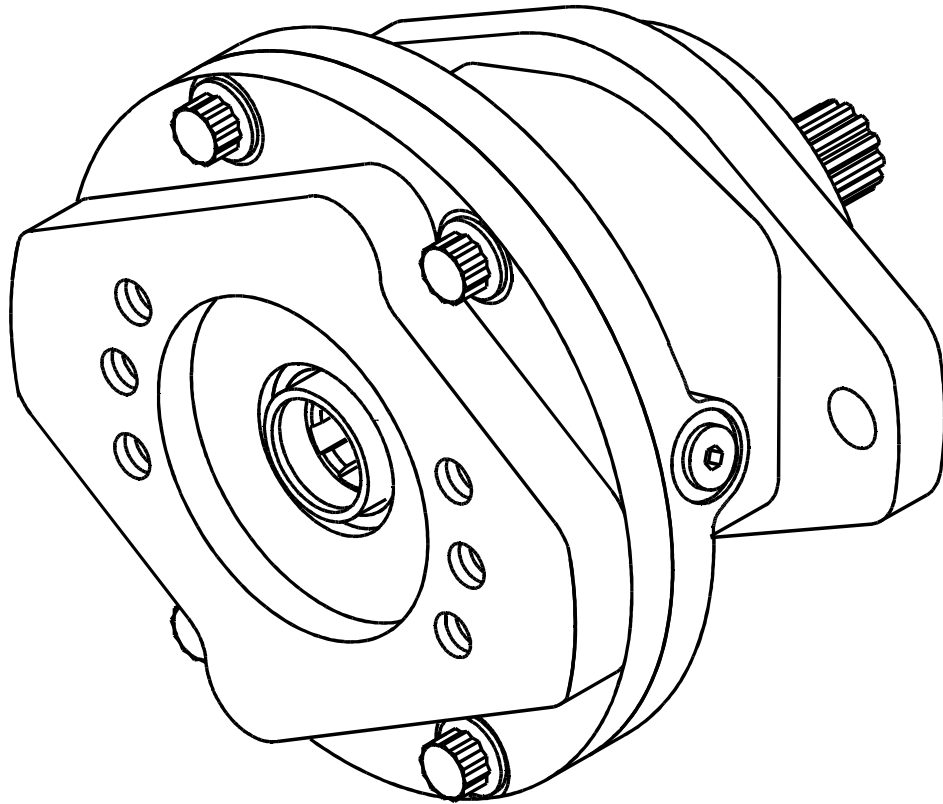
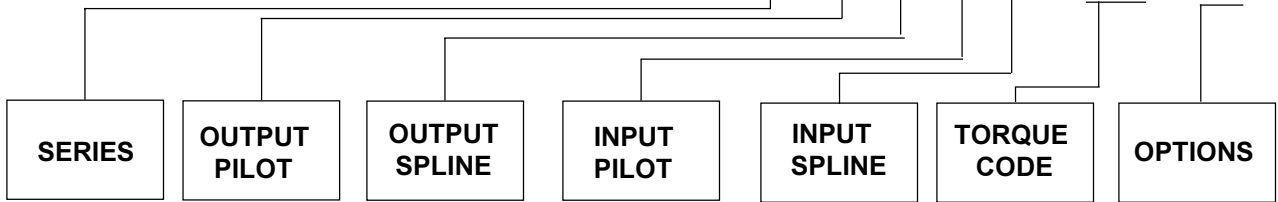


ESKRIDGE

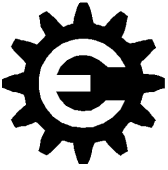


EXAMPLE PART NUMBER: 90 B 2 A 3 G045 F



90B SERIES BRAKE Service & Repair Manual

EFFECTIVE FOR:
S/N: 00001 10/09/81
TO: CURRENT



SERIES 90B SERVICE MANUAL

This manual will assist in disassembly and assembly of the above model brakes. Item numbers, indicated in parentheses throughout this manual, refer to the exploded parts breakdown drawing. Individual customer specifications may vary from exploded drawing and standard part numbers shown. If applicable, refer to individual customer drawing for details.

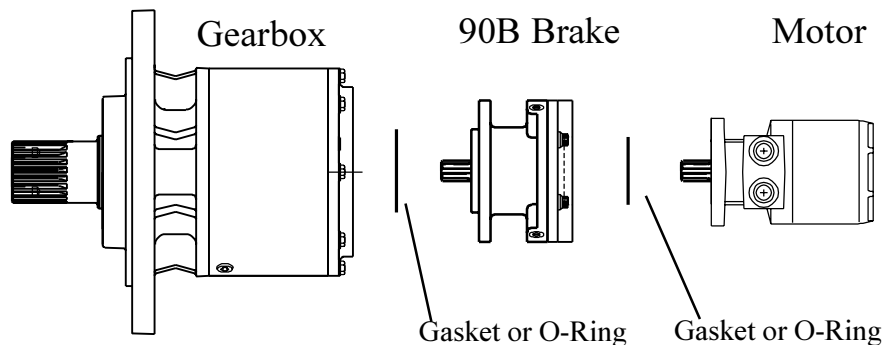
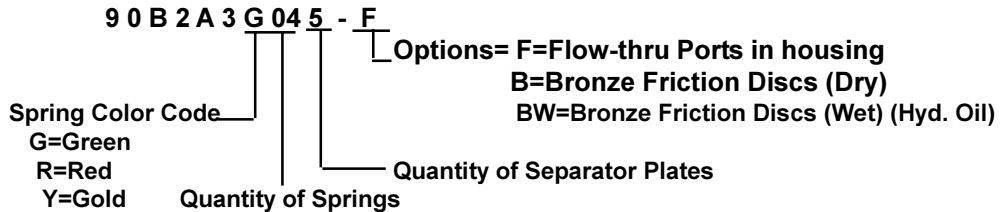
The Model 90B Series Eskridge brake is a spring applied, hydraulically released, multiple disc parking brake. The 90B is designed for "failsafe" type operations. Temperature, wear, and contamination of the friction surfaces will affect the performance of the brake and should be taken into consideration when specifying a required torque rating. Care should be taken to avoid damaging the splines or mounting surfaces during installation. The model 90B is not intended for use in dynamic applications. Please contact Eskridge Sales Dept. about any flow through applications. Brake operation should be tested during normal service operation. Brake inspection and service should be part of the normal service and maintenance schedule of the equipment or vehicle on which it is used. Any loss of holding torque requires the removal, inspection and replacement of suspect components.

SPECIFICATIONS

Maximum pressure	3,000 PSI
Maximum continuous pressure	3,000 PSI, per ANSI A92.2-1990
Maximum speed	3,900 RPM
Shaft splines	30° involute, flat root side fit per ANSI B92.1a-1976 internal-class 7, external-class 5
Maximum output spline torque	4000 lb-in for code 2, 13T 16/32 8000 lb-in for code 3, 1-6B
Maximum operating temperature	170°F
Volume of oil to release brake	.3 cu. in.
Approximate weight	25 lbs.

Torque ratings are based on standard friction material in ATF-F fluid media or dry bronze at (0) PSI back pressure. Break away torque may vary +/-10% from specified ratings. The "W" wet option applies to bronze friction discs only and is furnished with mineral base hydraulic oil. Torque rating for wet bronze brakes will vary depending upon the type of oil used. Use only mineral base hydraulic oil for release of brake. For flow-thru option "F", use only fluids that are compatible with internal seals. Use of fluids other than specified above will alter torque values.

TORQUE CODE AND OPTIONS





Installation

NOTE: Before beginning installation procedures, visually inspect brake mounting flanges and shaft splines for damage due to poor handling during shipping. If damage is excessive, do not use brake.

- 1) The 90B brake is supplied with the necessary o-rings and/or gaskets for mounting the brake to a gearbox and a motor to the brake.
- 2) Mount 90B brake with (2) 1/2-13x1 capscrews through brake mounting flange. On horizontal shaft mountings, one o-ring port should be oriented as close to top as practical (bleeder port). Some installations require that brake be "released" so it can be rotated to align bolt holes (see step 6 of installation instructions)
- 3) Attach motor to input end of brake with appropriate sized capscrews through motor flange and gasket to give approximately 1/2" thread engagement. Make sure capscrews do not bottom out when fully tightened.
- 4) Torque all capscrews to approximately 75% of their yield strength. Refer to the chart below for appropriate thread size and torque loads:

TORQUE IN FT - LBS				
THREAD SIZE	SAE GRADE 5		SAE GRADE 8	
	DRY	LUBED	DRY	LUBED
3/8-16	30	23	45	35
1/2-13	75	55	110	80
5/8-11	150	110	220	170
3/4-10	260	200	380	280

- 5) Remove plastic protective plug from pressure port of brake and attach a pressure line with 7/16-20 UNF-2B straight thread ring fitting.
- 6) Apply low pressure (20-30 PSI) to brake release port. Loosen Hollow Hex Plug, opposite of pressure port. Just enough to allow hydraulic fluid to bleed from cavity. After air has been bled from brake, tighten plug.

Disassembly

- 1) Remove motor from brake.
- 2) Loosen four 1/2-13x1 12-Point Capscrews (8). Alternately unscrew capscrews 1 turn at a time until all internal spring force is relieved. Remove cover (2) and springs (10).

CAUTION: Do not clamp or otherwise restrain cover (2) while removing cover bolts (8) since the brake is under high compressive spring load.

- 3) Apply low pressure air (20-30 PSI) to brake release port while holding one hand on top of piston (3). The air will force piston out of case. If friction discs (11) will be reused, turn brake upside down so that hydraulic oil cannot run down into case (1) as piston is forced out.
- 4) Remove shaft (4).
- 5) Friction discs (11), separator plates (12), and spacers (5) may now be removed from case (1). If your brake has a full compliment of friction discs (11) and separator plates (12), it will not have any spacers (5).
- 6) Remove seal (18) and bearing (6).

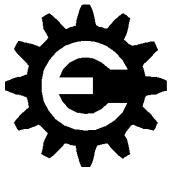
Inspection

- 1) Friction discs (11) should be replaced when overall height of stack of spacers (5), friction discs (11) and separator plates (12) is less than 1.230". This overall height represents an approximate 10% decrease in holding torque from that of a new brake.
- 2) Inspect piston rings (13, 14, 15 & 16) for signs of abrasion, extrusion or other damage.

Assembly

Assembly should be in reverse order of disassembly with the following additional instructions.

- 1) Install shaft (4) by pushing shaft downward through bearing (7) and Seal (18) until bearing shoulder on shaft is seated against bearing.



2) Friction pack [Spacer (5), Friction Disc (11), and Separator Plate (12)] must be installed in exactly the same order as they were removed. There must always be a Friction Disc (11) above and below each Separator Plate (12). If a Separator Plate (12) is placed next to the Piston (3) or Spacer (5), the unit will overheat and seize up. Be careful not to contaminate the friction surfaces with dirt, grease or fluid media* other than what is specified by your particular brake.

NOTE:

If installing new friction discs (11), soak all discs in specified fluidmedia * before installation.

3) Pour appropriate fluid media, approximately 1 1/2 oz. over the friction plates or until the fluid level is even with top friction disc (11). See Fluid Media Table below.

4) If replacing piston o-rings, be sure o-rings (15&16) are nearest each other with backup rings (13&14) to the outside after installing onto Piston (3). Flat side of backup-ring must be placed next to piston groove wall, curved face toward o-ring. Lubricate o-rings and bores with silicone based lube or with mineral base oil. Gently slide Piston (3) into case (1) until large o-ring (16) touches case. Press down firmly on piston using heel of both hands. This will squeeze o-rings into case and set piston (3) against friction plates. Do not use a hammer

or mallet to install piston.

5) Insert springs (10) into piston (3) evenly or symmetrically spaced.

6) Install cover o-ring (17) around lip on case (1).

7) If item (7) is a ball bearing, install it in cover (2). If item (7) is a thrust washer, install it on shaft (4).

8) Set cover (2) on top of springs (10) over input end of shaft (4). Start four capscrews (8) through cover and into case with your fingers. Alternately tighten cover bolts 1 turn at a time until cover is tight against case. Torque bolts to 80 ft-lbs.

NOTES:

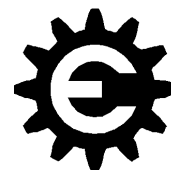
Maximum operating pressure is 3,000 PSI. Operation above this pressure is detrimental to the life of the brake and could be dangerous.

Fluid Media Table

<u>Option Code</u>	<u>Friction Disc Lining</u>	<u>Fluid Media</u>
None (Standard)	Paper Composite	Automatic Transmission Fluid, ATF-Type F*
B	Bronze (Dry)	None
BW	Bronze (Wet)	Mineral Base Hydraulic Oil

*Other fluids such as Dextron III will deliver lower holding torque. Contamination of ATF-F with hydraulic or other oils will also lower holding torque.

It is recommended that spring holes in piston be filled with fluid (1/2 oz.) after piston is installed. This will prevent fluid that is below piston from being trapped above it when brake is turned to horizontal position and back to vertical.



Repair Kits Model 90B

NOTE:

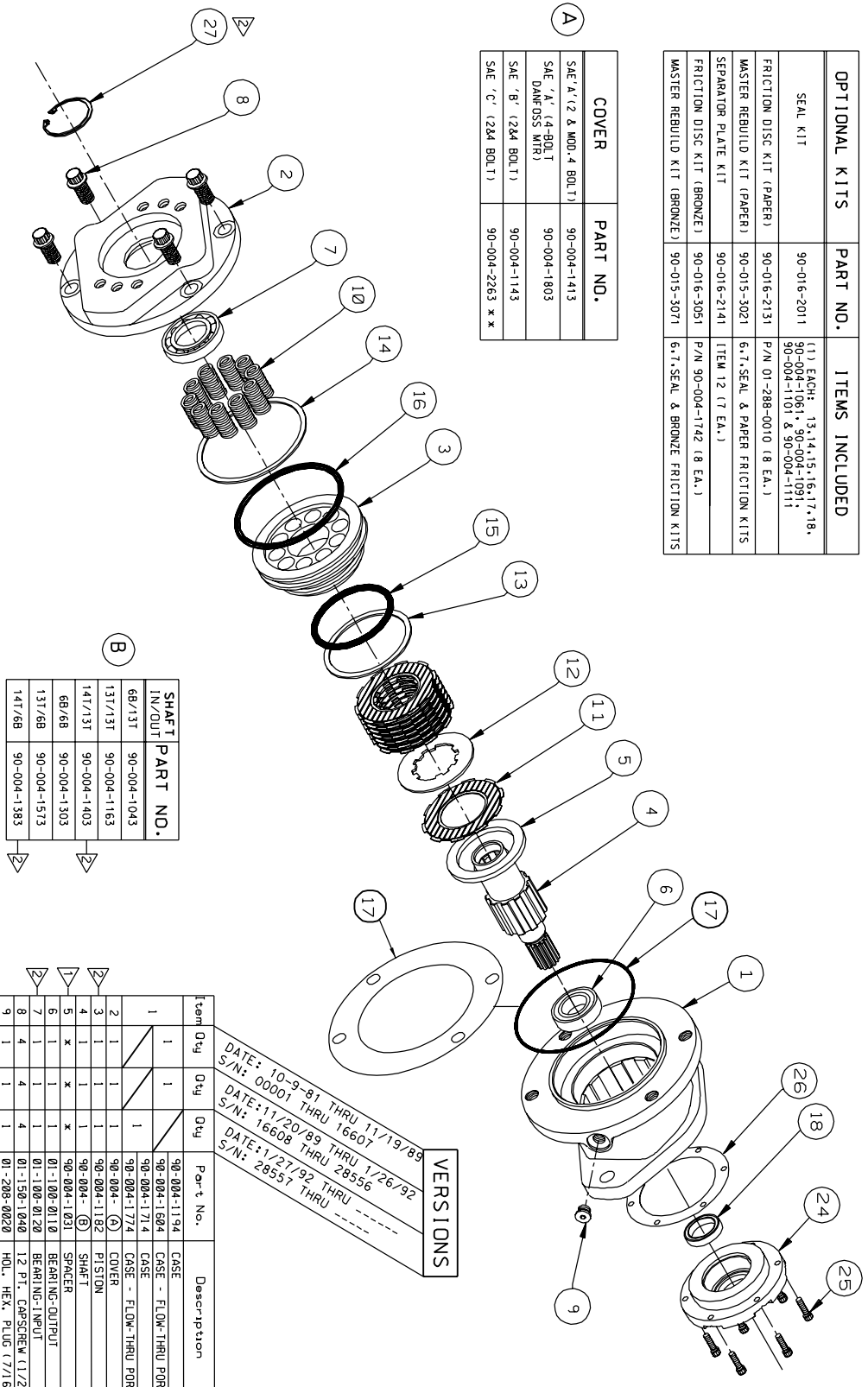
Due to the many combinations of torques and release pressures available, it is impossible to detail each style and supply a repair kit for each individual model. The repair kits listed below will work with all combinations of torque vs. release pressure, input mountings and friction plates. It is entirely possible to have "extra" parts left over from the repair kits after you have complete the

*repair or maintenance. If you are not sure about what is required for your brake and its configuration, please contact **Eskridge, Inc.** sales or engineering department.*

<u>Kit Description</u>	<u>Kit P/N</u>	<u>Components Included & Qty.</u>
Friction Disc Kit (Paper)	90-016-2131	01-288-0010 Paper Friction Disc (8)
Friction Disc Kit (Bronze)	90-016-3051	90-004-1742 Bronze Friction Disc (8)
Separator Plate Kit	90-016-2141	01-288-0020 Separator Plate (7)
Seal Kit	90-016-2011	01-400-0120 Back-up Ring, Piston (1) 01-400-0140 Back-up Ring, Piston (1) 01-402-0450 O-Ring, Piston (1) 01-402-0470 O-Ring, Piston (1) 01-402-0580 O-Ring, Case Seal (1) 01-405-0340 Shaft Seal (1)
Master Rebuild Kit (Paper)	90-015-3021	90-004-1061 Gasket, Mtr., SAE"A" 4 Bolt (1) 90-004-1091 Gasket, Mtr., SAE"B" 2 Bolt (1) 90-004-1111 Gasket, Base (1) 90-016-2131 Friction Disc Kit, (Paper) (1) 90-016-2011 Seal Kit (1) 01-100-0110 Bearing, Output (1)
Master Rebuild Kit (Bronze)	90-015-3071	01-100-0120 Bearing, Input (1) 90-016-3051 Friction Disc Kit (Bronze) (1) 90-016-2011 Seal Kit (1) 01-100-0110 Bearing, Output (1) 01-100-0120 Bearing, Input (1)

OPTIONAL KITS	PART NO.	ITEMS INCLUDED
SEAL KIT	90-016-2011	(1) EACH: 13,14,15,16,17,18, 90-004-1061, 90-004-1091, 90-004-1101 & 90-004-1111
FRICITION DISC KIT (PAPER)	90-016-2131	P/N 01-288-0010 (8 EA.)
MASTER REBUILD KIT (PAPER)	90-015-3021	6,7, SEAL & PAPER FRICITION KITS
SEPARATOR PLATE KIT	90-016-2141	ITEM 12 (7 EA.)
FRICITION DISC KIT (BRONZE)	90-016-3061	P/N 90-004-1742 (8 EA.)
MASTER REBUILD KIT (BRONZE)	90-015-3071	6,7, SEAL & BRONZE FRICITION KITS

COVER	PART NO.
SAE 'A' (2 & MOD. 4 BOLT)	90-004-1413
SAE 'A' (4-BOLT DAMPOSS MTR)	90-004-1803
SAE 'B' (2&4 BOLT)	90-004-1143
SAE 'C' (2&4 BOLT)	90-004-2263 * * *



SHAFT IN/OUT	PART NO.
68/131	90-004-1043
131/131	90-004-1163
141/131	90-004-1403
68/68	90-004-1303
131/68	90-004-1513
141/68	90-004-1383

VERSIONS

DATE: 10-9-81 THRU 11/19/89
S/N: 0001 THRU 16607

DATE: 11/20/89 THRU 1/26/92
S/N: 16608 THRU 28556

DATE: 1/27/92 THRU
S/N: 28557 THRU

- * QTY. OF SPRINGS MUST BE 2,4,5,6,8 OR 10 SYMMETRICALLY SPACED. TOTAL QTY. OF SEPARATORS (ITEM 12) AND SPACERS (ITEM 5) MUST EQUAL 7. A FULL COMPLIMENT BRAKE INCLUDES 8 FRICTION DISCS (ITEM 11), 7 SEPARATORS (ITEM 12), AND 0 SPACERS (ITEM 5). THE QTY OF ALL ITEMS ABOVE IS DETERMINED BY TORQUE AND RELEASE PRESSURE REQUIREMENTS.
- 2 BRAKE WITH 14T INPUT SPLINE REQUIRES THE FOLLOWING:

ITEM	DESCRIPTION	SAE 'A' / 'B'	SAE 'C' * * *
3	PISTON	90-004-1632	90-004-1632
7	THRUST WASHER	01-112-0280	01-112-0390
27	RETAINING RING	01-150-0620	01-150-0620

 * * * SAE 'C' COVER 90-004-2263 IS NOT AVAILABLE WITH OTHER THAN 14T INPUT SPLINE.
- 3. CASE (ITEM 1) WITH FLOW-THRU PORTS REQUIRES (4) 1/8 NPT PLUGS P/N 01-207-0300 (NOT SHOWN).

EFFECTIVE FROM: S/N 00001 10/09/81 TO: CURRENT

Item	Qty	Qty	Part No.	Description
1	1	1	90-004-1194	CASE
1	1	1	90-004-1604	CASE - FLOW-THRU PORTS
1	1	1	90-004-1714	CASE
2	1	1	90-004-1774	CASE - FLOW-THRU PORTS
3	1	1	90-004-182	PISTON
4	1	1	90-004- (B)	SHAFT
5	1	1	90-004-1031	SPACER
6	1	1	01-100-0110	BEARING-OUTPUT
7	1	1	01-100-0120	BEARING-INPUT
8	4	4	01-150-1040	12 PT. CAPSCREW (1/2-13X1)
9	1	1	01-208-0020	HOL. HEX. PLUG (7/16-20)
10	1	1	01-261-0290	SPRING - (GREEN)
11	1	1	01-261-0310	SPRING - (RED)
11	1	1	01-288-0010	FRICITION DISC (PAPER)
12	1	1	01-288-0010	FRICITION DISC (BRONZE)
12	1	1	01-288-0020	SEPARATOR PLATE
13	1	1	01-400-0120	BACK-UP RING
14	1	1	01-400-0140	BACK-UP RING
15	1	1	01-402-0450	O-RING
16	1	1	01-402-0470	O-RING
17	1	1	01-402-0580	O-RING
17	1	1	01-402-0340	SEAL
18	1	1	01-405-0340	BASE
24	1	1	01-150-1030	SOC. HD. CAPSCREW (10-24X3/4)
25	6	6	90-004-1052	GASKET - BASE
26	1	1	90-004-1111	GASKET - BASE

ESKRIDGE Model 90B

ECN 1547
X90BASSY REV. C 7-1-98

PRODUCT WARRANTY

ESKRIDGE, INC. ("Eskridge") warrants to its original purchaser ("Customer") that new component parts ("Parts") sold by Eskridge to the Customer will be free of defects in material and workmanship and will conform to standard specifications set forth in current Eskridge sales literature or to any custom specifications of the Customer acknowledged in writing by Eskridge, **SUBJECT TO THE FOLLOWING QUALIFICATIONS AND LIMITATIONS:**

- 1) Prior to placing warranted Parts in service, the Customer shall provide proper storage such that foreign objects (e.g., rain or debris) cannot enter any Parts via entry ports which are normally closed during operation.
- 2) If Parts requiring motorized power for operation are received from Eskridge without a motor, documentation must be available indicating proper lubrication upon placement of the Parts in service.
- 3) The Customer must notify Eskridge in writing of any claim for breach of this warranty promptly after discovery of a defect and in any event prior to the termination of the warranty period, which shall commence when a unit is placed in service and shall expire upon the earlier of (i) the expiration of twelve (12) months from the date of Commencement of Service (as defined in Paragraph 4) (ii) the completion of one thousand (1,000) hours of service of the Parts (iii) the expiration of six (6) months after the expiration of any express warranty relating to the first item of machinery or equipment in which the Parts are installed or on which it is mounted, or (iv) the installation or mounting of the Parts in or on an item of machinery or equipment other than the first such item in which the Parts are installed or on which the Parts are mounted.
- 4) Parts shall be deemed to have been placed in service (the "Commencement of Service") at the time the machinery or equipment manufactured or assembled by the Customer and in which the Parts are installed or on which the Parts are mounted is delivered to the Customer's dealer or the original end-user, whichever ever receives such machinery or equipment first.
- 5) This warranty shall not apply with respect to Parts which, upon inspection by Eskridge, show signs of disassembly, rework, modifications or improper installation, mounting, use or maintenance.
- 6) Eskridge makes no warranty in respect to hydraulic motors mounted on any Parts. Failure of any such motor will be referred to the motor manufacturer.
- 7) Claims under this warranty will be satisfied only by repair of any defect(s) or, if repair is determined by Eskridge in its sole, absolute and uncontrolled discretion to be impossible or impractical, by replacement of the Parts or any defective component thereof. No cash payment or credit will be made for defective materials or workmanship. **IN NO EVENT SHALL ESKRIDGE BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND OR NATURE, WHICH DAMAGES ARE HEREBY EXPRESSLY DISCLAIMED.**
- 8) From time to time, Eskridge may make changes in the component parts manufactured by it without incorporating such changes in the component parts previously shipped. Such changes shall not constitute an admission by Eskridge of any defects or problems with previously manufactured component parts.
- 9) All freight charges on Parts returned for warranty service are the responsibility of the Customer.

THE FOREGOING WARRANTY IS THE SOLE WARRANTY MADE BY ESKRIDGE WITH RESPECT TO ANY PARTS, AND IS IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, ESKRIDGE EXPRESSLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, REGARDLESS OF ANY KNOWLEDGE ESKRIDGE MAY HAVE OF ANY PARTICULAR USE OR APPLICATION INTENDED BY THE PURCHASER. THE SUITABILITY OR FITNESS OF THE PARTS FOR THE CUSTOMER'S INTENDED USE, APPLICATION OR PURPOSE AND THE PROPER METHOD OF INSTALLATION OR MOUNTING MUST BE DETERMINED BY THE CUSTOMER.

WARRANTY RETURN POLICY

- 1) All Parts shall be returned freight prepaid.
- 2) Any Parts qualifying for warranty will be repaired with new Parts free of charge (except for freight charges as provided above).
- 3) If parts are found to be operable, you have two options:
 - a. The Parts can be returned to you with a service charge for inspection, cleaning, and routine replacement of all rubber components and any other parts that show wear; or
 - b. We can dispose of the Parts at the factory if you do not wish it to be returned.

NOTE: Any order of Parts by customer shall only be accepted by Eskridge subject to the terms stated herein. Any purchase order forms used by Customer (to accept this offer to sell) which contain terms contrary to, different from, or in addition to the terms herein shall be without effect, and such terms shall constitute material alteration of the offer contained herein under K.S.A 84-2-207 (2)(b), and shall not become part of the contract regarding the sale of the Parts.

OTHER ESKRIDGE PRODUCTS

PLANETARY GEARBOXES

SERIES

20/28 SERIES
50 SERIES
60 SERIES
100 SERIES
130 SERIES
150 SERIES
250 SERIES
600 SERIES
1000 SERIES

TORQUE RATING
MAX. INTERMITTENT
20,000-28,000 IN-LB
50,000 IN-LB
60,000 IN-LB
100,000 IN-LB
130,000 IN-LB
150,000 IN-LB
250,000 IN-LB
600,000 IN-LB
1,000,000 IN-LB

MULTIPLE DISC BRAKES

SERIES

90B SAE B
90BA SAE B ADJUSTABLE TORQUE
92B SAE B LOW PROFILE
93 FOR NICHOLS MOTORS
95C SAE C
95W SAE C WHEEL MOUNT
98D SAE D

TORQUE RATING
TO 4,800 IN-LB
TO 4,800 IN-LB
TO 2,800 IN-LB
TO 6,100 IN-LB
TO 12,000 IN-LB
TO 21,000 IN-LB
TO 25,000 IN-LB

PLANETARY AUGER DRIVES (DIGGERS)

SERIES

D50 MODELS 1500, 2500 & 5000
76 MODELS BA & BC, TWO SPEED
77 MODELS BA, BC & BD
78 MODELS 35 & 48, TWO SPEED
75 MODELS TWO SPEED

TORQUE RATING
1,500-5,000 FT-LB
8,000-12,500 FT-LB
6,000-12,500 FT-LB
9,000-12,500 FT-LB
16,500-20,000 FT-LB



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