

Manitowoc

TRADITIONAL CRANE PARTS MANUAL

This manual has been prepared for and is considered part of

4600

Model

46438

Serial Number

GROUP A = Rotating Structure (Includes rotating bed, operator's cab, cases, fuel tanks, transfer pump, counterweights, guards, platforms, catwalks, machinery enclosure, horn)

GROUP B = Upperworks Machinery (Includes front, rear, and auxiliary drums, boom hoist, swing and drive shafts, hand levers, foot pedals, control linkage, rotation indicators, upperworks hydraulic components, hydraulic piping, hydraulic oil reservoir, lubrication pump and piping, blowers)

GROUP C = Air Components & Electrical (Includes control console, air piping, electric wiring, auxiliary light plant and lighting, TV monitoring, compressor and air tank)

GROUP D = Power Components - Upperworks (Includes engine or motor, radiator, auxiliary power plant, take off converters and piping, controls, VICON power lowering, torque limiter, hydraulic pumps and piping, fuel piping, battery box)

GROUP E = Lower Structure & Control (Includes carbody, crawlers, travel shafts and control, steering travel locks, hydraulic travel, travel power outriggers, carrier, pedestal, lowerworks hydraulic piping, RINGER components, barge mounting and machinery, spud drums)

GROUP F = Attachments (Includes booms, jibs, masts, tower, wire rope guides, equalizer, gantry, fairlead, timber guards, boom angle indicator, block-up limit, tag line, hook block, weight ball, upper and lower boom point, wind speed indicator, crowd and retract dipper sticks, dippers,)

O-NUMBER SECTION = (Includes lacing drawings and purchased component parts drawings referenced in sections A through F)

This manual is arranged in sections as listed above. Sections A through F are arranged by group numerical order with an index after each section tab. An alphabetical index for groups A Through F combined is located after the O-number Section. The O-number section is arranged in numerical order by O-number. Following this cover page are the Basic Specifications, Warranty Information, Tool List (if applicable) Outline Dimensions, Weights, and Dealer Listing.

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Corrosion and Abrasion

Refer to Figure 3.

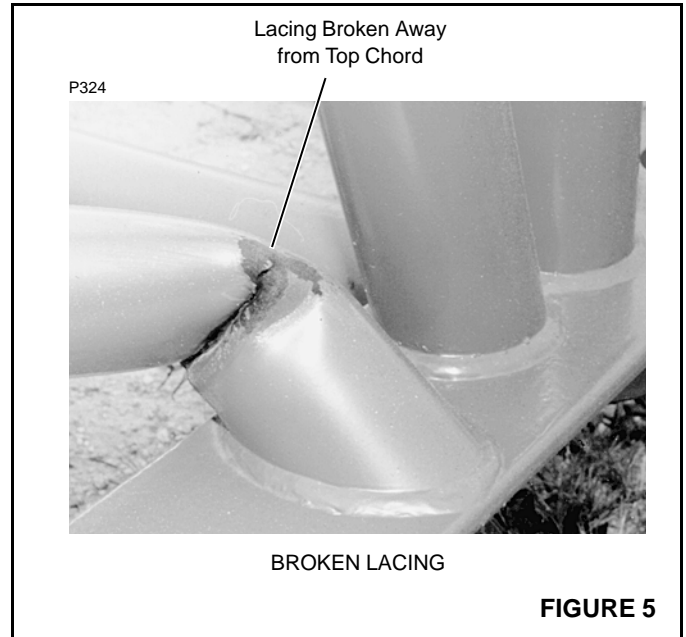
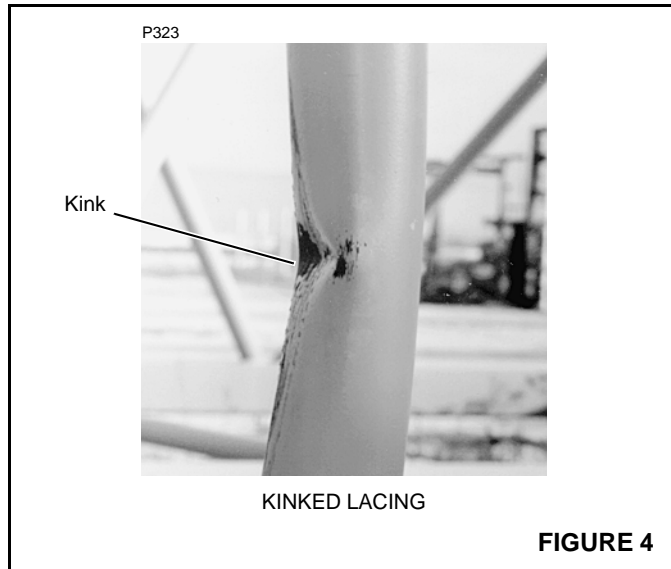
Corrosion and abrasion must not be deeper than 10 percent of the wall thickness, the angle thickness, or the plate thickness.

Kinks

Refer to Figure 4.

Kinked lacings must be replaced; *do not bend kinked lacings back into alignment.*

If any chord or platework is kinked, contact Manitowoc Crane Care for approved repair instructions. *Do not bend kinked chords or platework back into alignment.*



Cracks and Breaks

Refer to Figure 5.

Cracked and broken lacings must be replaced; *do not attempt to repair cracked or broken lacings.*

If any chord or platework is cracked or broken, contact Manitowoc Crane Care for approved repair instructions. *Do not attempt to repair cracked or broken chords or platework.*

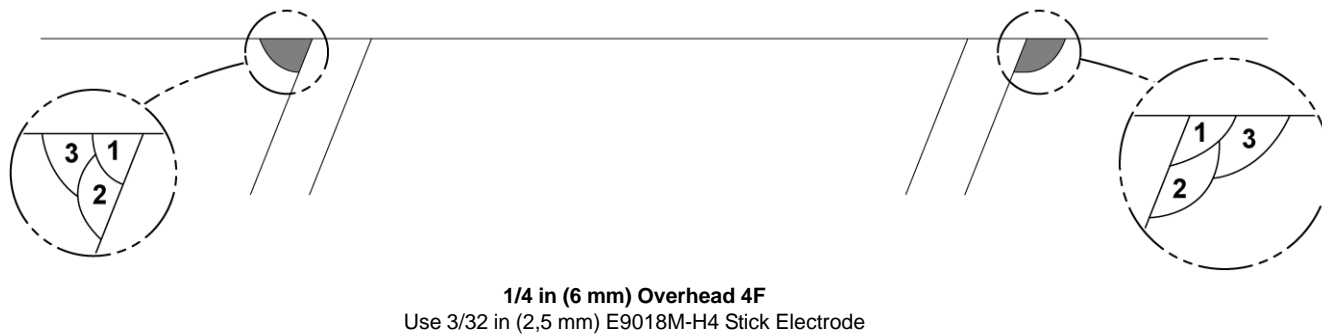
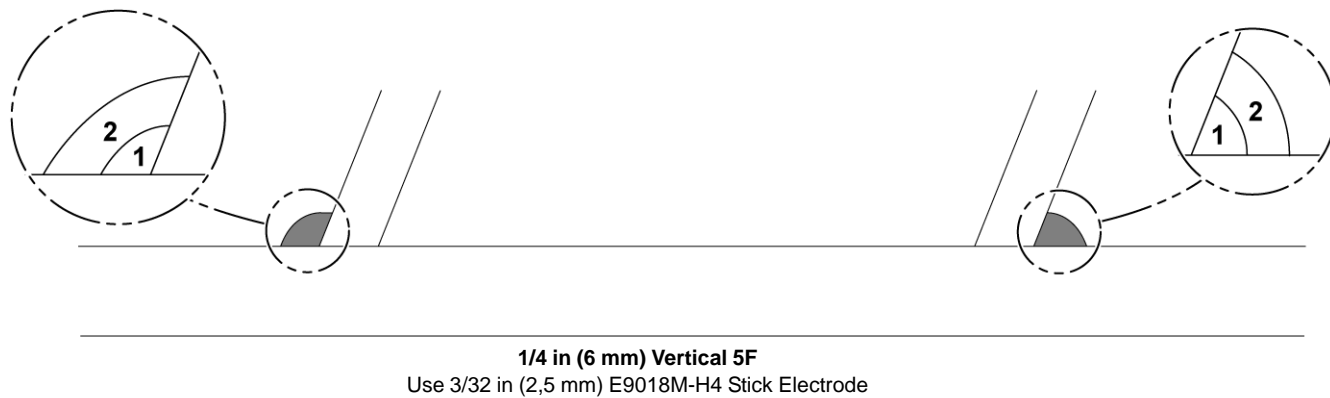
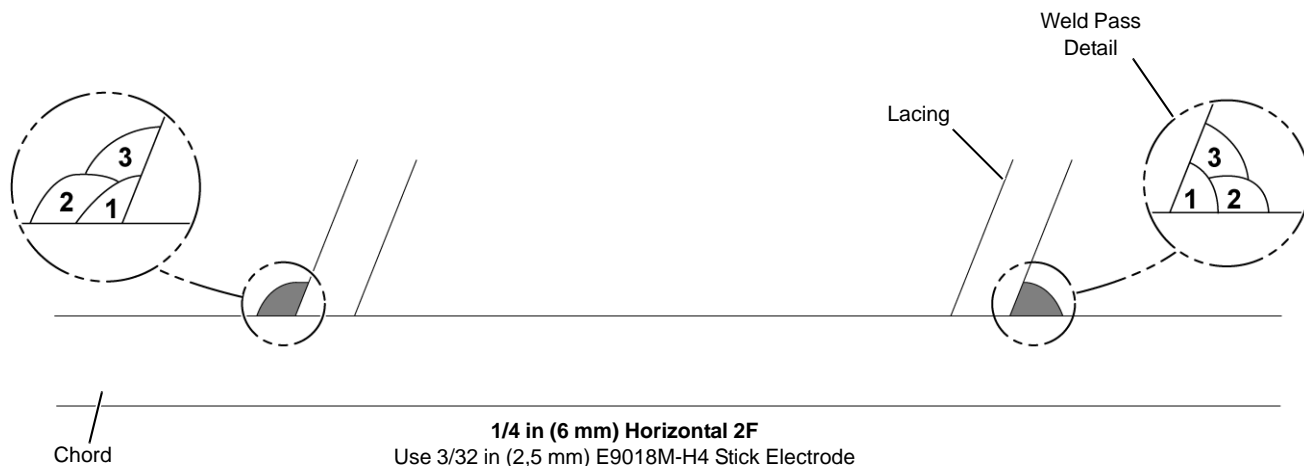


FIGURE 16



MANITOWOC ENGINEERING CO.

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Manitowoc, Wisconsin 54220

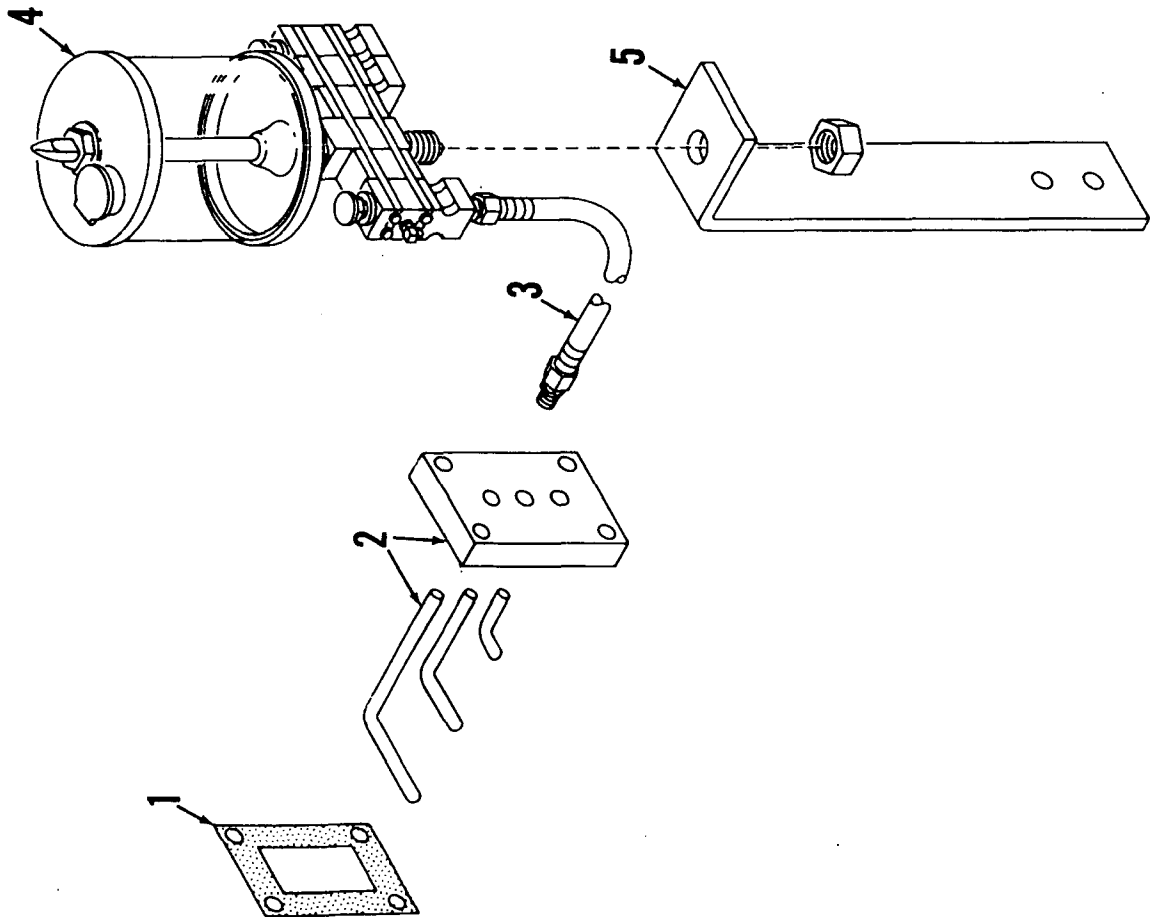
WEIGHTS

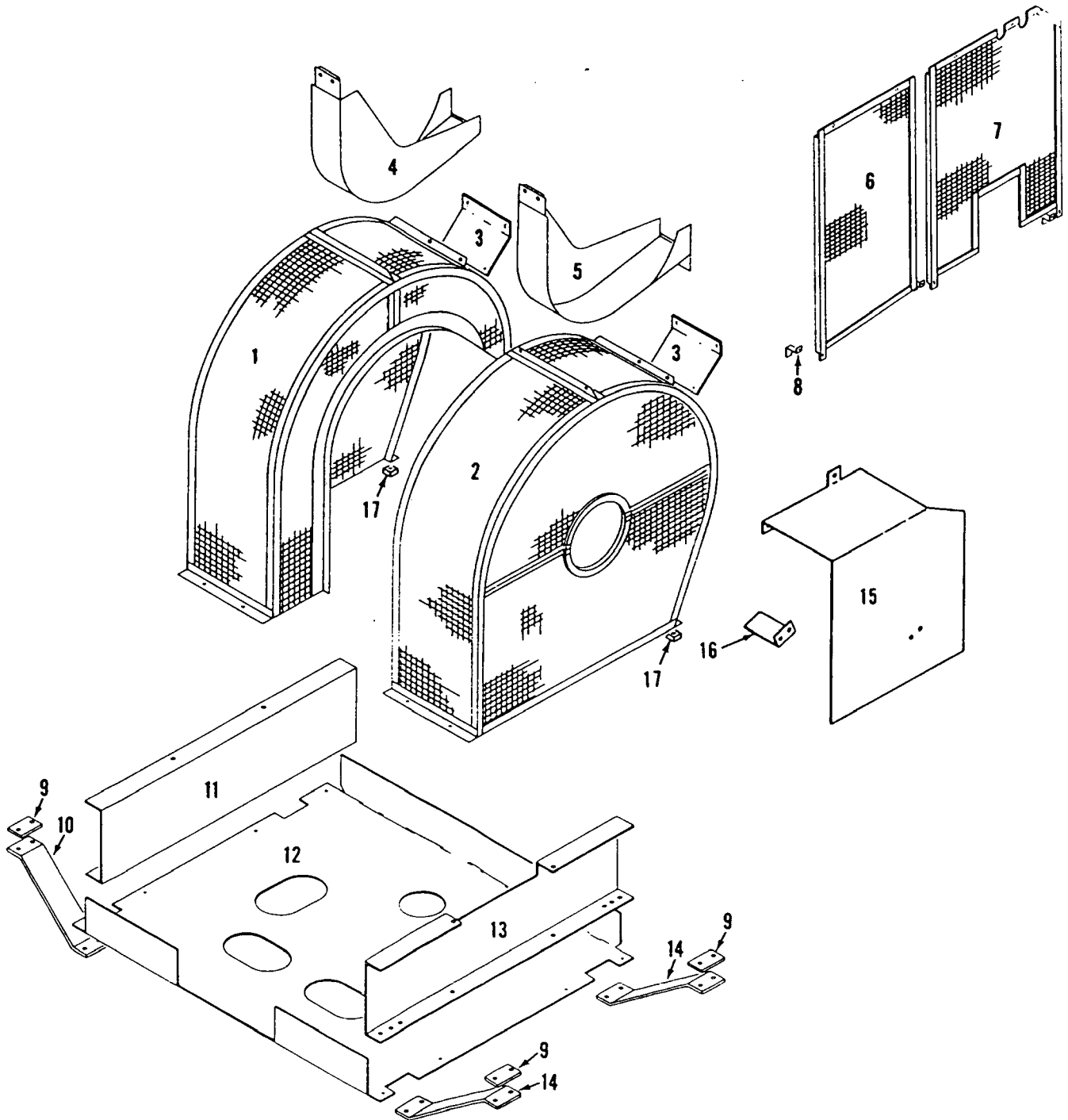
4600 SERIES I w/NO. 40 BOOM

DESCRIPTION	APPROX. WEIGHT (IN LBS.)
DRAGLINE - w/100' No. 40 boom, 55,000# counterweight, mast and back-hitch, 26'-1" crawlers w/60" treads, single front and rear drums, std. swing, mast hoist, Cummins KTA-1150-C525 engine for hoist. Cummins N-855-C235 engine for swing and travel, mast hoist rope, single sheave upper boom point, wire rope guide, revolving fairlead, and drag interlock.	384,105*
CLAMSHELL - w/100' No. 40 boom, 87,000# counterweight, heavy duty mast and backhitch w/mast sheave for clamshell, 26'-1" crawlers w/60" treads, single front and rear drums w/41" dia. laggings for both drums, std. swing, mast hoist, Cummins KTA-1150-C525 engine for hoist, Cummins N-855-C235 engine for swing and travel, mast hoist rope, double sheave upper boom point, wire rope guide and tagline.	424,670*
UPPERWORKS - w/Cummins KTA-1150-C525 and Cummins N-855-C235 engines, (Dragline) std. swing, mast hoist, single front and rear drums, and drag interlock; <u>LESS</u> boom, mast and backhitch, counterweights, wire rope guide and catwalk.	133,205*
UPPERWORKS - w/Cummins KTA-1150-C525 and Cummins N-855-C235 engines, (Clamshell) std. swing, mast hoist, single front and rear drums w/41" dia. laggings for both drums; <u>LESS</u> boom, mast and backhitch, counterweights, wire rope guide and catwalk	136,925*
UPPERWORKS (DRAG) as above, w/mast and backhitch, mast hoist rope and carbody; <u>LESS</u> crawlers.	200,515*
UPPERWORKS (CLAM) as above, w/heavy duty mast and backhitch, mast hoist rope and carbody; <u>LESS</u> crawlers	210,335*
CARBODY - w/roller path, ring gear and king pin; <u>LESS</u> crawlers.	55,160
CRAWLERS, 26'1" w/60" treads.	53,595 each
REMOVABLE COUNTERWEIGHTS	
Rear Ctwt	32,000
* Rear Ctwt	10,000
Lower Center.	36,000
Lower Right	9,500
Lower Left.	9,500

*Modify upperworks weight for optional power plants by adding 600# for GM 12V-71N Vicon, and deducting 470# for Cat. D-379 Vicon.

(Cont'd).

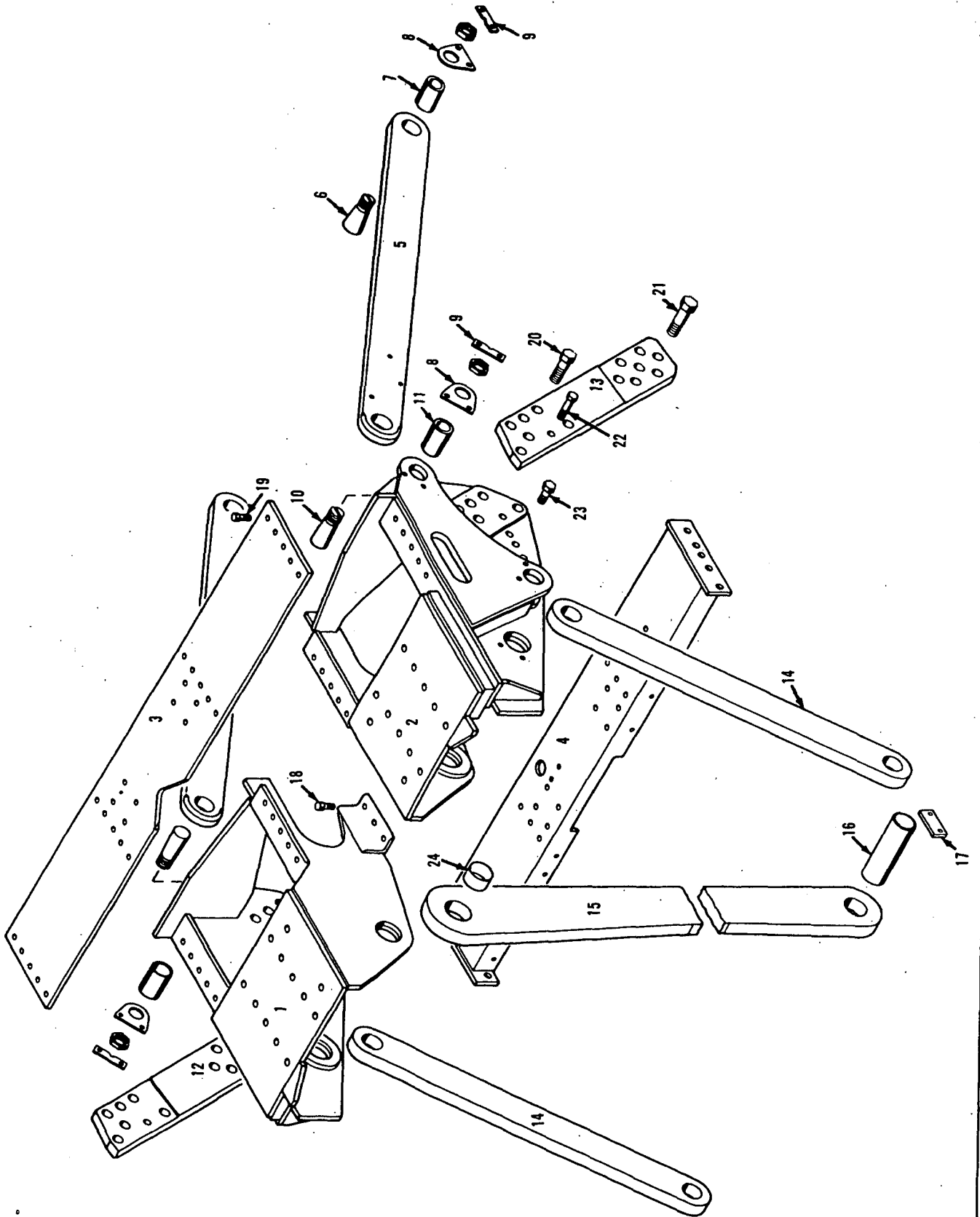




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42789A1

MATERIAL LIST ON BACK

"A" Frame

50274-1 Cont.	REV. K	MODEL 4600
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CAB
(DUAL ENGINES OR SINGLE ENGINE W/DUAL CONVERTERS)
(66 TOOTH FRONT DRUM GEAR)

REF. NO.	PART NUMBER	QUANTITY REQUIRED	DESCRIPTION OF PART	VENDORS PART NO.
20	90354	2	PANEL, Side W/stove bolts, hex nuts and lockwashers	
21	23715	1	PANEL, Left Side W/stove bolts, hex nuts and lockwashers	
22	23720	1	EXTENSION, Left Front Roof W/capscrew, hex nut and lockwasher (See Notes #6 and 9)	
	31843-6		ROOF, Left Front (Complete) W/capscrews, hex nuts and lockwashers (See Notes #4, 7, 10, and 12)	
23	632687	1	PANEL, Roof	
24	395102	1	DOOR, Roof W/hinges	
24	395014		DOOR, Roof W/hinges (Mach. W/Boom Stop)	
25	395115	1	DOOR, Roof W/hinge	
26	31843-2	1	FRAME, Roof	
	31842-6	1	ROOF, Right Front (Complete) W/capscrew, hex nuts and lockwashers (See Notes 4, 7, 10, and 12)	
27	395103	1	DOOR, Roof W/hinges	
27	395122		DOOR, Roof W/hinges (Mach. W/Boom Stop)	
28	31842-2	1	FRAME, Roof	
29	395115	1	DOOR, Roof W/hinge	
30	632686	1	PANEL, Roof	
	32164-6	1	ROOF, Right Front (Complete) W/capscrews, hex nuts and lockwashers (Mach. W/Wide Split Front Drum)	
27	395055	1	DOOR, Roof W/hinges	
27	395013		DOOR, Roof W/hinges (Mach. W/Boom Stop)	
28	32164-2	1	FRAME, Roof	
29	395115	1	DOOR, Roof W/hinge	
30	632686	1	PANEL, Roof	
32	70825	2	SUPPORT, Right Front Roof Door W/capscrews and lockwashers	
32	32008	1	EXTENSION, Right Front Roof W/capscrew, hex nut and lockwasher	
33	75122	as req.	SHIM	
34	23997	1	EXTENSION, Right Rear Roof W/capscrew, hex nut and lockwasher	
35	23998	1	PANEL, Right Rear W/stove bolts, hex nuts and lockwashers	
36	19509	1	GLASS, Window (See Note 11)	
17	605301	1	CHANNEL, Rubber (Specify 5'2" or 1.575 m.)	
37	23988	1	DOOR, Rear Right W/stove bolts, hex nuts and lockwashers	
	71001	1	CATCH, Door W/mach. screw, hex nut and lockwasher (See Note 11)	
38	475000	2	HANDLE, Outside (See Note 11)	
	475001	2	HANDLE, Inside	
	510163	2	LOCK	
39	94093	1	PANEL, Rear Right W/stove bolt, hex nut and lockwasher	
40	181637	1	SHUTTER, Radiator W/hook, chain, stove bolts, pins, cotter pins mach. screws, hex nuts, flatwashers and lockwashers	
41	140308	1	SHEET, Closing W/stove bolts, hex nuts and lockwashers	
42	71909	1	POST, Door W/stove bolts, hex nuts and lockwashers (See Note 11)	
	23729-6	1	DOOR, Right Side W/stove bolts, hex nuts and lockwashers	
43	23729-2	1	PANEL, Rear	
44	395104	1	PANEL, Front	
45	23723	1	PANEL, Right Center W/stove bolts, hex nuts and lockwashers	
47	15689	1	STEP, Roof W/stove bolts, hex nuts and lockwashers	
48	15894	1	PLATE, Step Backing	
49	23717	1	BRACKET, Right Front Panel W/capscrews, hex nuts and lockwashers (To and Incl. Serial #46126 only)	

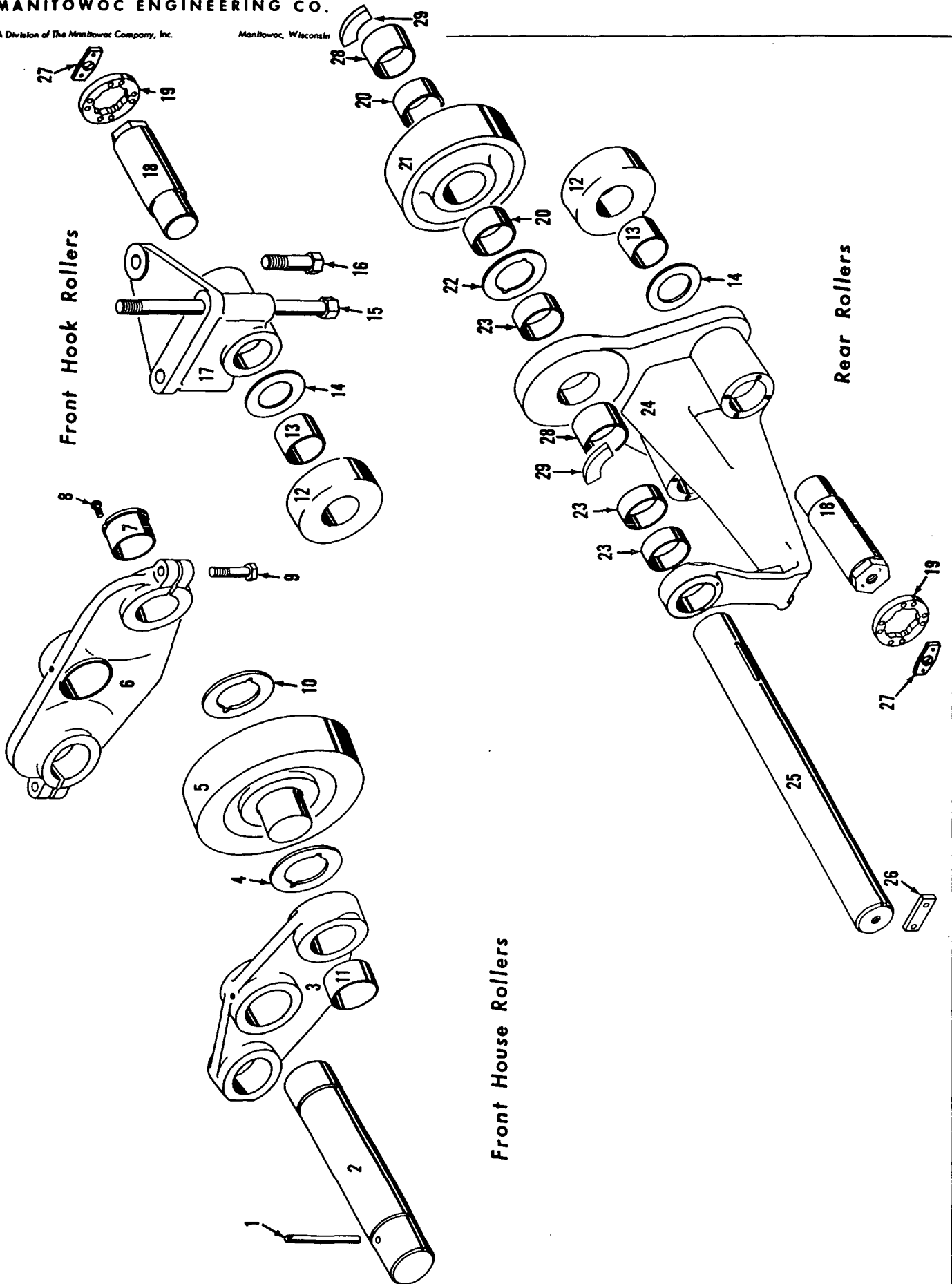
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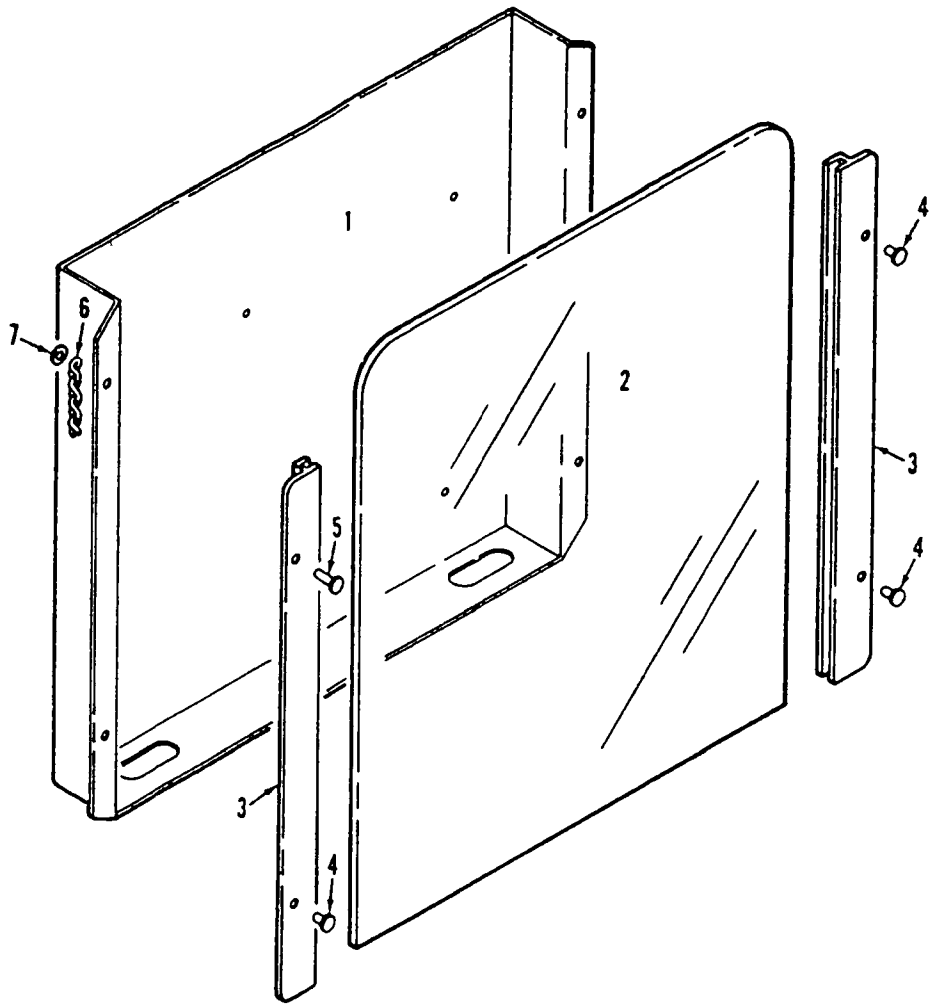
PLEASE GIVE MACHINE S/N W/ORDER

MASTER

REV. 10-1-1966

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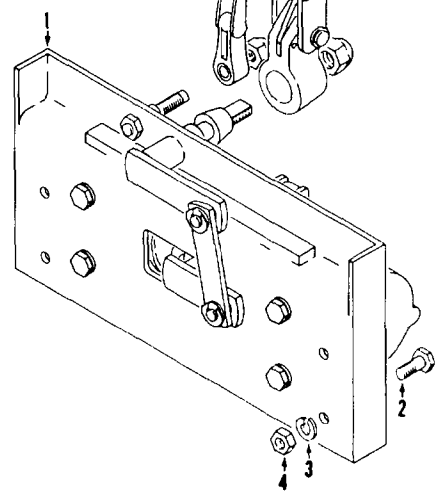
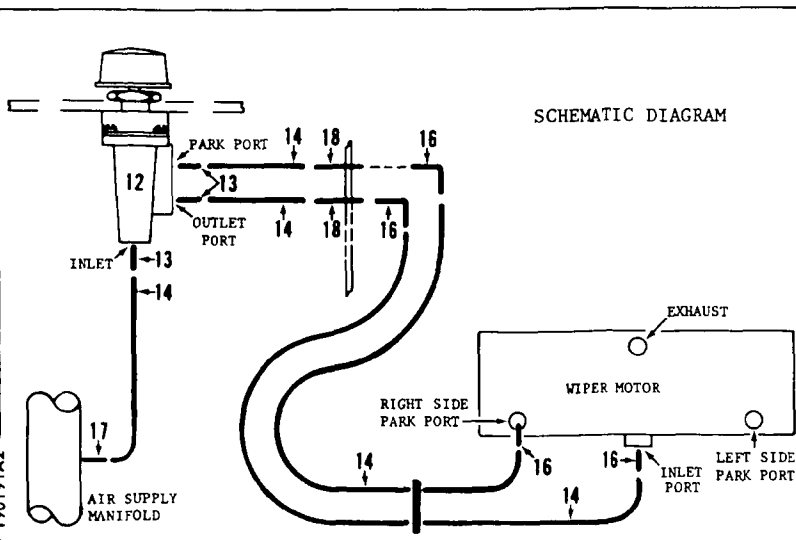
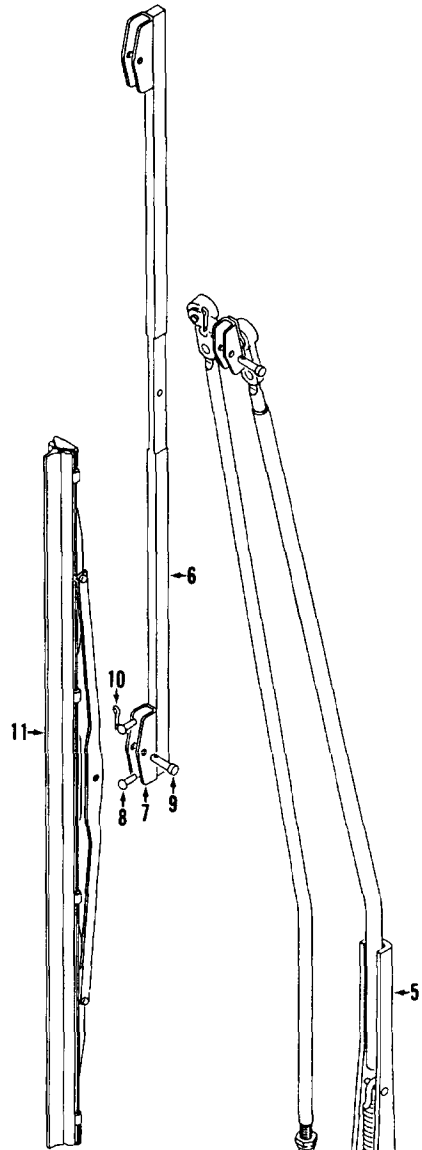




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MATERIAL LIST ON BACK

CHART HOLDER



MATERIAL LIST ON BACK

WINDSHIELD WIPER

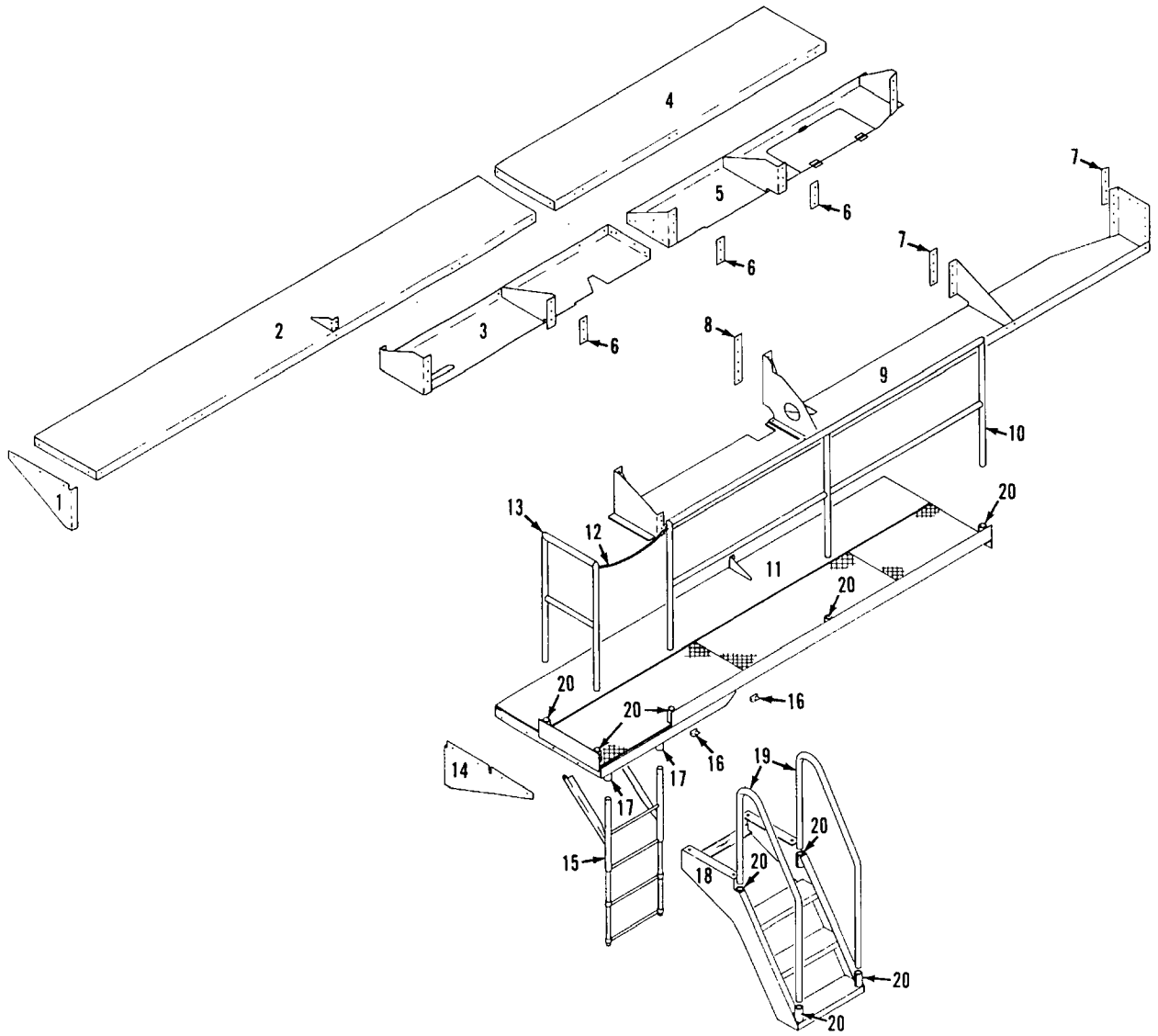
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190530C1

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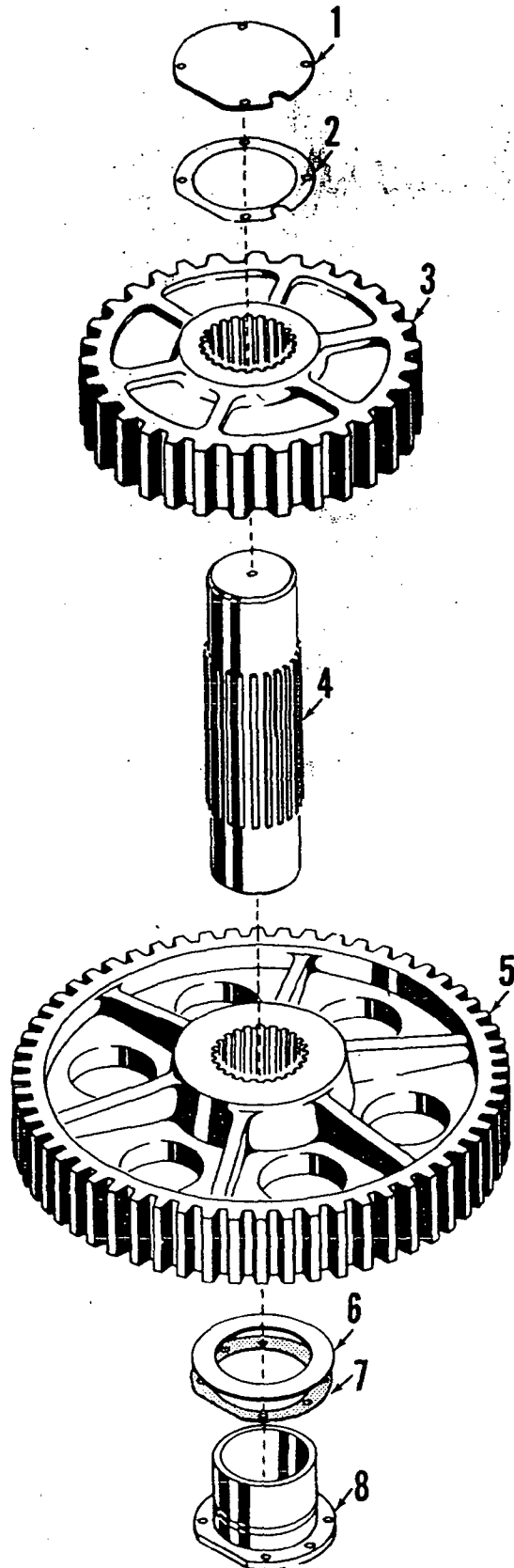
PLATFORM

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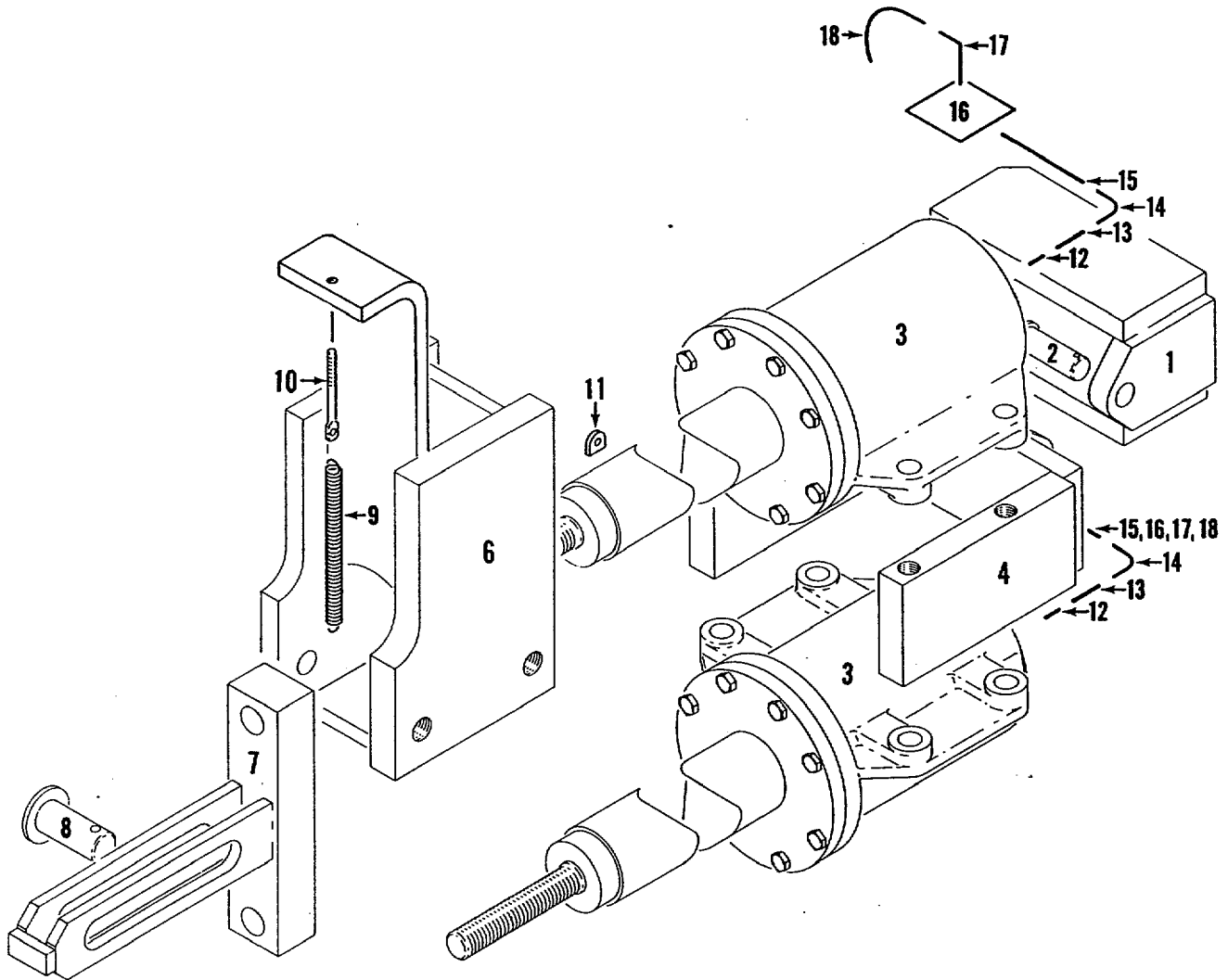


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MATERIAL LIST ON BACK

SWING SHAFT ASSEMBLY - INTERMEDIATE

MASTER



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MATERIAL LIST ON BACK

DRUM BRAKE

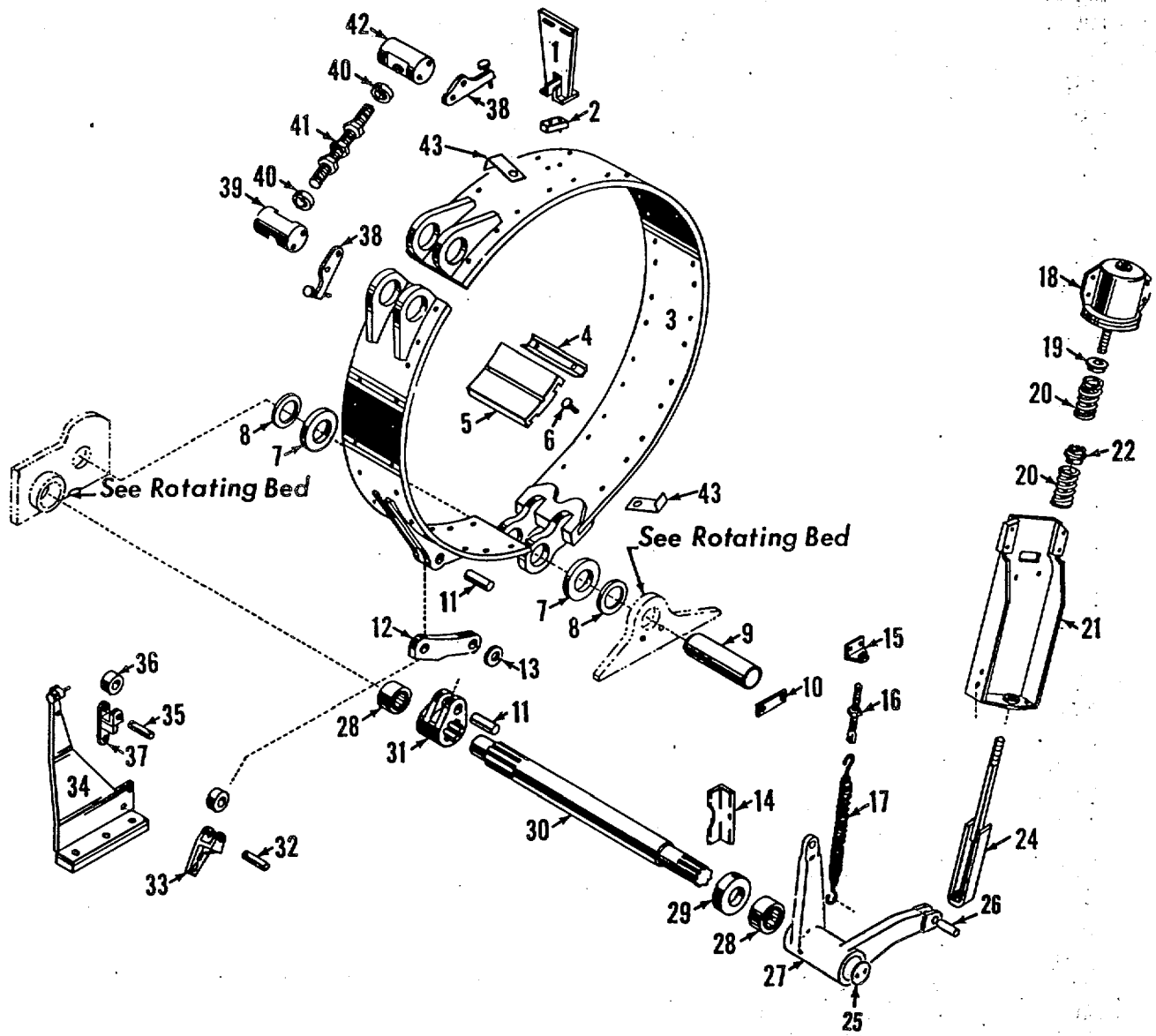
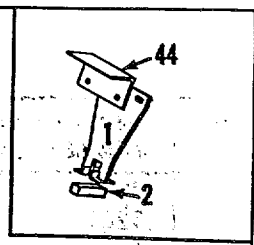
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WASILEK

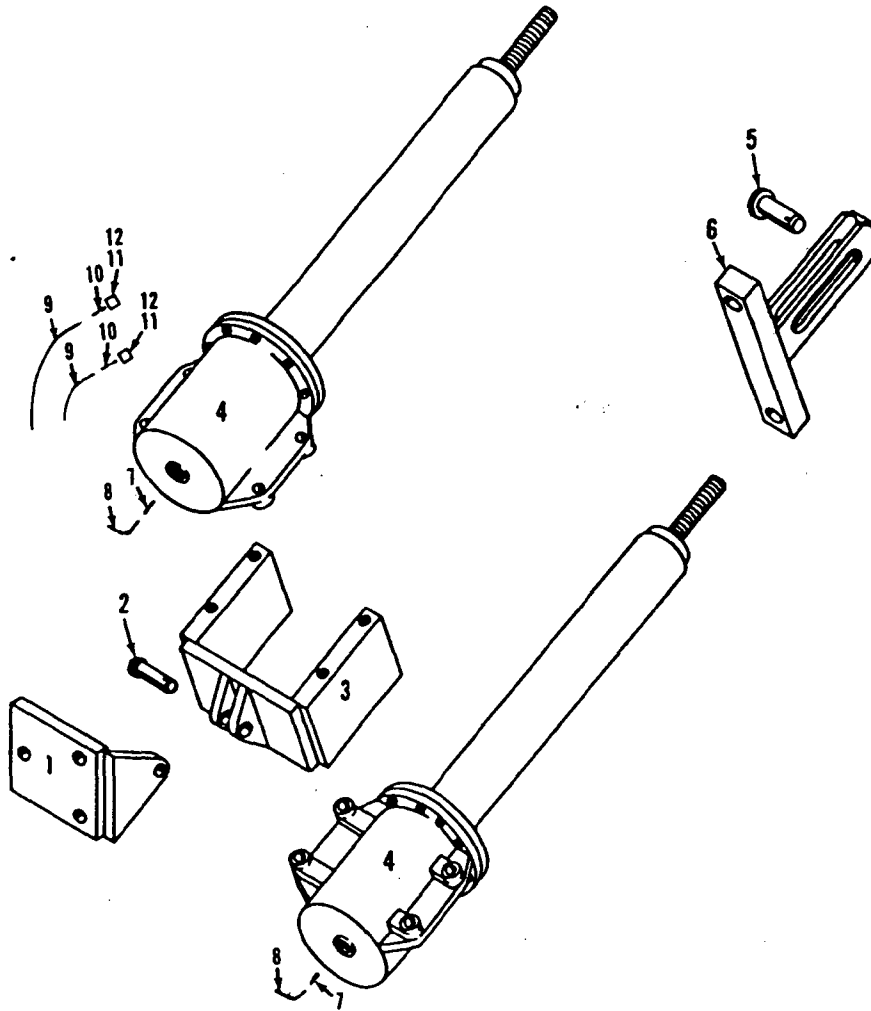


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REAR DRUM BRAKE

MASTER



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MATERIAL LIST ON BACK

FRONT DRUM PARKING BRAKE CONTROL

49298-1Cont.	REV. G	MODEL 4600
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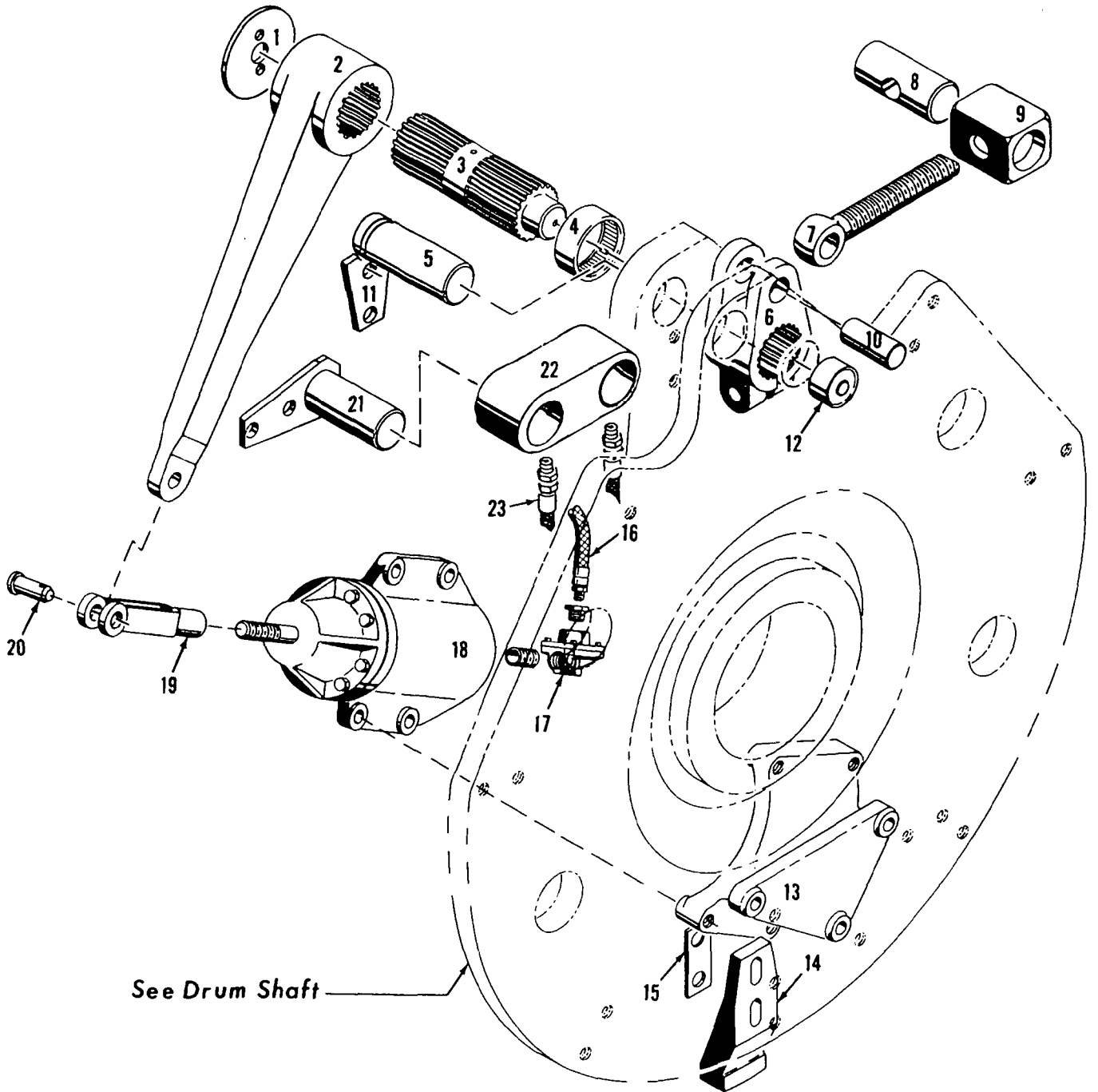
LUBRICATION PIPING
(SINGLE ENGINE)

REF. NO.	PART NUMBER	QUANTITY REQUIRED	DESCRIPTION OF PART	VENDORS PART NO.
45	571705	1	PLUG, Pipe (1")	
46	703031	1	VALVE, Horizontal Ball Check (1")	
47	543805	1	NIPPLE (1" x 3")	
48	14855	1	GASKET	
49	21379	1	SUMP, Oil W/capscrews, lockwashers and pipe plug	
50	572278	1	PLUG, Magnetic (2")	
51	543408	1	NIPPLE, Close (1½")	
52	406959	2	ELBOW (1½")	
53	71911	2	ADAPTER, Hose (1½" NPT 1 3/4" I.D. hose)	
54	345338	2	CLAMP, Hose (#28 1 5/16" - 2½")	
55	485694	1	HOSE, Radiator (1 3/4" I.D. - specify length)	
56	543220	1	NIPPLE (1½" x 24 3/4")	
57	431331	1	FLANGE, Welding (1½") (Weld at Assembly)	
58	219977	1	BAR (½" x 1" x 6")	
59	667081	1	STRAP, Pipe (½")	
60	406952	1	ELBOW (½")	
61	543442	1	NIPPLE (½" x 1½")	
62	543531	1	NIPPLE (½" x 2½")	
			<u>MACHINE WITH FLOW INDICATOR</u>	
70	288757	1	BUSHING (1" x 3/4")	
71	543405	1	NIPPLE, Close (3/4")	
72	489442	1	INDIACTOR, Flow	
73	288753	1	BUSHING (3/4" x 1/2")	
			<u>Note 1:</u> For machines after design change of 3/13/81, with mounting on left side of filter, add the following:	
74	138107	1	PAD, Mounting (Weld in place at assembly)	
75	147692	1	PLATE, Mounting (Weld in place at assembly)	
76	139228	1	PLATE, Instruction W/drive screws	
			0-407 (9-19-70 and 11-9-70) #0-340 (1-19-71 and on)	
			REV. G	49298 - 1

Run as Front

MASTER

49298 G1 Cont.



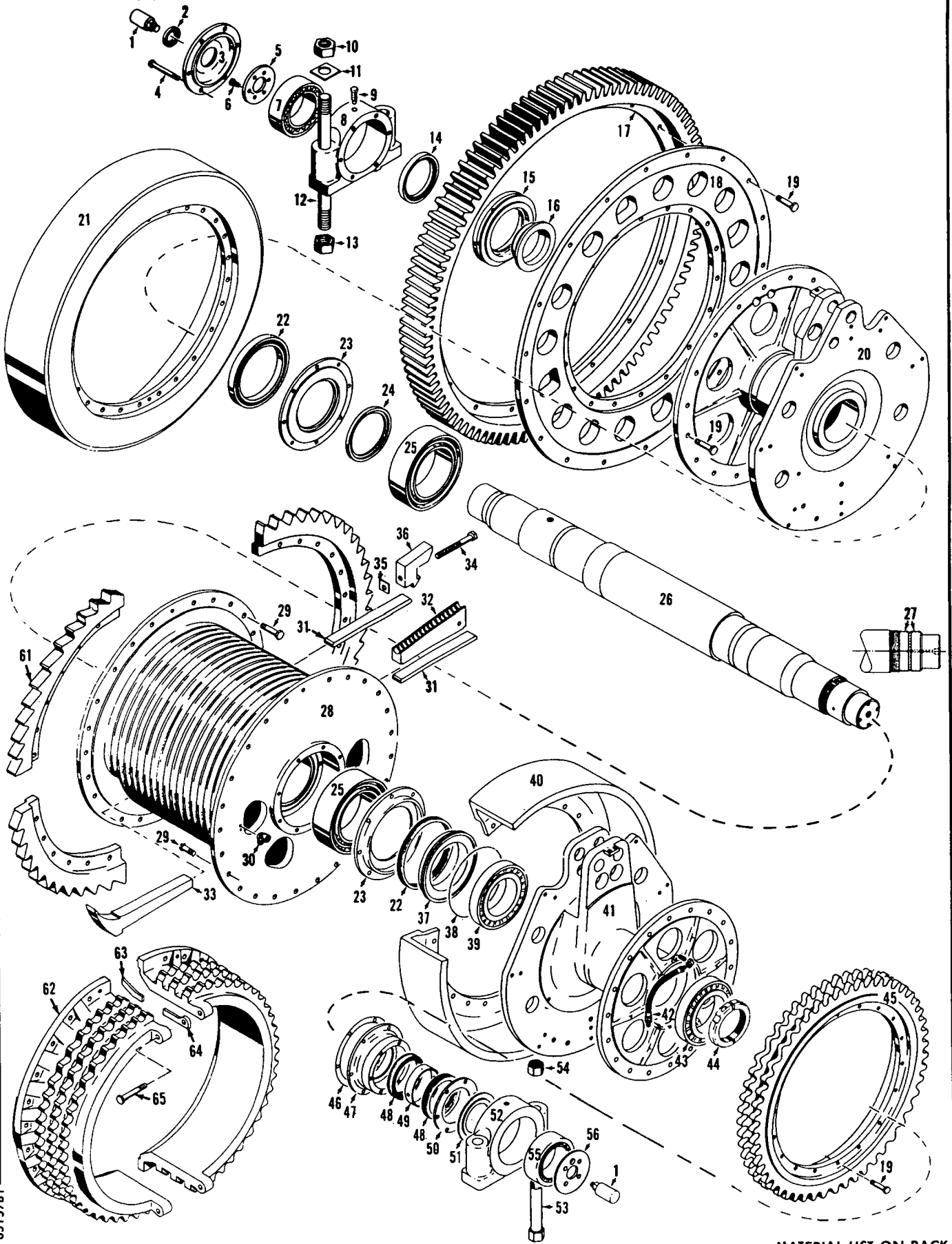
See Drum Shaft

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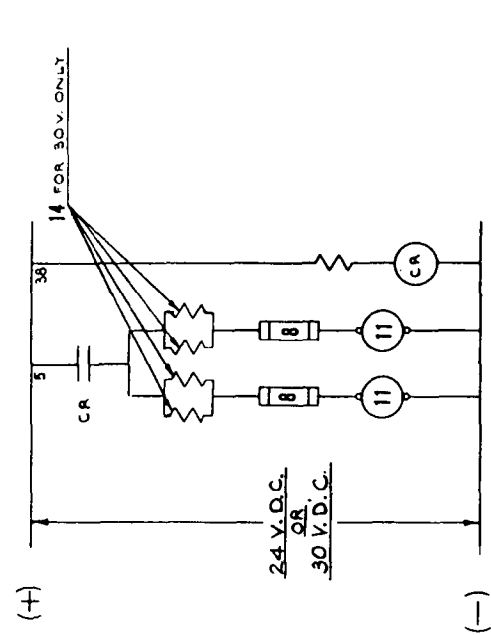


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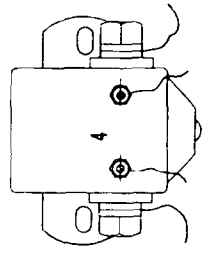
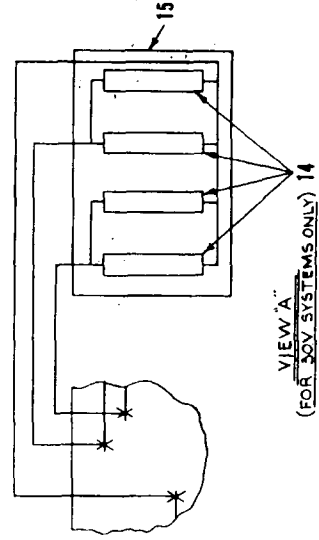
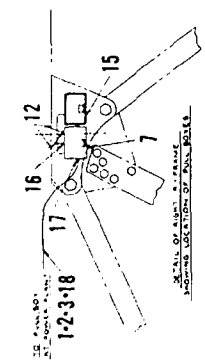
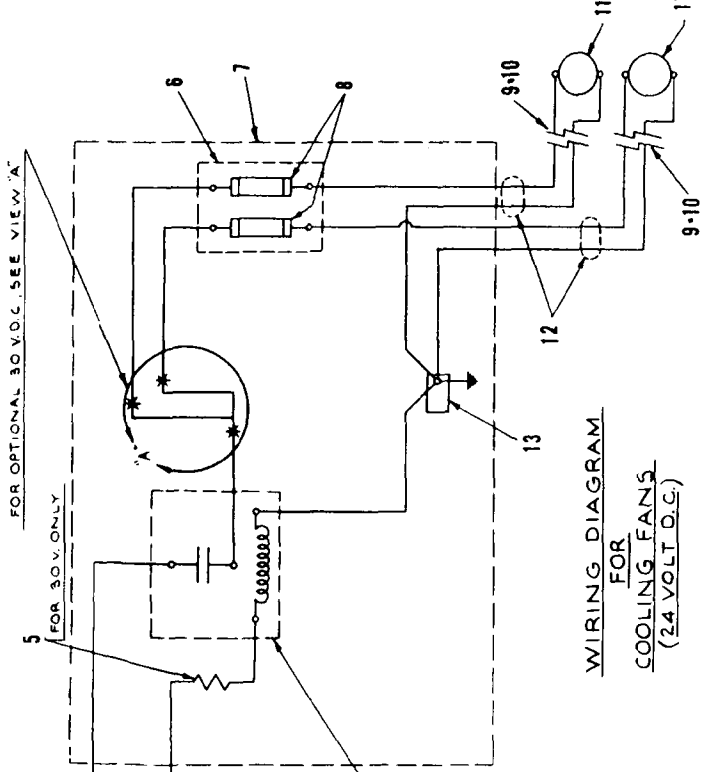
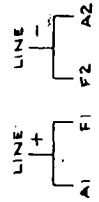
MATERIAL LIST ON BACK

REAR DRUM SHAFT

65385A2



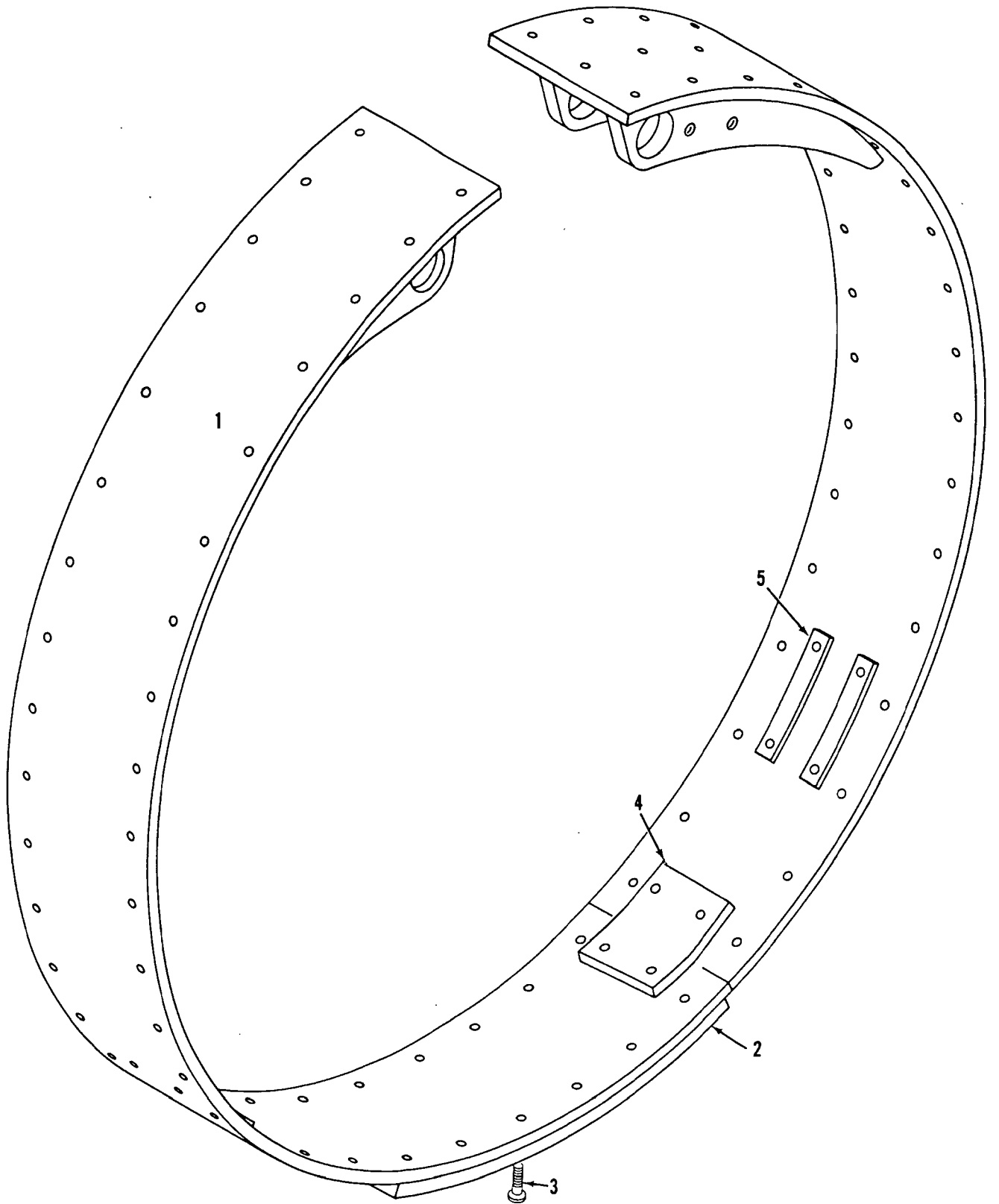
SCHEMATIC SYMBOLS
 CONTACTOR COIL
 CONTACT RELAY CONTACTS
 FUSE
 MOTOR
 RESISTOR



MATERIAL LIST ON BACK

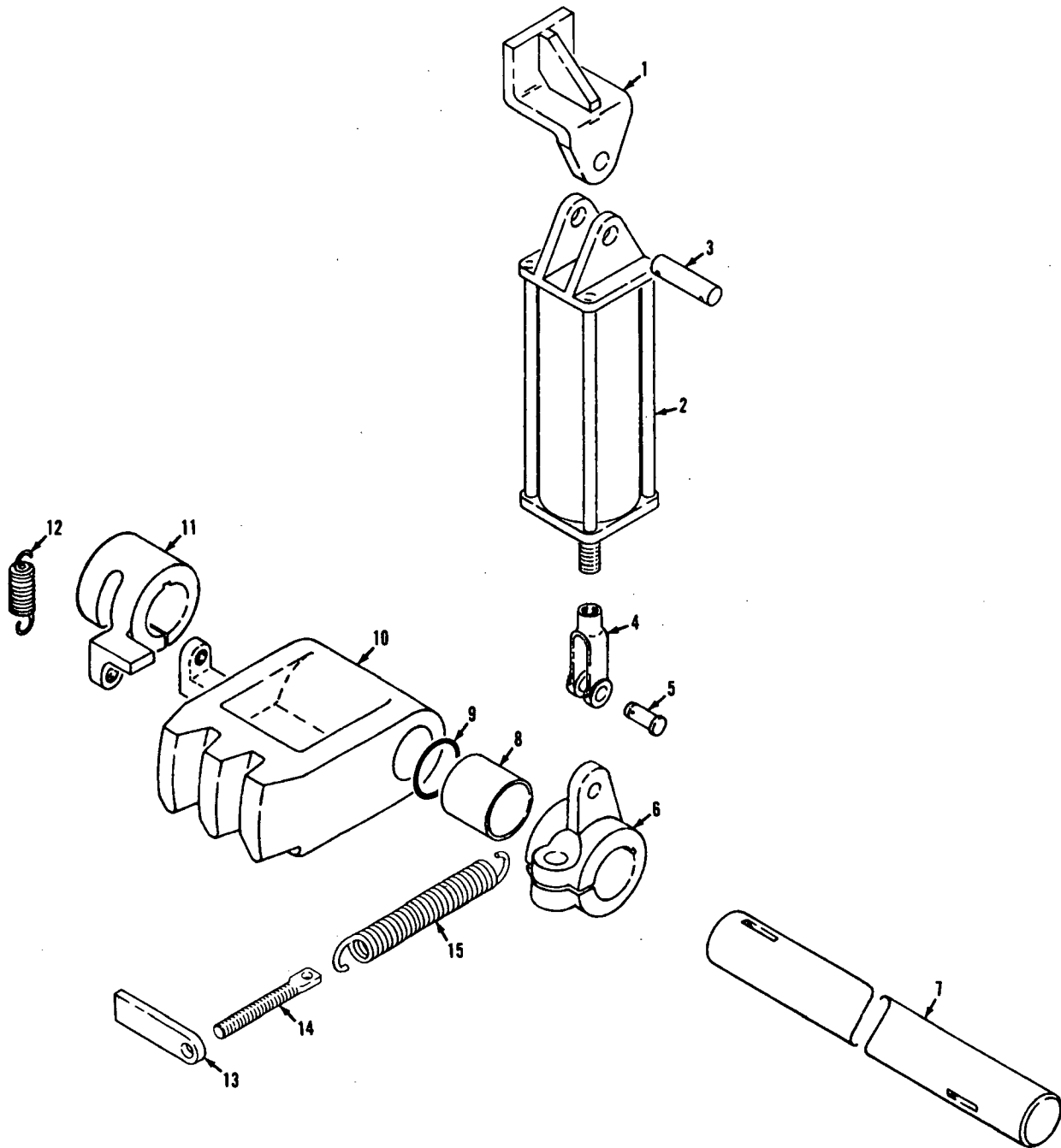
COOLING FAN WIRING

MASTER



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CLUTCH BAND

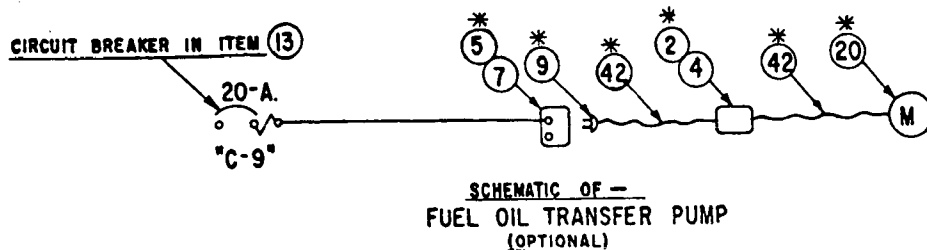
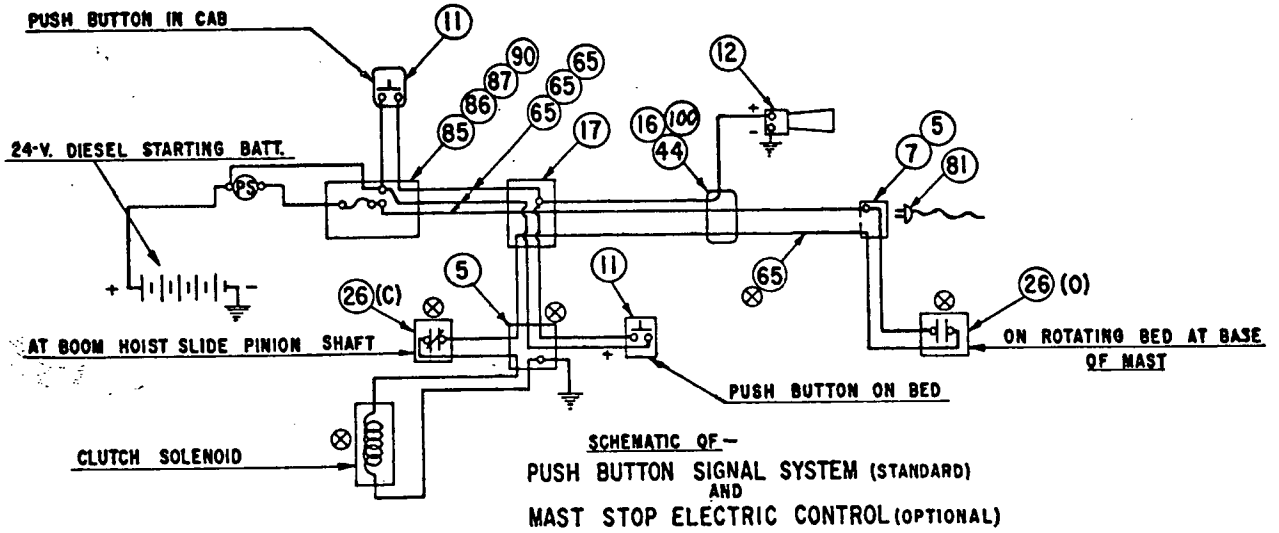
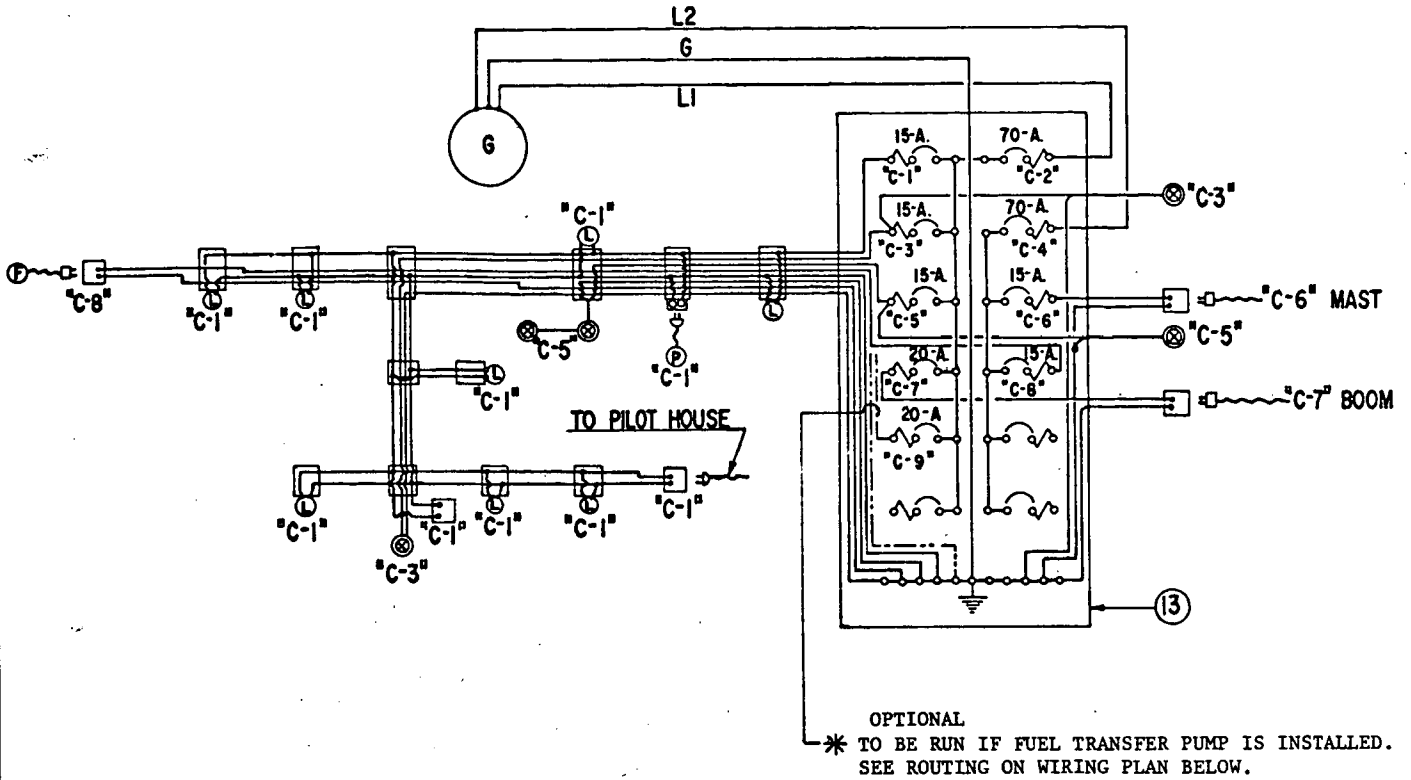


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PARTS MANUAL ALPHABETICAL INDEX
Group C - Air Components & Electrical

DESCRIPTION	PUBLICATION	REV	START DATE	END DATE	GROUP
Air Joint	65445	C1	01/21/76	02/02/79	C0501
Air Piping to Elevated Operator's Station	190108	B1	01/22/75	09/27/78	C0302
Air Piping to Elevated Operator's Station	93707	A1	03/18/71	11/02/78	C0302
Boom & Mast Lighting	183103	A1	03/02/77		C1201
Boom & Mast Lighting	41086	A1	07/14/57	03/18/69	C1201
Cab Lighting	142811	-	03/10/75	05/18/77	C1301
Cab Lighting	142933	-	03/11/75	09/01/05	C1301
Cab Lighting	190170	-	08/06/75	09/09/78	C1301
Cab Lighting	50496	D1	10/31/67	07/28/77	C1301
Cab Lighting	50496	B2	10/31/67	01/21/81	C1301
Compressor & Piping	181698	C1	04/17/72	10/19/81	C0101
Compressor & Piping	49584	-	03/30/72	04/06/76	C0101
Control Console	65336	G1	01/21/75	09/05/78	C0201
Control Console	65337	E1	01/21/75	09/05/78	C0201
Electrical Controls	65349	-	03/10/75	11/10/77	C0303
Instrument Panel/Switch	190095	D1	09/08/77		C0202
Instrument Panel/Switch	190096	F1	09/08/77		C0202

MASTER



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BILL OF MATERIAL				
ITEM NO.	DESCRIPTION	QUANTITY	MATERIAL	REMARKS
1	CABLE HARNESS	1	477301	
2	BRACKET	1	142922	
3	CABLE HARNESS	1	477303	
4	IDENTIFICATION TAGS	306008	SEE NOTE 1	
5				
6	2 COND. CABLE #10 WIRE	3	371827	
7	1 COND. CABLE #10 WIRE	3	371829	
8	24 COND. CABLE #10 WIRE	3	371851	
9				
10	2 GROMMET	2	472025	
11				
12	3 TERMINAL STRIP	3	667742	
13	8-32NC 1/2 LG. RD. HD. SC.	8	616427	
14	8-32NC HEX. NUT	8	546050	
15	8 LOCKWASHER	8	710319	
16	20 WELDING PAD	20	554113	
17	24 1/2" PIPE STRAP	24	667219	
18	20 1/2" ZINC PL. CAPSCREW	20	618351	
19	20 1/2" LOCKWASHER	20	710302	
20				
21	1 DOME LIGHT ASSEM.	1	142933	
22	1 CIRCULATION FAN ASSEM.	1	142932	
23	1 WIRING IN PILOT HOUSE	1	142911	

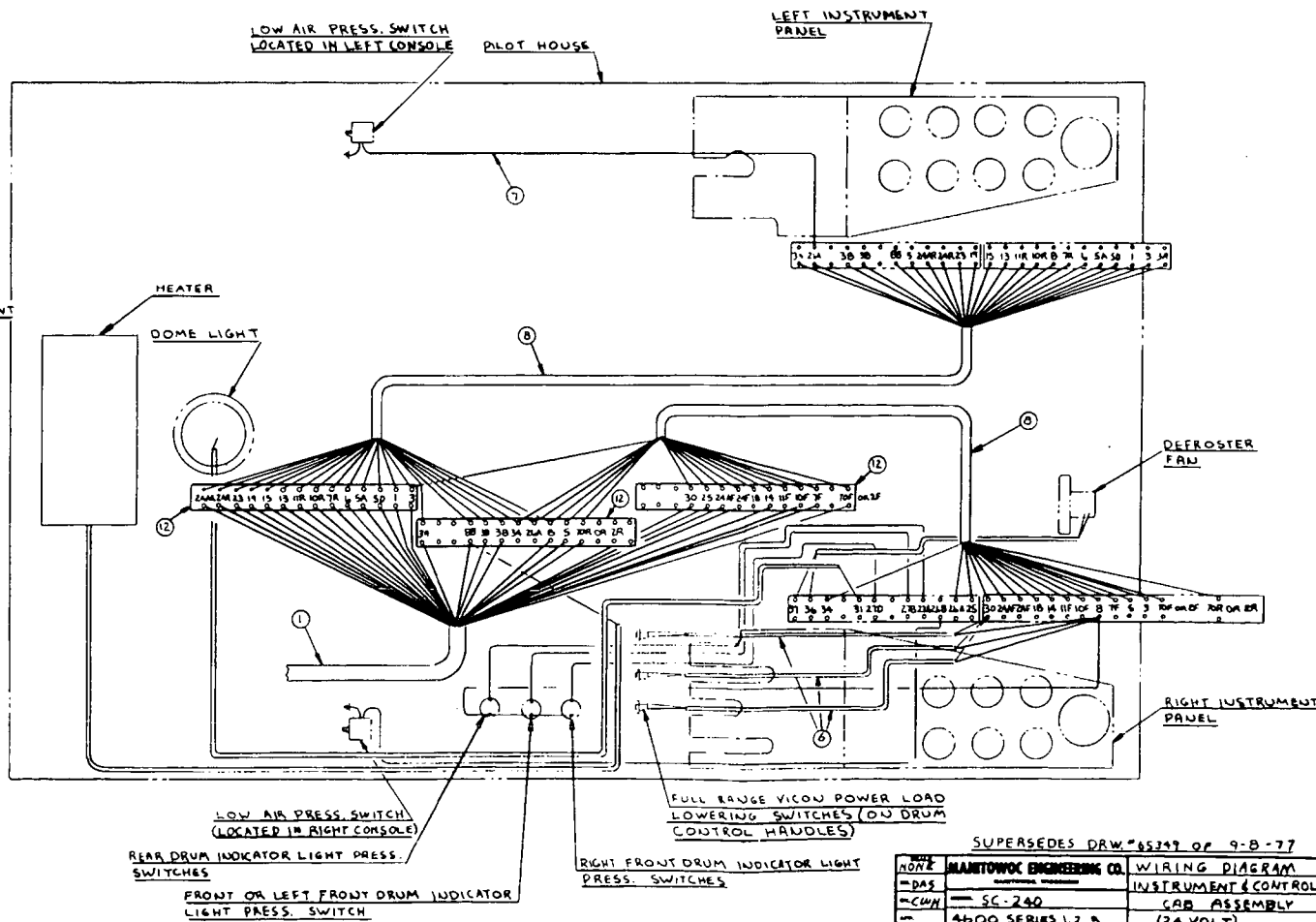
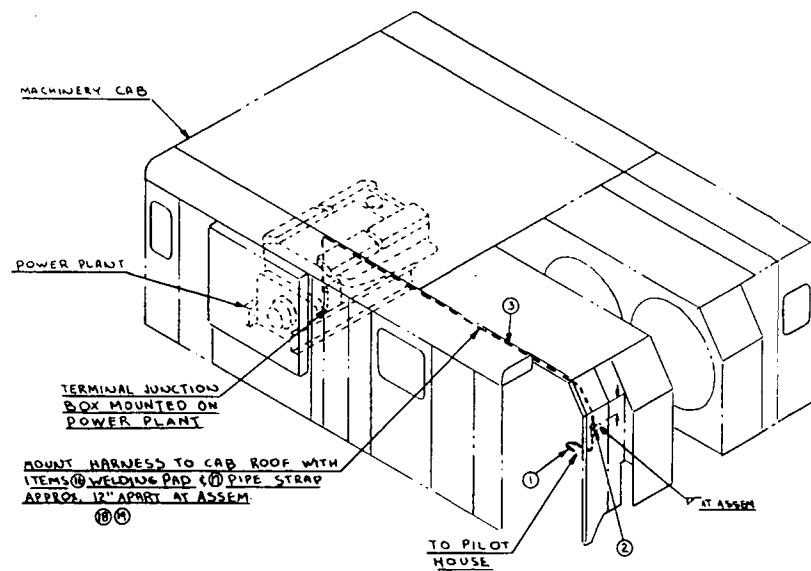
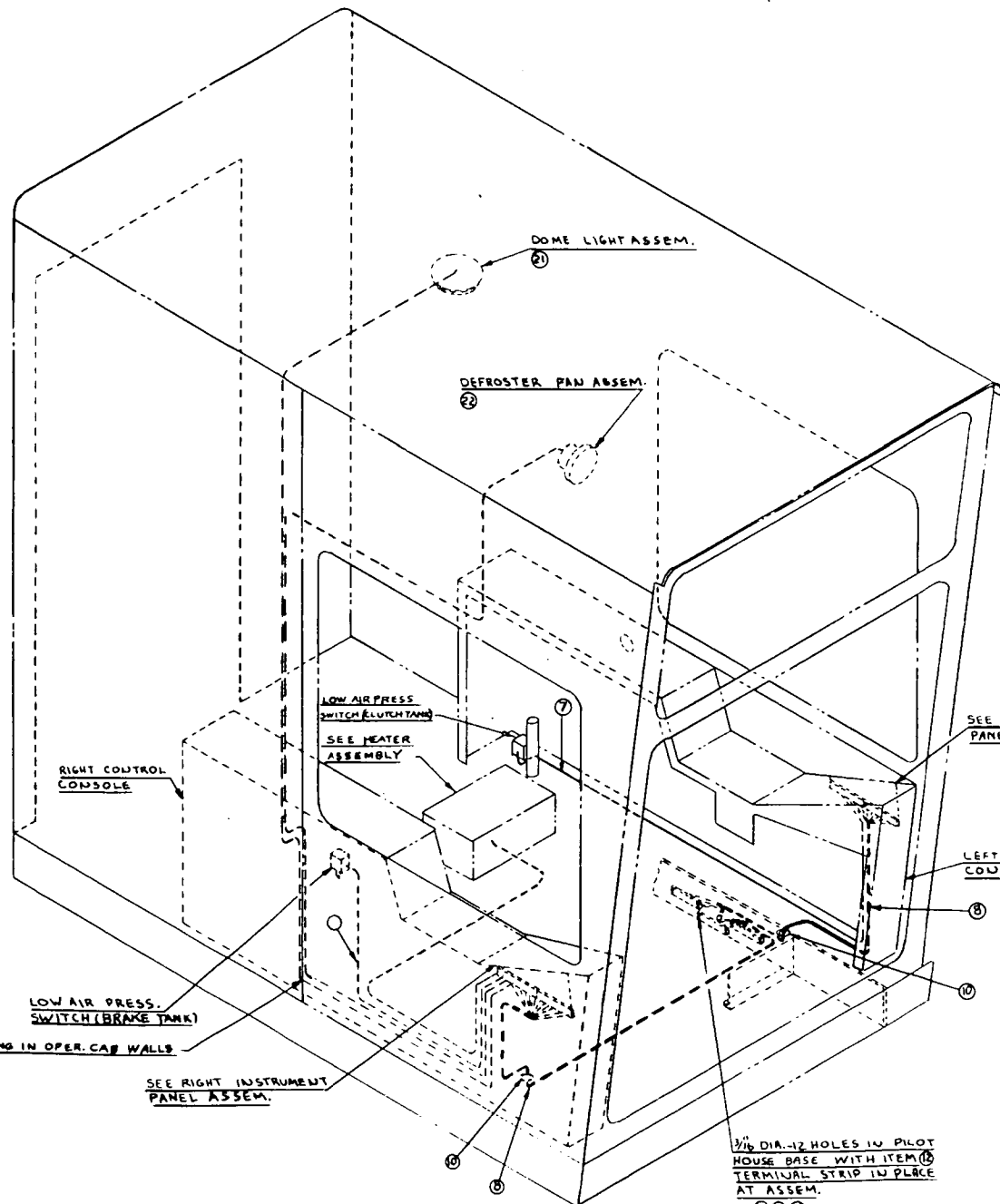
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NOTE 1
 IDENTIFY ALL WIRES THE SAME AS
 SHOWN ON TERMINAL STRIPS.
 FOR SINGLE POWER PLANT MACHINES
 LEAVE THE LETTERS "P" & "R" OFF ANY
 WIRES SO INDICATED.

NOTE 2
 FOR WIRING NOT SHOWN SEE
 INSTRUMENT PANELS.

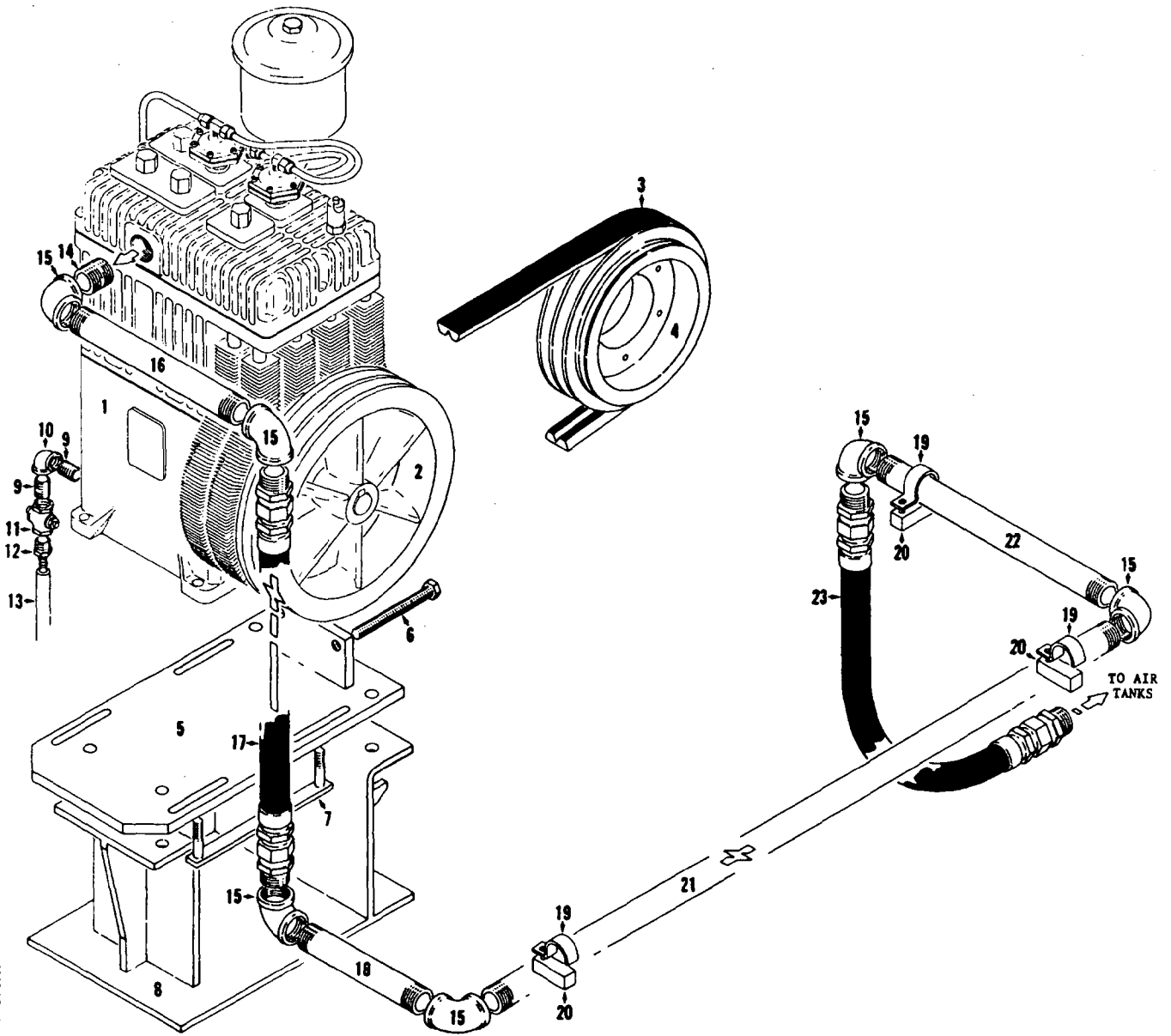
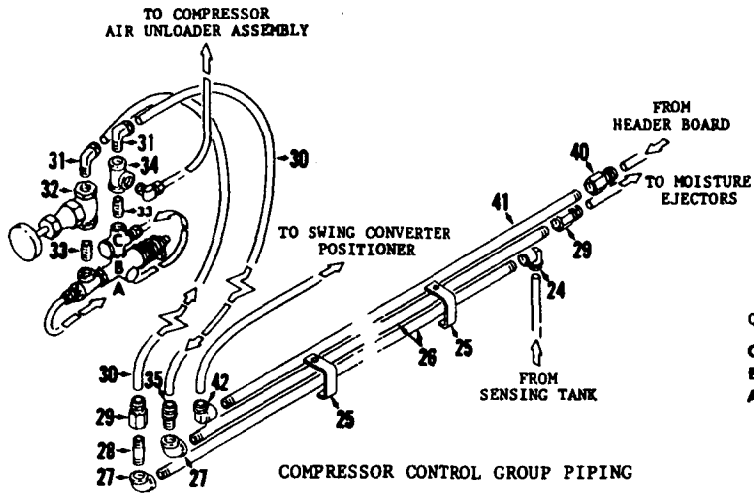
NOTE 3
 FOR WIRE IDENTIFICATION NUMBERS
 SEE CHART "5806 (MASTER NUMBER INDEX)"



65349

SUPERSEDES DRAW # 65349 OF 9-B-77

DATE	MANITOWOC ENGINEERING CO.	WIRING DIAGRAM	11-10-77
BY	SC-240	INSTRUMENT & CONTROLS	
CHKD		CAB ASSEMBLY	
APP	4600 SERIES 1.2.3	(24 VOLT)	65349

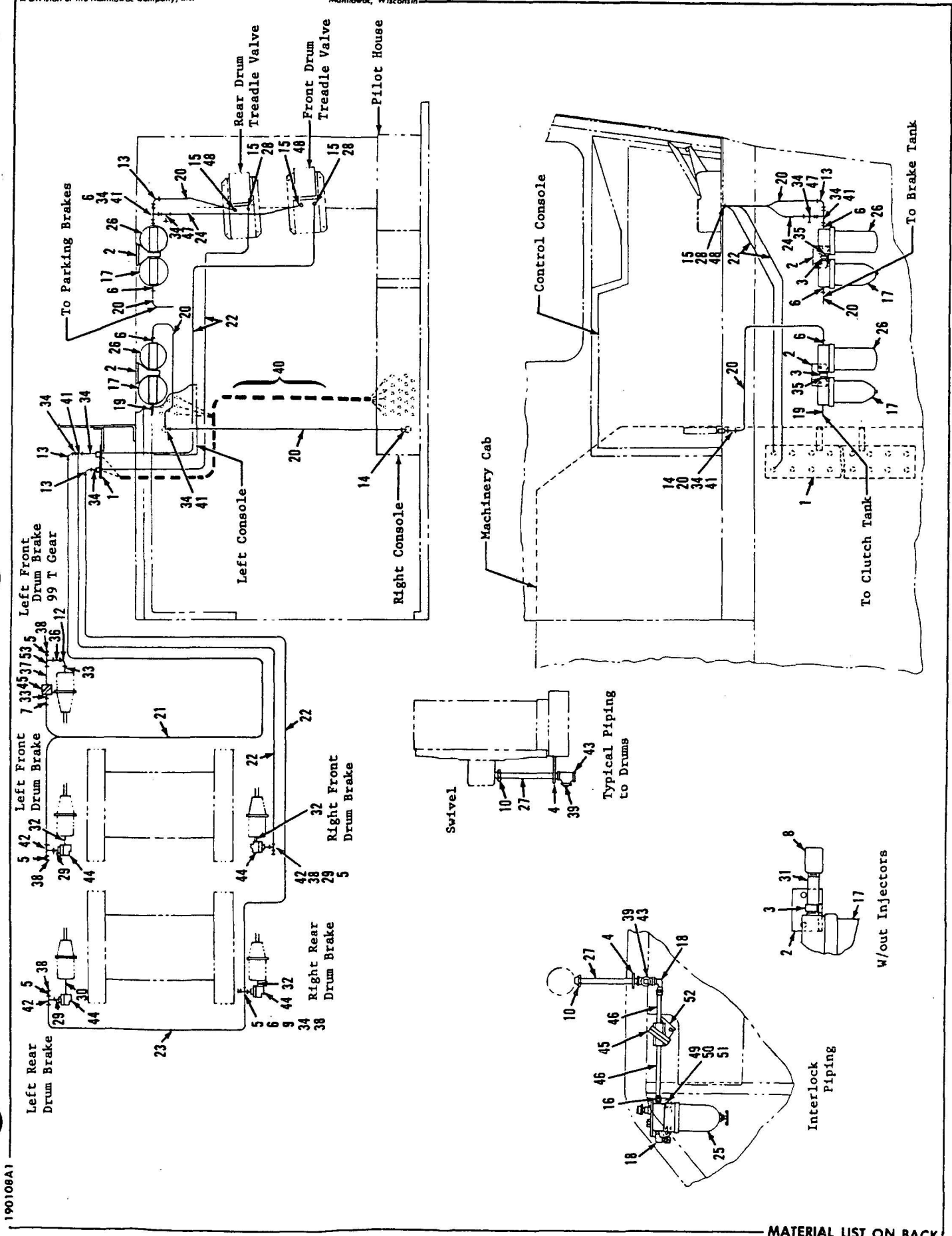


MATERIAL LIST ON BACK

181698A1

COMPRESSOR

181698A1



190108A1

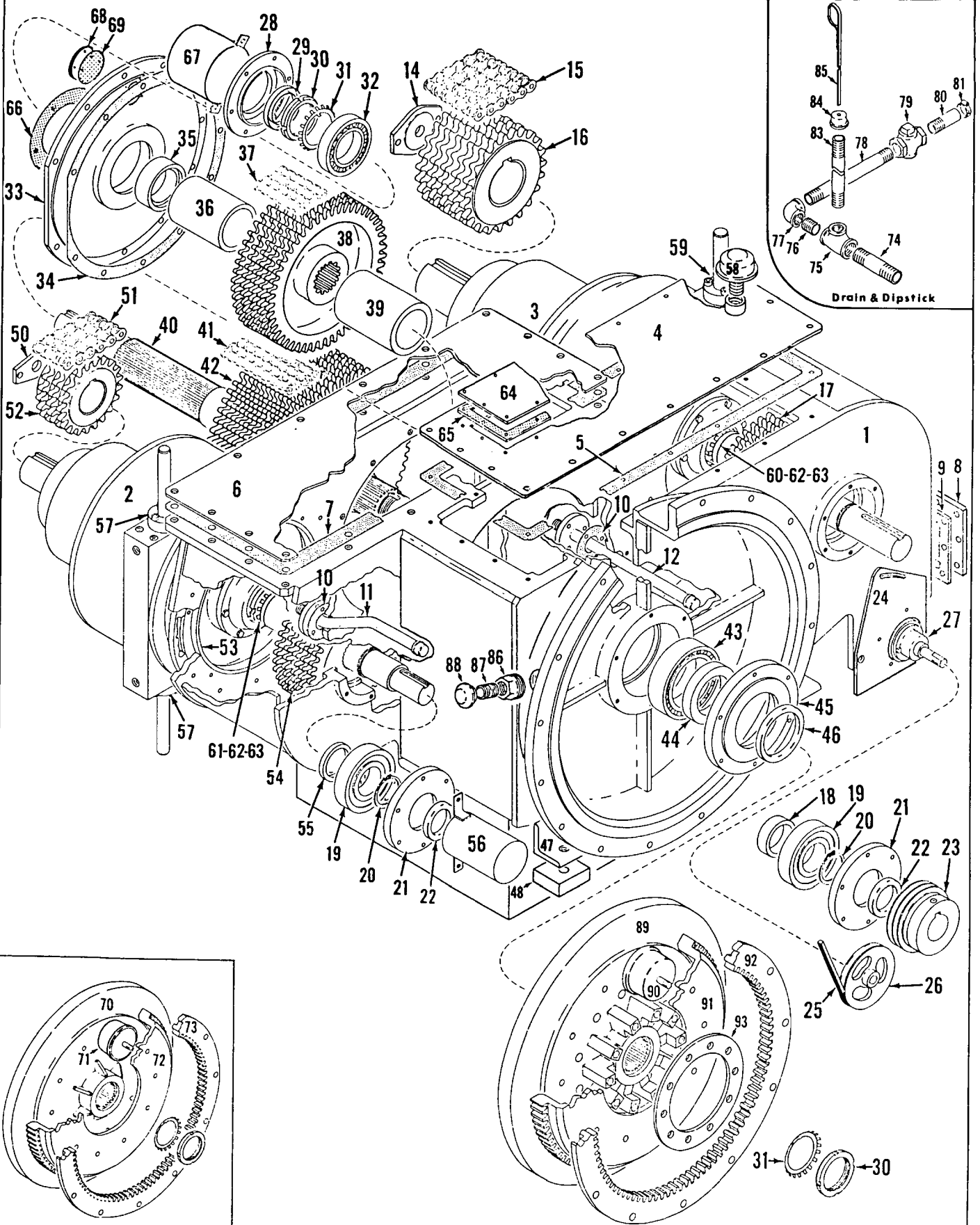
MATERIAL LIST ON BACK

AIR PIPING

MANITOWOC ENGINEERING CO.

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Manitowoc, Wisconsin



Drain & Dipstick

PREVIOUS COUPLING

MATERIAL LIST ON BACK

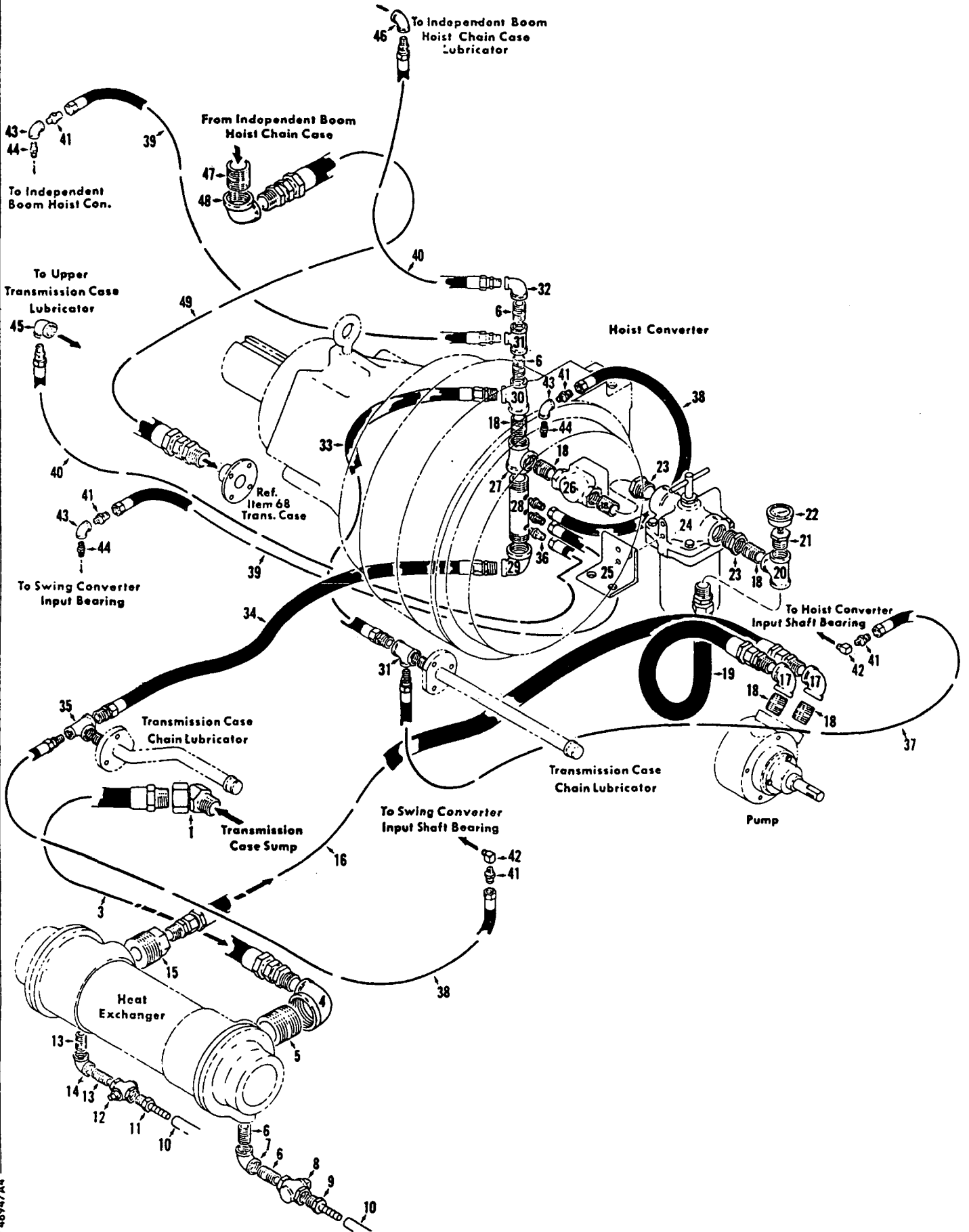
LOWER TRANSMISSION CASE

48947D1

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Manitowoc, Wisconsin



MATERIAL LIST ON BACK

MASTEK

LUBRICATION SYSTEM

48947AA

MODEL

4600 S-1, 4600 S-3

POWER PLANT

(Air or Electric Start Caterpillar D379 with Controlled Converters)

ITEM	PART #	QTY.	DESCRIPTION OF PART
62	367014	1	CONTROL, Shutter
63	380951	1	CROSS (1/8") (Series-3 only)
64	396466	2	PIN, Roll Dowel (2 1/2" lg)
65	679300	1	TEE (1/8") (Series-1 only)
68	406955	1	ELBOW (3/4")
70		1	ENGINE, Diesel (electric start - optional) (see Note 1)
71	414046	1	ENGINE, Diesel (air start)
72	429573	1	INSERT (1/8" NPT 3/8" I.D. Hose)
75	472020	4	GROMMET, Rubber (3/4" Hole) (air start only)
76	485663	1	HOSE, Radiator (1 1/4" I.D. - specify length)
77	485664	2	HOSE, Radiator (1 1/2" I.D. - specify length)
78	485671	1	HOSE, Radiator (1" I.D. - specify length)
79	485686	1	HOSE, Radiator (4 1/2" I.D. - specify length)
82	485844	1	TUBING, Plastic (3/8" I.D. - specify length)
83	511761	1	LUG, Terminal (air start only)
85	543400	1	NIPPLE (1/8" x 3/4")
87	543405	1	NIPPLE, Close (3/4")
92	543762	1	NIPPLE (3/4" x 6 1/2")
93	543812	1	NIPPLE (1" x 5")
95	546059	10	NUT, Hex (3/4" - 10 UNC - 2B)
96	565910	1	PIPE (1" x 4 1/2" - threaded one end)
97	566128	1	PIPE (3/4" x 3" - threaded one end)
98	585905	1	RADIATOR (see O-772)
	585860	1	RADIATOR (replaced by 585905)
99	612452	1	CAPSCREW (3/8" - 16 UNC - 2A x 3/4" lg)
100	612717	16	CAPSCREW (3/4" - 10 UNC - 2A x 1 3/4" lg)
101	612721	10	CAPSCREW (3/4" - 10 UNC - 2A x 2 1/4" lg)
103	624649	2	SHACKLE, Anchor with screw pin
104	644067	2	SLEEVE
105	667089	1	STRAP, Pipe (1 1/2")
106	673200	1	SWITCH, Pressure
107	675752	1	UNIT, Tachometer Sending
108	680532	5	LUG, Terminal (#6 wire 3/8" hole) (air start only)
109	680594	2	TERMINAL, Battery (3/0 Positive) (air start only)
110	680595	2	TERMINAL, Battery (3/0 Negative) (air start only)
111	682702	2	THIMBLE
112	695300	4	JOINT, Flex Tube
113	565938	2	PIPE (3" x 4" - threaded one end)
115	701017	1	UNIT, Pressure Sending (Series-3 only)
116	701018	1	UNIT, Temperature Sending (Series-3 only)
118	709703	1	WASHER, Flat (3/8")
119	710304	3	LOCKWASHER (3/8")
120	710308	26	LOCKWASHER (3/4")
121	719103	1	ROPE, Wire (1/8" - specify length)

Note: For electric start, modify engine 414046 per drawing 184546.

PLEASE GIVE MACHINE SERIAL NUMBER WITH ORDER

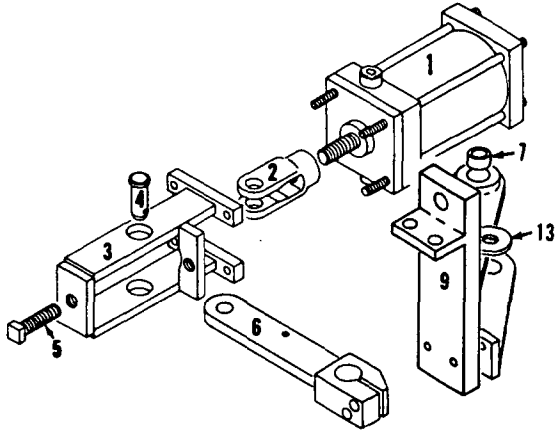
ASSEMBLY	PAGE	REV.
50408	3 of 3	AE-1

MANITOWOC ENGINEERING CO.

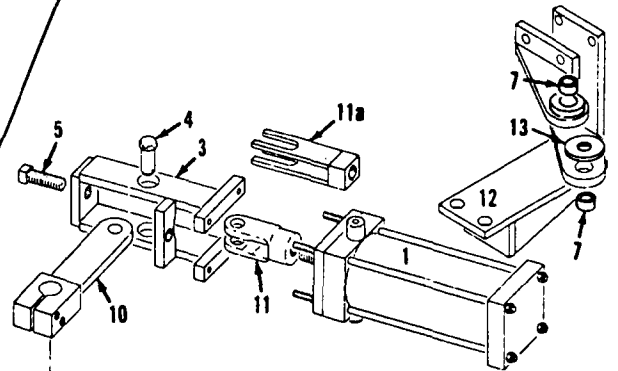
A Division of The Manitowoc Company, Inc.

Manitowoc, Wisconsin

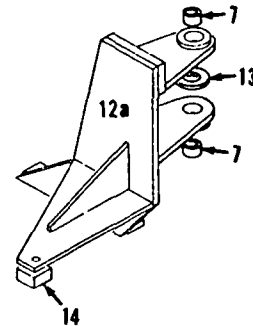
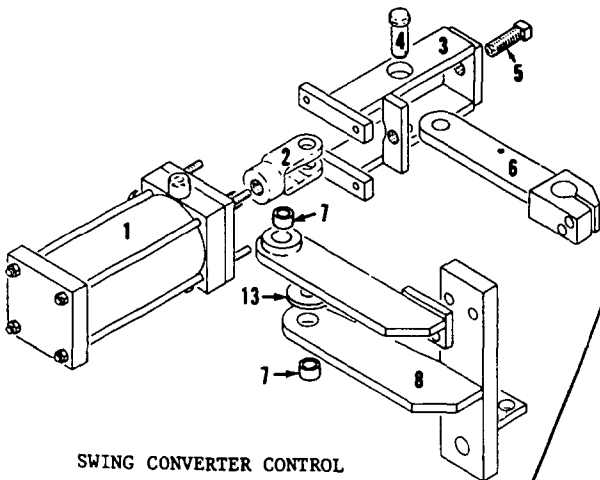
INDEPENDENT BOOM HOIST CONVERTER CONTROL



HOIST CONVERTER CONTROL



SWING CONVERTER CONTROL



18025401

MATERIAL LIST ON BACK

CONVERTER CONTROL

182894-1 Cont	REV. B	MODEL 4600 S1, S3
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ENGINE AIR START PIPING

REF. NO.	PART NUMBER	QUANTITY REQUIRED	DESCRIPTION OF PART	VENDORS PART NO.
47	429543	1	ADAPTER, 45° Swivel (1¼")	
48	429539	1	ELBOW, 90° (1¼" NPTF x 1¼" NPSM)	
49	486131	1	HOSE, Flex (1½" x 2'0" - .610 m)	
50	406816	1	ELBOW, 90° (1½")	
51	542107	1	NIPPLE (1¼" x 14½")	
52	543653	1	NIPPLE (½" x 4")	
53	429623	1	TEE, Male Branch (3/8" x 3/8" x 1/4")	
54	486127	1	HOSE, Flex (1¼" x 11'4" - 3.455 m)	
55	429633	1	ELBOW, 90° Male (3/8" x 1/8")	
56	460191	1	GAUGE, Air Pressure	

RUN AS FRONT

MASTER

182894-1 Cont

0-147, 0-156

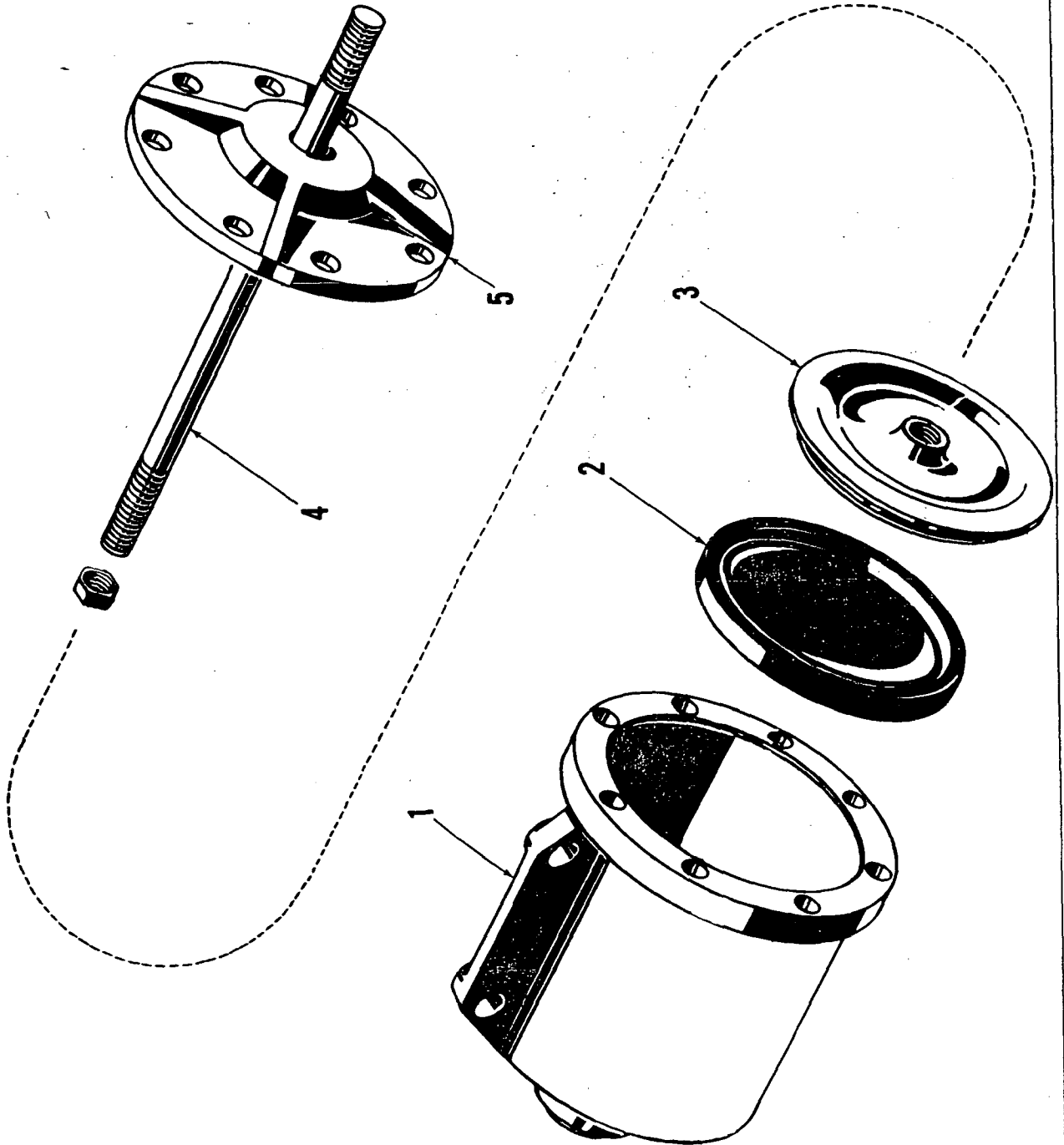
PLEASE GIVE MACHINE S/N W/ORDER

REV. B	182894 - 1
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Manitowoc, Wisconsin



ILLUST. No. 20729 -A-1

MATERIAL LIST ON BACK

AIR CYLINDER

207291.

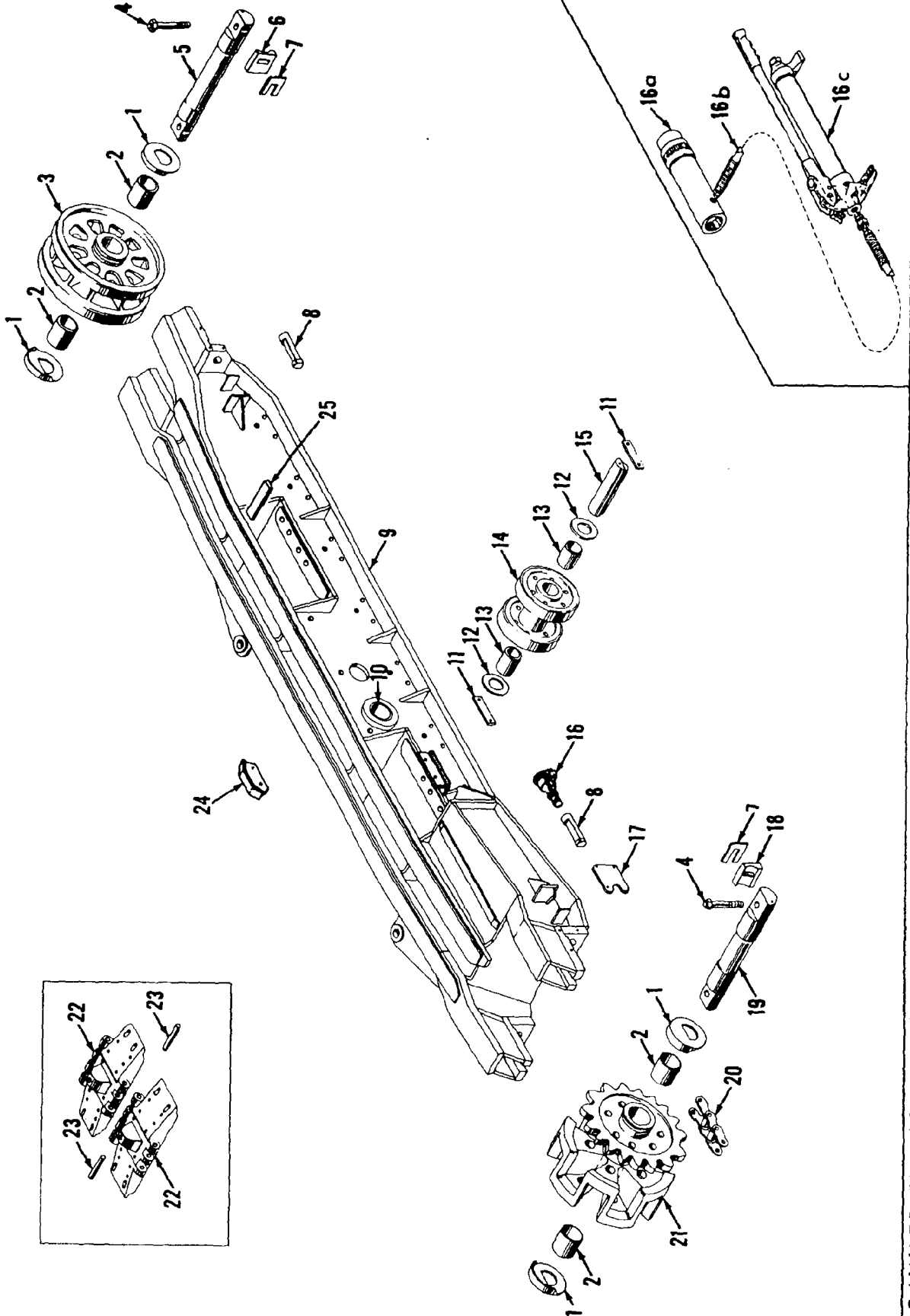
MANITOWOC

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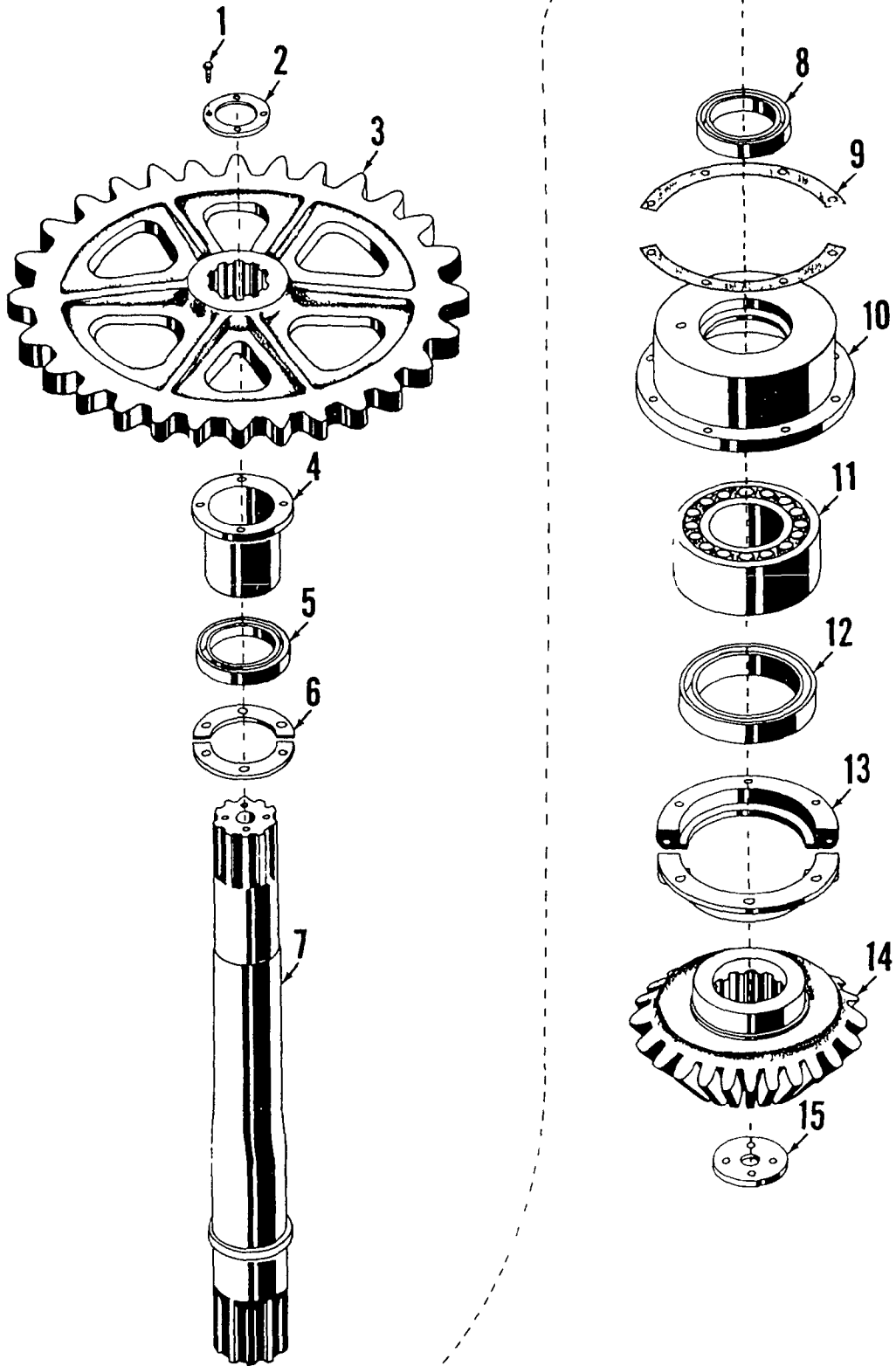
MASTER



42763D1

MATERIAL LIST ON BACK

CRAWLER FRAME ASSEMBLY



ILLUST No 31253-A-1

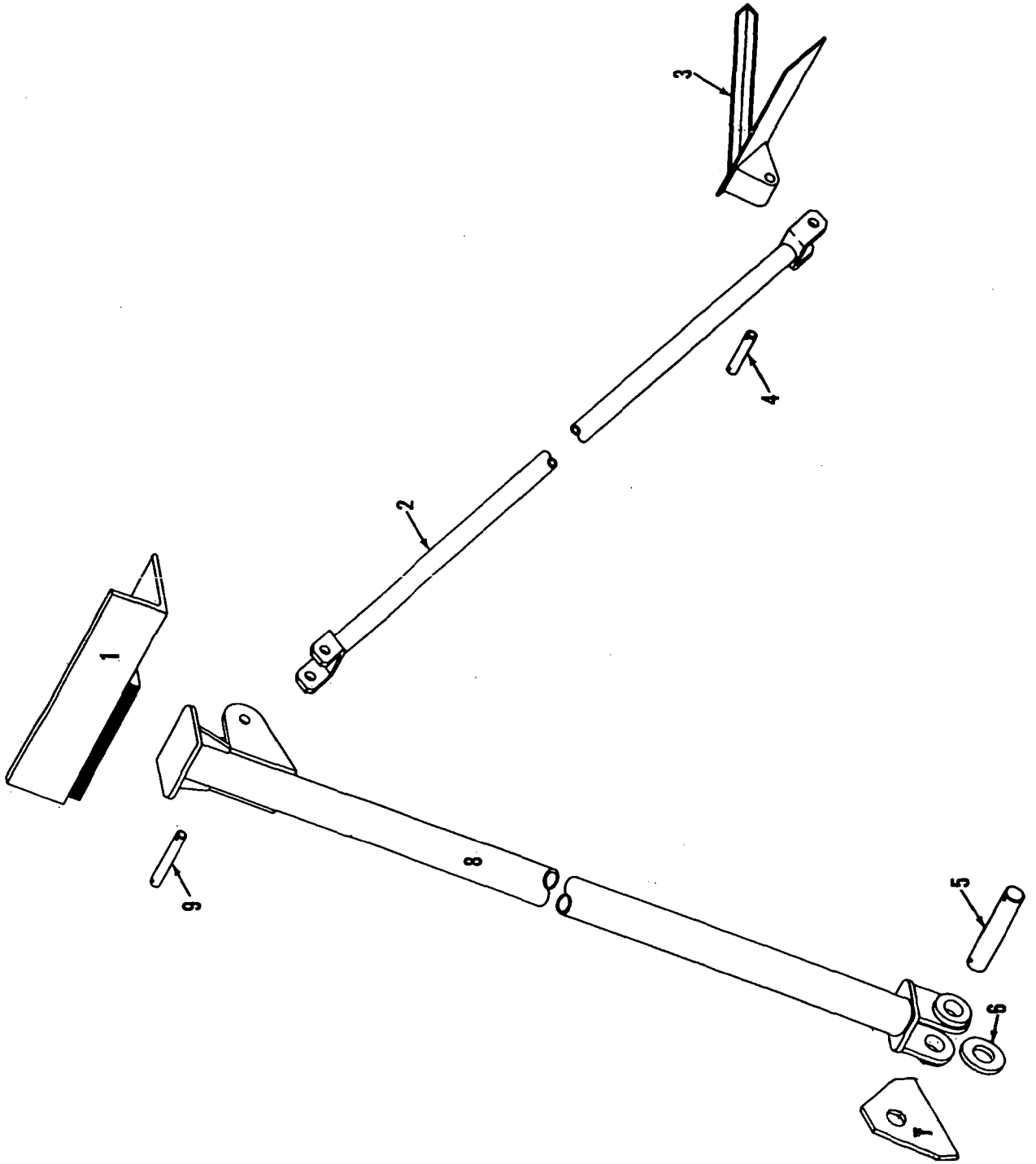
MATERIAL LIST ON BACK

VERTICAL TRAVEL SHAFT ASSEMBLY

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3277081

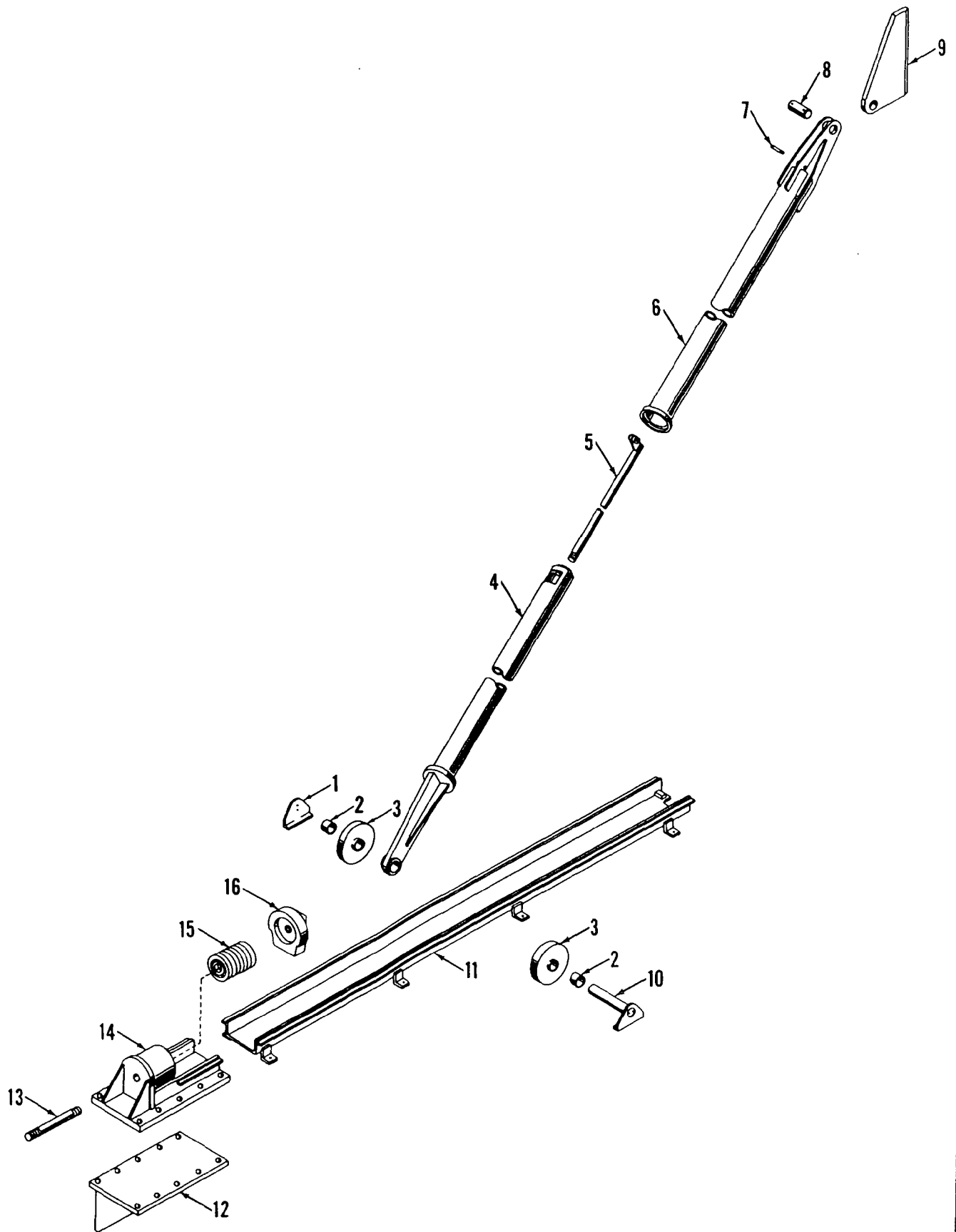
MATERIAL LIST ON BACK

MAST STOP

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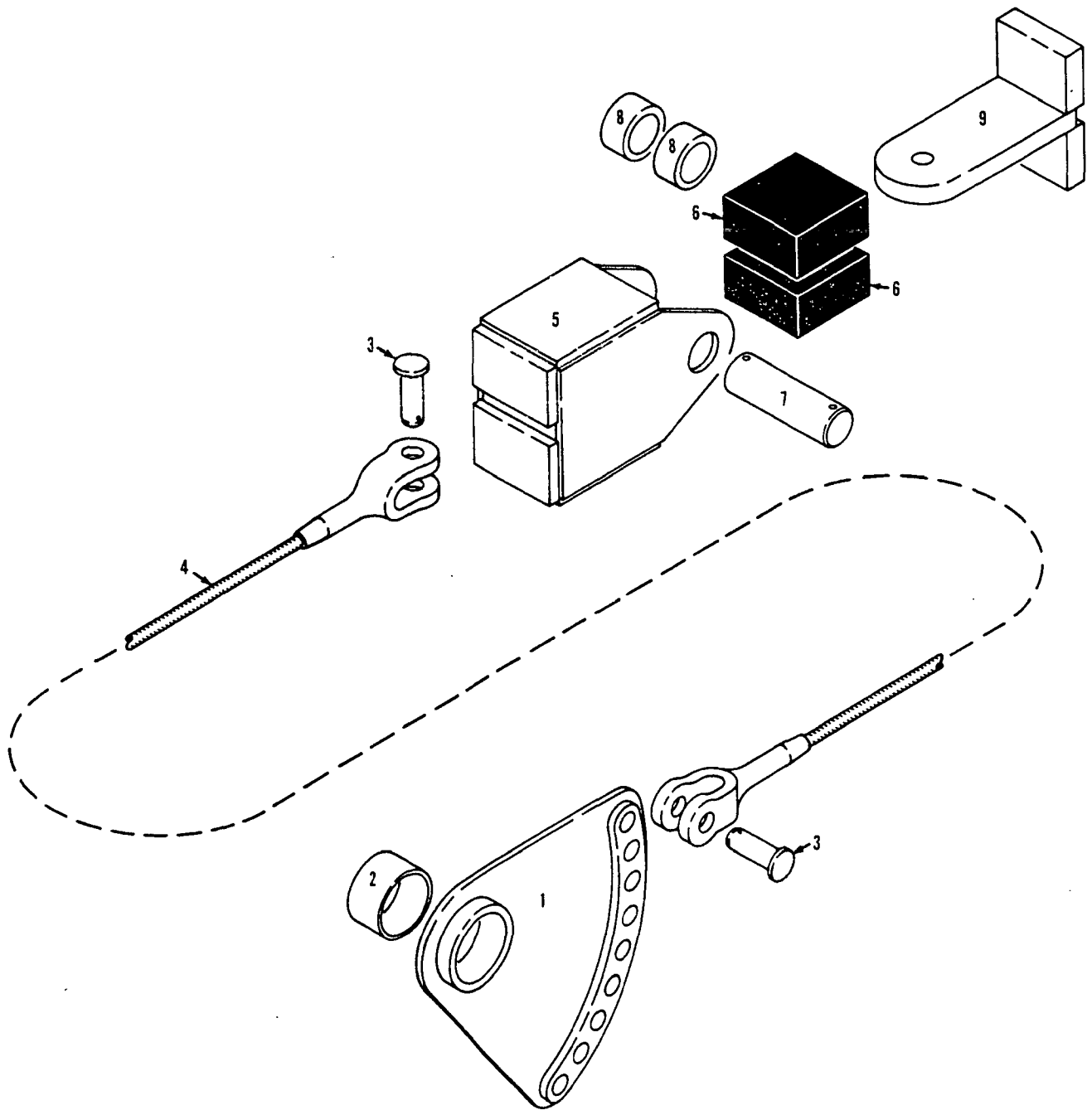


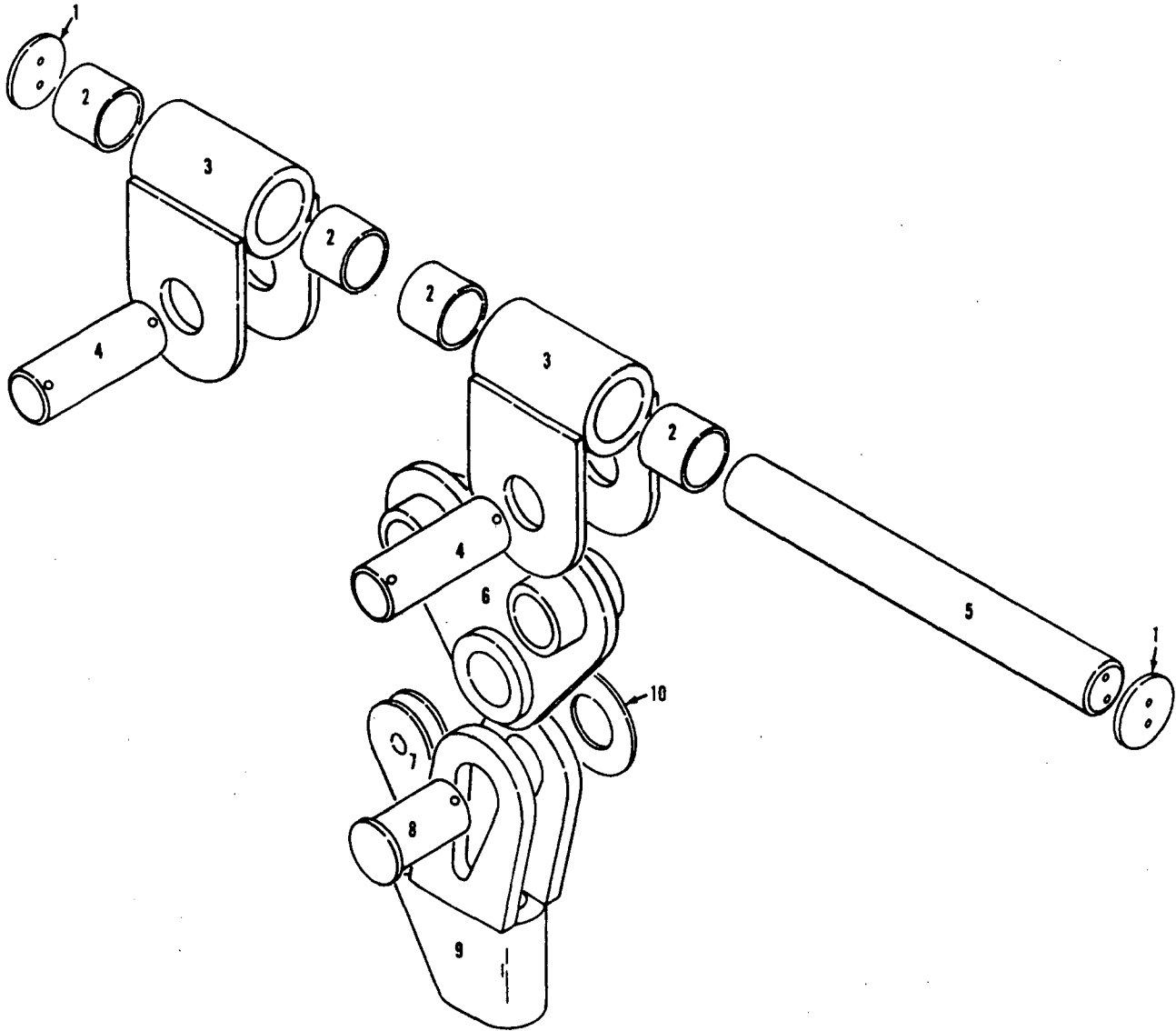
42798 A 1

MATERIAL LIST ON BACK

BOOM STOP

MASTER



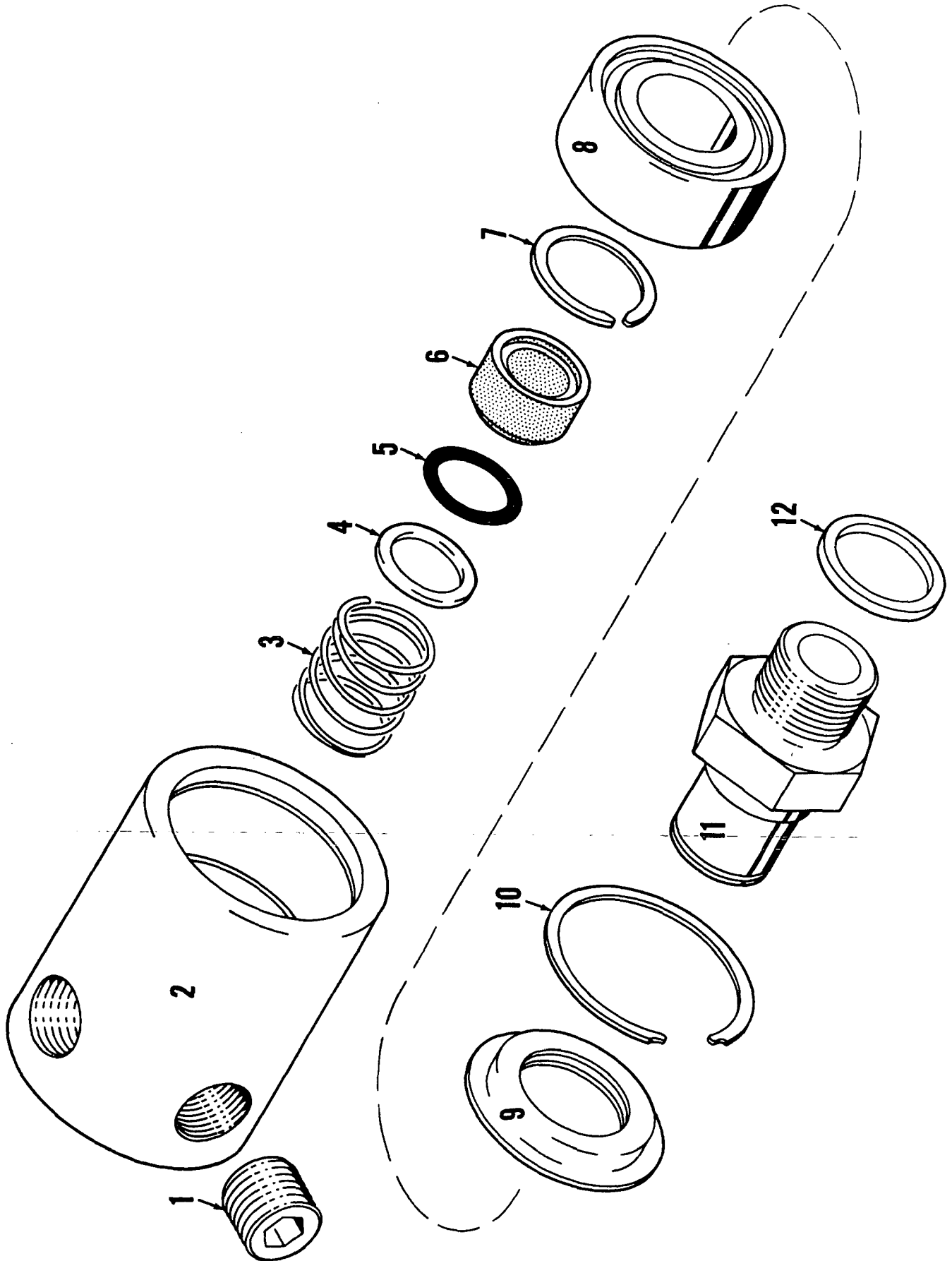


MASTER

MASTER

0-112A

Q-112A1



MATERIAL LIST ON BACK

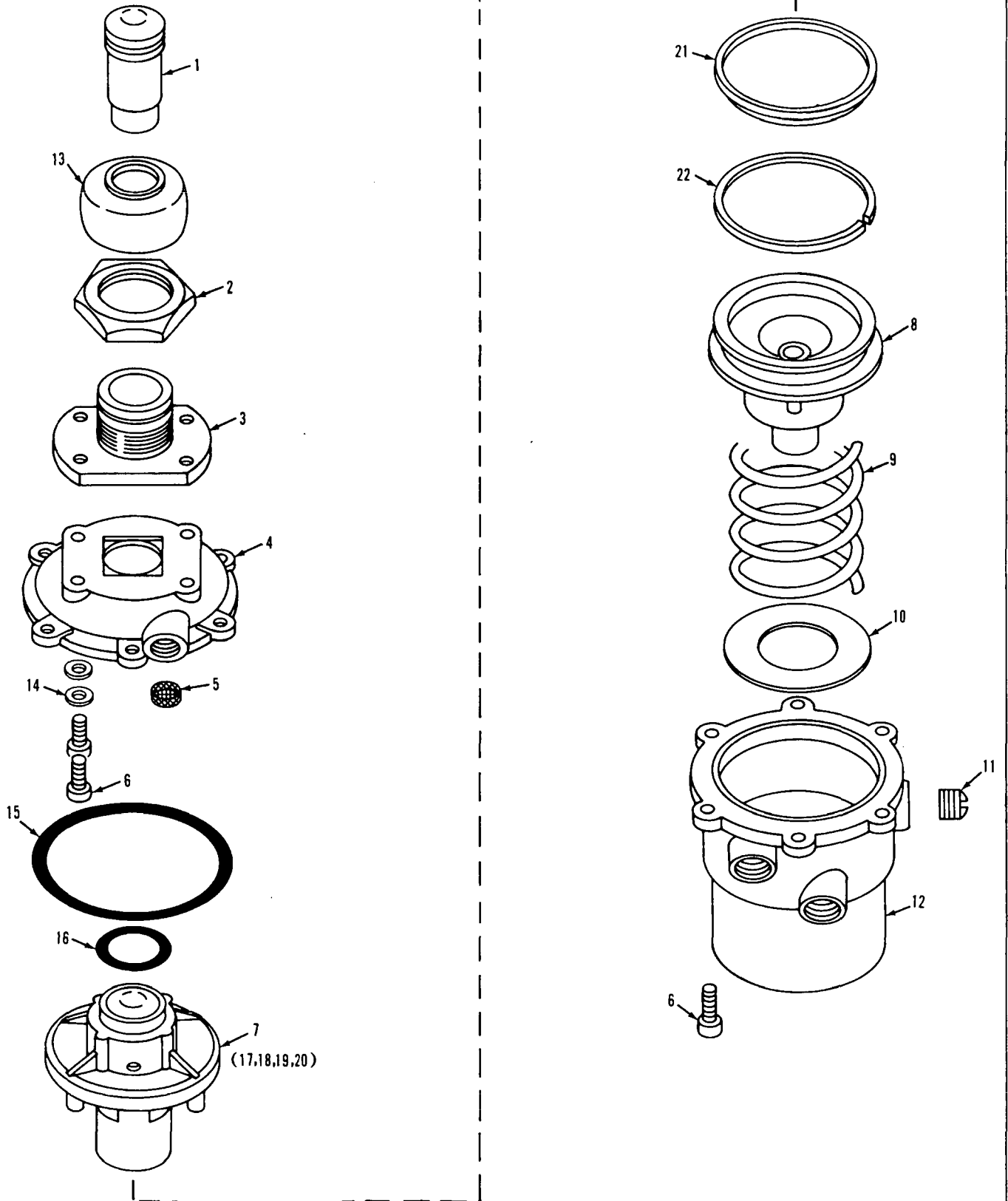
SWIVEL UNION

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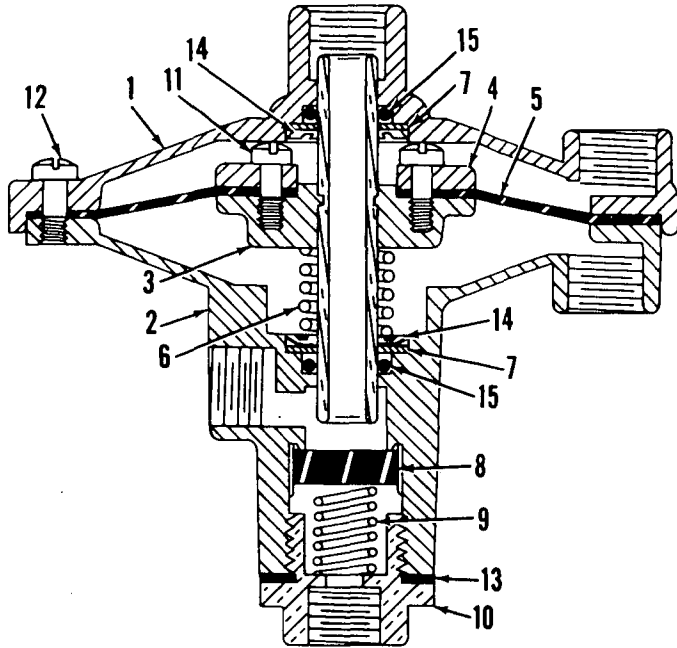
MASTER



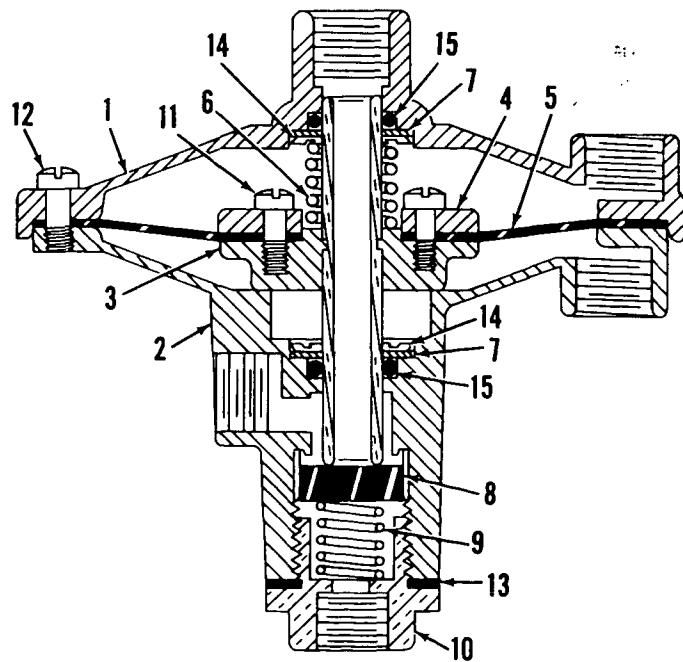
0-247-1B

MATERIAL LIST ON BACK

Control Valve



Normally Closed

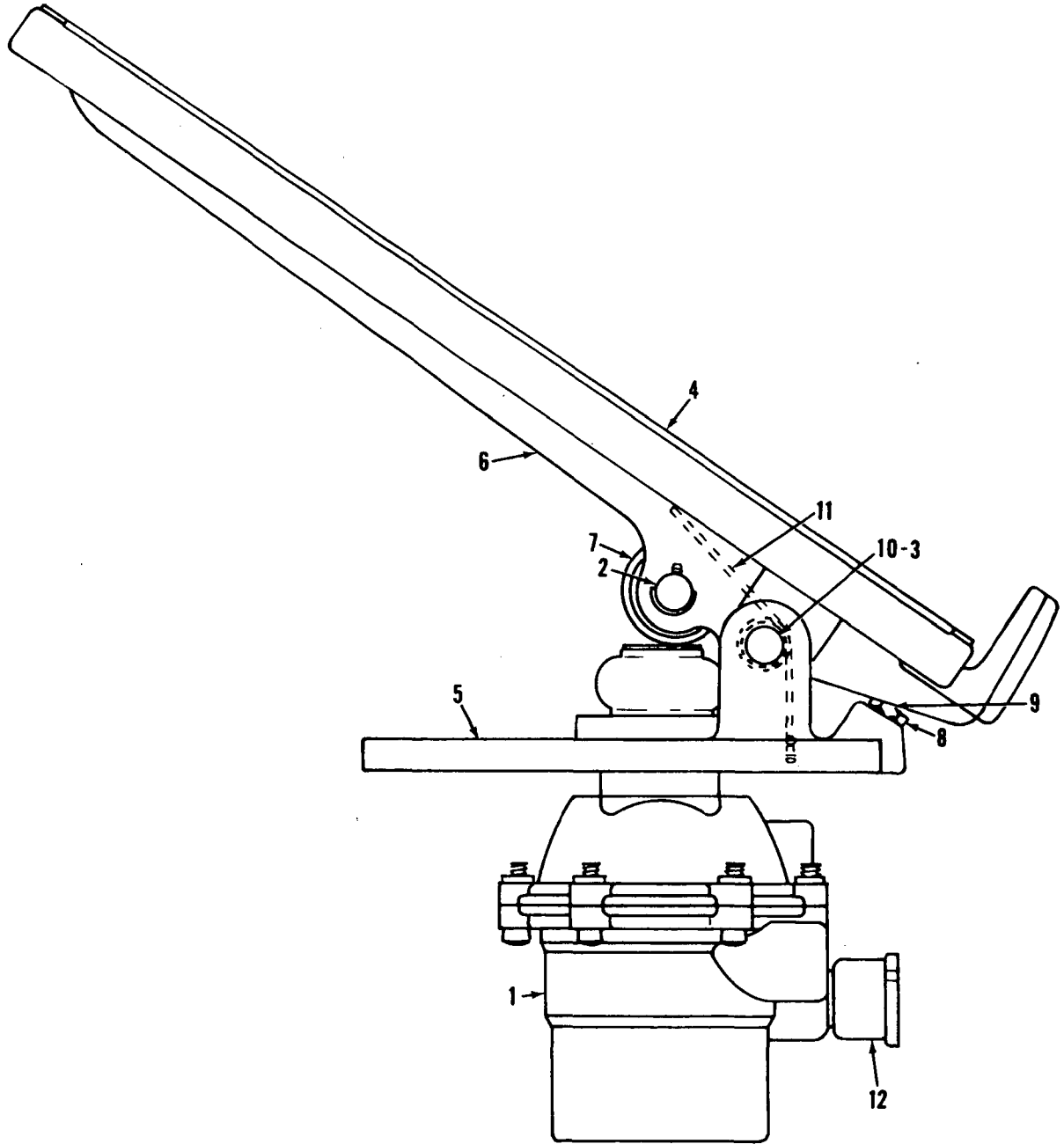


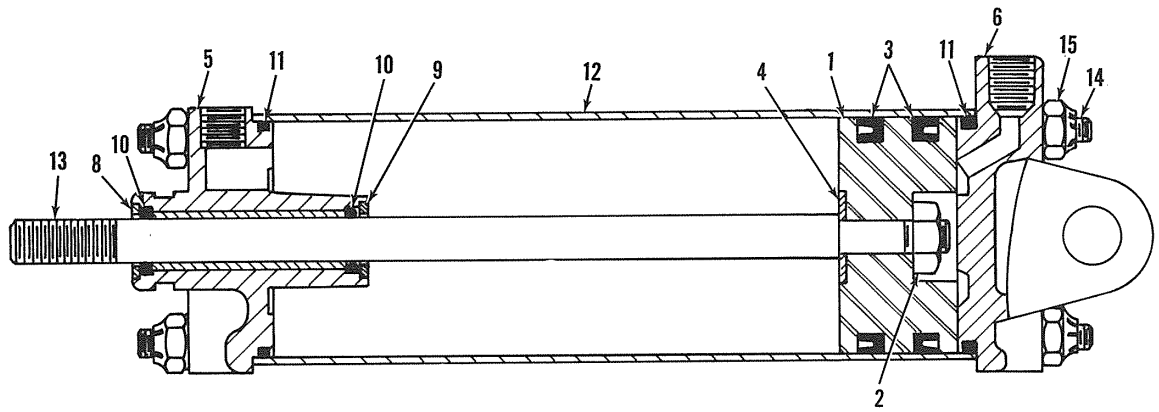
Normally Open

MASTER

RELAY VALVES

MASTER





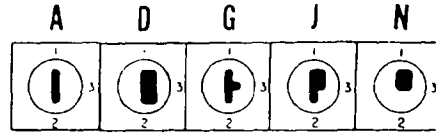
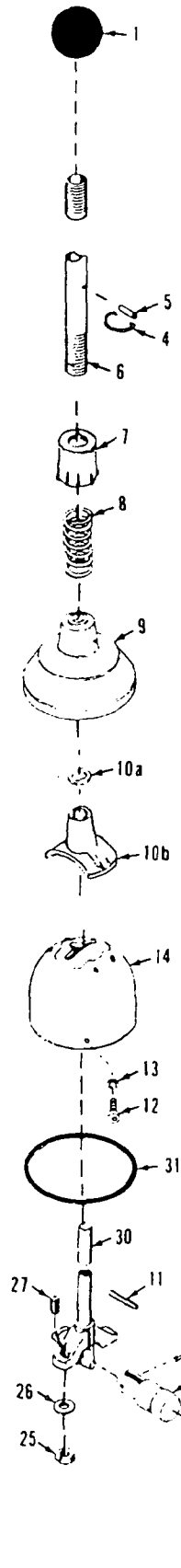
ASSEMBLY	REVISION
O-414	B

AIR CYLINDER

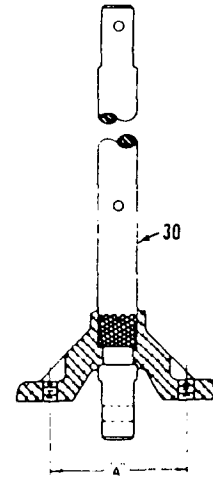
MANITOWOC ENGINEERING CO.

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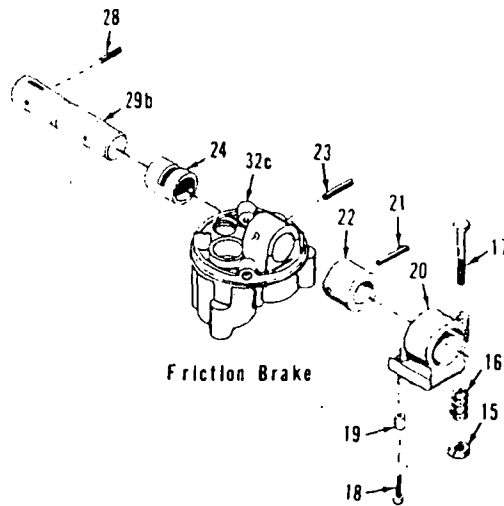
Manitowoc, Wisconsin



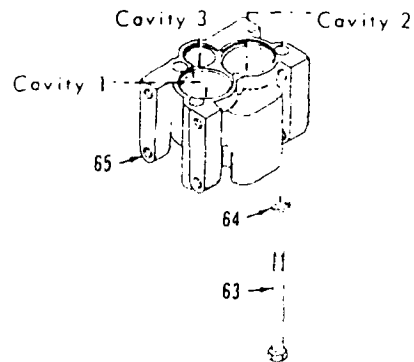
Handle Guide Inserts for Ref. No. 14



Yoke Spacing
Ref. No. 30



Friction Brake



0-441-2B

MATERIAL LIST ON BACK

FLEXAIR VALVE OPERATING MECHANISM

MODEL
ALL

CYLINDER, PUMP
Crawler Adjusting Jack
583136, 385177 or 385653 (see Note 1)

ITEM	PART #	QTY.	DESCRIPTION OF PART
4	NSS	1	BUSHING
11	NSS	1	GASKET
12	90022895	1	NUT
6	NSS	1	RING, Retaining
7	NSS	1	U-CUP
8	NSS	1	WASHER
9	90022897	1	BEARING, Rod
10	90022898	1	PLUNGER
11	NSS	1	GASKET
3	90022894	1	SCREW
5	90022896	1	SPRING
12	90022895	1	NUT
12	90022895	1	NUT
11	NSS	1	GASKET
13	90022899	1	RING, Stop
14	NSS	1	RING, Wiper
15	90022900	1	PROTECTOR, Thread
16	90022901	1	SADDLE
17	90022862	1	COUPLER, Half (female) High Flow
18	90022902	1	CAP, Dust
	90022861	1	COUPLER, Half (male) High Flow (not included - listed as reference only)
	90022903	1	KIT, Seal
2	NSS	1	PIN, Roll
6	NSS	1	RING, Retaining
7	NSS	1	U-CUP
8	NSS	1	WASHER
11	NSS	1	GASKET
14	NSS	1	RING, Wiper
JACK CYLINDER (385653) (see Page 3)			
1	NSS	1	HOUSING
2	9372220360	2	PISTON
3	9372220361	1	NUT, Retaining
5	9372220362	1	RING, Retaining
6	9372220363	1	RING, Bearing
8	9372220364	1	SCREW
9	9364220155	1	COUPLING, Half (female) High Flow
	9364220154	1	COUPLING, Half (male) High Flow (not included - listed as reference only)
10	9372220366	1	LOAD CAP ASSEMBLY
11	9372220367	1	SPRING
12	9372220368	1	NUT, Cap
13	9372220369		GASKET
14	9372220370	1	SCREW
15	9372220371	1	BUSHING
16	9372220372	2	PLUG
17	9372220373	1	PROTECTOR, Thread

PLEASE GIVE MACHINE SERIAL NUMBER WITH ORDER

ASSEMBLY O-471	REVISION E
--------------------------	----------------------

PARTS DRAWINGS REFERENCE

**20729
21359
21673
22635
33519
93251
93560
93994
162059
180848
181355
182343
182873
183210
190025
190095**

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