

PARTS LIST SECTION

CARCO MODEL J-120-PS, PSM AND PSC WINCH (WITH INTERNAL FILTERS)

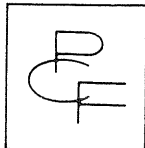
For control stand, cables, hydraulic hoses, pumps and fittings see adapter section of this manual

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Note: Purchased parts, such as bearings and oil seals may be substituted with parts of equal quality on the manufacturer's recommendation, and with the approval of Pacific Car and Foundry Company.

ATTENTION: Be sure to give correct part number, part name and complete serial number of winch when ordering. Also name and model of the tractor on which the winch is mounted.



PACIFIC CAR AND FOUNDRY COMPANY

A DIVISION OF
PACCAR

1400 North Fourth Street Renton, Washington 98055 (206) 235-2799
4401 West 44th Place Chicago, Illinois 60632 (312) 254-6950

2342-F-9-15-77
SUPERSEDES
2342-F-10-1-74

— SEE DETAIL

USE EXISTING
TRACTOR WELD
NUTS & FASTENERS
(3 PLACES)

48700-
PRESS
KIT R

CL TRACTOR

19

4

5

1

5

6

6

FOR IDENTIFICATION AND ASSEMBLY OF
PUMP GROUP PARTS SEE 49056 PUMP
GROUP PAGE IN ADAPTER SECTION OF
SERVICE MANUAL.

17

C

16

C

2.

3.

3/4R
(4 PLACES)

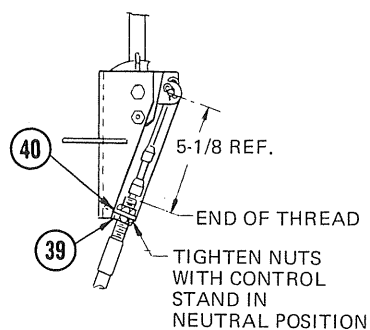
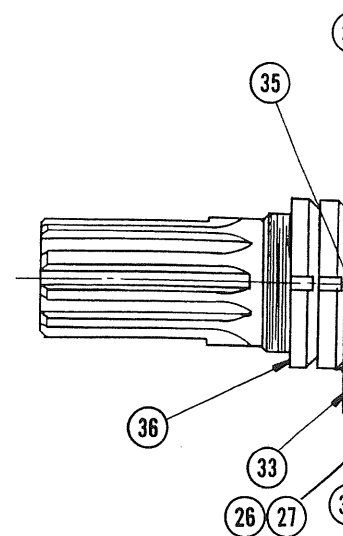
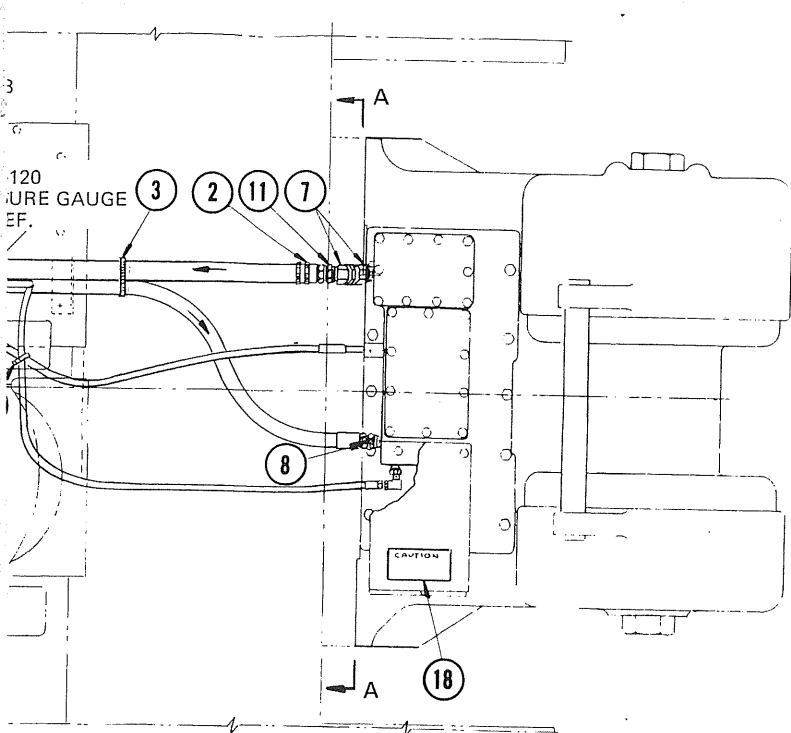
REMOVE S

11

2

12

10



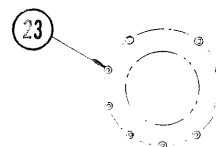
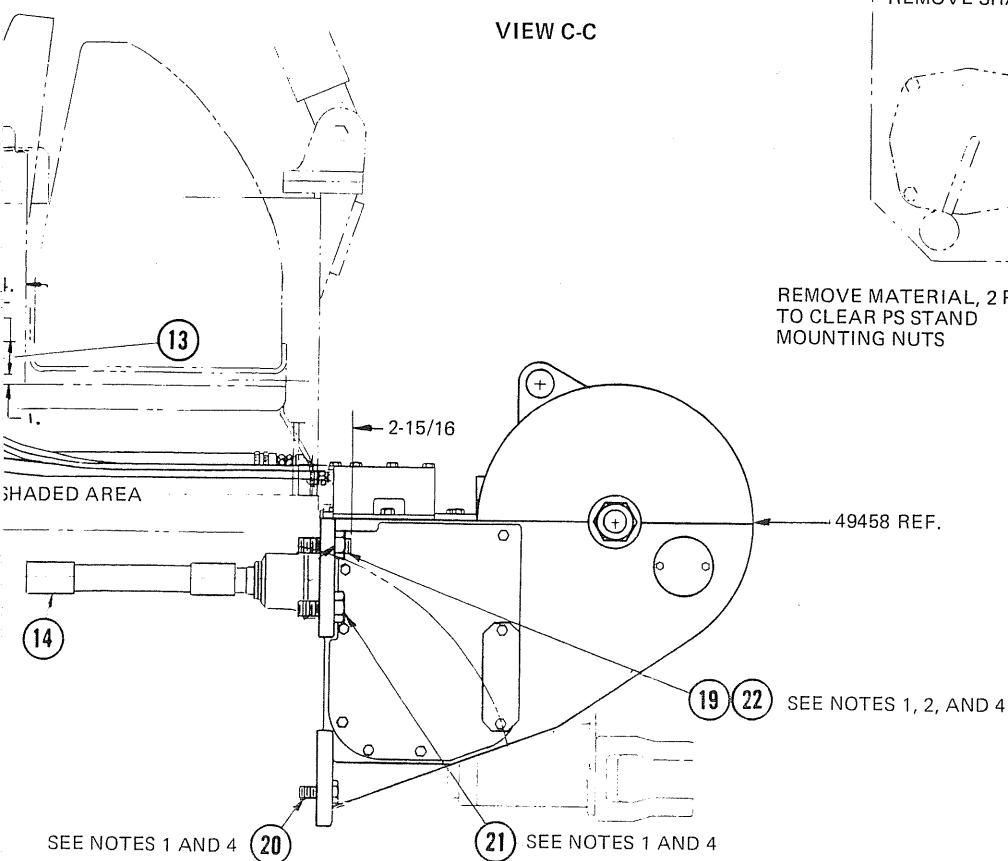
COVER ASSY. CAT 3P4126 REF.

1-1/2 DIA
REMOVE SHADED AREA

REMOVE MATERIAL, 2 PLACES,
TO CLEAR PS STAND
MOUNTING NUTS

DETAIL B

REM
ARE
R (3 PL



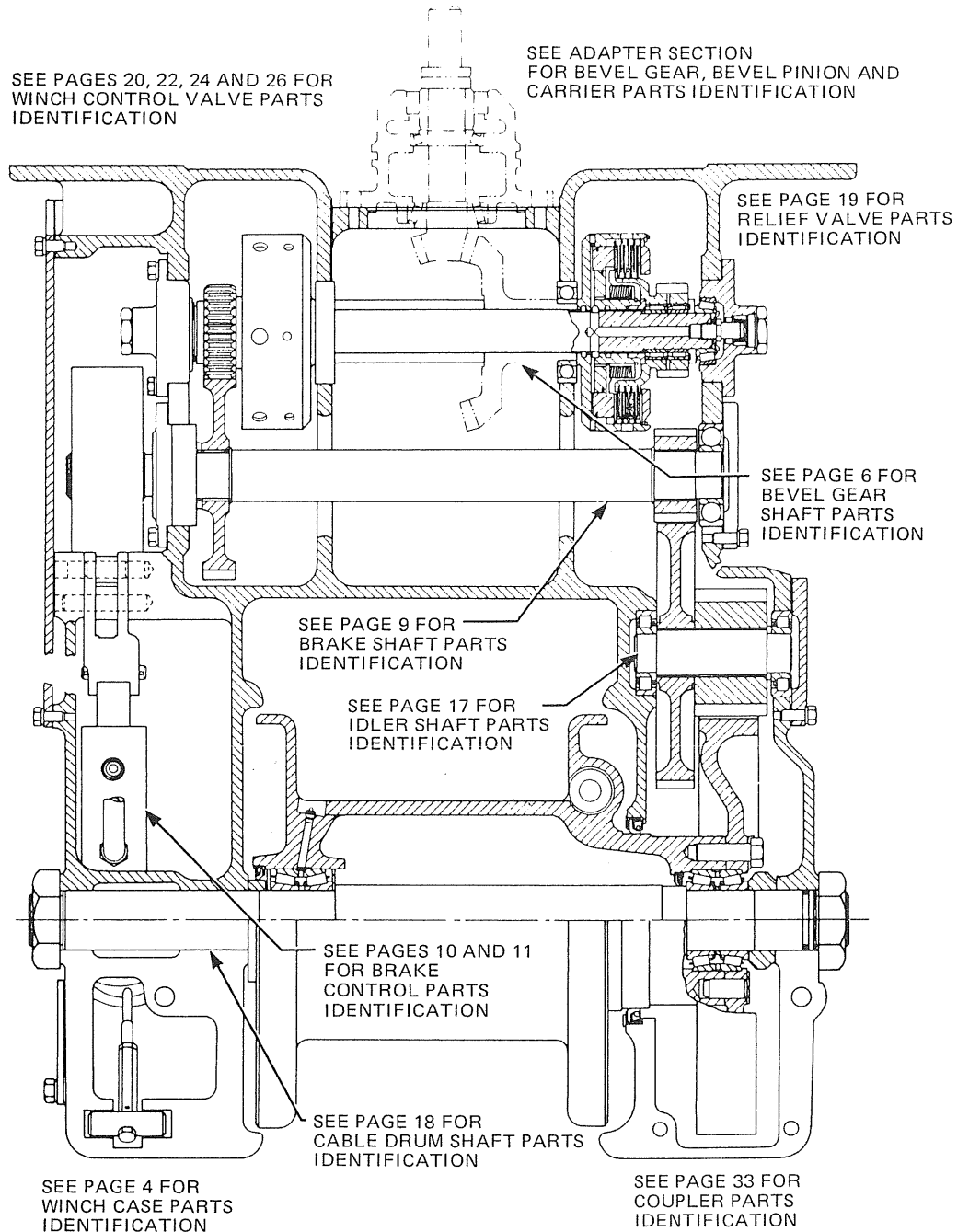
GEAR SET
NO.

41423
41422
* 41421
41420

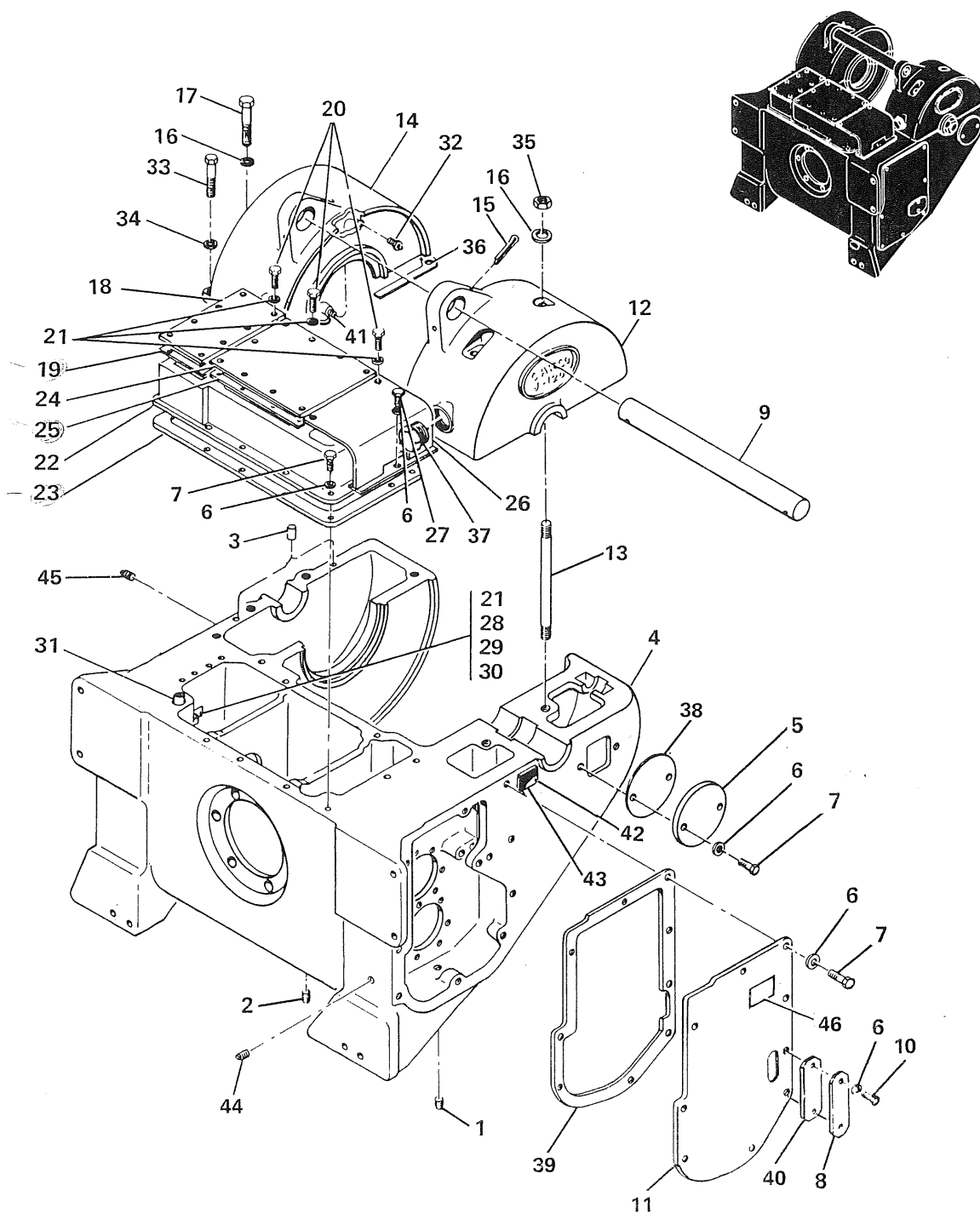
* Standard
Direct Dr

NOTE: T
J-120-PS
optional f
if the gear

PARTS IDENTIFICATION INDEX DRAWING CARCO MODEL J-120-PS, PSM & PSC WINCH



CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 4
WINCH CASE



WINCH CASE

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	16169-8	Plug, 1/2 NPT Sq. Hd.	1
2	16168-20	Plug, 1-1/4 NPTF Mag. Sq. Hd.	1
3	16290-2016	Dowel Pin, 5/8 x 1	2
* 4	49365	Case Complete (includes items 11 and 12)	1
5	42048	Cover	1
6	16064-10	Washer, 5/8	24
7	16047-1010	Cap Screw, 5/8 UNC x 1-1/4 H.H.	21
8	44817	Cover	1
9	49043-3	Cable Guard (includes item 15)	1
10	16047-1012	Cap Screw, 5/8 UNC x 1-1/2 H.H.	2
***** 11	See Below	Brake Cover (see serial number below)	1
* 12	40109	Brake Side Cover	1
13	45050-2059	Stud	2
* 14	40108	Cover	1
15	16288-1272	Cotter Pin, 3/8 x 4-1/2	1
16	16064-20	Washer, 1-1/4	4
17	16047-2028	Cap Screw, 1-1/4 UNC x 3-1/2 H.H.	2
18	49337	Cover	1
19	49338	Gasket	1
20	16047-607	Cap Screw, 3/8 UNC x 7/8 H.H.	22
21	16064-6	Washer, 3/8	24
22	Ref. Only	Housing (see pages 16, 18, 20 and 22)	1
23	49339	Gasket	1
24	49335	Cover	1
25	49336	Gasket	1
26	49345-80	Shroud	1
27	16047-1008	Cap Screw, 5/8 UNC x 1 H.H.	1
28	16012-19	Clip, KICKHAEFER CC-2213	1
29	16047-610	Cap Screw, 3/8 UNC x 1-1/4 H.H.	1
30	16033-6	Nut, 3/8 UNC Hex	1
31	49342-120	Suction Tube	1
32	16249-1	Relief Plug, ALEMITE 317400	1
33	16047-1424	Cap Screw, 7/8 UNC x 3 H.H.	4
34	16064-14	Washer, 7/8	4
35	16033-20	Nut, 1-1/4 UNC Hex	2
** 36	40170	Gasket (see note below)	2
37	16220-38	Plug, WHITE 1604-136-Y	1
38	44833	Gasket	1
✓ 39	45914-4	Gasket (length 77")	1
40	44813	Gasket	1
41	16150-2	Elbow, 1/8 NPT 90° Street	1
42	16055-5	Drive Screw, #10 x 3/8 Type U	4
*** 43	See Below	Name Plate	1
44	16167-8	Plug, 1/2 NPT Hex Soc.	1
45	16169-20	Plug, 1-1/4 NPT Sq. Hd.	1
**** 46	See Below	Instruction Plate	1
47	16453-5	Sealant, DOW-CORNING Silastic RTV 732, 5oz Tube	1

* Items 4, 12 and 14 cannot be ordered separately.

** For aluminum cover gasket order 48922-1.

J120PS Winch S/N 2781 and up do not use a gasket.

Use Silastic Sealer No. 732 RTV, item 47 or equivalent to seal cover to case.

*** { 49329 — Name Plate, PS Models.

{ 45816 — Name Plate, PSM & PSC Models.

**** { 49044 — Instruction Plate, PS Winches

{ 48684 — Instruction Plate, PSM, PSC Winches

***** { Winch serial number 2639 & below, except 2656 use 41355 Brake Cover

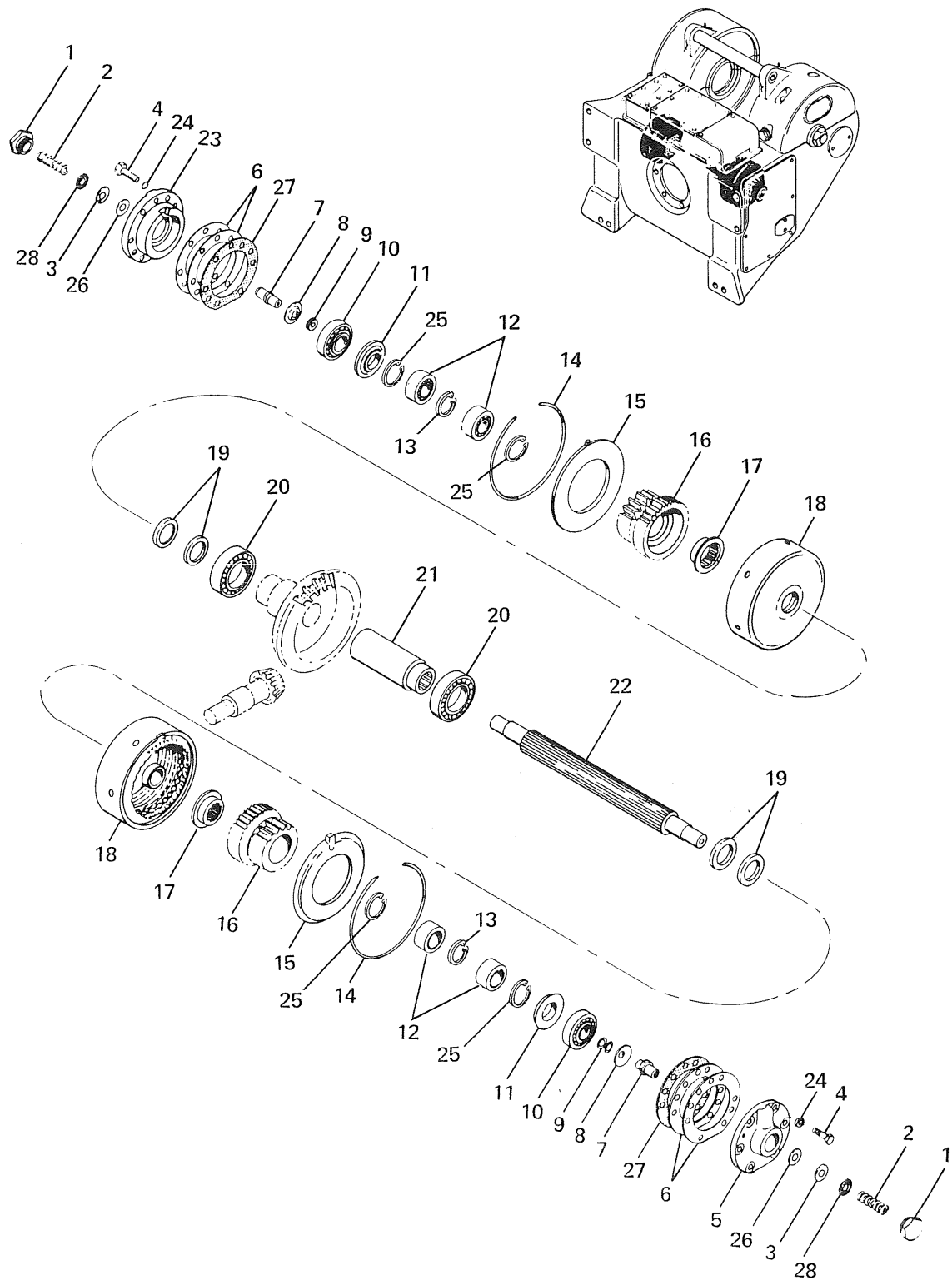
{ Winch serial number 2640 and up, except 2656 use 50654 Brake Cover

2344-F-9-15-77

SUPERSEDES

2344-F-3-15-75

CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 6
BEVEL GEAR SHAFT

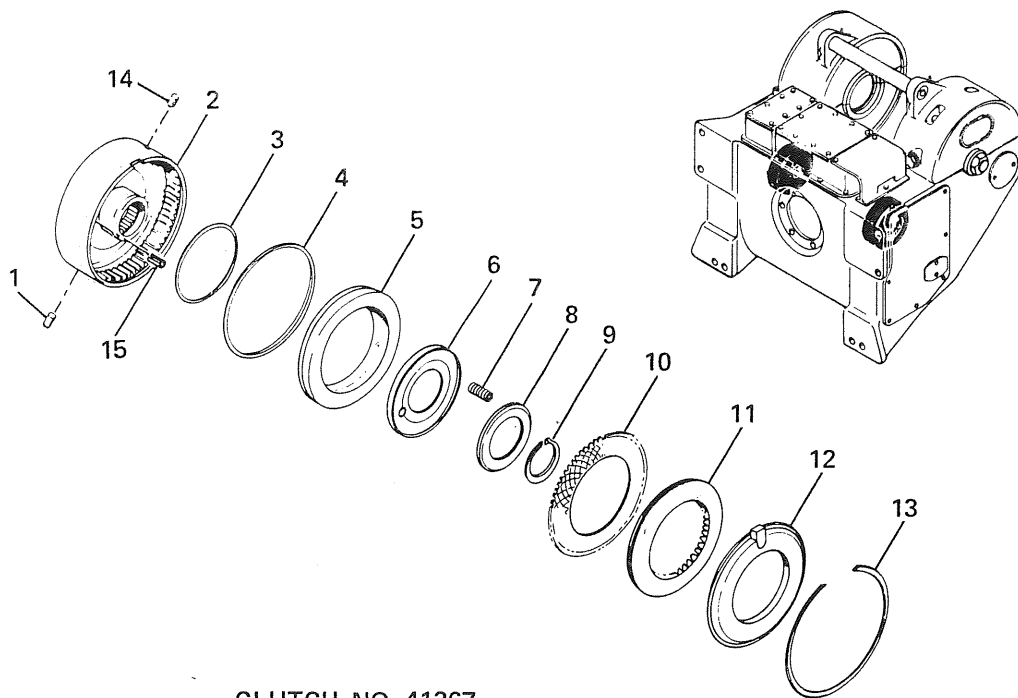


BEVEL GEAR SHAFT

CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 7
BEVEL GEAR SHAFT

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	16166-20	Plug, PARKER 05P0-20	2
2	44753	Spring	2
3	44949	Seal (includes item 28)	2
4	16047-1014	Cap Screw, 5/8 UNC x 1-3/4 H.H.	12
5	41847	Retainer,	1
6	40149	Shim Set	2
7	41742	Stub Shaft	2
8	44105	Clamp Ring	2
9	44336	Shim Set	2
10	15150	Brg. Cup	2
	15151	Brg. Cone	2
11	44104	Spacer	2
12	15255	Brg. Set (Matched)	2
13	16314-315	Retng. Ring, TRUARC N5000-315	2
14	49378	Retng. Ring	2
15	44083	Retng. Ring	2
16	48841	Pinion	2
17	44103	Spacer	2
18	41367	Clutch (See Figure 3) (includes items 14 and 15)	2
19	40116	Seal	4
20	15044	Ball Brg.	2
21	40186	Spacer	1
22	40187	Shaft	1
23	41848	Retainer,	1
24	16064-10	Washer, 5/8	12
25	16314-350	Retng. Ring, TRUARC N5000-350	4
26	44940	Washer	2
27	45029	Gasket	2
28	16262-121	O-Ring, NAT'L. 610067	2

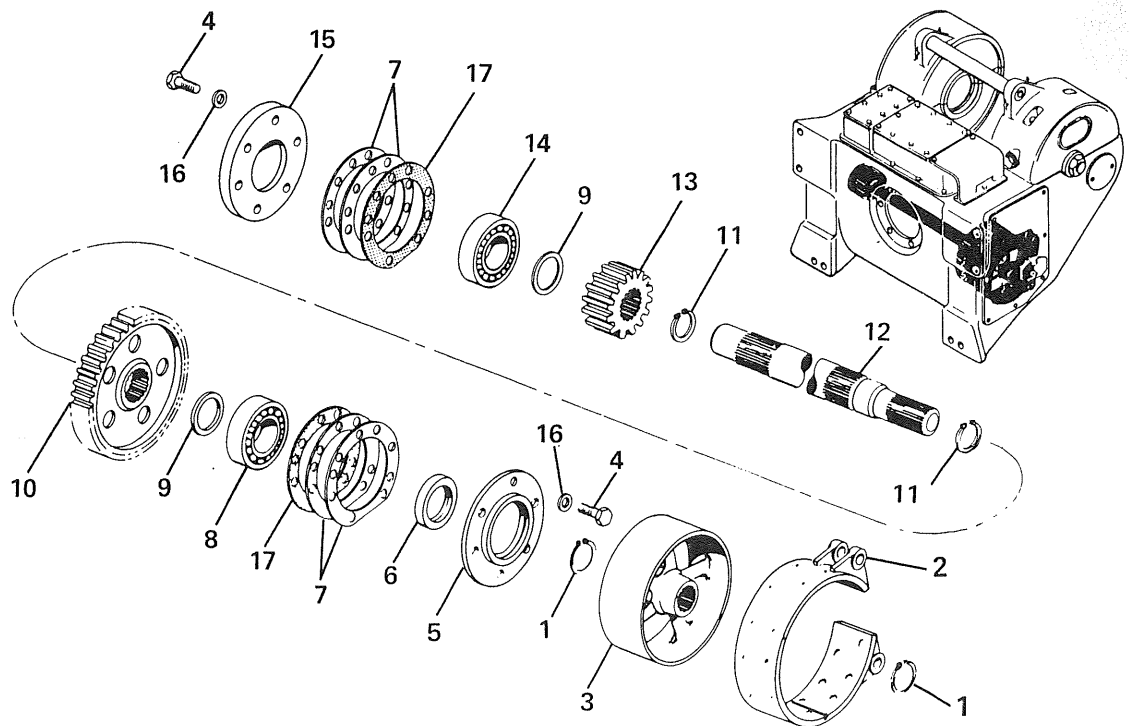
CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 8
CLUTCH



CLUTCH NO. 41367

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	16290-1208	Dowel Pin, 3/8 x 1/2	1
2	41365	Housing (includes items 1 and 14)	1
3	46246	Seal	1
4	46247	Seal	1
5	41366	Piston	1
6	40163	Ring	1
7	40128	Spring	17
8	40136	Retainer	1
9	16313-400	Retng. Ring, TRUARC 5100-400	1
10	46129	Friction Disc	5
11	46130	Steel Disc	4
12	44083	Retng. Ring	1
13	49378	Retng. Ring	1
14	45415-2	Orifice Dowel	1
15	16295-1428	Pin, SPIROL 437-1750-H-B-K	1

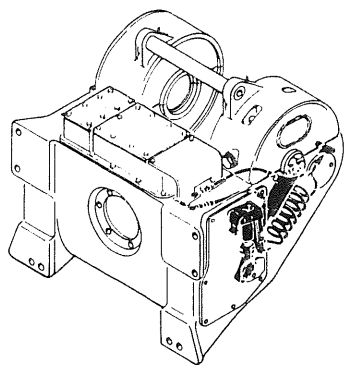
CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 9
BRAKE SHAFT ASSEMBLY



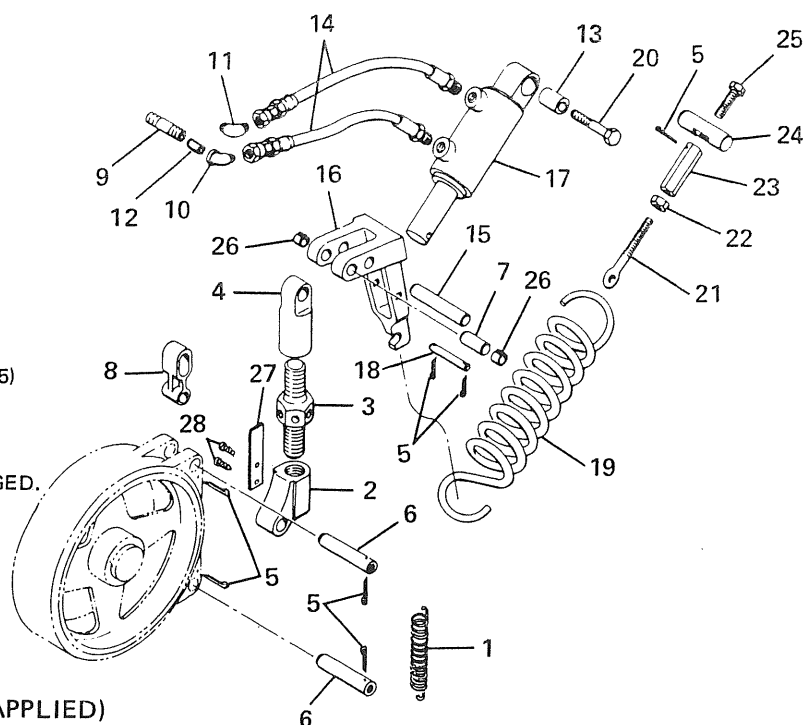
BRAKE SHAFT

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	16313-262	Retng. Ring, TRUARC 5100-262	2
* 2	46606-33954	Brake Band Assembly (includes following)	1
	46607	Brake Block	3
	16323-808 > 69373	Rivet, 1/4 x 1/2 Tub. Brass	38
3	41358	Brake Drum	1
4	16047-1014	Cap Screw, 5/8 UNC x 1-3/4 H.H.	12
5	40138	Carrier	1
6	16342-4	Oil Seal, NAT'L. 415004	1
7	40149	Shim Set	2
8	15145	Ball Brg.	1
9	40132	Spacer	2
10	41363	Gear	1
11	16313-300	Retng. Ring, TRUARC 5100 x 300	2
12	41352	Shaft	1
13	41353	Pinion	1
14	15079 15280	Ball Brg.	1
15	40150	Cover	1
16	16064-10	Washer, 5/8	12
17	45029	Gasket	2

CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 10
BRAKE CONTROL (SPRING APPLIED)

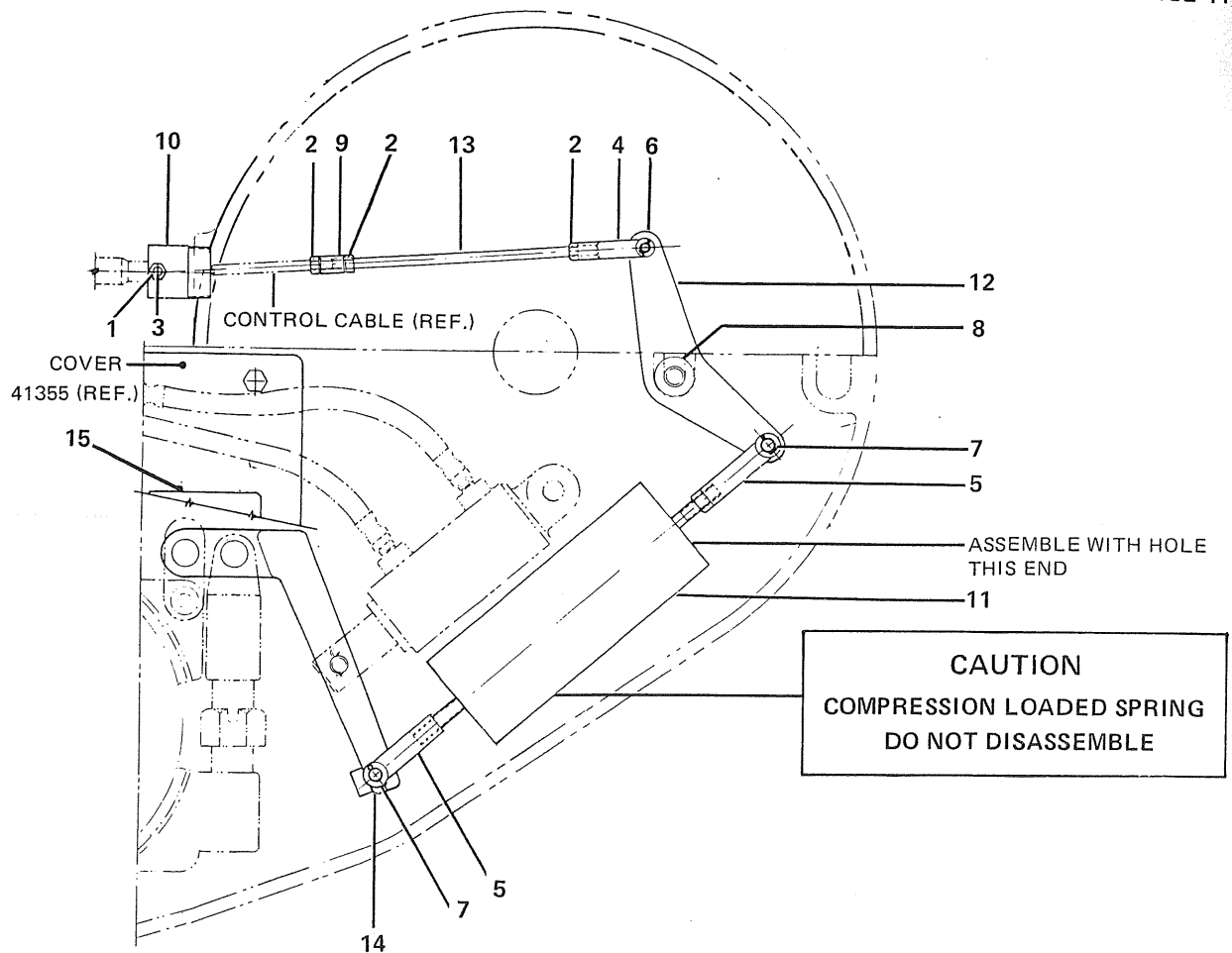


*DIAGRAM SHOWS PINS (ITEMS 7 AND 15)
IN LOCATIONS FOR OVERWIND CABLE
DRUM OPERATIONS.
FOR UNDERWIND OPERATION THE
PIN LOCATIONS MUST BE INTERCHANGED.



BRAKE CONTROL (SPRING APPLIED)

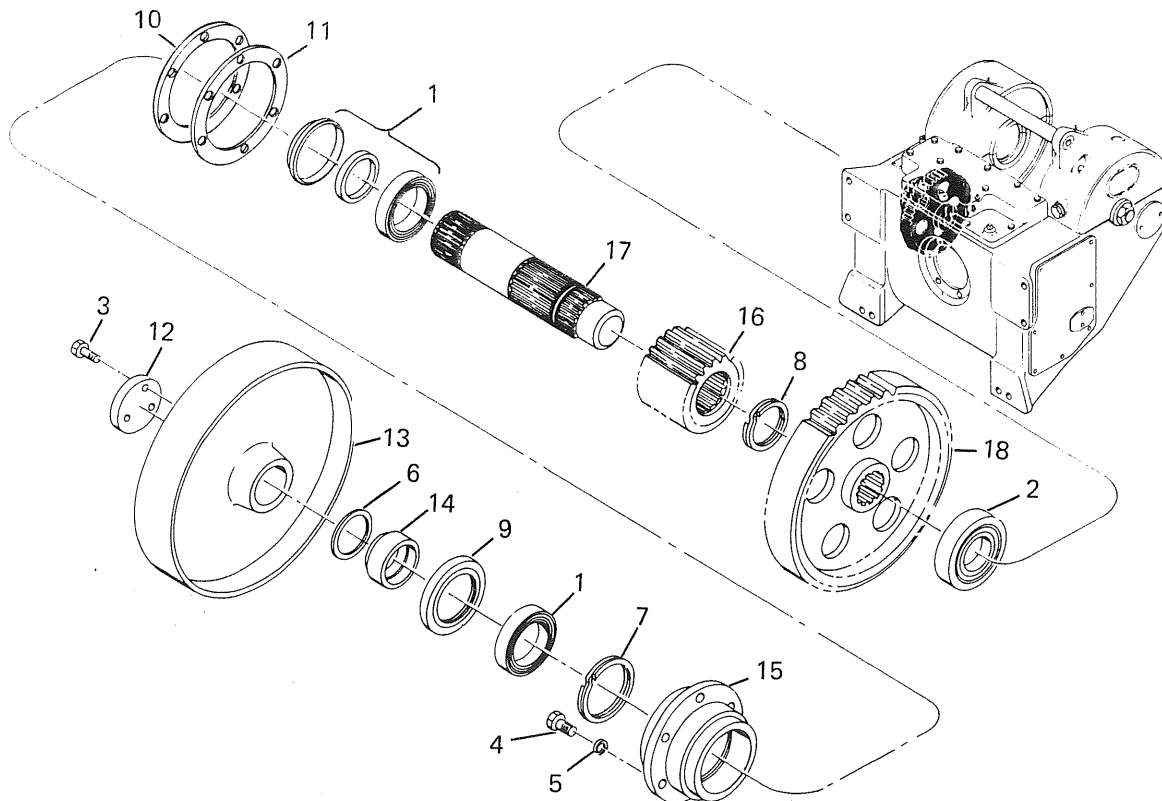
REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	44107	Spring	1
2	40159-1	Rod Nut	1
3	40157	Rod	1
4	40156-1	Rod Nut	1
5	16288-420	Cotter Pin, 1/8 x 1-1/4	7
* 6	44114	Pin	2
7	32920	Pin	1
8	40119	Link	1
9	45805	Nipple	1
10	16142-46	Elbow, WTHRHD. C5455 x 6	1
11	16145-66	Elbow, WTHRHD. C5405 x 6 x 6	1
12	45806	Orifice	1
13	46077-2	Sleeve	1
* 14	44118-17	Hose	2
15	32919	Pin	1
16	41361	Arm	1
17	45861	Cylinder (See Figure 6)	1
18	40134	Pin	1
19	40155	Spring	1
20	16047-1236	Cap Screw, 3/4 UNC x 5 H.H.	1
21	44684	Eye Bolt	1
22	16043-8	Nut, 1/2 UNC Hex Jam	1
23	40174	Nut	1
24	40175	Pin	1
25	44752	Screw	1
26	44687-1	Spacer	2
27	44806	Spring	1
28	16055-5	Drive Screw, #10 x 3/8 Type U	2



BRAKE CONTROL (INCHING BRAKE)

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	16043-6	Nut, 3/8 UNC Hex Jam	1
2	16044-6	Nut, 3/8 UNF Hex Jam	3
3	16056-620	Set Screw, 3/8 UNC x 1-1/4 Hex Soc. Cp. Pt.	1
4	16245-6	Yoke, CLEVELAND 2708-4A	1
5	16245-8	Yoke, CLEVELAND 2708-6A	2
6	16246-6	Yoke Pin Assy., CLEVELAND 2708-1/2-4A	1
7	16246-8	Yoke Pin Assy., CLEVELAND 2708-1/2-6A	2
8	16295-2456	Spring Pin, C.E.M. CO. 750-3500-H-B-K	1
9	44013	Coupling	1
10	45351-3	Anchor	1
11	49420-20	Spring Assy.	1
12	49423	Lever	1
13	49424	Rod	1
14	49426-20	Arm	1
15	48684	Instruction Plate	1

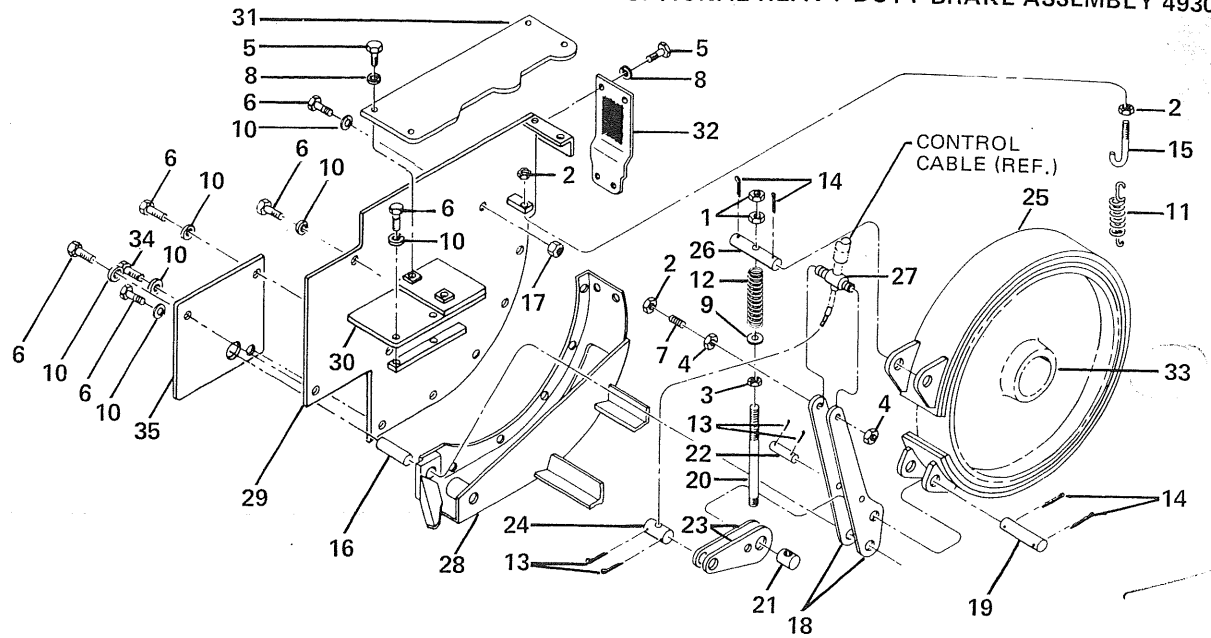
CARCO MODEL J-120-PSC WINCH
PARTS LIST SECTION—PAGE 12
49315 IDLER SHAFT ASSEMBLY



REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	15295	Bearing Assy.	1
2	15139	Bearing	1
3	16041-1010	Cap Screw, 5/8 UNC x 1-1/4 H.H.	3
4	16047-1014	Cap Screw, 5/8 UNC x 1-3/4 H.H.	6
5	16064-10	Washer, 5/8	6
6	16262-237	O-Ring, NAT'L. 623015	1
7	16305-512	Retng. Ring, SPIROLOX RS-212	1
8	16306-325	Retng. Ring, SPIROLOX RST-118	1
9	16342-17	Seal, NAT'L. 415192	1
10	40147	Shim Set	1
11	46232	Gasket	1
12	49013	Retainer	1
13	49014	Drum	1
14	49015	Sleeve	1
15	49017	Carrier	1
16	49018	Pinion	1
17	49019	Shaft	1
18	44882	Gear	1

NOTE: To be used only with brake assy. 49300.

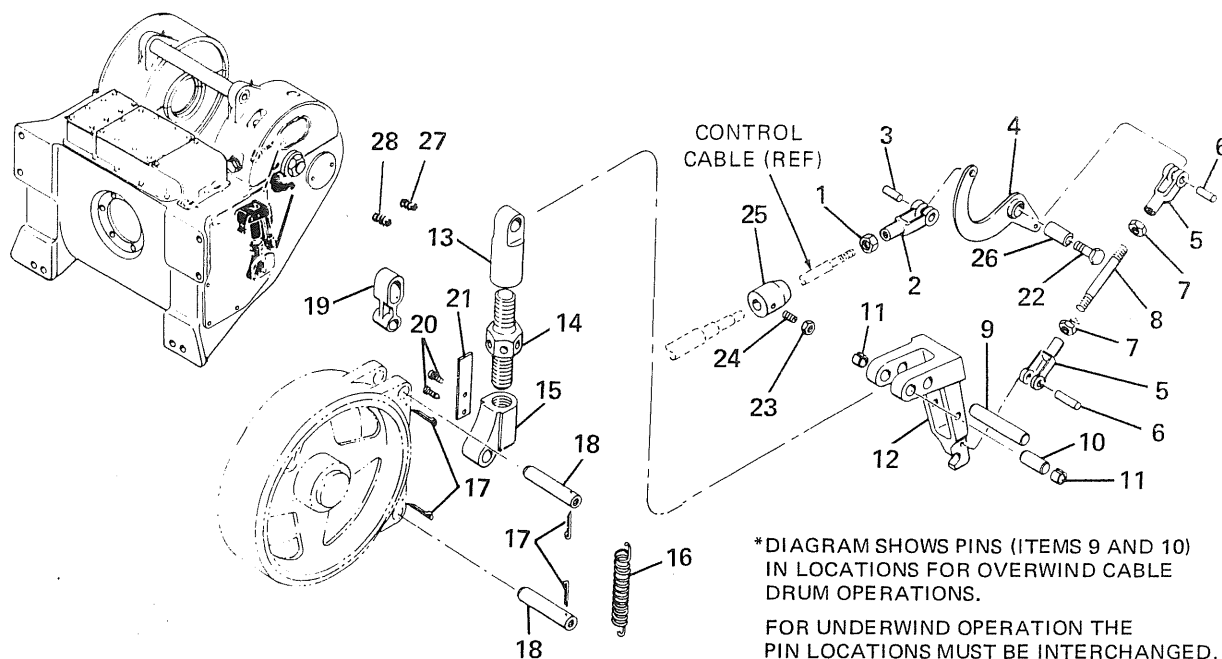
CARCO MODEL J-120-PSC WINCH
PARTS LIST SECTION—PAGE 13
OPTIONAL HEAVY DUTY BRAKE ASSEMBLY 49300



REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	16031-8	Nut, 1/2 UNC Hex	2
2	16043-6	Jam Nut, 3/8 UNC Hex	3
3	16043-8	Jam Nut, 1/2 UNC Hex	1
4	16043-14	Jam Nut, 7/8 UNC Hex	2
5	16047-810	Cap Screw, 1/2 UNC x 1-1/4 H.H.	7
6	16047-1010	Cap Screw, 5/8 UNC x 1-1/4 H.H.	11
7	16056-628	Set Screw, 3/8 UNC x 1-3/4 Hex Soc. Hd.	1
8	16063-8	Washer, 1/2	7
9	16064-8	Washer, 1/2	1
10	16064-10	Washer, 5/8	12
11	16240-7	Spring	1
12	16240-9	Spring	1
13	16288-416	Cotter Pin, 1/8 x 1	4
14	16288-628	Cotter Pin, 3/16 x 1-3/4	4
15	39927-1	Bolt	1
16	49011	Pin	1
17	49016-120	Nut	1
18	49021	Link	2
19	49022	Pin	1
20	49023	Rod	1
21	49024	Pin	1
22	49025	Pin	1
23	49026	Lever	2
24	49027	Pin	1
25	49028	Brake Band Assy.	1
26	49029	Pin	1
27	49030	Pin	1
28	49050	Shroud	1
29	49301	Brake Guard Assy.	1
30	49302	Bracket	1
31	49303	Cover	1
32	49304	Guard	1
33	49315	Idler Shaft Assy.	1
34	16047-1014	Cap Screw, 5/8 UNC x 1-3/4 H.H.	1
35	51610	Cover	1

NOTE: To be used only with idler shaft assy. 49315.

CARCO MODEL J-120-PSM & PSC WINCH
PARTS LIST SECTION—PAGE 14
BRAKE CONTROL (MANUAL)

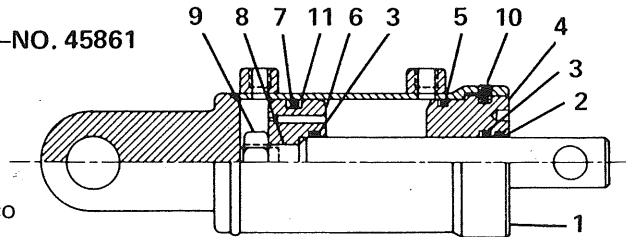


BRAKE CONTROL (MANUAL)

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	16044-6	Nut, 3/8 UNF Hex Jam	1
2	16245-6	Yoke, Cleve. 2708-4A	1
3	16246-6	Pin, Cleve. 2708-1/2-4A	1
4	44990	Lever	1
5	16245-8	Yoke, Cleve. 2708-6A	2
6	16246-8	Pin, Cleve. 2708-1/2-6A	2
7	16044-8	Nut, 1/2 UNF Hex Jam	2
8	37629-5	Stud	1
* 9	32919	Pin	1
* 10	32920	Pin	1
11	44687-1	Spacer	2
12	41361	Arm	1
13	40156-1	Rod Nut	1
14	40157	Rod	1
15	40159-1	Rod Nut	1
16	44107	Spring	1
17	16288-420	Cotter Pin, 1/8 x 1-1/4	4
18	44114	Pin	2
19	40119	Brake Link	1
20	16055-5	Drive Screw, #10 x 3/8 Type U	2
21	44806	Spring	1
22	16047-1236	Cap Screw, 3/4 UNC x 5 H.H.	1
23	16043-6	Nut, 3/8 UNC Hex Jam	1
24	16056-620	Set Screw, 3/8 UNC x 1-1/4 Hex Soc.	1
25	45351-3	Anchor	1
26	46077-2	Sleeve	1
27	16169-6	Plug, 3/8 NPT Sq. Hd.	1
28	16169-4	Plug, 1/4 NPT Sq. Hd.	1

CARCO MODEL J-120-PS, PSM AND PSC WINCH
PARTS LIST SECTION—PAGE 15
BRAKE CYLINDER

BRAKE CYLINDER—NO. 45861

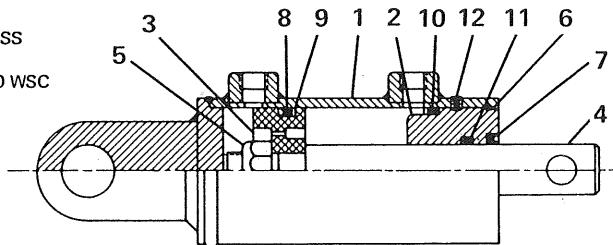


MANUFACTURER: REMCO
CARCO PART NO. 46473
REMCO PART NO. C-2-552

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
** 1		Tube	1
* 2	16281-5	Wiper, REMCO 472309	1
* 3	16262-214	O-Ring, NAT'L. 622719	2
** 4		Head	1
* 5	16262-228	O-Ring, NAT'L. 623006	1
** 6		Piston	1
* 7	16334-1	Seal, C/R 710087	1
** 8		Rod	1
9	16281-9	Nut, REMCO 410504	1
10	16054-404	Set Screw, 1/4 UNC x 1/4 Hex. Soc.	1
* 11	16301-1	Back-up Washer, C/R 451069	1
* *	46241	Repair Kit (includes items 2,3,5,7 and 11)	1

**Not a spares item, order 45861 cylinder assy.

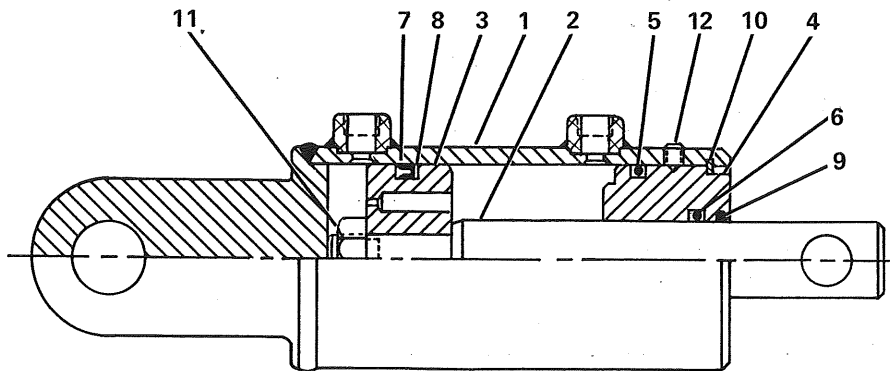
MANUFACTURER: CROSS
CARCO PART NO. 46474
CROSS PART NO. 225020 WSC



REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
** 1		Tube	1
2	16280-2	Head, CROSS 1C3243	1
3	16280-3	Piston, CROSS 1C3279	1
4	16280-4	Rod, CROSS 1C3282	1
5	16280-5	Nut, CROSS 1A0146	1
6	16280-6	Retng. Ring, CROSS 1A0280	1
* 7	16280-7	Wiper, CROSS 1A0014	1
* 8	16334-1	Seal, C/R 710087	1
* 9	16301-1	Back-up Washer, C/R 451069	1
* 10	16262-228	O-Ring, NAT'L. 623006	1
* 11	16262-214	O-Ring, NAT'L. 622719	1
12	16054-404	Set Screw, 1/4 UNC x 1/4 Hex. Soc.	1
* *	46241	Repair Kit (includes items 7,8,9,10 and 11)	1

**Not a spares item, order 45861 cylinder assy.

CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 16
BRAKE CYLINDER



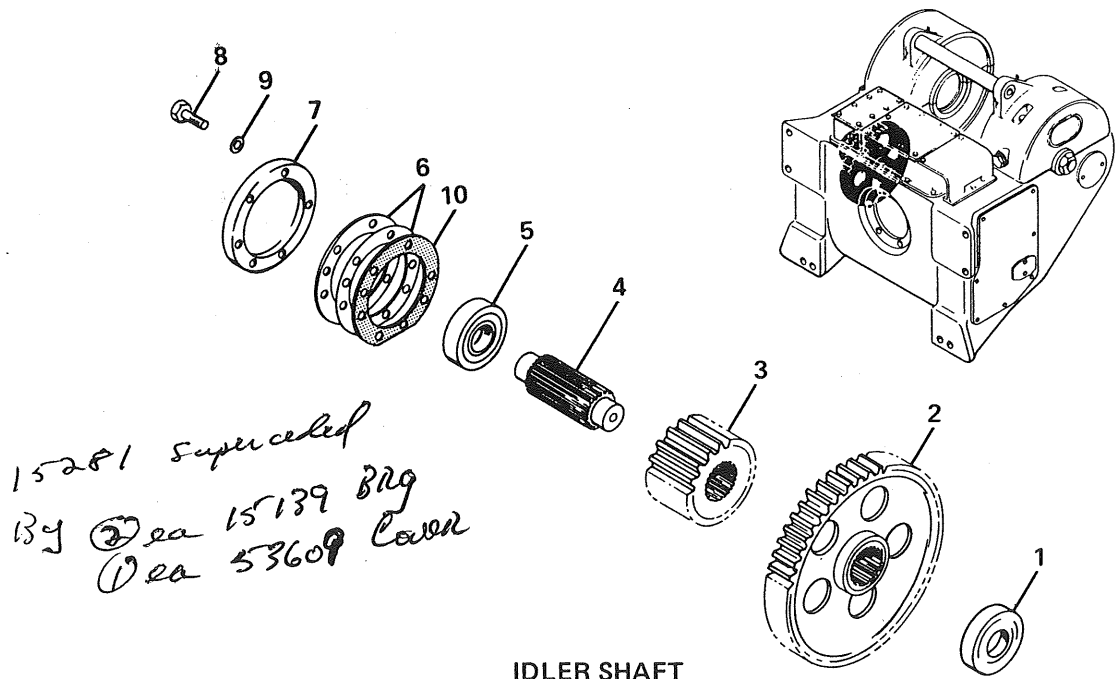
MANUFACTURER — REMCO
CARCO PART NO. — 49694
REMCO PART NO. — 021370

BRAKE CYLINDER — NO. 45861

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
** 1		Tube	1
2	16281-17	Rod, REMCO B-231428	1
3	16281-18	Piston, REMCO B-221364	1
4	16281-19	Head, REMCO B-261288	1
* 5	16262-228	O-Ring, NAT'L. 623006	1
* 6	16262-214	O-Ring, NAT'L. 622719	1
* 7	16334-1	Seal, C/R 710087	1
* 8	16301-1	Back-Up Washer, C/R 451069	1
* 9	16420-9	Wiper, REMCO 904009	1
10	16307-250	Retng. Ring, SPIROLOX RRT-250	1
11	16281-20	Nut, REMCO 812063	1
12	16056-404	Set Screw, 1/4 UNC x 1/4 Hex Soc. Cup Pt.	1
* *	46241	Repair Kit (Includes Items 5, 6, 7, 8 and 9)	1

** Not a spares item, order 45861 cylinder assy.

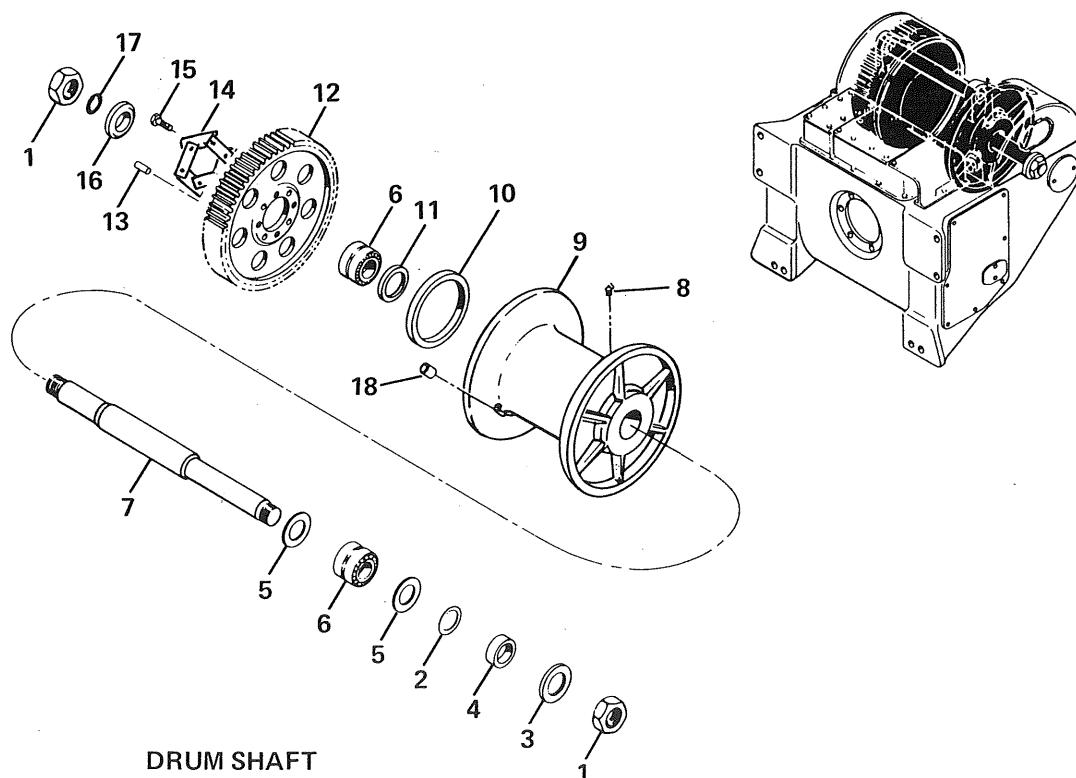
CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 17
IDLER SHAFT



IDLER SHAFT

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	15280	Ball Brg.	1
2	44882	Gear	1
3	40947	Pinion	1
4	40167	Shaft	1
5	15281 ★	Ball Brg.	1
6	40147	Shim Set	1
7	40151	Cover	1
8	16047-1014	Cap Screw, 5/8 UNC x 1-3/4 H.H.	6
9	16064-10	Washer, 5/8	6
10	46232	Gasket	1

CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 18
DRUM SHAFT



DRUM SHAFT

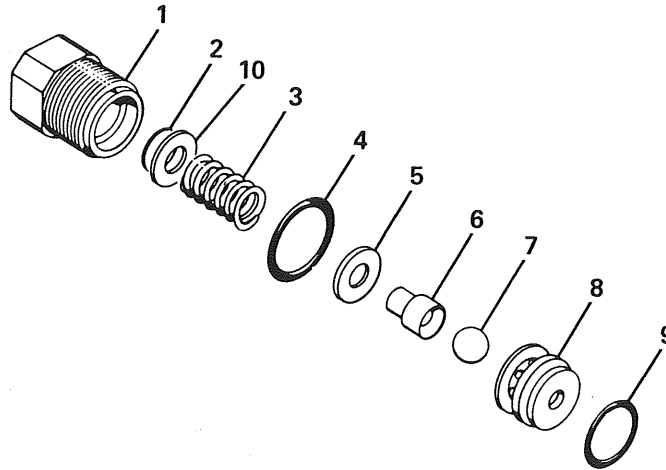
REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	16044-44	Nut, 2-3/4 UN Hex Jam	2
2	44880	Shim	2
3	16343-33	Oil Seal, NAT'L. 455072	2
4	40143-3	Spacer	1
5	40139	Seal	1
6	15237	Brg. Cone	2
6	15238	Brg. Cup	4
*** 7	40145	Shaft	2
8	16222-2	Fitting, ALEMITE 1610B	1
* 9	40144	Standard Drum	1
	44277	High Capacity Drum	1
10	16342-12	Oil Seal, NAT'L. 415482	1
11	16343-26	Oil Seal, NAT'L. 455040	1
12	40137	Gear	1
** 13	45081-6	Dowel Pin	6
14	44250	Lock	6
15	16048-1620	Cap Screw, 1 UNF x 2-1/2 H.H.	6
16	44155-3	Spacer	1
17	16262-340	O-Ring, NAT'L. 622743	1
18	25459-3	Ferrule For 1-1/4 Wire Rope	1
	25459-2	Ferrule For 1 or 1-1/8 wire rope	1

*Optional High Capacity Drum is standard on PSC models.

**When bull gear or cable drum is replaced, dowel holes must be drilled 1-9/64" and reamed 1.1557"/1.577" to accommodate oversize 45081-6 dowels.

***For extended drum shaft order 46927 shaft and 2 each 16041-19 nut, TIMKEN T-AN-19.

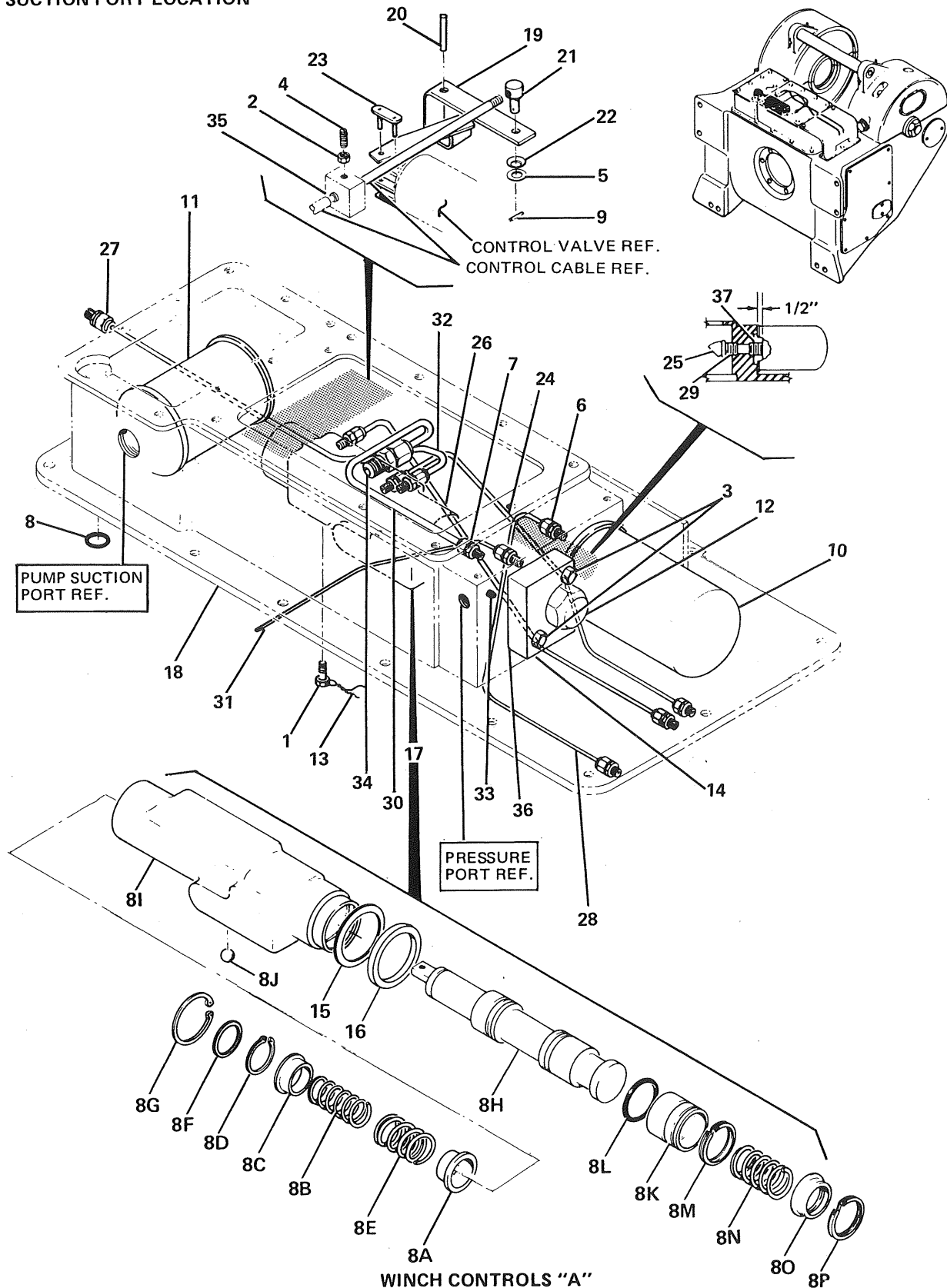
CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 19
RELIEF VALVE



RELIEF VALVE—NO. 44960

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	16271-57	Body, GRESEN 1747	1
2	{ 16271-54 16271-56	Shim, GRESEN 949 Shim, GRESEN 1743	As Req'd
3	16271-19	Spring, GRESEN 953	1
4	16271-58	O-Ring, GRESEN 1615	1
5	16271-59	Spacer, GRESEN 1742	1
6	16271-60	Follower, GRESEN 1744	1
7	16271-21	Ball, GRESEN 014	1
8	16271-64	Seat, GRESEN 3093	1
9	16271-61	O-Ring, GRESEN 1718	1
10	16271-55	Washer, GRESEN 1213	1

CARCO MODEL J-120-PS, PSM & PSC WINCH
 PARTS LIST SECTION—PAGE 20
 WINCH CONTROLS "A"
 STANDARD CONTROL CABLE AND
 SUCTION PORT LOCATION



STANDARD CONTROL CABLE AND
SUCTION PORT LOCATION

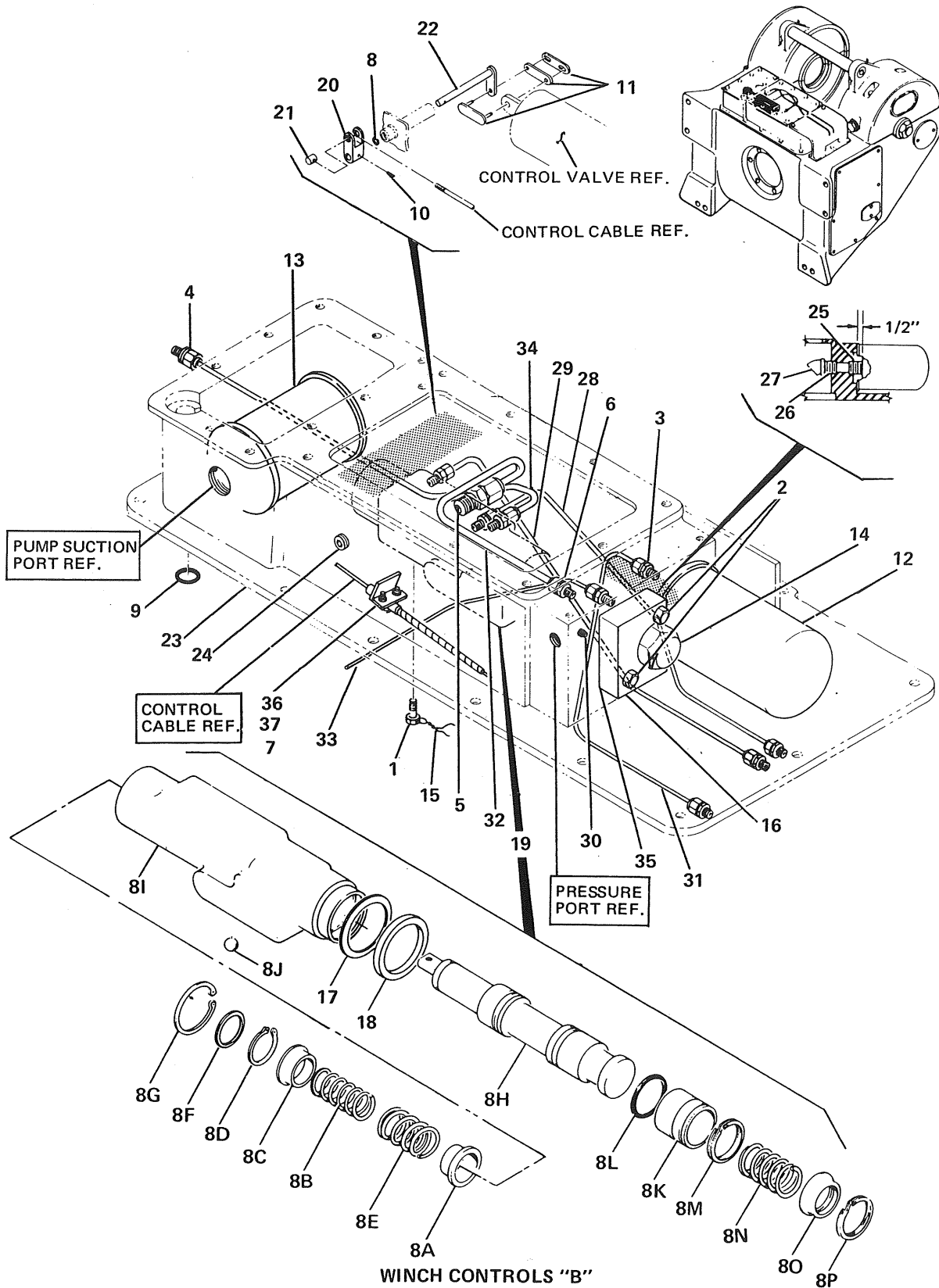
WINCH CONTROLS "A"

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	16024-9	Cap Screw, 1/2 UNF x 1 Hex Dr. Hd.	1
2	16043-6	Nut, 3/8 UNC Hex Jam	1
3	16047-610	Cap Screw, 3/8 UNC x 1-1/4 H.H.	2
4	16056-610	Set Screw, 3/8 UNC x 5/8 Hex Soc. Hd.	1
5	16064-8	Washer, 1/2	1
6	16129-44	Connector, ANCHOR 4M-4JMS	3
7	16129-88	Connector, ANCHOR 8M-8JMS	1
8	16262-220	O-Ring, NAT'L. 622725	1
9	16292-616	Spring Pin, ROLLPIN 3/16 x 1	1
10	16392	Return Filter, BALDWIN BT-364	1
11	16393	Suction Strainer, MARVEL 610-5-M40	1
12	44960	Relief Valve (see Page 19)	1
13	48125-1	Lockwire, 16 Ga. x 12	1
14	49318	Relief Valve Plate	1
15	49323	Seal Washer	1
16	49324	Valve Body Seal	1
17	49325	Control Valve	1
18	49326	Housing	1
19	49330	Control Lever	1
20	49331	Control Lever Pin	1
21	49332	Control Cable Pin	1
22	49333	Disc Spring	As Req'd.
23	16364-2040	Connecting Link, ANSI 2040	1
24	49375	Brake Tube	1
25	49657	Elbow	1
26	49372	Forward Clutch Tube	1
27	16129-66	Connector, ANCHOR 6M-6JMS	6
28	49374	Brake Return Line Tube	1
29	16158-1211	Nipple, 3/4 NPT x 1-3/8	1
30	49353	Valve Supply Tube	1
31	49376	PTO Lube Tube	1
32	49373	Reverse Tube	1
33	16169-4	Plug, 1/4 NPT Sq. Hd.	1
34	16129-68	Connector, ANCHOR 6M-8JMS	1
35	16262-208	O-Ring, PARKER 2-208 N674-70	1
36	49519	Gasket	1
37	50218	Connector	1
8A	44259-1	Stop	1
* 8B	45548	Spring	1
* 8C	45623	Stop	1
8D	16313-75	Retn'g. Ring, TRUARC 5100-75	1
* 8E	45549	Spring	1
* 8F	45622	Washer	1
8G	16314-150	Retn'g. Ring, TRUARC N5000-150	1
** 8H	49322	Spool	1
** 8I	49321	Body	1
8J	16217-8	Ball, 1/2 Steel	4
** 8K	45855	Piston	1
8L	16262-215	O-Ring, NAT'L. 622720	1
8M	16308-131	Retn'g. Ring, SPIROLOX RS-131	1
8N	45857	Spring	1
8O	45856	Stop	1
8P	16305-156 157	Retn'g. Ring, SPIROLOX RR-156 157	1

* Items 8B, 8C, 8E and 8F not serviced separately. Order spring repair kit 45813.

** Items 8H, 8I and 8K are not serviced separately. Order 49325 control valve.

CARCO MODEL J-120-PS, PSM & PSC WINCH
 PARTS LIST SECTION—PAGE 22
 WINCH CONTROLS "B"
 RELOCATED CONTROL CABLE LOCATION
 WITH STANDARD SUCTION PORT



WINCH CONTROLS "B"
 ASSEMBLY NO. 49617-120

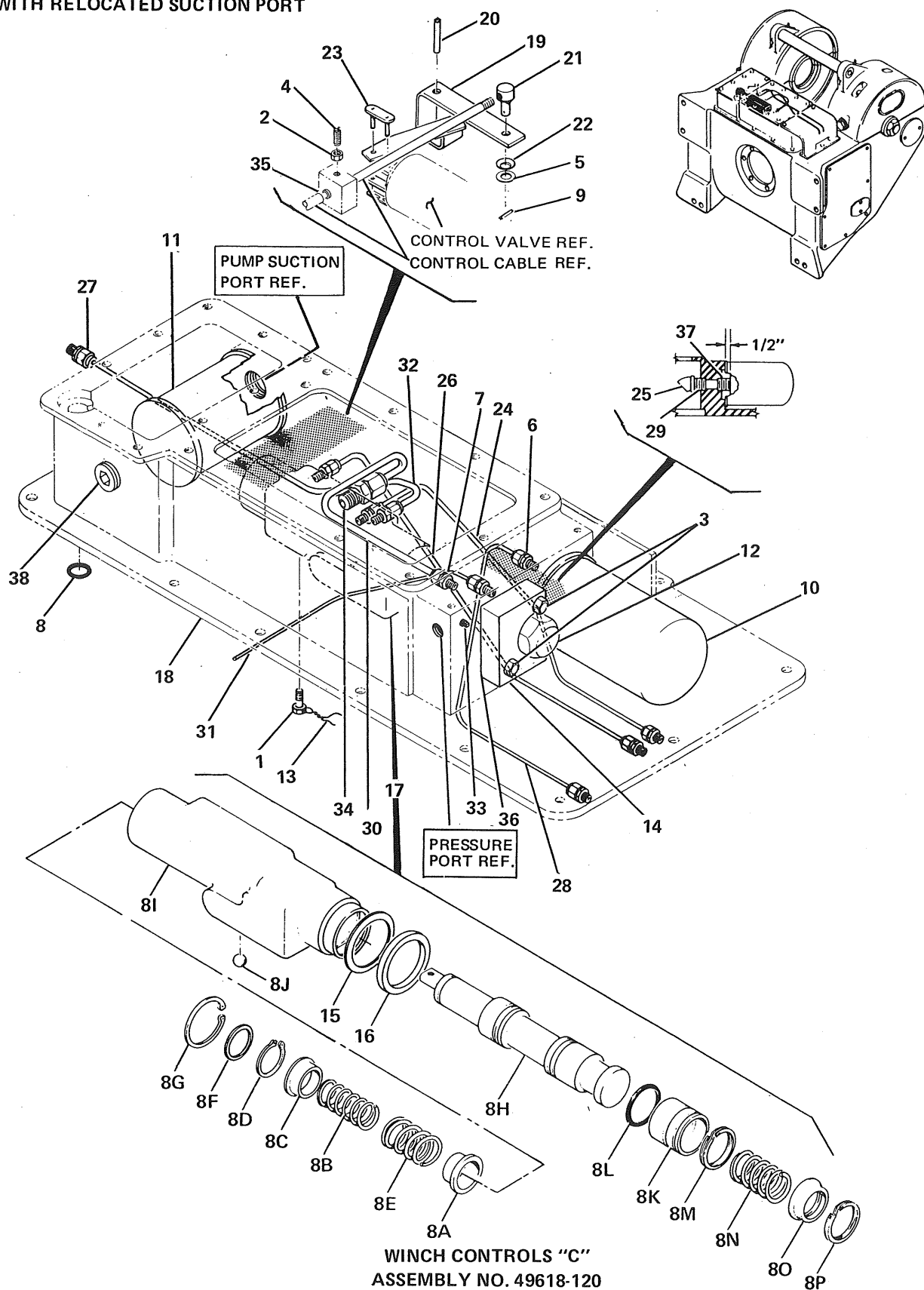
CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 23
WINCH CONTROLS "B"

**RELOCATED CONTROL CABLE LOCATION
WITH STANDARD SUCTION PORT**

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	16024-9	Cap Screw, 1/2 UNF x 1 Hex Dr. Hd.	1
2	16047-610	Cap Screw, 3/8 UNC x 1-1/4 H.H.	2
3	16129-44	Connector, ANCHOR 4M-4JMS	3
4	16129-66	Connector, ANCHOR 6M-6JMS	6
5	16129-68	Connector, ANCHOR 6M-8JMS	1
6	16129-88	Connector, ANCHOR 8M-8JMS	1
7	16033-6	Nut, 3/8 UNC Hex	2
8	16262-014	O-Ring, NAT'L. 610014	1
9	16262-220	O-Ring, NAT'L. 622765	1
10	16292-616	Spring Pin, ROLLPIN 3/16 x 1	1
11	16364-2040	Connecting Link, ANSI 2040	1
12	16392	Return Filter, BALDWIN BT-364	1
13	16393	Suction Strainer, MARVEL 610-5-M-40	1
14	44960	Relief Valve (see Page 19)	1
15	48125-1	Lock Wire, 16 Ga. x 12	1
16	49318	Relief Valve Plate	1
17	49323	Seal Washer	1
18	49324	Valve Body Seal	1
19	49325	Control Valve	1
20	49568	Lever	1
21	49569	Pin	1
22	49570	Control Lever	1
23	49731-120	Housing	1
24	16167-8	Plug, 1/2 NPTF Hex Soc. Hd.	1
25	50218	Connector	1
26	16158-1211	Nipple, 3/4 NPT x 1-3/8	1
27	49657	Elbow	1
28	49375	Brake Tube	1
29	49372	Forward Tube	1
30	16169-4	Plug, 1/4 NPT Sq. Hd.	1
31	49374	Brake Return Line Tube	1
32	49353	Valve Supply Tube	1
33	49376	PTO Lube Tube	1
34	49373	Reverse Tube	1
35	49519	Gasket	1
36	16398-4	U-Bolt, CABLECRAFT 161-014-4	1
37	16067-6	Lock Washer, 3/8	2
8A	44259-1	Stop	1
* 8B	45548	Spring	1
* 8C	45623	Stop	1
8D	16313-75	Retn'g. Ring, TRUARC 5100-75	1
* 8E	45549	Spring	1
* 8F	45622	Washer	1
8G	16314-150	Retn'g. Ring, TRUARC N5000-150	1
** 8H	49322	Spool	1
** 8I	49321	Body	1
8J	16217-8	Ball, 1/2 Steel	4
** 8K	45855	Piston	1
8L	16262-215	O-Ring, NAT'L. 622720	1
8M	16308-131	Retn'g. Ring, SPIROLOX RS-131	1
8N	45857	Spring	1
8O	45856	Stop	1
8P	16305-156	Retn'g. Ring, SPIROLOX RR-156	1

* Items 8B, 8C, 8E and 8F not serviced separately. Order spring repair kit 45813.
 ** Items 8H, 8I, and 8K are not serviced separately. Order 49325 control valve.

CARCO MODEL J-120-PS, PSM & PSC WINCH
 PARTS LIST SECTION—PAGE 24
 WINCH CONTROLS "C"
 STANDARD CONTROL CABLE LOCATION
 WITH RELOCATED SUCTION PORT



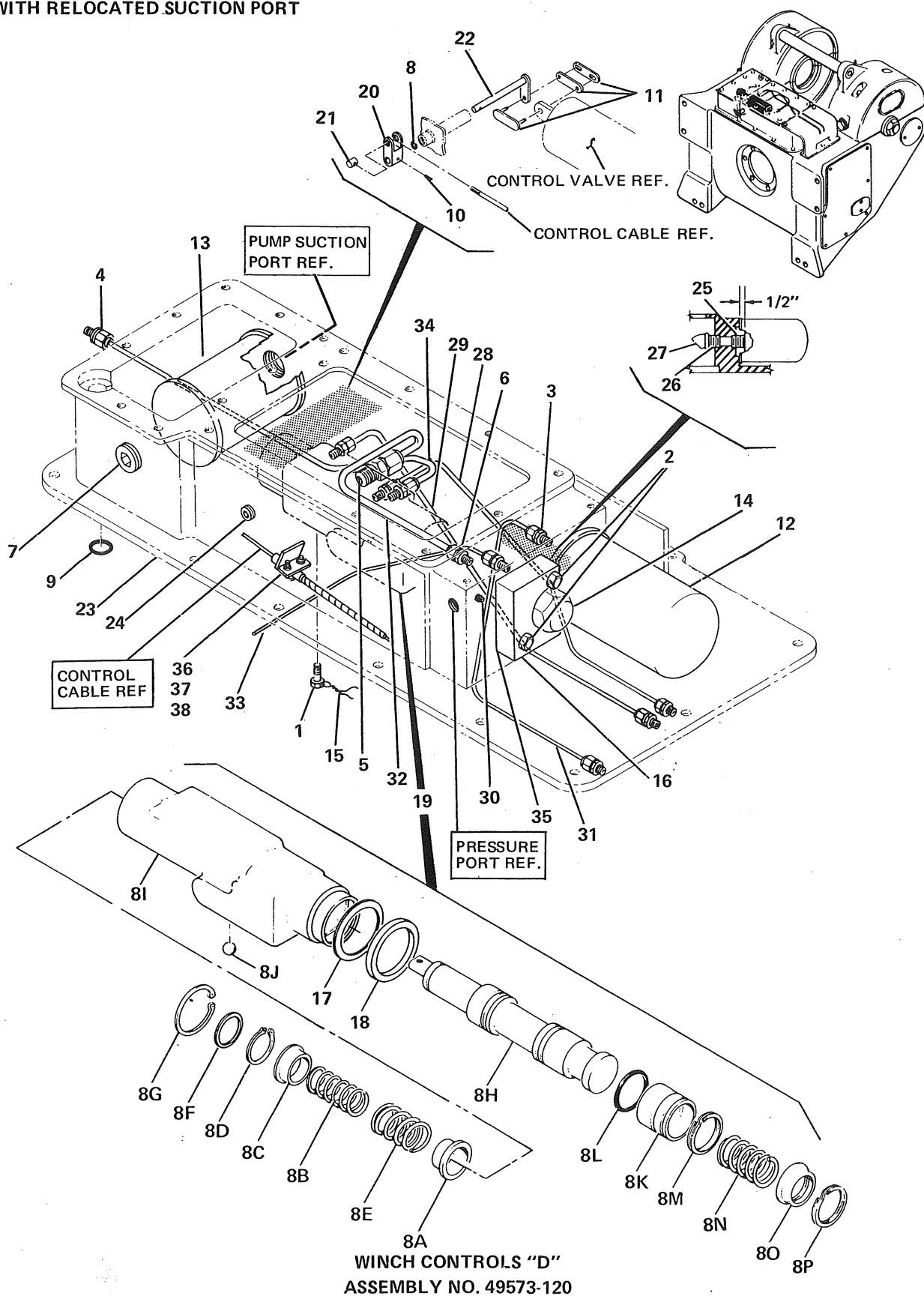
CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 25
WINCH CONTROLS "C"

**STANDARD CONTROL CABLE LOCATION
WITH RELOCATED SUCTION PORT**

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	16024-9	Cap Screw, 1/2 UNF x 1 Hex Dr. Hd.	1
2	16043-6	Nut, 3/8 UNC Hex Jam	1
3	16047-610	Cap Screw, 3/8 UNC x 1-1/4 H.H.	2
4	16056-610	Set Screw, 3/8 UNC x 5/8 Hex Soc. Hd.	1
5	16064-8	Washer, 1/2	1
6	16129-44	Connector, ANCHOR 4M-4JMS	3
7	16129-88	Connector, ANCHOR 8M-8JMS	1
8	16262-220	O-Ring, NAT'L. 622725	1
9	16292-616	Spring Pin, ROLLPIN 3/16 x 1	1
10	16392	Return Filter, BALDWIN BT-364	1
11	16393	Suction Strainer, MARVEL 610-5-M-40	1
12	44960	Relief Valve (see Page 19)	1
13	48125-1	Lockwire, 16 Ga. x 12	1
14	49318	Relief Valve Plate	1
15	49323	Seal Washer	1
16	49324	Valve Body Seal	1
17	49325	Control Valve	1
18	49732-120	Housing	1
19	49330	Control Lever	1
20	49331	Control Lever Pin	1
21	49332	Control Cable Pin	1
22	49333	Disc Spring	As Req'd
23	16364-2040	Connecting Link, ANSI 2040	1
24	49375	Brake Tube	1
25	49657	Elbow	1
26	49372	Forward Clutch Tube	1
27	16129-66	Connector, ANCHOR 6M-6JMS	6
28	49374	Brake Return Line Tube	1
29	16158-1211	Nipple, 3/4 NPT x 1-3/8	1
30	49353	Valve Supply Tube	1
31	49376	PTO Lube Tube	1
32	49373	Reverse Tube	1
33	16169-4	Plug, 1/4 NPT Sq. Hd.	1
34	16129-68	Connector, ANCHOR 6M-8JMS	1
35	16262-208	O-Ring, PARKER 2-208 N674-70	1
36	49519	Gasket	1
37	50218	Connector	1
38	16167-16	Plug, 1 NPTF Hex Soc. Hd.	1
8A	44259-1	Stop	1
* 8B	45548	Spring	1
* 8C	45623	Stop	1
8D	16313-75	Retn'g. Ring, TRUARC 5100-75	1
* 8E	45549	Spring	1
* 8F	45622	Washer	1
8G	16314-150	Retn'g. Ring, TRUARC N5000-150	1
** 8H	49322	Spool	1
** 8I	49321	Body	1
8J	16217-8	Ball, 1/2 Steel	4
** 8K	45855	Piston	1
8L	16262-215	O-Ring, NAT'L. 622720	1
8M	16308-131	Retn'g. Ring, SPIROLOX RS-131	1
8N	45857	Spring	1
8O	45856	Stop	1
8P	16305-156	Retn'g. Ring, SPIROLOX RR-156	1

* Items 8B, 8C, 8E and 8F not serviced separately. Order spring repair kit 45813.
 ** Items 8H, 8I and 8K are not serviced separately. Order 49325 control valve.

CARCO MODEL J-120-PS, PSM & PSC WINCH
 PARTS LIST SECTION—PAGE 26
 WINCH CONTROLS "D"
 RELOCATED CONTROL CABLE LOCATION
 WITH RELOCATED SUCTION PORT



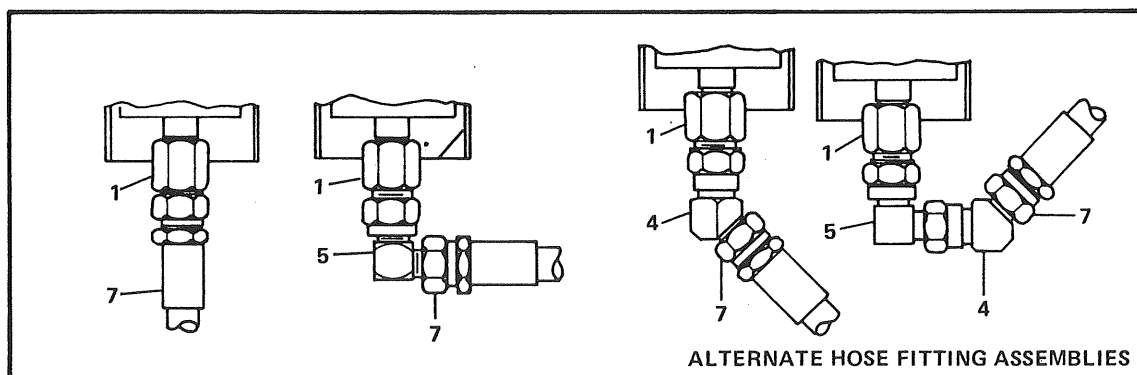
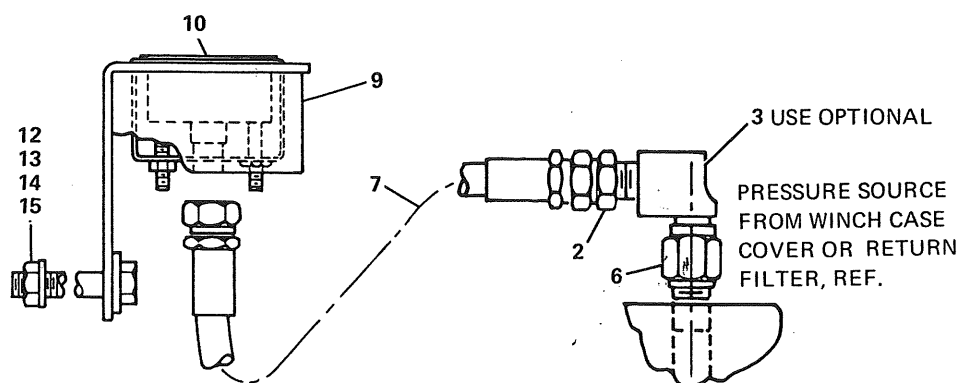
**RELOCATED CONTROL CABLE LOCATION
WITH RELOCATED SUCTION PORT**

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	16024-9	Cap Screw, 1/2 UNF x 1 Hex Dr. Hd.	1
2	16047-610	Cap Screw, 3/8 UNC x 1-1/4 H.H.	2
3	16129-44	Connector, ANCHOR 4M-4JMS	3
4	16129-66	Connector, ANCHOR 6M-6JMS	6
5	16129-68	Connector, ANCHOR 6M-8JMS	1
6	16129-88	Connector, ANCHOR 8M-8JMS	1
7	16167-16	Plug, 1 NPTF Hex Soc. Hd.	1
8	16262-014	O-Ring, NAT'L. 610014	1
9	16262-220	O-Ring, NAT'L. 622765	1
10	16292-616	Spring Pin, ROLLPIN 3/16 x 1	1
11	16364-2040	Connecting Link, ANSI 2040	1
12	16392	Return Filter, BALDWIN BT-364	1
13	16393	Suction Strainer, MARVEL 610-5-M-40	1
14	44960	Relief Valve (See Page 19)	1
15	48125-1	Lock Wire, 16 Ga. x 12	1
16	49318	Relief Valve Plate	1
17	49323	Seal Washer	1
18	49324	Valve Body Seal	1
19	49325	Control Valve	1
20	49568	Lever	1
21	49569	Pin	1
22	49570	Control Lever	1
23	49733-120	Housing	1
24	16167-8	Plug, 1/2 NPTF Hex Soc. Hd.	1
25	50218	Connector	1
26	16158-1211	Nipple, 3/4 NPT x 1-3/8	1
27	49657	Elbow	1
28	49375	Brake Tube	1
29	49372	Forward Tube	1
30	16169-4	Plug, 1/4 NPT Sq. Hd.	1
31	49374	Brake Return Line Tube	1
32	49353	Valve Supply Tube	1
33	49376	PTO Lube Tube	1
34	49373	Reverse Tube	1
35	49519	Gasket	1
36	16398-4	U-Bolt, CABLECRAFT 161-014-4	1
37	16067-6	Lock Washer, 3/8	2
38	16033-6	Nut, 3/8 UNC Hex	2
8A	44259-1	Stop	1
* 8B	45548	Spring	1
* 8C	45623	Stop	1
8D	16313-75	Retn'g. Ring, TRUARC 5100-75	1
* 8E	45549	Spring	1
* 8F	45622	Washer	1
8G	16314-150	Retn'g. Ring, TRUARC N5000-150	1
** 8H	49322	Spool	1
** 8I	49331	Body	1
8J	16217-8	Ball, 1/2 Steel	4
** 8K	45855	Piston	1
8L	16262-215	O-Ring, NAT'L. 622720	1
8M	16308-131	Retn'g. Ring, SPIROLOX RS-131	1
8N	45857	Spring	1
8O	45856	Stop	1
8P	16305-156	Retn'g. Ring, SPIROLOX RR-156	1

* Items 8B, 8C, 8E and 8F not serviced separately. Order spring repair kit 45813.

** Items 8H, 8I, and 8K are not serviced separately. Order 49325 control valve.

CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 28
PRESSURE GAUGE



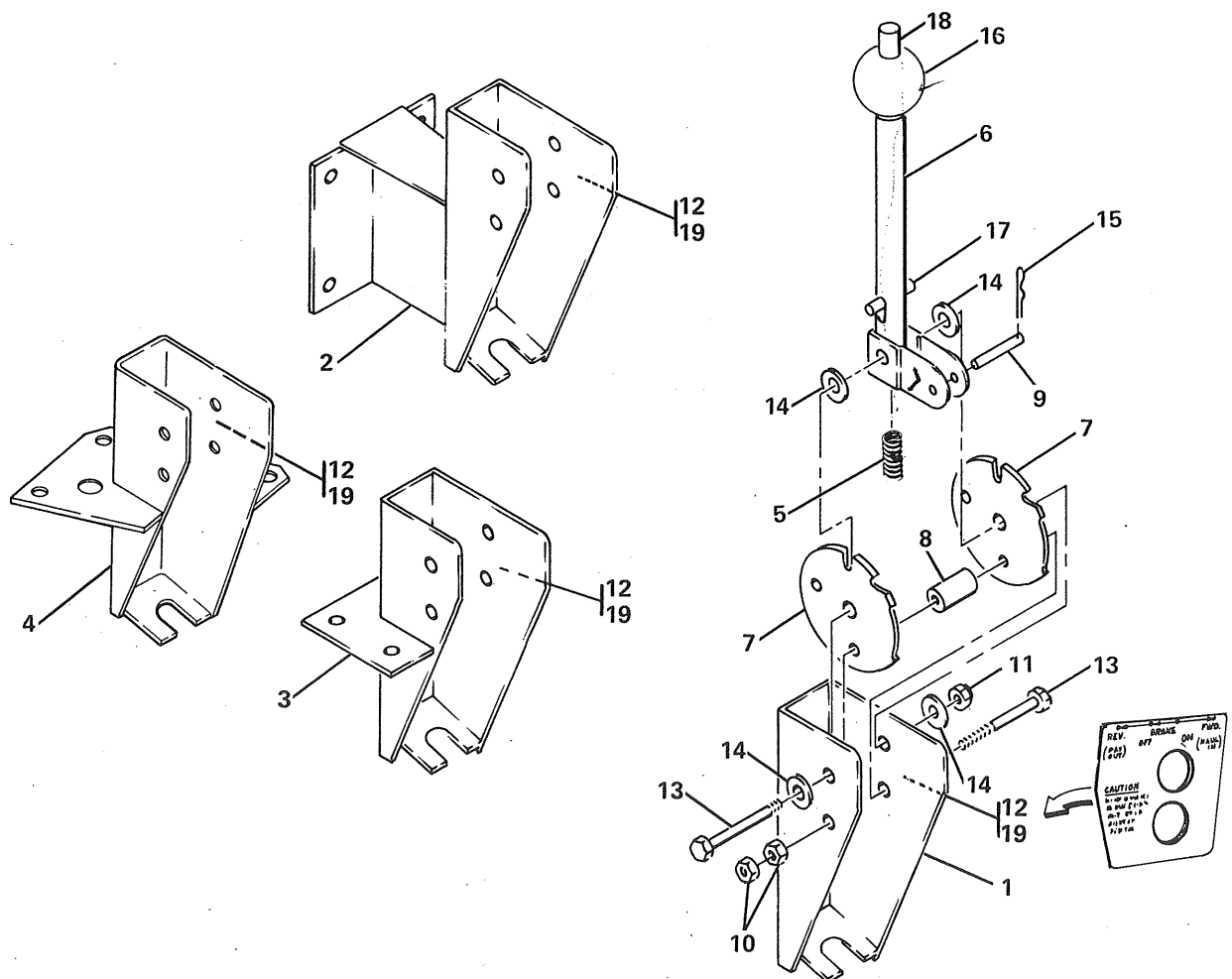
PRESSURE GAUGE – NO. 48700-120

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN PER UNIT
1	16116-44	Adapter, WTHRD. C5255 x 4 x 4	1
2	16129-44	Connector, WTHRD. C5205 x 4 x 4	1
3	16171-44	Elbow, WTHRD. 3400 x 4	1
4	16184-44	Union, WTHRD. C5356 x 4	1
5	16185-44	Union, WTHRD. C5506 x 4	1
6	16362-44	Snubber, CHEMIQUIP 25B-D	1
* 7	44921-120	Hose Assembly	1
** 8	45101	Tag, Instruction—Not Shown	1
9	48687	Bracket	1
10	48693	Gauge	1
** 11	48712	Sheet, Instruction—Not Shown	1
12	16047-620	Cap Screw, 3/8 UNC x 2-1/2 H.H.	1
13	16033-6	Nut, 3/8 UNC Hex.	1
14	16063-6	Washer, 3/8	1
15	16067-6	Washer, 3/8 Lock	1
** 16	Form A-2281	Sheet, Instruction—Not Shown	1

*48700-1 kit can be ordered, which is without item 7.

**Item 8, 11 and 16 are included in gauge kit.

CARCO MODEL J-120-PS WINCH
PARTS LIST SECTION—PAGE 29
CONTROL STAND

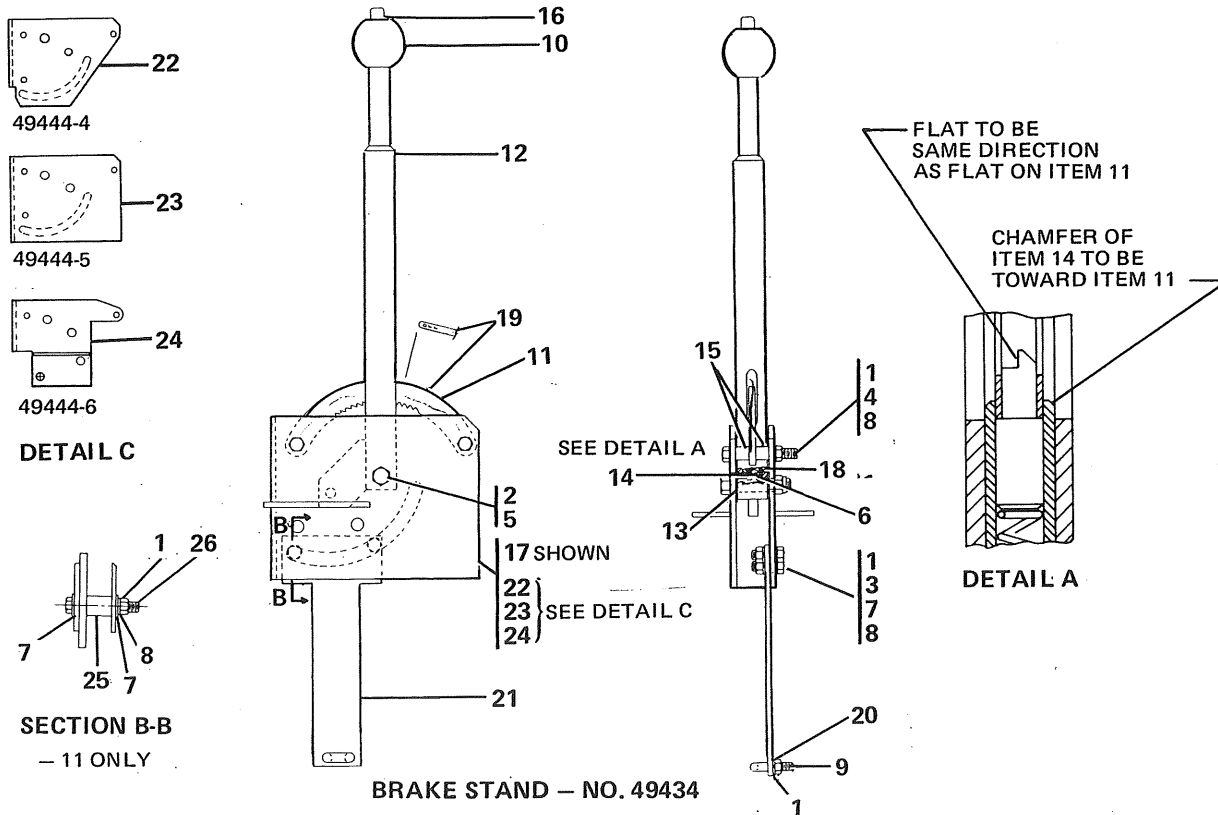


CONTROL STAND—NO. 49001

REF.	CARCO PART NO.	NAME AND DESCRIPTION	CONTROL STAND GROUP NO'S 49001-1 THRU 49001-8							
			QTY. -1	QTY. -2	QTY. -3	QTY. -4	QTY. -5	QTY. -6	QTY. -7	QTY. -8
1	49002-1	Housing	1				1		1	
2	49002-2	Housing		1				1		1
3	49002-3	Housing			1					
4	49002-4	Housing				1				
5	41403	Spring	1	1	1	1	1	1	1	1
6	49003	Lever Assy.	1	1	1	1	1	1	1	1
7	49007	Lock Plate	2	2	2	2	2	2	2	2
8	49804-3	Spacer	1	1	1	1	1	1	1	1
9	49010	Pin	1	1	1	1	1	1	1	1
10	16033-6	Nut, 3/8 UNC Hex	2	2	2	2	2	2	2	2
11	16039-66	Lock Nut, ESNA 21NE-066	1	1	1	1	1	1	1	1
12	49314	Shift Instruction Plate	1	1	1	1				
13	16047-620	Cap Screw, 3/8 UNC x 2-1/2 H.H.	2	2	2	2	2	2	2	2
14	16064-6	Washer, 3/8	4	4	4	4	4	4	4	4
15	16381-13	Hitch Pin, WESTERN WIRE WW-13	1	1	1	1	1	1	1	1
16	41404	Ball	1	1	1	1	1	1	1	1
17	16294-824	Spring Pin, 1/4 x 1-1/2	1	1	1	1	1	1	1	1
18	49004	Push Rod	1	1	1	1	1	1	1	1
19	49314-3	Shift Instruction Plate						1		

*Items 16, 17, 18 are included in item 6.

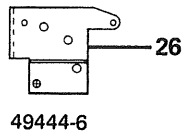
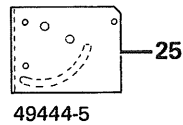
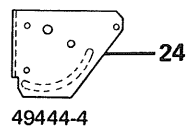
CARCO MODEL J-120-PSC & PSM WINCH
PARTS LIST SECTION—PAGE 30
CONTROL STAND, MANUAL BRAKE



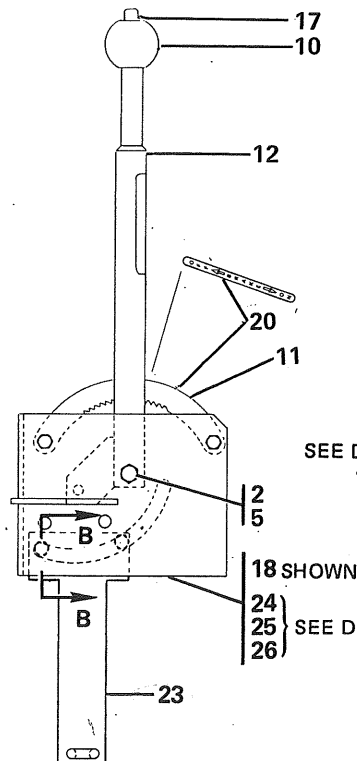
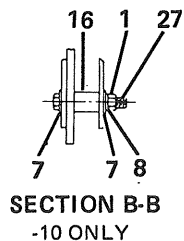
REF.	CARCO PART NO.	NAME AND DESCRIPTION	BRAKE STAND GROUP NO.			
			QUANTITY 49434-7	QUANTITY 49434-8	QUANTITY 49434-9	QUANTITY 49434-11
1	16033-6	Nut, 3/8 UNC Hex	4	4	4	4
2	16039-83	Lock Nut, ESNA 21NE-083	1	1	1	
3	16047-608	Cap Screw, 3/8 UNC x 1 H.H.	2	2	2	
4	16047-620	Cap Screw, 3/8 UNC x 2-1/2 H.H.	2	2	2	
5	16047-818	Cap Screw, 1/2 UNC x 2-1/4 H.H.	1	1	1	
6	16064-3	Washer, No. 10	1	1	1	
7	16064-6	Washer, 3/8	2	2	2	
8	16067-6	Lock Washer, 3/8	4	4	4	
9	16398-4	U-Bolt, CABLECRAFT 161-010-4	1	1	1	
10	41404	Ball	1	1	1	
11	50627	Sector 22.35	1	1	1	
12	49435	Handle	1	1	1	
13	49436	Washer	2	2	2	
14	49437	Bushing	1	1	1	
15	49438	Spacer	4	4	4	
16	50629	Rod 1 1/2 60	1	1	1	
17	49444-3	Housing	1			
18	49445	Spring	1	1	1	
19	49446	Plate	1	1	1	
20	16067-4	Lock Washer, 1/4	2	2	2	
21	50099	Arm	1	1	1	
22	49444-4	Housing			1	
23	49444-5	Housing		1		
24	49444-6	Housing				1
25	48692-615	Spacer				2
26	16047-618	Cap Screw, 3/8 UNC x 2-1/4 H.H.				1

*See page 14 for brake control group used with these stands.

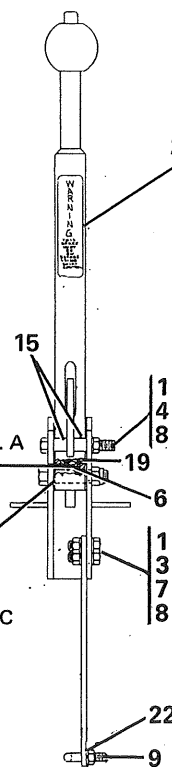
CARCO MODEL J-120-PS/1B & PSC WINCH
PARTS LIST SECTION—PAGE 31
CONTROL STAND, WITH INCHING BRAKE



DETAIL C

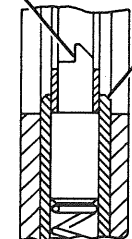


SEE DETAIL A
14
13
18 SHOWN
24
25
26
SEE DETAIL C



WARNING
THIS
BRAKE
MUST
BE
ON
BEFORE
USING
SHIFT
CONTROL

FLAT TO BE SAME
SAME DIRECTION
AS FLAT ON ITEM 11
CHAMFER OF
ITEM 14 TO BE
TOWARD ITEM 11



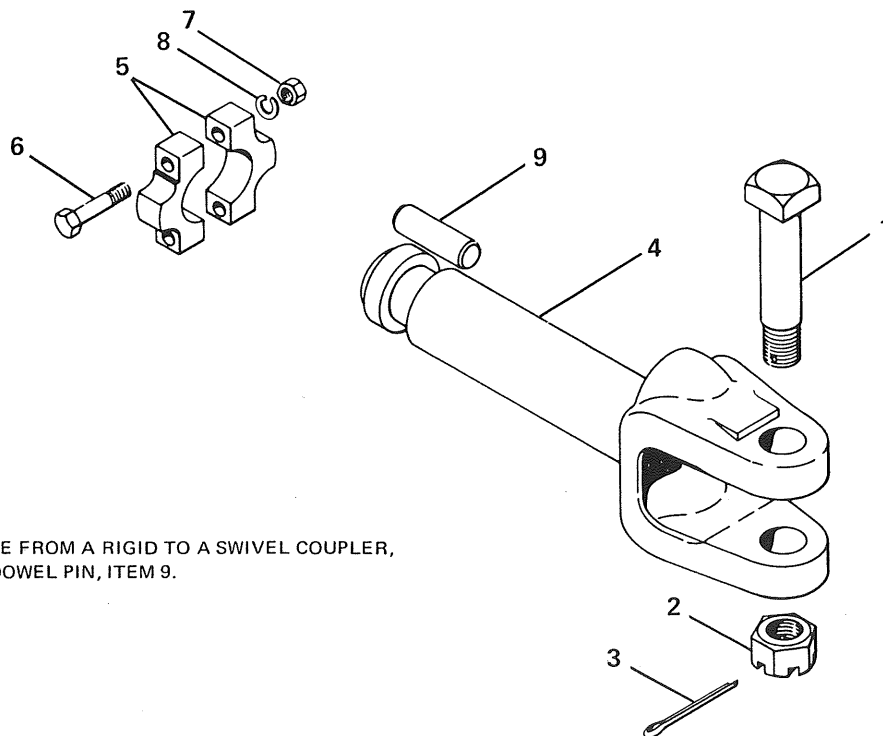
DETAIL A

INCHING BRAKE STAND — NO. 49434

REF.	CARCO PART NO.	NAME AND DESCRIPTION	BRAKE STAND GROUP NO.			
			QUANTITY 49434-4	QUANTITY 49434-5	QUANTITY 49434-6	QUANTITY 49434-10
1	16033-6	Nut, 3/8 UNC Hex	4	4	4	4
2	16039-83	Lock Nut, ESNA 21NE-083	1	1	1	
3	16047-608	Cap Screw, 3/8 UNC x 1 H.H.	2	2	2	
4	16047-620	Cap Screw, 3/8 UNC x 2-1/2 H.H.	2	2	2	2
5	16047-818	Cap Screw, 1/2 UNC x 2-1/4 H.H.	1	1	1	1
6	16064-3	Washer, No. 10	1	1	1	1
7	16064-6	Washer, 3/8	2	2	2	4
8	16067-6	Washer, 3/8 Lock	4	4	4	4
9	16398-4	U-Bolt, CABLECRAFT 161-010-4	1	1	1	1
10	41404	Ball	1	1	1	1
11	50627	Sector	1	1	1	1
12	49435	Handle	1	1	1	1
13	49436	Washer	2	2	2	2
14	49437	Bushing	1	1	1	1
15	49438	Spacer	4	4	4	4
16	48692-615	Spacer				2
17	50629	Rod	1	1	1	1
18	49444-3	Housing		1		
19	49445	Spring	1	1	1	1
20	49446	Plate	1	1	1	1
21	49928	Warning Plate	1	1	1	1
22	16067-4	Washer, 1/4 Lock	2	2	2	2
23	50099	Arm	1	1	1	1
24	49444-4	Housing	1			
25	49444-5	Housing			1	
26	49444-6	Housing				1
27	16047-618	Cap Screws, 3/8 UNC x 2-1/4 H.H.				1

*See page 11 for brake control group used with these stands.

CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 32
COUPLER



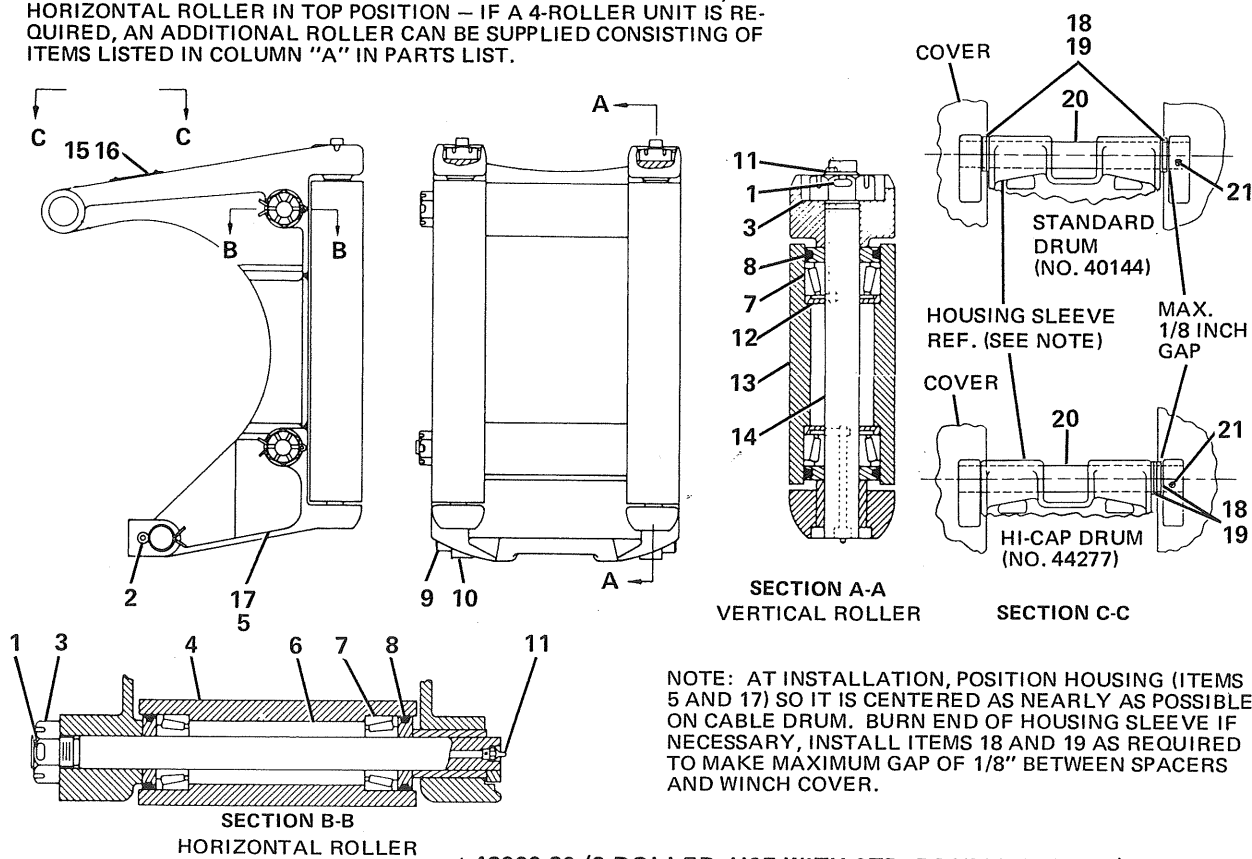
TO CHANGE FROM A RIGID TO A SWIVEL COUPLER,
REMOVE DOWEL PIN, ITEM 9.

COUPLER — NO. 44252

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT
1	Y-905-7	Bolt (includes items 2 and 3)	1
2	Y-905-5	Nut (includes item 3)	1
3	16288-1248	Cotter Pin, 3/8 x 3	1
4	32711	Coupler	1
5	45703	Clamp (includes items 6, 7 and 8) 33715	1
6	16047-1022	Cap Screw, 5/8 UNC x 2-3/4 H.H.	2
7	16033-10	Nut, 5/8 UNC Hex.	2
8	16067-10	Washer, 5/8 Lock	2
9	32874	Pin	1

CARCO MODEL J-120-PS, PSM & PSC WINCH
PARTS LIST SECTION—PAGE 33
FAIRLEAD

THIS FAIRLEAD IS NORMALLY FURNISHED AS A 3-ROLLER UNIT, WITH HORIZONTAL ROLLER IN TOP POSITION — IF A 4-ROLLER UNIT IS REQUIRED, AN ADDITIONAL ROLLER CAN BE SUPPLIED CONSISTING OF ITEMS LISTED IN COLUMN "A" IN PARTS LIST.



NOTE: AT INSTALLATION, POSITION HOUSING (ITEMS 5 AND 17) SO IT IS CENTERED AS NEARLY AS POSSIBLE ON CABLE DRUM. BURN END OF HOUSING SLEEVE IF NECESSARY, INSTALL ITEMS 18 AND 19 AS REQUIRED TO MAKE MAXIMUM GAP OF 1/8" BETWEEN SPACERS AND WINCH COVER.

FAIRLEAD — PART NO. { 42000-30 (3 ROLLER, USE WITH STD. DRUM NO. 40144)
42000-40 (4 ROLLER, USE WITH STD. DRUM NO. 40144)
42000-31 (3 ROLLER, USE WITH HICAP DRUM NO. 44277)
42000-41 (4 ROLLER, USE WITH HICAP DRUM NO. 44277)

REF.	CARCO PART NO.	NAME AND DESCRIPTION	QUAN. PER UNIT	"A"
1	16288-1240	Cotter Pin, 3/8 x 2-1/2	3	1
2	16288-1656	Cotter Pin, 1/2 x 3-1/2	2	
3	16036-24	Nut, TIMKEN K8111	3	1
4	32807	Roller	1	1
5	48454	Housing (For High Capacity Drum 44277)	1	
6	32806	Shaft	1	1
7	15235	Brg. Cup	6	2
	15178	Brg. Cone	6	2
8	30044	Dust Guard	6	2
9	30051-3	Bar	1	
10	42005	Attaching Lug	2	
11	16222-2	Grease Fitting, ALEMITE 1610B	5	1
12	30045	Retainer	4	
13	30705	Roller	2	
14	30701	Shaft	2	
15	16055-5	Drive Screw, #10 x 3/8 Type U	4	
16	26248	Name Plate	1	
17	42001	Housing (For Std. Drum 40144)	1	
18	49879-1	Spacer	1	
19	49879-2	Spacer	2	
20	49043-3	Cable Guard	1	
21	16288-1272	Cotter Pin, 3/8 x 4-1/2	1	

*Welds to winch case.

SERVICE SECTION SUPPLEMENT CARCO MODEL J-120-PSM & PSC (POWER SHIFT FRICTION CLUTCH)

PAGE 1

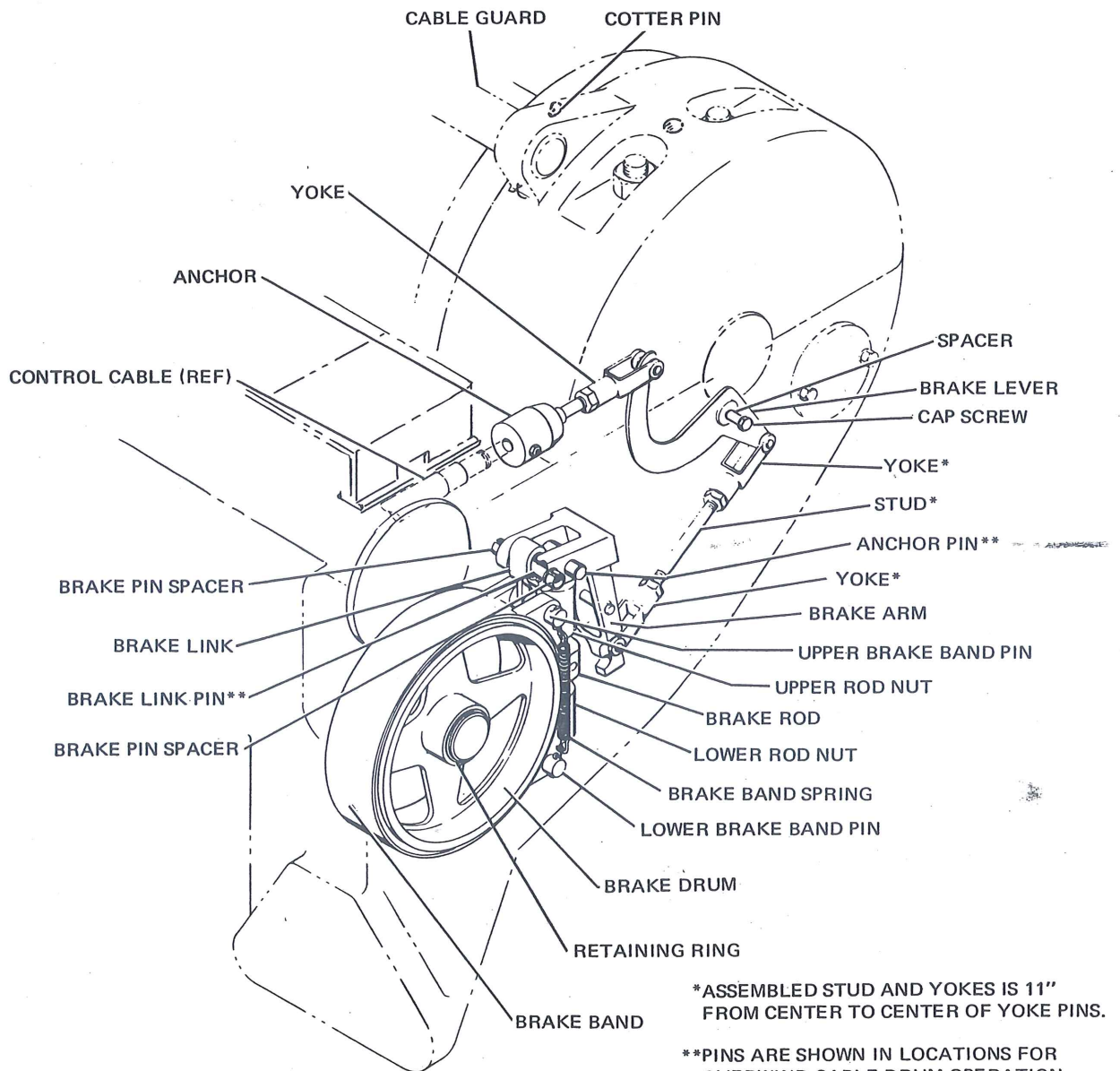


FIGURE 1

*ASSEMBLED STUD AND YOKES IS 11"
FROM CENTER TO CENTER OF YOKE PINS.

**PINS ARE SHOWN IN LOCATIONS FOR
OVERWIND CABLE DRUM OPERATION.
FOR UNDERWIND OPERATION, POSITIONS
OF THESE PINS MUST BE INTERCHANGED.

BRAKE CONTROL - PSM & PSC

Disassembly

See Figure 1.

NOTE: Observe strict cleanliness while working on any part of the winch.

Remove brake cover.

If winch is mounted on tractor, move brake control handle to brake-off position to release brake. Remove upper and lower brake band pins and tension spring.

Remove retaining ring securing brake drum to shaft, and remove drum. Remove brake band assembly.

Disassembly (continued)

If brake linkage is to be removed, proceed as follows:

1. Remove cotter pin securing cable guard, and remove guard.
2. Remove capscrew and sleeve that acts as pivot for brake lever.
3. Remove anchor pin.
4. Remove hex nuts and washers securing brake side cover, and lift up cover. Brake linkage will come out with cover.
5. Remove yoke pin assembly to separate brake lever from control cable end yoke.
6. Remove yoke pins and disassemble brake linkage as required to replace parts.

Assembly

If brake linkage was disassembled, connect brake lever, brake arm, stud, and yokes to form a subassembly. Thread jam nuts and yokes onto stud, and adjust position to obtain a center-to-center spacing of yoke pins of 11 inches. Turn yokes to align, and tighten jam nuts.

Connect upper end of brake lever to control cable end yoke.

Remove capscrews and washers securing access cover and remove cover.

Lift brake side cover with brake linkage over case, and lower link-

age into case. Guide linkage into position. Secure cover with hex nuts and washers.

Working through access opening, position brake lever to align with capscrew hole, and install capscrew with sleeve. Install access cover.

Connect brake link to brake arm with brake link pin (shorter pin).

Position brake arm and install anchor pin (longer pin) in first part of brake arm. Position assembled brake rod and upper and lower rod nut and complete installation of pin.

NOTE: If winch is being assembled for underwound drum operation, interchange the long and short pins; the anchor pin (longer pin) will then be installed through the end hole of the brake arm and the slotted hole of the brake link.

Be sure spacer rings are installed in winch case at each end of the shorter pin.

Place brake band in winch. Install brake drum on brake shaft and install retaining ring.

Secure ends of brake band assembly to brake rod and brake link with pins, and connect brake band spring to cotter pins in brake band.

Adjust brake band clearance. Refer to PSM & PSC Supplement Page in Operator's Section. Install brake side cover and gasket.

SERVICE SECTION

Carco Model J-120-PS Winch
(POWER SHIFT FRICTION CLUTCH)

CONTENTS

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GENERAL INSTRUCTIONS

This manual contains procedures for complete disassembly and assembly of the winch, and also provides adjustment procedures required during and after repair or overhaul. The necessary clearances, backlash, and other data for proper reassembly of the winch are given in the data sheet at the end of this section.

NOTE: For repair, disassemble the winch only to the extent necessary to accomplish the required replacement of parts.

Before starting any replacement procedures, be sure to clean thoroughly the parts to be removed, and adjacent areas, to prevent entry of dirt and sand into the winch. Do not leave any ports or access openings exposed to the weather. Seal or cap

**CARCO MODEL J-120-PS WINCH
SERVICE SECTION--PAGE 2**

the openings to prevent entry of dust, moisture, or other foreign material. Protect all exposed hydraulic ports and fittings with caps or plugs to prevent contamination of the hydraulic system.

During disassembly, care should be taken not to damage gaskets, shims, seals, and O-rings that are to be reused. Replace any such parts that are damaged or otherwise defective. Certain O-rings and seals specified in the replacement instructions must not be reused. In general, seals and O-rings that work under operating hydraulic pressures, or that require extensive disassembly to replace, should be replaced with new parts at time of reassembly.

During assembly, coat threads of all cap screws that penetrate the gear and clutch compartments, using suitable mastic sealing compound. Take care to prevent excess sealing compound from entering the winch case, as it tends to clog the filters.

Maintain strict cleanliness during rebuild to prevent entry of dirt or moisture into winch case. Hydraulic components should be rebuilt in a clean, controlled atmosphere such as exists in an injector room.

PREPARATION FOR DISASSEMBLY

Clean winch and rear of tractor to prevent entry of dirt into winch or tractor transmission case during removal and disassembly.

Loosen pipe plug from winch cover to permit complete draining of oil.

Remove magnetic pipe plug from bottom of winch to drain oil.

Disconnect hydraulic hoses from winch case.

Disconnect winch control cable from control stand.

Support winch with suitable hoist or chain block, and remove nuts, cap screws, and washers securing winch to tractor. Move winch back while guiding control cable back out of tractor.

When winch and P.T.O. shaft have been removed from tractor transmission, cover opening in rear of tractor to prevent entry of dirt.

CAUTION: Do not run tractor engine after oil is drained from winch unless winch hydraulic pump is disconnected from tractor engine.

BRAKE CONTROL

Disassembly

See Figures 1 and 2.

NOTE: Observe strict cleanliness while working on any part of the winch.

Remove side cover (brake).

If winch is mounted on tractor and is in working order, start tractor engine and move control lever to brake-off position to release brake. Remove brake band pins and tension spring. Stop engine.

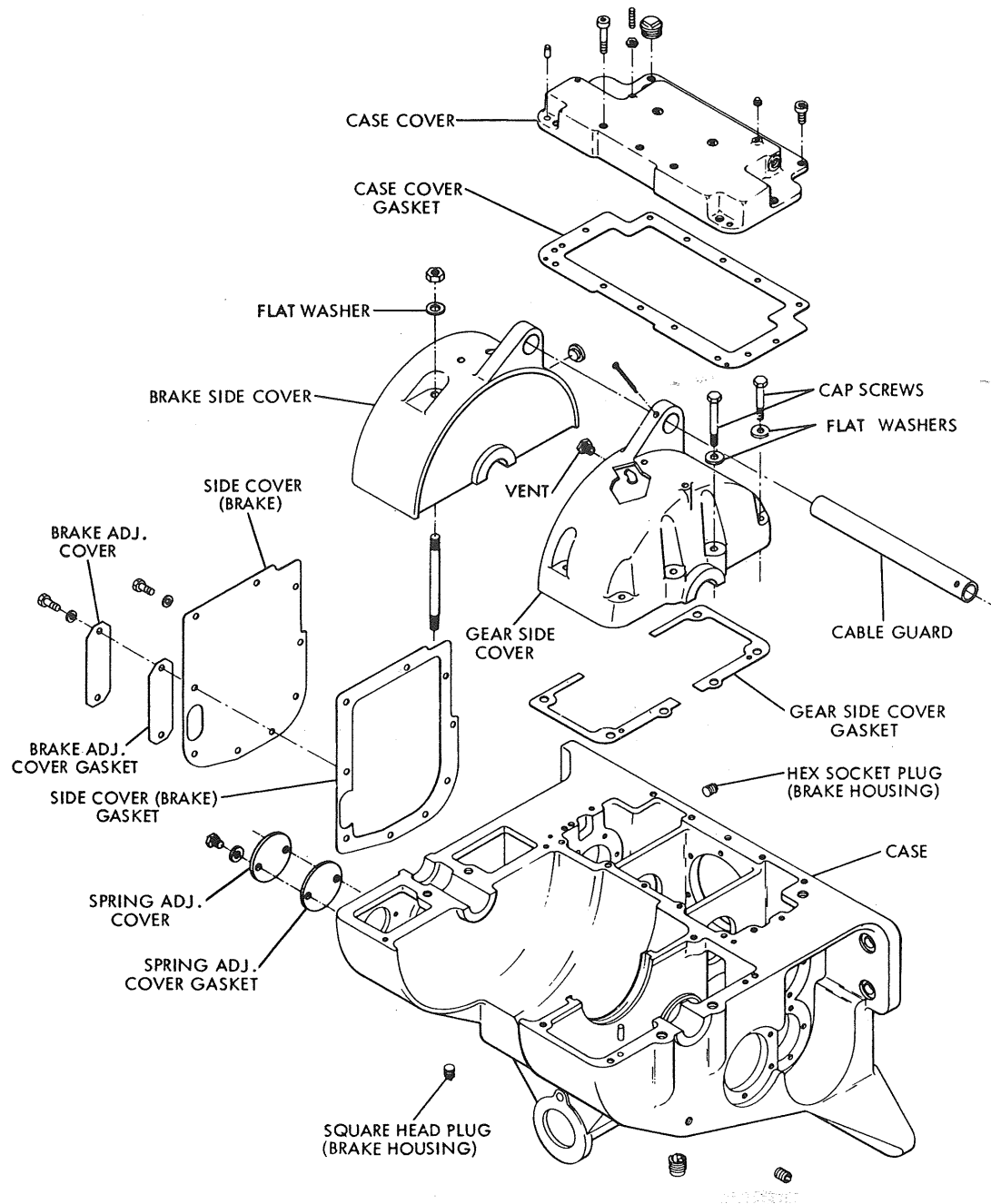


FIGURE 1

CARCO MODEL J-120-PS WINCH
SERVICE SECTION--PAGE 4

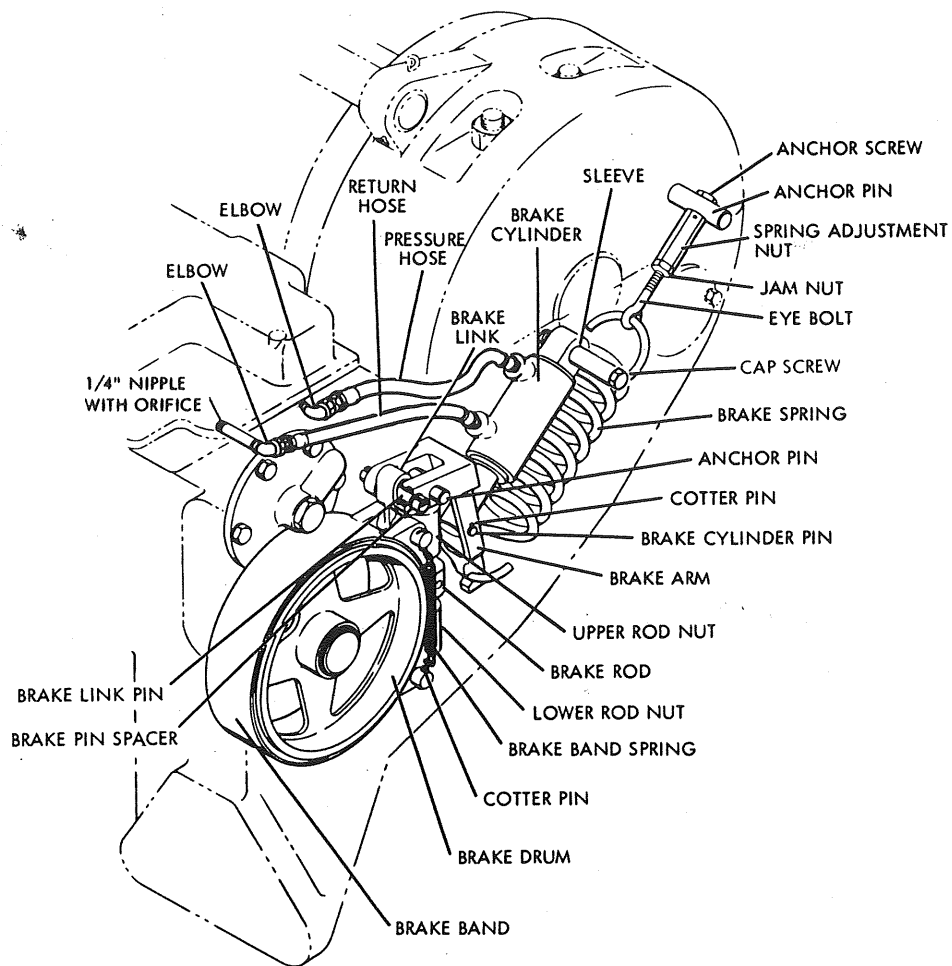


FIGURE 2

If winch is removed from tractor, or is inoperable, remove spring adjustment cover and loosen brake spring adjustment nut until brake spring is free of tension, then remove brake band pins and brake band spring.

Remove retaining ring securing brake drum to shaft, and remove drum. Remove brake band assembly.

Disconnect brake hoses from fittings at winch case.

If brake spring is still under tension, loosen brake spring adjustment nut as required to loosen spring, and disconnect spring from brake arm.

Remove brake cylinder anchor screw. Remove brake arm anchor pin, using suitable puller threaded into hole in pin if necessary, and remove cylinder, brake arm, and brake rod assembly. Disassemble brake cylinder from brake arm.

Assembly

See Figures 1 and 2.

Assemble brake arm to brake cylinder with brake cylinder pin and cotter pin. Assemble brake link to arm with brake link pin.

Position assembled brake cylinder and brake arm in winch, and secure brake cylinder with cap screw and spacer. Engage brake spring with end of brake arm.

Position brake rod assembly in winch and install anchor pin through brake arm and brake rod nut and into pin recess in winch case.

NOTE: If winch is being assembled for underwound drum operation, interchange the long and short brake pins; the longer pin will then be installed through the end hole of the brake arm and the slotted hole of the brake link.

Be sure spacer rings are installed in winch case at each end of the shorter pin.

Connect brake hoses to fittings in winch case.

Place brake band in winch. Install brake drum on brake shaft and install retaining ring.

Secure ends of brake band assembly to brake rod and brake link with pins, and connect brake band spring with cotter pins.

Adjust brake band clearance and brake spring tension. Refer to ADJUSTMENTS.

Install spring adjustment cover. Install side cover (brake) and gasket.

CASE COVER

Removal

If winch is mounted on tractor, clean case cover and tractor fuel tank or tank guard. Disconnect control cable at control stand. Refer to Adapter Section.

Disconnect pressure hose from valve cover, and catch any hydraulic fluid that drains from hose.

Plug disconnected lines to keep clean.

CARCO MODEL J-120-PS WINCH
SERVICE SECTION--PAGE 6

Remove cap screws and washers securing case cover to case, and remove cover. Eyebolts may be installed in threaded holes in cover to facilitate lifting.

Cover gasket is cemented to cover. If gasket is damaged or defective, or if tubes are removed from cover, carefully scrape old gasket from mating surfaces of cover. Remove all old cement, being careful not to scratch the mating surface.

If cover gasket is not removed, take care not to damage gasket during subsequent disassembly.

Disassembly

See Figures 1 and 3.

Disconnect all hydraulic tube nuts connected to control valve. Remove O-rings and tube retainers where required, and remove all hydraulic tubes from case cover.

NOTE: Cover gasket will be destroyed by removal of O-rings and retainers. If hydraulic tubes are removed, cover gasket must be replaced.

Unscrew control cable core from valve spool, and pull cable core free. Remove jam nut and socket-head set screw securing cable housing in case cover, and remove control cable. If O-ring and back-up ring remain in cover, remove O-ring and back-up ring.

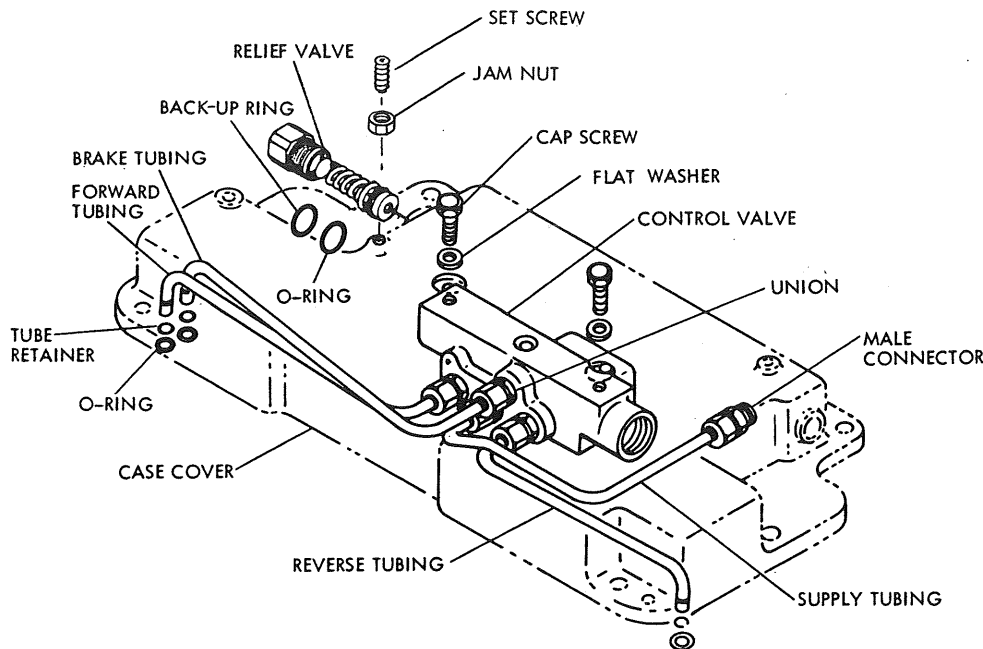


FIGURE 3

Support control valve and remove screws and washers to detach valve from cover.

Turn relief valve body counter-clockwise to remove valve from cover, being careful not to drop valve components as valve is removed. Remove O-ring from relief valve bore in cover.

Assembly

See Figures 1 and 3.

Install O-ring in relief valve bore in cover, and be sure it is seated properly. Be sure O-ring does not slip out of position, or O-ring will be damaged. Assemble ball seat, ball, guide, washer, and spring, and insert into bore in cover. Thread relief valve body into relief valve bore and tighten moderately. DO NOT OVERTIGHTEN.

Position control valve in cover, and install two hex-head cap screws and washers loosely.

Install pressure tube and secure with tube nuts to valve body and pressure inlet port in case cover. Install remaining tubes, starting with innermost to allow maximum room for wrench, and secure each tube in cover flange with a tube retaining ring. Install O-ring on end of each tube, next to retaining ring. Connect valve end of each tube to corresponding port in control valve body.

Tighten valve body to cover.

Position O-ring and back-up ring

on control cable anchor shoulder. Insert control cable housing into bore and install and tighten set screw and jam nut to secure housing in bore. Insert core in cable housing and engage end of core with control valve spool. Thread core into spool.

NOTE: Control stand end of installed control cable should measure 8-1/16" (+1/8", -3/16") from stud end to set screw groove in cable at brake-on (neutral) position.

Installation

If gasket was removed from cover, coat mating surface of cover with suitable adhesive and apply gasket. Take care to prevent adhesive from entering winch case. The adhesive tends to clog the filter elements.

Position cover on top of winch case, and secure to case with socket-head cap screws.

CONTROL VALVE

Removal

Refer to CASE COVER, Disassembly.

Disassembly

See Figure 4.

Remove retaining ring from each end of valve.

NOTE: Use arbor press to compress springs slightly to facilitate removal of retaining rings.

**CARCO MODEL J-120-PS WINCH
SERVICE SECTION--PAGE 8**

Remove spool lock screw and washer.

Pull spool with springs and stops out of Control Cable end of body. Remove retaining ring from end of spool and remove spring stops and small spring.

Remove spring stop and spring from opposite end of valve. Using a soft drift, press piston from valve body.

Remove retaining ring from piston. With O-ring removed, install piston in valve body. Be sure piston slides freely in and out of body.

Inspect O-ring for wear and replace if necessary.

Assembly

See Figure 4.

Install O-ring and retaining ring on piston. Lubricate O-ring, piston, and valve body with light oil.

Press piston evenly into body.

Using arbor press, install piston spring and stop in body and secure with retaining ring.

Assemble inner spring stop, small spring and outer spring stop on spool and secure with retaining ring.

Lubricate assembled spool with light coating of oil and insert spool in body through control cable end.

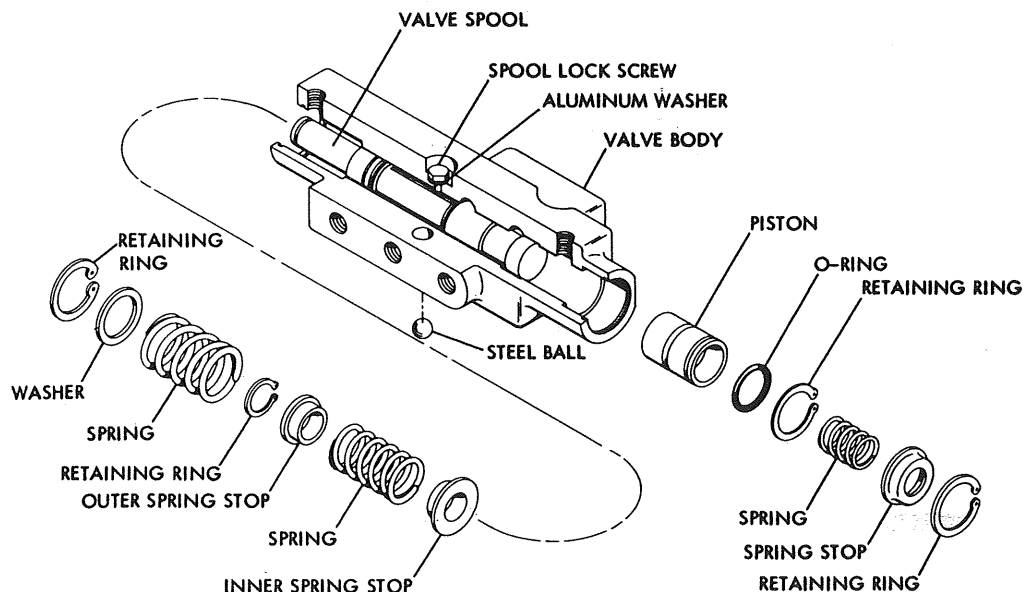
Align spool for spool lock screw and install.

NOTE: Installed spool lock screw should not bottom against spool.

Install outer (large) spring and washer and secure with retaining ring.

Installation

Refer to CASE COVER, Assembly.



CONTROL VALVE - NO. 45853

FIGURE 4

RELIEF VALVE

Removal

Refer to CASE COVER, Disassembly.

Disassembly

See Figure 5.

NOTE: All disassembly and assembly of the relief valve must be done in an injector room or other similarly clean, air-conditioned area.

Remove spring, washer, guide, and ball from seat.

Inspect ball and seat. Be sure ball is smooth, and inspect seat bore for contamination that might cause ball

to stick. Be sure seat does not have excessive wear and that ports are clean.

Shims may be removed by inverting body and tapping the open end lightly on soft surface.

Assembly

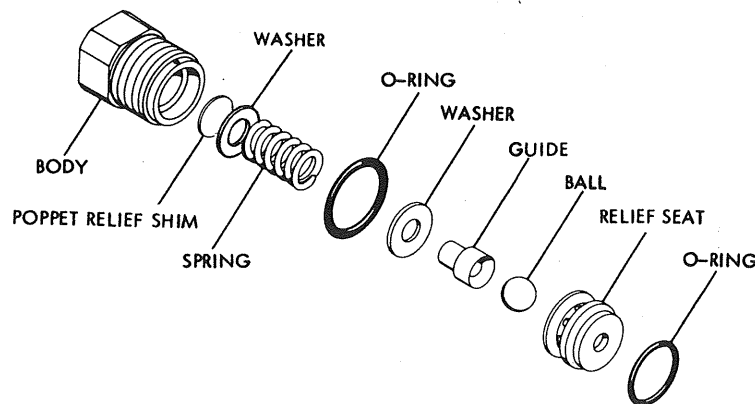
See Figure 5.

Install ball, guide, washer and spring in seat. Place shims and washer in body and place body over spring.

Wrap assembly in clean plastic or paper until ready to install in cover.

Installation

Refer to CASE COVER, Assembly.



RELIEF VALVE-NO. 44960

FIGURE 5



BEVEL GEAR SHAFT

Removal

See Figure 6.

Remove case cover. Refer to CASE COVER , Removal.

Remove brake drum and band. Refer to BRAKE CONTROL, Disassembly.

Remove bearing retainer at each end of bevel gear shaft.

Thread cap screws into two threaded holes in bearing retainer and tighten screws alternately to jack retainer from case, or use puller SK-7733. Remove and mark shims for proper installation during reassembly. Remove plug, seal spring, teflon seal, and washer from each carrier.

Unscrew stub shaft from each end of bevel gear shaft and remove shims and clamp ring. Mark shims for proper installation at time of reassembly.

Block clutch housing or bevel gear against web of case.

Thread eyebolt SK-8029 through plate SK-8028 and into threaded hole in outer surface of clutch assembly to support reverse or forward clutch. Use jam nut to maintain clutch position. See Figure 8.

Using shaft and cap puller SK-7733, or strong back SK-8031 and 3/4

UNF stud and nut, pull shaft until roller bearing cone is released, and catch bearing cone. Continue pulling shaft until it is clear of clutch, and lift clutch out of case.

NOTE: If tracks interfere with complete removal of bevel gear shaft, slide shaft first one way, then the other, to clear clutches. For complete removal of shaft, it may be necessary to remove one track shoe; otherwise winch may have to be removed from tractor.

Support remaining clutch in same manner, pull shaft free of case, and remove clutch. Remove other bearing cone from shaft with bearing puller.

NOTE: If it is necessary to drive shaft out of case, thread a 3/4 UNF cap screw into end of shaft to protect threaded hole in shaft.

If winch is removed from tractor, remove bevel pinion carrier with pinion. If no parts are to be replaced on pinion and carrier, mark shims for proper installation during reassembly.

Using a soft drift or wooden block, drive bevel gear toward the center of winch to press spacer and bearing from case. Remove spacer and bevel gear. Remove ball bearings from spacer and bevel gear.

**CARCO MODEL J-120-PS WINCH
SERVICE SECTION--PAGE 12**

**Bevel Pinion and Carrier - Dis-
assembly**

See Figure 7.

Remove lock nuts from forward end of shaft. Press pinion out rear of carrier.

Remove remaining components from carrier and shaft.

Assembly

See Figure 7.

NOTE: If carrier or bearings are replaced, use longest spacer and shim set to adjust bearing preload. Shim forward bearing cup as required to obtain correct preload.

Press bearing cups into carrier. Press rear bearing cone on bevel pinion shaft.

Install pinion in carrier. Install bearing spacer and forward bearing cone.

Install seal sleeve and one lock nut. Adjust bearing preload. See Bevel Pinion Bearing Preload Adjustment

After adjustment is established, remove lock nut and seal sleeve. Install oil seals into carrier inner seal with lip toward winch transmission, outer seal with lip toward tractor transmission.

NOTE: For final assembly, use either Type B, Type CV, Bearing Mount, or Nut Lock LOCTITE compounds on lock nut threads and on inside diameter of seal sleeve. Follow manufacturers' instructions for use.

Install seal sleeve and lock nuts. Recheck bearing preload adjustment. Seals will add 5-10 lb./in. preload.

Installation

See Figure 6.

Install ball bearings on bevel gear and bevel gear spacer. Install gear and spacer in winch case.

Install shaft installation tool #46252 on end of shaft. Insert shaft into winch, with installation tool toward forward clutch side. Pull shaft through bevel gear and spacer, turning as necessary to align splines.

Pull bevel gear shaft back sufficiently to permit installation of forward clutch.

Support clutch and pinion assembly with plate SK-8028 and eyebolt SK-8029. See Figure 8.

Position clutch in winch case and carefully pull bevel gear shaft through clutch, turning shaft as necessary to align splines with those in static seals and splined spacer.

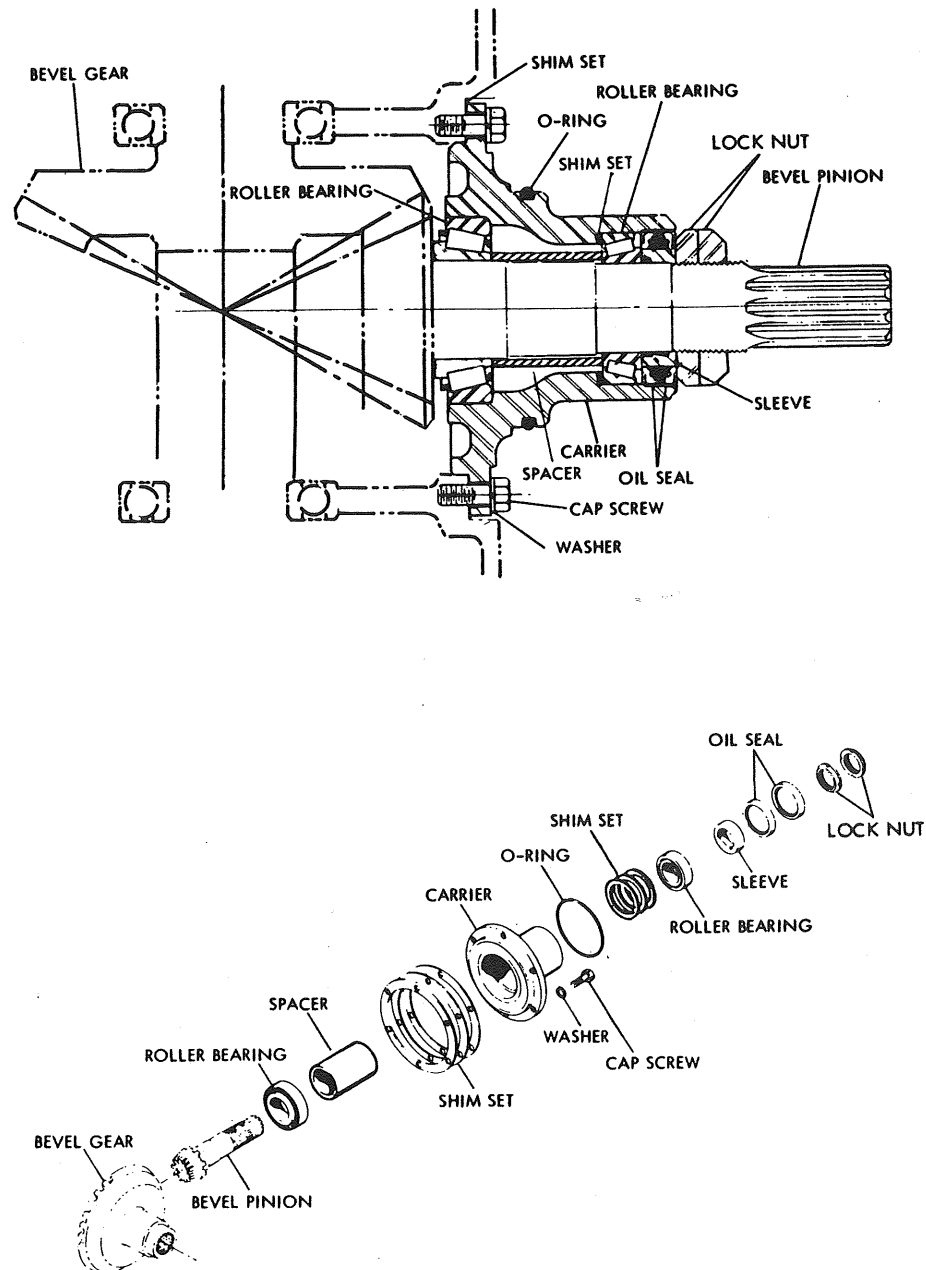


FIGURE 7

**CARCO MODEL J-120-PS WINCH
SERVICE SECTION--PAGE 14**

Push shaft through clutch sufficiently to remove tool from shaft. Install tool on reverse clutch end of shaft and move shaft to permit reverse clutch to be installed.

Support reverse clutch in same manner as forward clutch, and position in winch case. Pull bevel gear shaft back through reverse clutch in same manner as for forward clutch.

Remove installation tool.

Center bevel gear shaft so same amount of shaft extends beyond clutch

pinion on each side, being sure all slack is removed from between components on shaft.

Install clutch pinion bearing inner races and retaining rings, aligning match marks. Be sure races are not damaged by bearing rollers in pinion during installation.

Install spacer over end of bevel gear shaft into clutch pinion.

Complete installation of remaining clutch assembly in same manner.

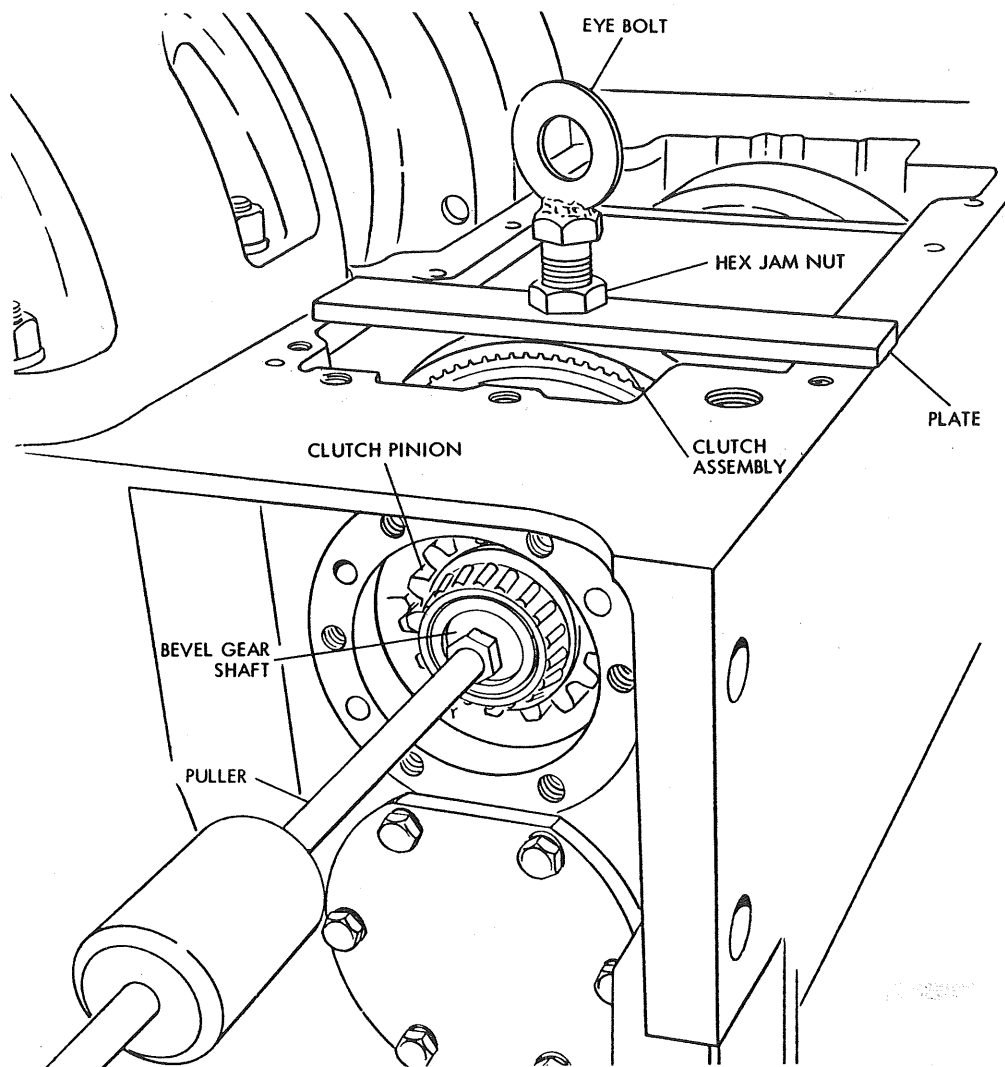


FIGURE 8

Install tapered roller bearings on ends of shaft, using stud SK8027, nut and bearing press SK8026 to press bearings into place. Use two bearing presses simultaneously (one on each end of shaft) to press shaft components together. Bearings should be equally positioned on shaft, within 1/32".

Be sure all spacers, bearing races, and clutch housings are seated so no clearance remains between components on shaft.

Position shims and clamp ring on each end of shaft. Be sure shims are in same position from which they were removed. Add or remove shims as necessary to provide slight compression of clamp ring against bearing cone. Install stub shaft. Check stub shaft for runout. Total runout should not exceed 0.010". Use hardwood drift to tap high point of runout to align, if necessary.

Install bevel pinion and carrier, installing shims in same position from which removed, if no new parts were installed.

NOTE: Install bevel pinion carrier with oil trough facing up.

Install shims on each bearing retainer in same position from which removed, and install bearing retainers on winch case.

NOTE: Install fiber shim in innermost position under carrier.

Adjust bevel gear backlash and bevel gear shaft end clearance, if necessary. Refer to Bevel Gear Backlash Adjustment.

Install seal back-up washer, teflon seal, O-ring, and seal spring in each carrier, and install plugs.

Install brake drum and band. Refer to BRAKE CONTROL, Assembly.

Install case cover. Refer to CASE COVER, Installation.

CLUTCH

Disassembly

See Figure 9.

Remove clutch. Refer to BEVEL GEAR SHAFT, Removal.

Remove retaining ring from clutch body and remove retaining ring (weldment). Slide clutch pinion out of clutch. Remove splined spacer from pinion.

Remove snap rings securing clutch pinion bearing outer races, and remove clutch pinion bearing outer races, noting position for re-assembly. Note marks for matching races.

Similarly note match marks and position of pinion bearing inner races and remove inner races.

Lift clutch plates out of body, and mark plates so that they may be returned in the same order to maintain established wear pattern.

Using suitable press, compress ring retainer against springs, and remove retaining ring. Remove retainer and clutch springs. Remove return ring.

Invert clutch over a soft surface, such as wood, and drop clutch onto surface to remove clutch pinion.

CARCO MODEL J-120-PS WINCH
SERVICE SECTION--PAGE 16

Remove two static seals from clutch body.

Remove piston rings from piston and clutch housing.

Inspection

Inspect clutch discs for damage, warping, and excessive wear. Measure thickness of discs while stacked in operating position. Minimum thickness of pack is 1-1/4". If total thickness is less than this amount,

replace discs. Replace warped or damaged plates.

Inspect clutch piston for damage and wear. If piston is damaged or shows excessive wear, replace piston.

Inspect orifice dowel. Be sure opening is 0.031".

Check piston ring wear. If piston rings installed protrude less than .015" from surface of piston or clutch body, replace rings.

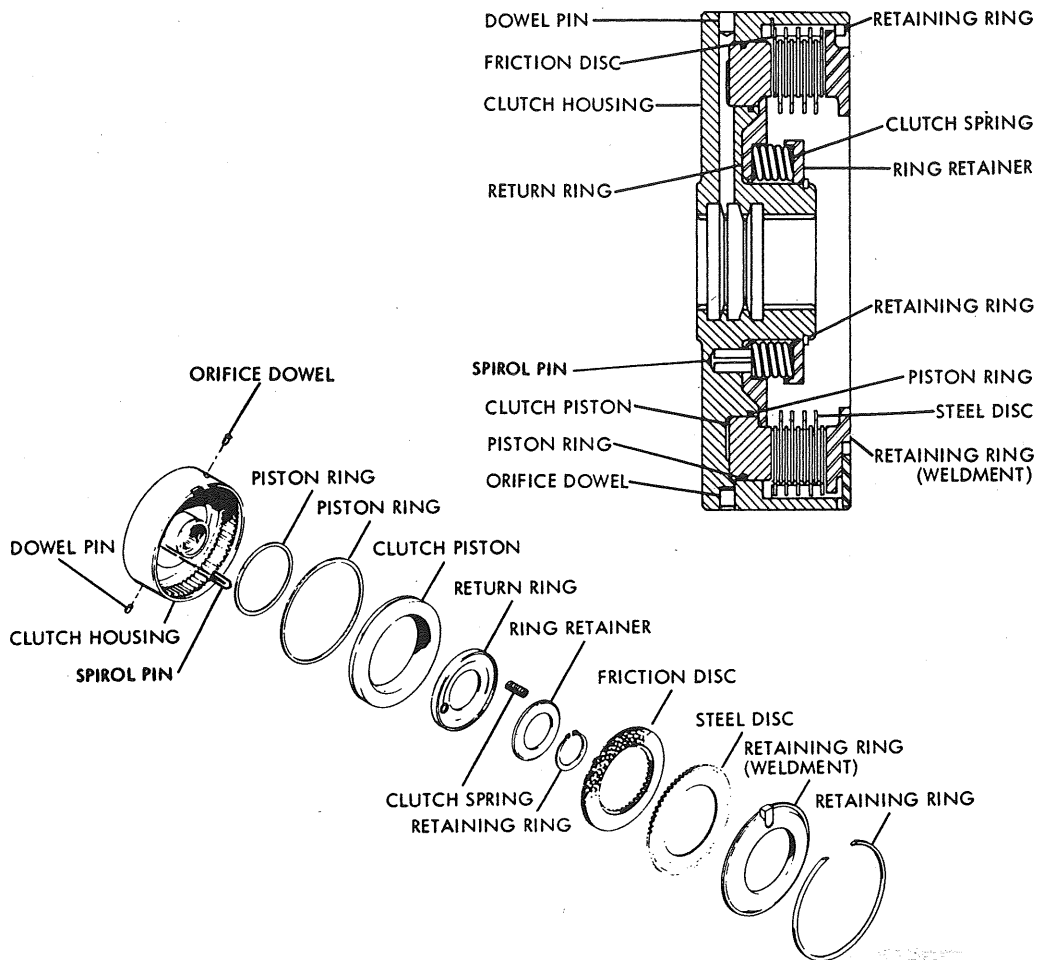


FIGURE 9

Assembly

See Figure 9.

Clean all clutch parts thoroughly before reassembling.

Install piston rings in clutch housing and on piston. Lubricate rings, after installation, with SAE 10W oil to facilitate installation of piston.

NOTE: Do not oil rings before installation in housing and piston. To do so tends to prevent ring from seating properly.

Position piston in housing and press evenly into place until piston bottoms in housing.

Install return ring in clutch housing with hole in ring aligned with pin in housing. Position springs with one spring over pin. Install ring retainer over springs and, using suitable press, compress springs sufficiently to permit installation of retaining ring. Install retaining ring so that sharp edge on inner diameter faces outward.

Install pinion bearing outer races in clutch pinion, and position so that outer faces of bearings are just clear of the inner edge of the respective retaining ring grooves (3/8" in from side surfaces of pinion).

NOTE: Observe match marks on pinion bearing outer races when installing bearings.

Install spacer and pinion gear in clutch.

If original clutch discs are used, install discs in same order from which they were removed, observing marks made at time of disassembly.

If new or unmarked clutch discs are installed, begin with a disc splined in the outer circumference, then alternate with inner- and outer-splined discs until there is a total of five outer-splined discs and four inner-splined discs, concluding with an outer-splined disc.

Install clutch disc retaining ring (weldment) and install retaining ring. Be sure ring is fully seated in groove in body.

NOTE: In some circumstances, it is possible for the clutch pinion to move outward sufficiently to allow the second from the inner disc to drop off the clutch pinion splines. To prevent this possibility, temporarily install two wedges between the outer surface of the splined portion of the clutch pinion and the inner surface of the clutch disc retaining ring. Be sure to remove wedges after clutch is installed in winch.

Lubricate outer circumference of static seals with clear vaseline before installation. Do not use oil.

Install two new splined static seals in clutch housing bore.

NOTE: Use of grease for lubrication of I. D. of seals is not recommended, as it may prevent visual determination of alignment.

ment of seal splines with those on clutch housing. Use light oil.

Carefully align static seal splines with those in clutch housing.

Install lifting eyebolt through plate SK-8028 and in threaded hole in outer surface of clutch housing and support clutch. See Figure 8. Lower clutch into winch case and align clutch pinion and brake shaft gear.

Adjust nut on eyebolt, and rotate bevel gear and spacer to align internal splines for installation of bevel gear shaft. Check alignment of splines of static seals and splined spacer.

Install bevel gear shaft. Refer to BEVEL GEAR SHAFT, Installation.

BRAKE CYLINDER

Removal

Refer to BRAKE CONTROL, Disassembly.

Disassembly

See Figure 10.

Rotate brake cylinder so ports face downward, and work piston back and forth to remove oil.

Remove rod head lock screw.

Unscrew rod head from cylinder tube, and pull rod and rod head from tube.

Remove piston nut from rod. Remove piston from rod, and remove piston packing. Remove piston seal.

Remove rod head from piston end of rod. Remove rod wiper, packing, and head seal from rod head.

Inspection

Inspect piston, rod, and inside of tube for scoring, scratches, and excessive wear. Replace parts that are scratched, scored, or worn beyond the point where a leak-free seal can be obtained.

Inspect orifice in piston. Orifice should be 0.031".

Inspect seals and wipers for cuts, distortion, and deterioration. Replace any defective part.

Brake cylinder return line orifice should be 0.060".

Assembly

See Figure 10.

Install rod wiper and rod packing in rod head bore. Lubricate with SAE 10W oil after installing. Install rod head on rod from piston end to prevent possible damage to wiper and packing by hole in outer end of rod.

Install piston seal in inside diameter of piston.

Position piston on rod. Install piston packing on piston, with lip of packing facing toward threaded end of rod. Secure with piston nut.

Install head seal on rod head. Lubricate piston packing and head seal with SAE 10W oil and insert piston carefully into end of cylinder tube. Push piston rod straight into tube, being careful not to damage packing on groove in outer end of tube.

When piston is approximately halfway into tube, push rod head into tube. Engage threads and turn rod head until it is tight in cylinder tube. Secure with rod head lock screw.

Installation

Refer to BRAKE CONTROL, As-
sembly.

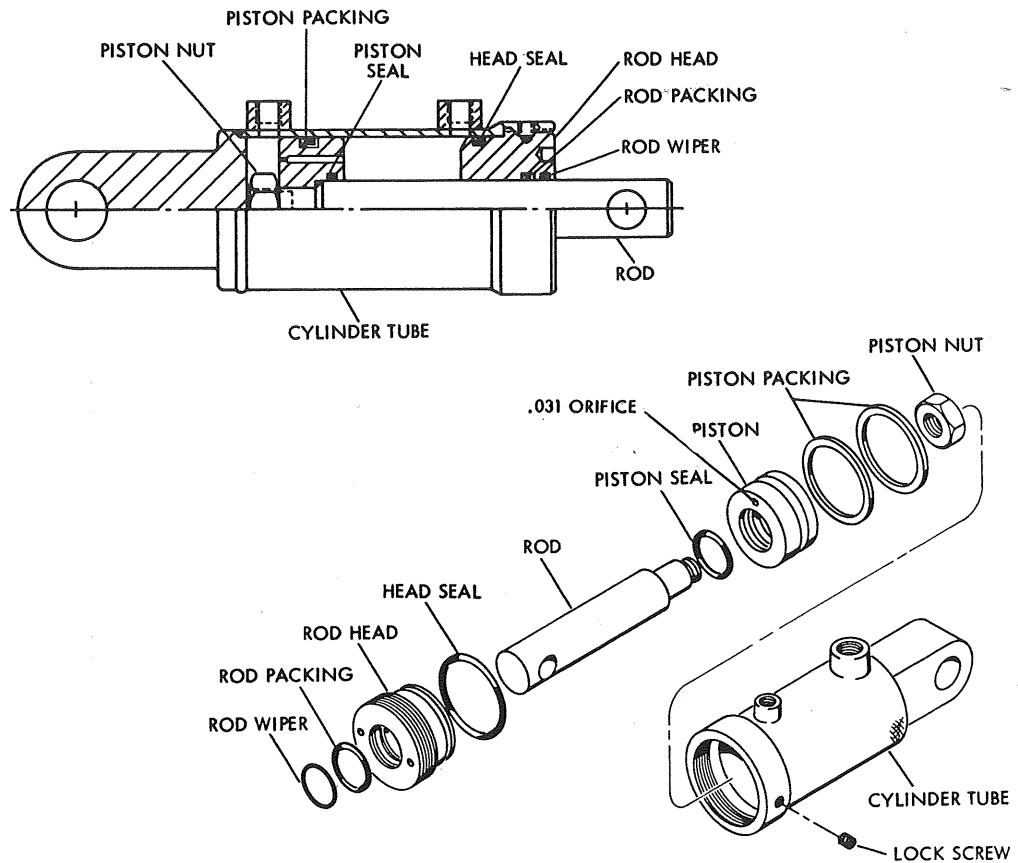
BRAKE SHAFT

Removal

See Figure 11.

Drain oil from winch.

Remove brake band and brake drum. Refer to BRAKE CONTROL, Disassembly.



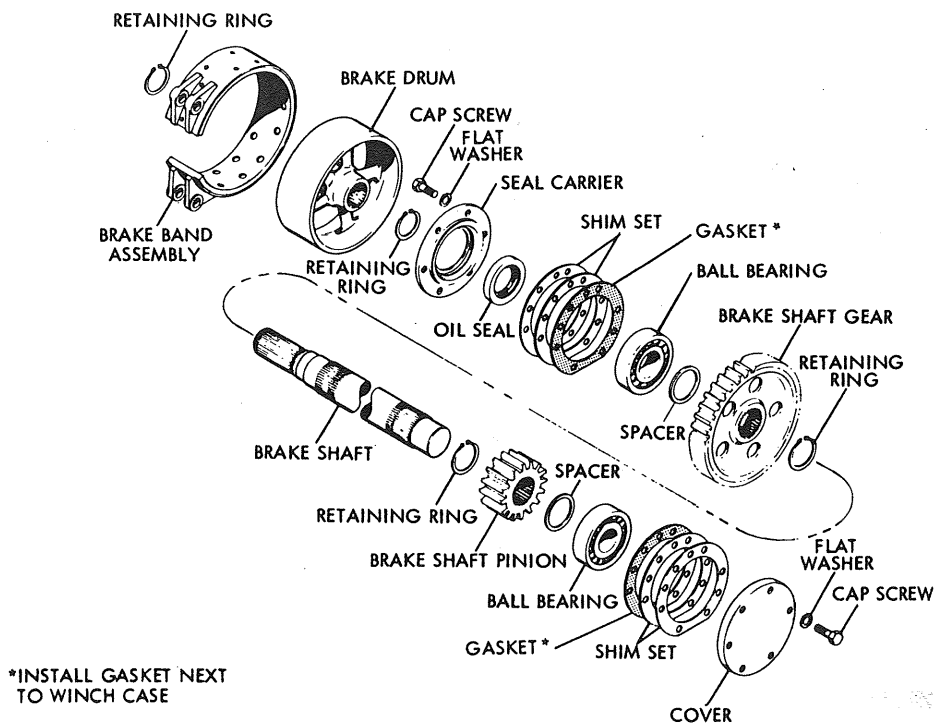
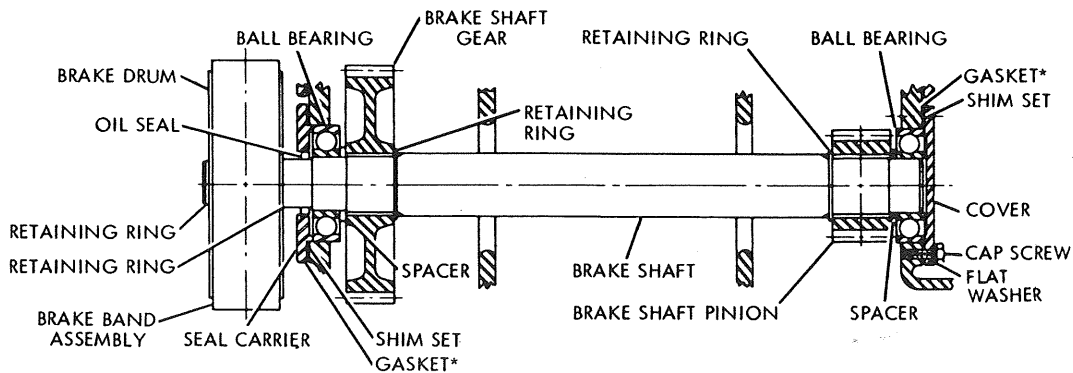
BRAKE CYLINDER NO. 45861

FIGURE 10

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If brake shaft gear is to be removed from case, remove forward clutch. Refer to BEVEL GEAR SHAFT, Removal.

Remove brake shaft cover. Remove seal carrier from brake side of shaft in same manner. Mark shims under covers for proper position at reassembly.



*INSTALL GASKET NEXT TO WINCH CASE

FIGURE 11

If oil seal is to be replaced, remove seal from carrier.

Using a soft drift, drive brake shaft out the gear side, taking pinion and bearing with it. Remove bearing, spacer, and pinion from brake shaft. Remove retaining ring from each end of shaft.

Lift brake shaft gear and spacer out of winch case.

Pull ball bearing from brake side of case.

Installation

See Figure 11.

Install ball bearing in brake shaft bore on brake side of case.

Install two retaining rings in grooves at each end of brake shaft.

Insert brake shaft from gear side, position spacer and brake shaft gear, and rotate brake shaft gear to align splines with those on shaft. Insert shaft until gear rests against retaining ring.

Slide brake shaft pinion and spacer on gear end of shaft. Install ball bearing on gear end of shaft.

If oil seal was removed from seal carrier, install a new seal in carrier and install carrier in bore, being sure to install shims in same position from which they were removed. If new parts were installed, shim as necessary while adjusting end clearance in brake shaft.

NOTE: Install gasket next to winch case.

Secure carrier to case with cap screws and washers.

Install cover and shims on gear side of case in same manner, adjusting end clearance, if necessary, by adding or removing shims.

Install bevel gear shaft. Refer to BEVEL GEAR SHAFT, Installation.

Install brake band and brake drum. Refer to BRAKE CONTROL, Assembly.

DRUM SHAFT

Disassembly

See Figure 12.

Remove cotter pin securing cable guard, and remove guard.

Remove nuts from ends of drum shaft.

Remove hex nuts and washers securing brake side cover, and remove cover.

Remove cap screws and washers securing gear side cover, and remove cover.

Using suitable hoist, lift drum and shaft assembly from winch case. Mark bull gear and drum for proper positioning during reassembly. Remove O-ring and set spacer from gear end of shaft.

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SERVICE SECTION--PAGE 22

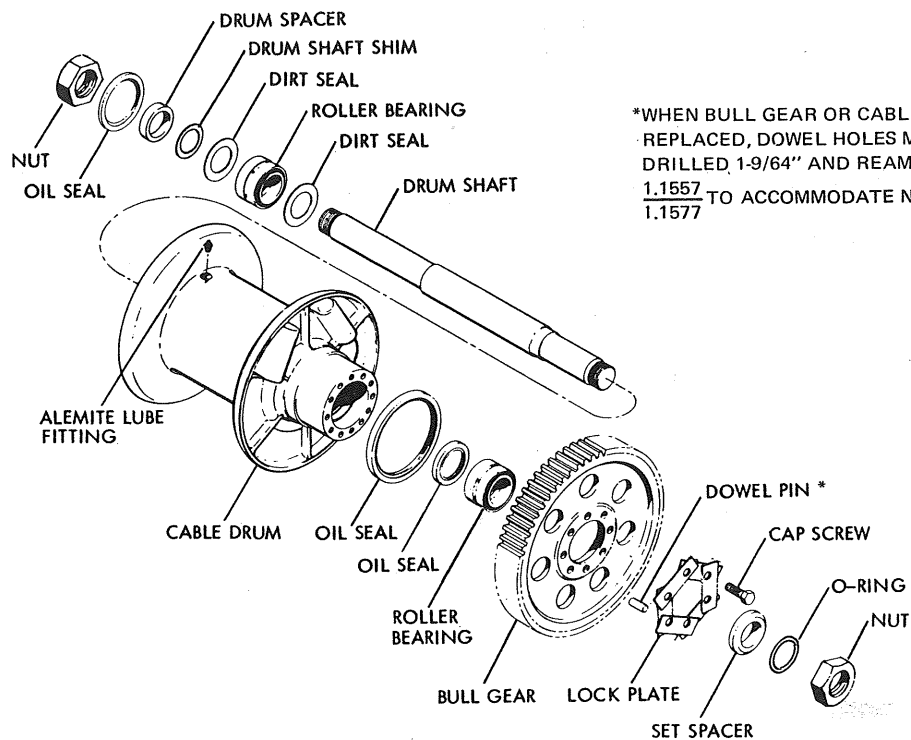
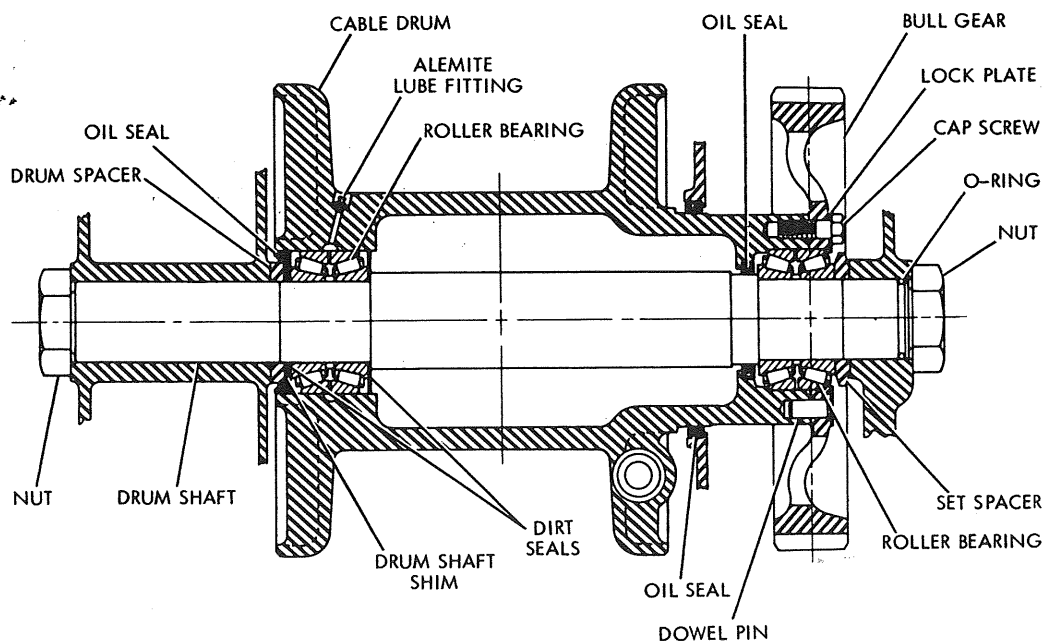


FIGURE 12

Remove cap screws securing bull gear to drum, and remove lock plate and gear.

Pull shaft from brake end of drum. Remove oil seal, drum spacer, dirt seals, and bearing from shaft.

Remove bearing and oil seal from gear side of drum.

Assembly

See Figure 12.

Install oil seal in bore at gear side of drum. Install tapered roller bearing in gear end of drum.

Install inner dirt seal and tapered roller bearing on brake end of drum shaft. Insert drum shaft into brake end of drum. Install outer dirt seal, drum spacer, and oil seal on brake end of shaft.

Install oil seal on outer surface of drum at gear end.

Position bull gear on drum, observing location marks made at time of disassembly. Secure gear to drum with hex-head cap screws and lock plate.

NOTE: If either drum or bull gear is replaced, ream dowel holes as required and install dowels.

Install set spacer and O-ring on gear side of shaft, and, using a suitable hoist, lift assembled drum and shaft and lower into winch case, being careful to guide oil seal on gear end of drum into seal recess in case.

Install gear side cover with gaskets, using gasket compound, and secure to case with cap screws and washers. Trim surplus material from end of gaskets.

Install brake side cover and secure to case with nuts and washers.

Install nut on each end of drum shaft. Tighten nut on brake side first.

Install cable guard in case, and secure with cotter pin.

IDLER SHAFT

Removal

See Figure 13.

Remove drum shaft. Refer to DRUM SHAFT, Disassembly.

Remove idler shaft cover. Mark shims for correct position at time of reassembly.

Using shaft and cap puller SK-7733 and idler shaft puller adapter, remove idler shaft and outer bearing. Remove outer bearing from idler shaft. Remove bull pinion and idler gear through bull gear opening in winch case.

Remove inner bearing.

Installation

See Figure 13.

Install inner bearing.

Support bull pinion in housing and insert idler shaft through pinion.

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SERVICE SECTION--PAGE 24**

Support idler shaft gear in housing and push idler shaft through gear, turning as necessary to align splines.

Be sure idler shaft is installed with drilled end of shaft outward.

Press idler shaft into inner bearing.

Install outer bearing into bearing bore onto idler shaft.

Install shims, gasket, and cover on case, being sure shims are in same position from which they were removed, and secure cover.

NOTE: Install gasket next to winch case.

If new parts are used, shim as required to adjust end clearance.

Install drum shaft assembly. Refer to DRUM SHAFT , Assembly.

ADJUSTMENTS

Brake Clearance Adjustment

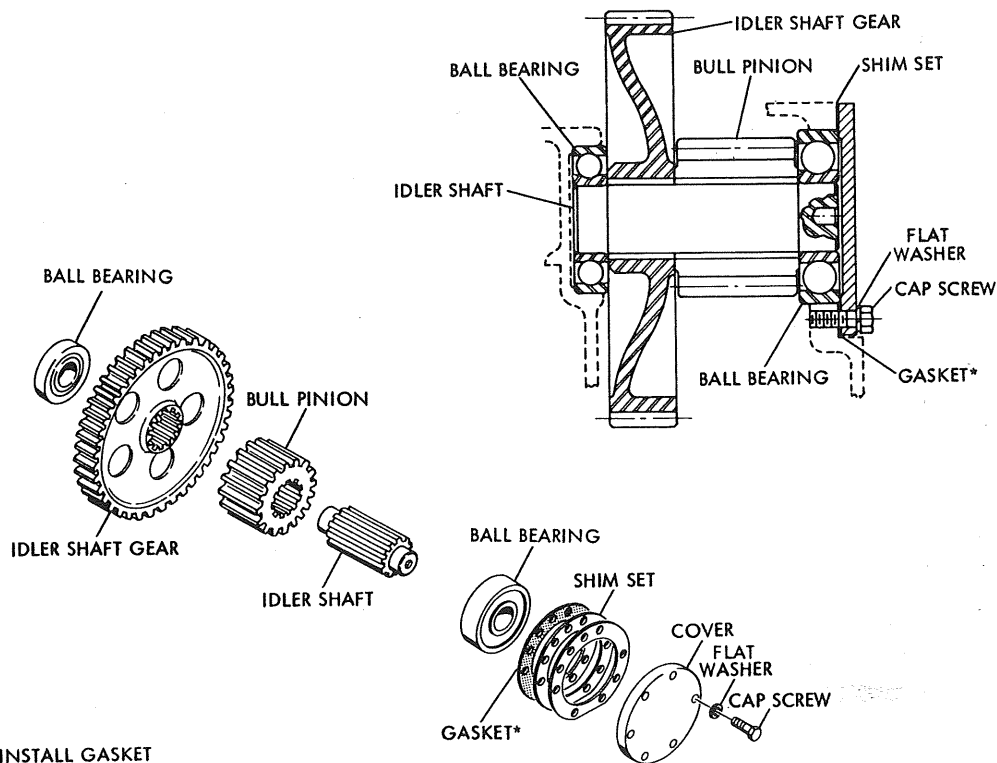
See Figure 2.

Remove brake adjustment cover.

Start tractor engine and shift winch to brake-off position. Be sure brake is fully released.

Adjust brake rod until brake band is tight, then back off brake rod four or five hex flats. Adjust so a flat side of the rod nut is flat against the brake rod spring.

Install brake adjustment cover.



* INSTALL GASKET
NEXT TO WINCH CASE

FIGURE 13

Brake Spring Adjustment

See Figure 2.

1. Remove spring adjustment cover and brake side cover.

2. With tractor engine stopped, remove orifice from brake cylinder return line and reinstall line.

3. Loosen jam nut and turn spring adjustment nut as required to increase or decrease spring tension. Brake should start to release at approximately 175 PSI and should be fully released at 190 - 200 PSI. Do not overtension.

4. Replace orifice in return line.

5. Tighten jam nut and install spring adjustment cover.

Do not allow brake to slip or drag over extended periods of time.

Control Stand Adjustment

With tractor engine running, check operation of the winch with control handle in each of the four positions. Winch should be in brake-off when control handle is in the clip-lock position. Check to see that winch does not shift to reverse when handle is pushed forward slightly to release from clip-lock position.

If adjustment is not correct, detach control stand from mounting surface, loosen set screw in control anchor, and rotate entire stand around cable to thread cable in or out of stand to accomplish desired adjustment. Fine adjustment of brake-off position is accomplished by adjusting the position of the clip.

See cable installation instructions under CASE COVER, Assembly for cable adjustment procedure.

When adjustment is correct, bolt stand back on mounting surface.

Relief Valve Adjustment

Relief valves are adjusted at the factory, and should not require further adjustment. After cleaning the relief valve, however, or if incorrect pressure adjustment is suspected, proceed as follows:

1. Stop tractor engine.

2. Install gage of 0 to 400 PSI range in 1/4 NPT port on valve cover.

3. Start tractor engine and place control stand in brake-off position.

4. Check pressure reading on gauge. Pressure should be 240 to 260 PSI.

5. If pressure setting requires readjustment, stop tractor engine and remove valve housing. Be sure ball is not dislodged to fall into winch case.

6. Remove shims between spring and end of housing to reduce pressure. Add shims to increase pressure.

7. Reinstall valve housing.

8. Start tractor engine and place control stand in brake-off position.

9. Check pressure reading on gauge. Pressure should be 240 to 260 PSI.

10. Place control stand in clutch positions. Pressure reading should be 240 to 260 PSI.

CAUTION: Before operating winch in clutch positions, be sure wire rope is removed or secured in a manner which will allow cable drum to turn without interference or damage to winch and wire rope.

Bevel Pinion Bearing Preload Adjustment

Tighten nut to 150 to 300 lb/ft. Check bearing preload. Preload torque without oil seals installed should be 0 to 20 lb/in. (5 to 30 lb/in. with oil seals). Add or remove shims under forward bearing cup to obtain correct preload.

Bevel Gear Contact Adjustment

See Figure 14.

Remove or add shims under bevel

pinion carrier as required to set bevel gear contact pattern.

Bevel Gear Backlash Adjustment

See Figure 6.

Remove or add shims under bevel shaft bearing retainers to set bevel shaft end clearance to 0.005 to .010 inch. Transfer shims from one bearing retainer to the other as required to set backlash between bevel gear and bevel pinion to 0.012 to 0.016 in.

Reversing Cable Drum Rotation

To change winch from overwind to underwind or vice versa, reverse positions of the bevel gear and bevel gear spacer and reverse positions of the brake anchor pin and brake link pin. Refer to BEVEL GEAR SHAFT and BRAKE CONTROL.

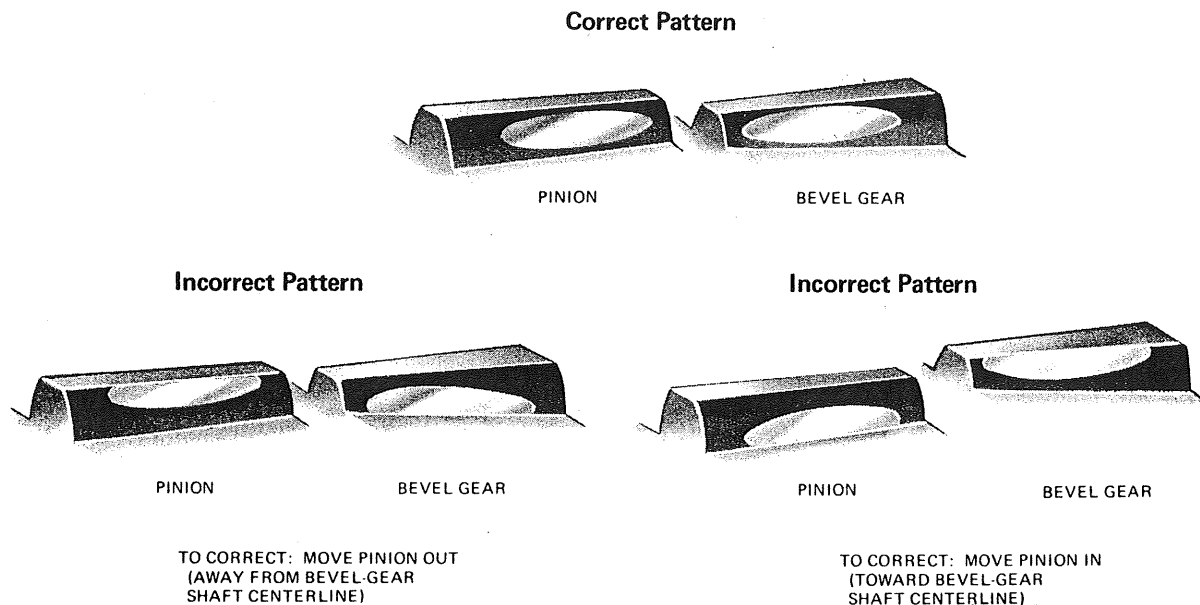


FIGURE 14

GEAR TOOTH CONTACT PATTERNS

SERVICE DATA

CAP SCREW TORQUE VALUES (SAE Type 2, Grade 5)

Bolt Size	Torque - lb/ft		Bolt Size	Torque - lb/ft	
	Min.	Max.		Min.	Max.
1/4	9	10	7/8	420	470
5/16	19	21	1	630	710
3/8	33	37	1-1/8	850	950
7/16	53	60	1-1/4	1200	1350
1/2	80	90	1-1/2	2000	2300
5/8	160	180	1-3/4	3300	3700
3/4	290	320	2	5000	5500

The tabulated values apply when:

1. Tapped holes have sufficient threads to prevent stripping female threads.

2. All threads are lubricated with engine oil or light grease.

3. Joints are rigid; no gaskets or compressible materials used.

When coated or metallic plated bolts are used, or when lubricants other than engine oil or light grease

are used, multiply values in the table by the following factors:

1. .85 when metallic plated bolts or nuts are used.

2. .75 when Parkerized bolts or nuts are used.

3. .70 when Molykote, white lead, or similar mixtures are used as lubricants.

4. .90 when hardened surfaces are used under the nut or bolt head, whichever is torqued.

CLUTCH DATA

Clutch disc pack minimum thickness	1-1/4 in.
Clutch disc pack minimum clearance	.100 in.
Clutch piston ring wear:	
Large piston ring protrusion beyond outer surface of piston	0.015 in. min.
Small piston ring protrusion beyond surface of housing	0.015 in. min.
Orifice dowel opening	0.031 in.

BEARING PRELOAD, GEAR BACKLASH, AND SHAFT END
CLEARANCES

Bevel pinion bearing adjustment:

Bearing end play002 in. loose to .002 in. tight
Torque without carrier seals installed	max. 10 lb./in.
Bevel pinion nut torque	150 to 300 lb./ft.
Bevel gear shaft end clearance	0.005 to 0.010 in.
Bevel gear to bevel pinion backlash	0.008 to 0.012 in.
Brake shaft end clearance	0.010 to 0.020 in.
Idler shaft end clearance	0.005 to 0.015 in.

BRAKE ASSEMBLY DATA

Minimum thickness of brake lining	1/4 in.
Brake cylinder piston orifice	0.031 in.
Brake cylinder return line orifice	0.060 in.

SPECIAL SERVICE TOOLS

