(36G)



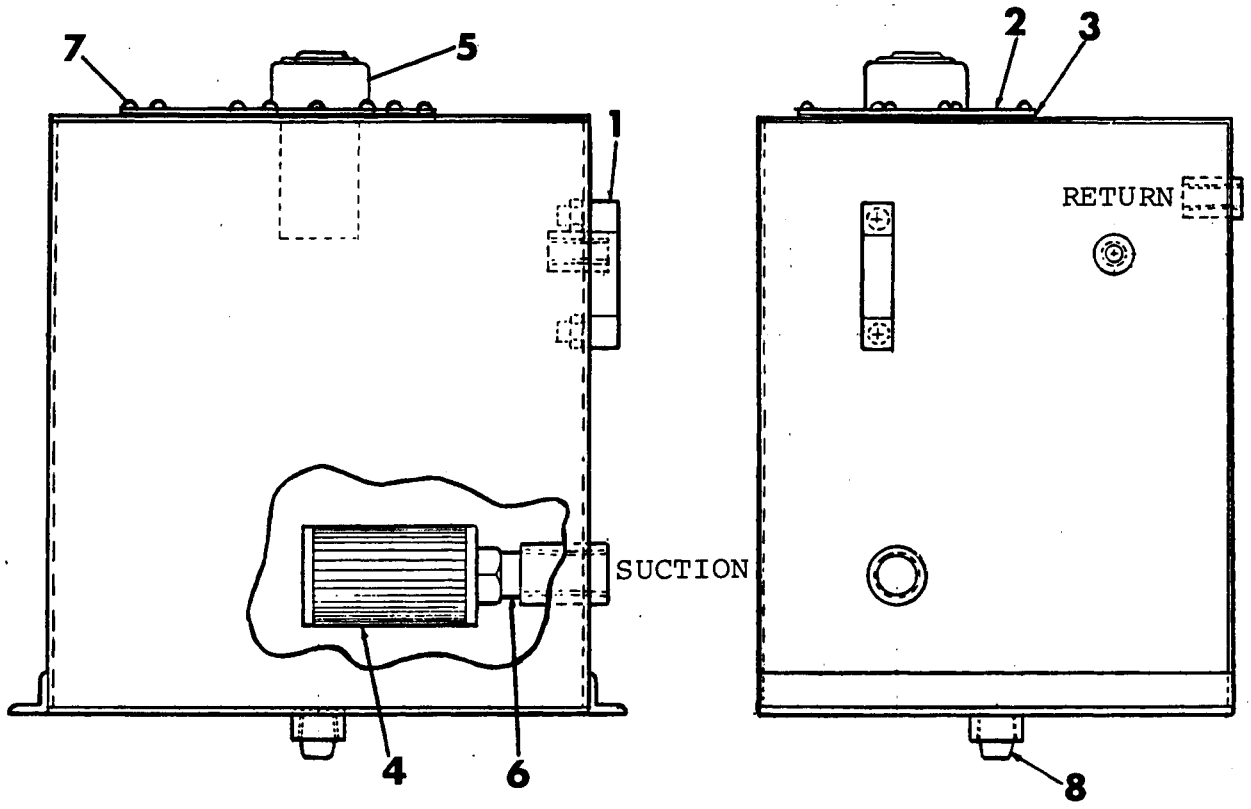
ITEM	PART NUMBER	DESCRIPTION	QTY
11A-	30743	PRESSURE REDUCING VALVE ASSEMBLY	1
-1	21734	PRESSURE REDUCING VALVE	1
-2	80008-08	MALE ELBOW	1
-3	80001-04	MALE CONNECTOR	2

FIGURE 12 - HYDRAULIC TANK ASSEMBLY (ALL MODELS)



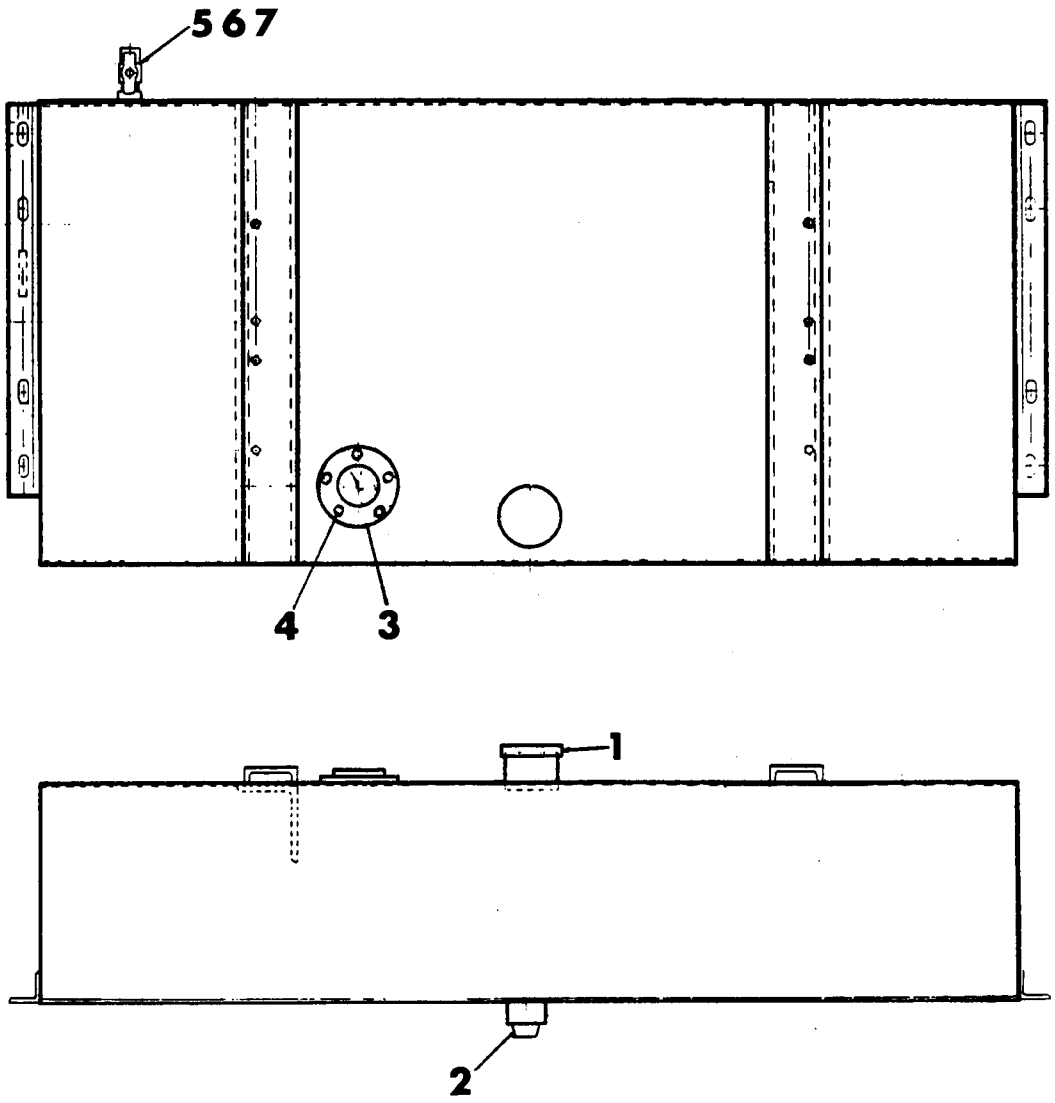
ITEM	PART NUMBER	DESCRIPTION	QTY
12-	30329	HYDRAULIC TANK ASSEMBLY	1
-1	30286	HYDRAULIC TANK (SEE FIG.12A)	1
-2	2451	90° ELBOW	1
-3	2483	MALE CONNECTOR	1
-4	30306	RETURN LINE FILTER	1
-5	2442	90° STREET ELBOW	1
-6	2510	MALE CONNECTOR	1
-7	3033	SHUT OFF VALVE	1
-8	2459	90° STREET ELBOW	1
-9	2494	NIPPLE	1
-10	16947	RETURN LINE FILTER ELEMENT	1

FIGURE 12A - HYDRAULIC TANK (ALL MODELS)



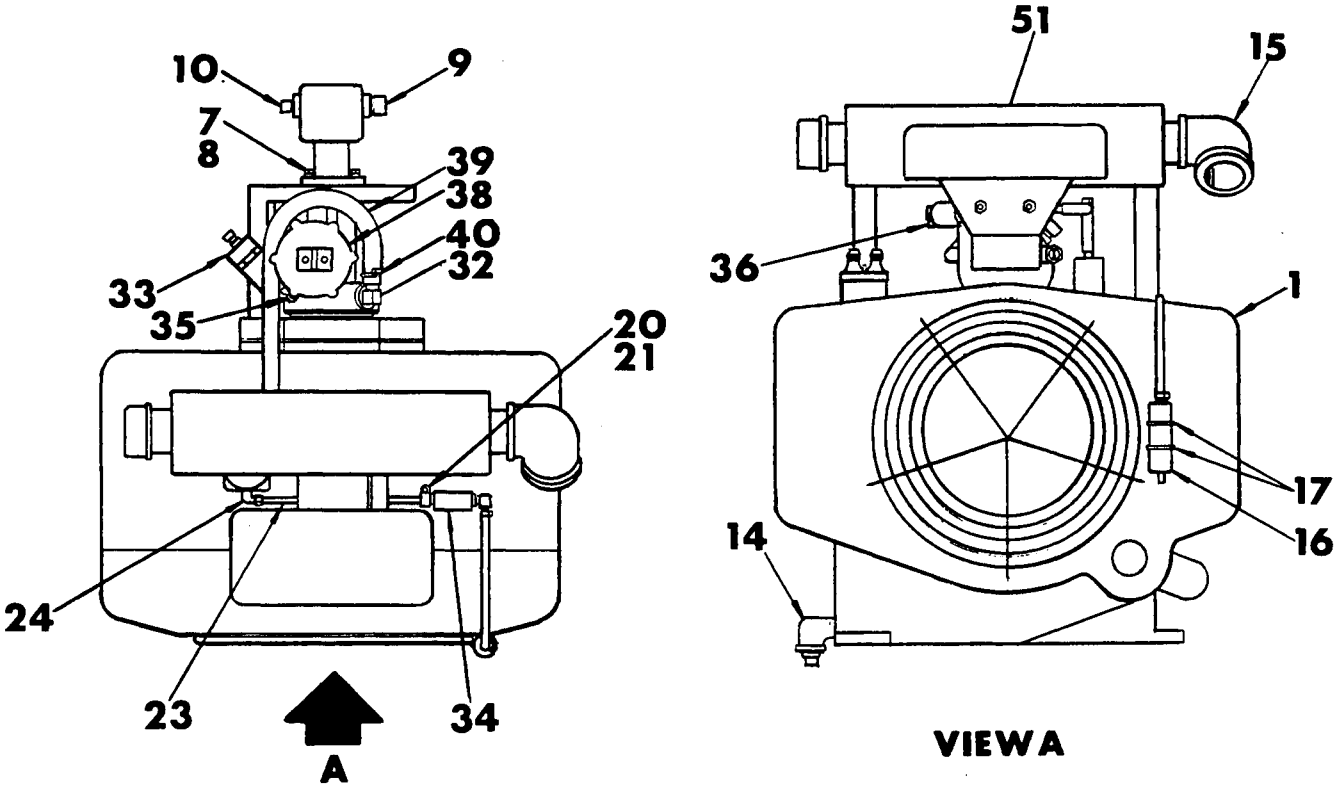
ITEM	PART NUMBER	DESCRIPTION	QTY
12A-	30286	HYDRAULIC TANK (10 GAL)	1
-1	3018	SIGHT GAUGE	1
-2	8319	COVER-INSPECTION	1
-3	8320	GASKET	1
-4	3004	SUMP FILTER	1
-5	3005	BREATHER CAP	1
-6	2493	NIPPLE	1
-7	61703	SLOTTED HEAD SELF-TAPPING SCREW-10-32X½	12
-8	3027	MAGNETIC PLUG	1

FIGURE 13 - GAS TANK ASSEMBLY(25GTD) (30G) (36G)



ITEM	PART NUMBER	DESCRIPTION	QTY
13-	30285	GAS TANK ASSEMBLY (15 GAL)	1
-1	3005	BREATHER CAP	1
-2	3027	MAGNETIC PLUG - 3/4 NPT	1
-3	12002	LIQUID LEVEL GAUGE	1
-4		SLOT HD. SELF TAPPING SCREW NO. 10-32 X 1/4	11
-5	1200	NEEDLE VALVE	1
-6	80001-04	MALE CONNECTOR	1
-7	80021-03	STREET ELBOW	1

FIGURE 14-DUAL FUEL ENGINE & PUMP ASSEMBLY (30G) (36G)



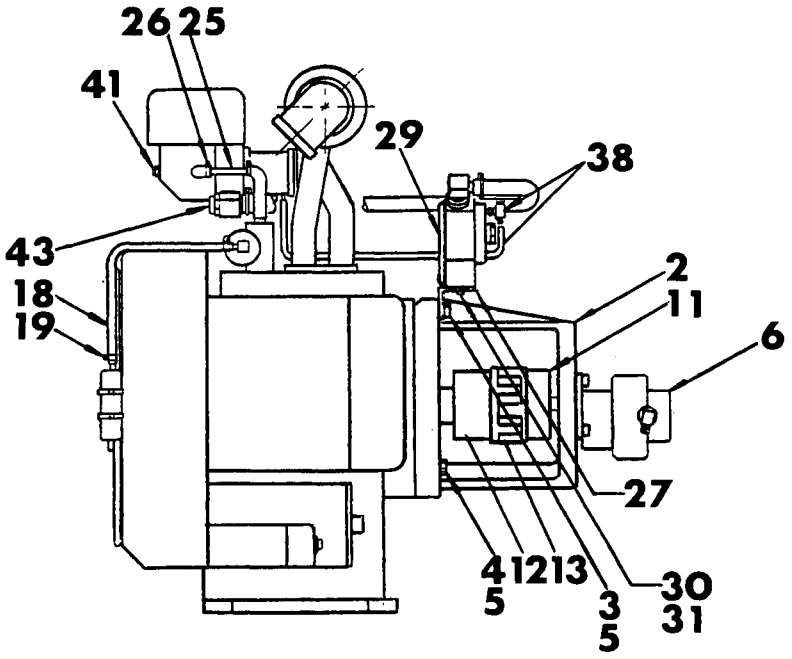


FIGURE 14-DUAL FUEL ENGINE & PUMP ASSEMBLY (30G) (36G)

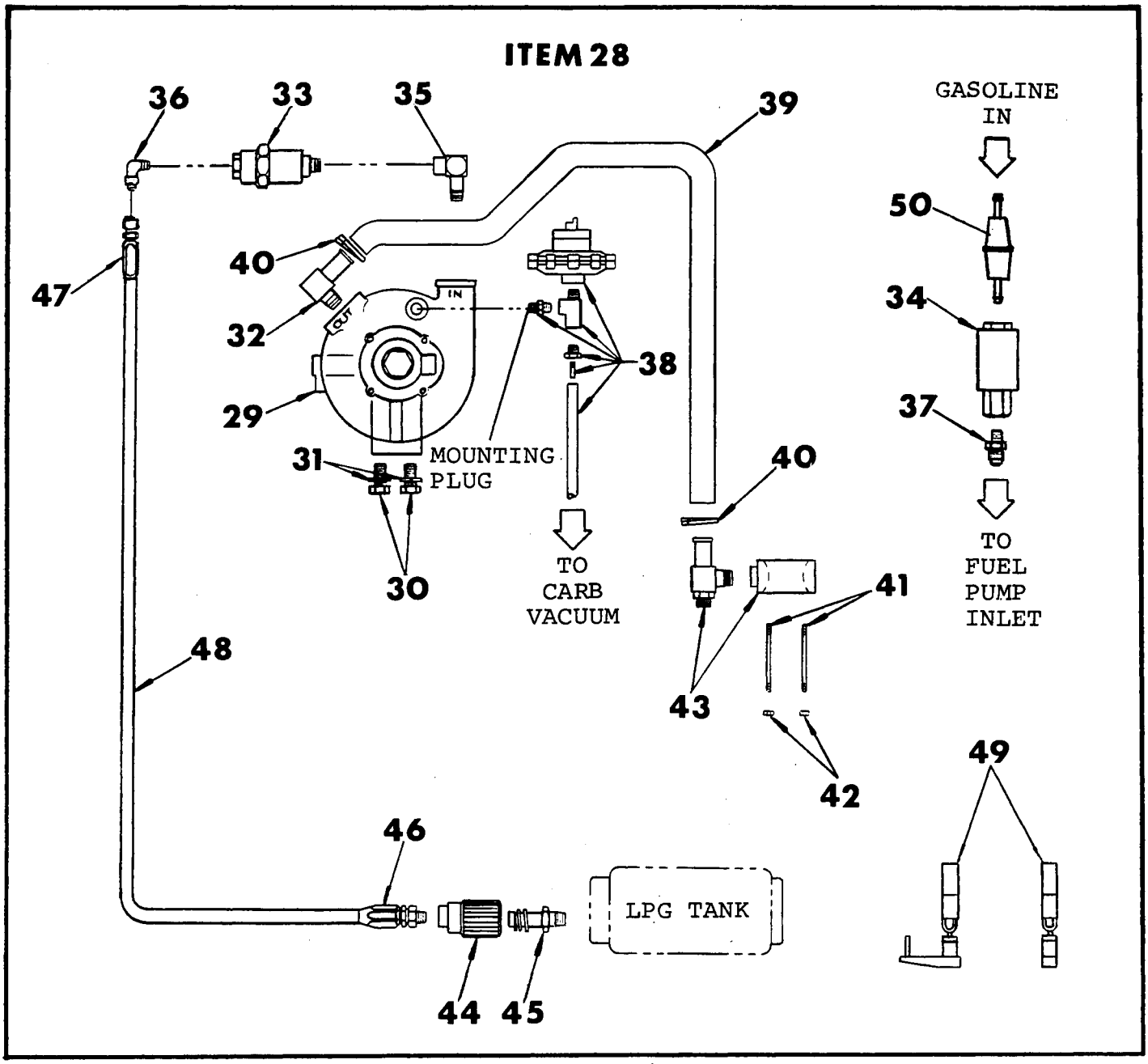


FIGURE 14-DUAL FUEL ENGINE & PUMP ASSEMBLY (30G) (36G)

ITEM	PART NUMBER	DESCRIPTION	QTY
14-	30233	DUAL FUEL ENGINE & PUMP ASSEMBLY	1
-1	20506	ENGINE - 20 H.P.	1
-2	9066-2	PUMP ADAPTER	1
-3	60141	HEX HEAD CAPSCREW-3/8-16 UNC X 1 3/4 (GRADE 5)	2
-4	60122	HEX HEAD CAPSCREW-3/8-16 UNC X 1½ (GRADE 5)	2
-5	63303	LOCKWASHER - 3/8 MED.	4
-6	30234	HYDRAULIC PUMP	1
-7	60608	HEX HEAD CAPSCREW-5/16-18 UNC X 3/4 (GRADE 5)	4
-8	63302	LOCKWASHER-5/16	4
-9	2452	90° ELBOW-PUMP INLET	1
-10	2456	90° ELBOW-PUMP OUTLET	1
-11	30573	HALF JAW COUPLING - PUMP SIDE	1
-12	20929	HALF JAW COUPLING - ENGINE SIDE	1
-13	20930	SPIDER	1
-14	52300	90° STREET ELBOW - ½ NPT	1
-15	52301	90° ELBOW - 1½ NPT	1
-16	160	GASOLINE FILTER	1
-17	255	CABLE TIE	2
-18	160 B	FUEL HOSE - ¼ I.D.	1
-19	161 A	HOSE CLAMP	2
-20	22	RIGID CLAMP	1
-21	374	BLIND RIVET	1
-22	2414	STRAIGHT ADAPTER	1
-23	30237	FUEL TUBE	1
-24	2434	90° ADAPTER	1
-25	66152	PCV TUBE - 3/8 I.D. X .035 WALL X 2¾ SAE 1010	1
-26	65167	HOSE CLAMP- IDEAL 6203 OR EQUIVALENT	2
-27	30236	REGULATOR BRACKET	1
-28	30226	DUAL FUEL KIT	1
-29	16921	REGULATOR - 50 E	1
-30	60107	HEX HEAD CAPSCREW- 462010-N ¼-20 UNC X 5/8	2

FIGURE 14-DUAL FUEL ENGINE & PUMP ASSEMBLY (30G) (36G)

ITEM		PART NUMBER	DESCRIPTION	QTY
-31		63301	LOCKWASHER - W46-L ¼ MED.	2
-32		66143	90° ELBOW-3H-3058 5/8 HOSE X 3/8 NPT	1
-33		16925	FILTER LOCK FL-21812 V	1
-34		16974	GASOLINE SHUT-OFF VALVE	1
-35		16519	90° STREET ELBOW - 3401-4 SPECIAL LONG ¼ NPT	1
-36		66144	90° ELBOW - 49X6 3/8 FLARE X ¼ NPT	1
-37		66145	ADAPTER - 68X4 ¼ FLARE X 1/8 NPT	1
-38		16975	MICROVAC KIT - 1501 - PA	1
-39		66146	HOSE - H-703 5/8 I.D. X 2 FT	1
-40		66147	HOSE CLAMP-CC-115 5/8 I.D. HOSE	2
-41		16956	CARB ADAPTER STUD - 3S - 501	1
-42		16958	LOCK NUT - N - 1032 - NTC	2
-43		16922	CARB ADAPTER - 1431 A - 26	1
-44	*	65142	QUICK DISCONNECT SOCKET - 7141 - F	1
-45	*	65141	QUICK DISCONNECT NIPPLE - 7141 - M	1
-46	*	16425	HOSE FITTING - 2F - 238 5/16 HOSE X ¼ NPT	1
-47	*	66148	HOSE FITTING -2F - 237 5/16 HOSE	1
-48	*	66149	HIGH PRESSURE HOSE - H-501 UL LPG FUEL	1
-49	*	486-A	TANK BRACKET-33½ LB. ICC TANK	1PR
-50		160	GAS FILTER-AC GF 453	1
-51		16280	MUFFLER	1

NOTE: See fig.5B for location of items 44 thru 49.

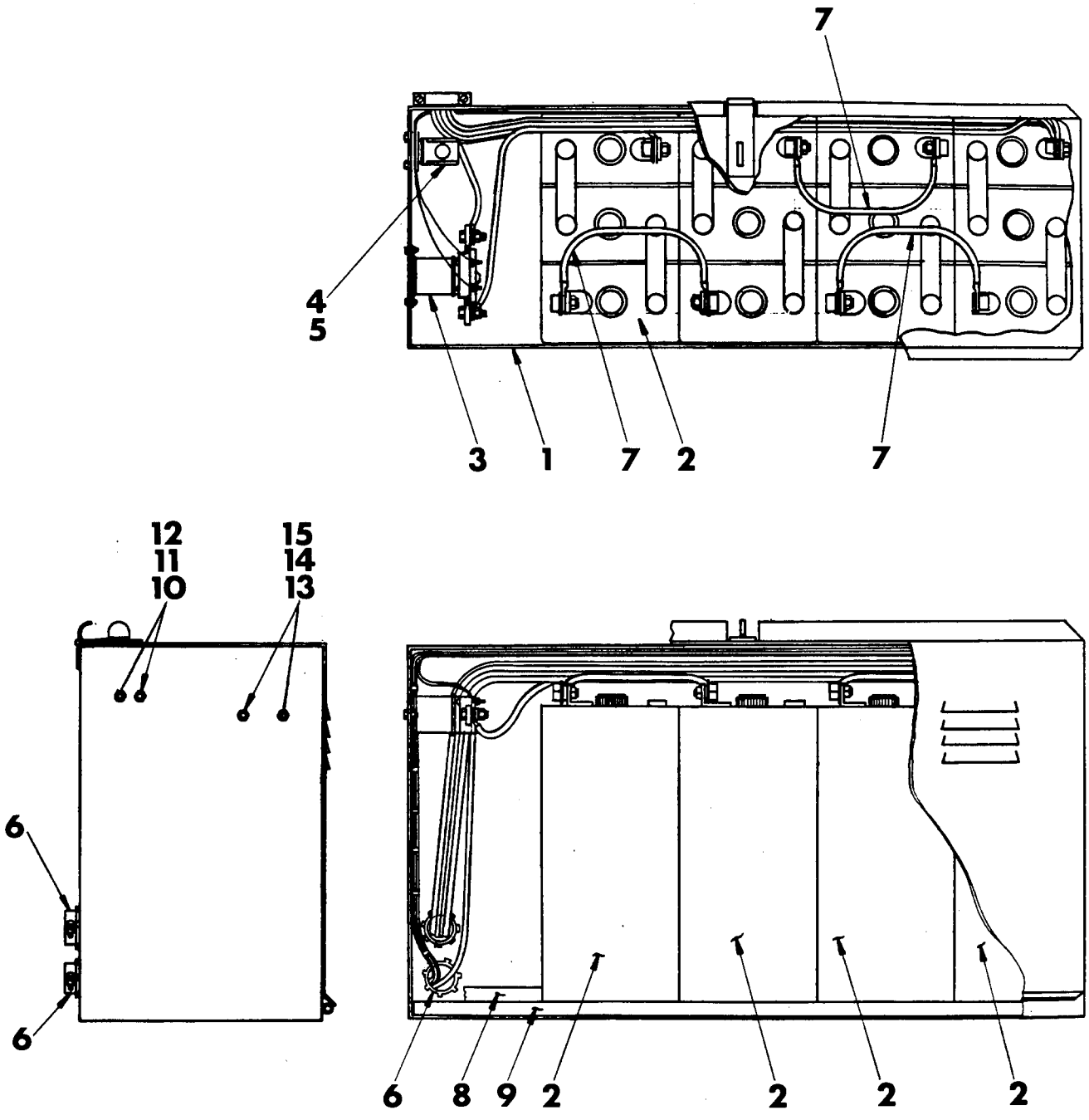
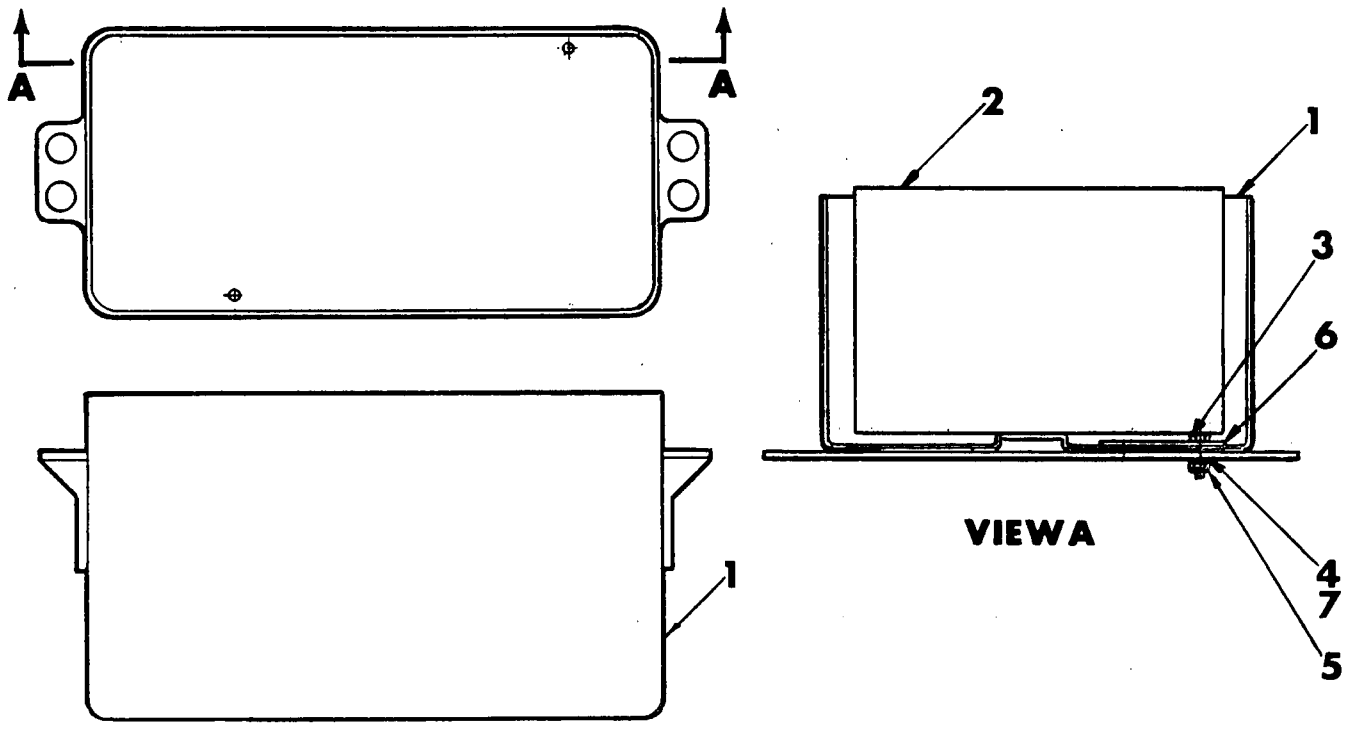

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FIGURE 15 - BATTERY BOX ASSEMBLY (25E) (30E) (36E)

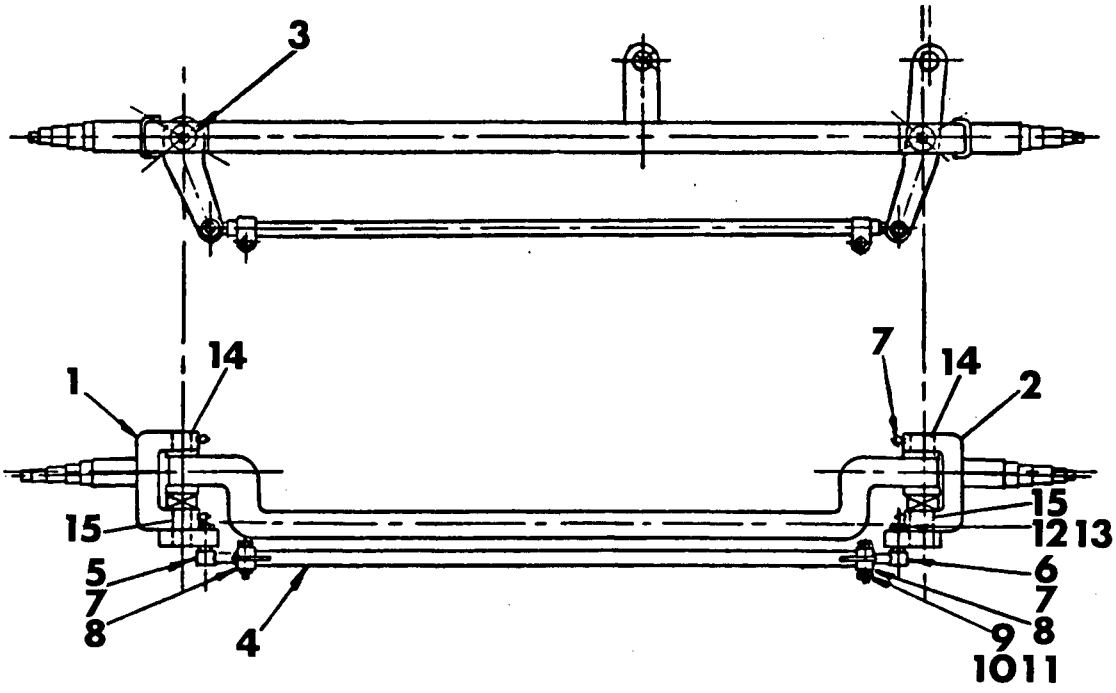
ITEM	PART NUMBER	DESCRIPTION	QTY
15-	30466	BATTERY BOX ASSEMBLY	1
-1	30287	BATTERY BOX	1
-2	30297	BATTERY-6 VOLT L-16 TROJAN (7X11½X15)	4
-3	4085	RELAY-400 AMP	1
-4	7844	RELAY SOCKET (8-PIN)	1
-5	4032	RELAY-6 VOLT	1
-6	213	ROMEX CONNECTOR	2
-7	63A	BATTERY CABLE 12"	3
-8	65139	PLYWOOD 3/4 X 5½ X 8	1
-9	4J	PLYWOOD 3/4 X 11 3/4 X 33½	1
-10	62609	SLOTTED RD. HEAD SCREW NO. 6-32 UNC X ½ LG.	2
-11	61501	HEX NUT NO. 6-32 UNC	2
-12	63311	LOCK WASHER NO.6	2
-13	60158	HEX HEAD CAPSCREW ½-20 UNC X 3/8 LG.	2
-14	60701	HEX NUT ¼-20 UNC	2
-15	63301	LOCK WASHER ¼	2

FIGURE 15A - BATTERY BOX INSTALLATION (30G) (36G)



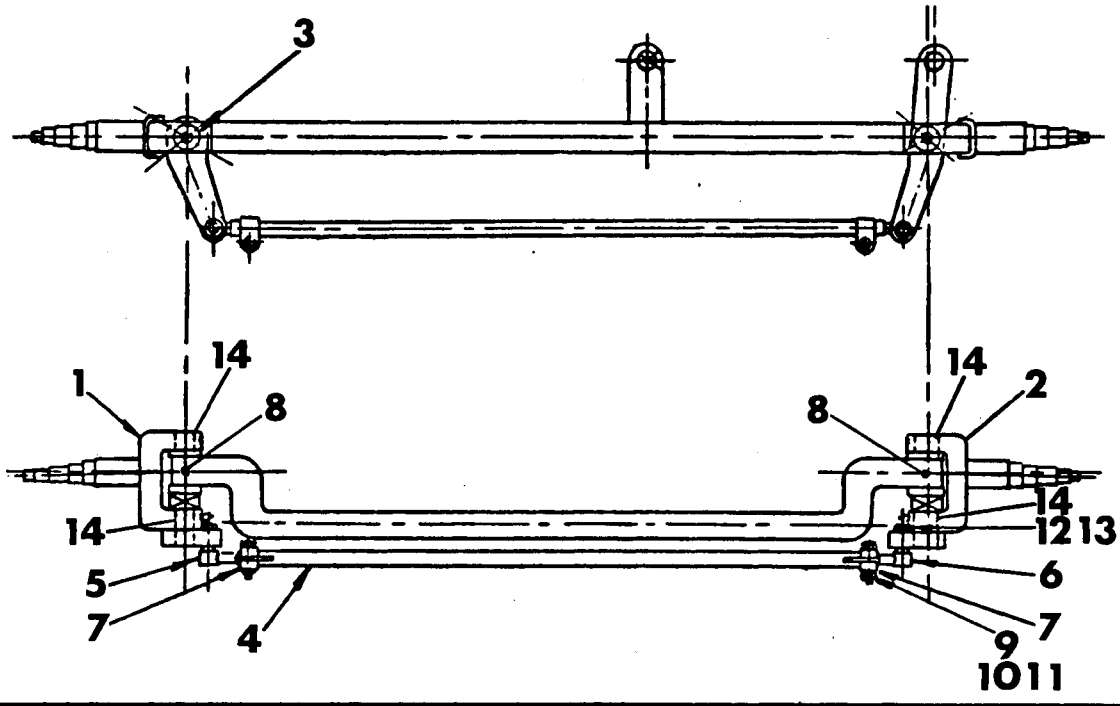
ITEM	PART NUMBER	DESCRIPTION	QTY
15A-	9064	BATTERY BOX INSTALLATION	1
-1	782	BATTERY BOX	1
-2	4030	BATTERY-12V RV27-P-VT	1
-3	60131	HEX HEAD CAPSCREW ¼ - 20 UNC X 1	2
-4	63301	LOCK WASHER ¼	2
-5	60701	HEX NUT ¼-20 UNC	2
-6	9080	BATTERY BOX BAR	2
-7		FLAT WASHER ¼	4

FIGURE 16 - FRONT AXLE ASSEMBLY (PRIOR) (ALL MODELS)



ITEM	PART NUMBER	DESCRIPTION	QTY
16-	30143	**FRONT AXLE ASSEMBLY** (PRIOR)	1
-1	66100	STEERING YOKE WELDMENT (L.H.)	1
-2	66049	STEERING YOKE WELDMENT (R.H.)	1
-3	66102	KING PIN	2
-4	66096	TIE ROD	1
-5	66097	TIE ROD END (L.H.)	1
-6	66098	TIE ROD END (R.H.)	1
-7	16261	LUBE FITTING (PRIOR ONLY)	6
-8		CLAMP - 1" I.D.	2
-9	60204	HEX HEAD CAPSCREW - 3/8-24 UNF X 2	2
-10	60803	HEX NUT - 3/8-24 UNF	2
-11	63303	LOCKWASHER 3/8	2
-12	61016	CASTLE NUT	2
-13	64307	COTTER PIN	2
-14	66103	BUSHING-SHORT	2
-15	66104	BUSHING-LONG	2

FIGURE 16A - FRONT AXLE ASSEMBLY (ARTROX) (ALL MODELS)



ITEM	PART NUMBER	DESCRIPTION	QTY
16A-	30143	FRONT AXLE ASSEMBLY (ARTROX)	1
-1	66101	STEERING YOKE WELDMENT (L.H.)	1
-2	66099	STEERING YOKE WELDMENT (R.H.)	1
-3	66035	KING PIN	2
-4	66036	TIE ROD	1
-5	66037	TIE ROD END (L.H.)	1
-6	66038	TIE ROD END (R.H.)	1
-7		CLAMP 1" I.D.	2
-8		ROLL PIN (ARTROX ONLY)	2
-9	60204	HEX HEAD CAPSCREW-3/8-24 UNF X 2	2
-10	60803	HEX NUT-3/8-24 UNF	2
-11	63303	LOCK WASHER-3/8	2
-12	61016	CASTLE NUT	2
-13	64307	COTTER PIN	2
-14	64904	FLANGE BUSHING	4

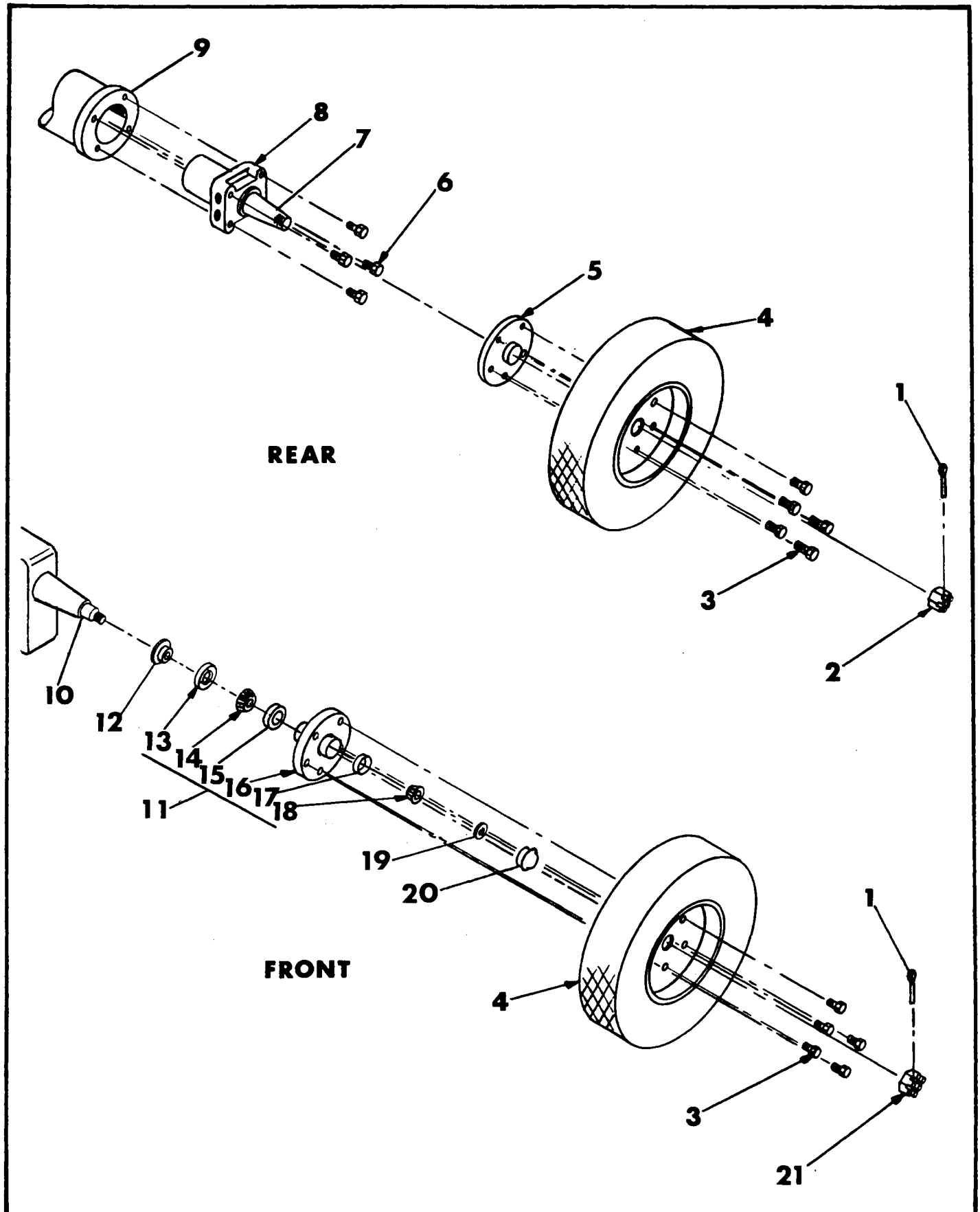
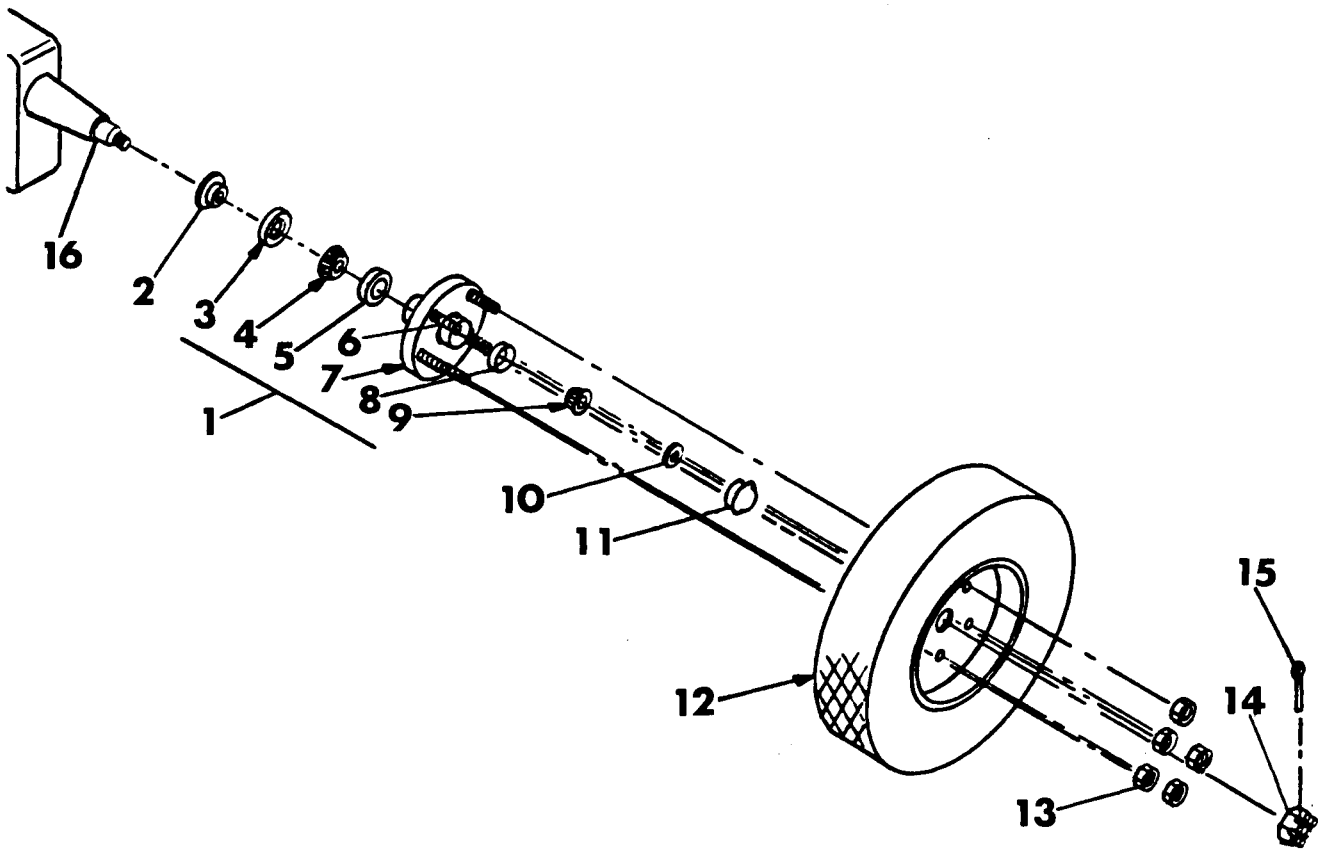

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FIGURE 17 - FRONT & REAR WHEEL INSTALLATION (25E)

ITEM		PART NUMBER	DESCRIPTION	QTY
17-		9067	FRONT & REAR WHEEL INSTALLATION	1
-1	*	16278	COTTER KEY - 3/32 X 2	4
-2		47	CASTLE NUT	2
-3		2221	CONE BOLT - 3183	20
-4		30465	TIRE & WHEEL ASSEMBLY (SEE FIG.18)	4
-5		2206-2	DRIVE HUB CASTING	2
-6		60138	HEX HEAD BOLT - ½-13 X 2¼	8
-7		2955	DRIVE MOTOR SHAFT	2
-8		3040	HYDRAULIC DRIVE MOTOR	2
-9		30187	FRAME WELDMENT (REF.)	1
-10		30143	FRONT AXLE ASSEMBLY (REF.)	1
-11	*	9057	FRONT HUB ASSEMBLY-HADCO 21112 (1980)	1
-12	*	66133	RETAINER RING	2
-13		66134	GREASE SEAL	2
-14		66135	INNER BEARING	2
-15		66136	INNER CUP	2
-16		66137	FRONT HUB	2
-17		66138	OUTER CUP	2
-18		66139	OUTER BEARING	2
-19	*	66140	KEY WASHER	2
-20		66141	DUST CAP	2
-21	*	66142	SLOTTED JAM NUT	2

*NOTE: ITEM 11- FRONT HUB ASSEMBLY DOES NOT INCLUDE ITEMS 1,12,19 & 21.

FIGURE 17A - FRONT HUB ASSEMBLY (ALL MODELS)



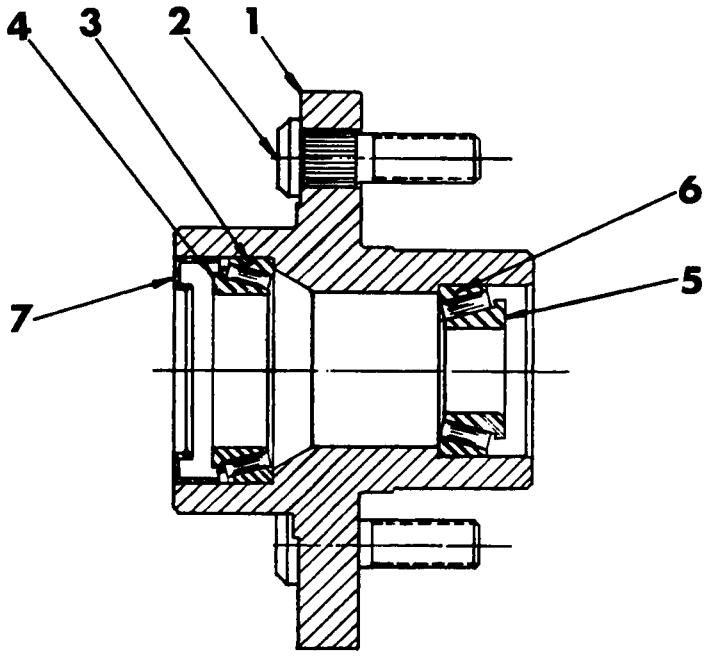
ITEM	PART NUMBER	DESCRIPTION	QTY
-1	* 31144 (Steel) (was 30410)	FRONT HUB ASSEMBLY-HADCO 521004 (25E) (1981) (30E) (36E) (30G) (36G) (1980)	1
-2	* 66133	RETAINER RING	2
-3	66134	GREASE SEAL	2
-4	66135	INNER BEARING	2
-5	66136	INNER CUP	2
-6	66150	STUD	10
-7	66151	FRONT HUB	2
-8	66138	OUTER CUP	2
-9	66139	OUTER BEARING	2
-10	* 66140	KEY WASHER	2
-11	66141	DUST CAP	2
-12	30465	TIRE & WHEEL ASSEMBLY (25E) (SEE FIG.18)	1
	30358	TIRE & WHEEL ASSEMBLY (30E) (36G) (30G) (36G) (SEE FIG.18A)	1

FIGURE 17A - FRONT HUB ASSEMBLY (ALL MODELS)

ITEM		PART NUMBER	DESCRIPTION	QTY
-13		61301	WHEEL NUT ½-20 UNC	10
-14	*	66142	SLOTTED JAM NUT	2
-15	*	16278	COTTER KEY-3/32X2	2
-16		30413	FRONT AXLE ASSEMBLY (REF.)	1

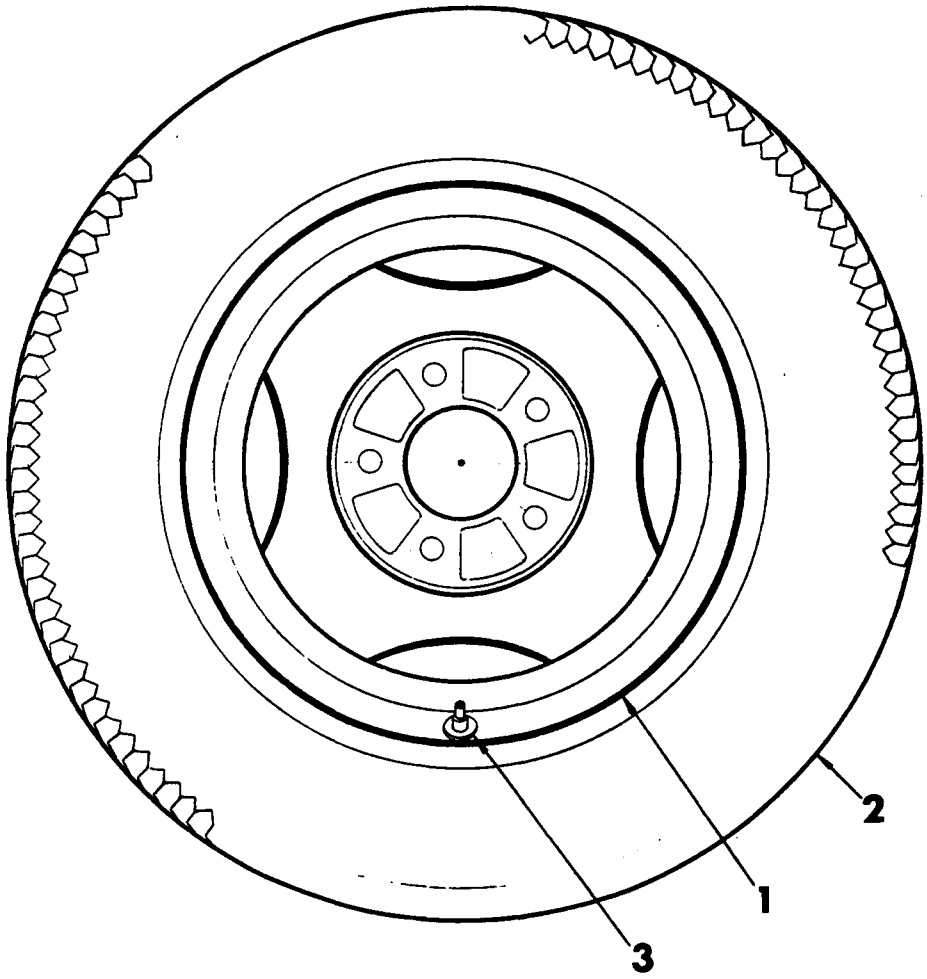
*NOTE: ITEM 1-FRONT HUB ASSEMBLY DOES NOT INCLUDE ITEMS 2,10,14 & 15.

FIGURE 17B - FRONT HUB ASSEMBLY (ALL MODELS & 25ETD & 25GTD)



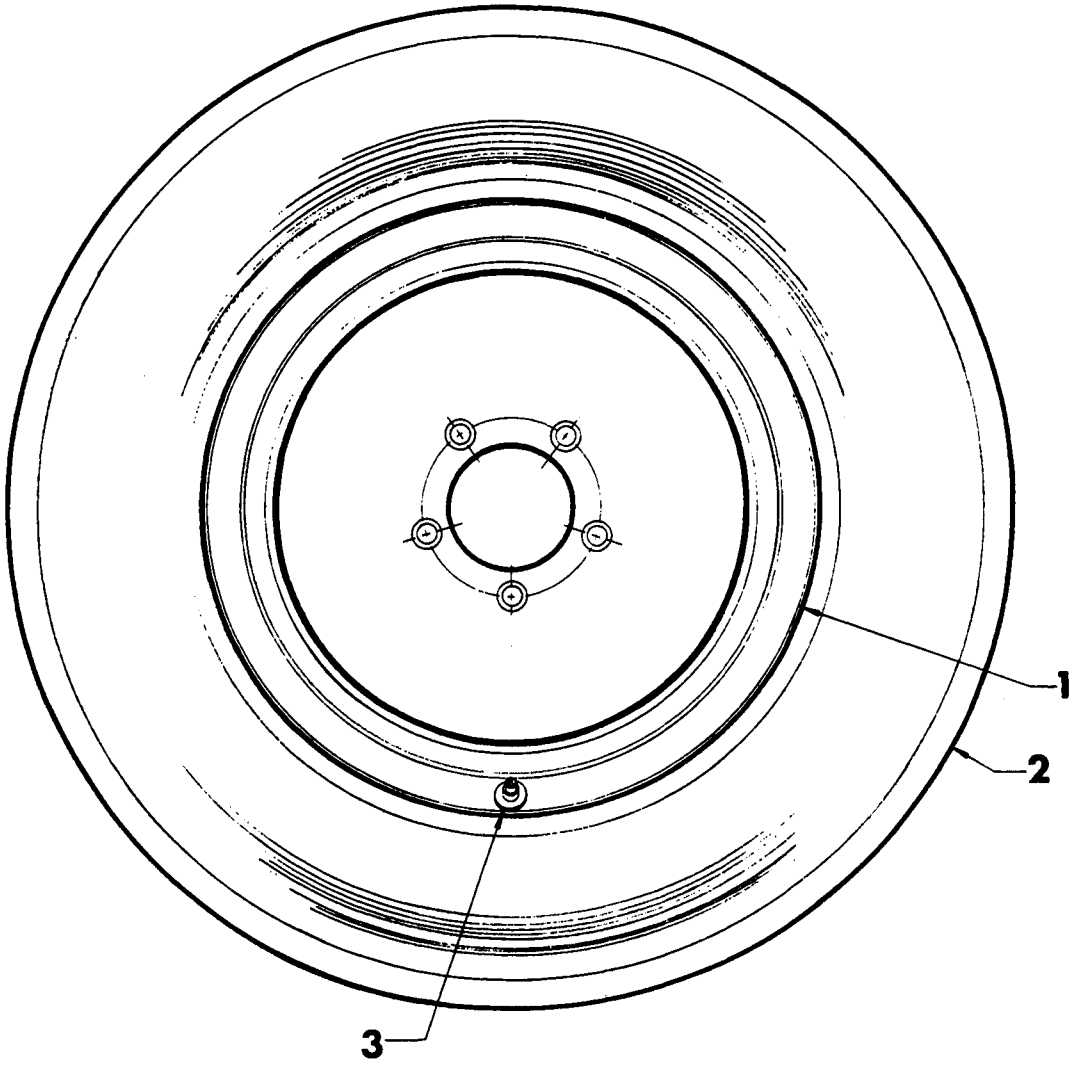
ITEM	PART NUMBER	DESCRIPTION	QTY
17B-	31285	FRONT HUB ASSEMBLY	1
-1	31144	HUB MACHINING	1
-2	65530	WHEEL BOLT	5
-3	66136	INNER BEARING CUP	1
-4	66135	INNER BEARING CONE	1
-5	66139	OUTER BEARING CONE	1
-6	66138	OUTER BEARING CUP	1
-7	66134	GREASE SEAL	1

FIGURE 18 - TIRE & WHEEL ASSEMBLY (25E)



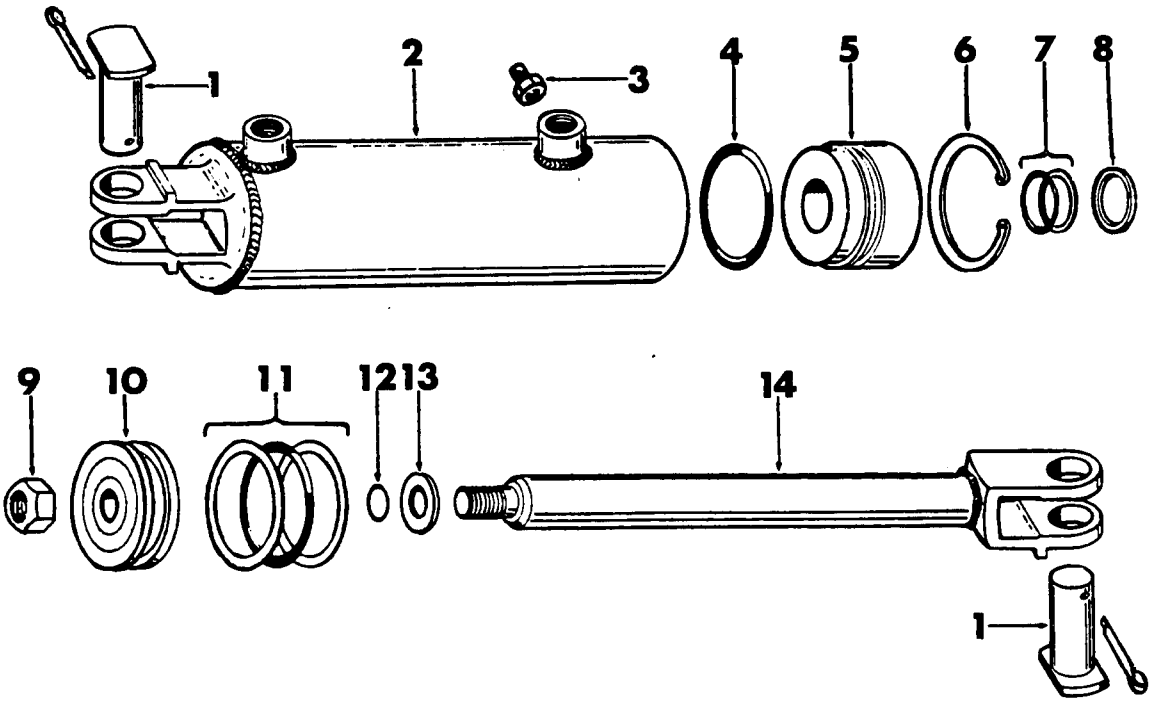
ITEM	PART NUMBER	DESCRIPTION	QTY
18-	30465	TIRE & WHEEL ASSEMBLY	1
-1	261-A	WHEEL	1
-2	30480	TIRE	1
-3	763	VALVE	1

FIGURE 18A - TIRE & WHEEL ASSEMBLY
(25ETD) (30E) (36E) (25GTD) (30G) (36G)



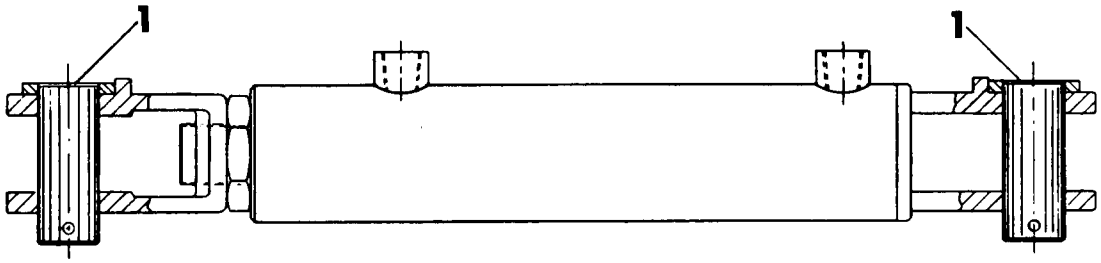
ITEM	PART NUMBER	DESCRIPTION	QTY
18A-	30358	TIRE & WHEEL ASSEMBLY	1
-1	30356	WHEEL	1
-2	30357	TIRE	1
-3	2252	VALVE STEM	1

FIGURE 19 - STEERING CYLINDER (ALL MODELS)



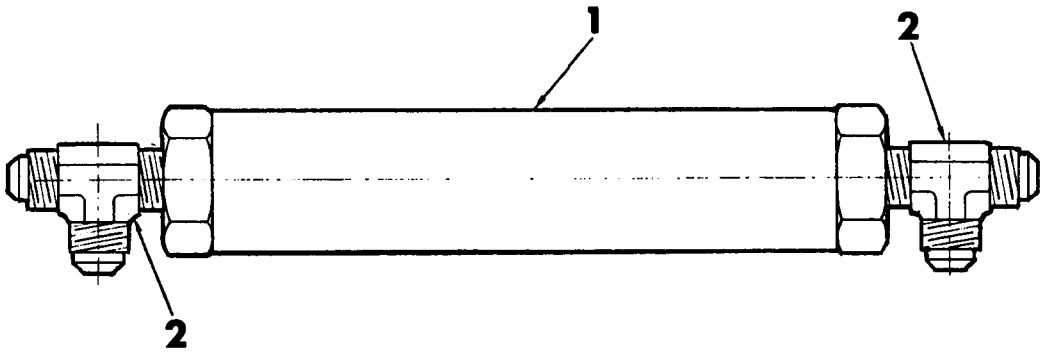
ITEM	PART NUMBER	DESCRIPTION	QTY
19-	3062	Steering Cylinder (HPWR)	1
-1	2356	Clevis Pin - 1"DIA. X 2 5/8	2
-2		Tube Assembly - LC 1.5 X 6	1
-3		Head Set Screw	1
-4		Head O-Ring	1
-5		Head	1
-6		Lock Ring	1
-7		Shaft Packing Set	1
-8		Rod Wiper	1
-9		Piston Lock Nut	
-10		Piston	1
-11		Piston O-Ring Assembly	1
-12		Small O-Ring	1
-13		Steel Washer	1
-14		Shaft Assembly	1
-15	3062-1	Seal Kit (HPWR)	1

FIGURE 19A - STEERING CYLINDER (ALL MODELS) (JULY 1982)



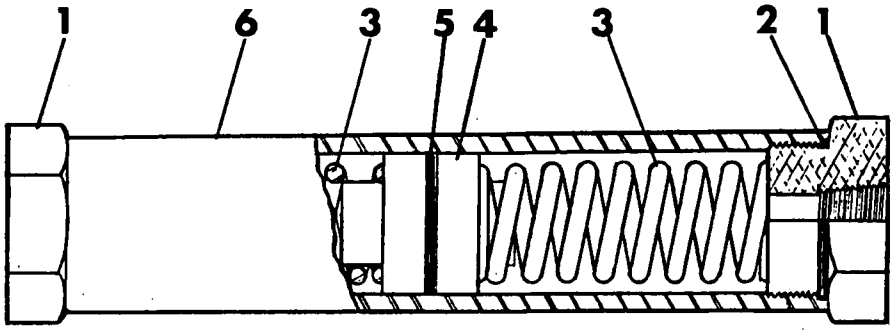
ITEM	PART NUMBER	DESCRIPTION	QTY
19A-	30803	STEERING CYLINDER (RA) (2" BORE)	1
-1	2356	CLEVIS PIN - 1" DIA. X 2 5/8	2
-2	66548	SEAL KIT (RA)	1

FIGURE 20 - CUSHION CYLINDER ASSEMBLY (ALL MODELS)



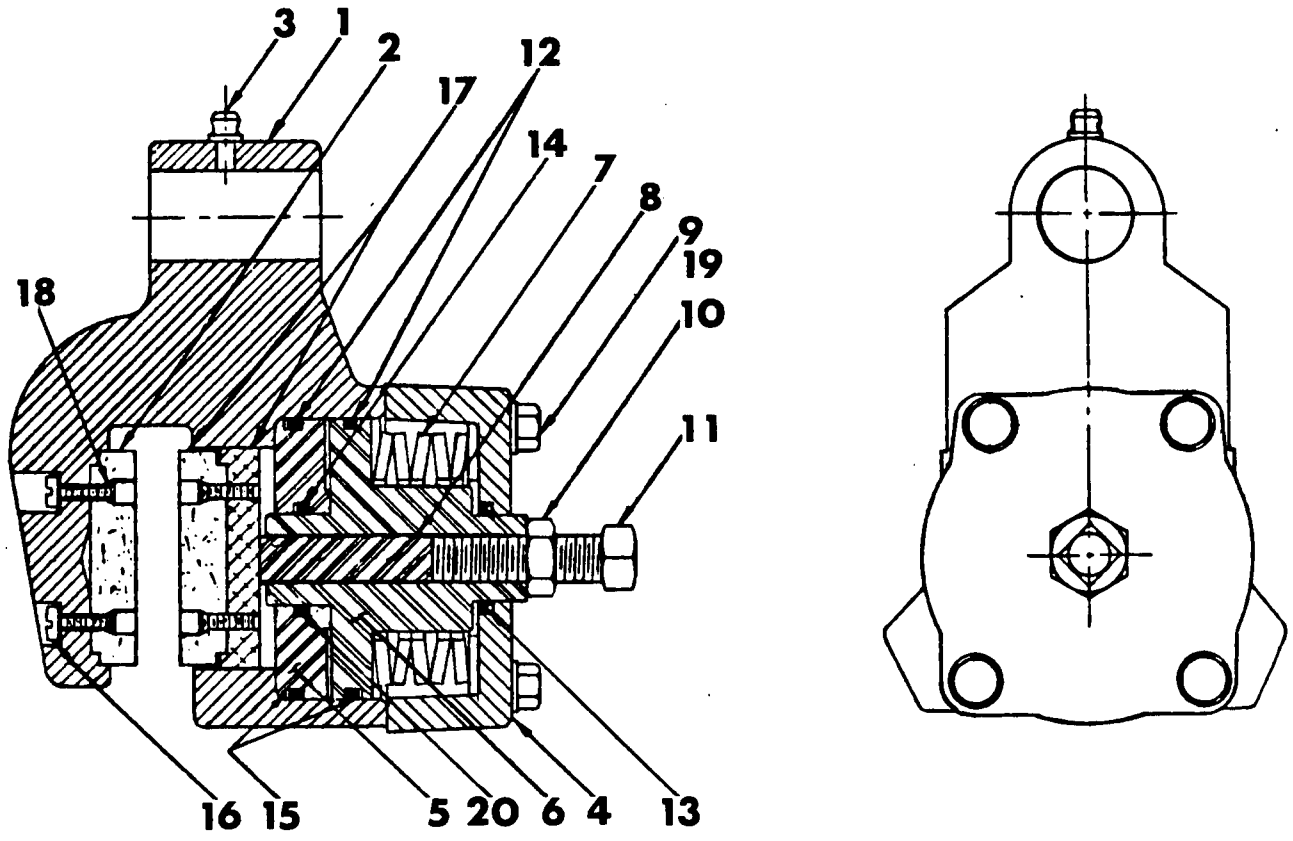
ITEM	PART NUMBER	DESCRIPTION	QTY
20-	30496	CUSHION CYLINDER ASSEMBLY	1
-1	44	CUSHION CYLINDER (SEE FIG.21)	1
-2	2432	MALE RUN TEE	2

FIGURE 21 - CUSHION CYLINDER (ALL MODELS)



ITEM	PART NUMBER	DESCRIPTION	QTY
21-	44	CUSHION CYLINDER (CE)	1
-1		END PLUG - 7392-020P	2
-2		END PLUG - O-RING-7392-0920	2
-3		SPRING - 7392-060	2
-4		PISTON - 7392-15P	1
-5		QUAD RING - 7392-8214	1
-6		CYLINDER - 7392-1875150	1
-7	44A	SEAL KIT (CE)	1

FIGURE 22 - CALIPER DISC BRAKE (ALL MODELS) (JULY 1982)

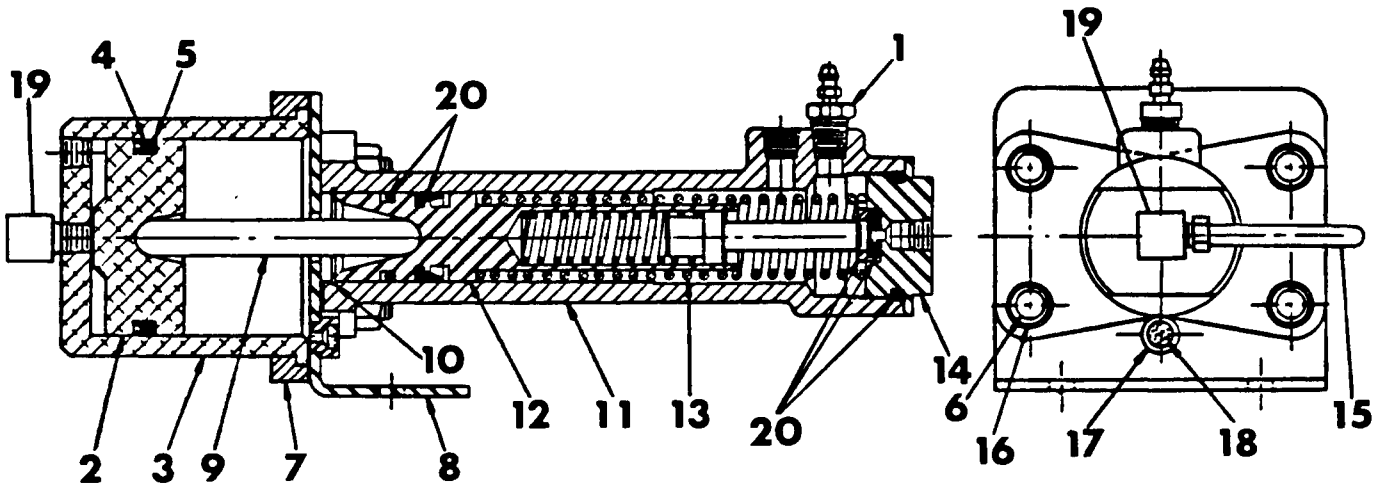


ITEM	PART NUMBER	DESCRIPTION	QTY
25-	30860	CALIPER DISC BRAKE (SERIES 530 - SPRING APPLY)	1
-1	66375	HOUSING	1
-2	66376	LINING PAD	1
-3	66377	FITTING	1
-4	66378	COVER	1
-5	66379	PISTON	1
-6	66380	PISTON	1
-7	66381	BELLEVILLE SPRING	5
-8	66382	PUSH ROD	1
-9	66383	HEX HEAD CAP SCREW	4
-10	66384	JAM NUT	1
-11	66385	SET SCREW	1
-12	66386	O-RING	2
-13	66387	WIPER SEAL	1

FIGURE 22 - CALIPER DISC BRAKE (ALL MODELS)
(JULY 1982)

ITEM	PART NUMBER	DESCRIPTION	QTY
-14	66388	O-RING	1
-15	66389	BACK-UP RING	2
-16	66390	SCREW	2
-17	66391	LINING ASSEMBLY	1
-18	66392	INSERT	2
-19	66393	LOCK WASHER	4
-20	66394	BACK-UP RING	1
-21	66395	BLEEDER SCREW (NOT SHOWN)	1
-22	66396	CONNECTOR (NOT SHOWN)	2

FIGURE 23 - DISC BRAKE INTENSIFIER (ALL MODELS) (JULY 1982)

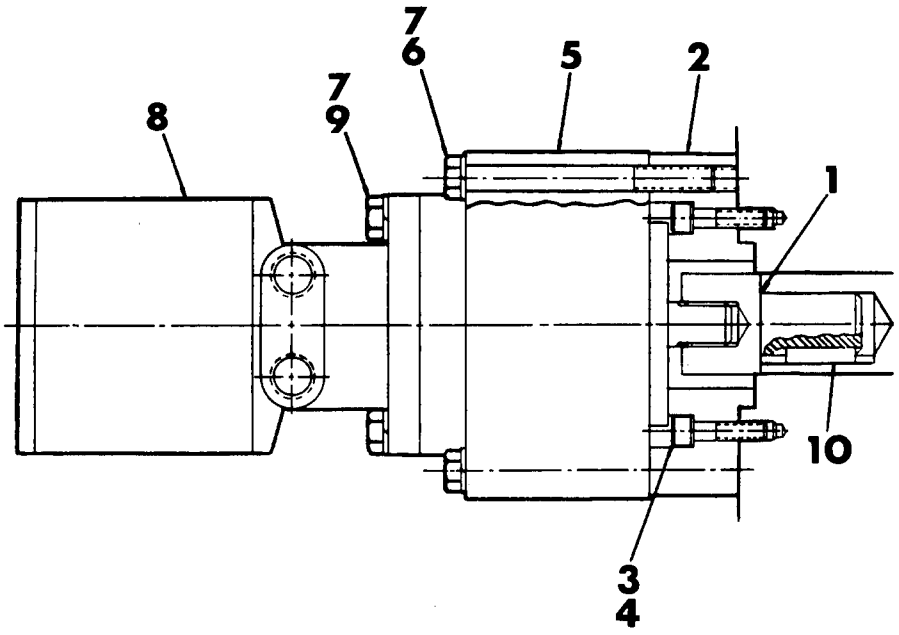


ITEM	PART NUMBER	DESCRIPTION	QTY
25A-	30829	DISC BRAKE INTENSIFIER ASSEMBLY	1
-1	66303	BLEEDER SCREW ASSEMBLY	1
-2	66304	PISTON	1
-3	66305	HOUSING	1
-4	66306	SEAL	1
-5	66307	BACK-UP WASHER	1
-6	66308	SCREW	4
-7	66309	RETAINER	1
-8	66310	BRACKET	1
-9	66311	PUSH ROD	1
-10	66312	SNAP RING	1
-11	66313	HOUSING	1
-12	66314	PISTON ASSEMBLY	1
-13	66315	SPRING	1
-14	66316	END PLUG ASSEMBLY	1
-15		TUBE ASSEMBLY	1
-16	66318	LOCK NUT	4
-17	66319	ADAPTOR	1
-18	66320	SNUBBER	1

FIGURE 23 - DISC BRAKE INTENSIFIER (ALL MODELS)
(JULY 1982)

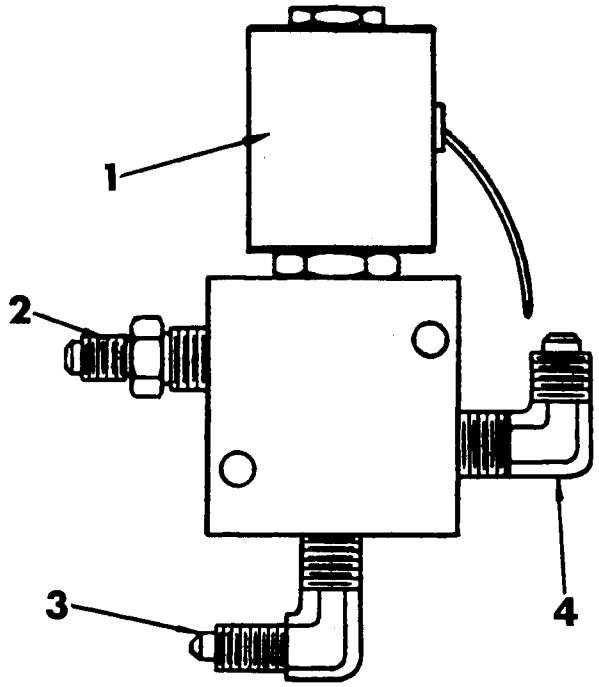
ITEM	PART NUMBER	DESCRIPTION	QTY
-19		ELBOW	2
-20	66332	REPAIR KIT (INCLUDES ITEMS 2, 4 & 5)	1

FIGURE 24 - AUSCO BRAKE TO GEAR BOX ASSEMBLY (25GTD)



ITEM	PART NUMBER	DESCRIPTION	QTY
24-	30318	AUSCO BRAKE TO GEAR BOX ASSEMBLY	1
-1	30307	SHAFT ADAPTER	1
-2	30308	BRAKE ADAPTER	1
-3	61903	SOCKET HEAD CAP SCREW - 3/8-16UNC X 1 1/2 (GR. 5)	4
-4	63303	LOCK WASHER - 3/8	4
-5	30209	BRAKE	1
-6	60310	HEX HEAD CAP SCREW - 1/2-13UNC X 5 (GR. 5)	2
-7	63305	LOCK WASHER - 1/2	6
-8	30456	HYDRAULIC MOTOR	1
-9	60308	HEX HEAD CAP SCREW - 1/2-13UNC X 1 1/4 (GR. 5)	4
-10	35148	SQUARE KEY - 5/16 X 1 3/8	1

FIGURE 25 - SOLENOID VALVE ASSEMBLY (25GTD)



ITEM	PART NUMBER	DESCRIPTION	QTY
25-	30330	SOLENOID VALVE ASSEMBLY	1
-1	20883	SOLENOID VALVE	1
-2	80001-04	MALE CONNECTOR	1
-3	80008-04	MALE ELBOW	1
-4	80008-08	MALE ELBOW	1

FIGURE 26 - HYDRAULIC HOSE DIAGRAM (25ETD)

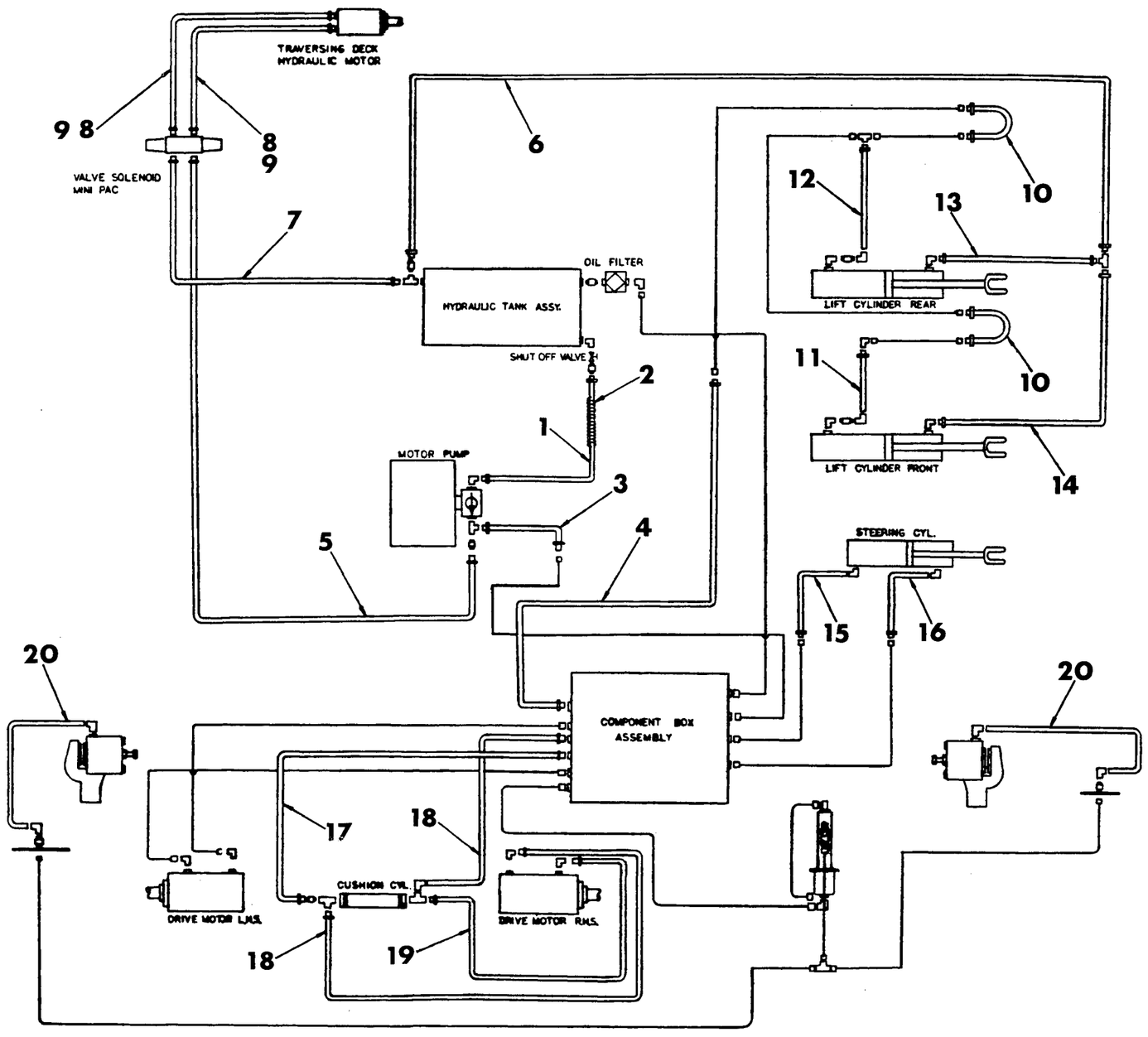


FIGURE 26 - HYDRAULIC HOSE DIAGRAM (25ETD)

ITEM	PART NUMBER	DESCRIPTION	QTY
26-	31209	HYDRAULIC HOSE DIAGRAM	1
-1	13205-12-0340	HOSE ASSEMBLY	1
-2	862	SPRING	1
-3	13213-06-0262	HOSE ASSEMBLY	1
-4	13210-06-0810	" "	1
-5	13210-06-0160	" "	1
-6	13205-06-0910	" "	1
-7	13205-06-0400	" "	1
-8	2568	HOSE	2
-9	2562	STRAIGHT SWIVEL HOSE FITTING	4
-10	13210-06-0274	HOSE ASSEMBLY	2
-11	13210-06-0194	" "	1
-12	13210-06-0200	" "	1
-13	13205-06-0540	" "	1
-14	13205-06-0540	" "	1
-15	13213-06-0226	" "	1
-16	13213-06-0262	" "	1
-17	13210-08-0230	" "	1
-18	13213-08-0350	" "	2
-19	13213-08-0350	" "	1
-20	13214-04-0120	" "	2

FIGURE 26A - HYDRAULIC HOSE DIAGRAM (25GTD)

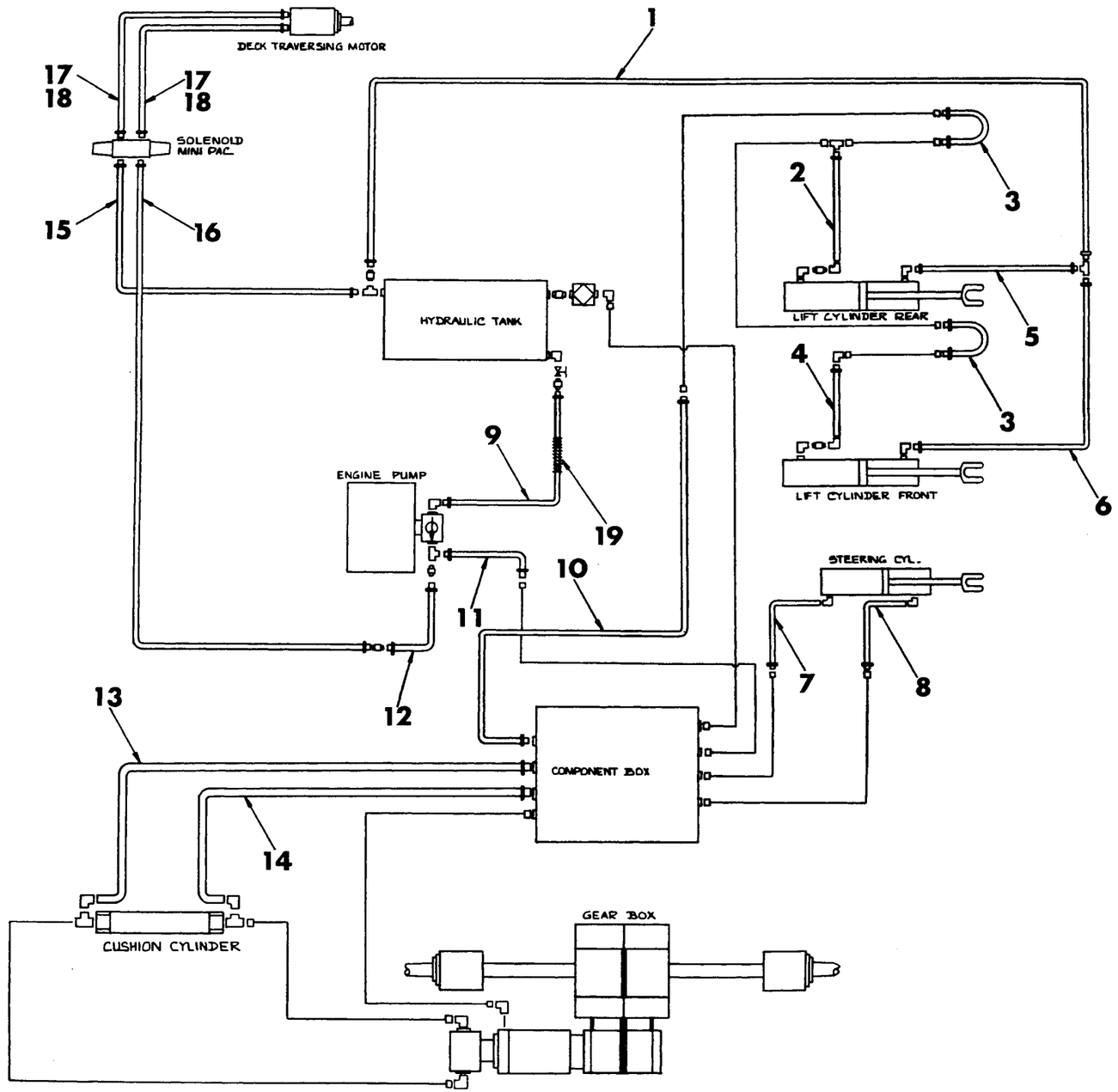
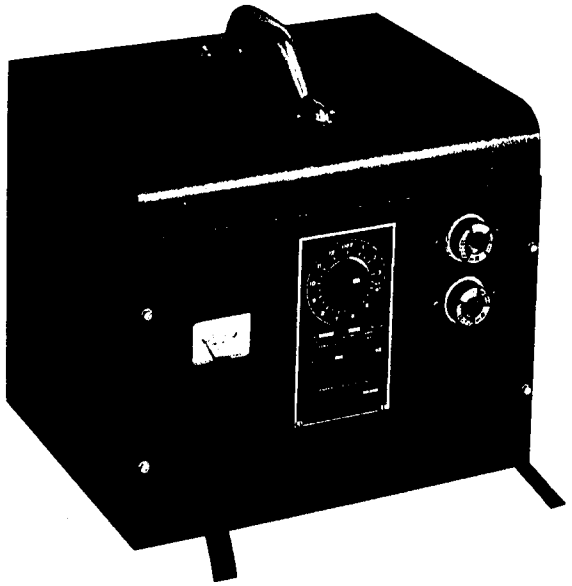


FIGURE 26A - HYDRAULIC HOSE DIAGRAM (25GTD)

ITEM	PART NUMBER	DESCRIPTION	QTY
26A-	31277	HYDRAULIC HOSE DIAGRAM	1
-1	13205-06-1190	HOSE ASSEMBLY	1
-2	13210-06-0200	" "	1
-3	13210-06-0274	" "	2
-4	13213-06-0194	" "	1
-5	13213-06-0540	" "	1
-6	13205-06-1720	" "	1
-7	13213-06-0256	" "	1
-8	13213-06-0236	" "	1
-9	13205-12-0460	" "	1
-10	13210-06-0810	" "	1
-11	13214-08-	" "	1
-12	13214-08-	" "	1
-13	13213-08-0360	" "	1
-14	13213-08-0180	" "	1
-15		" "	1
-16		" "	1
-17	2568	PARAFLEX HOSE	2
-18	2562	STRAIGHT SWIVEL HOSE FITTING	4
-19	862	SPRING	1

OPERATING & SERVICING
HANDBOOK



SINCE 1929

CHRISTIE

ELECTRIC CORP.

SERIES "L" BATTERY CHARGERS

INTRODUCTION

This handbook describes the installation, operation, trouble shooting, and repair of the CHRISTIE Series L portable and built-in battery chargers. These units are self-contained, fully automatic, ruggedized, commercial battery chargers, designed for operation on the normal electrical service. The output of the Series L charger is regulated by use of a resonance transformer. The built-in model is permanentaly mounted on the battery powered vehicle.

SPECIFICATIONS

INPUT POWER	115 Volts; 60 Hz
OUTPUT VOLTAGE	12,24 or 36 volts, DC
OUTPUT CURRENT	25 to 40 Amp
OUTPUT MONITOR	Ammeter
OUTPUT CONTROL	12 or 24 hour Automatic Timer
TRANSFORMER PROTECTION-	D-C output fuses
PERSONNEL PROTECTION	Grounded cabinet (3rd wire)

INSPECTION AND INSTALLATION

Inspect the exterior of the shipping container for visual signs of rough handling during shipment

Remove the charger from the shipping container and inspect the exterior of the unit for damage (broken glass, cracked knobs, etc.). CLAIMS FOR SHIPPING DAMAGE SHOULD BE FILED WITH THE CARRIER.

Install the charger on any suitable working surface so that there is free access to the front (control) panel and at least six (6) inches of free clearance on each side. There should be at least two (2) inches of clearance on the top of the charger. (The charger may be suspended overhead by the handle.) The clearance is required to allow proper flow of air through the side and top louvers for cooling.

There must be a separately fused, three-wire, single-phase, 115 volt, power receptacle sufficient rating (see A-C Amp in table on back page) within reach of the AC input cord of the charger.

OPERATING INSTRUCTION.

1. Connect the AC plug to a suitable power receptacle.
2. Connect the DC plug to the battery receptacle (permanently connected on built-in models).

NOTE

Check the output plug for the correct polarity.
The WHITE or RED lead must be connected to the POSITIVE terminal
The BLACK lead must be connected to the NEGATIVE terminal

3. Turn the charger ON by setting the timer to the desired charging time (See Charging Time Chart).
4. Verify that the OUTPUT METER indicates a charging current. (If it does not, see TROUBLE SHOOTING SECTION.)
5. The timer control will turn off the charger (positive turn-off feature) at the completion of the charge cycle.
6. Disconnect the battery from the charger (on built-in model disconnect the AC cord).
7. Using a hydrometer, verify that the battery has been properly charged.

TROUBLE SHOOTING & REPAIR INSTRUCTIONS

LOW OR NO CHARGING CURRENT

1. Verify that the battery being charged has no open or dead cells. Check jumper cables between batteries for tight and clean connections,and also verify that the battery is not already fully charged.
2. Check the output fuses of the charger.
3. Verify that the AC receptacle has power by plugging in an electrical appliance.
4. Turn the charger ON and verify that the transformer hums. If no hum is heard, proceed with step 4.1.
   - 4.1 Remove the cabinet cover to gain access to the interior of the charger.
   - 4.2 On larger chargers furnished with a power relay (see wiring diagram)verify that the relay accuates when charger is turned on. If relay does not close, check continuity across relay coil.Also check for burned or damaged relay contacts
   - 4.3 Disconnect the transformer primary leads from the timer assembly or power relay. Check for continuity between the primary input leads of the transformer on the terminal board. If no continuity is found, replace the transformer. If continuity is found proceed as follows:
   - 4.4 With the timer switch ON, check for continuity across the switch. If the switch is open with the timer on, replace the timer assembly.

CHARGING TIME CHART

The following chart provides useful information for determining the minimum charging time needed to restore a battery to a full charge condition. In addition to normal charging, the cells of the batteries should be equalized twice each month. This is done by charging the batteries an additional seven (7) hours after a normal charge cycle. The current indications of the ammeter will be low during cell equalization.

Specific Gravity Reading	Condition of Battery	Hours Needed* to Charge
1100	fully discharged	12
1125	10% charged	10
1150	20% charged	8
1175	30% charged	7
1200	60% charged	4
1225	75% charged	2
1250	95% charged	1/2
1260	fully charged	0

*Charging time will vary with the AH capacity of the battery.

INSPECTION OF BATTERIES AND ASSOCIATED CIRCUITS

An inspection of batteries and associated circuits is required often to assure that the batteries are capable of being fully charged. This inspection requires the use of a single-cell voltmeter, a hydrometer and a continuity tester.

1. Verify that all connections within the unit to be charged are clean and tight.

2. Check each battery for loose terminal posts.

3. Test for continuity between all battery terminals and the charging receptacle.

4. Verify that the top of each battery is free of moisture, grease and acid flims which may cause a current leakage.

5. Test each individual cell in each battery after recharging with the hydrometer to verify that all specific gravity readings are within 10 points of one another.

6. Using the hydrometer, pull out acid from a cell and then vigorously expel the acid back into the cell to cause a violent stirring action. Immediately draw out another sample of acid and visually inspect it to see if it contains a brownish sediment (indicates positive plates are deteriorated).

IMPORTANT FACTS ON BATTERIES AND CHARGERS

Do not discard a good battery as being defective because its specific gravity does not show an increase immediately upon applying a charge. Many good batteries require a charging period as long as three (3) hours before they show any increase in the specific gravity.

Do not charge a battery if the electrolyte temperature could rise above 120°F. This could damage both battery and charger. As a rule of thumb, the electrolyte temperature during normal charging is about 25°F above the local air temperature.

There are only two test methods to determine if a discharged battery is defective without applying a charge. These tests are given in steps 5 and 6 of the INSPECTION OF BATTERIES AND ASSOCIATED CIRCUITS. Voltage testing methods without fully charging or made while charging have no relationship to battery defectiveness.

Failure to keep the battery electrolyte to the proper level will result in a crumbling (abnormal sulfation) of the plates and cause failure of the battery. Distilled water must be added to the battery regularly to make up for the loss due to evaporation, especially during periods of high charging rates. Add water only to fully charged batteries.

Both overcharging and undercharging can cause a premature failure of a battery. Overcharging destroys the positive plates. Consistent undercharging causes a buckling of the plates.

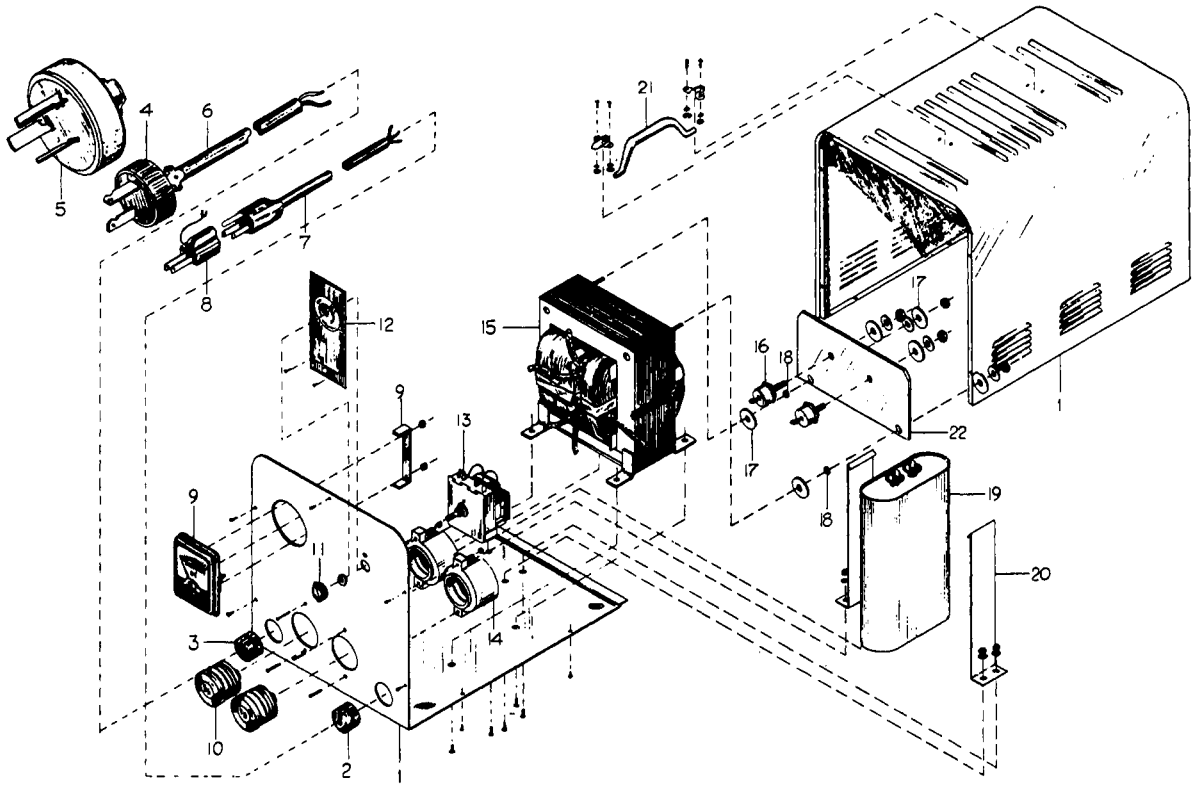
OUTPUT FUSES BLOW

7. Verify that the circuit under charge is not shorted by disconnecting the charger and operating it disconnected.
8. If fuses continue to blow, test the charger as per steps 5.1 through 5.13.

TIMER DOES NOT TURN UNIT OFF

9. Indicates that timer motor or switch is faulty. Replace timer assembly.

EXPLODED DIAGRAM (Typical Charger)



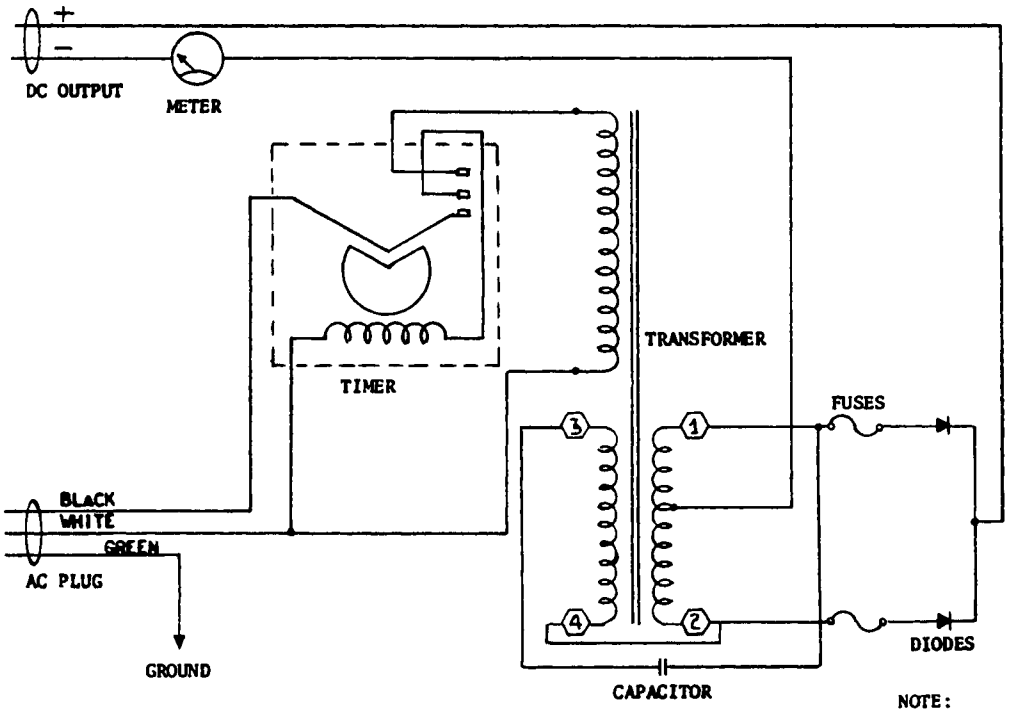
CHRISTIE SERIES "L" BATTERY CHARGERS

PARTS LIST

	Item		Item		Item
1	Portable Cabinet	9	Ammeter	18	Washer Assembly (3/8")
2	Bushing (AC)	10	Fuse	19	Capacitor
3	Bushing (DC)	11	Control knob	20	Bracket Set
4	DC Plug (2 prongs)	12	Timer Dial	21	Handle Assembly
5	DC Plug (3 prongs)	13	Timer Assembly (12 hr.)	22	Heat Sink
6	Output Cord	13	Timer Assembly (24 hr.)		
7	AC Cord and Plug (portable)	14	Fuse Holder		
		15	Transformer		
7	Recessed Male Plug (built-in model)	16	Diode		
8	Adaptor	17	Washer Assembly (3/4")		

When ordering parts, please specify both serial number and model.

Wiring Diagram Models 1225L, 2425L and 3625L
(Separate appropriate diagram is furnished for other models)



NOTE

1) Make voltage checks with capacitor disconnected.

Test Voltages (tp 1 & 2)

Model	Vac
1225	22
2425	42

Test Voltages (tp 3 & 4)

Model	Vac
1225	180
2425	180

NOTE:
SCHEMATIC SHOWS DIAGRAM FOR TIMER MANUFACTURED BY MALLORY TIMERS AND USED ON CHGRS MANUFACTURED AFTER 4/1/76.

4.5 If all of the foregoing checks indicate continuity, but the transformer does not hum, check for loose or broken leads between the AC plug, timer assembly, and terminal board.

5. If the transformer hums, proceed as follows:

5.1 Check the output fuses to insure they are good. Inspect the fuse holders for damage or a blackened appearance. (If the fuse holder is blackened it indicates oxidation and should be replaced.)

5.2 Remove the cabinet cover to gain access to the interior of the charger.

5.3 Disconnect the capacitor or capacitors for the following test:

5.4 Remove one of the output fuses. With the timer switch OFF, check for continuity across the DC output, connecting the continuity indicator first in one direction and then in the other. The indicator should show an open in one direction and continuity in the other

5.5 Repeat step 5.4 interchanging the condition of the two output fuses.

5.6 If the indications obtained in steps 5.4 and 5.5 are normal, the secondary of the transformer is shorted, and it should be replaced. If a short is measured in both directions in either step 5.4 or 5.5, the diode associated with the installed fuse is defective and should be replaced. If the indications in both directions in either step 5.4 or 5.5 are open, then the diode or transformer secondary may be open.

5.7 To isolate the defective part with one of the output fuses installed, check for continuity between its fuse holder and both terminals of the output ammeter. If continuity exists between the fuse holder and one of the meter terminals but not the other, the meter and the shunt are defective and must be replaced.

5.8 If continuity exists, repeat step 5.7 by interchanging fuses and connecting the continuity meter to the other fuse holder.

5.9 If continuity does not exist in either step 5.7 or 5.8, the transformer secondary may be open. Check for continuity directly across the transformer secondary with both output fuses removed.

5.10 If all indications to this point are normal, test the entire DC output circuitry for continuity by progressing from the +DC output terminal to the -DC terminal in incremental test sections, checking for open circuits and poor connections.

5.11 Test the resonance transformer for continuity between test points (3) and (4). If open replace transformer.

5.12 Test the resonance transformer under operating conditions by making the voltage measurements noted in the schematic diagram. Replace the transformer if these voltages are not normal.

5.13 Remove one lead from capacitor. Check across capacitor for continuity. If continuity exists, replace capacitor.

AC LINE FUSES BLOW

6. With unit unplugged and timer turned ON, check for continuity between each input prong of the AC plug and the ground prong. If all indications are open, the transformer or timer is shorted Operate the timer with the transformer disconnected to isolate the faulty item. If continuity is found, a short circuit exists and must be found and removed.

CHRISTIE BATTERY CHARGER REFERENCE CHART

Model			AC Volts	AC Amp	Battery* Amp Hours	DC Volts	DC Amp
Portable	Built-in						
1225L	1225LC		115	4	130/220	12	25
1240L	1240LC		115	5	170/250	12	40
2425L	2425LC	2425LB	115	7	130/220	24	25
2440L	2440LC		115	12	170/250	24	40
3625L	3625LC		115	12	130/220	36	25
3640L	3640LC		115	18	170/250	36	40

*Higher capacity batteries may be charged if longer than 12 hours recharge time is available. Some units are furnished with 24 hr. timers for this purpose.

WARRANTY

CHRISTIE ELECTRIC CORP. agrees to correct any defects in workmanship or material which may develop under proper and normal use by repair or replacement, F.O.B. Los Angeles, California, for a period of one year from date of purchase. The purchaser assumes full responsibility for proper installation and installation adjustments. Parts or equipment claimed defective must be returned to the factory, transportation prepaid, for inspection. If found defective, parts or equipment will be repaired or replaced and returned, transportation collect, to the purchaser. We undertake no responsibility for work done, or expense incurred in connection with repairs or replacements except on specific authority from Christie Electric Corp.

In no event does Christie Electric Corp. assume any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of these products. There are no warranties, either expressed or implied other than those provided herein.

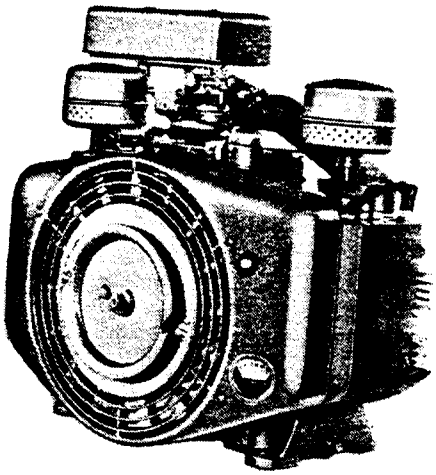
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CHRISTIE ELECTRIC CORP.

L-1001
7/77

3410 WEST 67TH STREET • LOS ANGELES, CALIFORNIA 90043 • (213) 750-1151

OPERATING AND MAINTENANCE INSTRUCTIONS



CCKB
ENGINE

ONAN 1400 73RD AVENUE N.E. • MINNEAPOLIS, MINNESOTA 55432
A DIVISION OF ONAN CORPORATION

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ENGINE SAFETY PRECAUTIONS

It is recommended that you read your engine manual and become thoroughly acquainted with your equipment before you start the engine.

WARNING **This symbol is used throughout this manual to warn of possible serious personal injury.**

CAUTION **This symbol refers to possible equipment damage.**

Fuels, electrical equipment, batteries, exhaust gases and moving parts present potential hazards that could result in serious, personal injury. Take care in following these recommended procedures.

Safety Codes

- All local, state and federal codes should be consulted and complied with.

General

- Provide appropriate fire extinguishers and install them in convenient locations. Use an extinguisher rated ABC by NFPA.
- Make sure that all fasteners on the engine are secure. Tighten supports and clamps, keep guards in position over fans, driving belts, etc.
- If it is necessary to make adjustments while the engine is running, use extreme caution when close to hot exhausts, moving parts, etc.

Protect Against Moving Parts

- Do not wear loose clothing in the vicinity of moving parts, such as PTO shafts, flywheels, blowers, couplings, fans, belts, etc.
- Keep your hands away from moving parts.

Batteries

- Before starting work on the engine, disconnect batteries to prevent inadvertent starting of the engine.
- DO NOT SMOKE while servicing batteries. Lead acid batteries give off a highly explosive hydrogen gas which can be ignited by flame, electrical arcing or by smoking.
- Verify battery polarity before connecting battery cables. Connect negative cable last.

Fuel System

- DO NOT fill fuel tanks while engine is running, unless tanks are outside engine compartment.
- DO NOT smoke or use an open flame in the vicinity of the engine or fuel tank. Internal combustion engine fuels are highly flammable.
- Fuel lines must be of steel piping, adequately secured, and free from leaks. Piping at the engine should be approved flexible line. Do not use copper piping on flexible lines as copper will work harden and become brittle enough to break.
- Be sure all fuel supplies have a positive shutoff valve.

Exhaust System

- Exhaust products of any internal combustion engine are toxic and can cause injury, or death if inhaled. All engine installations, especially those within a confine, should be equipped with an exhaust system to discharge gases to the atmosphere.
- Do not use exhaust gases to heat a compartment.
- Make sure that your exhaust system is free of leaks. Ensure that exhaust manifolds are secure and are not warped by bolts unevenly torqued.

Engine Exhaust Gas (Carbon Monoxide) is Deadly!

Carbon monoxide is an odorless, colorless gas formed by incomplete combustion of hydrocarbon fuels. Carbon monoxide is a dangerous gas that can cause unconsciousness and is potentially lethal. Some of the symptoms or signs of carbon monoxide inhalation are:

- Dizziness
- Intense Headache
- Weakness and Sleepiness
- Vomiting
- Muscular Twitching
- Throbbing in Temples

If you experience any of the above symptoms, get out into fresh air immediately.

The best protection against carbon monoxide inhalation is a regular inspection of the complete exhaust system. If you notice a change in the sound or appearance of exhaust system, shut the unit down immediately and have it inspected and repaired at once by a competent mechanic.

Cooling System

- Coolants under pressure have a higher boiling point than water. DO NOT open a radiator pressure cap while the engine is running. Bleed the system pressure first.

Keep the Unit and Surrounding Area Clean

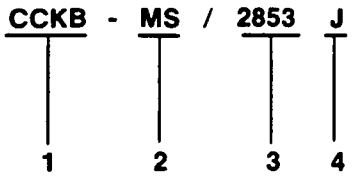
- Make sure that oily rags are not left on or near the engine.
- Remove all oil deposits. Remove all unnecessary grease and oil from the unit. Accumulated grease and oil can cause overheating and subsequent engine damage and may present a potential fire hazard.

GENERAL INFORMATION

ENGINE MODEL REFERENCE

Identify your model by referring to the MODEL and SPEC (specification) NO. as shown on the unit nameplate. Always use this number and the engine serial number when making reference to your engine.

How to interpret MODEL and SPEC NO.



1. Factory code for general identification purposes.
2. Specific Type:
   S - MANUAL STARTING
   MS - ELECTRIC STARTING
3. Factory code for optional equipment supplied.
4. Specification (Spec Letter) advances with factory production modification.

If your engine needs service or repair, contact an Onan Service Center. Trained mechanics will assure expert repair service on your Onan engine.

SPECIFICATIONS

Engine Design..... Opposed two cylinder, four cycle, L head and air cooled
Bore ..... 3-¼ inch (82.55 mm)
Stroke ..... 3 inch (76.20 mm)
Displacement..... 49.8 cu inch (816.22 cm^3)
H.P. - Garden Tractor Service ..... 19-½ hp @ 3600 rpm; 20 hp max. @ 3900 rpm
Oil Capacity with Filter Change ... 4 qts. (3.78 lit)
Oil Capacity without Filter Change ..... 3-½ qts. (3.31 lit)

TUNE-UP SPECIFICATIONS

Spark Plug Gap (Gasoline)..... .025 (0.69 mm)
Spark Plug Gap (LPG)..... .018 (0.46 mm)
Breaker Point Gap..... .020 (0.51 mm)
Valve Lash,
  Intake..... .006 to .008 (0.152 to 0.203 mm)
  Exhaust..... .015 to .017 (0.381 to 0.432 mm)
Ignition Timing:
  Standard Electric Start (Stopped or Running) ..... 20° BTC
  Manual Start with Spark Advance ..... 1° ATDC (Stopped)
    24° BTC (Running)
  Electric Start with Magneto and Spark Advance ..... 5° (Stopped)
    24° BTC (Running)

OUT-OF-SERVICE PROTECTION

Protect an engine that will be out-of-service for more than 30 days as follows:

1. Run engine until thoroughly warm (5 to 10 minutes).
2. Turn off fuel supply and run until engine stops.
3. Drain oil from oil base while still warm. Refill and attach a warning tag stating oil viscosity used.
4. Remove spark plugs. Pour one ounce (two tablespoons) of rust inhibitor (or SAE #50 oil) into the cylinders. Crank engine over a few times. Install spark plugs.
5. Service air cleaner.
6. Clean governor linkage and protect by wrapping with a clean cloth.
7. Plug exhaust outlet to prevent entrance of moisture, dirt, bugs, etc.
8. Wipe entire unit. Coat rustable parts with a light film of grease or oil.
9. Provide a suitable cover for the entire unit.
10. If battery is used, disconnect and follow standard battery storage procedure.

RUNNING REPLACEMENT PARTS

Oil Filter	122-0323
Air Filter	140-0636
Spark Plugs—Non-Resistor	167-0241
Spark Plugs—Resistor	167-0237
Breaker Points	160-0002
Condenser (Breaker Box)	312-0069
Coil	166-0535

WARNING

ENGINE EXHAUST GAS (CARBON MONOXIDE) IS DEADLY!

Carbon monoxide is an odorless, colorless gas formed by incomplete combustion of hydrocarbon fuels. Carbon monoxide is a dangerous gas that can cause unconsciousness and is potentially lethal. Some of the symptoms or signs of carbon monoxide inhalation are:

- Dizziness
- Intense Headache
- Weakness and Sleepiness
- Vomiting
- Muscular Twitching
- Throbbing in Temples

If you experience any of the above symptoms, get out into fresh air immediately.

The best protection against carbon monoxide inhalation is a regular inspection of the complete exhaust system. If you notice a change in the sound or appearance of exhaust system, shut the unit down immediately and have it inspected and repaired at once by a competent mechanic.

PRE-START

BEFORE STARTING

Check the engine to make sure it has been filled with oil and fuel. The chart below lists oil and fuel recommendations.

Crankcase Oil: Fill the crankcase with a good quality oil that meets the API (American Petroleum Institute) service designation SE or SE/CC. Recommended oil numbers for expected ambient temperatures are as follows:

TEMPERATURE	GRADE
Below 0° F (18° C)	SAE 5W30
Below 32° F (0° C)	SAE 5W30 or 10W40
Above 32° F (0° C)	SAE 30

Fill to "Full" mark on dipstick.

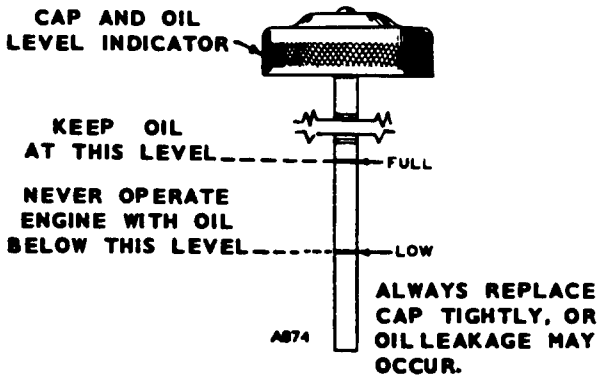
CAUTION **Do not overfill crankcase. Do not use service DS oil. Do not mix brands nor grades of motor oil.**

Refer to *Periodic Service* section for recommended oil change intervals.

Recommended Fuel: Use clean, fresh, non-leaded or regular grade, automotive gasoline. Do not use highly leaded premium types.

For new engines, the most satisfactory results are obtained by using nonleaded gasoline. For older engines that have previously used leaded gasoline, heads must be taken off and all lead deposits removed from engine before switching to nonleaded gasoline.

WARNING **Never check oil level while engine is running. Hot oil discharged from the engine could cause personal injury.**



CRANKCASE OIL FILL

CAUTION **If lead deposits are not removed from engine before switching from leaded to nonleaded gasoline, preignition could occur, causing severe damage to the engine.**

WARNING **Never fill the fuel tank when the engine is running. Gasoline could ignite, causing a serious injury.**

Inspection: Inspect the engine visually before starting. Check for loose or missing parts and any damage which may have occurred in shipment.

STARTING

If your engine has a START-RUN-STOP switch, press switch toggle to START, then release to RUN when engine starts. Press toggle to STOP, to stop engine.

1. Turn on ignition switch, pull the choke lever way out (for a cold engine) and push the start switch. When the engine starts, gradually push the choke lever in until the engine runs smoothly.
2. Black smoke from the exhaust and a rough running engine usually indicate over-choking.
3. To stop engine, turn ignition switch to off position.

OPERATION

BREAK-IN PROCEDURE

Controlled break-in with proper oil and a conscientiously applied maintenance program will help assure satisfactory service for many hours from your Onan engine.

Break-in or ideal fitting of all internal moving metal parts can best be achieved by maintaining proper cooling and correct lubrication during the running-in period. Run the engine at about half load for the first three hours with intermittent periods of full load to control engine break-in. Engine damage can be caused by using the wrong grade and weight of oil and high engine operating temperatures during break-in.

Check the oil level at least every five operating hours. Add oil to keep it at the proper level, but never overfill as overfilling may cause the oil to foam and enter the breather system.

HOT WEATHER OPERATION

When operating the engine in temperatures above 75° F (24° C) pay particular attention to the following items to prevent damage:

1. Keep the engine cooling fins clean and free of obstruction which would decrease air flow to and from the engine.
2. See that nothing obstructs air flow to and from the engine.
3. Ensure that you are using the proper grade and weight of oil for the temperature the engine is being used in. Check the oil level each time you fill the fuel tank.
4. Check the battery water level more frequently than every 50 hours which is recommended under normal conditions. High temperatures cause faster evaporation.

COLD WEATHER OPERATION

When the engine is being used in temperatures below 32° F (0° C), check the following items closely:

1. Use the correct grade and weight of oil for the temperature conditions. Change the oil only when the engine is warm. If an unexpected temperature drop occurs when the engine is filled with summer oil, move to a warm location until the oil will flow freely before starting the engine.
2. Use fresh fuel. Fill the fuel tank after each days use to protect against moisture condensation.
3. Keep battery in a well-charged condition.

MAINTENANCE

Oil Level: Check oil level at least every eight hours of operation. Check more frequently on a new or overhauled engine as oil consumption is higher until piston rings seat properly.

Oil Change: Change crankcase oil after the first 25 hours of operation; change every 50 hours after that. If operating in extremely dusty conditions, change oil more frequently.

Oil Filter (If Used): Replace oil filter every 100 hours; replace more often in dusty conditions. Tighten the filter finger-tight plus one quarter to one half turn. Be sure to replace rubber ring around filter.

Crankcase Breather: This engine uses a crankcase breather valve for maintaining crankcase vacuum. No maintenance is generally required. If the crankcase becomes pressurized as evidenced by oil leaks at the seals, clean the crankcase breather cap and valve assembly, and the breather tube baffle in suitable solvent. To remove breather cap and valve assembly, remove the breather hose clamp and breather tube clamp.

Moistened Foam Air Cleaner: This air cleaner consists of a synthetic sponge over a metal retainer. The base and cover are similar to those of the dry paper kind. Wash the sponge periodically, moisten in oil and squeeze dry.

Cooling System: Check and clean cooling fins at least every 50 hours. Remove any dust, dirt or oil which may have accumulated.

CAUTION **Plugged or clogged cooling fins can cause overheating and engine damage.**

Spark Plugs: Check, clean and reset spark plugs every 100 operating hours. Replace spark plugs that show signs of fouling or electrode erosion. Replace plugs every 250 operating hours.

Breaker Points: Check, clean and reset breaker points every 200 operating hours. Replace points if they are pitted or burned. See *ADJUSTMENT* section.

ADJUSTMENTS

CARBURETOR

The carburetor has an idle jet and a main jet. The idle jet which is adjustable, affects engine operation at low speed. The main jet usually affects operation under load (high speed). Under normal circumstances, factory carburetor adjustments should not be disturbed. If the idle adjustment has been disturbed, turn the needle (counterclockwise) off its seat 1 to 1-1/2 turns to permit starting the engine, then readjust as follows:

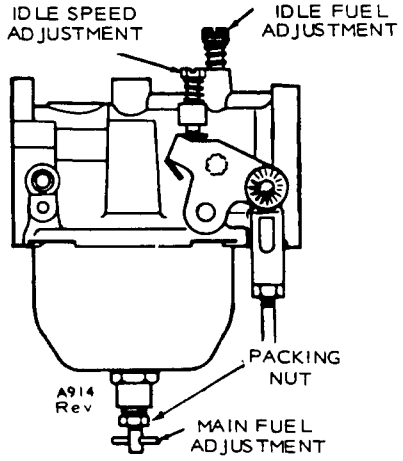
Carburetor Idle Adjustment

1. Allow the engine to run at least 10 minutes to warm it up.
2. Move engine speed control to SLOW position. The engine should run at about 1300 rpm.
3. Turn the idle needle out (counterclockwise) until engine begins to slow down or run unevenly. Remember this position.
4. Turn needle in (clockwise) past the position where the engine runs smoothly until it begins to slow down or run unevenly.

CAUTION **Do not force the needle against its seat; doing so will damage it.**

5. Back the needle out to a position approximately halfway between the two positions. This should provide a smooth running idle.

CAUTION **Loosen the packing nut before making main fuel adjustment and then tighten the nut to a snug fit after the adjustment has been made. This procedure makes it easier to use the carburetor adjusting tool and prevents fuel leaks around the packing nut. Fuel leaks cause hard starting because the float level becomes lower than normal.**



CARBURETOR ADJUSTMENTS

Carburetor Main (Load) Adjustment

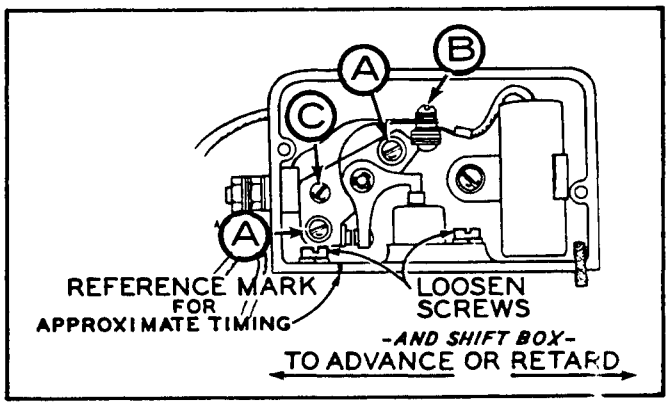
If engine runs unevenly at half or full load due to faulty carburetion, the main adjusting needle needs readjustment. For initial start-up, turn main adjustment 1 to 1-1/2 turns (counterclockwise) off its seat.

1. Start engine and allow it to warm up.
2. Push in on the governor mechanism to slow the unit down to about 400-500 rpm.
3. Set idle adjustment so engine runs smoothly.
4. Release governor mechanism to allow engine to accelerate. If engine accelerates evenly and without hesitation, main adjustment is correct. If not, turn needle outward about 1/2 turn and again slow the engine down and release the mechanism. Continue until the engine accelerates evenly and without hesitation after releasing the governor.
5. If engine tends to hunt (alternate increase and decrease of speed), open the main adjusting needle a little more. Do not open more than 1/2 turn beyond the maximum power point.

BREAKER POINTS

To maintain maximum efficiency from the engine, check condition of the breaker points every 200 hours of operation. Proceed as follows:

1. Remove the two screws and the cover on the breaker box.
2. Remove both spark plugs so engine can be easily rotated by hand. If plugs have not been changed within the last 100 hours, clean and regap or replace them with new ones after setting the breaker points.
3. Remove the two mounting screws (A) and pull the points out of the box just far enough so screw (B) can be removed. Replace points with a new set (if needed) but do not completely tighten mounting screws (A).
4. Rotate the engine clockwise (facing flywheel) by hand until TC mark on gear cover aligns with TC mark on flywheel. Turn screw (C) until point gap measures .020" (0.508 mm) with a flat thickness gauge.
5. Tighten mounting screws and recheck gap.



BREAKER POINT ADJUSTMENT

PERIODIC SERVICE GUIDE

Regularly scheduled maintenance is the key to lower operating costs and longer service life for the unit. The following schedule can be used as a guide. However, actual operating conditions under which a unit is run should be the determining factor in establishing a maintenance schedule. When operating in very dusty or dirty conditions, some of the service periods may have to be reduced. Check the condition of the crankcase oil, the filters, cooling fins, etc. frequently until the proper service time periods can be established.

For any abnormalities in operation, unusual noises from engine or accessories, loss of power, overheating, etc., contact your nearest Onan Service Center.

PERIODIC MAINTENANCE SCHEDULE

SERVICE THESE ITEMS	AFTER EACH CYCLE OF INDICATED HOURS					
	8	50	100	200	400	1000
Inspect Engine Generally	x[3]					
Check Oil Level	x					
Service Air Cleaner		x[1]				
Change Crankcase Oil		x[1]				
Check Battery Electrolyte Level		x				
Clean Cooling Fins		x				
Clean and Regap Spark Plugs (Replace at 250 hours)			x			
Replace Oil Filter			x[1]			
Clean Breather Valve				x		
Check Breaker Points				x		
Replace Air Cleaner Element				x[1]		
Check Valve Clearance					x[2]	
Remove Carbon and Lead Deposits					x[2]	
Inspect Valves, Grind If Necessary						x[2]
Complete Reconditioning (If Required)						x[2]

x[1] - Perform more often in extremely dusty conditions.
x[2] - For detailed maintenance, contact an Onan Service Center.
x[3] - Check for fuel leaks, exhaust leaks, etc.

FOR MAJOR SERVICE AND OVERHAUL CONTACT YOUR NEAREST ONAN SERVICE CENTER.

ASSY. NO. MBD-5007

prestolite.

SERVICE PARTS LIST

PUMP MOTOR
issued 1-8-79

Application J.S. Barnes

ITEM	SERVICE PART NO.	NO. USED	PART DESCRIPTION
1	MBD-2525	1	ARMATURE
12	MBD-1468A	1	BAND,COVER
5	X-3991	1	BEARING, BALL,SEALED,#201,C.E.
7	X-3990	1	BEARING,BALL,SHIELDED,#203,D.E.
11	MBD-1427	1	FAN
3	MBD-1005PS	1	FIELD COIL PKG.(POLE SCREWS INCL.)
4	MBD-502	1	HEAD, COMM. END
6	MBD-423B	1	HEAD, DRIVE END
8	MBD-1564	1	PLATE ASSEMBLY, BRUSH
9	MBD-19S	1	SPRING SET, BRUSH
2	MBD-1512S	1	BRUSH SET, SERVICE
10	90-2591 +	1	TERMINAL STUD PKG.(HDWE. INCL.)
13	90-701	1	THRUST WASHER PACKAGE

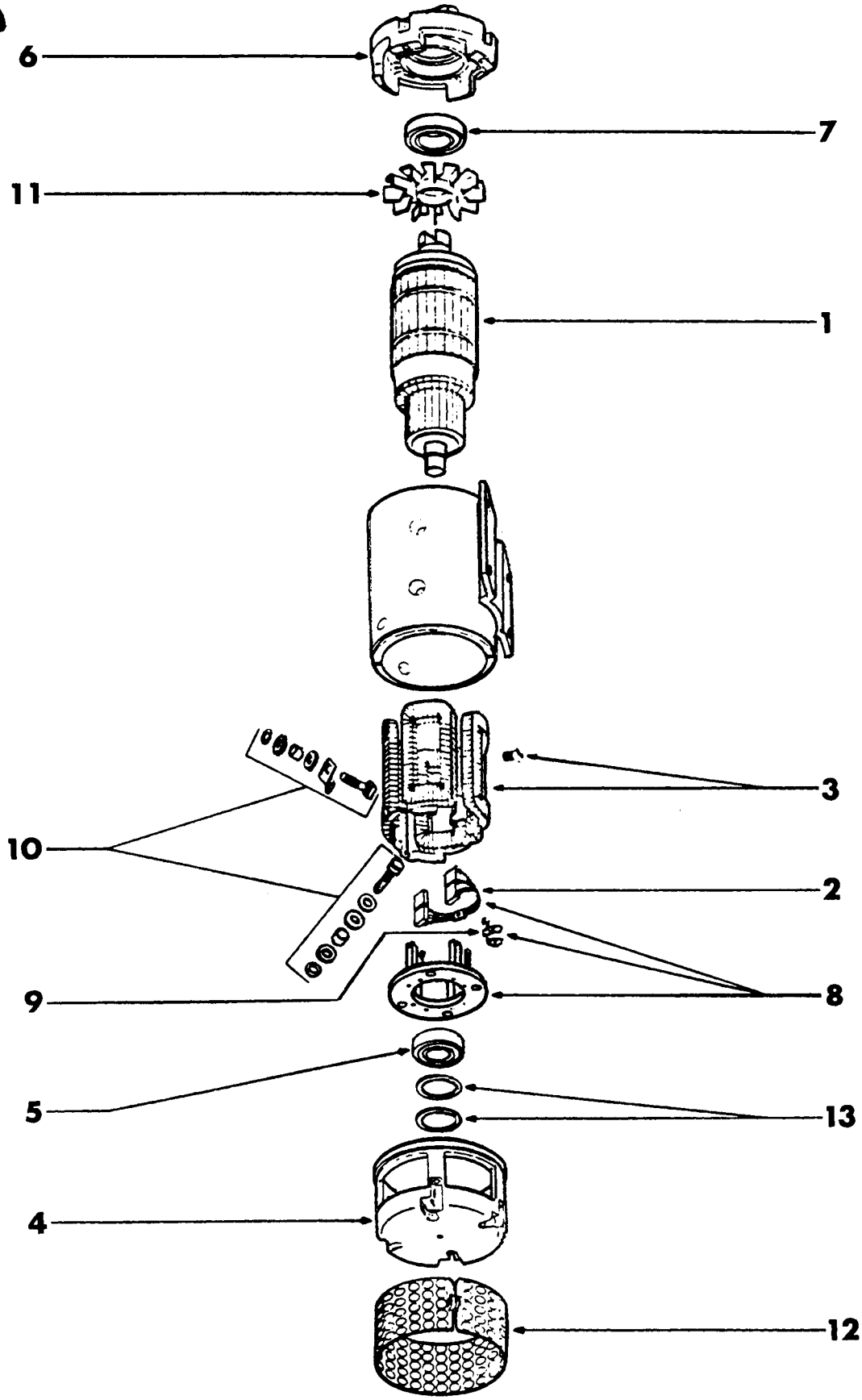
+ Contains additional parts to service other applications.

Note: This is a Ventilated Motor; for totally enclosed version use SP-6058(70-42)Enclosing Kit.

prestolite.

ASSY. NO. MBD-5007

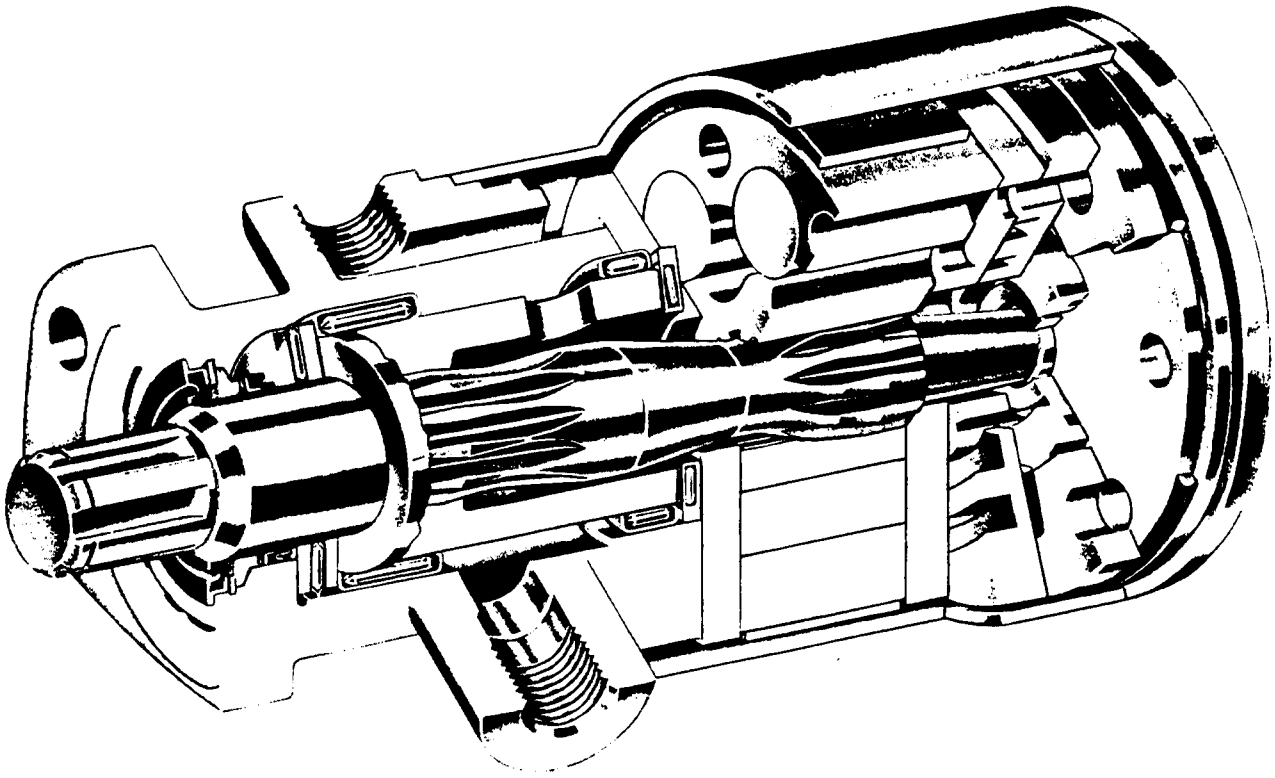
PUMP MOTOR



TORQMOTOR®

SERVICE PROCEDURE

MAB SERIES



The *MAB* TORQMOTOR

- Low Speed,
- High Torque
- Hydraulic Motor.

FORM NO. TMB-4

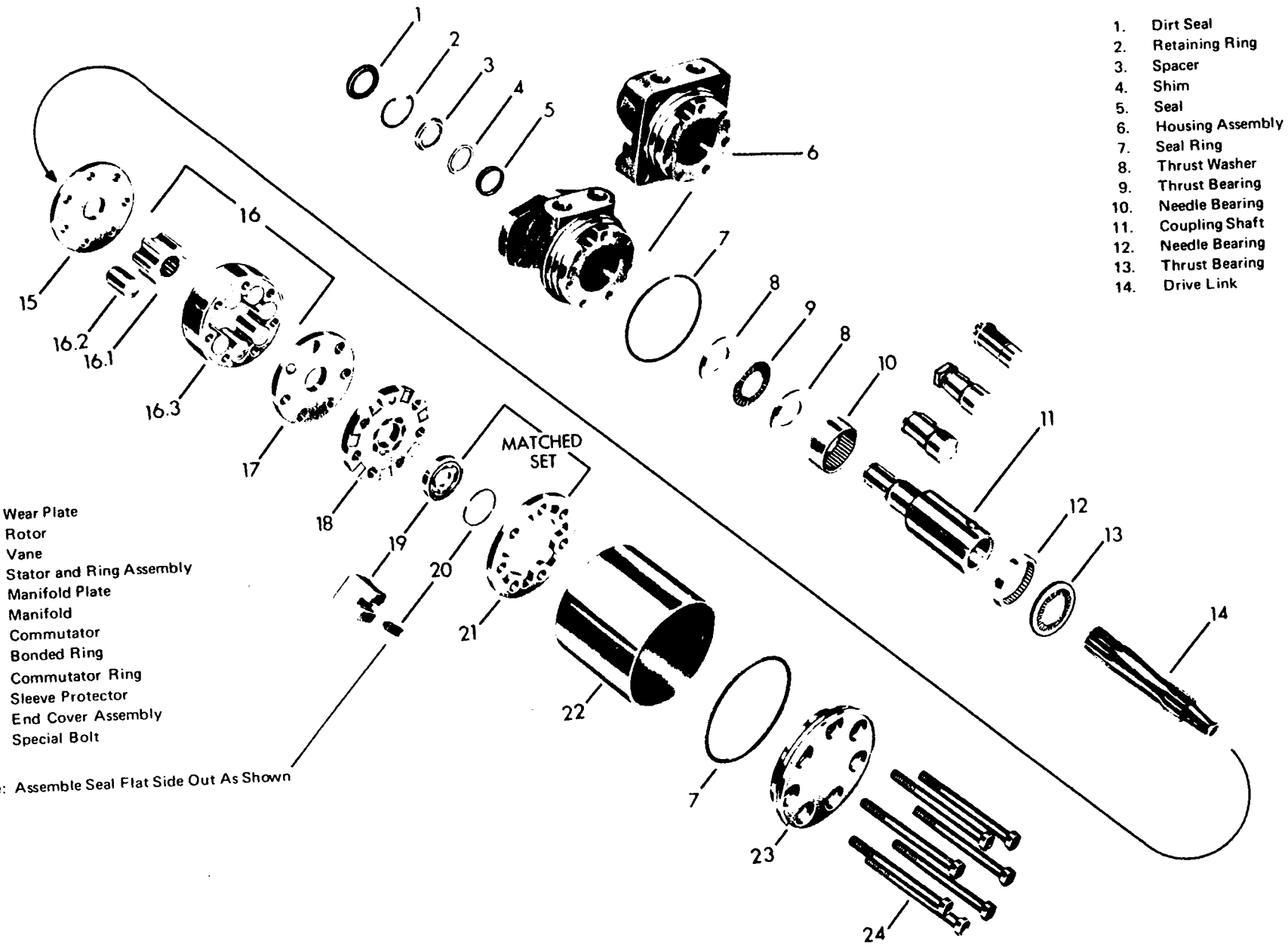


FIGURE MAB-200-2

SERVICE PROCEDURE

Preparation Before Disassembly

Remove port hole plugs before attempting to rotate shaft. Drain the motor assembly by turning the output shaft. Wash the complete motor in solvent and remove all particles of dirt from the exterior and blow dry before placing on work bench.

Clean Work Conditions

If it is necessary to disassemble the TORQMOTOR, make certain to use a clean work bench (a piece of clean wrapping paper makes an excellent and disposable top). The hands and tools of the repairman should be clean, and the operation should be carried out in a sheltered area free from drafts that may carry foreign material into the disassembled pieces. (Precision fits in the TORQMOTOR needs "white room" type care.)

Caution: Avoid wiping parts with a cloth, as lint and foreign particles may adhere to the working parts of the TORQMOTOR.

Handling

Care must be taken in handling the close fitting parts, as nicks and mutilations will result in serious damage.

REPLACEMENT OF HIGH PRESSURE SEAL (5) IN TORQMOTOR

(Reference Figure MAB-200-2)

1. Remove dirt seal (1) and retaining ring (2), if burr exists on retaining ring groove, remove with a scraping tool.
2. Set the motor with coupling shaft (11) down in a suitable clean can. Plug "A" port and connect "B" port to 120 psi air hose, or use a piston type hydraulic hand pump. Note: The air connection should be made with provisions for quick shut-off after the spacer (3), shim (4) and seal (5) have been ejected.
3. Apply clean grease to new seal (5) and assemble into housing assembly (6) with lip side inward.
4. Assemble shim (4), spacer (3) and retaining ring (2), be sure the rounded edge of the retaining ring is faced inward. Apply a small amount of clean grease to the back side of new dirt seal (1) and assemble into housing assembly (6).

TORQMOTOR DISASSEMBLY

(Reference Figure MAB-200-2)

1. In a vise, clamp down on the housing assembly (6) port bosses with the coupling shaft (11) pointed down.
2. Using wrench with a 12 point 9/16" socket, remove the seven special bolts (24) and place them on the work bench.
3. Remove the end cover assembly (23) and seal ring (7) by inserting screw driver between end cover assembly (23) and sleeve protector (22). Pry up end cover assembly (23) and lift from unit with seal ring (7) attached.
4. Remove seal ring (7) from end cover assembly (23) and discard.
5. Remove the commutator ring (21), commutator (19), bonded ring (20) and manifold (18) by using two of the special bolts (24) as a lifting tool, insert the two special bolts (24) into two holes and lift out the previously mentioned parts.
6. Remove bonded ring (20) from commutator (19) by using an air hose, blow air down into ring groove until bonded ring (20) is lifted out and discard.
7. Inspect manifold (18) for cracks and replace with new manifold if cracks are visible.
8. Remove manifold plate (17) by using the two special bolts (24) and method previously mentioned.
9. Remove rotor assembly (16), wear plate (15) and drive link (14) by using the two special bolts (24) and method previously mentioned.
10. Remove vanes (16.2) and rotor (16.1) from rotor assembly (16). Use caution not to drop these parts when handling.
11. Inspect rotor (16.1) outside lobes for pits and marks. If pits or wear marks are visible, discard rotor (16.1) and replace complete rotor assembly (16) with a new rotor assembly.
12. Remove thrust bearing (13).
13. Remove coupling shaft (11).
14. Remove sleeve protector (22) by inserting screw driver between sleeve protector (22) and housing assembly (6) and pry up. If rust exists on ends of sleeve protector (22), remove by sanding lightly.
15. Remove seal ring (7) from housing assembly (6) and discard.
16. Remove housing assembly (6) from vise, turn over and reclamp housing assembly in vise so that dirt seal (1) is pointed upward.
17. Remove dirt seal (1), retaining ring (2), spacer (3), shim (4) and seal (5) from housing assembly (6). Discard dirt seal (1) and seal (5). If burr exists on retaining ring groove, remove with a scraping tool.
18. Do not remove thrust washers (8), thrust bearing (9) and needle bearings (10) and (12) unless there is absolute evidence of damage. Needle bearings should be free to rotate and not show signs of surface breakdown. If needle bearing (10) requires replacement, use a 1.490 maximum diameter shaft and press out thrust washers (8), thrust bearing (9) and needle bearings (10) and (12). The housing assembly face should be placed on a block of wood during the pressing operation to protect it. Discard thrust washers, thrust bearing and needle bearings and replace with new parts as parts may have been damaged when being pressed out.

    If needle bearing (12) needs replacement use a bearing puller to remove needle bearing, care should be taken to not damage the housing assembly (6) face with the bearing puller.

TORQMOTOR ASSEMBLY

(Reference Figure MAB-200-2)

Important: Before starting assembly, clean all parts with a clean petroleum base solvent and air dry. **Do not wipe dry with rags.** Be sure all dried paint lips have been removed from edges of lapped surfaces. Unless otherwise indicated, do not oil or grease parts before assembly. Note: Lubricate All Seals before assembly with SAE 10W-40 SD oil or clean grease.

1. In a vise, clamp down on the housing assembly (6) port bosses with the small bore end pointed up. Assemble new seal (5) with lip side inward, assemble shim (4), spacer (3) and retaining ring (2). Be sure the rounded edge of the retaining ring (2) is faced inward.

2. Apply a small amount of clean grease to the back side of new dirt seal (1) and assemble into housing assembly (6).

3. Remove housing assembly (6) from vise, turn over and reclamp in vise with large bore end up. (*** See Note.)

4. Apply "Scotch" tape around splines or keyway on coupling shaft (11) to prevent damaging seal (5). Assemble coupling shaft (11).

5. Assemble thrust bearing (13).

6. Assemble drive link (14).

7. Assemble wear plate (15).

8. Assemble rotor assembly (16) with counterbore in rotor (16.1) down.

9. Assemble manifold plate (17), manifold (18) and commutator ring (21).

10. Assemble commutator (19) and new bonded ring (20).

11. Assemble new seal rings (7) on housing assembly (6) and end cover assembly (23).

12. Apply a generous amount of "STP" to both ends on sleeve protector (22) and assemble over unit and onto unit and onto housing assembly (6). Make sure sleeve protector is setting in a non-cocked position.

13. Assemble end cover assembly (23) onto sleeve protector (22) in a non-cocked position.

14. Assemble seven special bolts (24) and screw in finger tight. Alternately and progressively tighten the seven special bolts to pull end cover assembly (23) and sleeve protector (22) down into place. (Torque the seven special bolts to 50 ± 5 ft. lbs.)

*** NOTE

If it was necessary to remove thrust washers (8), thrust bearing (9), needle bearing (10) and needle bearing (12), the following assembly procedure must be followed.

1. Assemble new thrust washer (8), new thrust bearing (9), new thrust washer (8) in this order into housing assembly (6).

2. Press in new needle bearing (10) with suitable tools to a 2.365 ± .030 dimension into housing assembly (6). Note: Bearing should indicate which side to press against.

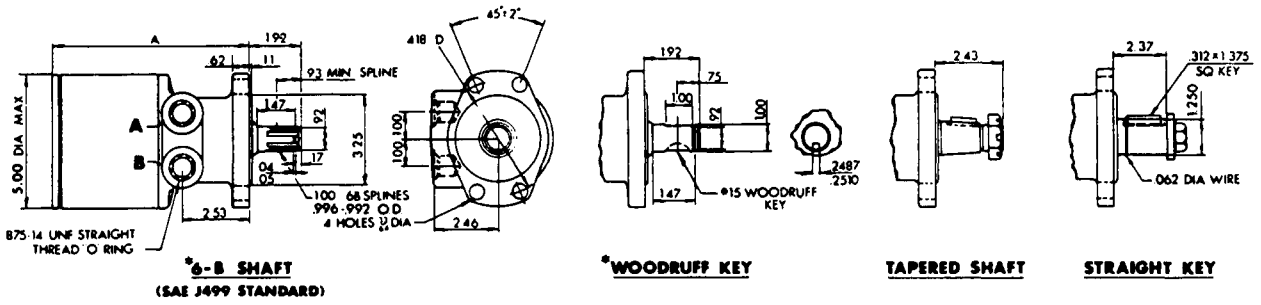
3. Press in new needle bearing (12) with suitable tools to a .18 ± .03 dimension into housing assembly (6). Note: Bearing should indicate which side to press against.

TROUBLE SHOOTING

Trouble	Cause	Remedy
Oil leakage	1. Hose fittings leaking	(a) Tighten fittings
		(b) Replace O ring in 7/8", 14 thread fitting
	2. Seal ring leak	(a) Replace seal ring by disassembling motor
	3. Special bolt leakage	(a) Tighten single bolt to 50 foot lbs.
	4. Faulty high pressure seal	Remove dirt seal, retaining ring and spacer. Blow out seal. Replace seal.
	5. Coupling shaft and high pressure seal	Replace coupling shaft and seal package.
High loss of speed, under load.	1. Lack of sufficient oil supply	(a) Adjust faulty pressure relief valve.
		(b) Repair worn pump.
		(c) Use correct oil for temperature of operation.
	2. High internal motor leakage.	(a) Replace worn rotor set with new rotor assembly
		(b) Replace worn commutator ring
		(c) Replace worn manifold
		(d) Replace worn wear plate.
Low mechanical efficiency or undue high pressure required to operate TORQMOTOR	1. Line blockage	(a) Replace blocked line.
	2. Internal Interference.	(a) Correct clearance of rotor set. (Replace rotor set)

PROVISIONING DATA

STANDARD MOUNT



*6-B SHAFT
(SAE J499 STANDARD)

*WOODRUFF KEY

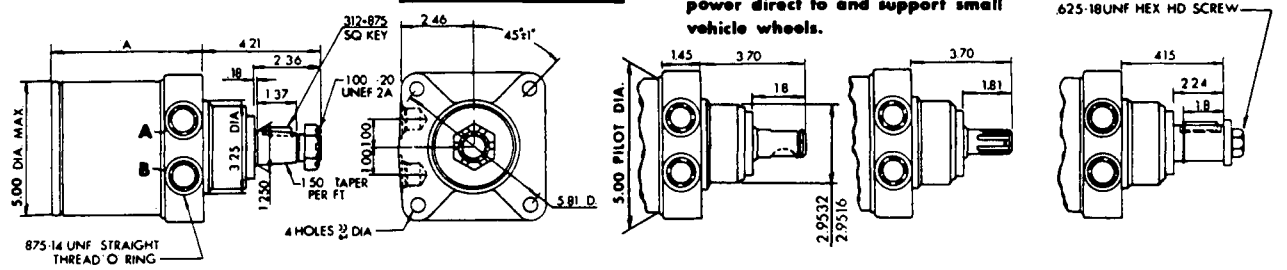
TAPERED SHAFT

STRAIGHT KEY

WHEEL MOUNT

Use this design mounting when maximum side load is applied to the output shaft.

The Wheel Mount design (w/ 1-¼ taper output shaft) can be used to apply power direct to and support small vehicle wheels.



TAPERED SHAFT
(SAE J501 STANDARD)

*WOODRUFF KEY

*6-B SHAFT

STRAIGHT KEY

*The 6-B Spline shaft and Woodruff Key shaft are machined for a WALDES TRUARC Snap Ring No. 5100-100 (or equivalent)

MOTOR SERIES	DISPLACEMENT CU. IN. / REV.	DIMENSION "A" STD. MTG.	DIMENSION "A" WHL. MTG.	APPROX RPM WITH 10 GPM NO LOAD	APPROX. RPM WITH 10 GPM @1500 PSI	THEO. TORQUE IN. LBS/100 PSI	IN. LB TORQUE @ 1500 PSI STARTING	IN. LB TORQUE @ 1500 PSI RUNNING
MAB 08	5.9	7.409	5.630	400	365	94	1,040	1,250
MAB 16	11.8	7.910	6.131	200	180	188	2,150	2,850
MAB 24	17.7	8.410	6.631	130	115	282	3,600	4,150
MAB 40	29.6	9.410	7.631	78	65	470	6,050	6,800

Dimensional Values Shown Are Reference

MAB TORQMOTOR

NOTE: System Relief Valve Setting from 2,000-3,000 PSI Require Prototyping and Evaluation by Sales Engineer.

SPECIFICATION & IDENTIFICATION TAG GUIDE

EXAMPLE: MAB 08 0 02

SERIES

ROTOR WIDTH IN $\frac{1}{16}$ 'S
- 08
- 16
- 24
- 40

MOUNTING & SHAFT
- 02 STD. MTG. 6-B SHAFT
- 03 WHL. MTG. TAPERED SHAFT
- 04 STD. MTG. TAPERED SHAFT
- 05 WHL. MTG. 6-B SHAFT
- 08 STD. MTG. WOODRUFF KEY
- 09 WHL. MTG. WOODRUFF KEY
- 10 STD. MTG. STRAIGHT KEY
- 11 WHL. MTG. STRAIGHT KEY

THE PRODUCT REPRESENTED HEREIN IS PROTECTED BY THE FOLLOWING PATENTS:

U.S.A. PATENT NO. 3,288,034
U.S.A. PATENT NO. 3,289,602
3,452,680

OTHER U.S.A. AND FOREIGN PATENTS GRANTED AND PENDING

Another Product

of —



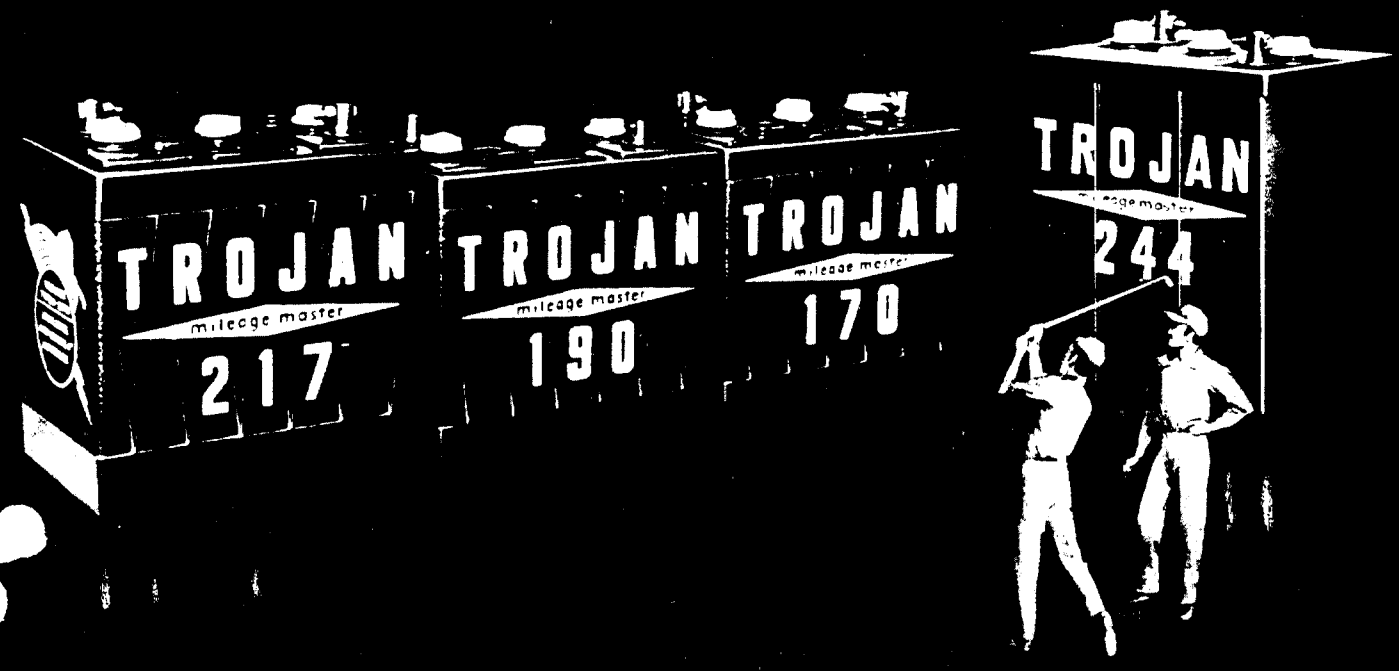
TRW

ROSS GEAR DIVISION

LAFAYETTE, INDIANA 47902

PROPER CARE AND MAINTENANCE OF ELECTRIC VEHICLE GOLF CAR BATTERIES

THE INFORMATION INSIDE IS AN IMPORTANT CONTRIBUTION TO BETTER SERVICE AND MORE EFFICIENT USE OF ELECTRIC GOLF CARS AND WAS PREPARED BY BATTERY COUNCIL INTERNATIONAL.



proper care and maintenance of electric vehicle

1. NEW BATTERY RECEIVAL AND INSTALLATION

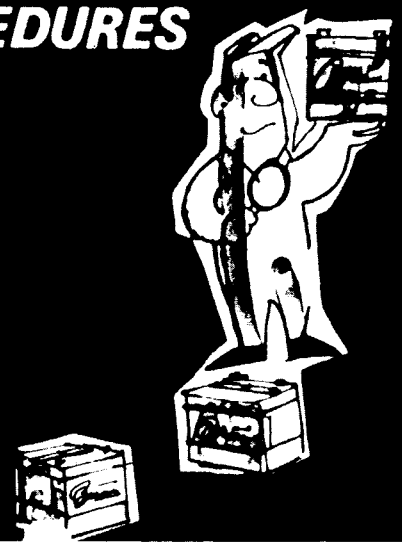


1. **Always** inspect incoming shipments of batteries for damage. Look for and pay particular attention for damage to or wet spots on the shipping cartons, examine those batteries for signs of breakage.
2. If damaged batteries are found secure acknowledgment of the damage from the carrier's representative and file a claim against the transportation company. Contact your supplier for battery replacement.
3. If batteries are received wet and **not** immediately placed in service, they must be charged at regular interals as follows:

Storage Temperature	Charge
Below 40° F	None required
40° F to 60° F	Every 2 months
60° F and above	Once a month

4. Never stack one battery directly on top of another. Post damage and/or container damage can occur from improper stacking. If batteries are stored individually, place supporting boards between layers. **Do not** stack layers more than three (3) high and rotate stock so that the oldest batteries can be used first.
5. Dry charge batteries should be activated in accordance with instructions of the battery manufacturer.
6. Batteries should be installed in accordance with the vehicle manufacturer's instructions. Connections should be made tight enabling good contact between connector lugs and battery terminals. Always charge sets of batteries immediately after installation into the car.

2. MAINTENANCE-INSPECTION PROCEDURES



1. **Water batteries at least once a week.**
   - a. Add only approved water to the cells. Distilled water is recommended, high mineral content water must not be used. Maximum allowable impurities in percent-iron (.003), chloride (.004), fixed residue (.075).
   - b. Remove vent caps and water batteries preferably after charging to prevent over flow of acid due to expansion.
   - c. Fill all cells to the proper level. **Do not overfill cells.** Fill to level indicator or ½ inch over the top of the separators if there is no level indicator. Do not use a hose to water batteries.
   - d. Spot check cells between weekly waterings to assure electrolyte is above separators. Excess water usage indicates the presence of any one or all of the following conditions which should be checked
     1. Overcharging
     2. High temperature operation
     3. Nearing end of service life
   - e. **Do not allow the electrolyte level to drop** below the top of the separators since this will lead to shortened battery life.
2. **Clean batteries after weekly watering or when washing cars.**
   - a. Wash the tops of the batteries making sure the vent caps are in place. Do not allow water or other foreign matter to enter the cells.
   - b. Use a solution of bicarbonate of soda and water to wash batteries if there is an accumulation of acid
3. **Inspection** to insure good conditions which will give better battery service
   - a. When watering batteries inspect battery and other terminal connections for:
     1. **Corrosion** — If any exists, clean connection and apply a non-metallic grease or protective spray to retard further corrosion.
     2. **Loose Connections** — Be sure all connections are tight and that good contact is made between terminals.
     3. **Broken or Frayed Cables** — Be sure all cable connections are good and that no loose or broken wires are exposed. Replace any which look suspicious.
   - b. Once a week after the batteries have been charged, spot check two (2) or more cells for specific gravity reading. Gravity should be 1.250 - 1.280. If low readings are noted:
     1. Check charger to insure that proper charge is being returned to the batteries.
     2. Check connections as specified under **Inspection 3a.**
     3. Check all cells to determine if batteries are near the end of life. This should be done to the same procedure as called for under **Section IV** covering **"Trouble Shooting" of batteries.**
   - c. On a regular interval, check car as outlined in the instruction manual for:
     1. Brake drag
     2. Proper tire pressure
     3. Proper alignment
     4. Proper lubrication
     5. Proper operation of electrical system
     6. Proper operation of drive and transmission system
     7. Condition of charger plug and receptacle in car

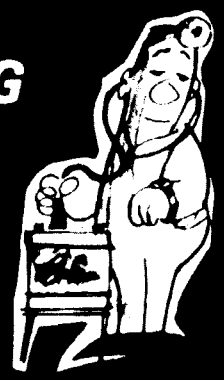
     Any of these conditions which are detrimental to car operation will shorten battery life.

3. CHARGING PROCEDURE



1. Become familiar with instructions issued with the charger or car manual.
2. Batteries are to be charged after each day's use as soon as play has been completed. Charging between rounds is permissible if it is determined feasible to do so.
3. **Do not charge batteries** if car was not used that day.
4. **Do not allow batteries to sit in discharged condition** for prolonged periods of time.
5. **Always be sure batteries are fully charged** each day prior to starting play.

4. TROUBLE SHOOTING FOR WEAK OR BAD BATTERIES



When a car fails to operate properly performing less than one round of golf, the car is to be brought into the shop and the batteries examined as follows:

1. Check terminal connections for corrosion, loose connections and broken or frayed cables.
2. If terminal connections appear to be in good condition, check all cells with a hydrometer for variation in specific gravity among cells. A variation of .030 points or more between cells of a battery is cause for suspect. Mark the low cells.
3. Recharge the batteries as recommended by the manufacturer.
4. Read all gravities again after recharge. Be sure that batteries are fully charged at gravities of 1.250 to 1.280. If cells vary by .030 points or more it is an indication of possible trouble within that battery.
5. Connect a load tester to the set of batteries and discharge the batteries at 75 Amps and record the time to a terminal voltage of 3.15 volts. Testers are now available having an automatic Shut Off at this voltage. New batteries should run a minimum of 75 minutes on this test.
   a. If the batteries run less than 40 minutes they have either reached the end of life or a defective battery is in the circuit. Battery replacement is then necessary.
   b. If batteries run 40-50 minutes they have lost capacity and may be nearing the end of their useful life. In golf car service one round of golf may be expected on an average golf course.
   c. If batteries run more than 50 minutes, they are in good condition and satisfactory for continued service. Prior to putting the car back in service it should be checked for the existence of other trouble as outlined in the instruction manual.

5. BATTERY REPLACEMENT



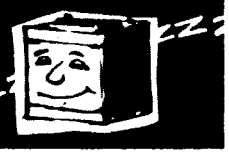
Defective Batteries (Premature Failures)

1. Defective battery can be determined either by observation of gravity variance at the end of the 75 Amp discharge (.030 or more points between cells of a battery) or by turning the discharge tester back on and determining the battery or cell which is defective by use of a voltmeter.
2. Mark the defective battery.
3. Recharge the batteries with the defective battery in the circuit.
4. Remove the defective battery and replace with new battery or battery of comparable age which is fully charged.

Worn Out Batteries

1. Remove old set of batteries.
2. Clean and recondition battery trays, holddowns and cables.
3. Inspect new batteries for broken containers and proper electrolyte level before installing in the car.
4. Install batteries in car being sure that they are properly held down, firm but not too tight.
5. Replace cables, being sure terminals and connectors are clean and connections are tight.
6. Apply a light coating of non-metallic grease or protective coating.

6. WINTER STORAGE OF WET BATTERIES



1. Prior to storing car, batteries should be cleaned, fully charged and properly leveled.
2. While in storage the batteries should be recharged to full charge at time intervals shown below:

Storage Temperature	Charge
Below 40° F	None required
40° F to 60° F	Every 2 months
60° F and above	Once a month

3. Check batteries after car has been removed from storage and before service begins. Follow **inspection and trouble shooting procedures** to determine the condition of the batteries.

Battery Council International

TROJAN MILEAGE MASTER BATTERIES

GROUP NUMBER	TYPE	VOLTS	REF. 20 HOUR RATE A.H.	75 AMPS TO 5.25 VOLTS AT 80 F MINUTES	OVERALL DIMENSIONS			SHIP WEIGHT
					LENGTH	WIDTH	*HEIGHT	
GC-2	J-170W	6	170	88	10 3/8	7 1/16	10 1/4	57
GC-2	J-190W	6	190	95	10 3/8	7 1/16	10 1/4	59
GC-2H	J-217W	6	217	108	10 3/8	7 1/16	11 1/2	66
GC-2H	J-244W	6	244	130	10 3/8	7 1/16	11 1/2	73

*For Universal Terminals or Angle Terminals, increase height one quarter inch

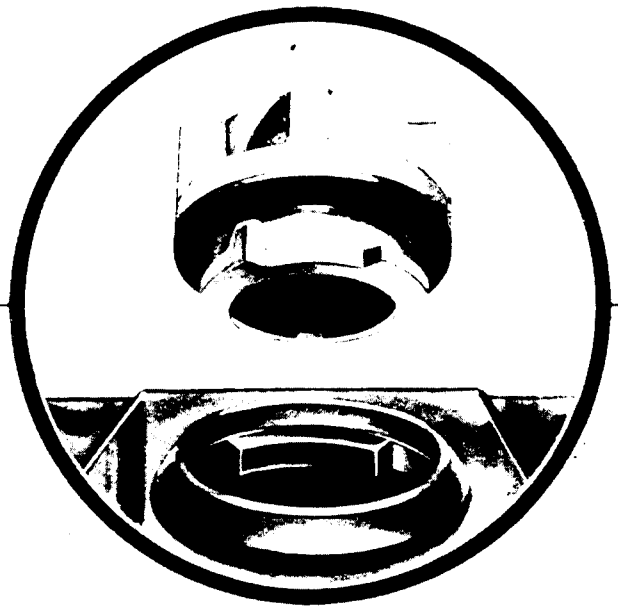
OTHER SPECIAL BATTERIES AVAILABLE TO FIT MOST TYPES OF ELECTRICAL VEHICLES.

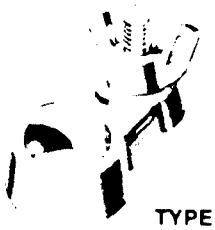
TROJAN "MILEAGE MASTER" TYPES FEATURE QUARTER-TURN VENT CAPS REDUCING SERVICE TIME 75%



TYPE AP

STRAIGHT POST





TYPE WT

WING NUT TERMINAL
3/16 or 5/16 Stud

TYPE LT

ANGLE TERMINAL
5/16 Lead coated bolt



TYPE UT

UNIVERSAL TERMINAL



ALL BATTERIES COME WITH UNIVERSAL TERMINALS
UNLESS OTHERWISE SPECIFIED

DISTRIBUTED BY

TROJAN BATTERY COMPANY

THIS CHAPTER HAS BEEN PROVIDED TO KEEP **MARK INDUSTRIES** SERVICE BULLETINS THAT APPLY TO THE IMPROVEMENT OF YOUR **MARKLIFT.**

No: 3441

Date: July, 1984

To: Mark Industries Distributors and Representatives

From: Service Department

Subject: Revision 3 - Self-Propelled Scissor (Medium Slab) Operation Maintenance and Parts Manual.

The purpose of this revision is to provide New Model 25E and 25G Traversing Deck model coverage.

Most of this change takes place in the parts section. Electrical and hydraulic schematics are provided.

Please use this revision package to update your Manual.

Refer to the "Record of Revisions" (Page viii) in the fore-matter section, as a guide to perform this update.

This cover letter goes in the "Service Bulletins" section.

John Laurin
Service Manager

No: 3404

Date: October, 1983

To: Mark Industries Distributors and Representatives

From: Service Department

Subject: Revision 2 - Self-Propelled Scissor (Medium Slab) Operation Maintenance and Parts Manual.

The main reason for this revision is to incorporate disc brake coverage for the (MS) machines. The disc brake features can be found in the added frame assembly figures in the parts section.

Please use this revision package to update your Manual.

Refer to the "Record of Revisions" (Page viii) in the fore-matter section, as a guide to perform this update.

This cover letter goes in the "Service Bulletins" section.

John Laurin
Service Manager

No: 3338
Date: April, 1981

To: Mark Industries Distributors and Representatives

From: Service Department

Subject: Revision 1 - Self-Propelled Scissor (Medium Slab Models) Operation Maintenance and Parts Manual.

This revision has been prepared to incorporate the (25E) (1981) Model. SERIAL NUMBER EFFECTIVITY IS 281-7714 ON.

Please send this revision package to your customers as soon as possible.

The new Title & Table of Contents Pages replaces the existing Title & Table of Contents Pages.

The "New Equipment Condition Report", pages X and XI, go after page IX in the fore matter section.

The balance of this change takes place in the Parts Section of the Manual. The pages are point numbered.

Example: 4.1, 4.2, 4.3, etc.

The point numbered figure and page numbers are shown in the provided Illustrated Parts List Index. Use this index, as a guide, to put the pages into your Manual.

The new Index replaces the existing Index.

John Laurin
Service Manager