

M-403-66R2
Thru S/N M-2110



MAINTENANCE UNIT
OPERATION, MAINTENANCE and PARTS MANUAL

E. D. ETNYRE & CO., Oregon, Illinois 61061

Caution

1. Do not start engine unless clutch is disengaged.
2. Always use steps, platforms and handrails provided.
3. Remain clear of moving or rotating parts.
4. Always have shields, covers and guards in place when operating.
5. Always have dry chemical fire extinguisher available and in good condition.
6. Do not operate burners unattended.
7. Burners may flash during ignition. Use torch to ignite. Remain clear.
8. Periodically check all body mounting tie downs, fasteners, and on trailer units check all suspension and running gear components.
9. Lit cigarettes or other sources of combustion must remain clear of open manholes or overflow vents.
10. Sparks from engine exhaust can be a source of ignition to volatile gases.
11. Use gloves or insulated material when handling spray bar, sections, or hoses.
12. Periodically check and clean overflow tube.
13. Open manhole slowly to relieve pressure that may exist in tank.
14. All pipe and hose connections must be secure before operating valves.
15. Keep unit clean for safety and operation.
16. Keep area clear of open flame or sparks when spraying material with volatile cutbacks.
17. Do not stand in a location such that accidental opening of spray bar valves will cause contact with spray.
18. Fill line cap or connection must be securely attached before operating intake valve lever.
19. "TUC" bar must be off and remain off when bar is rotated upward.
20. When loading with material over 200° F., proceed cautiously if moisture may be present in tank. If moisture may be in the spray bar or circulating system (particularly on newly delivered units or if the previous load was an emulsion) allow a small quantity of hot material to circulate in bar before putting any measurable amount of material in tank. This permits the large air space in the tank to absorb moisture vaporization (foaming) without spillage.

M-403-66R2

MAINTENANCE UNIT OPERATION, MAINTENANCE AND PARTS MANUAL

Introduction

This manual contains a complete list of serviceable parts for the ETNYRE MAINTENANCE UNIT. This manual is divided into sections . . . introductory pages, table of contents, operating instructions, illustrations and parts list, part number numerical index, and specification number numerical index.

The table of contents alphabetically lists the unit classifications and directs the user to the page where the illustration and parts list may be found. The general identification view on page 3, also directs the user to pages in the manual.

The individual parts in each illustration are shown in their normal relationship to one another. Reference numbers are used on each illustration and should not be used when ordering parts. A parts list accompanies each illustration.

How To Order Parts

To assure prompt delivery when ordering parts, please furnish the following information: 1) Complete name and address of consignee. 2) Method of shipment preferred. 3) Is shipment to be prepaid or collect? 4) Is shipment to be C.O.D. or open account? 5) Serial numbers of units to which parts apply. 6) Complete part numbers and descriptions. 7) Any special instructions.

Warranty

E. D. Etnyre & Co. guarantees for a period of one year from the date of the shipment to repair or replace, F.O.B. its factory, any part which requires replacement due to defect in material or workmanship, but will not be responsible for consequential damages or any further loss by reason of such defect. This guarantee does not cover products that were not manufactured by E. D. Etnyre & Co. except to the extent of the guarantee given by the actual manufacturer.

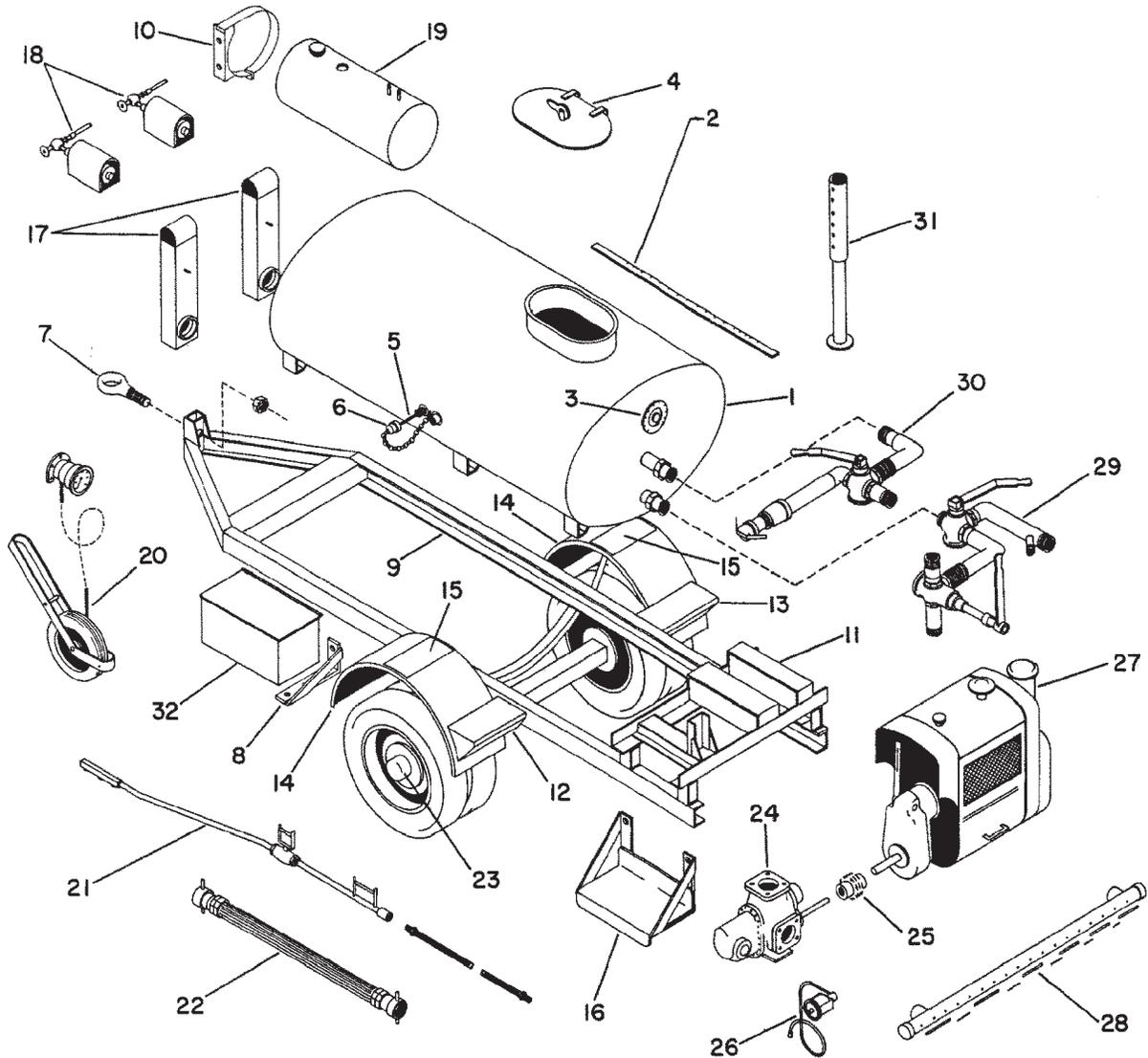


E. D. ETNYRE & CO., 200 Jefferson Street, Oregon, Illinois 61061, Phone 815/732-2116, Cable Address "EDECO"

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General Identification



REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1				TANK- BITUMEN	20	SEE PAGE 25			BITUMETER
2	SEE PAGE 2		1	STICK- MSRNG	21	SEE PAGE 26			HNDSPRAY GUN
3	SEE PAGE 2-10		1	TANK GAUGE	22	SEE PAGE 26			LOADING HOSE
4	SEE PAGE 8 SEE PAGE 9		1	MANHOLE-14 X 22	23	SEE PAGE 24			AXLE & HUBS
5	H-93	6500034	1	THERM- FAH	24	SEE PAGE 12			PUMPS- #2 & #4
6	T129-CA	3300038	1	CAP & CHAIN	25	SEE PAGE 13			COUPLING
7	MUF50-4	6450057	1	EYE-TOW W-NUT	26	SEE PAGE 13			TACHOMETER-PUMP
8	MUF-7AR MUF-7AL	2610003 2610002	1	BRKT-TL BOX-RT 1 BRKT-TL BOX LT	27	SEE ENG MNL			1 POWER UNIT
9			1	UNDRFRM- TRLR	28	SEE PAGE 16			1 BAR-FC RIGID
10	MUF-35A	2610041	2	BRKT- FUEL TNK	SEE PAGE 21				1 BAR- RIGID
11	APS-48A	4050003	1	BASE-PUMP & ENG	SEE PAGE 18				1 BAR-FC SHIFT
12	MUF8-5AL	2610008	1	STEP-FNDR MT-LT	SEE PAGE 20				1 RAISING MECH
13	MUF8-5AR	2610009	1	STEP-FNDR MT-RT	29	SEE PAGE 15			LINES-DSCHRG
14	MUF8-1	2610006	2	FENDER	30	SEE PAGE 14			LINES-SUCTION
15	MUF8-4	2610007	2	STEP-TOP RGTTRD	31	SEE PAGE 11			STANDS
16		2610220	1	STEP-SIDE-OPER	32	MUF-23A	2610034	1	TOOL BOX
17	MUH-2A	2630006	2	STACK-BRNR REL					
18	SEE PAGE 22 SEE PAGE 23			BURNERS- GENER BURNERS- LIQUID					
19	SEE PAGE 22			FUEL TK & LINES					

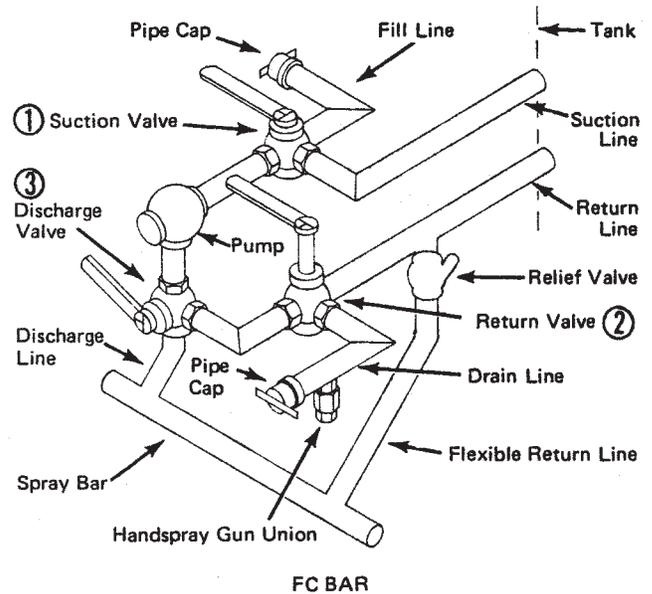
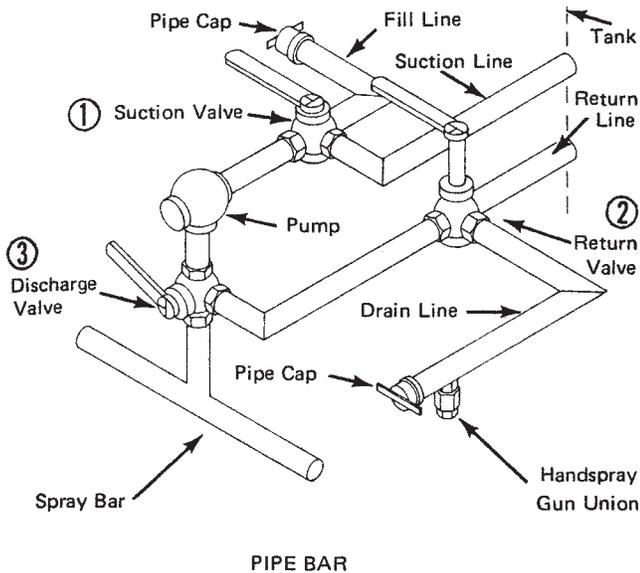
Pump Tachometer Chart

For use with Wisconsin Engines with 3.84 to 1 clutch reduction gear & Roper pumps nos. 2A and 4. Readings for 1/8" nozzles.

Gal. Per Sq. Yd.	Pump Capac.	Bitometer Reading									Engine Tachometer Reading (RPM)								
		4' Bar	5' Bar	6' Bar	7' Bar	8' Bar	9' Bar	10' Bar	11' Bar	12' Bar	4' Bar	5' Bar	6' Bar	7' Bar	8' Bar	9' Bar	10' Bar	11' Bar	12' Bar
.10	50 100	900 1350	900 1080	885 900	900	900	900	900	900	880	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000
.20	50 100	450 675	450 540	445 450	450	450	450	450	450	440	1370 1025	1710 1025	2000 1025	1200	1310	1540	1710	1880	2000
.25	50 100	360 540	360 430	355 360	360	360	360	360	360	350	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000
.30	50 100	300 450	300 360	295 300	300	300	300	300	300	292	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000
.40	50 100	225 335	225 270	220 225	225	225	225	225	225	220	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000
.50	50 100	180 270	180 215	177 180	180	180	180	180	180	175	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000
.60	50 100	150 225	150 180	148 150	150	150	150	150	150	145	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000
.70	50 100	130 193	130 155	127 130	130	130	130	130	130	125	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000
.75	50 100	112 180	120 145	118 120	120	120	120	120	120	117	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000
.80	50 100	120 170	112 135	110 112	112	112	112	112	112	110	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000
.90	50 100	100 150	100 120	100	100	100	100	100	100	97	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000
1.00	50 100	90 135	90 108	88 90	90	90	90	90	90	88	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000
1.25	50 100	72 108	72 85	70 72	72	72	72	72	72	70	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000
1.50	50 100	60 90	60 71	58 60	60	60	60	60	60	59	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000
2.00	50 100	45 68	45 54	44 45	45	45	45	45	45	44	1370 1025	1710 1025	2000 1025	1200	1365	1540	1710	1880	2000

*NOTE: Use above chart for engine tachometer reading in RPM. For tachometer reading in GPM use computer.

Operating Instructions



GENERAL

There are 3 Control Levers on rear of unit, as follows:

1. Top Left Control Lever: Operates the 3-way valve between the tank and the pump suction. With lever in CIRCULATE position, to the rear, pump suction is open to the tank. With lever in FILL position, to the left, suction is open to the filling connection on left side.

2. Top Right Control Lever: Operates a 3-way valve in the return line to the tank. With lever in HANDSPRAY position, to left, return is cut off, putting pressure on the handspray connection. This lever should be in CIRCULATE AND FILL position, to front, at all times except when handspraying or transferring. Relief valve on pump relieves pressure when handspray is turned off. When lever is turned to DRAIN position, to right, handspray connection is open to tank, permitting gravity drawoff.

3. Rear Control Lever: Operates the 3-way valve on the pump discharge. With lever in CIRCULATE AND FILL position, to the right, pump discharge is open to the return to tank. With lever in DISTRIBUTE position, to the left, pump discharge is open to the spray bar.

Pump Flushing Oil Valve is controlled by small valve wheel on left side of pump housing which opens fuel pressure line to pump suction.

Always be sure this valve is closed after flushing.

Suction Strainer is inside of fill line located on

left side of unit. This strainer should be removed and cleaned weekly.

HEATING

The fuel pump is driven by a V-belt from the crank shaft at the front of the engine.

Units With Constant Driven Fuel Pump: Fuel Circulates in the fuel tank against a relief valve set at 45 to 50# pressure. Always leave some fuel in tank to keep fuel pump cool. Pump will be ruined if allowed to run dry.

Units With Clutch Driven Fuel Pump: Fuel circulates in the fuel tank against a relief valve set at 45 to 50# pressure when clutch is in ENGAGED position. When pressure is desired, engage clutch. Do not hold in partially engaged position. Engage only when fuel pressure is desired; Do not run fuel pump when fuel tank is empty.

To Light Burners

Set engine governor for adequate fuel pressure, when circulating in tank.

1. Hold finger ahead of vaporizing tip and open burner valve until generating pan is about $\frac{1}{4}$ full and wick under coil thoroughly saturated. Close valve.

2. Open flue dampers and ignite wick.

3. When gas projects from vaporizing tip, burner

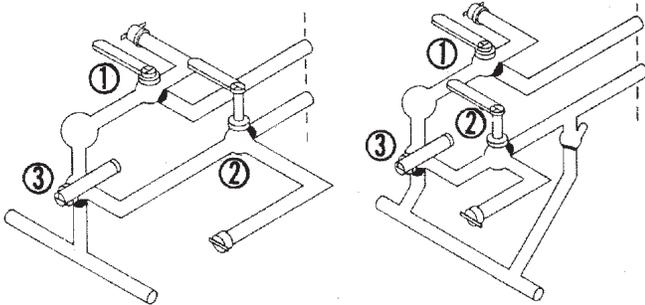
is generating. Open burner valve slightly. If coil is generating properly, an almost colorless gas will project from tip. Open valve as necessary to obtain a bright orange flame.

CAUTION

- Use clean kerosene for best results.
- Do not leave burners unattended.
- Do not start burners if flues are not completely covered with bitumen.
- Do not heat bitumen to temperature higher than spraying temperature recommended by the supplier.
- Close damper in stack when burners are not in use, to save heat.

FILLING

To Fill Through Manhole

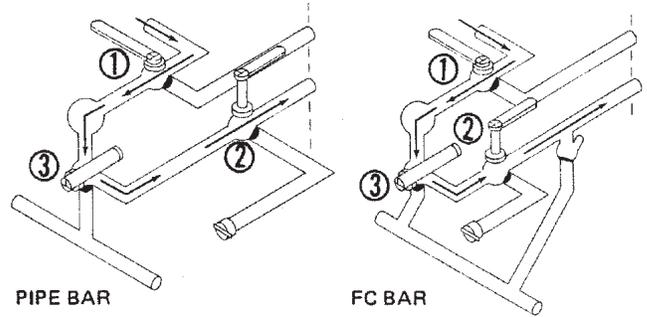


PIPE BAR

FC BAR

1. Always use Manhole strainer unless you are sure that material is free of all foreign matter.
2. If you do not want material to enter pump and circulating system, turn top left control lever (1) to FILL position and top right control lever (2) to HANDSPRAY position.
3. If material is to be heated in tank, allow approximately 5% for expansion.
4. When filling with hot bitumen, proceed cautiously if there is any moisture in tank or if emulsion was used in previous load.

To Fill Through Pump

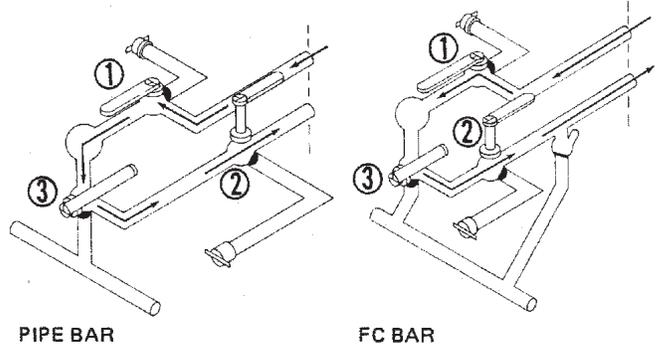


PIPE BAR

FC BAR

1. Connect filling hose to supply and to filling line on left side of unit. Be sure all connections are tight.
 2. Turn top left control lever (1) to FILL position.
 3. Turn top right lever (2) to CIRCULATE AND FILL position.
 4. Turn rear lever (3) to CIRCULATE AND FILL position.
 5. Start engine; engage clutch slowly to be sure pump is free. If pump does not turn easily, warm up with portable burner. Do not put flame directly on relief valve or packing gland of pump.
 6. Open valve at supply tank.
 7. Close valve at supply and vent hose when tank has filled sufficiently.
- If you have heavy material that may set up in the pump, allow engine to idle and circulate material in tank until ready to spray.

To Circulate In Tank

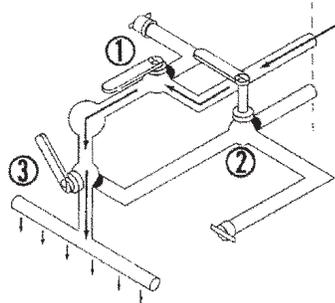


PIPE BAR

FC BAR

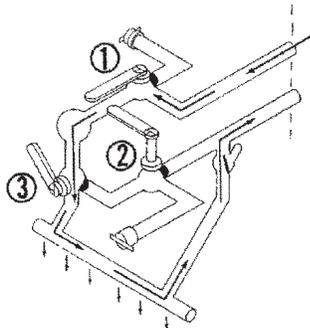
1. Turn top left control lever (1) to CIRCULATE position.
2. Turn top right lever (2) to CIRCULATE AND FILL position.
3. Turn rear lever (3) to CIRCULATE AND FILL position.
4. Start engine; engage clutch slowly to be sure pump is free. Material is now circulating through piping and tank.

Bar Spraying— Pipe Extension Bar



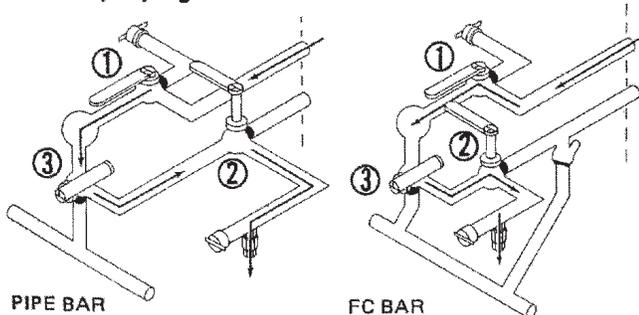
1. Adjust bar to length desired and be sure all nozzles are set with slots making an angle of 30° with bar center line. Use special nozzle wrench.
2. While circulating in tank, open engine governor to desired pump speed.
3. Turn rear control lever (3) to DISTRIBUTE position.

Bar Spraying— Circulating Bar



1. Adjust bar to correct length and set nozzles as above.
2. Set top levers (1 and 2) to CIRCULATE position and rear lever (3) to DISTRIBUTE position. When spray bar valves are closed, the material is circulating through the bar.

Hand Spraying



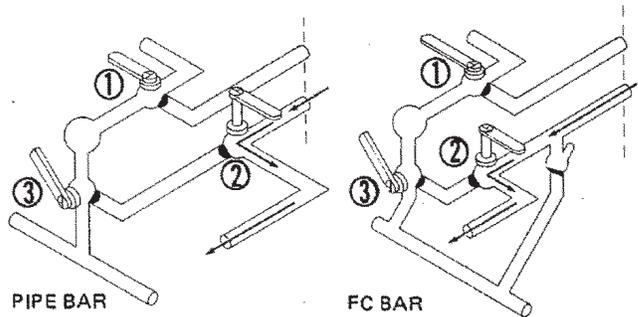
1. Start with all controls in CIRCULATE position.
2. Connect handspray hose to connection (4) at rear of unit.
3. Close valve at handspray gun. Turn top right lever (2) to HANDSPRAY position.
4. You can now handspray, opening and closing

valve at handspray gun as you desire.

5. If pressure is too great on handspray, turn handspray control lever (2) toward CIRCULATE AND FILL position as needed.

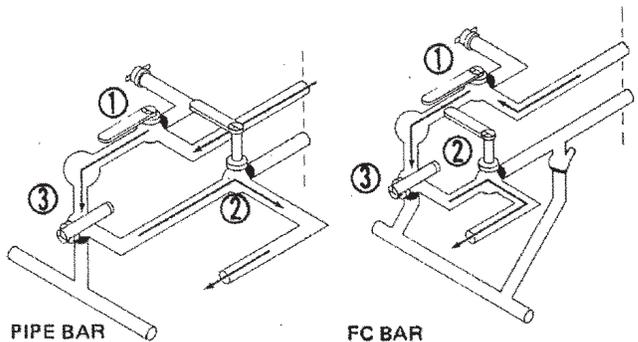
DRAINING AND FLUSHING

To Drain Tank



1. Pump all material from tank: then open drain plug in sump.
2. Turn top right lever (2) to DRAIN, rear lever (3) to DISTRIBUTE, and top left lever (1) to FILL position. Remove fill line cap. Tank is now empty of bitumen.

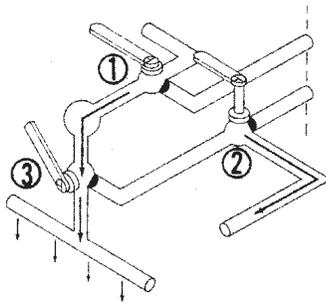
To Pump Material From Tank



1. Start engine; engage clutch slowly to be sure pump is free. Remove drain line cap.
2. Turn top right control lever (2) to HANDSPRAY position.
3. Turn rear control lever (3) to CIRCULATE position.
4. Turn top left control lever (1) to CIRCULATE position. Material is now being pumped from tank.

**To Drain Circulating System
With Material In Tank**

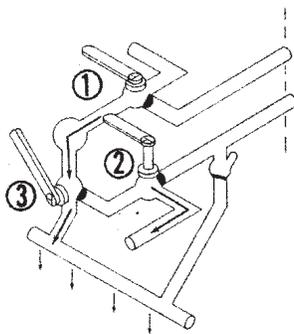
Pipe Bar



1. Turn top left control lever (1) to FILL position.
2. Turn top right control lever (2) to HAND-SPRAY position.
3. Turn rear control lever (3) to DISTRIBUTE position.
4. Remove fill line cap.
5. After a few minutes, turn rear control lever to CIRCULATE and open handspray gun valve to blow out handspray gun. Lines are now empty of material.

**To Drain Circulating System
With Material In Tank**

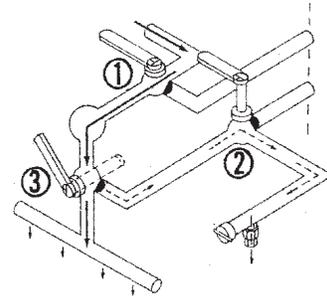
FC Bar



1. Turn top left control lever (1) to FILL position.
2. Turn top right control lever (2) to HAND-SPRAY position.
3. Turn rear control lever (3) to DISTRIBUTE position.
4. Remove fill line cap.
5. Open spray nozzle valves after removing fill cap.
6. After a few minutes turn rear control lever to CIRCULATE and open handspray gun valve to blow out handspray gun. Lines are now empty of material.

**To Flush Circulating System With Material
In Tank**

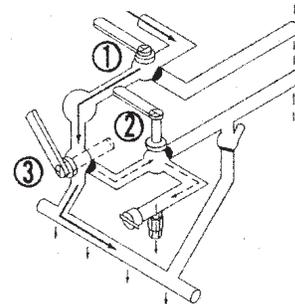
Pipe Bar



1. Turn top left control lever (1) to FILL position.
2. Turn top right control lever (2) to HAND-SPRAY position.
3. Turn rear control lever (3) to DISTRIBUTE position.
4. Open flushing oil valve.
5. When flushing oil comes out of spray nozzles, turn rear control lever to CIRCULATE and open handspray gun valve. After lines are cleaned, turn off flushing oil valve.

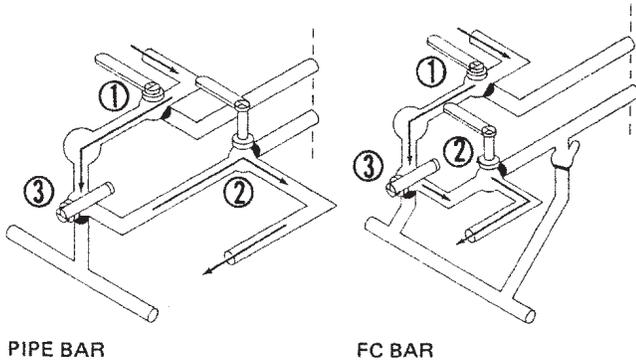
**To Flush Piping or Circulating System With
Material In Tank**

FC Bar



1. Turn top left control lever (1) to FILL position.
2. Turn top right control lever (2) to HAND-SPRAY position.
3. Turn rear control lever (3) to DISTRIBUTE position.
4. Open flushing oil valve.
5. After a few minutes, open spray nozzle valves.
6. When flushing oil comes out of spray nozzles, turn rear control lever to CIRCULATE, open handspray gun valve and close nozzle valves. After lines are cleaned, turn off flushing oil valve.

To Transfer From Supply Source To Storage



PIPE BAR

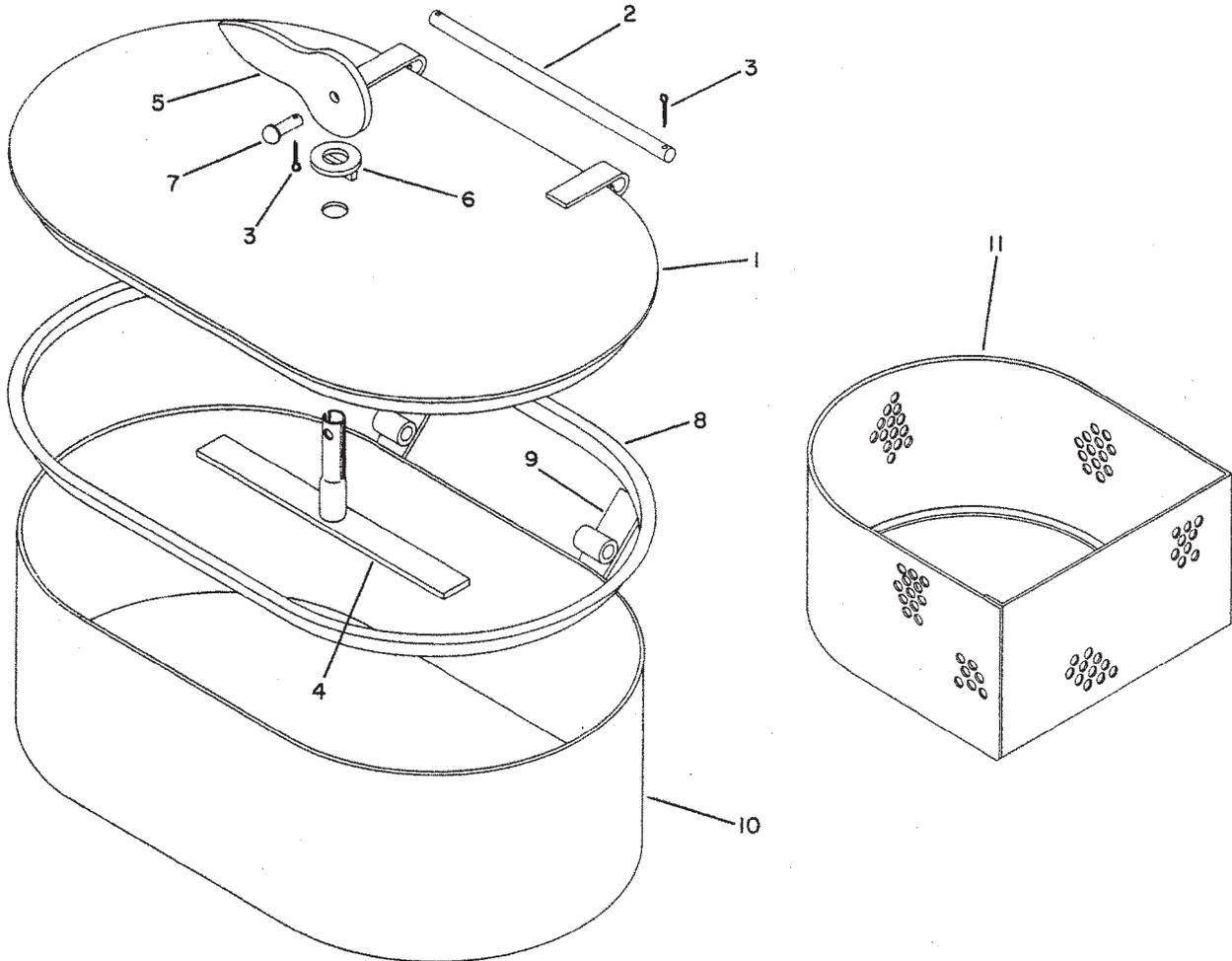
FC BAR

1. Turn top left control lever (1) to FILL position.
2. Turn top right control lever (2) to HAND-SPRAY position.
3. Turn rear control lever (3) to CIRCULATE position.
4. Connect hose from supply source to fill line.
5. Connect hose from storage to connection at drain line.
6. Start engine. Run pump at maximum speed where it will run quietly. Normally 150 G.P.M. is best transfer speed.

MAINTENANCE

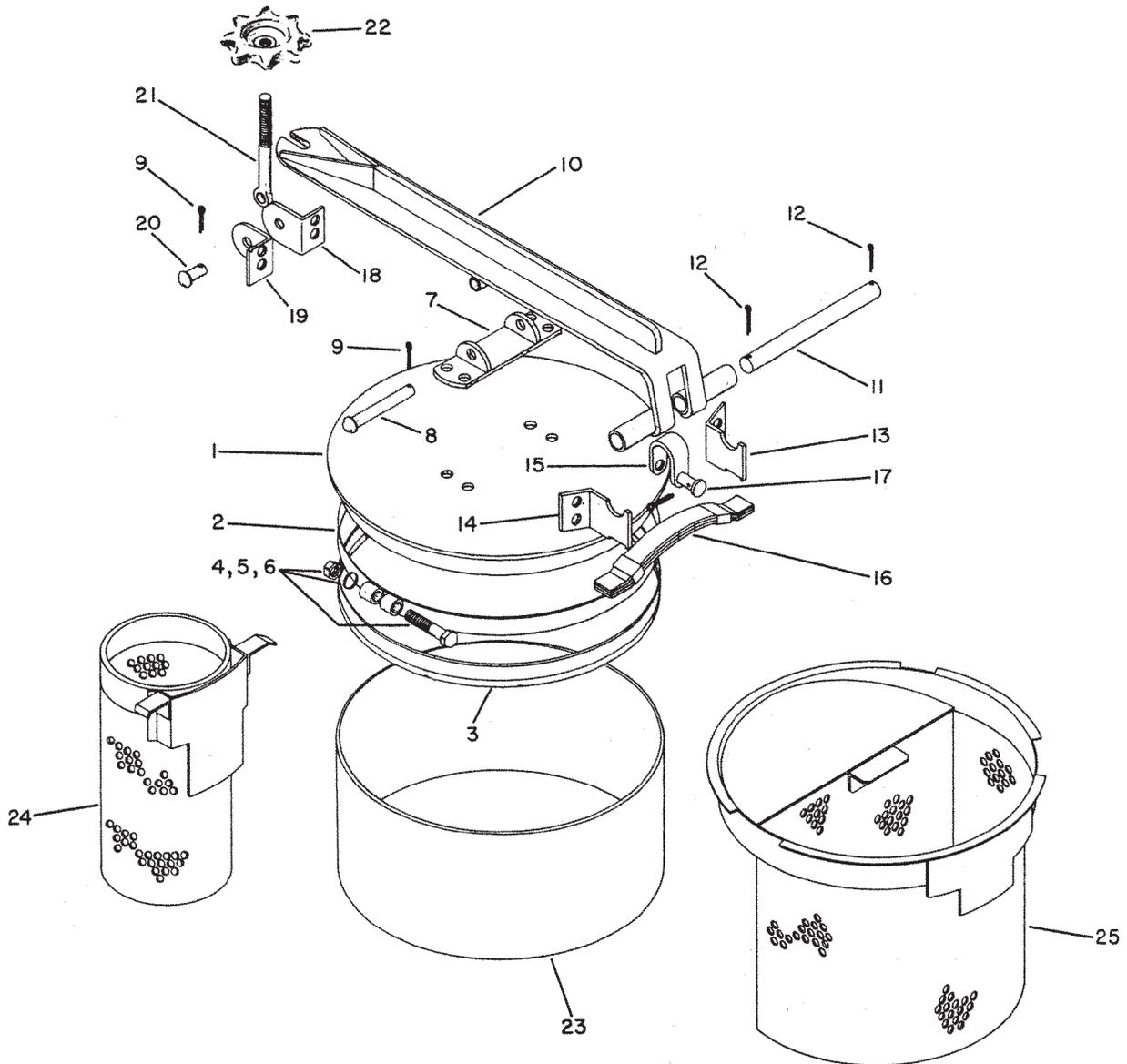
1. Drain and wash out after each day's use if material is heavy enough to set-up in tank or pump or when changing from asphalt to tar or vice versa.
2. Tighten pump packing glands only enough to stop any drip. If too tight, shaft may be scored.
3. If burners have a short blue flame, it is an indication that burners are over-generating, which is caused by carbon in the coils or too small an opening in the vaporizing tip. Flakes of carbon may be removed from tip by using the burner cleaner. If this does not correct the trouble, bore out the tip with a #54 drill. If flame is still blue, remove coil from burner and place it vertically in a vice with openings down; heat one-half of top coil to color; add oxygen cautiously to open tube end. As carbon burns out, color will travel around and down coil. When burned out, vibrate and blow out with air.
4. If flame is smoky and dark yellow, needle valve is open too much, causing under-generation.
5. Clean out suction line strainer periodically as necessary.

Manhole - MU Type



REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	MUT6-4A	2600012	1	COVER					
2	MUT6-5	2600015	1	PIN-HINGE					
3	ZCP1A-3	0103373	3	COTTER PIN					
4	MUT6-8A	2600020	1	ARM					
5	MUT6-10	2600025	1	HANDLE					
6	MUT6-9A	2600023	1	WASHER					
7		6000433	1	RIVET					
8	MUT6-2	2600011	1	GASKET					
9	MUT6-6A	2600016	2	HINGE					
10	MUT6-1A	2600006	1	COLLAR					
11	MUT-10A	2600029	1	STRAINER					
12	MUT-6A	2600005	1	MANHOLE-					

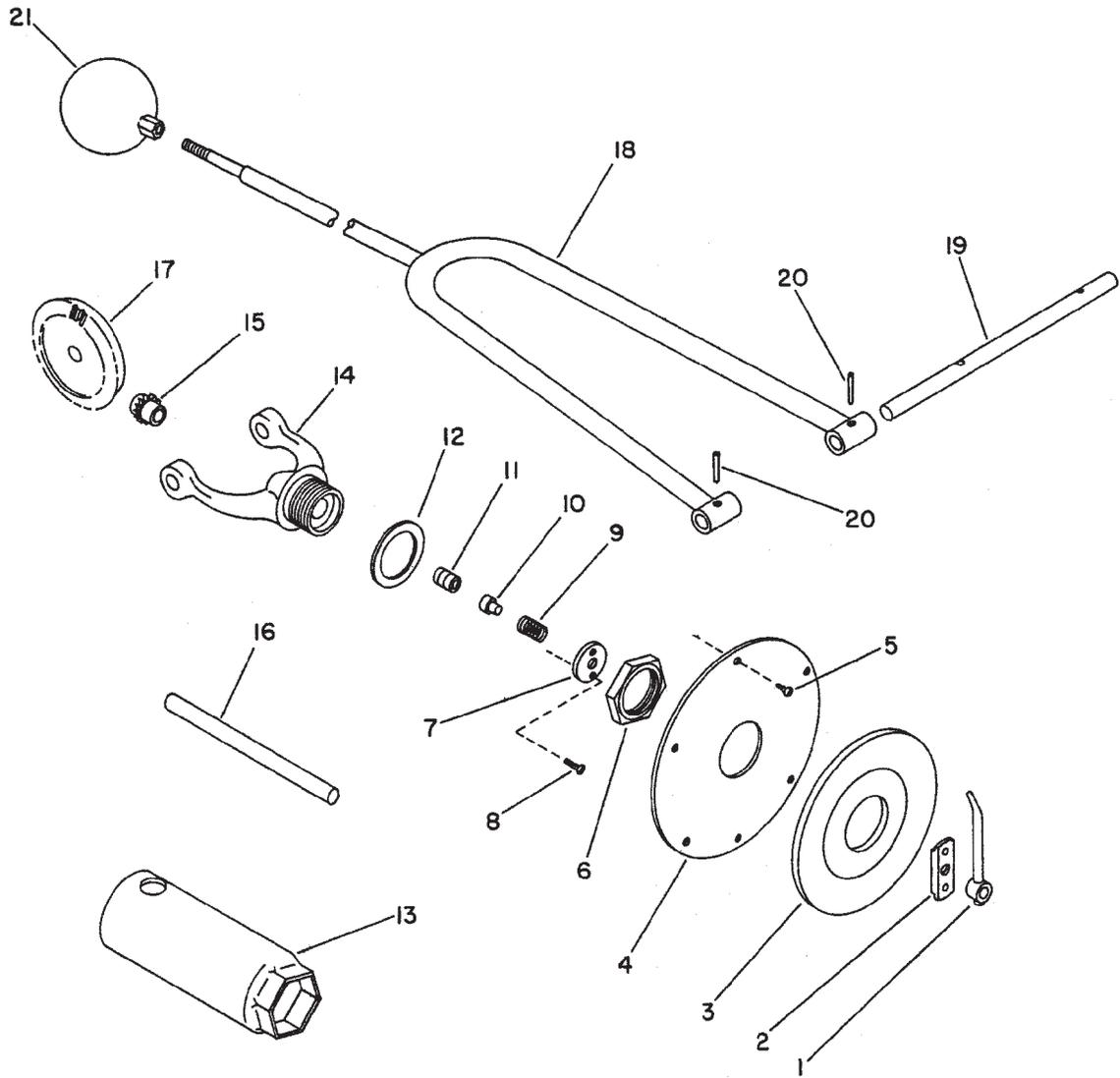
Manhole - 16 Inch Type



REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	T203-2A	3300113	1	COVER	20	T227-5	6000485	1	LATCH PIN
2	T203-3A	3300116	1	RING-RET GSKT	21	T227-6	3300150	1	LATCH BOLT
3	T203-3-1	3300117	1	RING-GSKT	22	T203-7	3300120	1	HAND WHEEL
4	ZC5-11	0122083	1	CAPSCREW	23	HTT-16A	2750057	1	RING
5	Z5-LW	0120214	1	LOCK WASHER	24	MS-356A	3390173	1	STRAINER-OPT
6	ZC5-N	0120376	1	HEX NUT	25	MS-85A	3390046	1	STRAINER
7	T203-9A	3300122	1	BEARING	26	T-203A	7100001	1	MANHOLE
8	T203-10	3300125	1	PIN					
9	ZCP1A-3	0103373	3	COTTER PIN					
10	T203-1A	3300108	1	TONGUE					
11	T203-8	3300121	1	HINGE PIN					
12	ZCP2-4	0103385	2	COTTER PIN					
13	T118-13L	3300018	1	BRACKET-LT					
14	T118-13R	3300019	1	BRACKET-RT					
15	T203-11-1	3300127	1	SLEEVE YOKE					
16	T203-12A	3300128	1	SPRING RELEASE					
17	T118-11	3300294	1	YOKE PIN					
18	T227-4L	3300148	1	LATCH BRG- LT					
19	T227-4R	3300149	1	LATCH BRG- RT					

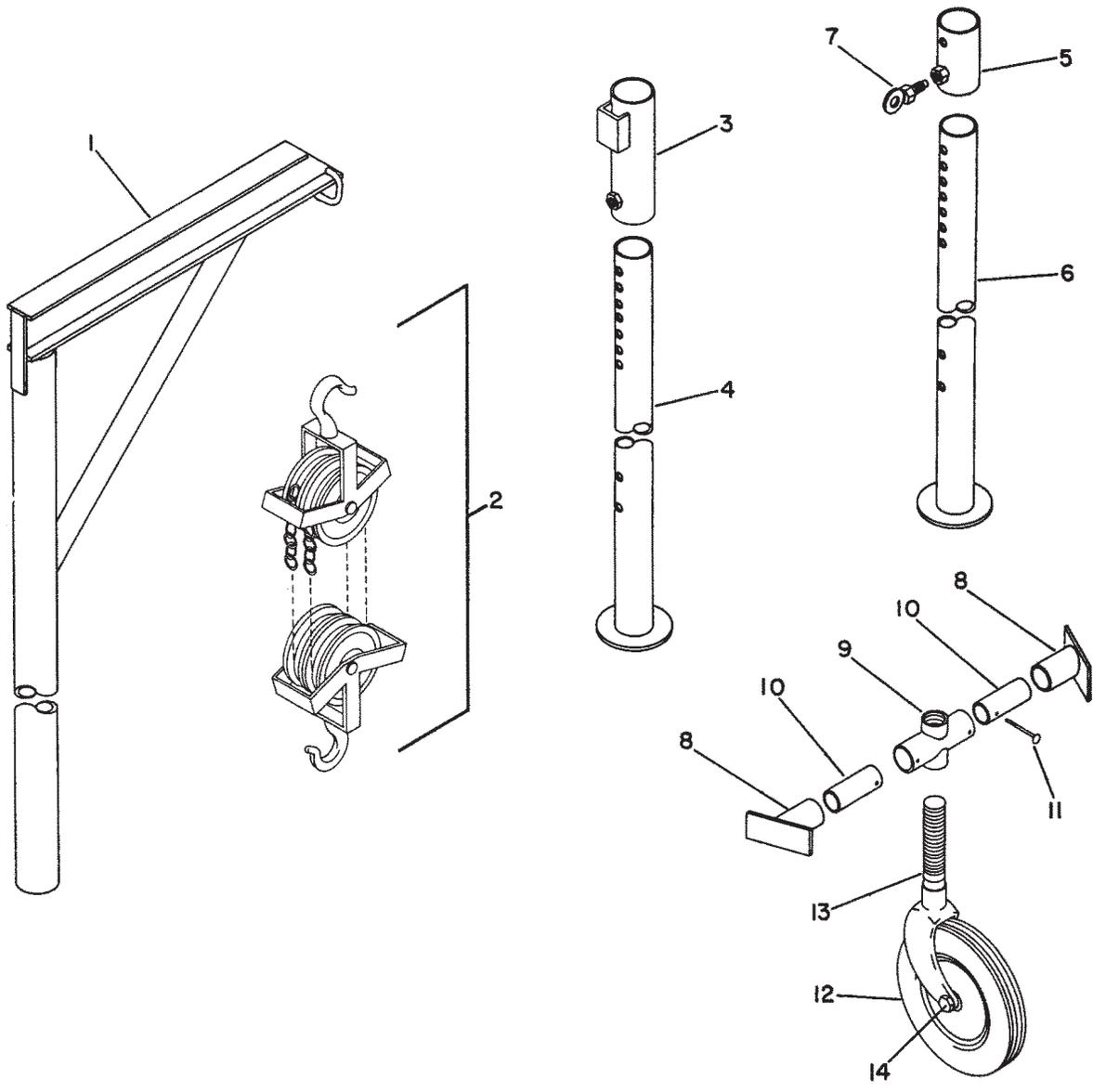
Specify Unit Serial No., Part No., & Part Description

Tank Gauge



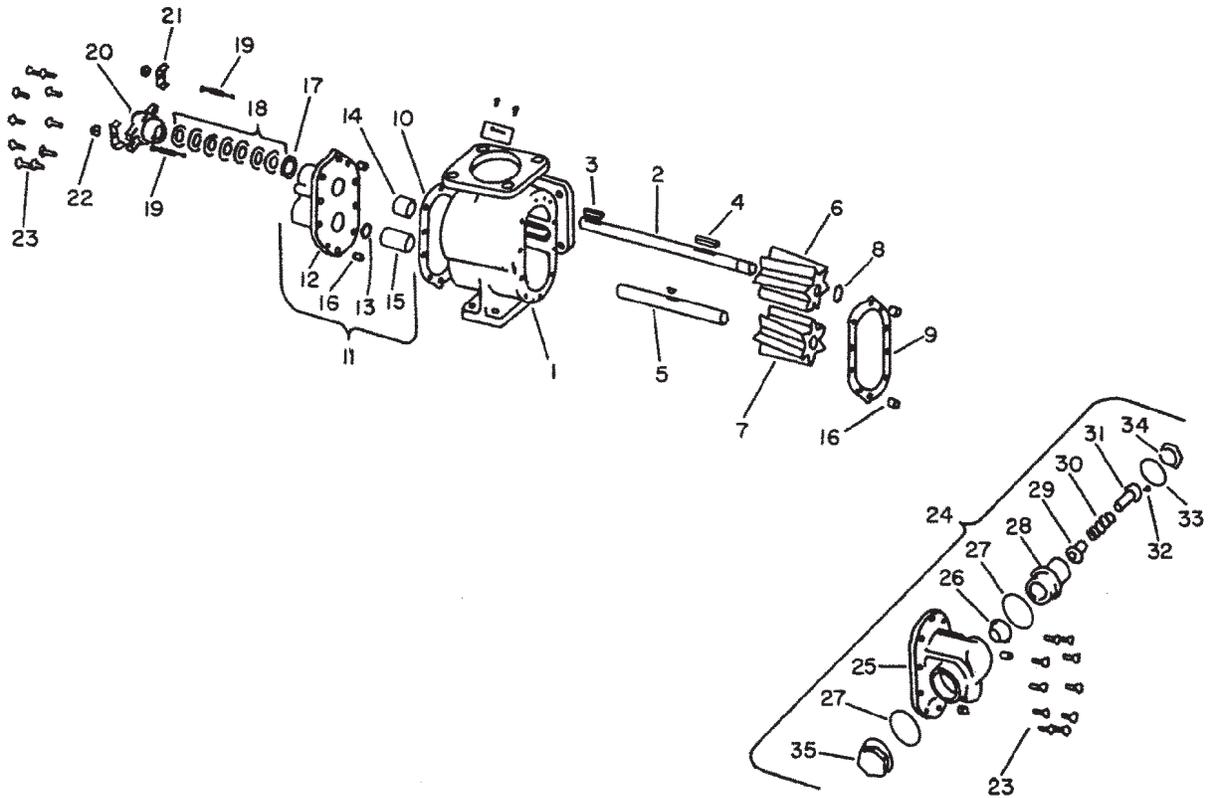
REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	TG-14	3360191	1	INDICATOR	16	TG-13	3360189	1	SHAFT-INDICATOR
2	TG29-1-2	3360202	1	PLATE-END BRG	17	TG-6	6425001	1	BEVEL GEAR
3	SEE PAGE 2		1	DIAL	18	TG39-1A-22	3360212	1	STEM- 22 LONG
4	TG29-1-1	3360201	1	PLATE		TG39-1A-27	3360425	1	STEM- 27 LONG
5	Z14DS-2	0144728	6	RD HD SMS		TG39-1A-30	3360214	1	STEM- 30 LONG
6	TG-8	3360186	1	HEX NUT		TG39-1A-34	3360215	1	STEM- 34 LONG
7	TG-25	3360195	1	PLATE-PKNG	19	TG-3	3360185	1	SHAFT-FLOAT
8	ZC8MS-2RH	0437352	1	RD HD MS	20	ZTPO-4	0103564	2	TAPER PIN
9	TG-15	3360192	1	SPRING-PKNG	21	TG-2	6600335	1	FLOAT
10	TG-12	3360187	1	SLEEVE-PKNG					
11	TG-31	3360204	1	PACKING					
12	TG-9	6600336	1	GASKET					
13	TL-8	3380080	1	WRENCH					
14	TG-16	3360193	1	BRKT- FLOAT					
15	TG-11	3220026	1	PINION					

Stands, Swivel Caster, Barrel Hoist & Chain Hoist



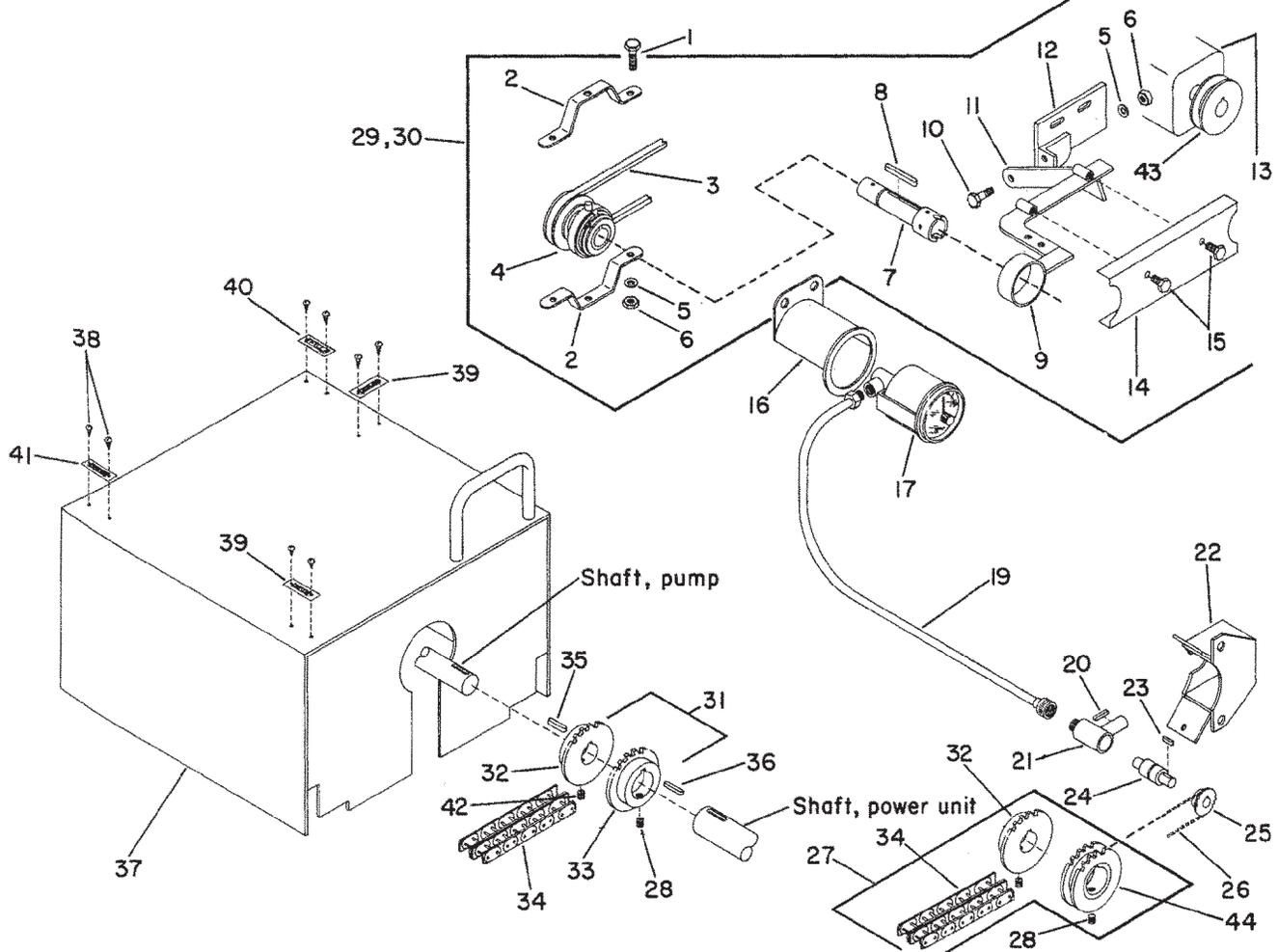
REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	MUF93-1A	2610083	1	BOOM-BARREL HST					
2	MUF20-5	6000320	1	CHAIN HOIST					
3	MUF111-2A	2610131	1	FRONT GUIDE					
4	MUF-111A	2610129	1	FRONT STAND					
5	MUF48-3A	2610053	1	REAR SLEEVE					
6	MUF48-5A	2610056	1	REAR STAND					
7	MUF48-4A	2610055	1	BOLT-LOCK					
8	MUF15-10A	2610031	2	TUBE-BRG					
9	MUF15-2A	2610019	1	THRDED CROSS					
10	MUF15-7	2610029	2	EXT TUBE					
11	MUF15-4A	2610025	2	PIN-LOCK					
12	MUF15-5A	7630032	1	WHEEL & TIRE					
13	MUF15-1	2610018	1	CASTER FORK					
14	MUF15-8	2610030	1	CASTER AXLE					

Pump



REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	RP-P1-175	7000038	1	CASE- PUMP #4	21	RP-D42-1	7000062	2	CLIP-PKG GLAND
	RP-P1-178	7000037	1	CASE- PUMP #2	22	RP-D441-755	7000063	2	LOCK NUT
2	RP-D1-1392	7000040	1	DRIVE SHAFT- #4	23	RP-G49-037100	7000064	16	CAPSCREW
	RP-D1-1361	7000041	1	DRIVE SHAFT- #2		RP-G49-24	7000065	4	CAPSCREW W-WSHR
3	RP-D30-9	7000042	1	KEY	24	RP-N7-228	7000066	1	FCPLT- REL VLV
4	RP-D30-9	7000042	2	KEY	25	RP-N3-190	7000067	1	FCPLT
5	RP-D1-1077	7000043	1	SHAFT- IDLER #4	25A	RP-P3-136	7000068	1	FCPLT- NSS
	RP-D1-1098	7000044	1	SHAFT- IDLER #2	25B	RP-G5-257	7000069	2	BRG BSHG- NSS
6	RP-P6-311	7000045	1	CAM DRV-LT #4	25C	RP-G8-247	7000070	2	WSHR-EXP NSS
	RP-P6-309	7000046	1	CAM DRV-LT #2	26	RP-D16-87	7000071	1	POPPET
7	RP-P6-277	7000047	1	CAM IDLE-RT #4	27	RP-G11-179A	7000072	2	GASKET- CAP
	RP-P6-275	7000048	1	CAM IDLE-LT #2	28	RP-P14-37	7000073	1	BONNET
8	RP-G41-108	7000049	1	RING- RET	29	RP-D8-325	7000074	1	GUIDE- SPRING
9	RP-D11-354	7000050	1	GASKET- FP	30	RP-G10-202	7000075	1	SPRING
10	RP-D11-339	7000051	1	GASKET- BP	31	RP-D15-20	7000076	1	SCREW- ADJ
11	RP-N2-438	7000052	1	BKPLT-INC 12-15	32	RP-G79-10	7000077	1	SCREW- SET
12	RP-P2-142	7000053	1	BACKPLT	33	RP-G11-105A	7000078	1	GASKET
13	RP-G8-247	7000054	1	EXP WASHER	34	RP-D21-91	7000079	1	CAP
14	RP-G5-261	7000055	1	BRG BSHG-SHRT	35	RP-P17-103	7000080	1	CAP- PLUG
15	RP-G5-257	7000056	1	BRG BSHG-LG		RP-D601-19	7000081	1	PLT- ROT NS
16	RP-D48-34	7000057	4	PIN-HOLLOW DWL	36	RP-2A	6600326	1	PUMP-COMPL #2
17	RP-G8-246	7000058	1	WASHER-PACK		RP-4	6600328	1	PUMP-COMPL #4
18	RP-HN43-2	7000024	1	PACKING SET					NSS NOT SERV
18A	RP-G14-202	7000059	1	RING- PACK					NS NOT SHOWN
19	RP-D708-16	7000060	2	STUD					
20	RP-P10-178	7000061	1	GLAND- PACK					

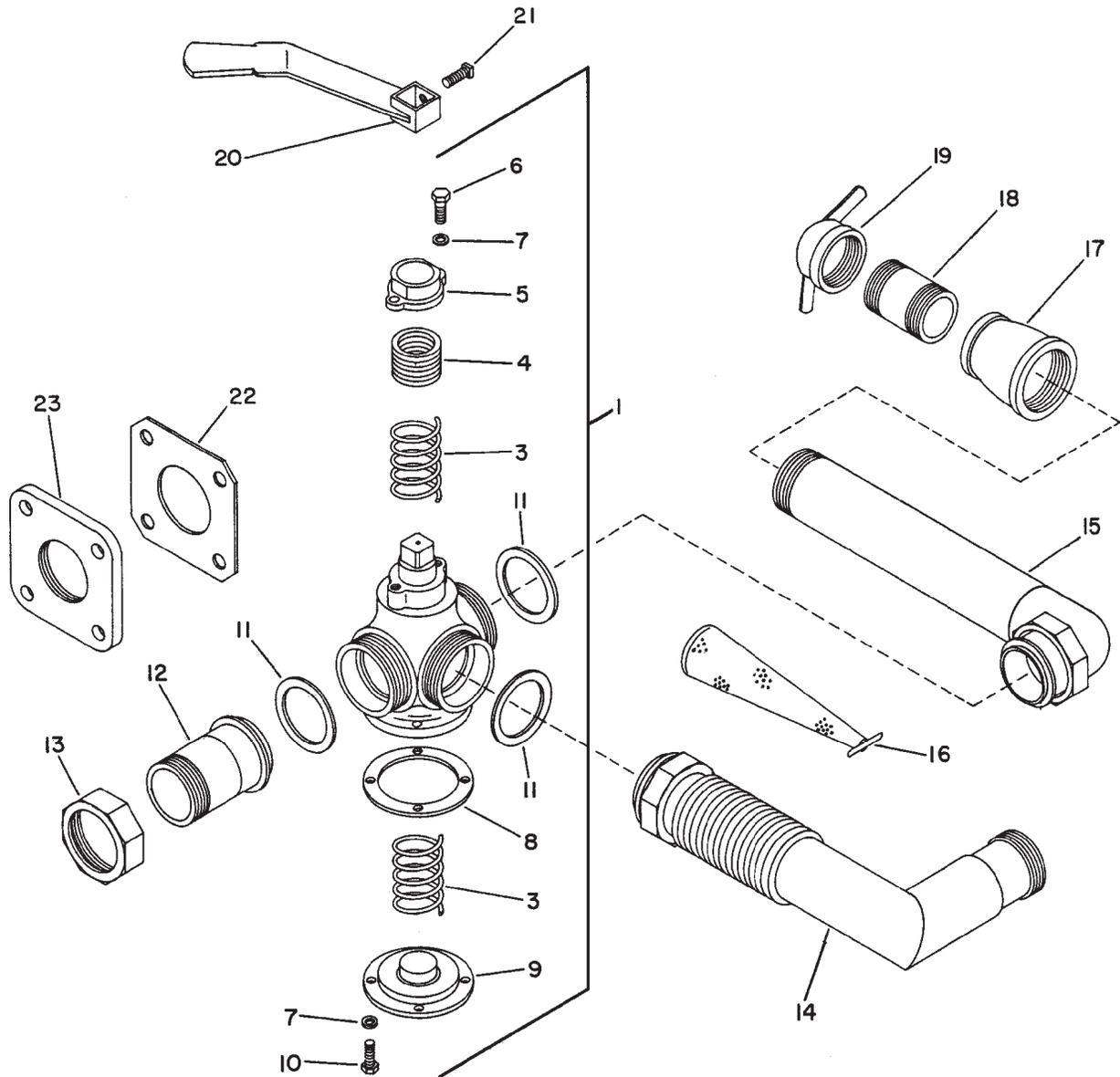
Pump Housing, Clutch, Coupling, Tachometer & Fuel Pump



REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	ZC6-5	0122145	2	CAPSCREW	28	ZSS5-1AS	0102581	2	SKT HD SS
2	MUH49-7	2630052	2	LEVER	29	MUH-49AA	2630102		CLUTCH DRIVE
3	VA-34	6435030	1	V-BELT	30	MUH-49A	2630106		DRIVE-LESS 13
4	MUH49-1A	2630037	1	CLUTCH-INCL 1-8	31	G-178A	3320199	1	CHAIN CPLG
5	Z6-LW	0120382	3	LOCK WASHER	32	G178-2	6430080	1	SPROCKET
6	ZC6-N	0220071	3	HEX NUT	33	G178-1	6430087	1	SPROCKET
7	MUH49-1-1	2630038	1	SHAFT EXTENSION	34	G178-3	3320616	1	CHAIN
8	ZK4-9	6000232	1	KEY	35	ZK4-5	6000005	1	KEY
9	MUH49-2A	2630041	1	ARM	36	ZK6-8	3170061	1	KEY
10	ZC6-6	0120918	1	CAPSCREW	37	MUHD-59A	2640031	1	PUMP HOUSING
11	MUH114-1	2630070	1	MTG ARM	38	Z4DS-1A-5	6000430	16	RD HD SMS
12	MUH49-5	2630048	1	ANGLE SUPT	39	056-11	3360178	2	PLATE-CIRC
13	MUH-28AA	2630100	1	PUMP-FUEL	40	056-10	3360423	1	PLATE-FILL
14	MUH24-1	2630027	1	COVER-GUARD	41	056-6	3360176	1	PLATE-DIST
15	ZC5-6	0120834	2	CAPSCREW	42	ZSS5-3	0102584	1	SKT HD SS
16	FM-33A	3320023	1	TACH HOUSING	43	MUH-55	2630056	1	PULLEY
17	TR-144A	3360393	1	TACH HEAD	44	G-343A	3320266	1	CPLG-W TACH DRV
	SW-205146	7850010	1	GLASS-W-IND					
19	SEE PAGE 2		1	TACH SHAFT					
	SEE PAGE 2		1	TACH SHAFT CORE					
20	ZK4-8	3100302	1	KEY					
21	HM-27A	3320340	1	TACH DRIVE BRG					
22	HM-36A	3320363	1	HOUSING					
23	ZK3-4	6000207	1	KEY					
24	HM-28	3320343	1	DRIVE BRG					
25	HM-29	6430081	1	SPROCKET					
26	HM-31	6430083	1	CHAIN					
27		2620001	1	CPLG-TACH DRV					

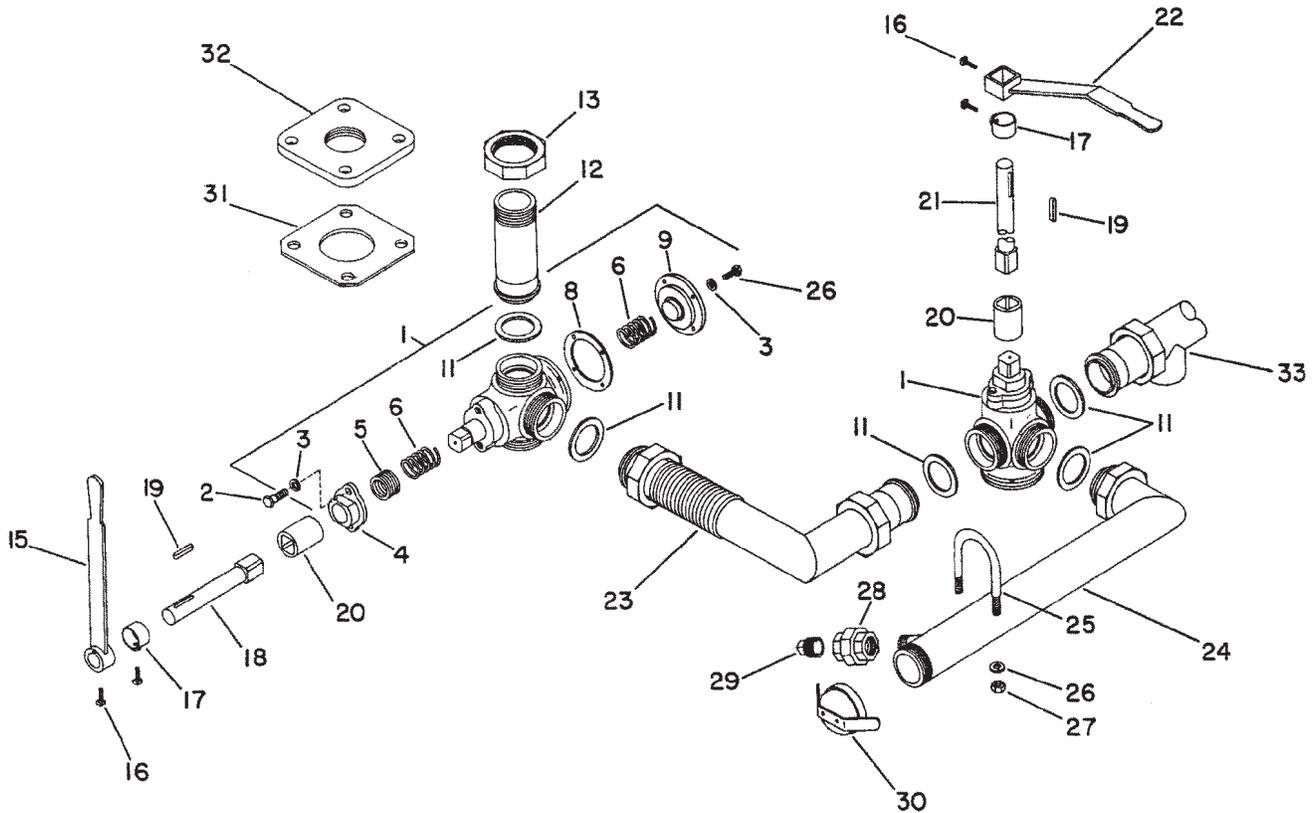
*After serial number M-1623 use spec. no. 2630147 fuel pump.

Suction Line & Valve



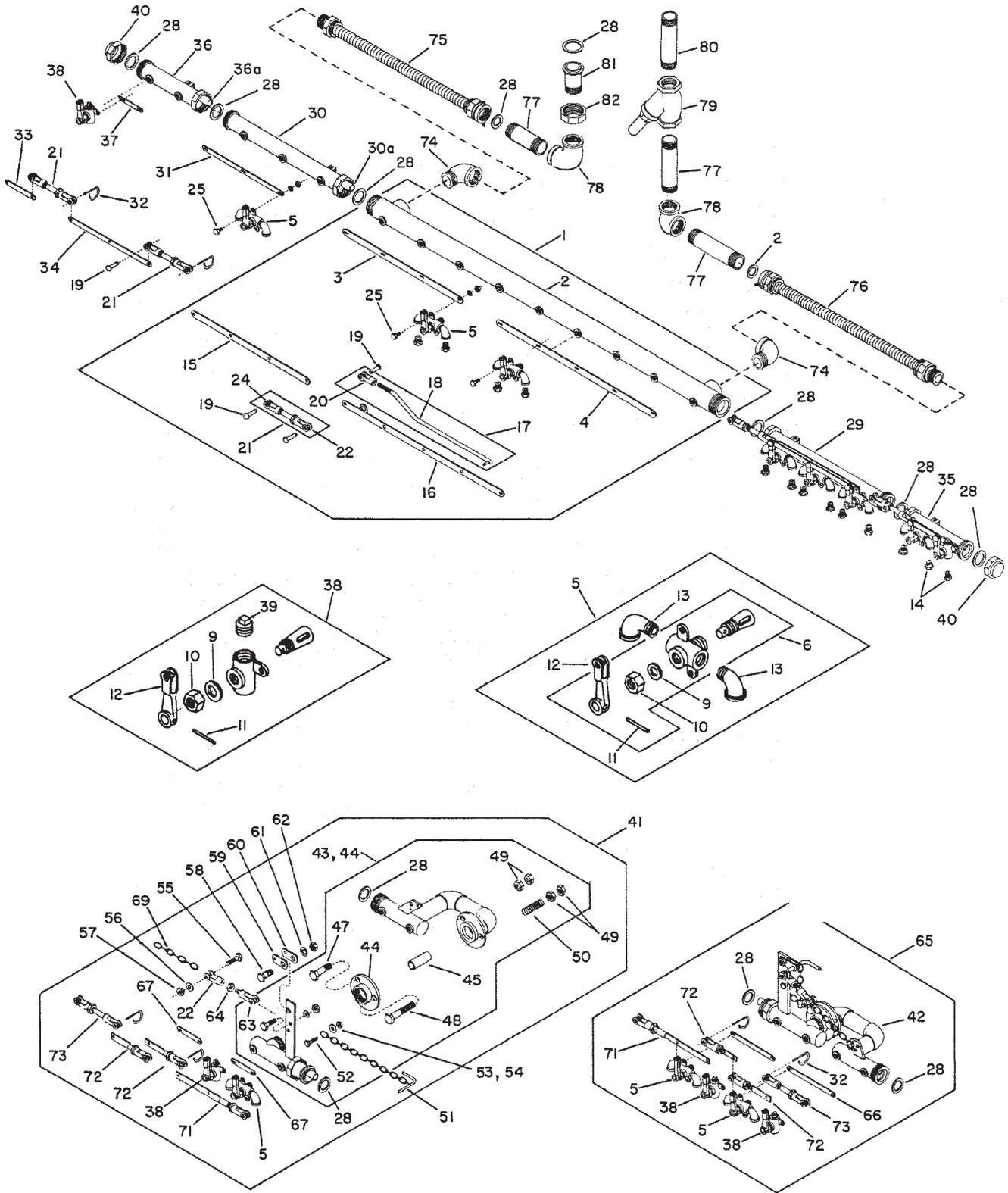
REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	HD-86A	3340075	1	VALVE-3 WAY	17	X40-32RC	6200063	1	RED CPLG
3	HD-79	3340046	2	SPRING	18	X32-CL	0219400	1	CLOSE NIPPLE
4	HD-53P	6600216	1	PACKING	19	MUHD8-4A	2640001	1	CAP
5	HD-60	3340028	1	GLAND CAP	20	MUHD-51A	2640017	1	LEVER
6	ZC5-4	0122017	2	CAPSCREW	21	ZSS6-45Q	0102896	1	SQ HD SS
7	Z5-LW	0120214	2	LOCK WASHER	22	MUHD-23G	2640006	1	GASKET- #4 PMP
8	HD-58G	3340027	1	GASKET	23	MUHD24-2 1-2	2640008	1	PLATE- #4 PMP
9	HD-58	3340026	1	PLATE					
10	ZC5-5	0122027	4	CAPSCREW					
11	HD-51G	6600208	3	ASB GASKET					
12	MUHD-120A	2640097	1	ADAPTER- #4PMP					
	MUHD-123A	2640102	1	ADAPTER- #2 PMP					
13	X32-UN	6000480	1	UNION NUT					
14	MUHD-122A	2640099	1	SUCTION LINE					
15	MUHD-46A	2640015	1	FILL LINE					
16	MUHD-15A	2640003	1	STRAINER					

Discharge Line & Valve



REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	HD-129A	3340172	2	VALVE- 3 WAY	31	MUHD-23G	2640006	1	GASKET-#4 PUMP
2	ZC5-3	0122007	4	CAPSCREW	32	MUHD-24	2640007	1	PLATE-#4 PUMP
3	Z5-LW	0120214	4	LOCK WASHER	33	MUHD-107A	2640083	1	LINE
4	HD-60	3340028	1	GLAND CAP					
5	HD-60P	3340029	2	PACKING					
6	HD-79	3340046	4	SPRING					
8	HD129-3G	3340176	2	GASKET					
9	HD129-3	3340175	2	PLATE					
10	ZC6-3	0122119	8	CAPSCREW					
11	CS-A6	6000251	6	GASKET					
12	MUHD-72A	2640045	1	ADPTR- #2 PUMP					
	MUHD-75A	2640052	1	ADPTR- #4 PUMP					
13	X24-UN	6000479	2	UNION NUT					
15	S-129A	3351059	1	LEVER					
16	ZC6-4	0120233	2	CAPSCREW					
17	FCO-31A	3350893	2	COLLAR-W-SCREW					
18	MUHD-60AS	2640037	1	SHAFT-SHORT					
19	ZK4-5	6000005	2	KEY-					
20	FCO-40	3350906	2	SQUARE CPLG					
21	MUHD-60AL	2640036	1	SHAFT-LONG					
22	MUHD-51A	2640017	1	LEVER					
23	MUHD-104A	2640076	1	RETURN LINE					
24	MUHD-108A	2640088	1	LINE					
25	MS-188	3390085	1	RIPE CLIP					
26	Z6-LW	0120382	10	LOCK WASHER					
27	ZC6-N	0120377	2	HEX NUT					
28	X16-RU	6000416	1	PIPE UNION					
29	X16-P	0219303	1	PIPE PLUG					
30	MUHD8-4A	2640001	1	CAP-PIPE					

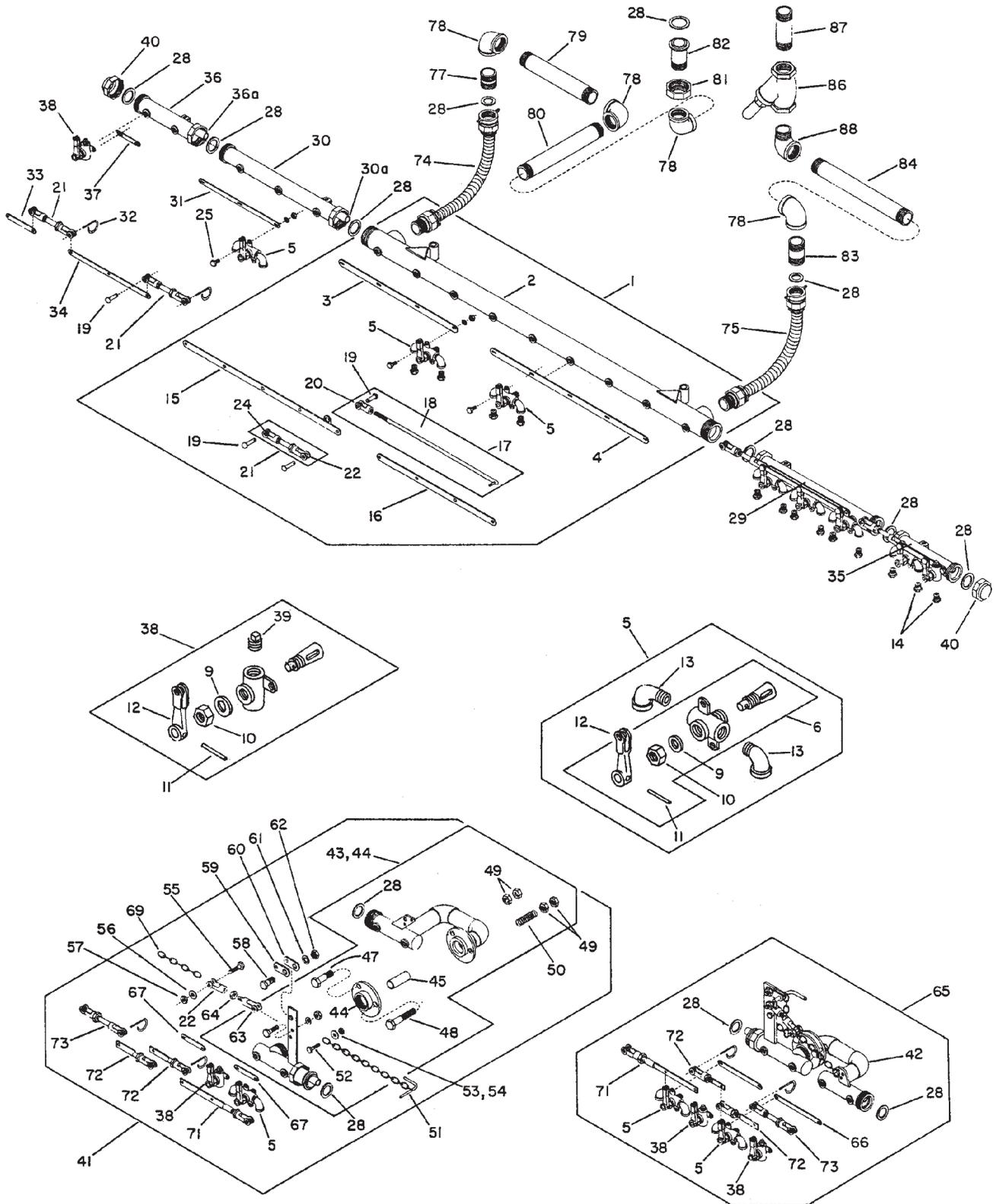
Spray Bar - FC Type Rigid



Spray Bar - FC Type Rigid

REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	MUHD-85AA	2640284	1	CNTR SECTION	62	ZC8-N	0120378	2	HEX NUT
2	MUHD-85A	2640061	1	CNTR TUBE	63	MUHD-144A	2640288	2	LINK
3	FCC-9L	3350696	1	BAR-HOLD LT	64	ZF7-N	0271506	2	HEX NUT
4	FCC-9R	3350697	1	BAR-HOLD RT	65	MUHD-141AR	2640159	1	SECT-FOLD RT
5	FCC-8AA	3350693	AR	VALVE-DBL PORT	66	FCC21-1-6	3350735	2	BAR-VLV HOLD
6	FCC-8A	3350694	AR	VALVE-LESS ELL	67	FC1-2L	3350090	2	LINK-HOLD
9	FCC8-1	3350695	AR	BRASS WASHER	69	RM15-4	6000347	2	CHAIN-PER FT
10	ZF9-JN	0124939	AR	JAM NUT	70	FC1-2L	3350090	2	LINK-LT HOLD
11	ZTPO-4	0103564	AR	TAPER PIN	71	MUHD-142A	2640174	2	LINK-INCL ITEMS
12	CS-24	3351187	AR	LEVER-VALVE					71A 64 22
13	X8-E	0108686	AR	STREET ELL	71A	MUHD142-1A	2640175	2	END LINK
14	S36-18	3351011	AR	NOZZLE- 1-8	72	MUHD-143A	2640287	2	LINK-INCL ITEMS
	S36-116	3351013	AR	NOZZLE- 1-16					72A 64 22
	S36-332	3351015	AR	NOZZLE- 3-32	72A	MUHD143-1A	2640177	2	SHORT LINK
	S36-316	3351014	AR	NOZZLE- 3-16	73	MUHD-144A	2640288	2	LINK-INCL ITEMS
15	FCC-10L	3350698	1	BAR-VALVE LT					73A 64 22
16		2650097	1	BAR-VALVE	73A	MUHD144-1A	2640179	2	END LINK
17	FCO-33A	3351222	1	ROD	74	X32-SE	0187154	2	STREET ELL
18	FCO-33	3350897	1	LINK-CONNECT	75	MUHD-89A	2640067	1	HOSE-28 INCHES
19			1	DRILLED RIVET		MUHD-89A	2640067	1	HOSE-32 INCHES
20	MS-131	3390072	1	TURNBUCKLE		MUHD-89A	2640067	1	HOSE-46 INCHES
21	FC2-4A	3350103	5	LINK	76	MUHD-90A	2640069	1	HOSE-32 INCHES
22	FC2-4-2	3350107	5	YOKE	77	X32-		3	NIPPLE
23	ZF7-N	0271506	5	HEX NUT	78	X32-E	0189777	2	ELBOW
24	FC2-4-1A	3350104	5	YOKE	79	MUHD-97	6600284	1	RELIEF VALVE
25	ZF4-3	0123450	AR	CAPSCREW	80	X32-24	0219535	1	NIPPLE
26	Z4-LW	0120380	AR	LOCK WASHER	81	MUHD-75A	2640052	1	ADAPTER-#4 PUMP
27	ZF4-N	0120367	AR	HEX NUT		MUHD-72A	2640045	1	ADAPTER-#2 PUMP
28	CS-A6	6000251	AR	GASKET	82	X24-UN	6000479	1	UNION NUT
29	FC-2AR	3350095	1	SECT-2FT RT-AS					AR-AS REQUIRED
	FC-2AL	3350094	1	SECT-2FT LT					AS-AS SHOWN
30	FC2-1A	3350096	2	TUBE-2FT SECT					
30A	FC2-1-3A	3350099	2	TUBE-INNER 2FT					
31	FC2-2	3350101	2	LINK-HOLD 2FT					
32	FCC-14	3350708	6	PULL PIN					
33	FC1-3	3350092	2	VLV CNTRL-1FT					
34	FC2-3	3350102	2	VLV CNTRL-2FT					
35	FC-1AR	3350084	1	SECT-1FT RT-AS					
	FC-1AL	3350083	1	SECT-1FT LT					
36	FC1-1A	3350085	2	TUBE-1FT SECT					
36A	FC1-1-2A	3350087	2	TUBE-INNER 1FT					
37	FC1-2L	3350090	1	LINK-HOLD LT-AS					
	FC1-2R	3350091	1	LINK-HOLD RT					
38	FC1-4A	3350093	AR	SINGLE VALVE					
39	X8-P	0219199	AR	PLUG-PIPE					
40	FCC21-2A	3350737	2	END CAP					
41	MUHD-141AL	2640158	1	SECT-FOLD LT					
42	MUHD141-2AR	2640285	1	SECT-BARE RT					
	MUHD141-2AL	2640286	1	SECT-BARE LT					
43		2640160	1	SECT-LT FOLD					
44		2640283	1	SECT-RT FOLD					
45	MUHD150-7	2640196	2	TUBE-INNER					
47	ZC8-9	0122466	2	CAPSCREW					
48	MUHD141-1-5	2640171	2	BOLT-SPRING					
49	ZC8-N	0120378	12	HEX NUT					
50	F-95	3310353	2	SPRING					
51	FCC25-6A	3350785	2	YOKE PIN					
52	ZC4-5	0121913	2	CAPSCREW					
53	Z4-FW	0120386	2	FLAT WASHER					
54	ZC4-N	0120375	2	HEX NUT					
55	ZC5-7	0122052	4	CAPSCREW					
56	Z5-FW	0446363	4	FLAT WASHER					
57	ZC5-N	0120376	4	HEX NUT					
58	ZC8-7	0122446	2	CAPSCREW					
59	FCC25-5L	3350783	2	CLEVIS HALF-LT					
60	FCC25-4	3350782	2	CLEVIS HALF					
61	Z8-LW	0120384	2	LOCK WASHER					

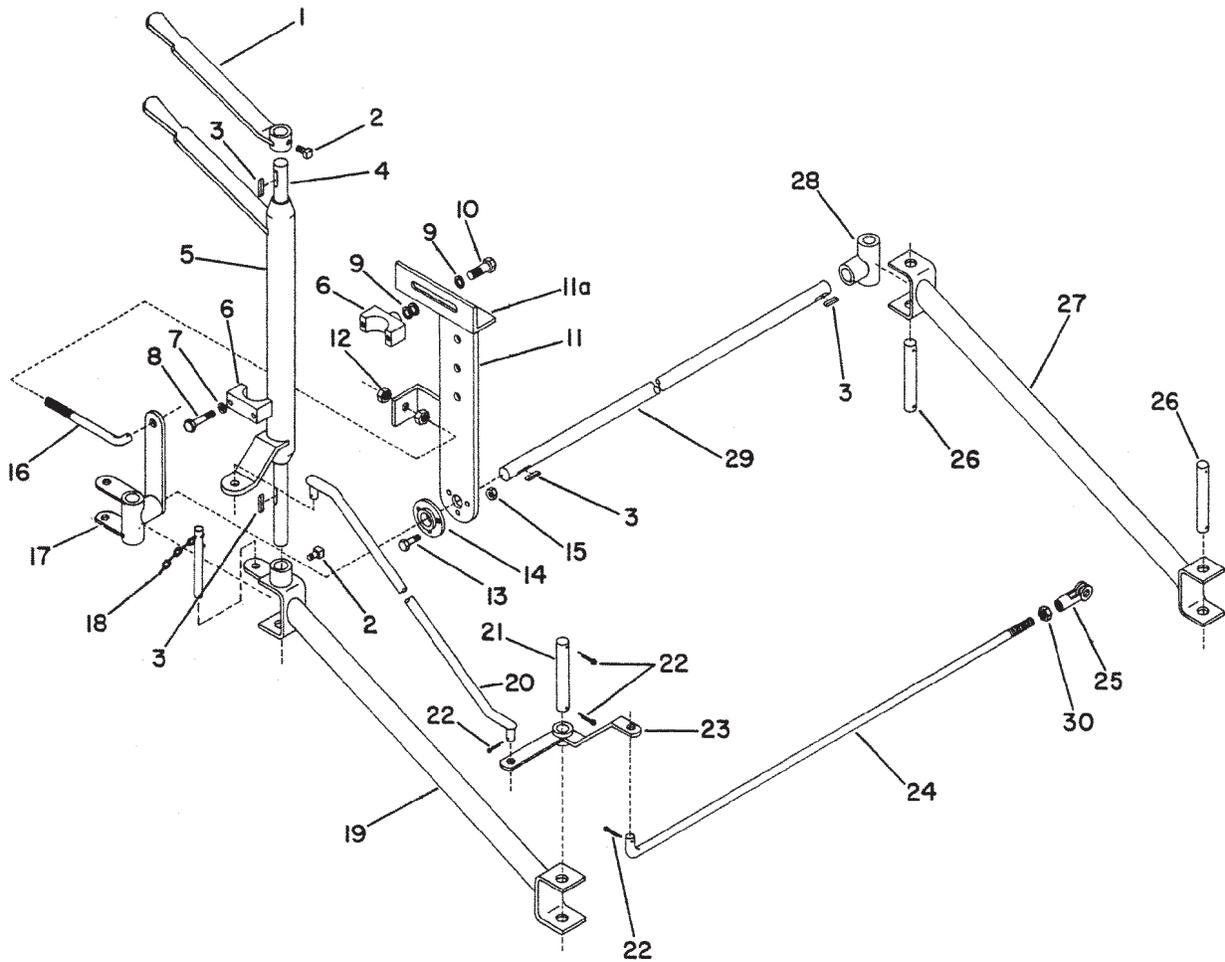
Spray Bar - FC Type Raising & Shifting



Spray Bar - FC Type Raising & Shifting

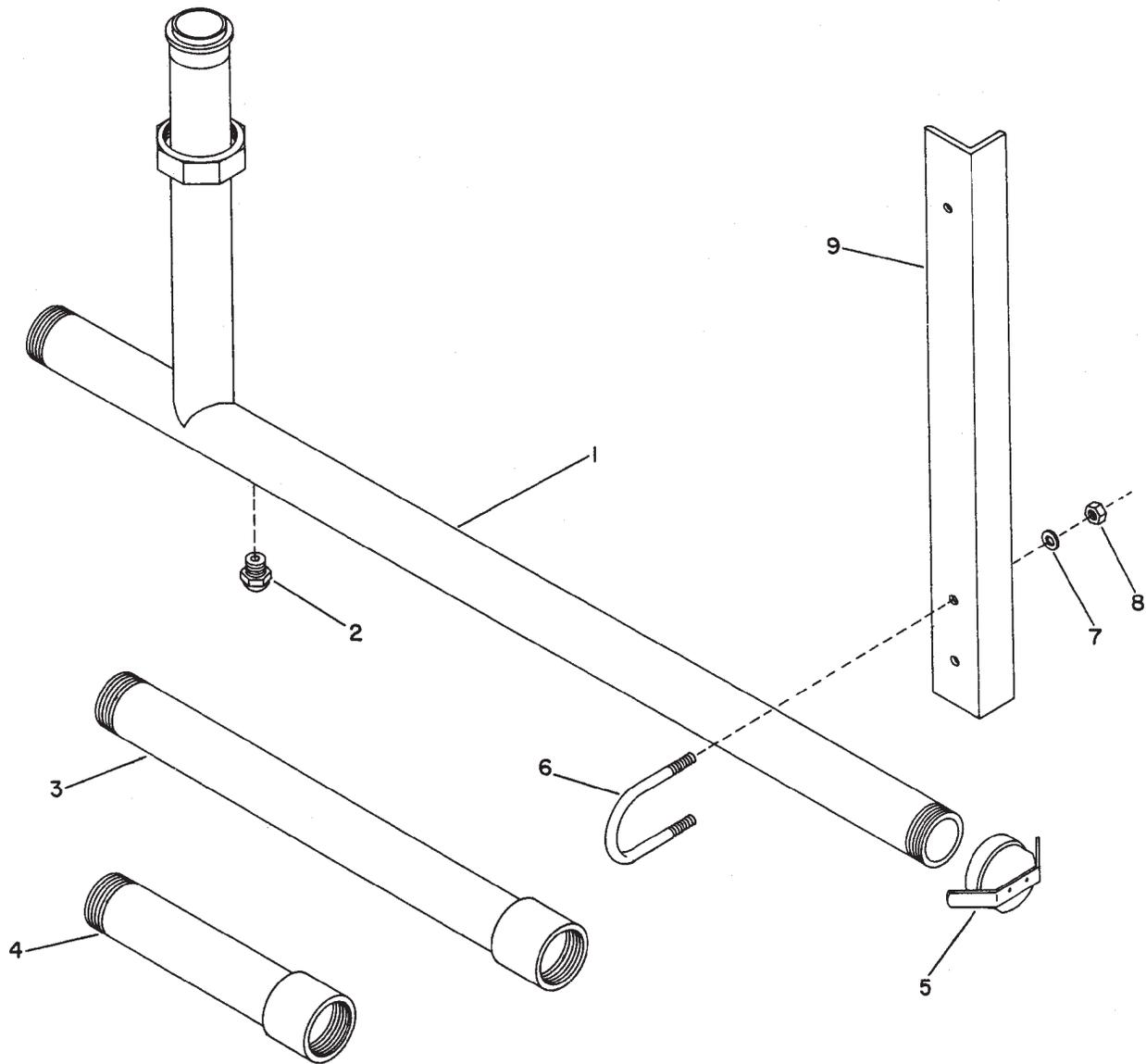
REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	MUHD-85AA	2650093	1	CNTR SECTION	62	ZC8-N	0120378	2	HEX NUT
2	MUHD-85A	2650094	1	CNTR TUBE	63	MUHD-144A	2640288	2	LINK
3	FCC-9L	3350696	1	BAR-HOLD LT	64	ZF7-N	0271506	2	HEX NUT
4	FCC-9R	3350697	1	BAR-HOLD RT	65	MUHD-141AR	2640159	1	SECT-FOLD-RT
5	FCC-8AA	3350693	AR	VALVE-DBL PORT	66	FCC21-1-6	3350735	2	BAR-VLV HOLD
6	FCC-8A	3350694	AR	VALVE-LESS ELL	67	FC1-2L	3350090	2	LINK-LT HOLD
9	FCC8-1	3350695	AR	BRASS WASHER	69	RM15-4	6000347	2	CHAIN-PER FT
10	ZF9-JN	0124939	AR	JAM NUT	70	FC1-2L	3350090	2	LINK-LT-HOLD
11	ZTPO-4	0103564	AR	TAPER PIN	71	MUHD-142A	2640174	2	LINK-INCL ITEMS
12	CS-24	3351187	AR	LEVER-VALVE					71A 64 22
13	X8-E	0108686	AR	STREET ELL	71A	MUHD142-1A	2640175	2	END LINK
14	S36-18	3351011	AR	NOZZLE- 1-8	72	MUHD-143A	2640287	2	LINK-INCL ITEMS
	S36-116	3351013	AR	NOZZLE- 1-16					72A 64 22
	S36-332	3351015	AR	NOZZLE- 3-32	72A	MUHD143-1A	2640177	2	SHORT LINK
	S36-316	3351014	AR	NOZZLE- 3-16	73	MUHD-144A	2640288	2	LINK-INCL ITEMS
15		2650096	1	BAR-VALVE RT					73A 64 22
16	FCC-10L	3350698	1	BAR-VALVE LT	73A	MUHD144-1A	2640179	2	END LINK
17	FCO-34A	3350898	1	ROD	74	MUHD-90A	2640069	1	HOSE-32
18	FCO-34	3350899	1	CONN LINK	75	MUHD-90A	2640069	1	HOSE-32
19			1	DRILLED RIVET	77	X32-CL	0219400	1	CLOSE NIPPLE
20	MS-131	3390072	1	TURNBUCKLE	78	X32-E	0189777	4	ELBOW
21	FC2-4A	3350103	5	LINK	79	X32-56	6200259	1	NIPPLE
22	FC2-4-2	3350107	5	YOKE	80	X32-64	6200260	1	NIPPLE
23	ZF7-N	0271506	5	HEX NUT	81	X24-UN	6000479	1	UNION NUT
24	FC2-4-1A	3350104	5	YOKE	82	MUHD-75A	2640052	1	ADAPTER-#4 PUMP
25	ZF4-3	0123450	AR	CAPSCREW		MUHD-72A	2640045	1	ADAPTER-#2 PUMP
26	Z4-LW	0120380	AR	LOCK WASHER	83	X32-20	0219533	1	NIPPLE
27	ZF4-N	0120367	AR	HEX NUT	84	X32-76	6200261	1	NIPPLE
28	CS-A6	6000251	AR	GASKET	85	X32-SE	0187154	1	STREET ELL
29	FC-2AR	3350095	1	SECT- 2FT RT-AS	86	MUHD-97	6600284	1	RELIEF VALVE
29	FC-2AL	3350094	1	SECT- 2FT LT	87	X32-24	0219535	1	NIPPLE
30	FC2-1A	3350096	2	TUBE-2FT SECT	88				AR-AS REQUIRED
30A	FC2-1-3A	3350099	2	TUBE-INNER-2FT	89				AS-AS SHOWN
31	FC2-2	3350101	2	LINK-HOLD-2FT					
32	FCC-14	3350708	6	PULL PIN					
33	FC1-3	3350092	2	VLV CNTRL-1FT					
34	FC2-3	3350102	2	VLV CNTRL-2FT					
35	FC-1AR	3350084	1	SECT-1FT-RT-AS					
	FC-1AL	3350083	1	SECT-1FT-LT					
36	FC1-1A	3350085	2	TUBE-1FT SECT					
36A	FC1-1-2A	3350087	2	TUBE-INNER-1FT					
37	FC1-2L	3350090	1	LINK-HOLD-LT					
	FC1-2R	3350091	1	LINK-HOLD-RT					
38	FC1-4A	3350093	AR	SNGL VLV					
39	X8-P	0219199	AR	PLUG-PIPE					
40	FCC21-2A	3350737	2	END CAP					
41	MUHD-141AL	2640158	1	SECT-FOLD-LT					
42	MUHD141-2AR	2640285	1	SECT-BARE-RT					
	MUHD141-2AL	2640286	1	SECT-BARE-LT					
43		2640160	1	SECT-LT-FOLD					
44		2640283	1	SECT-RT-FOLD					
45	MUHD150-7	2640196	2	TUBE-INNER					
47	ZC8-9	0122466	2	CAPSCREW					
48	MUHD141-1-5	2640171	2	BOLT-SPRING					
49	ZC8-N	0120378	12	HEX NUT					
50	F-95	3310353	2	SPRING					
51	FCC25-6A	3350785	2	YOKE PIN					
52	ZC4-5	0121913	2	CAPSCREW					
53	Z4-FW	0120386	2	FLAT WASHER					
54	ZC4-N	0120375	2	HEX NUT					
55	ZC5-7	0122052	4	CAPSCREW					
56	Z5-FW	0446363	4	FLAT WASHER					
57	ZC5-N	0120376	4	HEX NUT					
58	ZC8-7	0122446	2	CAPSCREW					
59	FCC25-5L	3350783	2	CLEVIS HALF-LT					
60	FCC25-4	3350782	2	CLEVIS HALF					
61	Z8-LW	0120384	2	LOCK WASHER					

Raising, Shifting & Carrying Mechanism



REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	S-129A	3351059	1	LEVER	17	MUHD131-2AL	2640116	1	CROSS BAR-LT
2	ZSS6-6SQ	0102892	2	SQ HD SET SCR	18	MUF15-4A	2610025	1	YOKE PIN-PULL
3	ZK4-5	6000005	4	KEY	19	MUHD131-1AL	2640112	1	CARRYING ARM-LT
4	MUHD131-9	2640132	1	BAR-SHIFT	20	MUHD131-12	2640136	1	LINK
	MUHD131-9T	2640133	1	BAR-SHIFT-TRK	21	MUHD131-11	2650135	1	PIN-HINGE
5	MUHD131-6A	2640127	1	CONTROL	22	ZCP2-5	0103386	10	COTTER PIN
	MUHD131-6AT	2640282	1	CONTROL-TRK MT	23	MUHD131-16A	2640146	1	BELL CRANK
6	MUHD131-3A	2640121	1	BEARING-ADJUST	24	FCO-33	3350897	1	CONN LINK-SHOWN
7	Z5-LW	0120214	2	LOCKWASHER	25	MS-131	3390072	1	CLEVIS
8	ZC5-8	0122065	2	CAPSCREW	26	MUHD131-7	2640130	2	HINGE PIN
9	Z8-FW	0120390	3	FLAT WASHER	27	MUHD131-1AR	2640113	1	CARRYING ARM-RT
10	ZC8-3	0122394	1	CAPSCREW	28	MUHD131-2AR	2640117	1	CROSS BAR-RT
11	MUHD131-14ART	2640141	1	BRACKET-RT-TRK	29	MUHD131-8	2640131	1	BAR
	MUHD131-14ALT	2640140	1	BRACKET-LT-TRK	30	ZF8-N	0120371	1	HEX NUT
	MUHD131-14AR	2640139	1	BRACKET-RT	24	FCO-34	3350899	1	CONN LNK-OFFST
	MUHD131-14AL	2640138	1	BRACKET-LT					
11A	MUHD131-5	2640126	1	BASE-USE W-11					
12	ZC8-N	0120378	2	HEX NUT					
13	ZC4-5	0121913	3	CAPSCREW					
14	45	3350001	1	BEARING					
15	ZC4-LN	9418936	3	LOCK NUT					
16	MUHD131-10	2640134	1	RAISING LINK					

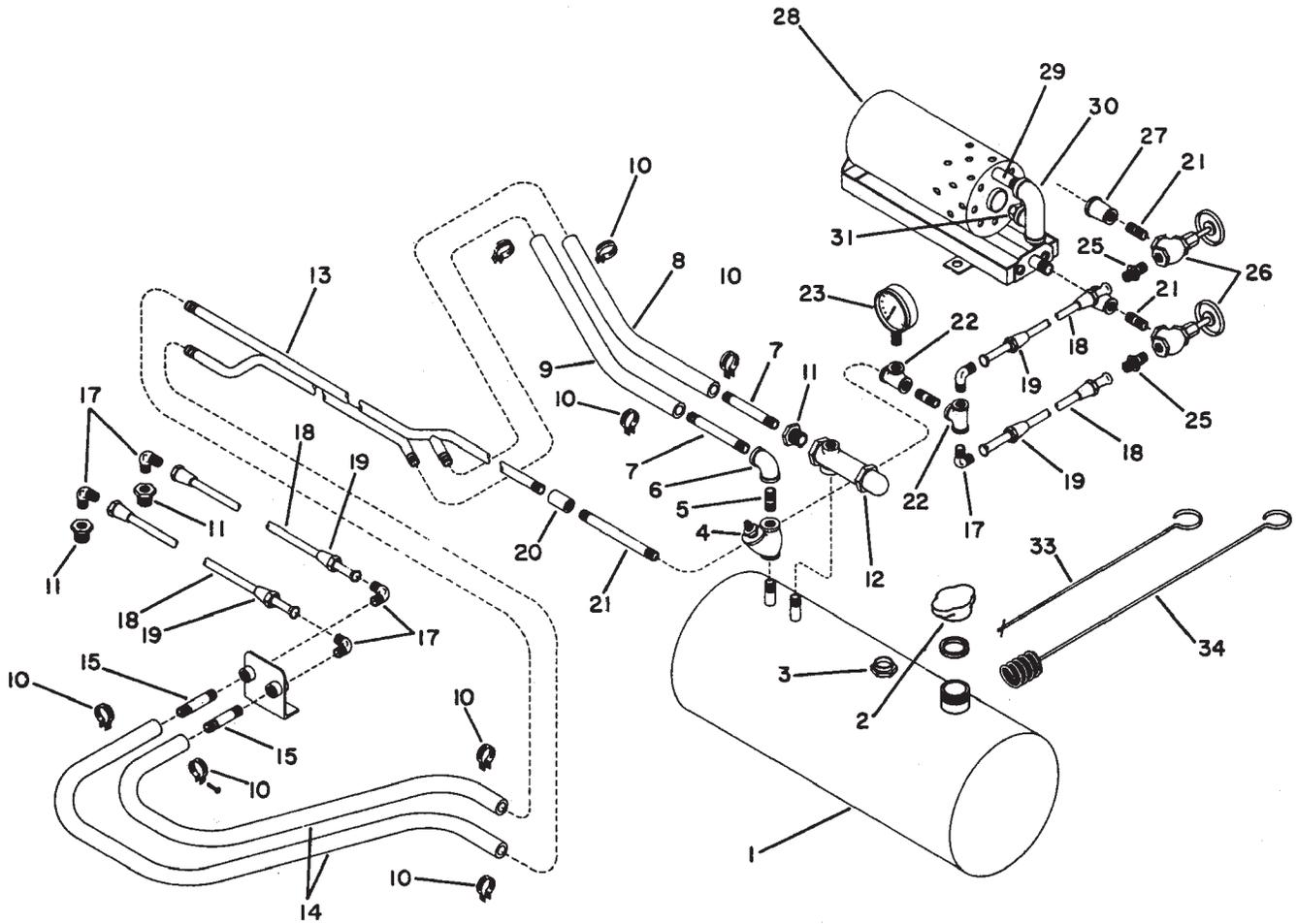
Spray Bar - Rigid Type Mounted



REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	MUHD-110A	2640090	1	SPRAY BAR	9	MUHD52-6AL	2640019	1	VERT BRACE-LT
2	S36-18	3351010	AR	NOZZLE- 1-8	10				AR-AS REQUIRED
2	S36-116	3351013	AR	NOZZLE- 1-16					
2	S36-332	3351015	AR	NOZZLE- 3-32					
2	S36-316	3351014	AR	NOZZLE- 3-16					
3	S53-2	3351017	AR	SECTION- 2FT					
4	S53-1	3351016	AR	SECTION- 1FT					
5	MUHD8-4A	2640001	2	PIPE CAP					
6	MS-188	3390085	1	PIPE CLIP					
7	Z6-LW	0120382	2	LOCK WASHER					
8	ZC6-N	0120377	2	HEX NUT					
9	MUHD52-6AR	2640020	1	VERT BRACE-RT					

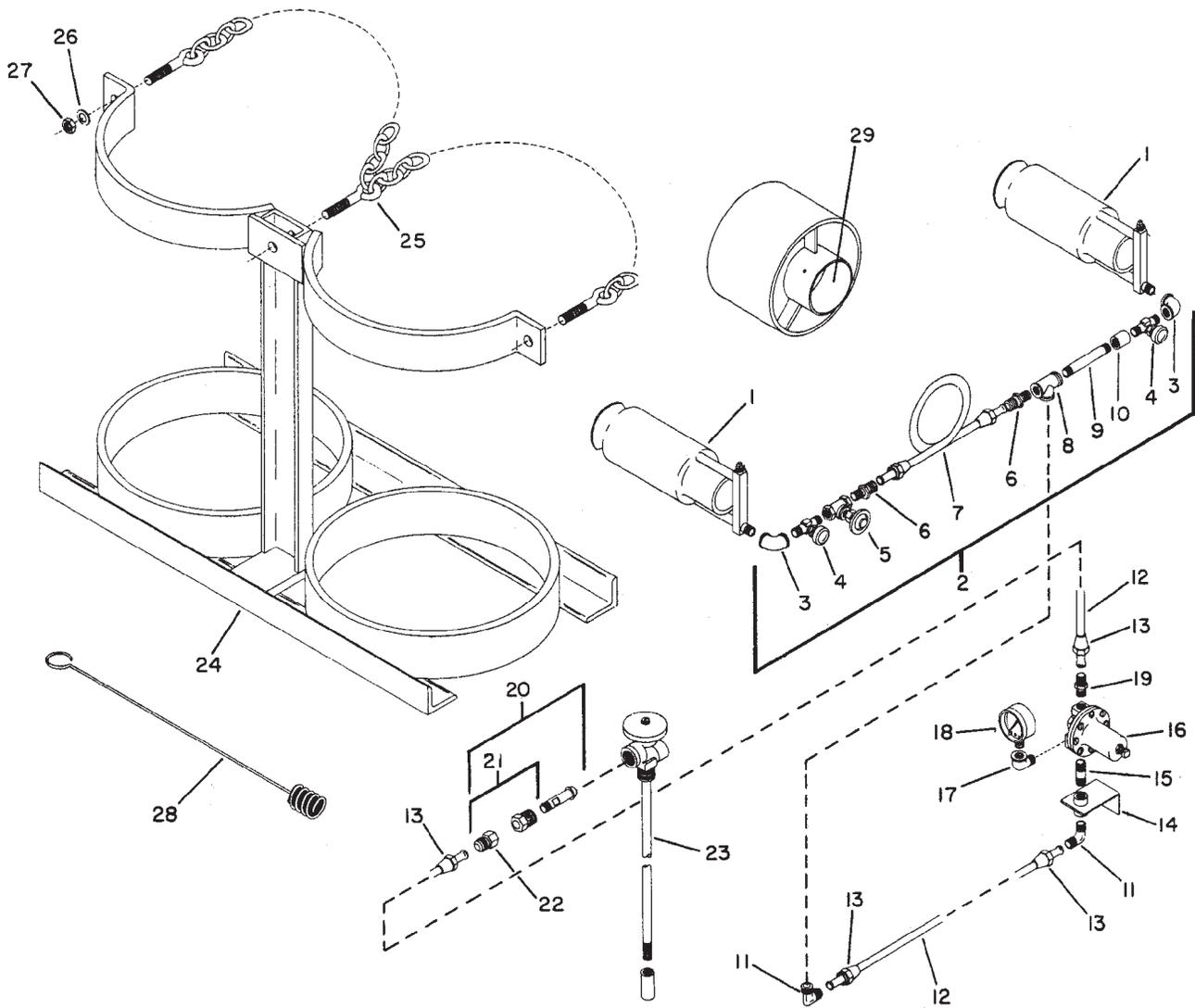
Specify Unit Serial No., Part No., & Part Description

Typical Fuel Supply & Generating Burners



REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	MUH10A-14	2630018	1	FUEL TANK- 34	20	X4-CP	0105409	1	COUPLING
2	H-48	3330025	1	FILL CAP	21	X4-SH	0105405	3	NIPPLE
	H-49	3330027	1	CAP GASKET	22	X4-T	0105417	2	TEE
	H-219A	3330082	1	STRAINER-FILL	23	H-92	6600196	1	PRESS GAUGE
3	H50-12	6600350	1	GAUGE	25	48F-45	0110200	2	CONNECTOR
4	H-220	6600199	1	STRAINER- Y	26	H-64	6600193	2	GLOBE VALVE
5	X6-SH	0121207	1	NIPPLE	27	X6-RCP	0111644	2	REDUCING CPLG
6	X6-RE	0120284	1	REDUCING ELBOW	28	H-33A	3330003	2	BURNER-GENER
7	H-76TH	3330028	2	HOSE CONN	29	H33-1A	3330005	2	COIL
8			1	HOSE-1-2 X 26	30	H-31	6500033	2	HOLDER
9			1	HOSE-1-2 X 23.5	31	H30-54	3330002	2	PLUG
10	4200252	6000057	8	CLAMP	32	H33-4	3330013	2	PAN
11	X6-RB	0119937	3	REDUCING BSHG	33	H-36A	3330022	1	CLEANER
12	H-155	6600197	1	RELIEF VALVE	34	H-217A	3330077	1	LIGHTER
13	MUH-113A	2630064	1	LINE-74 X 110					
	MUH-116A	2630077	1	LINE-96 X 50					
14			2	HOSE-1-2 X 18					
15	H-76TH	3330028	2	HOSE CONN					
16	O-110A	3360046	1	DBL BRKT CONN					
17	49F-45	6600114	6	CONNECTOR					
18				CPR TBG- 5-16					
19	41F-5L	0118538	8	FLARE NUT					

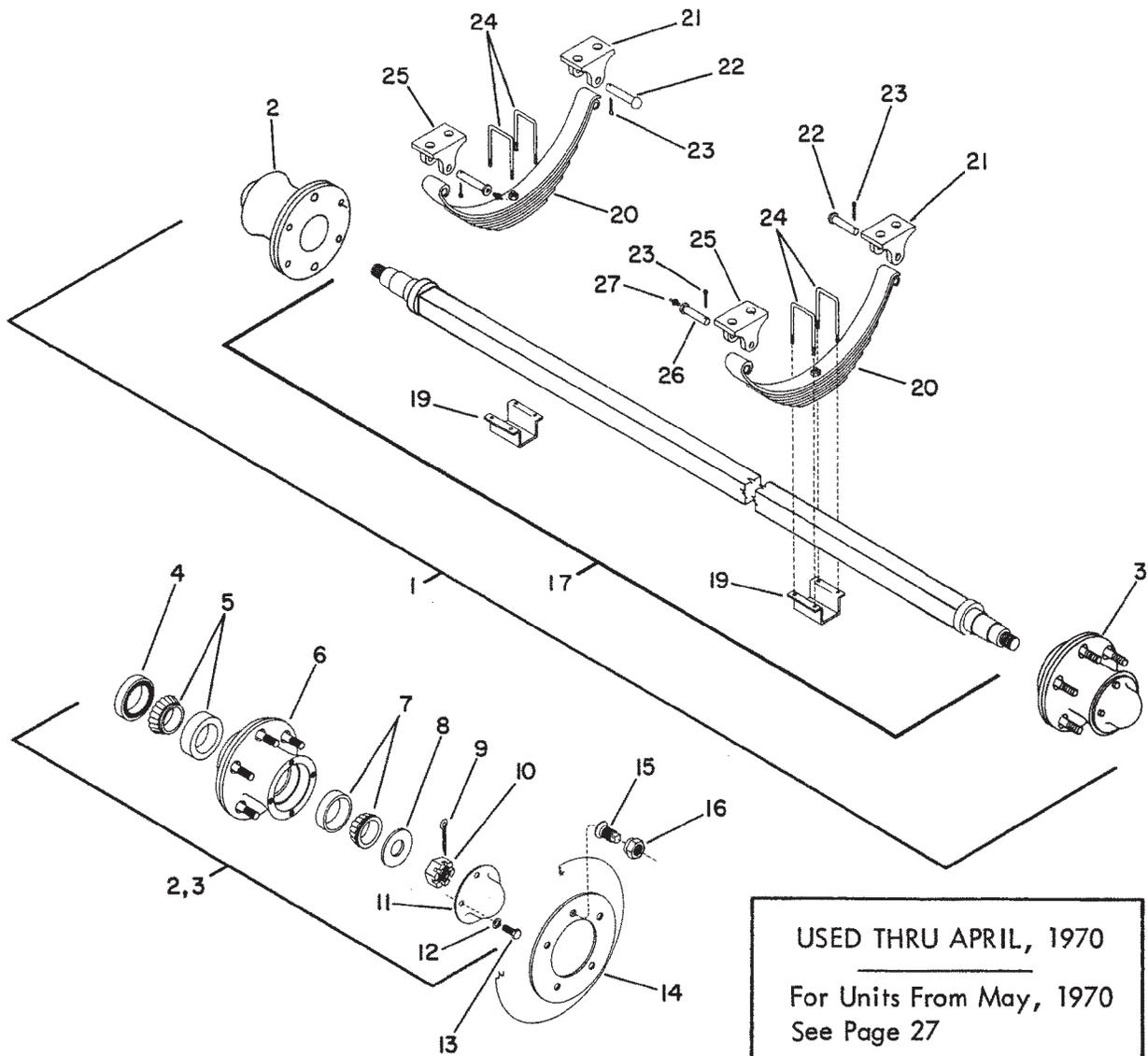
Liquid Propane Burners



REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	AF-B2	6500011	2	BURNER-W-VALVE	19	48F-46	0118750	1	CONNECTOR
2		7720001	1	PIPING INSTALL	20	H-451A	7720002	1	CONNECTION
3	X4-E	0105413	2	ELBOW	21	4201364	6600043	1	CONNTR- TYPE A
4	AF-N4V	6500064	2	PROPANE VALVE	22	45F-46	0121323	1	HYDRAULIC CONN
5	H-65	6600194	1	GLOBE VALVE	23	4200206	6600033	1	VALVE
6	48F-45	0110200	2	CONNECTOR	24	H-400A	3330230	1	BOTTLE RACK-DBL
7		7720003	1	TUBE LOOP-CONN	25	H400-7A	3330237	1	CHAIN & BOLT
8	X4-T	0105417	1	TEE	26	Z8-LW	0120384	3	LOCKWASHER
9	X4-14	0144594	1	NIPPLE	27	ZC9-N	0120378	3	HEX NUT
10	X4-CPB	0144075	1	BRASS CPLG	28	H-217A	3330077	1	LIGHTER
11	49F-46	0118755	2	CONNECTOR	29	H-419A	3330261	2	BRNR FLUE SUPT
12				CPR TBG-3-8 OD					
13	41F-6L	0118539	4	FLARE NUT					
14	H400-8A	3330239	1	REGLTR BRKT					
15	X4-6	0105407	1	NIPPLE					
16	4200290	6600039	1	PRESS REGULATOR					
17	X4-SE	0105423	1	STREET ELL					
18	H-212	6600198	1	PRESS GAUGE					

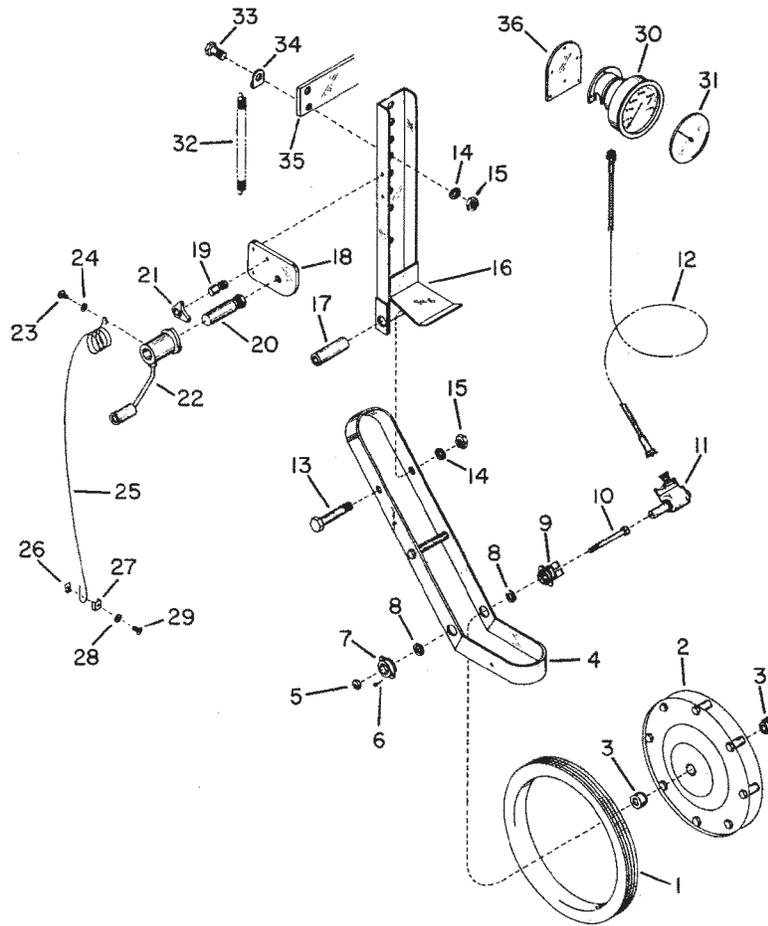
Specify Unit Serial No., Part No., & Part Description

Axle & Hub Assembly



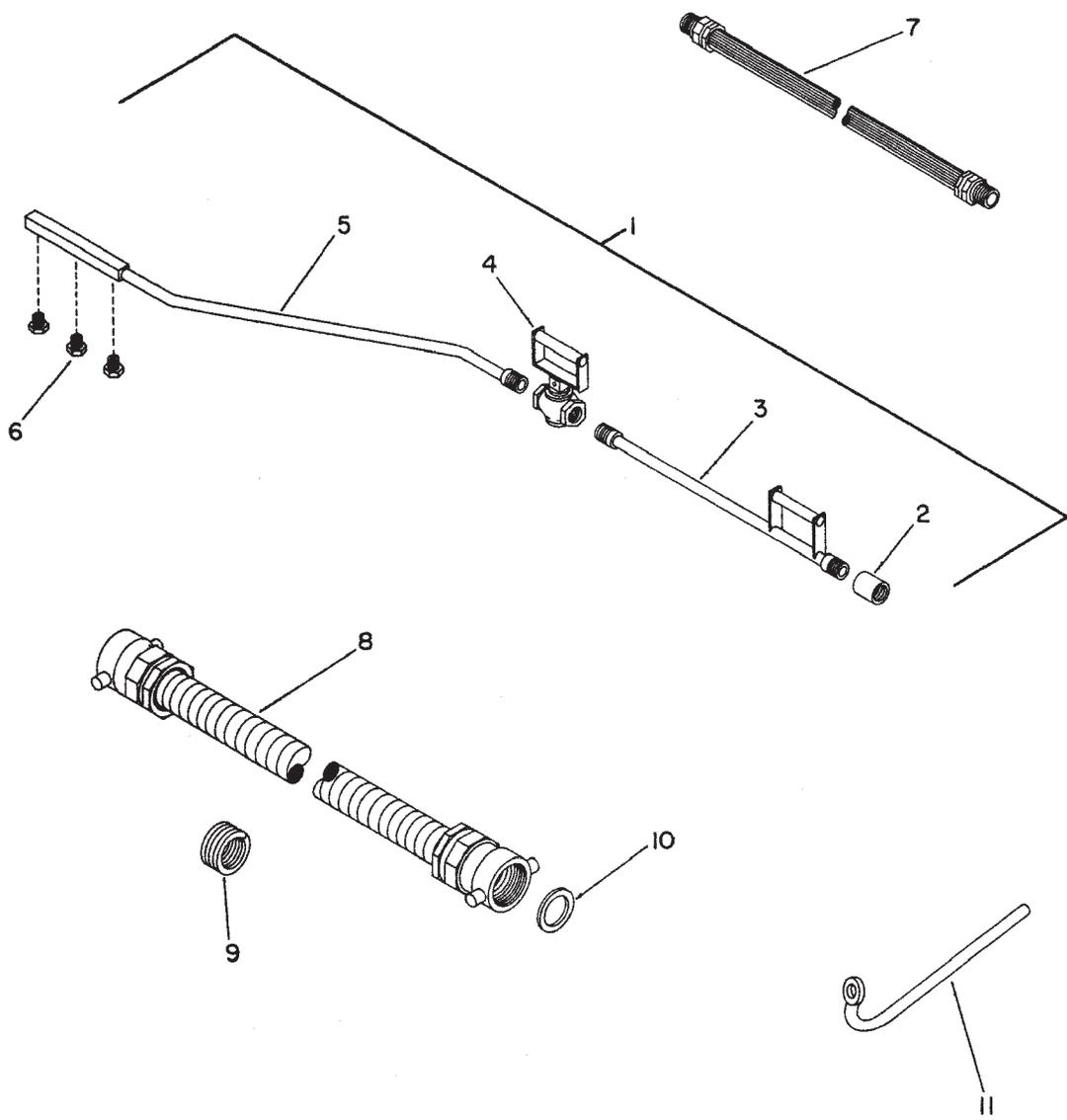
REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	MUF-95A	6450058	1	AXLE-COMP-W-HUB	17	MUF96-1A	7630078	1	BEAM & SPRINGS
2	UM-16-617	7630072	1	HUB-RIGHT	19	UM-3-1723	6450033	2	SPRING CLAMPS
3	UM-17-617	7630073	1	HUB-LEFT	20	UM-1-1640	6450032	2	SPRING
4	MUF95-5	7630074	2	SEAL-GREASE	21	UM-1523-2	6450031	2	BRKT-UNDERFRM
5	MUF95-3	7630005	2	CONE-BRG-INNER	22	UM-4-804	6100001	2	SPRING RIVET
6	MUF95-2AR	7630070	1	HUB-RT-W-STUDS	23	ZCP3-6	0103409	4	COTTER PIN
	MUF95-2AL	7630071	1	HUB-LT-W-STUDS	24	UM-13-1729	6200202	4	5 IN U-BOLTS
7	MUF95-4	7630006	2	CONE-BRG-OUTER	25	UM-1523-2	6450031	2	BRKT-UNDERFRM
8	UM-19-914	7630075	2	WASHER-SPINDLE	26	MUF95-1-1	6000203	2	SHACKLE BOLT
9	ZCP5-12	0108660	2	COTTER PIN	27	ZF-2	0273321	2	ZERK
10	ZF24-CN	0427668	2	CASTLE NUT					
11	UM-4-1001	7630007	2	CAP-INCL 12-13					
12	Z7-LW	0120383	8	LOCK WASHER					
13	ZC7-16A	0122260	8	CAPSCREW					
14	BW-48730-D3	6450056	4	WHEEL DRUM					
15	MUF31-2-5L	7620001	5	DUAL STUDS- LT					
	MUF31-2-5R	7620002	5	DUAL STUDS- RT					
16	UM-13-904	7630076	5	WHEEL NUT- LT					
	UM-14-904	7630077	5	WHEEL NUT- RT					

Bitumeter



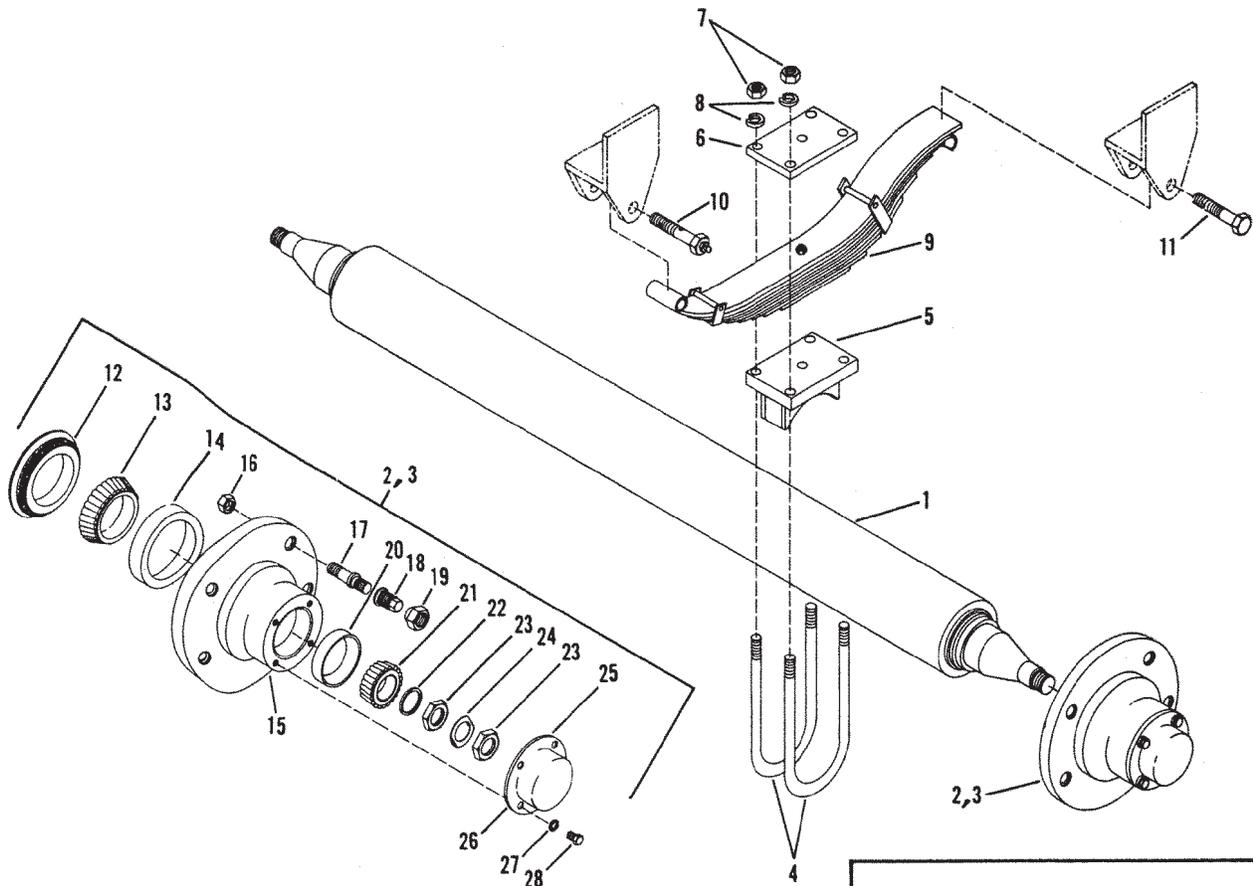
REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	TR-81	6450060	1	TIRE	28	Z3-LW	0120217	1	LOCK WASHER
2	TR-109A	3360312	1	WHEEL	29	ZC10MS-2RH	0120221	1	RD HD MS
3	TR127-2	3360345	2	BUSHING	30	SW-702D	6460014	1	BIT HEAD
4	TR-85	3360283	1	FORK	31	SW-205146	7850010	1	GLASS-W-INDIC
5	TR127-4	0125233	1	CASTLE NUT	32	TR-56	3360269	1	SPRING
6	ZC8MS-2RH	0132760	2	RD HD MS	33	ZC8-6	0122433	2	CAPSCREW
7	TR127-1	3360344	1	BRG-OUTER	34	TR-93	3360293	2	BRACKET
8	TR127-6	6420035	2	BEARING	35	TR-103A	3360301	1	BRACKET-TRCTR
9	TR127-3	3360347	1	CLAMP-BRG	35	TR-105A	3360308	1	BRACKET-CHASSIS
10	TR-84	3360281	1	SPINDLE	36	TR-119	3360317	1	MTG PLATE
11	SW-660-A	6460011	1	ADAPTER	37	TR127-5A	3360348	1	SPINDLE SET-INC 3 & 5-10
12	SEE PAGE 2 SEE PAGE 2		1	BITUMETER SHFT BITUMETER CORE	38	TR127-WFA	3360342	1	WHL & FORK-INCL 1 2 4 13-15 17 & 37
13	ZC8-18	0111300	1	CAPSCREW	39	TR127-MWFA	3360430	1	BITUMETER-LESS 11 12 & 30
14	Z8-LW	0120384	1	LOCK WASHER	40	TR-127AA	3360431	1	BITUMETER-COMPL
15	ZC8-N	0220073	1	HEX NUT					
16	TR-54A	3360264	1	SUPPORT					
17	TR85-1	3360284	1	SPACER					
18	TR-88	3360288	1	PLATE					
19	TR-66	3360278	1	STUD-PAWL					
20	TR-65	3360277	1	STUD-CABLE					
21	TR-64	3360276	1	LOCKING PAWL					
22	TR-63A	3360271	1	DRUM					
23	ZCMS4-2RH	0120628	1	RD HD MS					
24	Z4-FW	9414920	1	FLAT WASHER					
25	TR-62	3360424	1	CABLE- 15 FT					
26	SW-5134	6000369	1	CLIP					
27	MS127-1	3390071	1	CLIP- CBL CLMP					

Hoses & Handspray



REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION	REF.	PART NO.	SPEC. NO.	QTY.	DESCRIPTION
1	HS-21A	3380017	1	GUN- LESS 6					
2	X16-CP	0128137	1	COUPLING					
3	HS21-2A	3380022	1	TUBE					
4	HS21-1A	3380019	1	HANDLE					
5	HS21-3A	3380024	1	TUBE					
6	S36-18	3351011	3	NOZZLE-					
7	SEE PAGE 2			1 PATCH HOSE-ASB					
	SEE PAGE 2			1 PATCH HOSE-RUB					
8	SEE PAGE 2			1 FILL HOSE					
9	RM16-1	7220028	2	ASB CORD					
10	MUMS-24G	6600288	2	GASKET					
11	TL-27A	3380095	1	WRENCH- SPAN					

Axle & Hub Assembly



USED FROM MAY, 1970
Prior Units See Page 24

REF.	PART NO.	QTY.	DESCRIPTION	REF.	PART NO.	QTY.	DESCRIPTION
1	7620013	1	Axle Assembly	18	7620014	5	Inner Budd Cap Nut - Right Hand
2	7630091	1	Hub Assembly - Right		7620015	5	Inner Budd Cap Nut - Left Hand
3	7630092	1	Hub Assembly - Left	19	7620016	5	Outer Budd Cap Nut - Right Hand
4	2690100	4	Spring Mounting U-Bolt		7620017	5	Outer Budd Cap Nut - Left Hand
5	2690094	2	Spring Seat Assembly	20	7630107	2	Outer Bearing Cup
6	2690093	2	Top Plate	21	7630108	2	Outer Bearing Cone
7	0120371	8	Hex Nut	22	7630109	2	Bearing Thrust Washer
8	0120384	8	Lock Washer	23	7630110	4	Spindle Nut
9	6450032	1	Spring Assembly	24	7630111	2	Spindle Nut Lock Washer
10	2690102	2	Front Shackle Bolt with Zerk	25	7630112	2	Hub Cap Gasket NS
11	2690103	2	Rear Shackle Bolt	26	7630113	2	Hub Cap
12	7630100	2	Grease Retainer	27	7630114	8	Lock Washer
13	7630101	2	Inner Bearing Cone	28	7630115	8	Hub Cap Bolt
14	7630102	2	Inner Bearing Cup				
15	7630103	2	Hub				
16	7630104	10	Wheel Stud Nut				
17	7630105	5	Wheel Stud - Right				
	7630106	5	Wheel Stud - Left				

NS - Not Shown

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056-10	13	FCC-10L	18	HD-58G	14	MUH-55	13
056-11	13	FCC-14	16	HD-60	14	MUH10A-14	22
056-6	13		18		15	MUH114-1	13
2C6-5	13	FCC-8A	16	HD-60P	15	MUH24-1	13
41F-5L	22		18	HD-79	14	MUH49-1-1	13
41F-6L	23	FCC-8AA	16		15	MUH49-1A	13
4200206	23		18	HD-86A	14	MUH49-2A	13
4200252	22	FCC-9L	16	HD129-3	15	MUH49-5	13
4200290	23		18	HD129-3G	15	MUH49-7	13
4201364	23	FCC-9R	16	HM-27A	13	MUHD-104A	15
45	20		18	HM-28	13	MUHD-107A	15
45F-46	23	FCC21-1-6	16	HM-29	13	MUHD-108A	15
48F-45	22		18	HM-31	13	MUHD-110A	21
	23	FCC21-2A	16	HM-36A	13	MUHD-120A	14
48F-46	23		18	HS-21A	26	MUHD-122A	14
49F-45	22	FCC25-4	16	HS21-1A	26	MUHD-123A	14
49F-46	23		18	HS21-2A	26	MUHD-141AL	16
AF-B2	23	FCC25-5L	16	HS21-3A	26		18
AF-N4V	23		18	HTT-16A	9	MUHD-141AR	16
APS-48A	3	FCC25-6A	16	MS-131	16		18
BW-48730-D3	24		18		18	MUHD-142A	16
CS-24	16	FCC8-1	16		20		18
	18		18	MS-188	15	MUHD-143A	16
CS-A6	15	FCO-31A	15		21		18
	16	FCO-33	16	MS-356A	9	MUHD-144A	16
	18		20	MS-85A	9		16
F-95	16	FCO-33A	16	MS127-1	25		18
	18	FCO-34	18	MUF-111A	11		18
FC-1AL	16		20	MUF-23A	3	MUHD-15A	14
	18	FCO-34A	18	MUF-35A	3	MUHD-23G	14
FC-1AR	16	FCO-40	15	MUF-7AL	3		15
	18	FM-33A	13	MUF-7AR	3	MUHD-24	15
FC-2AL	16	G-178A	13	MUF-95A	24	MUHD-46A	14
	18	G-343A	13	MUF111-2A	11	MUHD-51A	14
FC-2AR	16	G178-1	13	MUF15-1	11		15
	18	G178-2	13	MUF15-10A	11	MUHD-59A	13
FC1-1-2A	16	G178-3	13	MUF15-2A	11	MUHD-60AL	15
	18	H-155	22	MUF15-4A	11	MUHD-60AS	15
FC1-1A	16	H-212	23		20	MUHD-72A	15
	18	H-217A	22	MUF15-5A	11		16
FC1-2L	16		23	MUF15-7	11		18
	16	H-219A	22	MUF15-8	11	MUHD-75A	15
	16	H-220	22	MUF20-5	11		16
	18	H-31	22	MUF31-2-5L	24		18
	18	H-33A	22	MUF31-2-5R	24	MUHD-85A	16
	18	H-36A	22	MUF48-3A	11		18
FC1-2R	16	H-400A	23	MUF48-4A	11	MUHD-85AA	16
	18	H-419A	23	MUF48-5A	11		18
FC1-3	16	H-451A	23	MUF50-4	3	MUHD-89A	16
	18	H-48	22	MUF8-1	3		16
FC1-4A	16	H-49	22	MUF8-4	3		16
	18	H-64	22	MUF8-5AL	3	MUHD-90A	16
FC2-1-3A	16	H-65	23	MUF8-5AR	3		18
	18	H-76TH	22	MUF93-1A	11		18
FC2-1A	16		22	MUF95-1-1	24	MUHD-97	16
	18	H-92	22	MUF95-2AL	24		18
FC2-2	16	H-93	3	MUF95-2AR	24	MUHD131-10	20
	18	H30-54	22	MUF95-3	24	MUHD131-11	20
FC2-3	16	H33-1A	22	MUF95-4	24	MUHD131-12	20
	18	H33-4	22	MUF95-5	24	MUHD131-14AL	20
FC2-4-1A	16	H400-7A	23	MUF96-1A	24	MUHD131-14ALT	20
	18	H400-8A	23	MUH-113A	22	MUHD131-14AR	20
FC2-4-2	16	H50-12	22	MUH-116A	22	MUHD131-14ART	20
	18	HD-129A	15	MUH-28AA	13	MUHD131-16A	20
FC2-4A	16	HD-51G	14	MUH-2A	3	MUHD131-1AL	20
	18	HD-53P	14	MUH-49A	13	MUHD131-1AR	20
FCC-10L	16	HD-58	14	MUH-49AA	13	MUHD131-2AL	20

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MUHD131-3A	20	RP-G49-037100	12	TG-13	10	X32-20	18
MUHD131-5	20	RP-G49-24	12	TG-14	10	X32-24	16
MUHD131-6A	20	RP-G5-257	12	TG-15	10		18
MUHD131-6AT	20		12	TG-16	10	X32-56	18
MUHD131-7	20	RP-G5-261	12	TG-2	10	X32-64	18
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Caution

1. Do not start engine unless clutch is disengaged.
2. Always use steps, platforms and handrails provided.
3. Remain clear of moving or rotating parts.
4. Always have shields, covers and guards in place when operating.
5. Always have dry chemical fire extinguisher available and in good condition.
6. Do not operate burners unattended.
7. Burners may flash during ignition. Use torch to ignite. Remain clear.
8. Periodically check all body mounting tie downs, fasteners, and on trailer units check all suspension and running gear components.
9. Lit cigarettes or other sources of combustion must remain clear of open manholes or overflow vents.
10. Sparks from engine exhaust can be a source of ignition to volatile gases.
11. Use gloves or insulated material when handling spray bar, sections, or hoses.
12. Periodically check and clean overflow tube.
13. Open manhole slowly to relieve pressure that may exist in tank.
14. All pipe and hose connections must be secure before operating valves.
15. Keep unit clean for safety and operation.
16. Keep area clear of open flame or sparks when spraying material with volatile cutbacks.
17. Do not stand in a location such that accidental opening of spray bar valves will cause contact with spray.
18. Fill line cap or connection must be securely attached before operating intake valve lever.
19. "TUC" bar must be off and remain off when bar is rotated upward.
20. When loading with material over 200° F., proceed cautiously if moisture may be present in tank. If moisture may be in the spray bar or circulating system (particularly on newly delivered units or if the previous load was an emulsion) allow a small quantity of hot material to circulate in bar before putting any measurable amount of material in tank. This permits the large air space in the tank to absorb moisture vaporization (foaming) without spillage.

M-403-66R2
Thru S/N M-2110

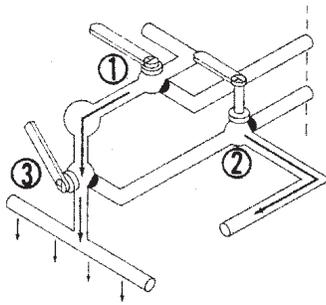


MAINTENANCE UNIT
OPERATION, MAINTENANCE and PARTS MANUAL

E. D. ETNYRE & CO., Oregon, Illinois 61061

**To Drain Circulating System
With Material In Tank**

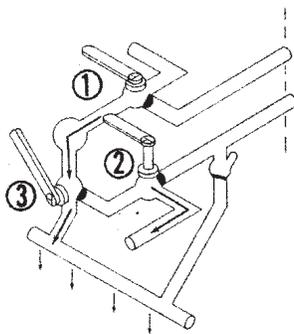
Pipe Bar



1. Turn top left control lever (1) to FILL position.
2. Turn top right control lever (2) to HAND-SPRAY position.
3. Turn rear control lever (3) to DISTRIBUTE position.
4. Remove fill line cap.
5. After a few minutes, turn rear control lever to CIRCULATE and open handspray gun valve to blow out handspray gun. Lines are now empty of material.

**To Drain Circulating System
With Material In Tank**

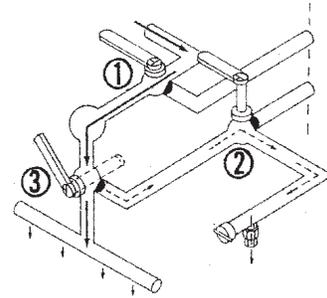
FC Bar



1. Turn top left control lever (1) to FILL position.
2. Turn top right control lever (2) to HAND-SPRAY position.
3. Turn rear control lever (3) to DISTRIBUTE position.
4. Remove fill line cap.
5. Open spray nozzle valves after removing fill cap.
6. After a few minutes turn rear control lever to CIRCULATE and open handspray gun valve to blow out handspray gun. Lines are now empty of material.

**To Flush Circulating System With Material
In Tank**

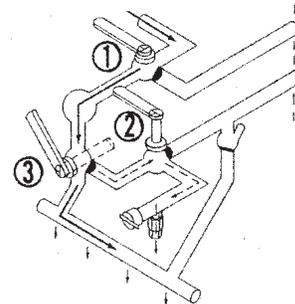
Pipe Bar



1. Turn top left control lever (1) to FILL position.
2. Turn top right control lever (2) to HAND-SPRAY position.
3. Turn rear control lever (3) to DISTRIBUTE position.
4. Open flushing oil valve.
5. When flushing oil comes out of spray nozzles, turn rear control lever to CIRCULATE and open handspray gun valve. After lines are cleaned, turn off flushing oil valve.

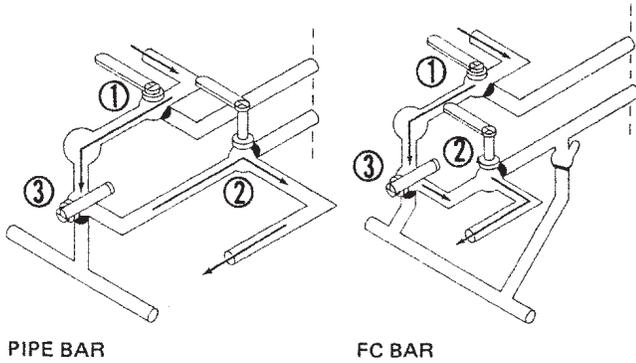
**To Flush Piping or Circulating System With
Material In Tank**

FC Bar



1. Turn top left control lever (1) to FILL position.
2. Turn top right control lever (2) to HAND-SPRAY position.
3. Turn rear control lever (3) to DISTRIBUTE position.
4. Open flushing oil valve.
5. After a few minutes, open spray nozzle valves.
6. When flushing oil comes out of spray nozzles, turn rear control lever to CIRCULATE, open handspray gun valve and close nozzle valves. After lines are cleaned, turn off flushing oil valve.

To Transfer From Supply Source To Storage



PIPE BAR

FC BAR

1. Turn top left control lever (1) to FILL position.
2. Turn top right control lever (2) to HAND-SPRAY position.
3. Turn rear control lever (3) to CIRCULATE position.
4. Connect hose from supply source to fill line.
5. Connect hose from storage to connection at drain line.
6. Start engine. Run pump at maximum speed where it will run quietly. Normally 150 G.P.M. is best transfer speed.

MAINTENANCE

1. Drain and wash out after each day's use if material is heavy enough to set-up in tank or pump or when changing from asphalt to tar or vice versa.
2. Tighten pump packing glands only enough to stop any drip. If too tight, shaft may be scored.
3. If burners have a short blue flame, it is an indication that burners are over-generating, which is caused by carbon in the coils or too small an opening in the vaporizing tip. Flakes of carbon may be removed from tip by using the burner cleaner. If this does not correct the trouble, bore out the tip with a #54 drill. If flame is still blue, remove coil from burner and place it vertically in a vice with openings down; heat one-half of top coil to color; add oxygen cautiously to open tube end. As carbon burns out, color will travel around and down coil. When burned out, vibrate and blow out with air.
4. If flame is smoky and dark yellow, needle valve is open too much, causing under-generation.
5. Clean out suction line strainer periodically as necessary.