THE ENSTROM HELICOPTER CORPORATION
TWIN COUNTY AIRPORT, P.O. BOX 490, MENOMINEE, MICHIGAN 49858

SERVICE INFORMATION LETTER

Date: November 20, 1980

Subject: Main Rotor Blade Damper

Model: F-28A, F-28C, 280, 280C

Effectivity: Not Applicable

There are currently seven series of main rotor dampers in use on Enstrom Helicopters. P/N 28-14264-1, -3, -5, -5 with the letter "B" following the serial number, -7, -8, and the -9 series. Dampers that do not have a dash number following the part number should be considered a dash 1.

Dash 1 dampers are high rate dampers and may only be used on the F-28A and 280 model aircraft. All other dash numbers are low rate dampers and may be used on all F-28A, 280, F-28C and 280C Enstrom Helicopters (Ref. Table 1).

Modification of dash 1 dampers, in accordance with Service Information Letter No. 0046, changes it to a dash 3, low rate damper useable on all aircraft.

NOTE: DO NOT intermix low rate and high rate dampers on the same aircraft.

All low rate dampers are functionally the same but should not be used in mixed sets

EXCEPTION: The -5 dampers with the letter "B" following the serial number have been factory modified to include the 28-14356 sleeve and associated parts. This modification allows them to be intermixed with the -9 series dampers.

Dash 7, 8 and 9 dampers are equipped with reservoirs that permit servicing and bleeding without removing the damper from the helicopter. Bleeding procedures for these dampers are provided with this Service Letter. Procedures for bleeding all other dash number dampers are explained in Service Information Letter No. 0033.

Damper overhaul kits are available from Enstrom Customer Service or an authorized Enstrom distributor. All kits consist of a complete set of seals and "O" rings for one damper. When ordering overhaul kits, check the dash number of the damper to be overhauled and add that number to the basic kit, P/N 272-.

All model dampers may be reworked to the dash 9 configuration by contacting Enstrom Customer Service or an authorized Enstrom distributor to obtain parts. Supplemental information for disassembly and assembly are attached.

NOTE: Modifications changing the damper dash number should be entered in the aircraft's log book.

Owners and operators should note that further upgrading of all model dampers can be accomplished in accordance with SIL No. 0115

The following information supplements the maintenance manual for disassembly and assembly:

1. Disassembly

a. Special tools required:

(1) Wrench - Damper Shaft T-00l5

(2) Damper Cycling Fixture T-0057 (Ref. Service Letter No. 33)

b. Remove damper from helicopter and disassemble per the following:

(1) Straighten tabs on locking washer at rod end.

(2) Hold piston (P/N 28-14267-1) using tool T-00l5.

(3) Loosen AN3l6-8R lock nut using 3/4" open-end wrench and remove 01-691-08 rod end.

(4) Remove all safety wire.

(5) Loosen reservoir cap P/N 28-1427l-l (-5) (-3). Loosen reservoir nut 28-14299 and (-7)(-8)(-9) cap AN814-3D.

(6) Remove (4) reservoir bolts.

(2) AN3H-12A (-5)(-3)
(2) AN3H-13A (-7)(-8)(-9)
(2) AN3H-5A

Remove reservoir 28-14269 (-5)(-3)
28-14298 (-7) (-8) (-9)

(7) Remove (2) 28-14273-13 sleeve

(8) Remove (2) 2-10 "O" rings and discard.

(9) Pour fluid from reservoir and remove cap(s). Remove "O" ring(s).

P/N 2-13 from cap 28-14271 (-5) (-3)
P/N 2-15 from cap 28-14299 (-7)(-8)(-9)
P/N 2-11 from top cap AN814-3D

(10) Remove (4) AN4H-l0A bolts from 28-14265 housing cover.

(11) Rotate cover using soft mallet, approximately 45˚, and tap cover up to remove. Remove fluid.

NOTE: If cover will not slide off piston shaft, it will be necessary to remove burr from end of shaft to preclude damage to brass sleeve P/N 28-l4274(-3), P/N 28-14285-11(-5) (-7), P/N 28-14285-l2(-8), P/N 28-14356(-9).

(12) Tap piston up using nylon drift until piston can be lifted from 28-14266 housing. Remove fluid.

(13) Remove seals, O-rings from brass sleeves and note location (ref. Figure 1 for configuration).

(14) Remove 2-326 O-ring from piston.

(15) Discard O-Ring and seals and clean parts for inspection.

(16) Inspect brass sleeve I.D. for scoring; replace if I.D. exceeds .750/.751 or scores in excess of .001 are evident on all lands.

(17) Install O-ring and seals in brass sleeve.

NOTE: Removal of brass sleeve from 28-14266 housing or 28-14265 cover is not recommended when damper is being repaired in the field. Ref. Figure 1 for proper seal and O-ring configuration.

2. Assembly

a. Place 28-14266 housing upright in vise.

b. Lube inside of housing with L-45-20 silicone oil. Check edge of sleeve for sharp burrs. If necessary, remove by light sanding with 320 grit.

c. Using compressed air, blow out valves in piston assembly.

d. Lube 2-326 O-ring with silicone oil and install on piston. Work around until completely seated.

e. Tap piston into housing using soft mallet until piston has bottomed in housing. Do not damage O-ring when starting piston into cylinder.

NOTE: Extreme care must be taken when piston reaches bottom. Valve setting can be affected if piston is bottomed with any force.

f. Fill housing with silicone oil.

g. Lube 2-137 0-ring with silicone oil and install in housing recess.

h. Using compressed air, blow out passages in 28-14265 cover.

i. Lube O-rings in brass sleeve and tap 28-14265 cover into piston until seated on housing.

j. Install (4) AN4H-10A bolts and (4) AN960-4l6 washers. Torque to 55 - 75 in. - lbs.

k. Reposition damper to horizontal in vise.

l. Using compressed air, blow out passage in 28-14269 reservoir (-3)(-5), 28-14298 (-7) (-8)(-9).

m. Install 0-ring (2) 2-10 into recess in reservoir.

n. Using compressed air, blow out 28-14273-13 sleeves and install through 0-ring in reservoir.

NOTE: Orifice in 2 8-14273-13 sleeve is size of #70 drill.

o. Install reservoir onto housing using (2) AN3H-l2A, (2) AN3H-5A bolts and (4) AN960-Dl0 washers. Torque to 20 - 25 in. -lbs.

p. Install AN814-3DL plug and 2-11 O-ring (-7) (-8) (-9).

q. Place damper in upright position in vise and fill with silicone oil.

r. Install 2-13 O-ring on 28-14271 cap (-3) (-5), 2-15 0-ring on 28-14299 cap (-7)(-8) (-9) and install in reservoir.

s. Install AN316-8R check nut on 01-691-08 rod end. Install 28-14248 lockwasher and brush Vibritite on threads of rod end. Install in damper piston. Install so distance from center of rod end to jam nut is 1.000/.950.

t. Tighten checknut and bend locking tabs of washer (torque 290 - 410 in.-lbs.).

u. Bleed damper per Service Information Letter No. 0033.

v. Safety wire plugs and bolts per AC43-12-1-2 using .032 wire.

O-Ring part number cross-reference to MS number:

2-116	M528775-116	O-ring
R513-116	N/A	O-ring
2-326	MS28775-326	O-ring
2-137	MS28775-137	O-ring
2-13	MS28775-013	O-ring
2-10	MS28775-010	O-ring
12500-750-250B		Seal
2-15	M528775-015	O-ring
2-11	MS28775-011	O-ring
2-210	MS28775-210	O-ring
2-25	MS28775-025	O-ring

TABLE I

Damper Ass'y 28-14264	Model	Rate	Configuration	Overhaul Kit	Interchangeable In Sets of 3 With:
-1	F28A 280	High	28-14273-11 Sleeve (High rate orifice) 28-14274-1 Sleeve 2-116 "O" Ring (1) R513-116 Teflon "O" Ring (1) MS28774-116 Back-Up (3)	Recommend Conversion to -3. See Service Information Letter No. 0046	Useable in sets of (3) only on F28A or 280
-3	F28A F28C 280 280C	Low	28-14273-13 Sleeve (To change rate), 28-14269 Reservoir, 28-14274-1 Sleeve 2-116 "O" Ring (1) MS28774-116 Back Up Ring (3) R513-116 Teflon "O" Ring(1)	Kit 272-3.	-5, -7, -8 and -9
-5	F28A F28C 280 280C	Low	28-14285-11 Sleeve*; 28-14269 Reservoir 12500-750-250B Seal (1) R513-116 Teflon "O" Ring (1) MS28774-116 Back Up (2) "B" after Serial No. uses 28-14356 Sleeve and associated seals (see -9)	Kit 272-5. If the Letter B follows Serial No., use Kit 272-9. *Inactive Update from -5 to -5B at next O/H	-3, -7, -8 and -9 ("B" after serial number can be mixed with -9)
-7	F28A F28C 280 280C	Low	28-14285-11 Sleeve* 28-14298 Reservoir 12500-750-250B Seal (1) (Top Servicing Plug) R513-116 Teflon "O" Ring (1) MS28774-116 Back-Up (2)	Kit 272-7. *Inactive No stock Update to -9 at next O/H	-3, -5, -8 and -9
-8	F28A F28C 280 280C	Low	28-14285-12 Sleeve* 28-14298 Reservoir 12500-750-250B Seal (1) (Top Servicing Plug) 2-210 "O" Ring (1) MS28774-116 Back-Up (1)	Kit 272-8. *Inactive No stock Update to -9 at next O/H	-3, -5, -7 and -9
-9	F28A F28C 280 280C	Low	28-14356 Sleeve 28-14298 Reservoir 12500-750-250B Seal (1) (Top Servicing Plug) 2-116 "O" Ring (1) MS28774-116 Back-Up (2)	Kit 272-9	-3, -5, -7 and -8

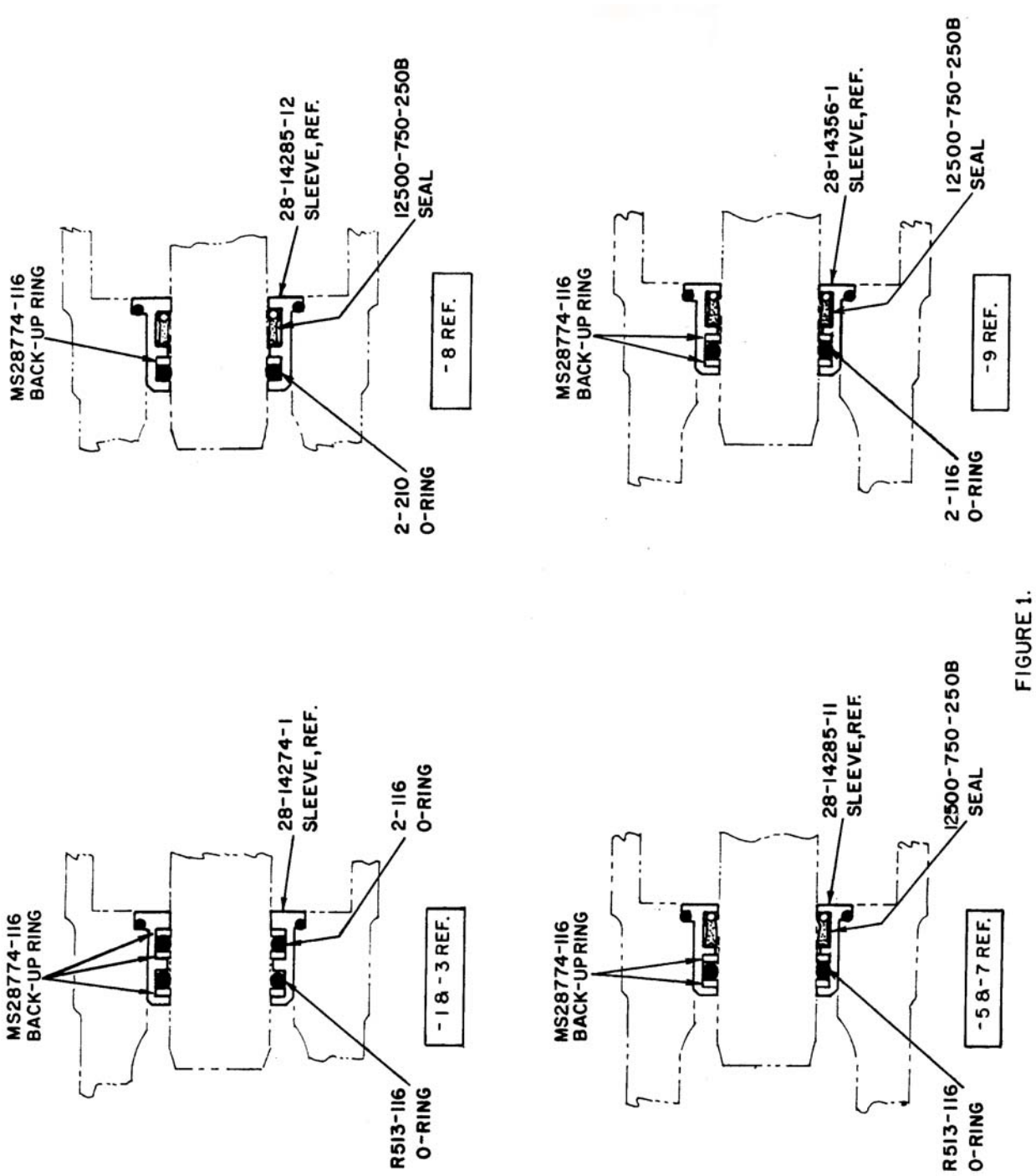
MS28774-116
BACK-UP RING
28-14285-12
SLEEVE, REF.
12500-750-250B
SEAL
2-210
O-RING
-8 REF.
MS28774-116
BACK-UP RING
28-14356-1
SLEEVE, REF.
12500-750-250B
SEAL
2-116
O-RING
-9 REF.
MS28774-116
BACK-UP RING
28-14274-1
SLEEVE, REF.
2-116
O-RING
R513-116
O-RING
-18-3 REF.
MS28774-116
BACK-UP RING
28-14285-11
SLEEVE, REF.
12500-750-250B
SEAL
R513-116
O-RING
-58-7 REF.

FIGURE 1.

Damper Assembly - P/N 28-14264-7, 8, & 9

I. Damper Bleeding Procedure

NOTE: This applies only to dampers with the 28-14298-1 reservoir.

A. Remove safety wire and top reservoir plug, AN814-3DL.

B. Fill reservoir to top using silicone oil L-45only.

C. Cyclic damper piston in by moving main rotor blade aft very slowly so as not to force oil out of damper. Cycle until damper piston just bottoms.

NOTE: This is normally a two man operation. One to cycle damper and one to observe fluid level and hold hub stationary.

D. Install AN814-3DL plug and cycle damper fore and aft several times, stopping with piston fully extended.

E. Remove AN814-3DL plug. Fill reservoir.

F. Cycle piston in only about half the piston length, observing any air bubbles.

NOTE: If no air bubbles exist go to step “G”. If air is still evident revert to step “D”, “E” and “F”.

G. Install AN814-3DL plug and safety.