



TRADITIONAL CRANE PARTS MANUAL

This manual has been prepared for and is considered part of

4600

Model

46103

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.

MANITOWOC CRANES, INC.

2401 South 30th Street • PO Box 70

Manitowoc, WI 54221-0070

Phone: 920-684-6621 • Fax: 920-683-6278

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B. Ordering Lacings without Lacing Drawings

The parts order must contain the following information to ensure that Manitowoc provides you with the correct lacings:

1. Crane serial number (can be found on builders plate in operator's cab.)
2. Boom or jib identification number.
3. Quantity, lacing location, and lacing number.
4. Boom or jib component name (butt, insert, or top) and part number.

NOTE: To obtain the lacing location and number, view the boom or the jib from the butt end looking forward. Identify the side on which the damaged lacing is located: left side, top side, right side, or bottom side. Count each lacing up to and including the damaged lacing, starting with **first lacing nearest butt end** of the component as shown in Figure e3.

Do not count a diagonal lacing as the first lacing. Identify diagonal lacing separately; lower end diagonal lacing or upper end diagonal lacing.

ASSISTANCE

If you are in doubt as to which lacings to order, DO NOT GUESS. Contact your nearest Manitowoc distributor for assistance; doing so may prevent the wrong parts from being shipped.

EXAMPLE: Assume you have a number 22 boom and the lacings with circled numbers in Figure 3 are damaged. Your parts order should be similar to the following example:

Crane Serial Number: **00000** (from builders plate).

Boom Identification Number: **#22 Boom**

Required:

- 1 each Top Side Lacing (1) for 30 ft Butt 48153-9
- 1 each Right Side Lacing (5) for 30 ft Butt 48153-9
- 1 each Bottom Side Lacing (3) for 20 ft Insert 33426-3
- 1 each Bottom Side Lacing (6) for 20 ft Insert 33426-3
- 1 each Top Side Lacing (2) for 40 ft Top 50453-2

Quantity	Lacing Location	Lacing Identification Number	Component Name and Part Number
1	Top Side	(1)	30 ft Butt 48153-9
1	Right Side	(5)	30 ft Butt 48153-9
1	Bottom Side	(3)	20 ft Insert 33426-3
1	Bottom Side	(6)	20 ft Insert 33426-3
1	Top Side	(2)	40 ft Top 50453-2

WELDING INSTRUCTIONS

Each lacing order is shipped with welding instructions and a copy of Form 00SPFM006 which identifies the chord and lacing material.

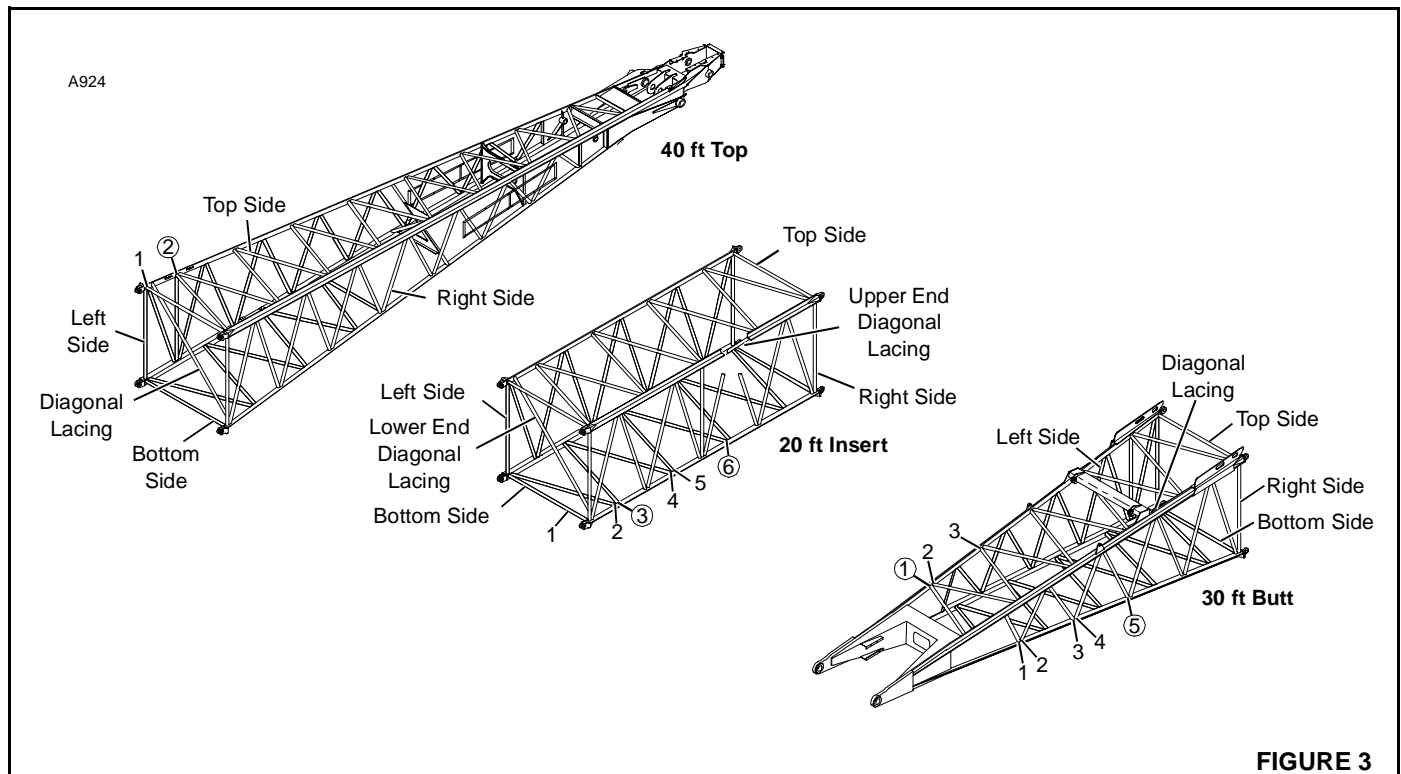
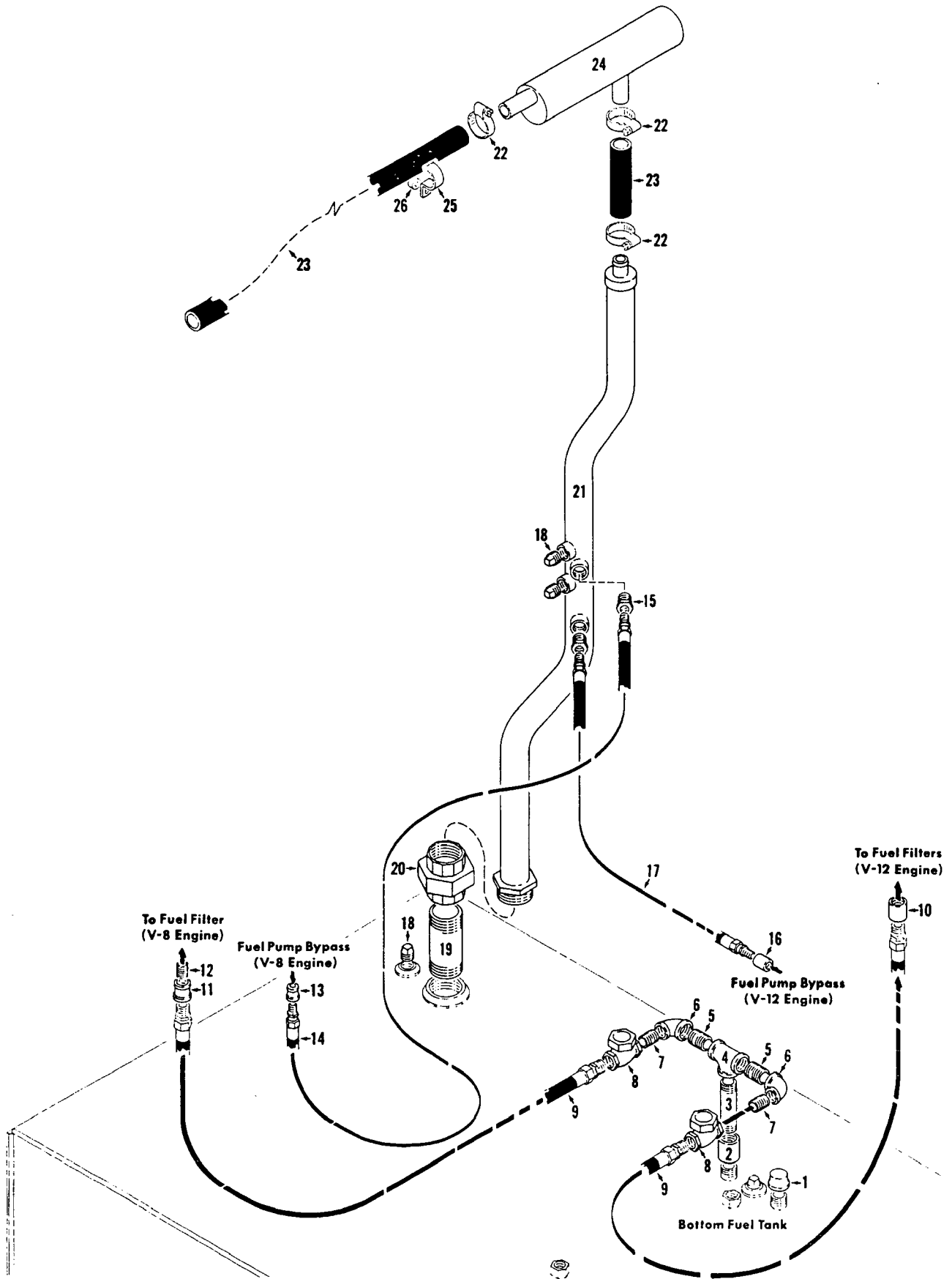


FIGURE 3

**PARTS MANUAL ALPHABETICAL INDEX
GROUP A - Rotating Structure**

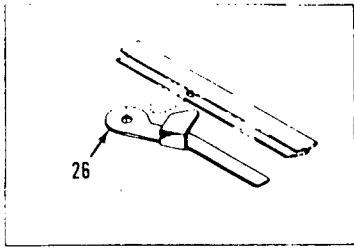
DESCRIPTION	PUBLICATION	REV	START DATE	END DATE	GROUP
"A" Frame	42789	I1	10/24/61	08/08/86	A0101
Cab	43806	A1	02/16/66	07/17/72	A0201
Cab	50318	O1	03/25/63	01/08/91	A0201
Cab Heater/Air Conditioner	50356	-	05/26/64	05/09/69	A0209
Chain & Gear Case	32771	B1	03/21/63	10/19/65	A0401
Chain & Gear Case	43786	G1	01/19/66	07/14/83	A0401
Counterweight & Cab Rear	43231	J1	06/23/64	01/15/85	A0301
Drum Drive Chain Case or Interlock Case	43050	E1	04/12/63	10/22/76	A0402
Fuel Tank	32000	B1	11/07/58	12/16/59	A0601
Fuel Tank	32185	C1			A0601
Fuel Tank	32412	A1	07/05/61	06/10/76	A0601
Fuel Tank	32412	A2	07/05/61	06/10/76	A0601
Fuel Tank	32412	A3	07/05/61	06/10/76	A0601
Guards	40773	D1	10/25/48	02/25/71	A0501
Interlock Drive Oiler	32177	B1	01/20/60	04/07/69	A0403
Operator's Station/Pilothouse	42206	C1	04/07/58		A0202
Operator's Station/Pilothouse	42206	K1	06/06/61	04/21/75	A0202
Platform	42263	B1	06/14/60	07/23/71	A0701
Rotating Bed Lubrication Piping	41855	A1	02/01/56	06/28/74	A0104
Rotating Bed/Hoist Frame/Transporter Platform	50467	A1	01/19/66	06/30/66	A0102
Rotating Bed/Hoist Frame/Transporter Platform	50467	B2	01/19/66	06/30/66	A0102
Windshield Wiper/Defogger	42232	C1	12/31/59	10/20/71	A0210
Windshield Wiper/Defogger	42232	C2	12/31/59	10/20/71	A0210



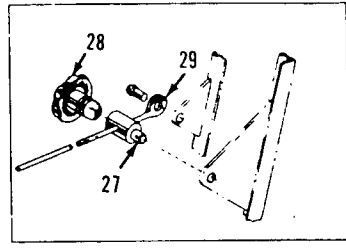
32412A2

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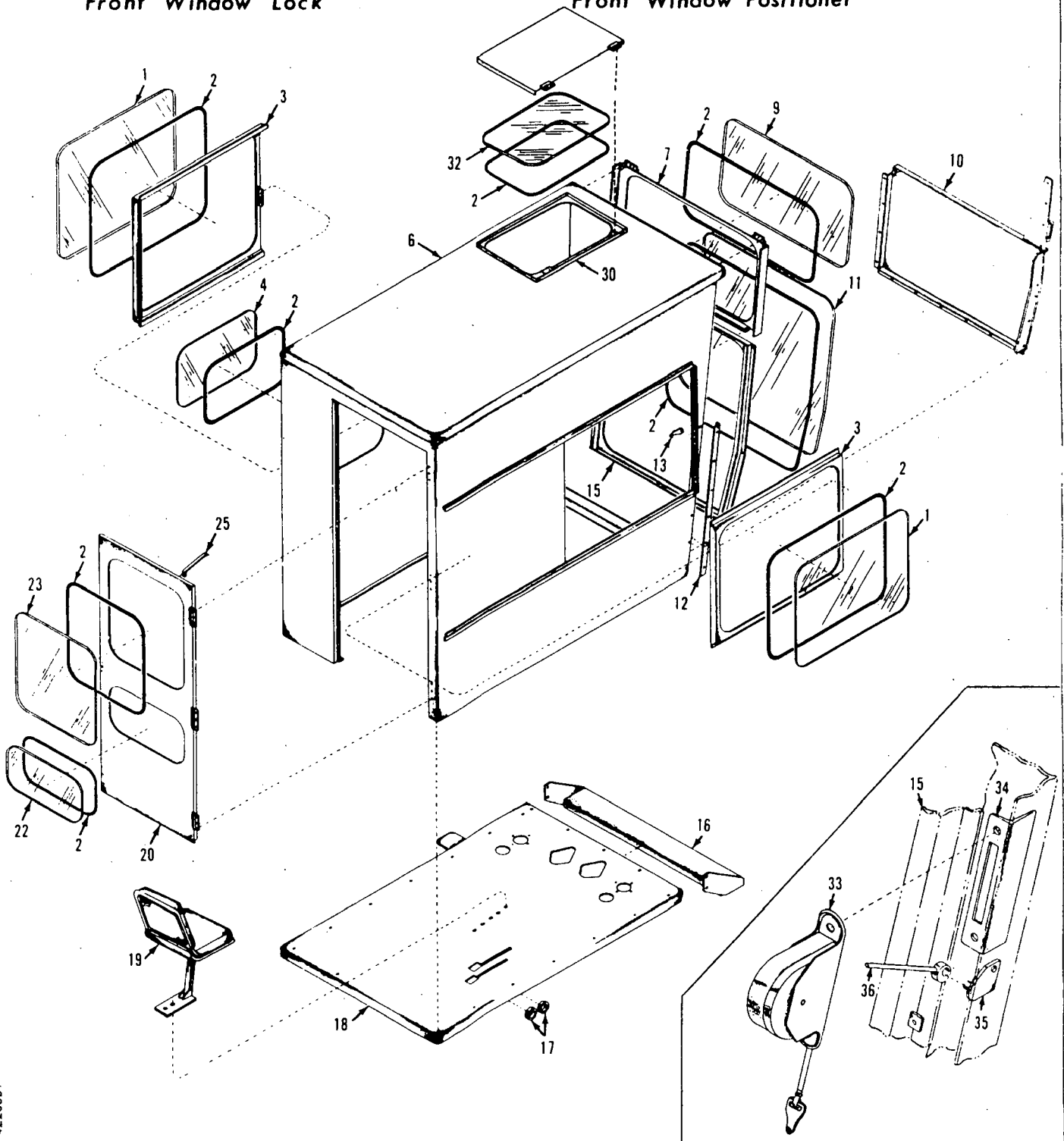
VENT PIPING



Front Window Lock



Front Window Positioner



MATERIAL LIST ON BACK

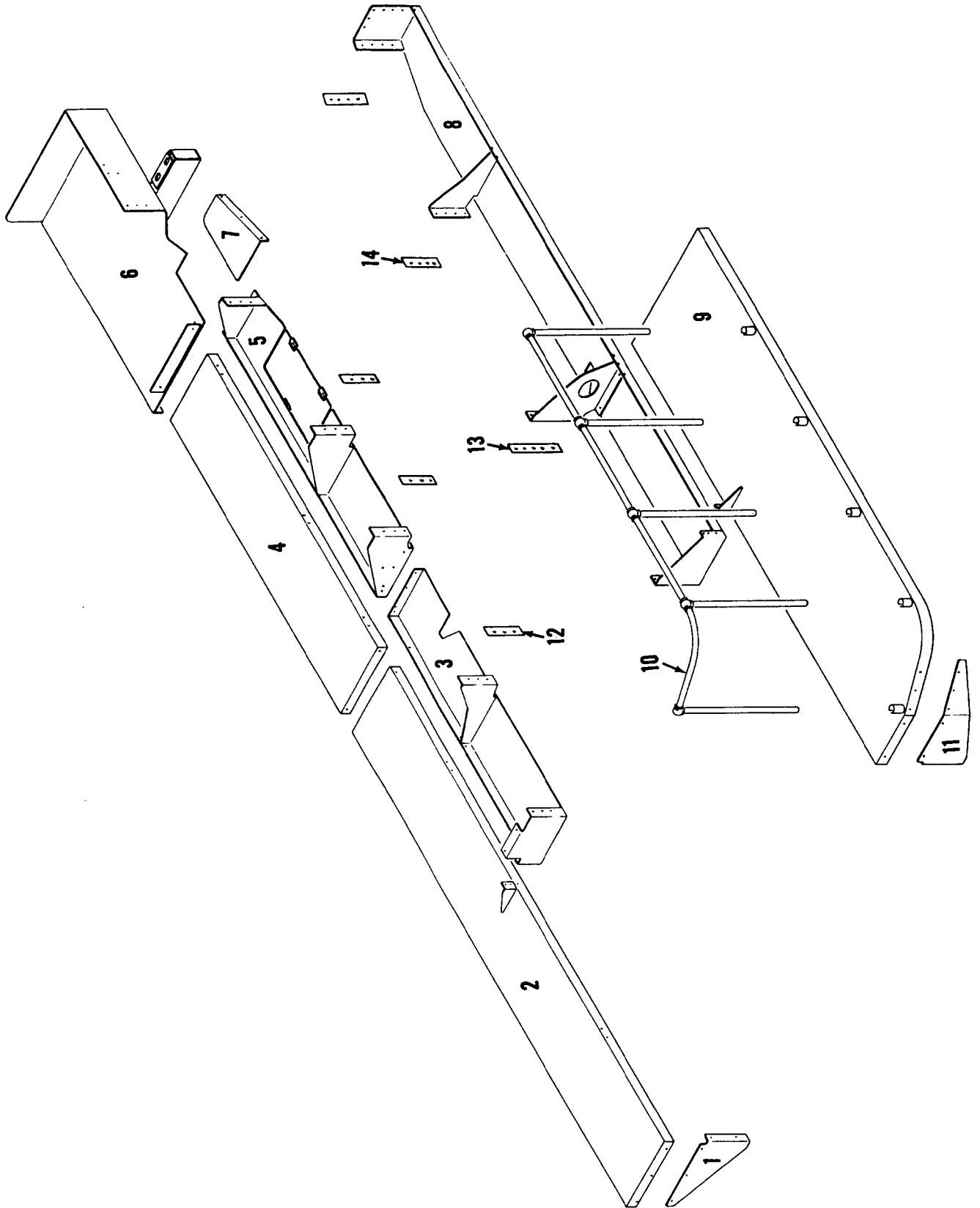
PILOT HOUSE
LOT 17

4220681

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Manitowoc, Wisconsin



MASTER

PLATFORM

42263-B-1

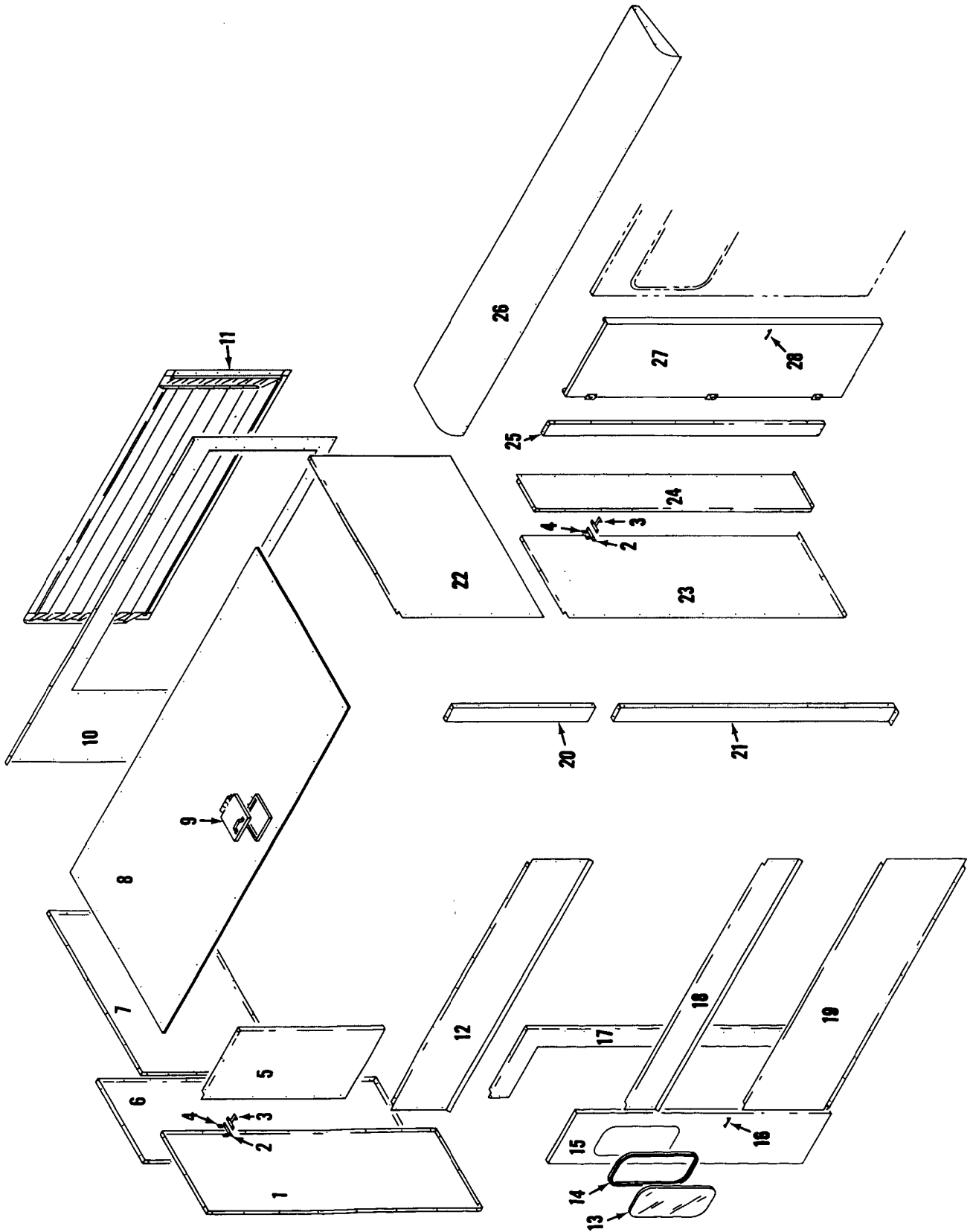
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42263 B1

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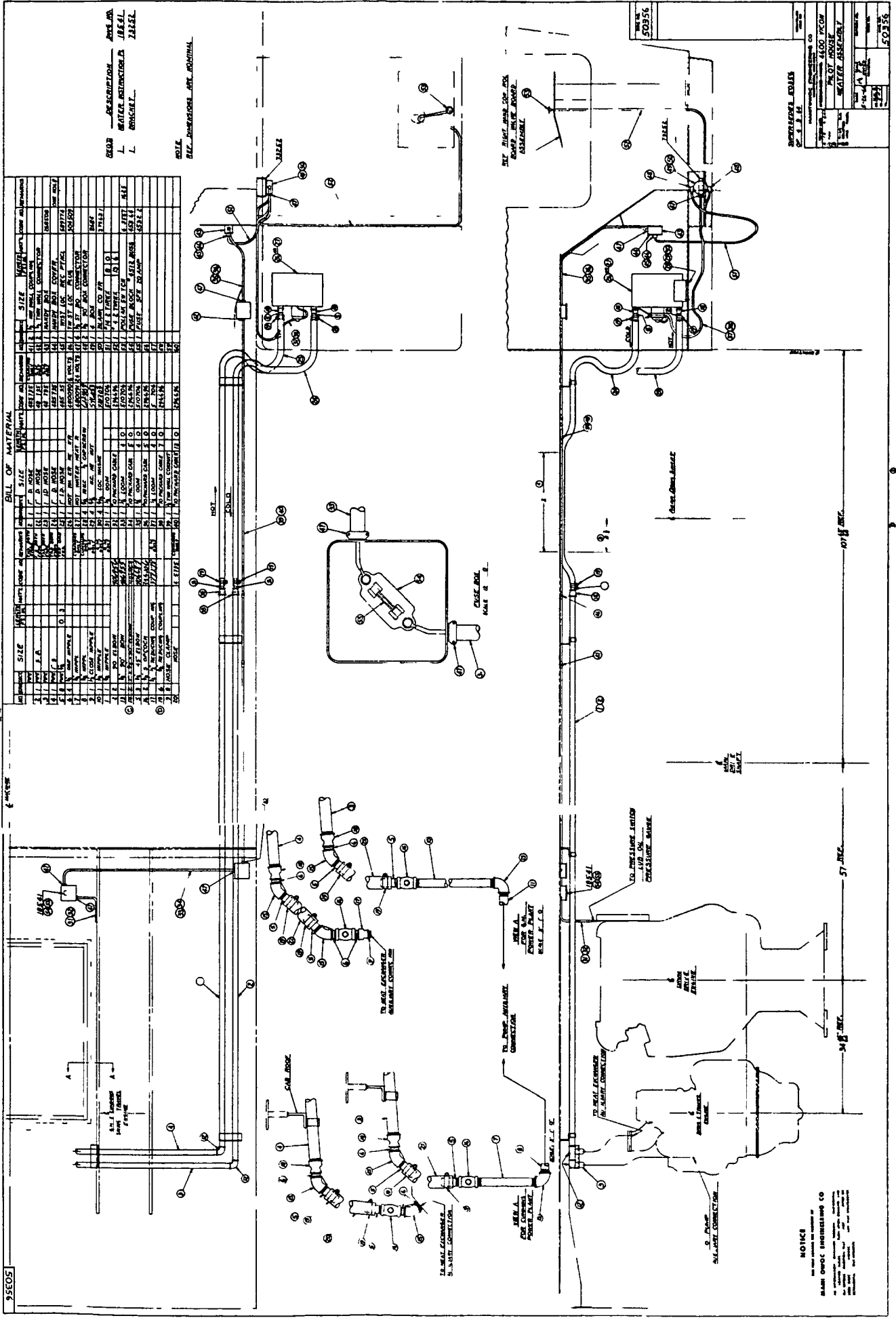
Manitowoc, Wisconsin



43806A1

MATERIAL LIST ON BACK

CAB EXTENSION



BILL OF MATERIAL

ITEM NO.	DESCRIPTION	QTY	SIZE	MATERIAL	REMARKS
1	PIPE	1	1/2"	304 S.S.	
2	FLANGE	1	1/2"	304 S.S.	
3	VALVE	1	1/2"	304 S.S.	
4	CONNECTOR	1	1/2"	304 S.S.	
5	ELBOW	1	1/2"	304 S.S.	
6	TEE	1	1/2"	304 S.S.	
7	ADAPTER	1	1/2"	304 S.S.	
8	PLUG	1	1/2"	304 S.S.	
9	WASHER	1	1/2"	304 S.S.	
10	NUT	1	1/2"	304 S.S.	
11	SCREW	1	1/2"	304 S.S.	
12	KEY	1	1/2"	304 S.S.	
13	WASHER	1	1/2"	304 S.S.	
14	NUT	1	1/2"	304 S.S.	
15	SCREW	1	1/2"	304 S.S.	
16	KEY	1	1/2"	304 S.S.	
17	WASHER	1	1/2"	304 S.S.	
18	NUT	1	1/2"	304 S.S.	
19	SCREW	1	1/2"	304 S.S.	
20	KEY	1	1/2"	304 S.S.	
21	WASHER	1	1/2"	304 S.S.	
22	NUT	1	1/2"	304 S.S.	
23	SCREW	1	1/2"	304 S.S.	
24	KEY	1	1/2"	304 S.S.	
25	WASHER	1	1/2"	304 S.S.	
26	NUT	1	1/2"	304 S.S.	
27	SCREW	1	1/2"	304 S.S.	
28	KEY	1	1/2"	304 S.S.	
29	WASHER	1	1/2"	304 S.S.	
30	NUT	1	1/2"	304 S.S.	
31	SCREW	1	1/2"	304 S.S.	
32	KEY	1	1/2"	304 S.S.	
33	WASHER	1	1/2"	304 S.S.	
34	NUT	1	1/2"	304 S.S.	
35	SCREW	1	1/2"	304 S.S.	
36	KEY	1	1/2"	304 S.S.	
37	WASHER	1	1/2"	304 S.S.	
38	NUT	1	1/2"	304 S.S.	
39	SCREW	1	1/2"	304 S.S.	
40	KEY	1	1/2"	304 S.S.	
41	WASHER	1	1/2"	304 S.S.	
42	NUT	1	1/2"	304 S.S.	
43	SCREW	1	1/2"	304 S.S.	
44	KEY	1	1/2"	304 S.S.	
45	WASHER	1	1/2"	304 S.S.	
46	NUT	1	1/2"	304 S.S.	
47	SCREW	1	1/2"	304 S.S.	
48	KEY	1	1/2"	304 S.S.	
49	WASHER	1	1/2"	304 S.S.	
50	NUT	1	1/2"	304 S.S.	
51	SCREW	1	1/2"	304 S.S.	
52	KEY	1	1/2"	304 S.S.	
53	WASHER	1	1/2"	304 S.S.	
54	NUT	1	1/2"	304 S.S.	
55	SCREW	1	1/2"	304 S.S.	
56	KEY	1	1/2"	304 S.S.	
57	WASHER	1	1/2"	304 S.S.	
58	NUT	1	1/2"	304 S.S.	
59	SCREW	1	1/2"	304 S.S.	
60	KEY	1	1/2"	304 S.S.	
61	WASHER	1	1/2"	304 S.S.	
62	NUT	1	1/2"	304 S.S.	
63	SCREW	1	1/2"	304 S.S.	
64	KEY	1	1/2"	304 S.S.	
65	WASHER	1	1/2"	304 S.S.	
66	NUT	1	1/2"	304 S.S.	
67	SCREW	1	1/2"	304 S.S.	
68	KEY	1	1/2"	304 S.S.	
69	WASHER	1	1/2"	304 S.S.	
70	NUT	1	1/2"	304 S.S.	
71	SCREW	1	1/2"	304 S.S.	
72	KEY	1	1/2"	304 S.S.	
73	WASHER	1	1/2"	304 S.S.	
74	NUT	1	1/2"	304 S.S.	
75	SCREW	1	1/2"	304 S.S.	
76	KEY	1	1/2"	304 S.S.	
77	WASHER	1	1/2"	304 S.S.	
78	NUT	1	1/2"	304 S.S.	
79	SCREW	1	1/2"	304 S.S.	
80	KEY	1	1/2"	304 S.S.	
81	WASHER	1	1/2"	304 S.S.	
82	NUT	1	1/2"	304 S.S.	
83	SCREW	1	1/2"	304 S.S.	
84	KEY	1	1/2"	304 S.S.	
85	WASHER	1	1/2"	304 S.S.	
86	NUT	1	1/2"	304 S.S.	
87	SCREW	1	1/2"	304 S.S.	
88	KEY	1	1/2"	304 S.S.	
89	WASHER	1	1/2"	304 S.S.	
90	NUT	1	1/2"	304 S.S.	
91	SCREW	1	1/2"	304 S.S.	
92	KEY	1	1/2"	304 S.S.	
93	WASHER	1	1/2"	304 S.S.	
94	NUT	1	1/2"	304 S.S.	
95	SCREW	1	1/2"	304 S.S.	
96	KEY	1	1/2"	304 S.S.	
97	WASHER	1	1/2"	304 S.S.	
98	NUT	1	1/2"	304 S.S.	
99	SCREW	1	1/2"	304 S.S.	
100	KEY	1	1/2"	304 S.S.	

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REVISIONS

NO.	DATE	DESCRIPTION
1	10/15/55	ISSUED FOR FABRICATION
2	11/15/55	REVISIONS TO DRAWING
3	12/15/55	REVISIONS TO DRAWING
4	1/15/56	REVISIONS TO DRAWING
5	2/15/56	REVISIONS TO DRAWING
6	3/15/56	REVISIONS TO DRAWING
7	4/15/56	REVISIONS TO DRAWING
8	5/15/56	REVISIONS TO DRAWING
9	6/15/56	REVISIONS TO DRAWING
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11	8/15/56	REVISIONS TO DRAWING
12	9/15/56	REVISIONS TO DRAWING
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15	12/15/56	REVISIONS TO DRAWING

PROJECT DATA

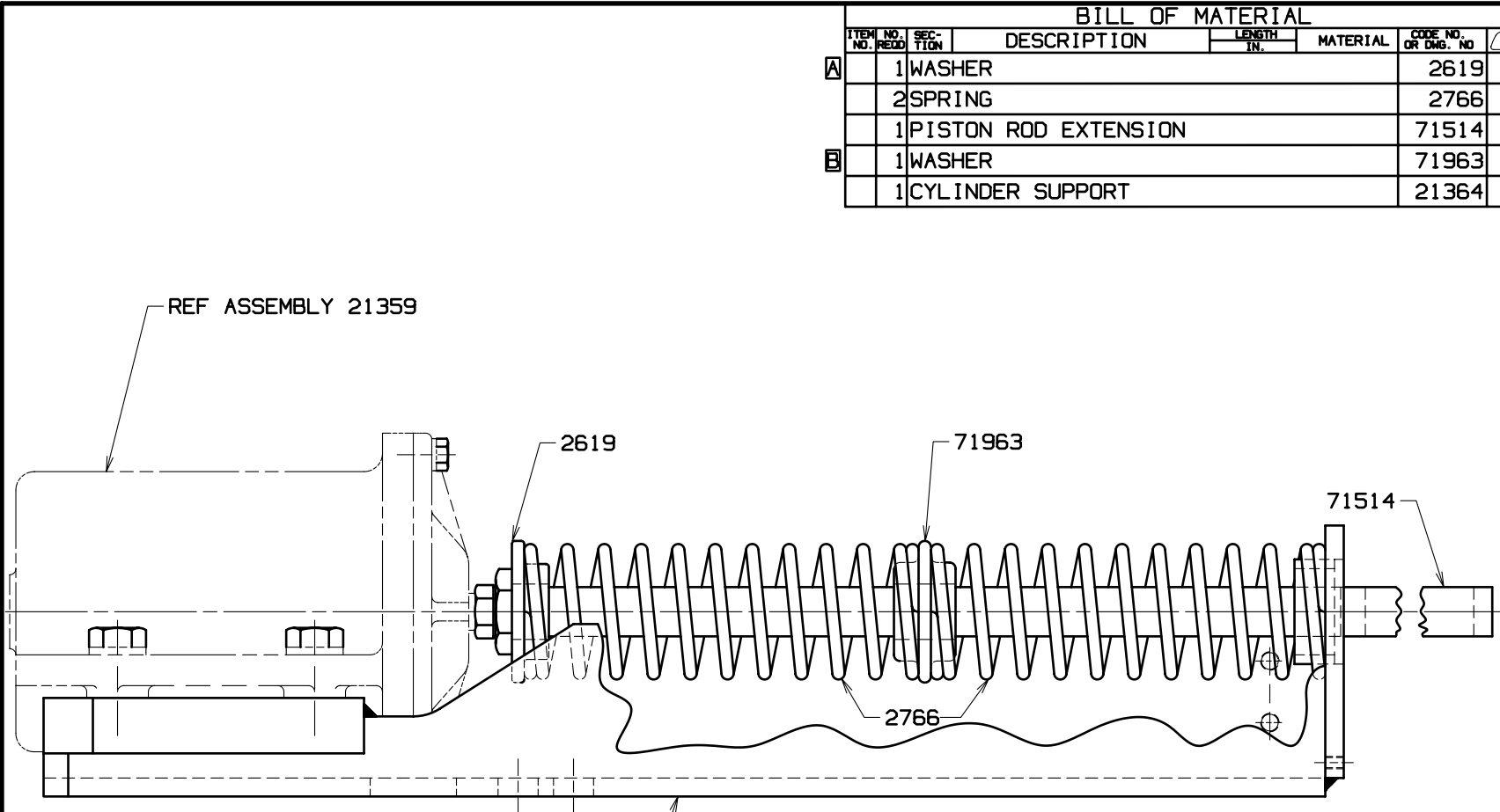
PROJECT NO. 4400
 PROJECT NAME WATER ASSEMBLY
 DRAWING NO. 50356
 DATE 10/15/55

PARTS MANUAL ALPHABETICAL INDEX
Group B - Upperworks Machinery

DESCRIPTION	PUBLICATION	REV	START DATE	END DATE	GROUP
Boom Hoist Chain Case	33218	A1	02/05/65	05/17/65	B0212
Boom Hoist Control, Independent	43095	F1	05/21/64	06/13/84	B0204
Boom Hoist Control, Independent	90115	B1	05/21/63	06/06/84	B0204
Boom Hoist Countershaft, Independent	90697	D1	02/11/65	05/24/84	B0208
Boom Hoist Gear Case, Independent	33217	A1			B0203
Boom Hoist Gear Case, Independent	33217	A1	02/04/65	06/12/84	B0203
Boom Hoist Support, Independent	43465	D1	02/04/65	05/11/78	B0201
Boom Hoist, Independent	50376	B2	01/15/65	04/02/71	B0202
Boom Hoist, Independent	50376	G1	01/15/65	06/12/68	B0202
Countershaft, Drum Drive	32426	D1	08/23/61	06/14/62	B0501
Drum Brake - Front	22635	C1	11/04/52	05/08/69	B0603
Drum Brake - Front	23984	-	09/15/59	12/16/82	B0603
Drum Brake - Front	24278	B1			B0603
Drum Brake - Front	31497	-	03/09/56		B0603
Drum Brake - Front	43034	A1	03/25/63	04/24/63	B0603
Drum Brake - Front	43205	K1	11/06/63	05/18/83	B0603
Drum Brake - Front	50451	A2	09/02/65	08/06/68	B0601
Drum Shaft - Front	50451	H1	09/02/65	08/06/68	B0601
Foot Pedals	32026	G1	05/02/59	04/03/73	B1202
Hand Levers	42212	B1	11/12/58		B1201
Hand Levers	42212	C1	07/13/60	04/10/63	B1201
Lubrication Pump & Piping (Sump)	42766	G1	08/30/61	07/28/76	B1401
Main Drive Shaft	50276	A4	07/04/62	05/06/77	B1301
Main Drive Shaft	50276	C2			B1301
Main Drive Shaft	50276	C3			B1301
Main Drive Shaft	50276	G1	05/19/64	09/05/66	B1301
Mast Hoist Auxiliary Brake	33099	D1	10/07/64	10/06/72	B0304
Mast Hoist Control	24278	B1	05/25/60	06/14/63	B0302
Mast Hoist Control	33071	A1	05/22/64	11/19/64	B0302
Mast Hoist Drums	42790	B1	11/24/61	11/19/64	B0301
Mast Hoist Reduction Gear	43143	B1	08/28/63	11/30/66	B0303
Mast Hoist Reduction Gear	43143	B2	08/28/63	11/21/85	B0303
Rear or Rear Auxiliary Drum	22635	C1	11/04/56	06/06/88	B0801
Rear or Rear Auxiliary Drum	50369	B3	10/10/64	04/01/71	B0801
Rear or Rear Auxiliary Drum	50369	B4	10/10/64	04/01/71	B0801
Rear or Rear Auxiliary Drum	50369	C2	10/10/64	01/04/71	B0801
Rear or Rear Auxiliary Drum	50369	I1	10/10/64	01/04/71	B0801
Rear or Rear Auxiliary Drum Brake	41803	F1	09/08/60	05/07/70	B0803
Rear or Rear Auxiliary Drum Brake	42274	F1	12/04/59	05/18/83	B0803
Rear or Rear Auxiliary Drum Control/Band	32162	D1	05/12/59	07/25/84	B0802
Rear or Rear Auxiliary Drum Pawl	182031	A1	06/21/73	10/22/73	B0805
Reduced Pressure Closing or Auto Take-Up	22762	B1	05/15/53	09/28/62	B0609
Slide Pinion Control	42252	D1	09/08/59	04/02/69	B1602
Slide Pinion Shaft (Intermediate Travel or Swing Shaft)	41815	A2	03/01/54	03/19/80	B1601
Slide Pinion Shaft (Intermediate Travel or Swing Shaft)	41815	C4	06/27/58	03/19/80	B1601
Slide Pinion Shaft (Intermediate Travel or Swing Shaft)	41815	G1	03/01/54	03/19/80	B1601
Swing Lock Control	32014	F1	11/14/58	08/27/71	B1701
Swing Shaft	90084	D1	04/15/63	09/27/89	B1901
Swing Shaft - Intermediate	21629	C1	03/22/48	12/12/72	B1902
Travel Drive	40772	C1	05/01/48	06/20/72	B2001

C

C



BILL OF MATERIAL						
ITEM NO.	NO. REQ'D	SECTION	DESCRIPTION	LENGTH IN.	MATERIAL	CODE NO. OR DWG. NO.
A	1		WASHER			2619
	2		SPRING			2766
	1		PISTON ROD EXTENSION			71514
B	1		WASHER			71963
	1		CYLINDER SUPPORT			21364

ASSEMBLIES USED ON
41802
41803
41861
49308
49661
49784

REVISIONS

7-21-60 PD
 A WAS 3 REQ'D
 B ADDED
 12-16-82 WNM
 REDRAW CADAM
 CK FJZ
 APP RJS

DATE	9-15-59
PATTERN NO.	
DWG. NO.	23984

SCALE	1/2" = 1 FT
DR.	MFB
CK.	DCM
APP	
DWG. NO.	23984

Manitowoc Cranes, Inc.
 Manitowoc, Wisconsin
 MODEL 4500, 4600

AIR CYLINDER
 SUPPORT ASSEMBLY

DO NOT SCALE THIS DRAWING

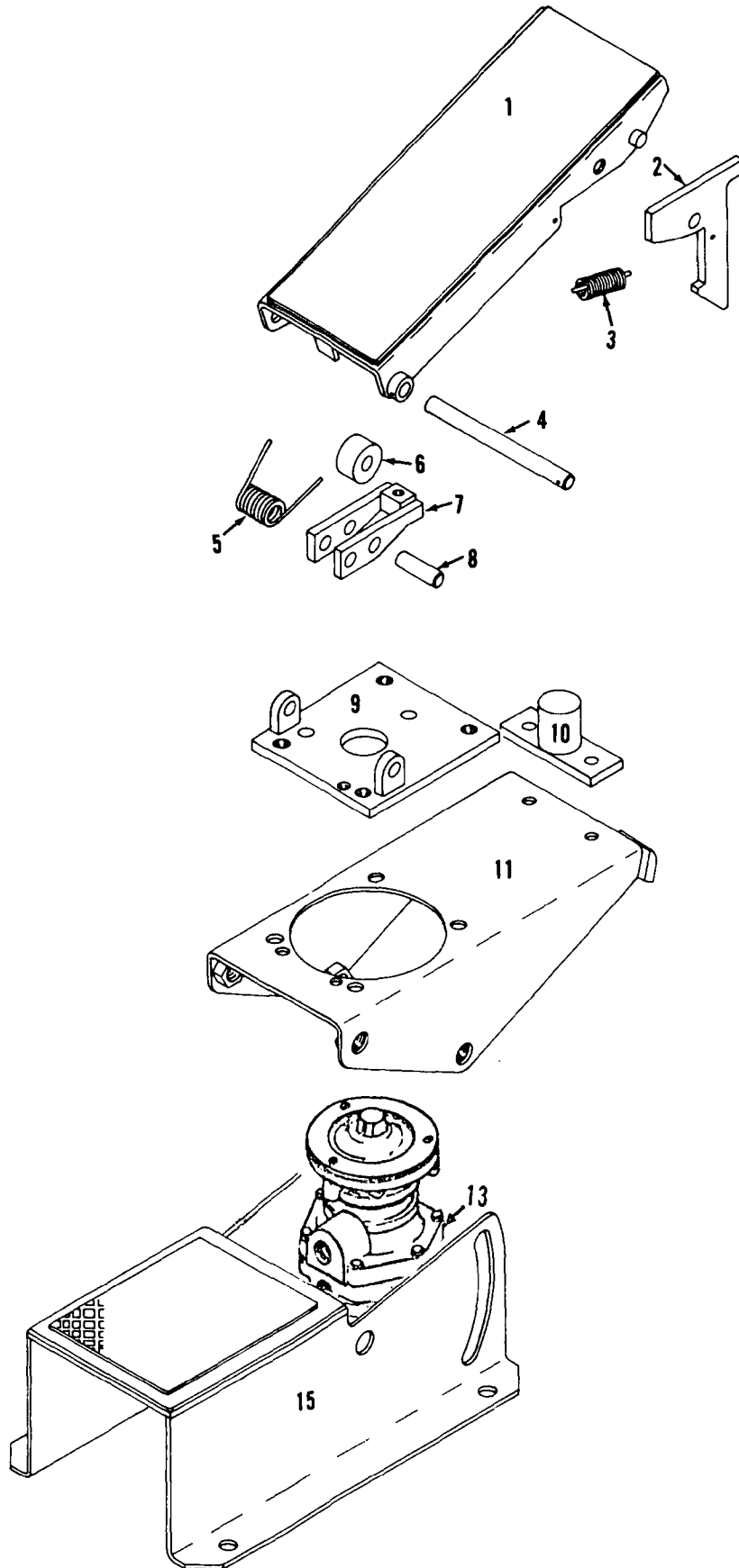
C

C

MANITOWOC ENGINEERING CO.

A Division of The Manitowoc Company, Inc.

Manitowoc, Wisconsin



MASTER

32026 F1

32026F1

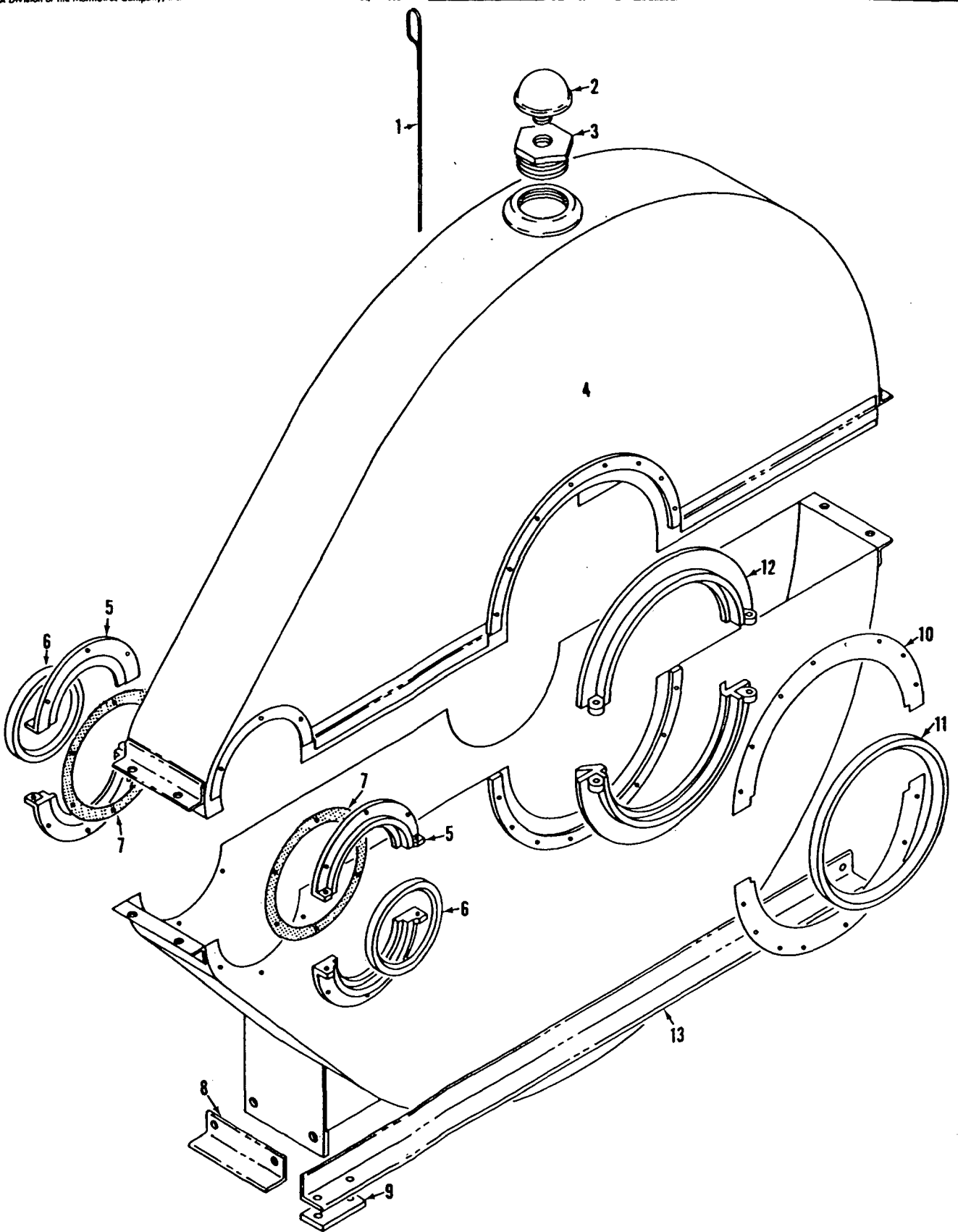
MATERIAL LIST ON BACK

TREADLE VALVE

MANITOWOC ENGINEERING CO.

A Division of The Manitowoc Company, Inc.

Manitowoc, Wisconsin



33217A1

MATERIAL LIST ON BACK

GEAR CASE

41803-1Cont.	REV. F	MODEL 4500-4600
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RIGHT REAR DRUM BRAKE

REF. NO.	PART NUMBER	QUANTITY REQUIRED	DESCRIPTION OF PART	VENDORS PART NO.
35	140674	1	PIN W/cotter pins	
36	18641	2	ROLLER	
37	18640	1	SUPPORT, Roller W/capscrews, hex nuts and lockwashers	
			<u>MACHINE W/ROOF MOUNTED IND. BOOM HOIST</u> (Ref. Nos. 1 - 2 Relocated)	
44	138822	1	ANGLE, Support (Weld to Roof Beam)	

#0-71, 21359

PLEASE GIVE MACHINE S/N W/ORDER

REV. F	41803 - 1
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Run as Front

MOTER

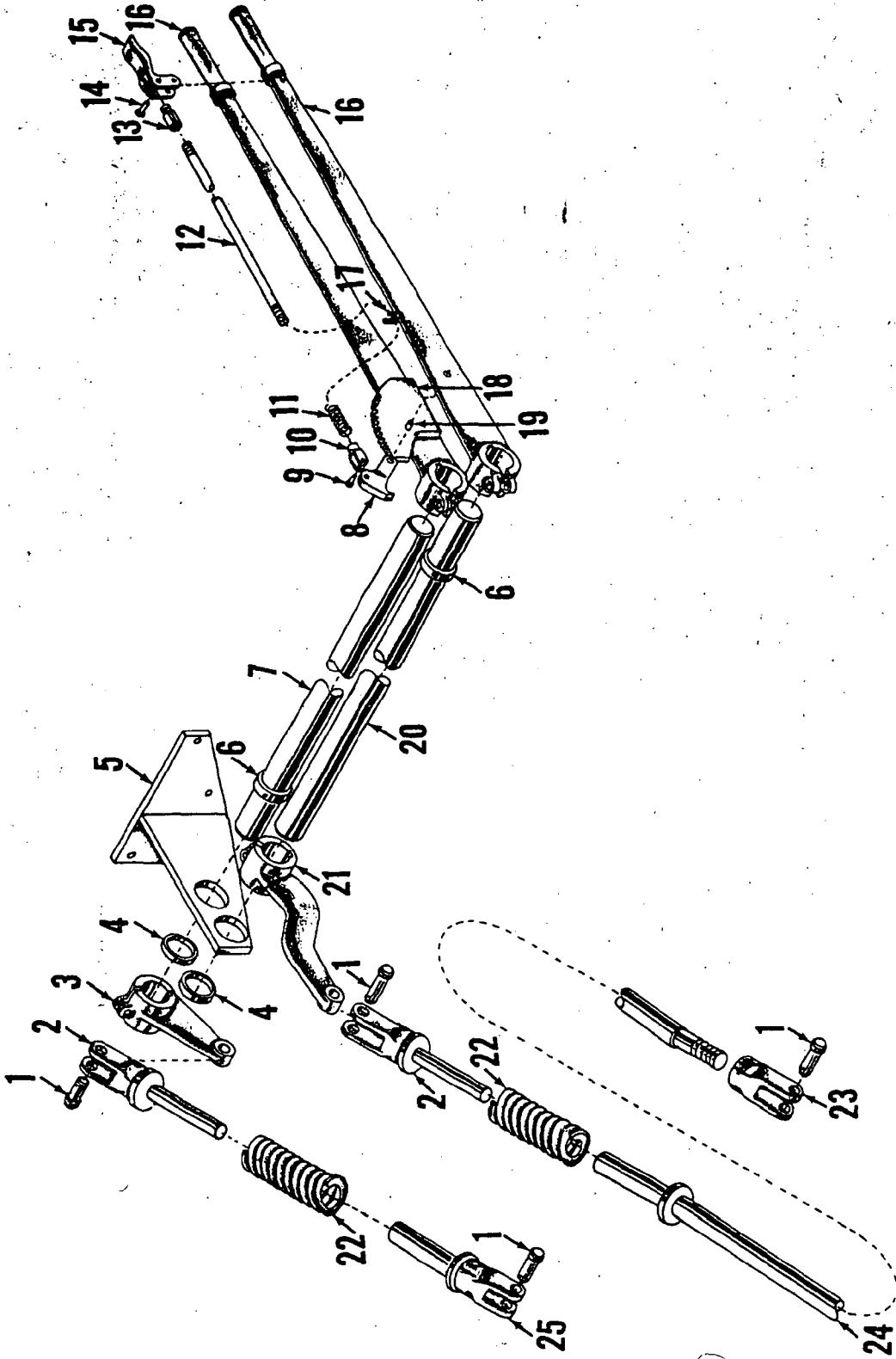
41803 Fl Cont'd.

MASTER

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Manitowoc, Wisconsin



ILLUST. No. 42212-B-1

MATERIAL LIST ON BACK

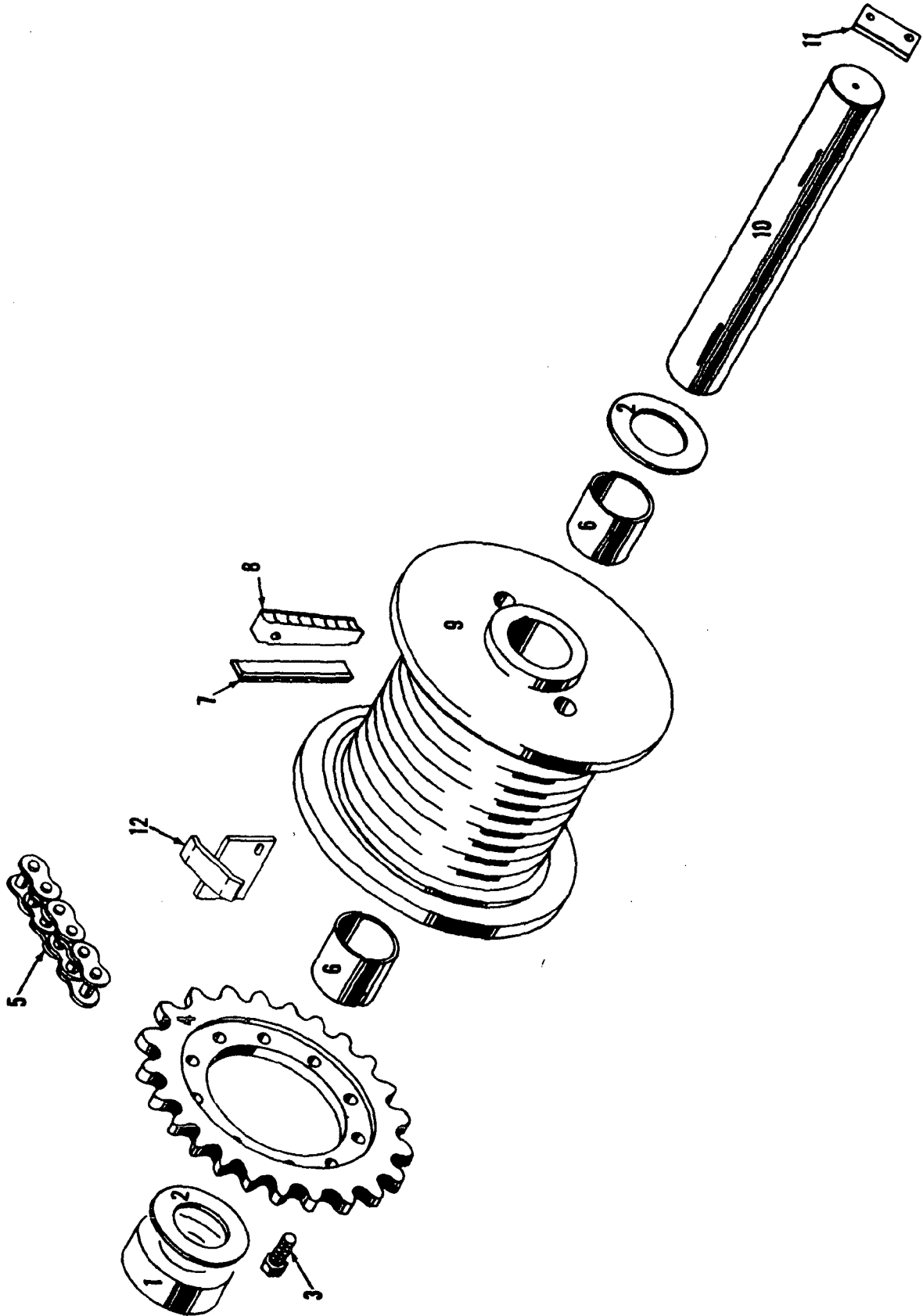
HAND BRAKE ASSEMBLY

MASTER

MANITOWOC ENGINEERING CO.

A Division of The Manitowoc Company, Inc.

Manitowoc, Wisconsin



42790A1

42790 A1

MATERIAL LIST ON BACK

BOOM HOIST DRUM

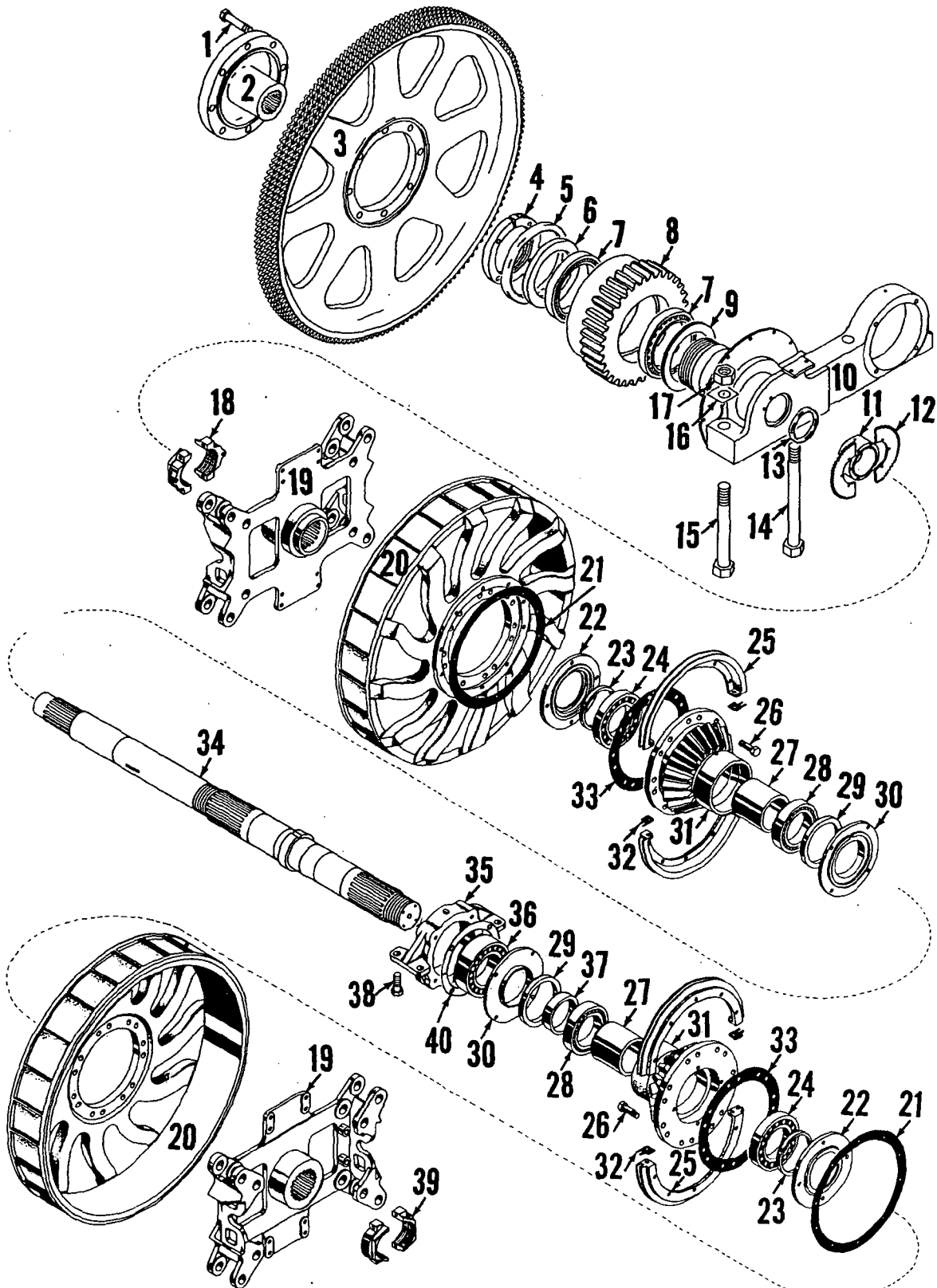
813.1



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MAIN DRIVE SHAFT ASSEMBLY

MATERIAL LIST FOR THIS ASSEMBLY WILL BE FOUND ON BACK OF THIS PAGE

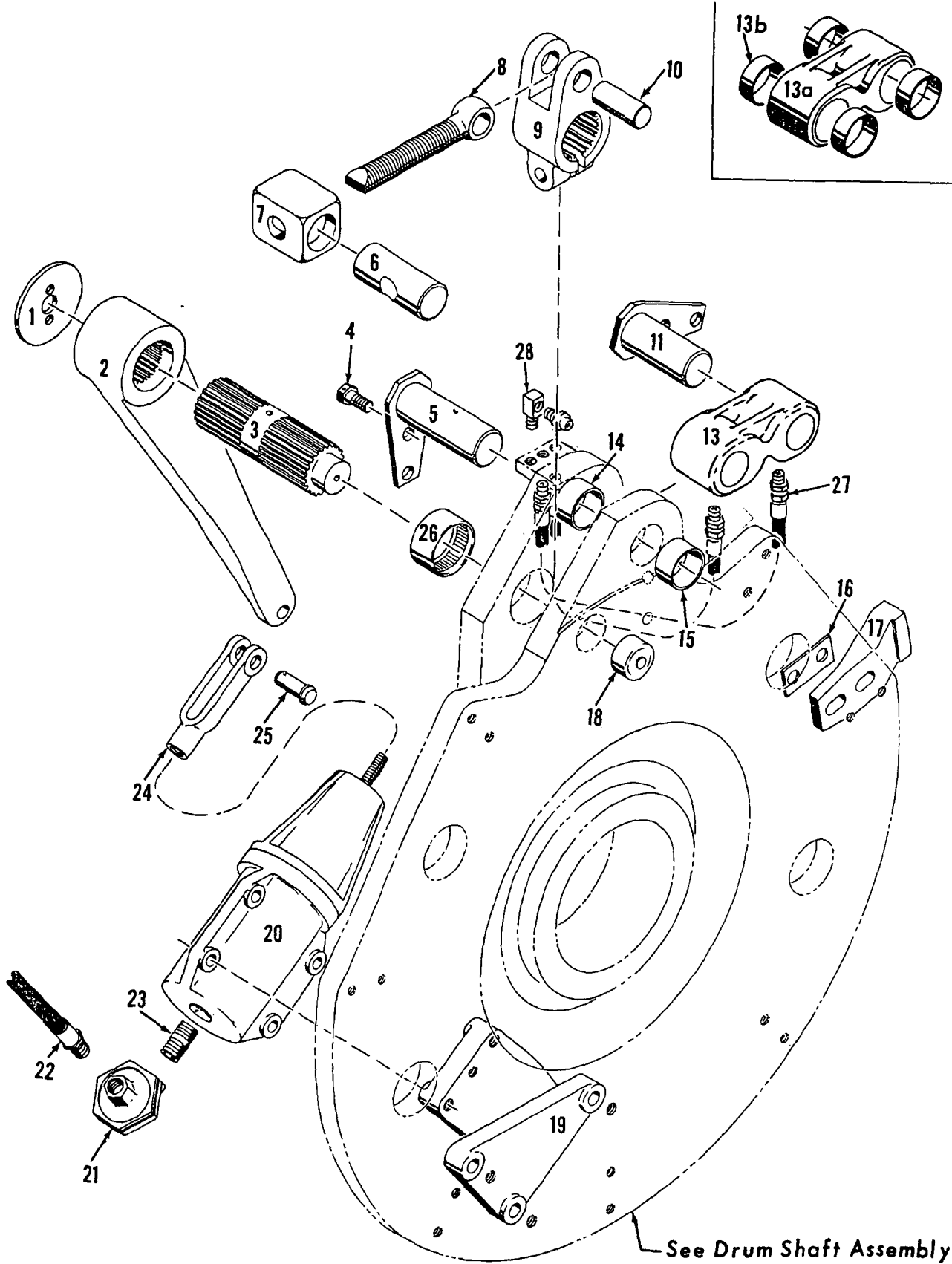
50276C3

99-12-1-1-2-1-66

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MASTER

50369B2

50369B2

See Drum Shaft Assembly

MATERIAL LIST ON BACK

LEFT DRUM CLUTCH ASSEMBLY

50376-1 cont.	REV. G	MODEL 4600
---------------	-----------	---------------

IND. BOOM HOIST DRUM

REF. NO.	PART NUMBER	QUANTITY REQUIRED	DESCRIPTION OF PART	VENDORS PART NO.
			<p><u>NOTE:</u> Spacer 18620 is available as 4 suffixes: 18620-3 (.718" wide), 18620-2 (.750"), 18620-5 (.781"), 18620-7 (.812"). Use suffix with width so right end of clutch spider Ref. #13 and left end of planetary pinion Ref. #29 contact spacer 18620 and not bearing retainer Ref. Nos. 16 leaving .025" - .062" end play in drum.</p>	

Run as a front

50376 cont.

REV. G	50376-1
-----------	---------

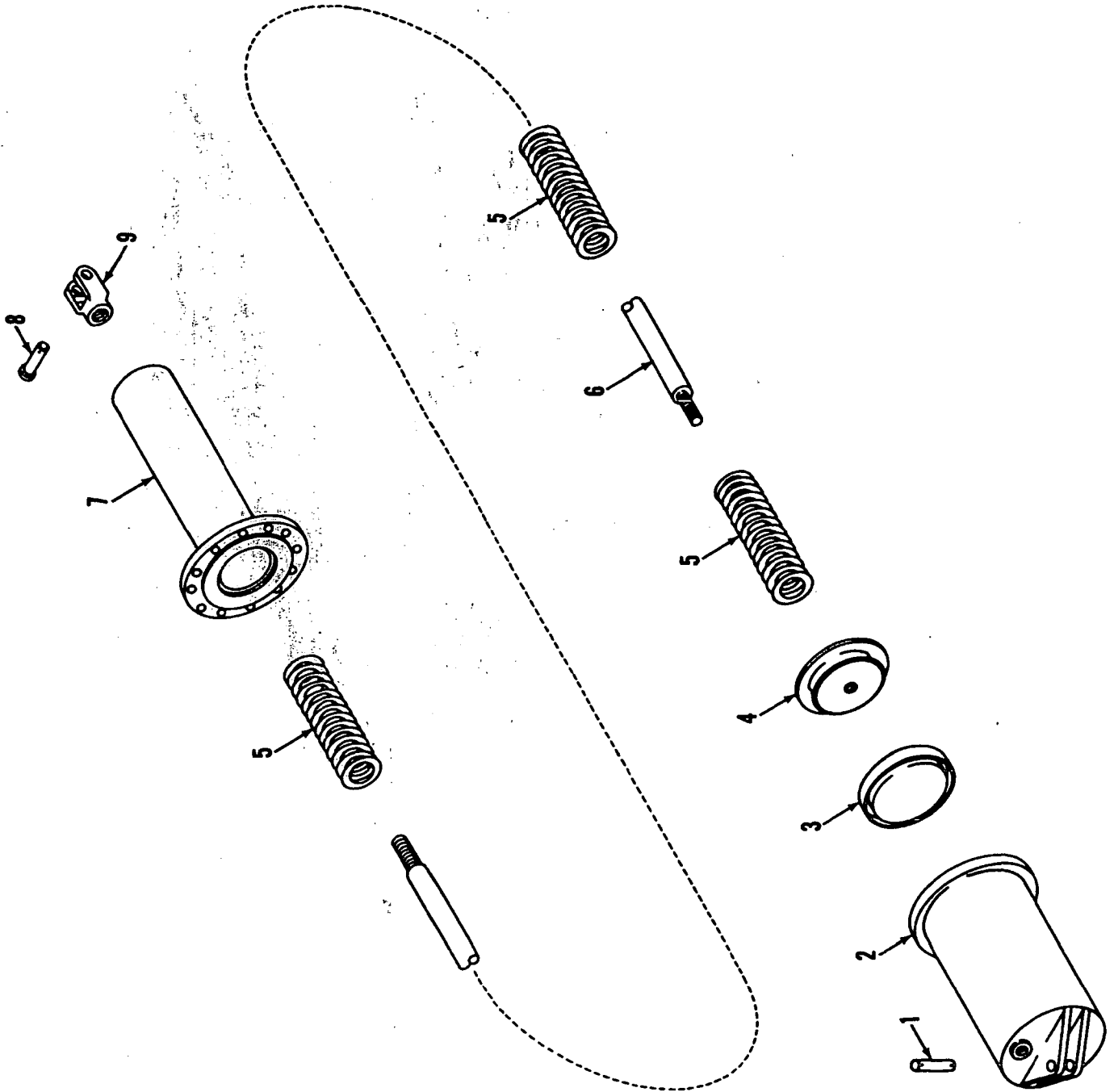
PLEASE GIVE MACHINE S/N W/ORDER

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Manitowoc, Wisconsin

601



90115A1

MATERIAL LIST ON BACK

AIR CYLINDER

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PARTS MANUAL ALPHABETICAL INDEX
Group D - Power Components

DESCRIPTION	PUBLICATION	REV	START DATE	END DATE	GROUP
Converter Control	32817	-	05/09/63	01/11/02	D0601
Converter Control	33669	A1	02/10/66	09/05/66	D0601
Converter Piping	43794	A1	02/02/66	02/20/68	D0701
Converter Piping	43794	A2	02/02/66	02/20/68	D0701
Instrument Panel/Engine	90696	A1	02/09/65	09/19/73	D0301
Power Plant	50460	-	12/14/66	07/17/72	D0101
Power Take Off - Transmission Case	43558	B2	01/10/66	02/13/68	D0401
Power Take Off - Transmission Case	43558	D1	01/10/66	02/13/68	D0401
Power Take Off - Transmission Case	43560	A2	01/21/66	03/06/67	D0401
Power Take Off - Transmission Case	43560	A3			D0401
Power Take Off - Transmission Case	43560	A3	01/21/40	05/18/80	D0401
Power Take Off - Transmission Case	43560	B2			D0401
Power Take Off - Transmission Case	43560	C1	01/21/66	01/21/70	D0401
Power Take Off - Transmission Case	43560	D1	01/21/66	05/18/81	D0401

43558-1Cont.

REV. D

Model

4600

LOWER TRANSMISSION CASE
(CAT. #379 OR 398 W/CONTROLLED CONVERTERS)

REF. NO.	PART NUMBER	DESCRIPTION OF PART	QUANTITY REQUIRED
36	76641	SPACER (See note 1)	1
37	335149	CHAIN, Drive (1" pitch, 5" wide, 78 links)	1
38	76619	SPROCKET, Drive (47 tooth)	1
38	79570	SPROCKET, Drive (S/N/ 46137)	1
39	76618	SPACER (Cat. #398 Engine)	1
39	73841	SPACER (Cat. #379 Engine)	1
40	33259	SHAFT, Take off (W/Cat. #398 Engine)	1
40	32470	SHAFT, Take off (W/Cat. #379 Engine)	1
41	335148	CHAIN, Drive (1" pitch, 12" wide, 94 links) (W/Cat. #398 Engine)	1
41	335176	CHAIN, Drive (1" pitch, 8" wide, 100 links) (W/Cat. #379 Engine)	1
42	73839	SPROCKET, Drive (60 tooth W/Cat. #379 Engine)	1
42	76617	SPROCKET, Drive (54 tooth W/Cat. #398 Engine)	1
43	224414	BEARING, Roller	1
44	76616	SPACER	1
45	90761	RETAINER, Bearing W/capscrews and lockwashers	1
46	622588	SEAL, Oil	1
47	352020	BLOCK, Rubber	42
48	352697	SPIDER, Drive	1
49	352698	RING, Drive	1
50	19405	PLATE, Lock W/capscrews	1
51	335079	CHAIN, Drive (1" pitch, 3 strand, 284 links)	1
52	23953	SPROCKET, Drive (21 tooth, 1" pitch, 3 strand)	1
53	76630	SLEEVE, Location W/mach. screws	1
54	76627	SPROCKET, Driven (24 tooth)	1
55	76628	SPACER	1
56	78153	COVER (W/out take-off)	1
57	427063	FILTER, Oil	1
58	275451	CAP, Breather	1
61	79572	SPACER (First on S/N 46137)	2
62	138216	COVER W/capscrews and copper washers	1
63	138217	GASKET	1
		NOTE 1: When upper transmission case is used, delete Ref. #6 and #36, and add the following:	
36	76620	SPACER	1
38	76619	SPROCKET, Drive (47 tooth)	1
		NOTE 2: Controlled converters may be replaced only as a unit; individual repair parts are not available separately. Consult factory for exchange units. Replacement units after Jan. 1, 1969 have outside lub. line to input bearing. These units are identified by #50774, 50775, 50776 replacing converters #43757, 43879 and 43758 respectively.	
		Use Sheet #0-245	

WHEN ORDERING ALWAYS GIVE MACHINE SERIAL NUMBER

REV. D

43558 - 1

43558 D1cont 1-10-66 2-13-68

43560-3 Cont.	REV. A	MODEL 4600
---------------	--------	------------

PLANETARY INDEPENDENT BOOM HOIST CONVERTER PIPING W/CAT. D-398 ENGINE
(USE W/48993 CHARGING PIPING)

RUN AS A FRONT

MASTER

43560-A3 cont.

REF. NO.	PART NUMBER	QUANTITY REQUIRED	DESCRIPTION OF PART	VENDORS PART NO.
<u>CONVERTER CHARGING SYSTEM</u>				
38	427102	1	SCREEN, Filter	
39	73341	1	ADAPTER, Filter	
40	429618	8	FITTING, Nipple (1/4")	
41	355008	2	COCK (1/4")	
42	377274	1	COUPLING, Reducing	
43	486133	1	HOSE, Flex (1/2" I.D. 16' or 4.8768 m)	
44	406895	1	ELBOW (1/2" x 1/4")	
45	406952	2	ELBOW (1/4")	
46	485802	1	HOSE, Flex (3/8" I.D. 6'7" or 2.0066 m)	
47	288751	1	BUSHING (3/4" x 1/4")	
48	427107	1	FILTER, Oil	
49	554113	4	PAD	
50	543405	1	NIPPLE, Close (3/4")	
51	406645	1	ELBOW (3/4" x 1/4")	
52	485996	1	HOSE, Flex (3/8" I.D. 4'2" or 1.2700 m)	
53	679714	1	TEE (1/4" x 1/4" x 1/8")	
54	429617	1	FITTING, Nipple (1/8")	
55	288790	1	BUSHING (1/4" x 1/8")	
56	701017	1	UNIT, Pressure Sending	
57	679301	1	TEE (1/4")	
58	352001	1	VALVE, Bleed	T.D. #M1277
59	15912	1	HOSE, Flex (3/8" I.D. 11'11-1/2" or 3.6449 m)	
60	352709	1	ORIFICE	

REV. A	43560 - 3
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PLEASE GIVE MACHINE S/N W/ORDER

43560-1 Cont.	REV. D	MODEL 4600
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UPPER TRANSMISSION CASE
(CAT. #379 or 398 ENGINE W/CONTROLLED CONVERTERS)

RUN AS FRONT

MASTER

43560-D1 cont.

REF. NO.	PART NUMBER	QUANTITY REQUIRED	DESCRIPTION OF PART	VENDORS PART NO.
43	77419	1	ROD, Reach W/hex nuts	
44	77384	1	BRACKET W/capscrew	
45	77385	1	BRACKET W/capscrew	
<u>MACH. W/POWER TAGLINE W/OUT IND. BOOM HOIST</u> (Delete Ref. Nos. 1, 2, 3, 7, 8, 9)				
7a	138367	1	PLATE, Cover W/capscrews and lockwashers	
46	79209	1	CAP, Bearing W/capscrews and lockwashers	
47	225113	1	LOCKNUT, Bearing	
48	225122	1	LOCKWASHER, Bearing	
49	224109	1	BEARING, Roller	
50	181068	1	SUPPORT, Bearing W/capscrews, hex nuts and lockwashers	
51	138370	1	GASKET	
52	181067	1	SHAFT	
<p><u>NOTE 1:</u> Converter #50692 supersedes converter #43826 per design change of March 6, 1969. Converter #50692 has external lubrication to the input bearing. Converter #43826 does not.</p> <p><u>NOTE 2:</u> Controlled converters replaced as a unit only. Consult factory for exchange units.</p> <p><u>NOTE 3:</u> Per Drwg. change of May 18, 1981, replacement of converter #50692 will be converter #65933. On converter #65933, sprocket #76649, Ref. #24, is held in place by snap ring #596814.</p>				
				REV. D
				43560 - 1

PLEASE GIVE MACHINE S/N W/ORDER

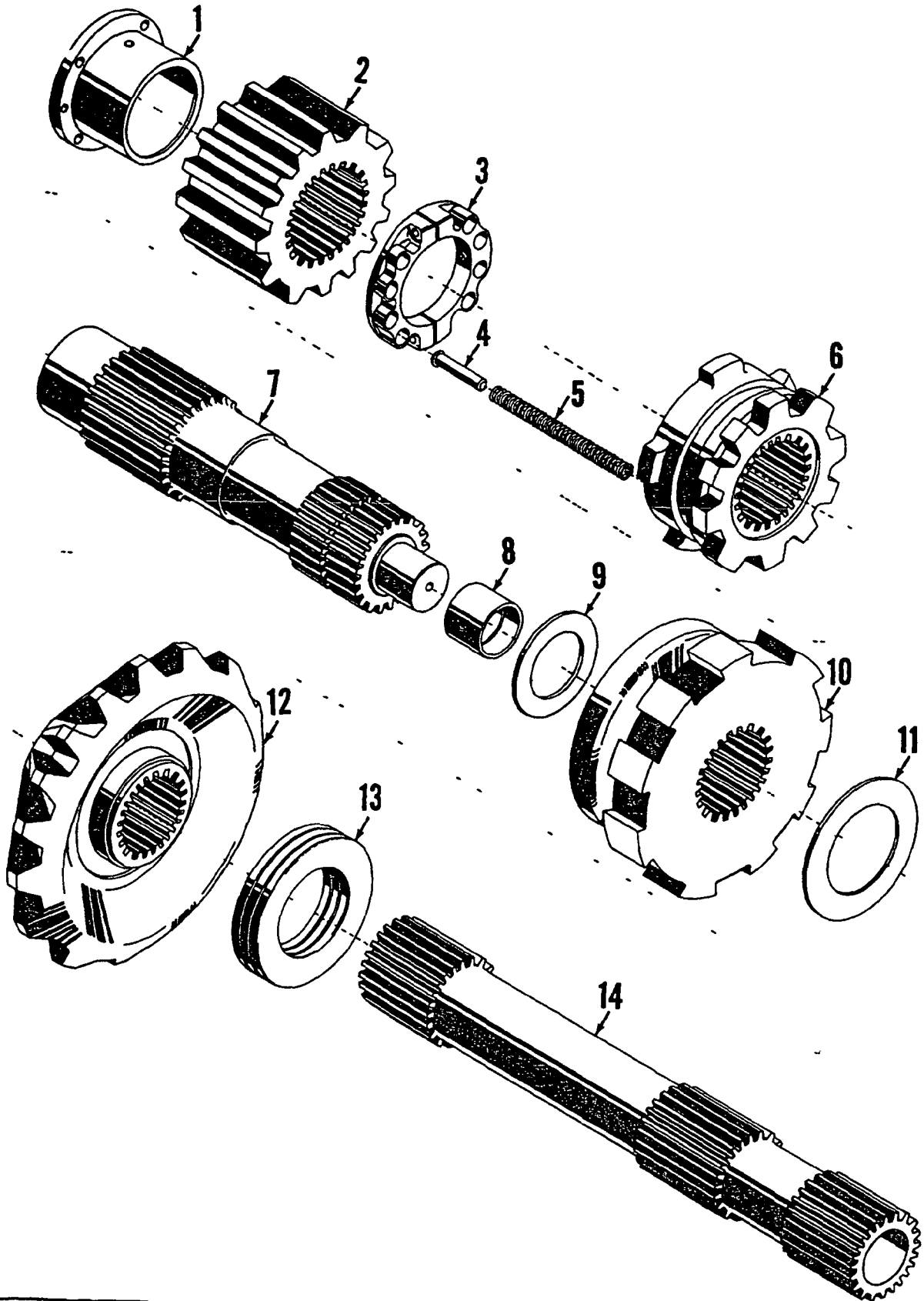
GROUP E - Lower Structure & Control

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MASTER



ILLUST No 31432-A-1

MATERIAL LIST ON BACK

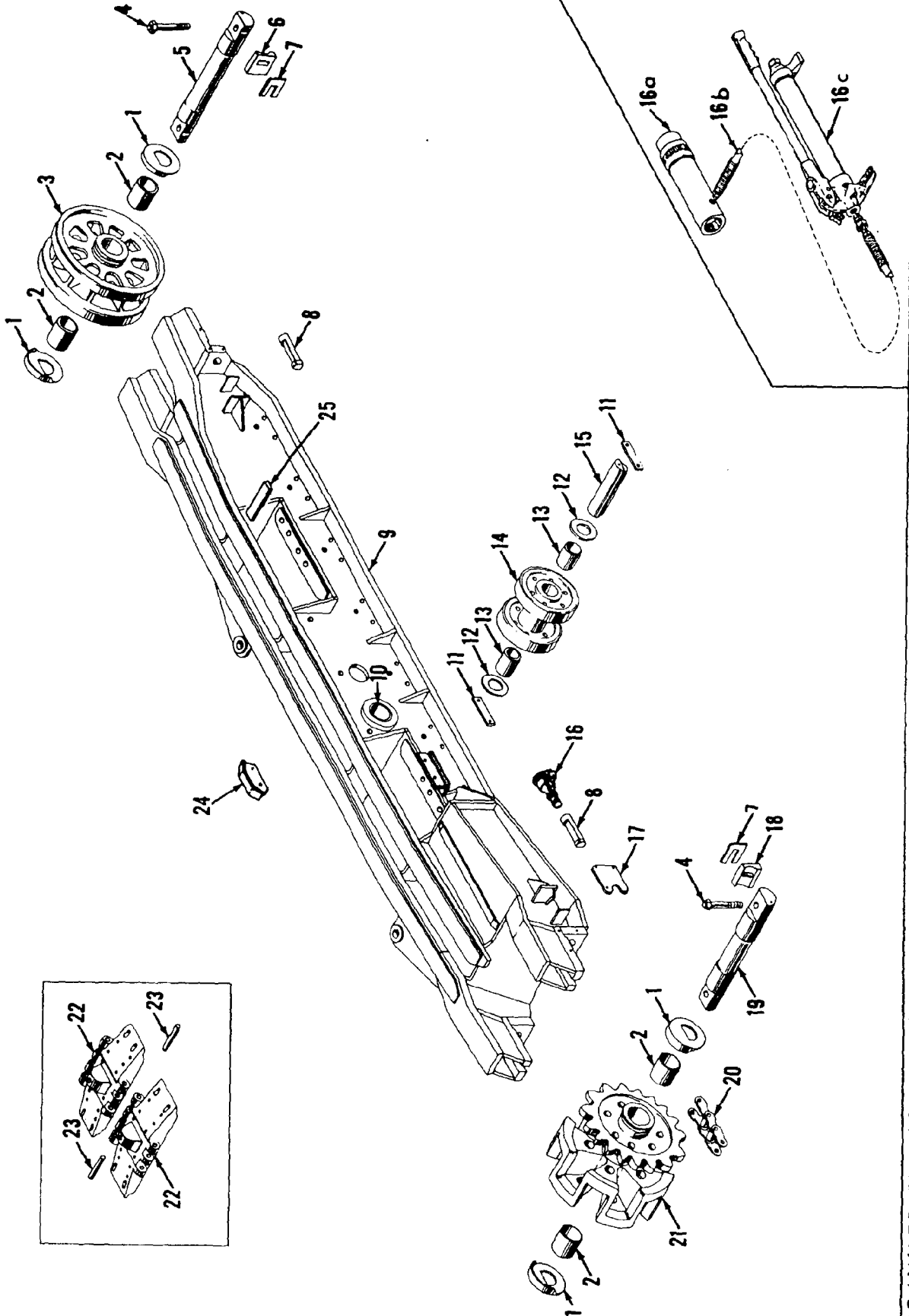
HORIZONTAL TRAVEL SHAFT

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42763D1

MATERIAL LIST ON BACK

CRAWLER FRAME ASSEMBLY

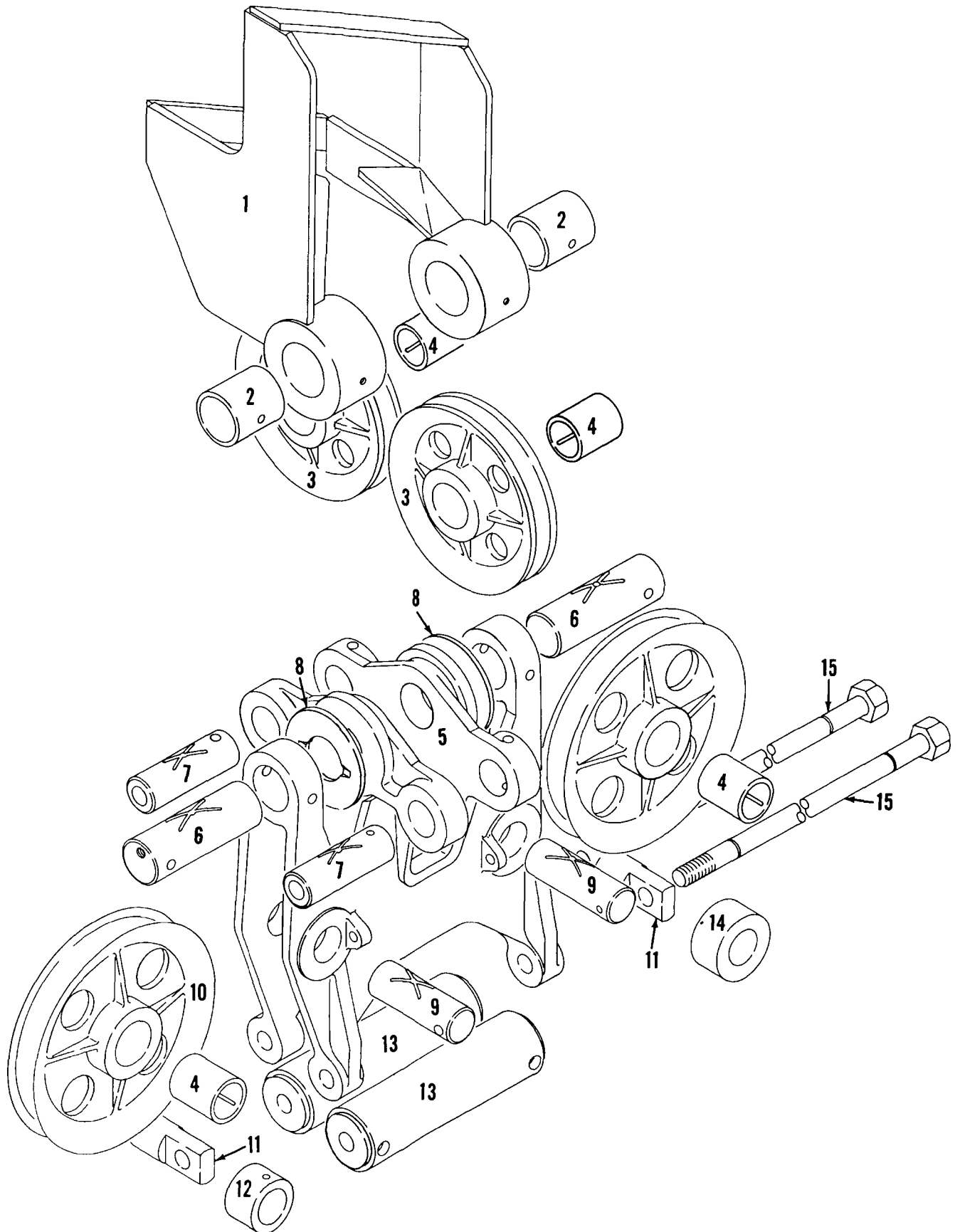
PARTS MANUAL ALPHABETICAL INDEX
Group F - Attachments

DESCRIPTION	PUBLICATION	REV	START DATE	END DATE	GROUP
Boom	50469	A1	03/07/66	10/26/71	F0101
Boom	50469	A2	03/07/66	10/26/71	F0101
Boom	50469	A3	03/07/66	10/26/71	F0101
Boom	50469	A4	03/07/66	10/26/71	F0101
Boom	50469	C6	03/07/66	10/26/71	F0101
Boom Point	24645	-	03/14/62	01/09/84	F0401
Boom Point	90687	D1	02/01/65	08/29/77	F0401
Boom Stop, Clutch Throw-Out	24850	B1	08/28/62	11/16/66	F0201
Dipper Stick, Trench Hoe	43273	B1	05/15/64	07/07/83	F5501
Intermediate Drag Drum	48393	C1	05/22/68	03/29/83	F5601
Intermediate Drag Drum Brake	33202	B1	01/06/65	03/25/83	F5602
Intermediate Drag Drum Brake	43433	D1	01/12/65	07/14/83	F5602
Power Tagline Converter	43472	A1	03/02/65	10/12/67	F1901
Power Tagline Converter	43472	A4	03/02/65	12/14/83	F1901
Power Tagline Converter	43472	A5	03/02/65	03/10/70	F1901
Power Tagline Converter	43472	A6	03/02/65	03/10/70	F1901
Power Tagline Converter	43472	A7	03/02/65	12/14/83	F1901
Power Tagline Converter	43472	B3	03/02/65	12/14/83	F1901
Power Tagline Converter	43472	D2	03/02/65	12/14/83	F1901
Power Tagline Fairlead	33645	A1	01/10/66		F1905
Trench Hoe Boom	43291	B1	05/12/64	07/18/83	F5101
Trench Hoe Boom	50458	A2	11/19/65	07/15/83	F5101
Trench Hoe Boom	50458	C1	11/19/65	07/15/83	F5101
Trench Hoe Boom	50458	C3	11/19/65	07/15/83	F5101
Upper Block - Anchor Joint	33659	A1	02/03/66	12/08/70	F1601
Wire Rope Guide	33561	B1	11/08/65		F0701
Wire Rope Guide	90479	B1	05/18/64	11/05/76	F0701
Wire Rope Roller Guide	73907	D1	12/06/62	09/13/79	F0801
Wire Rope Roller Guide	74690	D1	08/22/63	09/13/79	F0801

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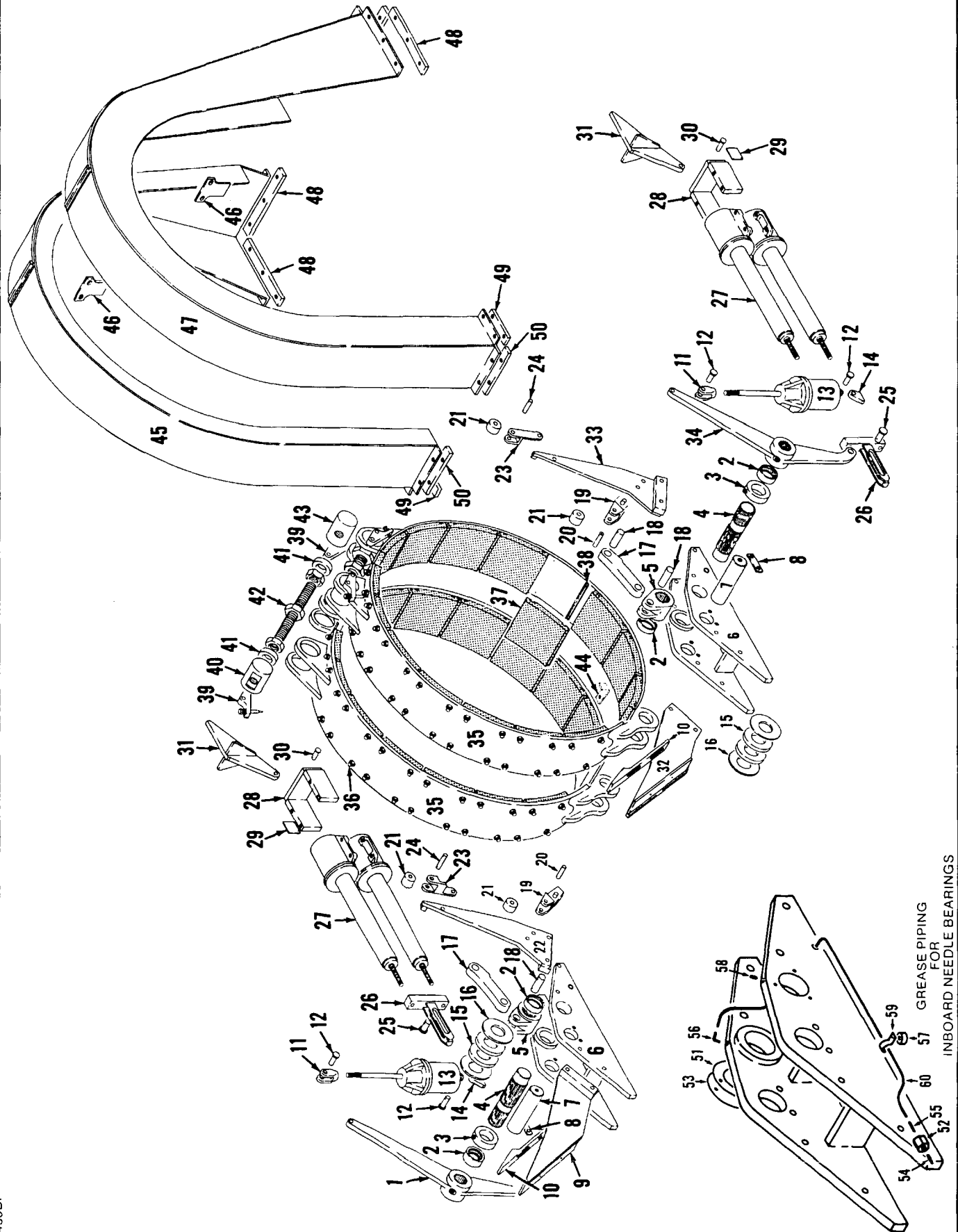
Manitowoc, Wisconsin



33645A1

MATERIAL LIST ON BACK

FAIRLEAD ASSEMBLY



43433BI

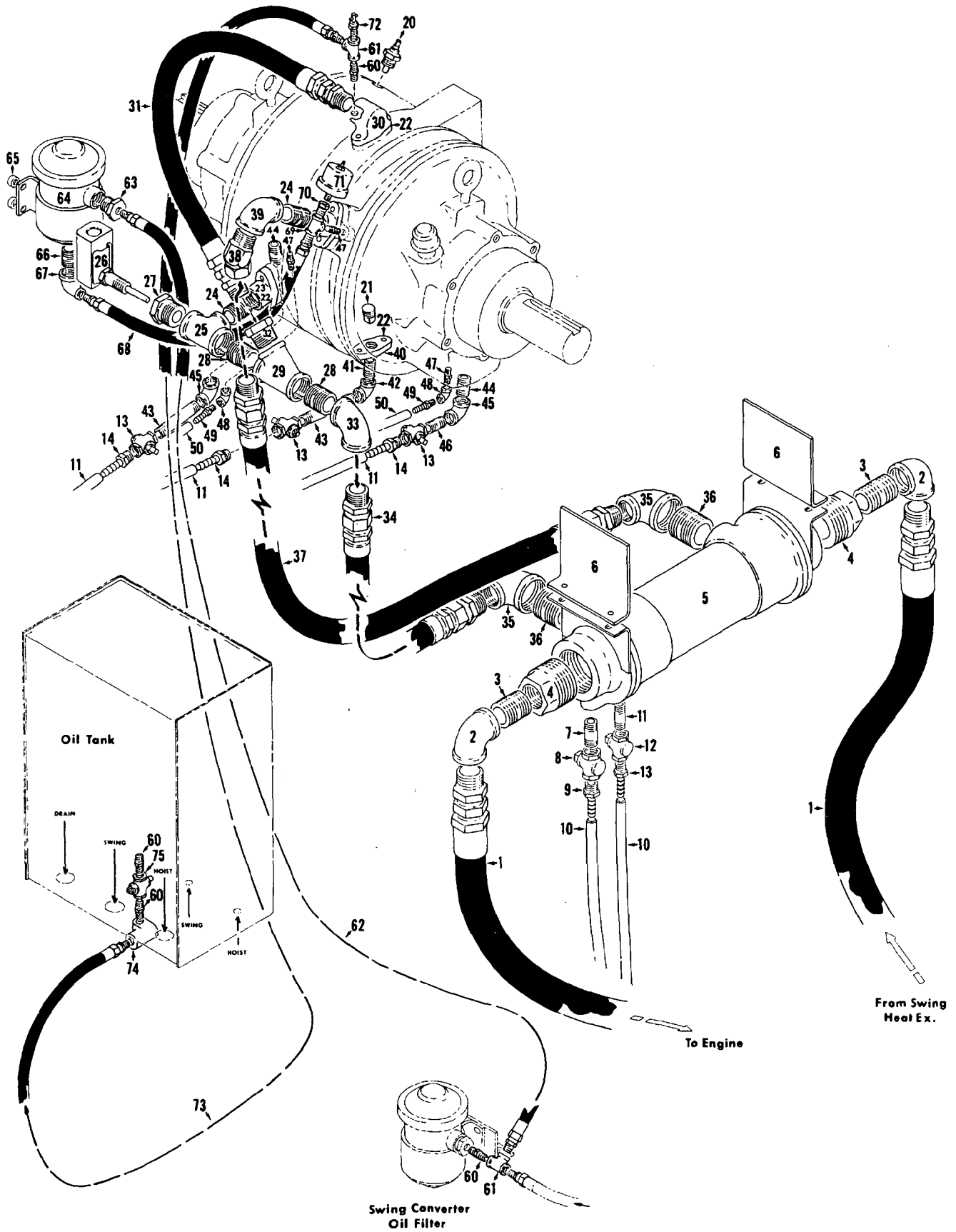
MATERIAL LIST ON BACK

BRAKE ASSEMBLY

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43472A5

Swing Converter
Oil Filter

To Engine

From Swing
Heat Ex.

MATERIAL LIST ON BACK

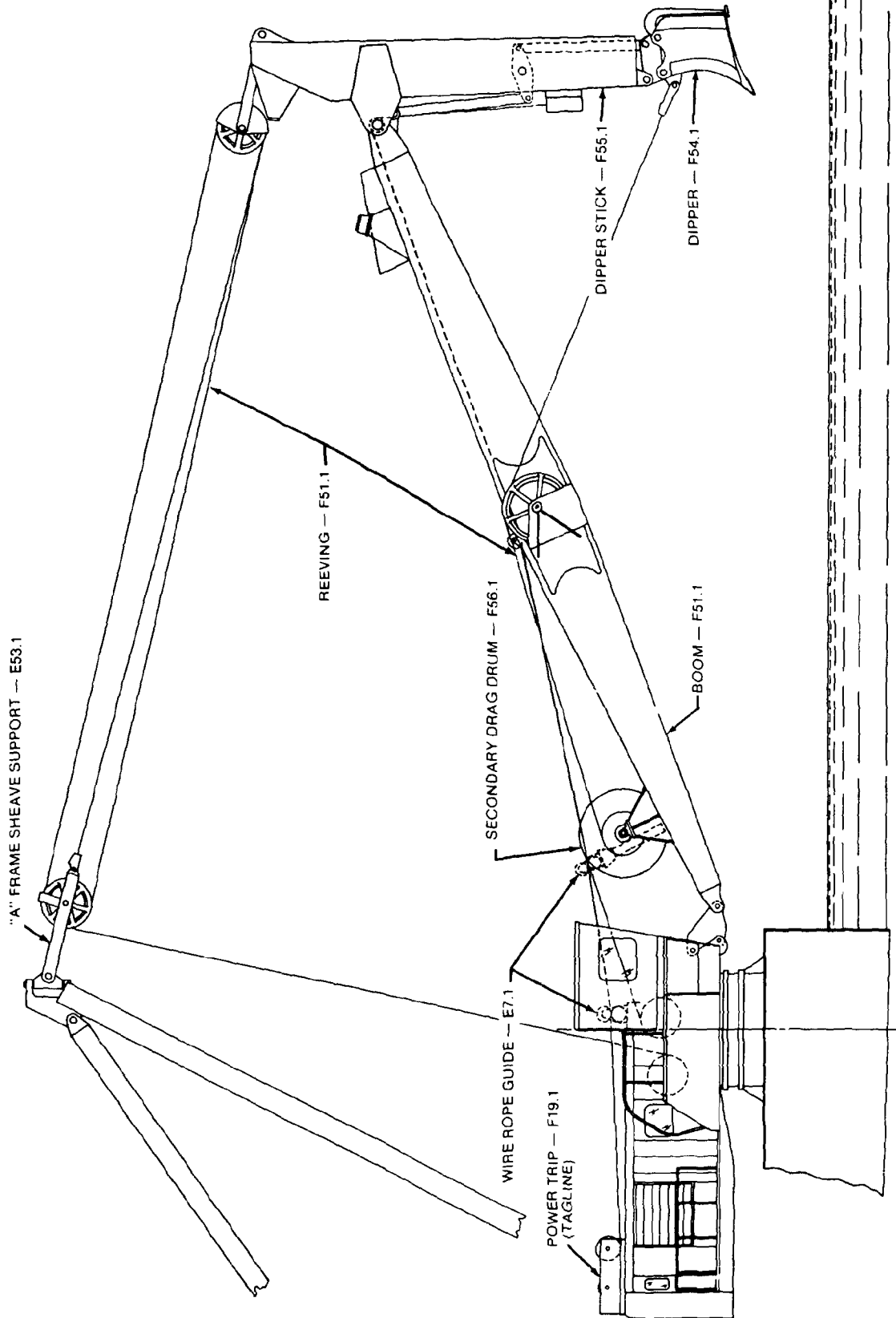
POWER TAGLINE PIPING

43472-7 Cont.	REV. A	Model	4600
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POWER TAGLINE PIPING
 (CAT. D-398 ENGINE W/43560 POWER TAKE OFF CASE W/IND. BOOM HOIST)
 (USE W/48993 CHARGING PIPING)

REF. NO.	PART NUMBER	DESCRIPTION OF PART	QUANTITY REQUIRED
48	406950	ELBOW (1/8")	2
49	429573	INSERT (1/8" NPT 3/8" I.D. Hose)	2
50	485844	TUBE, Plastic (3/8" I.D. - specify length)	2
<u>CONVERTER CHARGING SYSTEM</u>			
60	429618	FITTING, Nipple (1/4")	4
61	679301	TEE (1/4")	3
62	15362	HOSE, Flex (3/8" I.D. 6'0" or 1.8288 m. long)	1
63	288751	BUSHING (3/4" x 1/4")	1
64	427107	FILTER, Oil	1
65	554113	PAD	4
66	543405	NIPPLE, Close (3/4")	1
67	406645	ELBOW (3/4" x 1/4")	1
68	17845	HOSE, Flex (5/16" I.D. 2'3" or .6858 m. long)	1
69	679714	TEE (1/4" x 1/4" x 1/8")	1
47	429617	FITTING, Nipple (1/8")	1
70	288790	BUSHING (1/4" x 1/8")	1
71	701017	UNIT, Pressure Sending	1
72		VALVE, Bleed (T.D. #M1277)	1
73	15917	HOSE, Flex (3/8" I.D. 10'9-1/2" or 3.2893 m. long)	1
74	352709	ORIFICE	1

REV. A	43472 - 7
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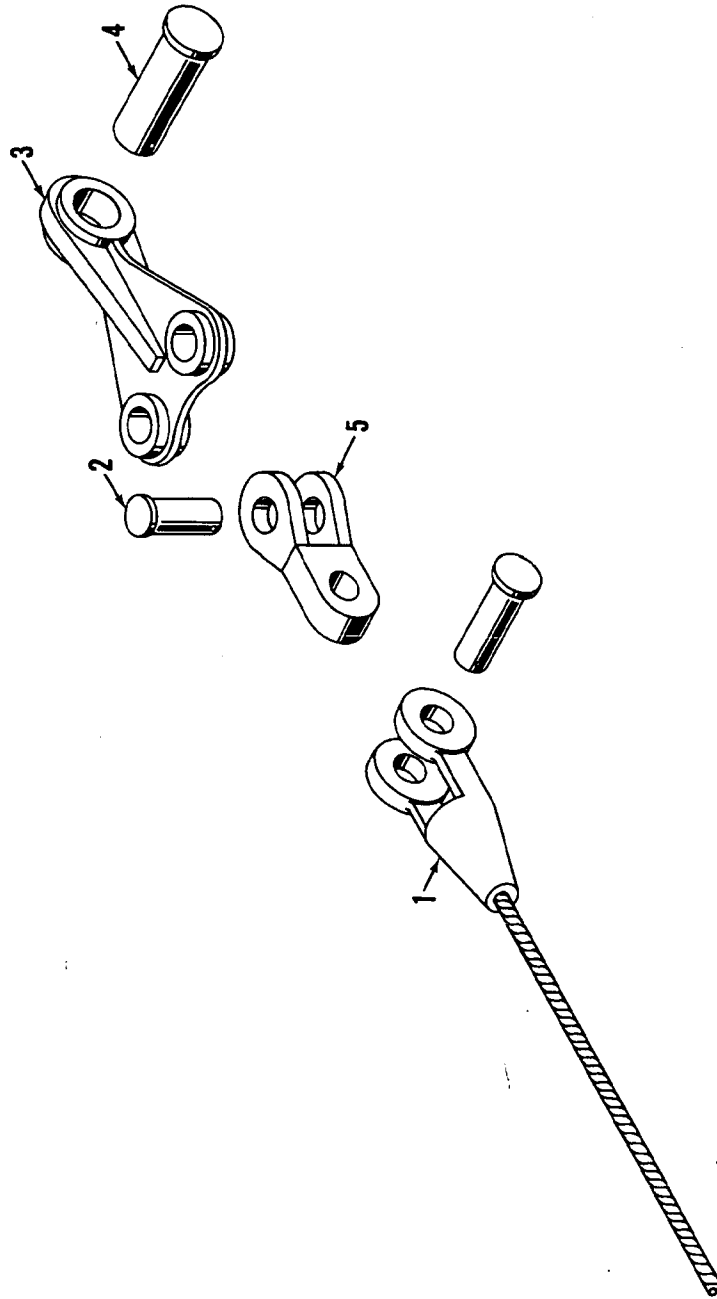
FOR PARTS ILLUSTRATIONS, SEE ASSEMBLIES AS NAMED. NUMBER IS PARTS MANUAL PAGE NUMBER.

50458C1

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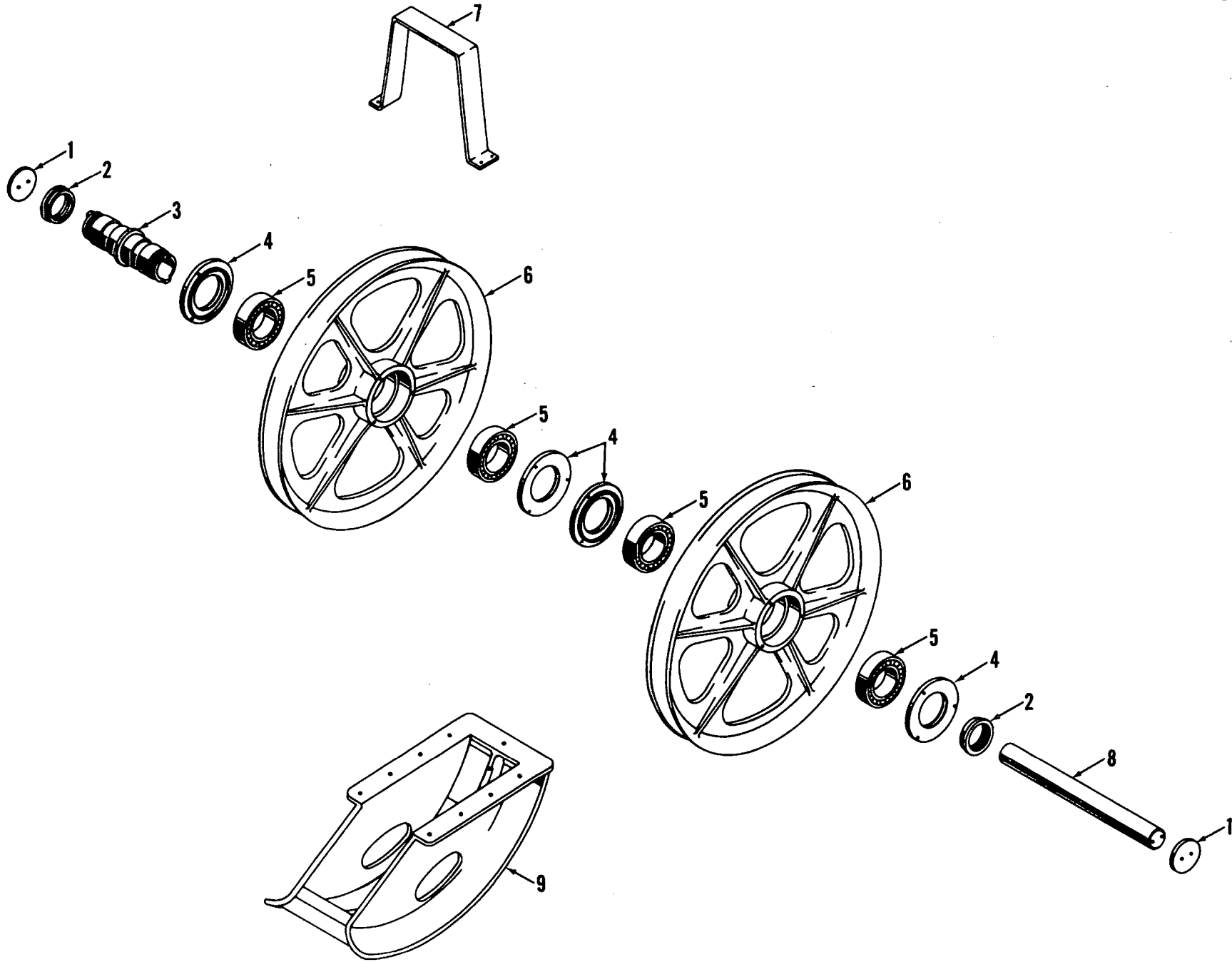
Manitowoc, Wisconsin



50278 - A-4

MATERIAL LIST ON BACK

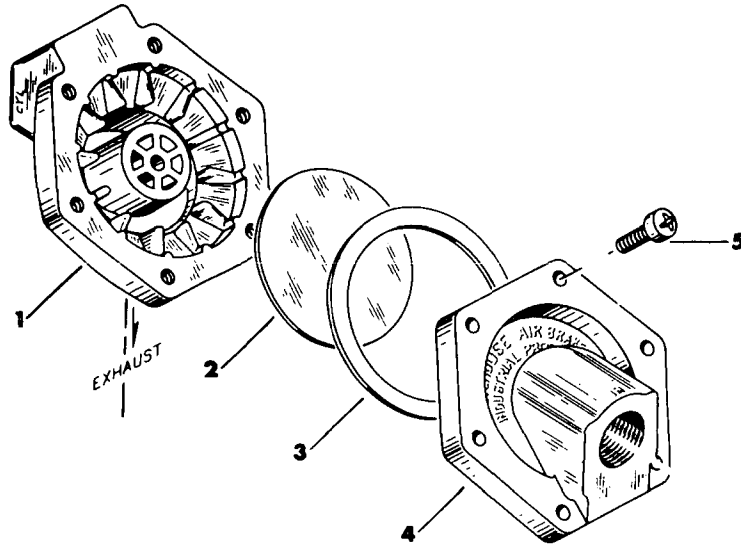
UPPER BRIDLE CONNECTIONS



MATERIAL LIST ON BACK

BOOM POINT SHAFT ASSEMBLY

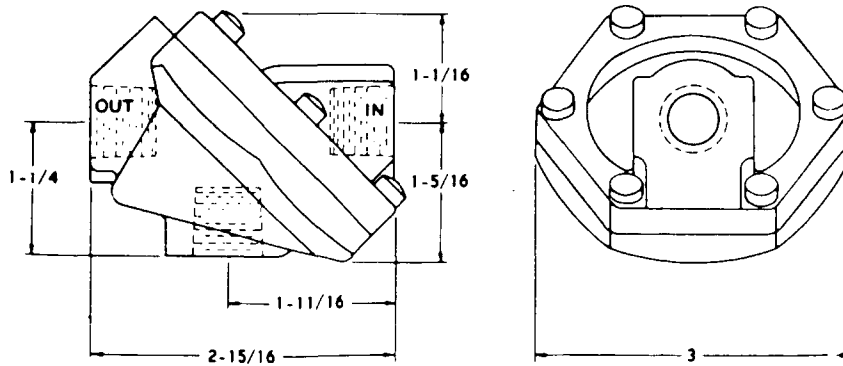
MANITOWOC NO. 714688 - WESTINGHOUSE NO. P52935-3



EXPLODED VIEW

PARTS LIST

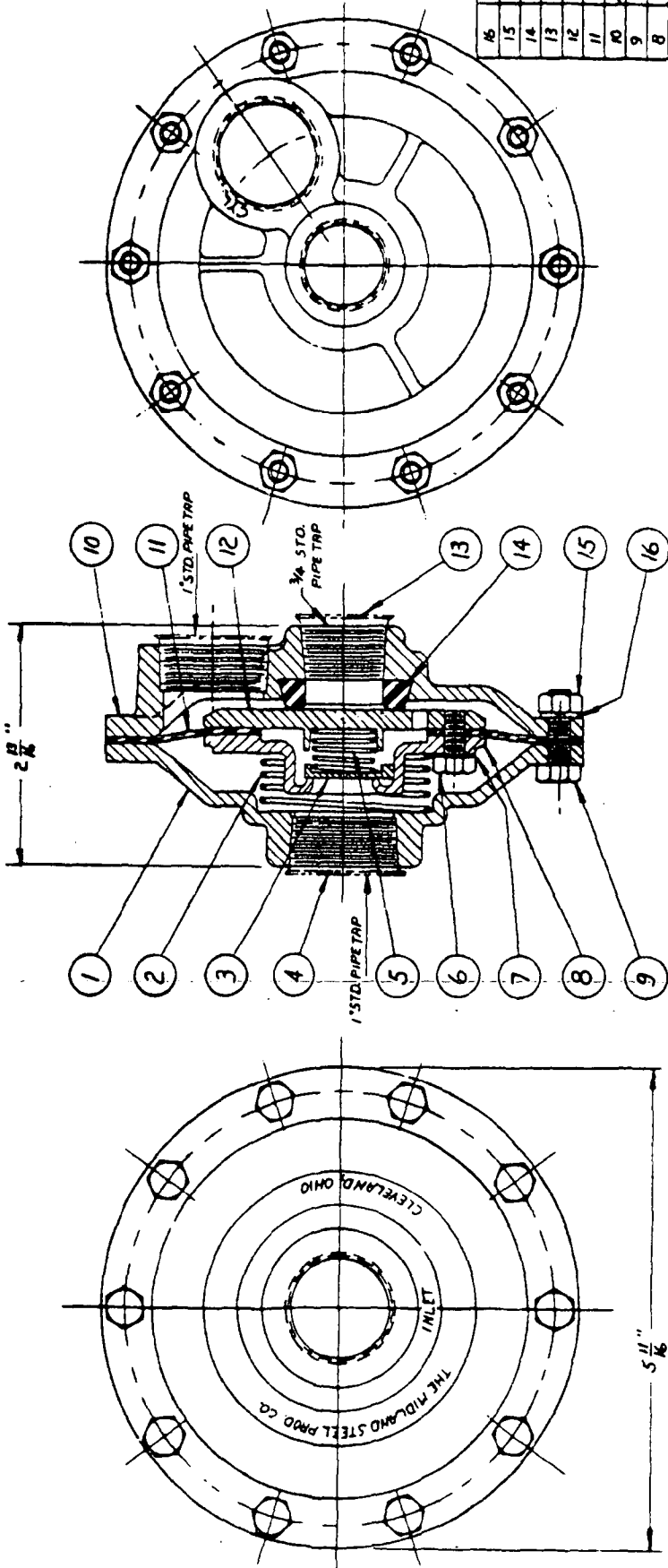
Manitowoc Number	Westinghouse Number	Ref. No.	Description
	P52966	1	Body, Valve
714693	P5112	2	Diaphragm
714694	P5111-6	3	Gasket
	P52967	4	Cover, Valve
	P49502	5	Screw, Washer Head



OUTLINE VIEW

Used Approx. 1962 to _____. (See Reverse Side of Sheet)

MIDLAND-CHRISTENSEN POWER BRAKE EQUIPMENT



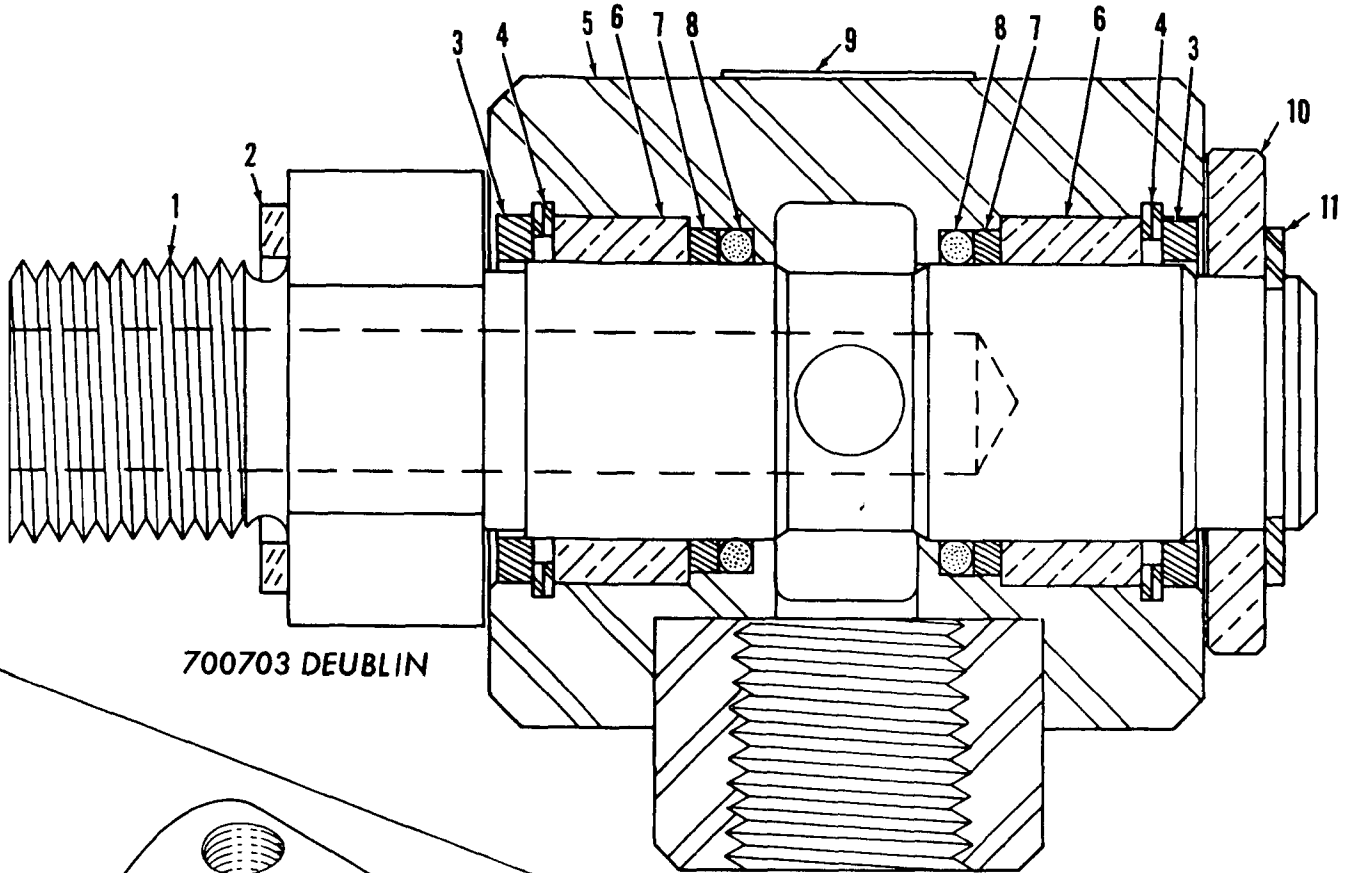
ITEM	PART No.
1	N-2481
2	N-10942-A
3	C-11971-A
4	B-X-407
5	C-11528-A
6	3-X-706
7	4-X-40
8	M-10940-A
9	3-X-179
10	N-20081-A
11	N-10931-0
12	B-X-406
13	N-12483
14	2-X-303
15	4-X-11
16	

QUICK RELEASE VALVE

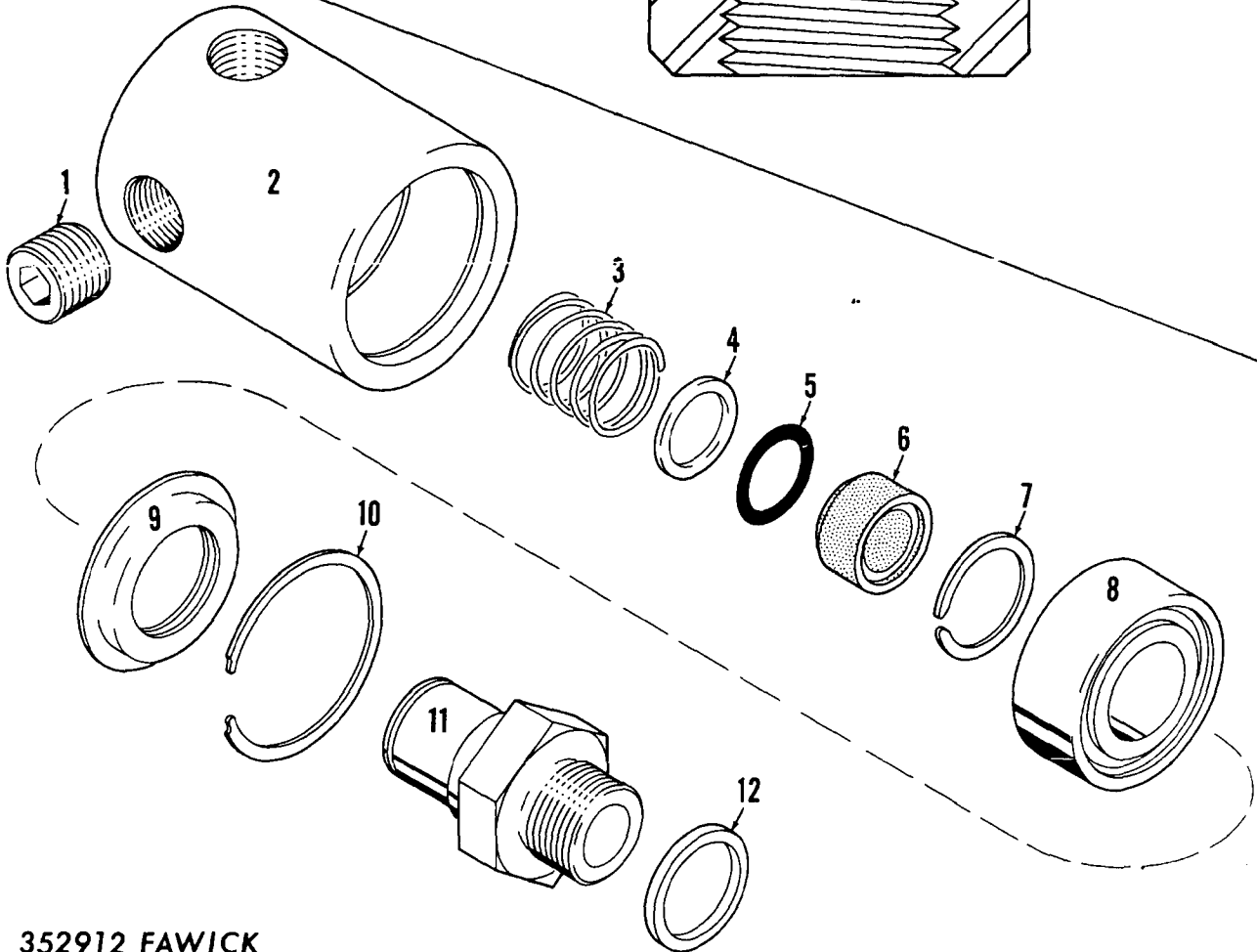
VALVE COMPLETE #N-20080 MANITOWOC CODE # 702425
 REPAIR KIT ONLY #RN-19-E MANITOWOC CODE # 702459

NOTE:
 THIS SHEET FOR MACHINES BUILT
 AFTER 1950, OPPOSITE SIDE FOR
 MACHINES BUILT PRIOR TO 1950.

MASTER



700703 DEUBLIN



0-157A1

0-157A1

352912 FAWICK

MATERIAL LIST ON BACK

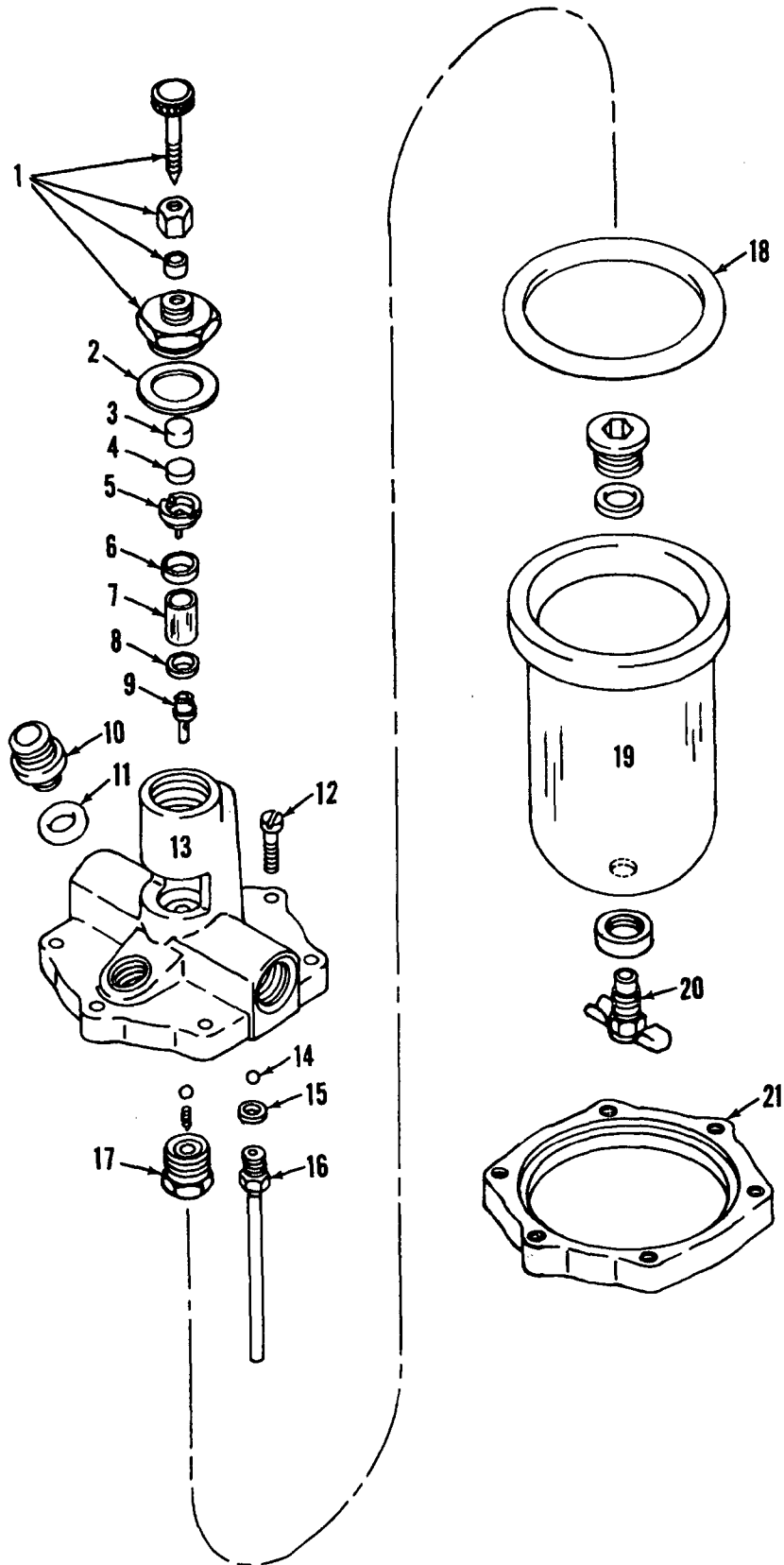
SWIVEL UNION

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MASTER



0-291

MATERIAL LIST ON BACK

LUBRICATOR

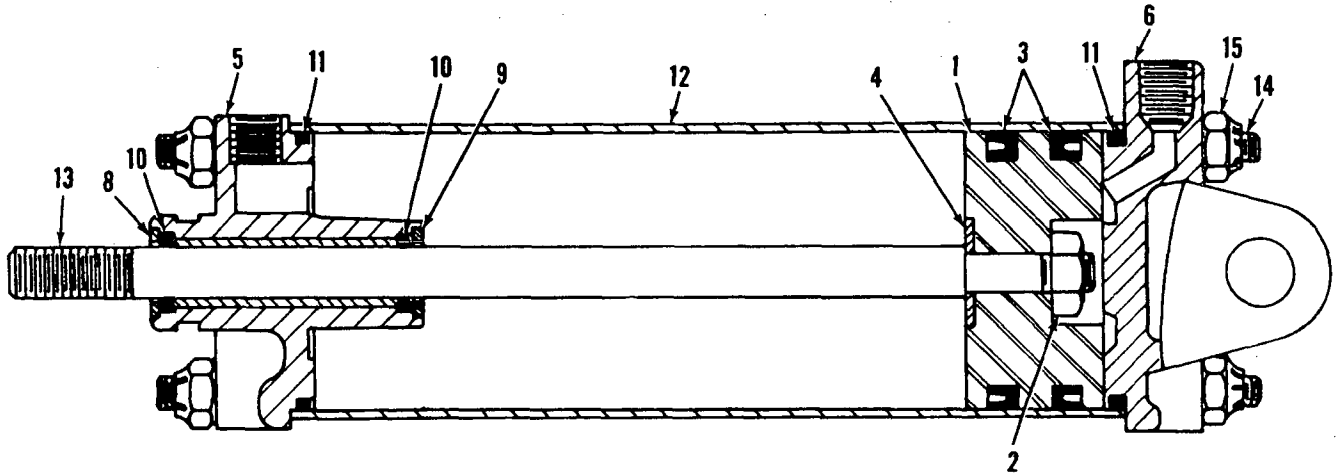
162.0

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Manitowoc, Wisconsin

MASTER



0-414

MATERIAL LIST ON BACK

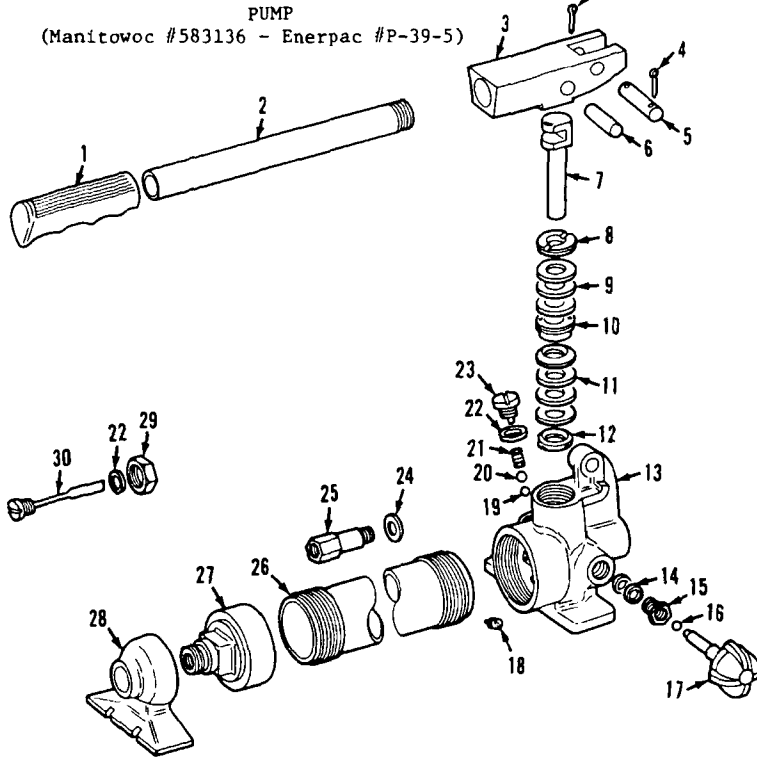
AIR CYLINDER

0-414

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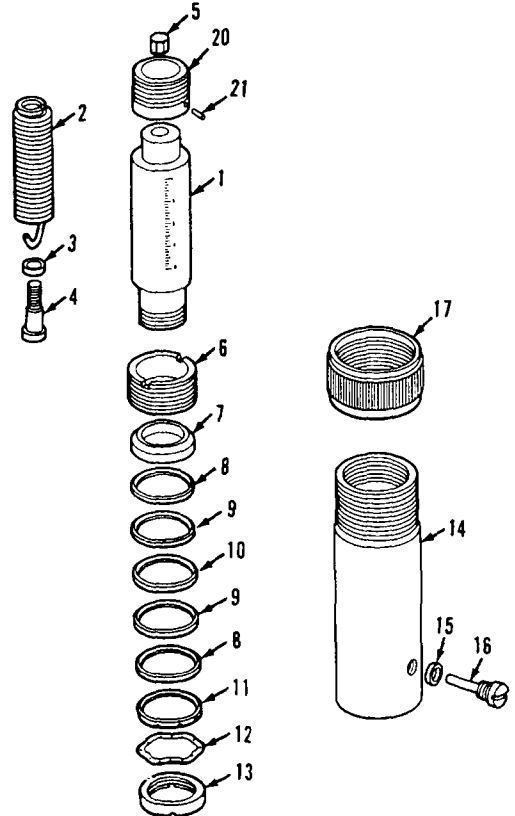
Manitowoc, Wisconsin



PUMP
(Manitowoc #583136 - Enerpac #P-39-5)

Ref. No.	No. Req.	Description	Part No.
1	1	Grip	C7.550
2	1	Handle	C7.900
3	1	Beam	B113.060-1
4	2	Pin, Cotter	S1.59
5	1	Pin, Beam	P76.63
6	1	Pin, Cross	P75.57
7	1	Plunger, Pump	P16.51
8	1	Nut, Retaining	P16.54
9	3	Packing, Pump	*
10	1	Nut, Cup Ret.	P16.55
11	4	Cup, Pump	*
12	1	Spreader	P1.52-2
13	1	Base	B121.005-1
14	2	Packing	*
15	1	Nut, Packing	MJ11-1
16	1	Ball	*
17	1	Spindle	J435.900
18	1	Screen, Oil	P807.18
19	2	Ball	*
20	1	Ball	*
21	1	Spring	S1.183
22	3	Gasket	*
23	1	Plug, Valve	CB9.185
24	1	Gasket	B159.167
25	1	Valve, By-pass	P182.190-2
26	1	Reservoir	P16.25
27	1	Cap, Reservoir	P75.266-1
28	1	Rest., Pump	P76.267-1
29	1	Nut	P75.181
30	1	Plug, Filler	B110.900
*		Kit	P39K-1

JACK
(Manitowoc #385177 - Enerpac #RSP-251)



Part numbers are the Venders, Enerpac, Butler, Wis. 54220. Please so Specify if ordering from Manitowoc Engineering Co.

When ordering parts, please give Model number and Serial number. See Nameplate for this information.

Ref. No.	No. Req.	Description	Part No.
1	1	Plunger Assembly	R251.900
20	1	Saddle	R251.45
21	1	Pin	R251.61
2	1	Spring	R225.184
3	1	Bearing Thrust	R225.155-1
4	1	Screw, Adjusting	R225.143-1
5	1	Nut	R225.55
6	1	Ring, Stop	R77.44-1
7	1	Disc	R225.71
8	2	Chevron	*
9	2	Separator, Cup	*
10	1	Chevron	*
11	1	Spreader	R77.43-1
12	1	Washer, Spring	*
13	1	Nut, Retaining	R77.35
14	1	Base	R225.05
15	1	Gasket	*
16	1	Screw, Retaining	R225.302
17	1	Protector, Thread	R158.271
	1	Coupler, Half	AR400
	1	Cap, Dust	Z410-1
	1	Decal	*
		Kit, Cylinder Packing	RC251K
		Kit, Coupler Packing	A604K

Crawler Adjusting Jack and Pump

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