

INSTALLATION AND SERVICE GUIDE

Kysor Fan Clutch - Series 1090

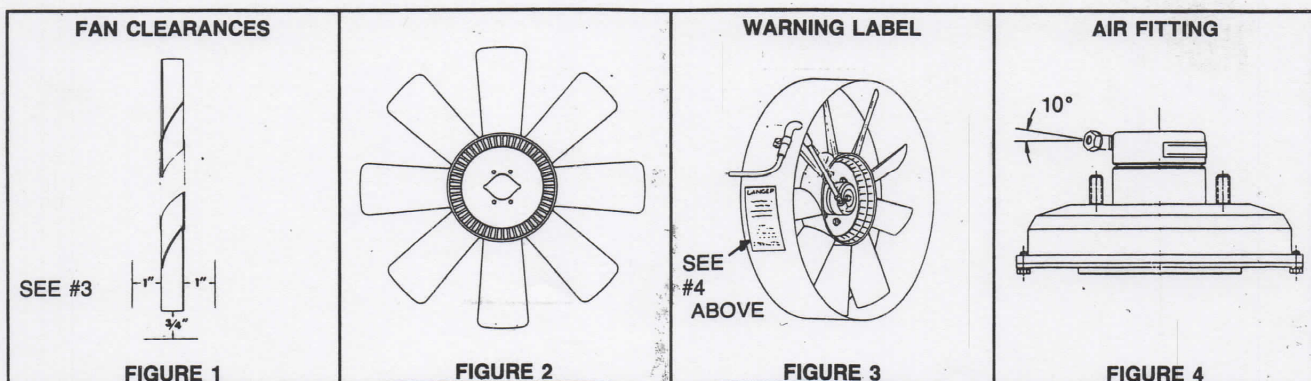
On behalf of the entire KYSOR organization, we wish to thank you for purchasing a KYSOR®/ DYN AIR® Fan Clutch. We sincerely believe this product to be the highest quality, most dependable Fan Clutch on the market and we are confident that it will provide you with the high performance and

reliable service that you desire. This installation and service guide contains the information you will need to properly install and maintain your fan clutch for maximum life and dependable service. We urge you to thoroughly familiarize yourself with the contents of this guide and preserve it for future reference.

Installation Instructions

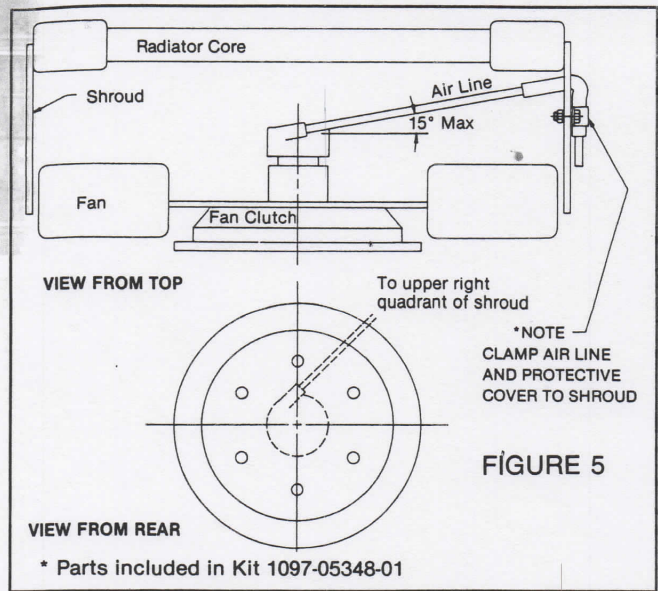
WARNING! Due care and caution must be exercised when installing a KYSOR®/DYN AIR® Fan Clutch. Failure to follow these instructions could result in a product misapplication, and may cause vehicle damage, fan breakage and possible serious personal injury. Fan clearances must always be checked after installation and before operation. Minimum clearances are 1" front and back and 3/4" at the fan tip. In some instances, an adjustment in spacer length may be required to meet these clearances.

1. Before putting the fan clutch into position, the fan may have to be put onto the front of the clutch or set into the shroud. **DO NOT PERMANENTLY MOUNT THE FAN TO THE CLUTCH UNTIL THE CLUTCH IS MOUNTED TO THE HUB.**
2. To mount the fan clutch to the hub, use self-locking 3/8"-16 socket head cap screws that are 1.00" longer than the adaptor for proper thread engagement. Torque these screws to 45 lbs.-ft. **(DO NOT USE WASHERS OF ANY KIND)**
3. Attach the fan, making sure 1.00" clearances, front and back, and 3/4" tip clearance exist. See Figure #1 below. NOTE: K-22 fan installation: If your fan does not have the notched pattern in the pilot, (see Figure #2 below) the cylinder cap must be removed to attach the fan. The cylinder cap must then be reattached using a torque rating of 84 lbs.-in. (See Page 9)
4. Attach the WARNING Label in a prominent and easily seen place, at eye level, on the fan shroud as shown in Figure #3 below. (typical both sides).
5. Install the air fitting into the cylinder of the fan clutch so that the inlet is angled approximately 10 degrees forward. See Figure #4 below.
6. Use installation kit 1097-05348-01 to install the air supply to the fan clutch. Use of any other hardware may result in damage to the fan, fan clutch and/or radiator.



"1093" Series Fan Drive Assembly - SEE PAGE 4

7. Run the air line and its protective cover through a 1/2" hole drilled in the fan shroud and attach to the front of the clutch at the cylinder inlet. Do not tie the air line to the radiator core. Using the clamp, place enough tension on the air line to assure that front to rear or side to side play does not exceed 1/2". See Figure #5.
8. The air line should not be angled forward anymore than 15 degrees and should exit the fan shroud in the upper right hand quadrant when viewed from the rear. See Figure #5.
9. **IMPORTANT:** Be sure to recheck the 1.00" front and back, and the 3/4" fan tip clearance.



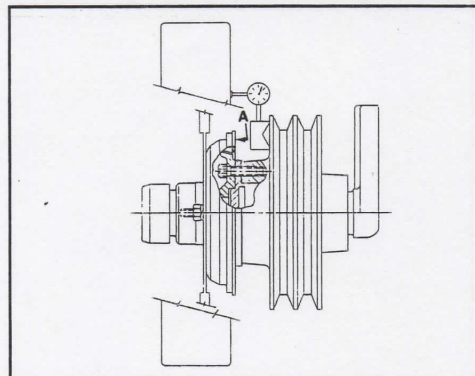
CHECKING OPERATION

1. Start engine. As air pressure builds up to around 90 psi the clutch will disengage, reducing fan noise. The compressor governor should be adjusted to cut in no lower than 100 psi. Failure to maintain 100 psi minimum may result in excessive fan clutch wear and possible damage to the engine, fan and radiator.
2. Stop engine. Check to see that the fan rotates freely. Check for air and water leaks.
3. Restart engine and run at governor RPM until fan clutch has completed at least one cycle. It may be necessary to temporarily block off part of the radiator to get the temperature high enough for the fan to come on.
4. **IMPORTANT NOTE:** If the installed clutch is a 8S (1090-06620 series) or a 12S (1090-06060 series), fan tip movement or "wobble," while disengaged, is normal and is not detrimental to the fan clutch operation or durability. This movement must not exceed 3/16" fore & aft at the blade tip on fans up to 30" diameter or 1/4" on fans above this diameter. If the "wobble" is more than allowed, replace the clutch with a 1090-07050-XX or 1090-08000-XX respectively.

Preventive Maintenance

1. **Pressure Tube Adjustment:** Check the air line tube that is mounted through the shroud for the proper tension (see #7, Installation Instructions).
2. **Lining Wear Check:** This must be done with a dial indicator, as shown in the diagram to the right. Insure that the clutch is receiving a minimum of 90 psi from the pressure tube so that it will be disengaged. The fan should now turn freely. Install the indicator as shown. If possible, place the indicator probe on the clutch itself, as shown at point "A" in the illustration at the right. If necessary to place the probe on the fan, as shown in this diagram, try to get as close to the clutch as possible. Zero the indicator. Disconnect pressure tube at the control. Read the indicator. The chart indicates the overhaul points.

Wear Check Intervals: First Check - 100,000 miles. After first check; every 50,000 miles until overhaul is required.



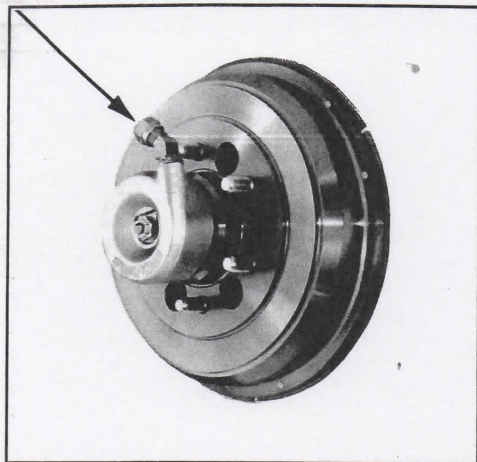
Clutch Part Number	Overhaul if indicator shows at or above
1090-05703-XX	.125"
1090-05261-XX	.160"
1090-05262-XX	.160"
1090-06620-XX	.170"
1090-06060-XX	.170"
1090-07050-XX	.170"
1090-08000-XX	.170"
1090-08500-XX	.170"

Troubleshooting

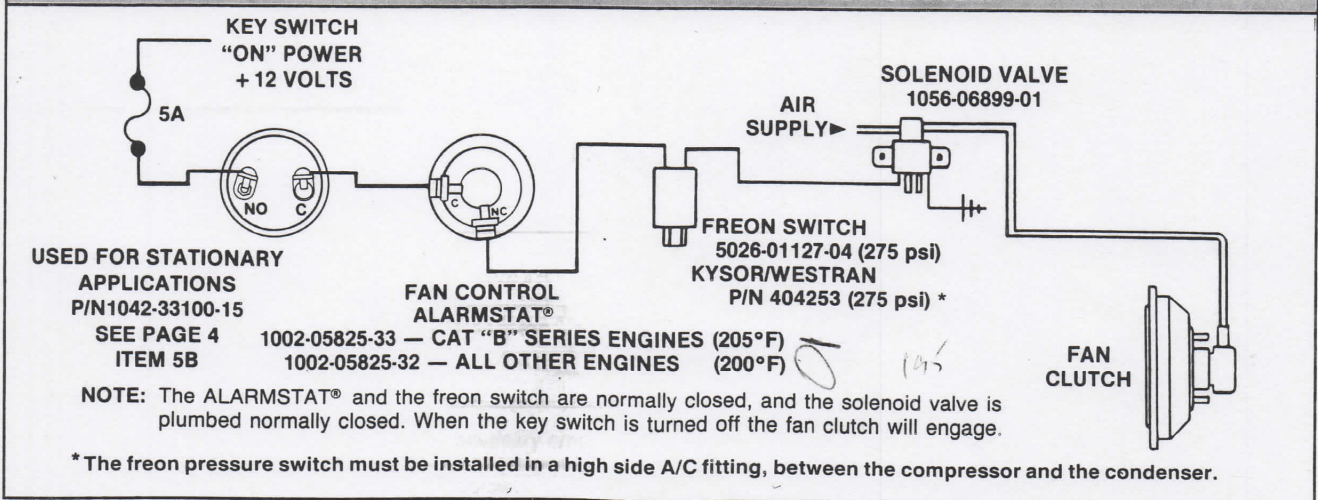
DESCRIPTION: This clutch is spring-loaded "ON" or in the engaged position, and is turned "OFF", or disengaged, by pressurizing the cylinder shown by the arrow. When disengaged, it is normal for the clutch to "freewheel" at about 300 RPM. Also, when disengaged, the bearing housing (to which the fan is attached) and the fan will be in the rear-most position. As the pressure is released and the clutch engages, the bearing housing and fan will move forward about 1/10".

TROUBLESHOOTING

1. **Clutch will not engage:** Disconnect the tube from the clutch. The clutch should move forward, and it should be very difficult, if not impossible, to rotate the fan by hand. If not, overhaul clutch.
2. **Clutch will not disengage:** Disconnect the tube from the clutch, and pressurize the cylinder with an external pressure source (90-120 psi). The clutch should move rearward, and the fan should move easily by hand. If clutch does not move easily, sometimes merely tapping it lightly will free it. If it is still difficult to turn, overhaul clutch.
3. **Clutch engages/disengages but is suspected of slipping:** Disconnect the clutch tube from the clutch control (solenoid valve, MULTISTAT® or SHUTTERSTAT®). Using a photo tachometer, measure fan speed and fan pulley speed with the engine running at rated speed. Any difference between fan and pulley speed indicates slippage and the clutch should be overhauled.
4. **Clutch engages/disengages slowly:** Disconnect the tube from the clutch, and pressurize the cylinder with an external air source (90-120 psi). The clutch should move rearward freely and quickly. Disconnect the external pressure source and the clutch should move forward freely and quickly. Now connect an air pressure gauge to the air line and check the pressure. It should quickly rise to 90-120 psi and drop rapidly when the air is turned off. If this does not happen, check the air line for possible breaks, restrictions or kinks. If none are found, replace the fan control(s). Kysor recommends using solenoid valve 1056-06899-01 for the main control, in conjunction with ALARMSTAT® series 1002-05825-XX and freon switch 5026-01127-04 (A/C override) (See below).



KYSOR DYNAIR® FAN CLUTCH CONTROL SYSTEM



Troubleshooting, Cont.

5. A. **Rapid wear of fan clutch and/or fan belts.** Check engine RPM under load at full throttle in first gear. Compare against specifications on engine data plate. If engine RPM exceeds engine specifications, the fuel system has been altered. (Turned Up) ALTERING THE FUEL SYSTEM SETTING OVERLOADS THE ENTIRE COOLING SYSTEM INCLUDING THE FAN CLUTCH. KYSOR VOIDS ALL WARRANTIES WHEN EVIDENCE IS FOUND OF SUCH ALTERATIONS.
- B. If this system is being used for STATIONARY OPERATION, or if your vehicle is equipped with a PTO or TURBO UNLOADER, a fan clutch "lock up" circuit is

required (as shown on page 3). This may be: a toggle switch in the dash, a normally open KYSOR PRESSURESTAT® (1042-33100-15) installed in the parking brake manifold, or a switch that will open when a PTO is engaged or an unloader is turned on. If the fan clutch is not locked "on" during such operations, it will cause early lining wear out due to rapid cycling. FAILURE TO USE A FAN CLUTCH "LOCK UP" CIRCUIT DURING STATIONARY HIGH RPM OPERATION WILL RESULT IN PREMATURE LINING WEAR OUT AND WILL VOID ALL WARRANTIES, EXPRESSED OR IMPLIED. (See page 3, Fan Clutch Control System)

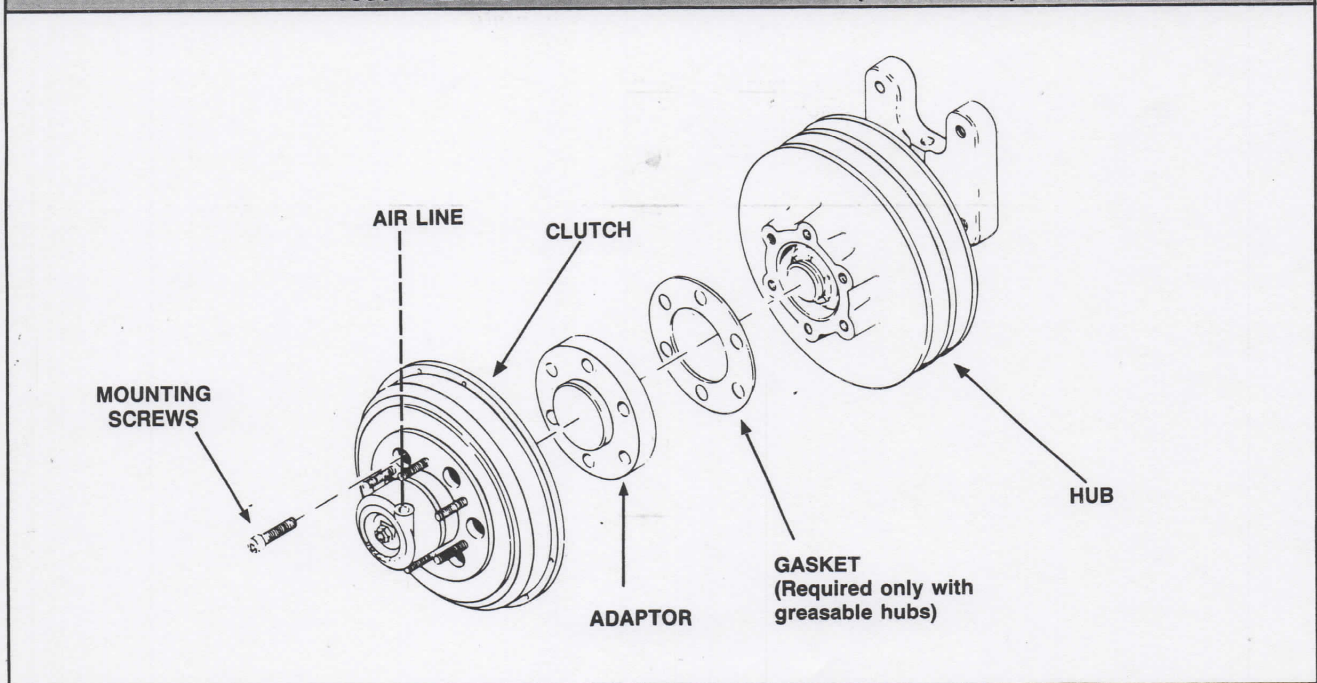
Service Parts

NOTE:

If the KYSOR®/DYNAIR® Fan Clutch comes attached to the hub (KYSOR'S "1093" Series - Fan Drive Assembly) you may require additional service parts. The Fan Hub Service Parts can be found in

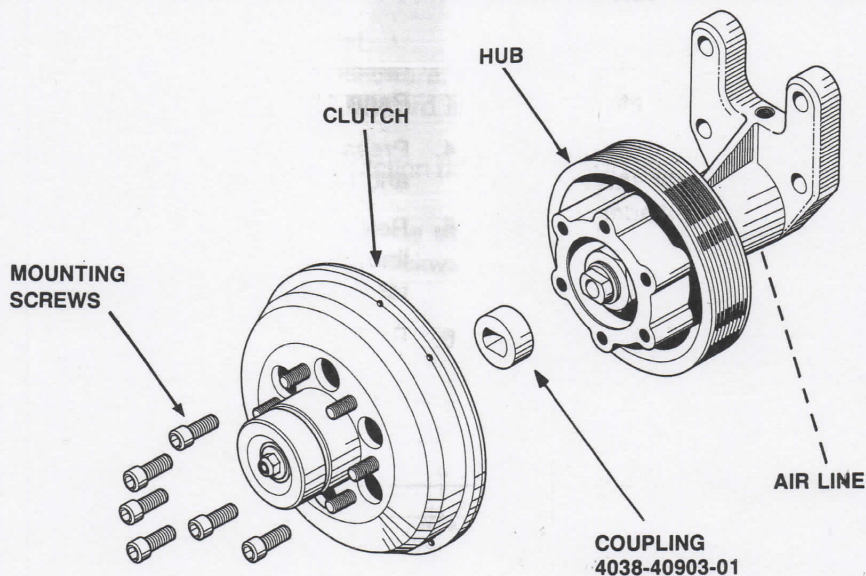
the Fan Hub Installation and Service Guide (Form - FH-1). The adaptor part number will be stamped on the adaptor. Take the gasket and mounting screws to your KYSOR dealer for EXACT replacement.

"1093" SERIES - FAN DRIVE ASSEMBLY (FRONT AIR)



Service Parts, Cont.

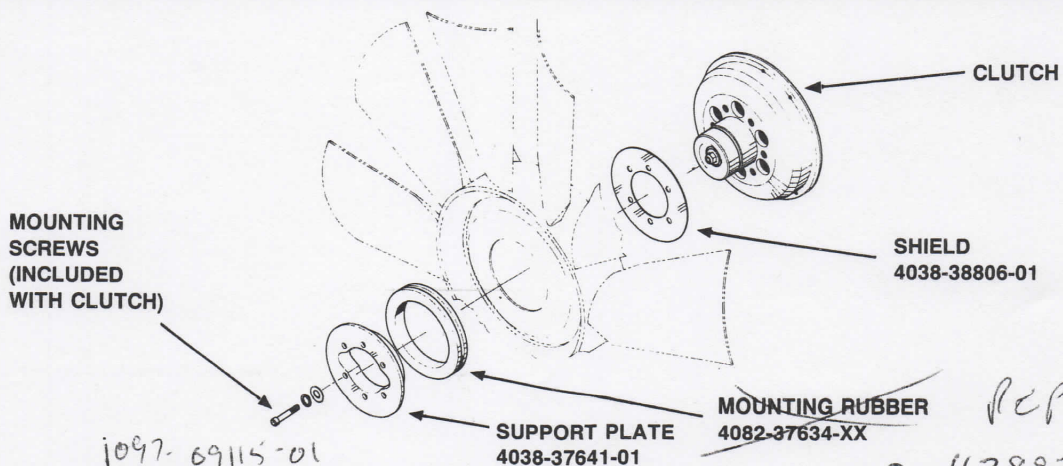
1093 SERIES FAN DRIVE ASSEMBLY WITH 1090-08500-01 FAN CLUTCH (INTEGRAL AIR)



"1093" SERIES FAN DRIVE ASSEMBLY (includes all parts shown above)

- A. For ease of assembly, the fan may have to be put into position on the fan clutch or set into the shroud before the fan drive assembly is put into position on the engine.
- B. Use existing hardware to install a complete "1093" series fan drive.

CRANKSHAFT MOUNT FAN CLUTCHES: 1090-08000-03, 1090-08000-04 and 1090-07050-02 (FRONT AIR)



Note: Kit number 1097-07825-XX includes necessary crankmount parts.
The mounting rubber will have the part number molded in or will be identified by a colored dot. See chart below.

o White Dot Mounting Rubber	-01
o No Dot Mounting Rubber	-02
o Red Dot Mounting Rubber	-03

Service Procedures

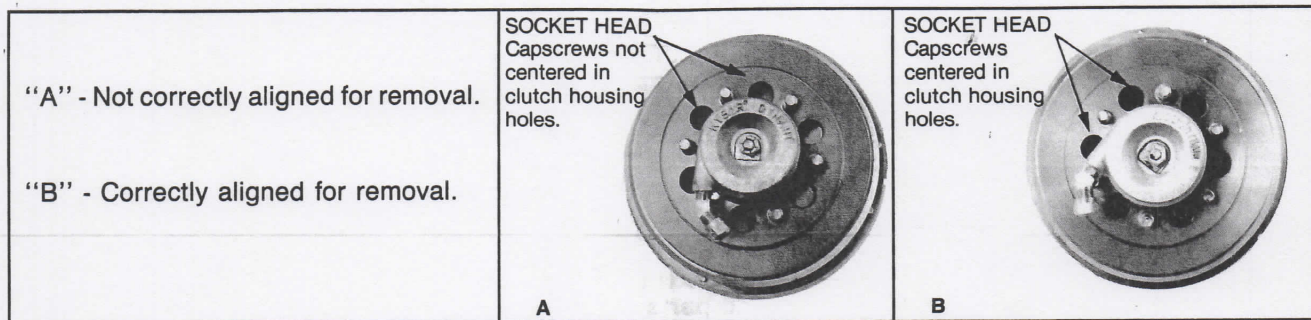
REMOVING FAN CLUTCH FOR SERVICE OVERHAUL

A. Fan Clutch Mounted on Water Pump (MACK & others):

1. In some cases it will be necessary to tilt the radiator forward, or remove it entirely, before the fan can be removed.
2. Disconnect air line from clutch cylinder and remove air line fitting from clutch cylinder.
3. Remove fan. NOTE: K-22 FAN REMOVAL: If your fan does not have the notched pattern in the pilot, the cylinder cap must be

removed to remove the fan (See Figure 2 on Page 1).

4. Pressurize clutch so that it will disengage and can be hand turned.
5. Rotate clutch until holes on front of clutch line up with socket head capscrews that retain clutch (see photo's A & B below)
6. Remove capscrews and remove clutch.



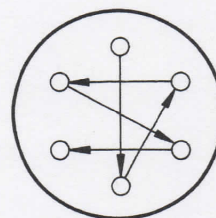
B. Fan Clutch Mounted on Fan Hub (CUMMINS, CAT, DDA and others):

1. In some cases it will be necessary to tilt the radiator forward to obtain adequate working room.
2. Disconnect air line from clutch.
3. Remove fan and fan belts. In some cases the belts may require removal before the fan can be taken off.
4. Remove clutch and hub assembly as a unit if desired. Otherwise, proceed to Step 5.

5. Pressurize clutch so that it will disengage.
6. Rotate clutch until holes on front of clutch line up with socket head capscrews that retain clutch to hub (see photos A & B)
7. Remove capscrews and remove clutch. Note: In cases where the radiator can be tilted far forward, it is possible to remove the fan, fan clutch and fan hub as one unit which may then be disassembled on the work-bench.

C. Crankshaft Mounted Fan Clutches.

1. Process is similar to water pump mounted units with the exception of fan mounting screws torquing during installation.
2. Cross Torque fan mounting screws to 15 lbs.-ft. Repeat process to 25 lbs.-ft.



Fan mounting screw torque pattern.

Service Procedures, Cont.

OVERHAUL

LINING REMOVAL:

- Apply 90-120 psi to the cylinder inlet.
- Remove retaining plate attaching hardware.
- Remove retaining plate and lining. Discard lining.
(See Figure #1)
- 7000 "D8" SERIES ONLY, remove friction ring as shown in Figure #2.
- Disconnect air pressure.
- NOTE: Some models have retaining plate screws, lockwashers and nuts, while others have only screws and lockwashers. See the Service Parts section of this guide.

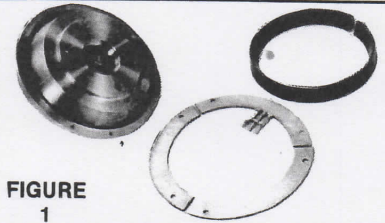


FIGURE
1

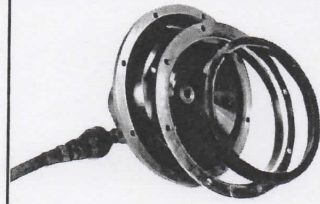
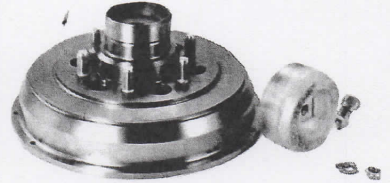


FIGURE
2

CYLINDER REMOVAL:

- Remove cylinder attaching hardware from center of cylinder and remove cylinder. If it's difficult to remove, apply 5-10 psi air pressure.
- NOTE: Some models have a cylinder nut, lockwasher and tabwasher while others use only a locknut and tabwasher. See the Service Parts section of this guide. (For 1090-08000, see Item 7 on page 8.)



LINING REMOVAL WITH THE CLUTCH STILL ON THE VEHICLE:

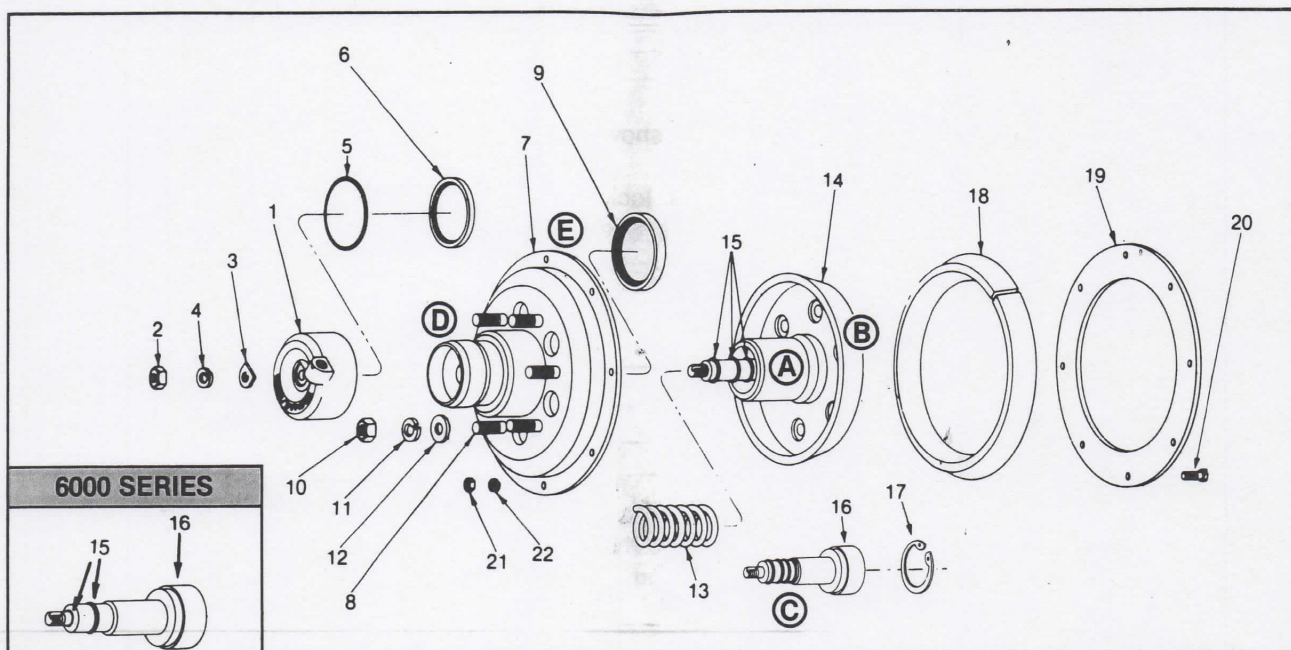
- Apply 90-120 psi to the cylinder inlet.
- Remove the retaining plate screws and plate.
- Remove the old lining and discard.
- Install the new lining.
- Attach the retaining plate and screws BUT DO NOT FULLY TIGHTEN. Snug the screws up Finger TIGHT ONLY.
- Cycle the clutch several times (release and apply air pressure) to center the lining.
- With the air pressure applied tighten the retaining plate screws to 30 lbs.-in.

From this point until final assembly, procedures are unique to each fan clutch. Find your series and follow the instructions below the exploded view of the clutch.

Service Procedures

**5000 SERIES
ORIGINAL DESIGN
1090-05261-XX (4208)
1090-05262-XX (4212)**

**6000 SERIES
"S" SERIES DESIGN
1090-06620-XX (8S)
1090-06060-XX (12S)**

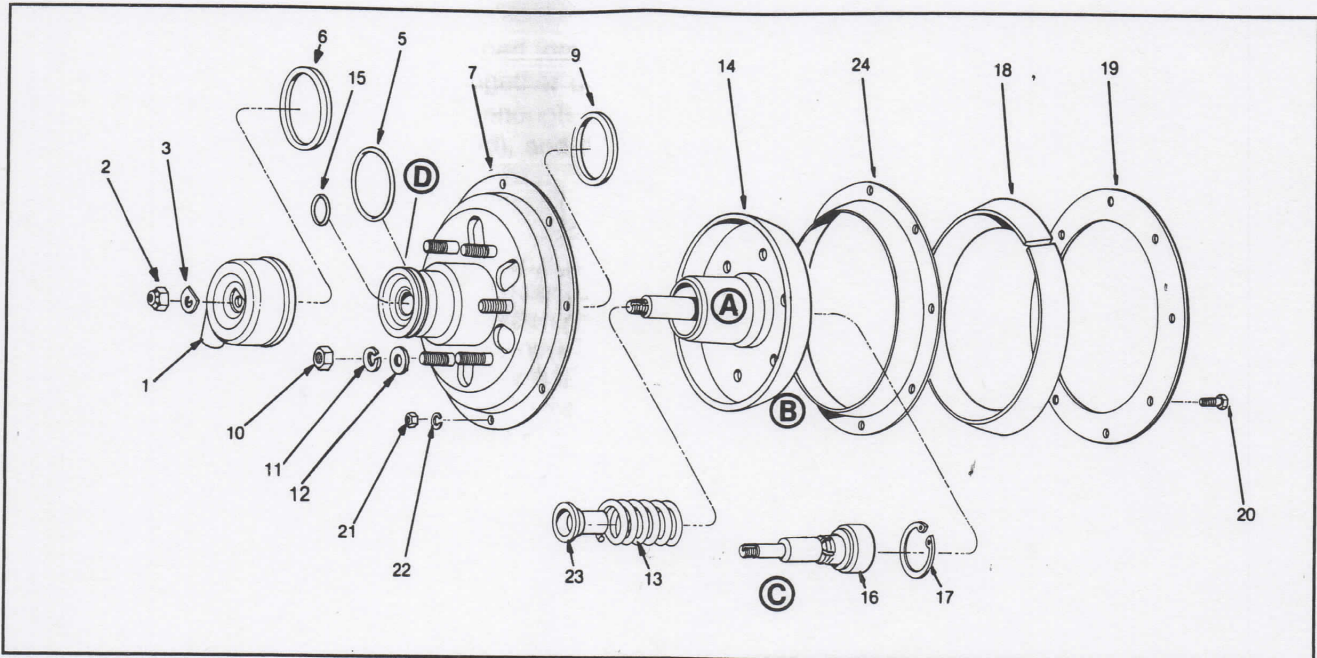


1. Remove the cylinder hardware (2, 3, 4) and the cylinder (1).
2. Remove the o-ring (5) from the cylinder. Inspect the cylinder for cracks or other damage. Replace if necessary. Inspect the dust seal (6). Replace only if pieces are missing from it. (Note: the dust seal is not included in repair kit and must be ordered separately.) See page 10. Lubricate the new o-ring (5) with recommended grease (see page 11) and install into cylinder. Set cylinder aside.
3. Withdraw shaft assembly (14) from bearing housing (7). Inspect the surface (A) on shaft (14) for signs of ANY wear or brinelling. If found, replace the clutch. Inspect surface (B) on shaft (14) for signs of scoring, burning or cracking. If found, replace the shaft assembly (14).
4. Rotate the piston rod (C) while checking the bearing for smoothness. If it is rough, replace the piston rod assembly (16). If it is okay, **DO NOT REMOVE FROM SHAFT.**
5. Remove o-rings (15) and spring (13) from the piston rod.
6. Clean the shaft (14) but do not submerge in solvent.
7. Lubricate the new o-rings (15) with recommended grease and install on piston rod. Install the new spring (13) on the piston rod and set the shaft assembly aside.
8. Inspect the piston (D) for signs of scoring. Replace bearing housing (7) if found. Rotate piston (D). Bearing should turn smoothly. If not, replace bearing housing (7). Inspect lining surface (E) inside of housing. If cracked, burned or scored, replace housing (7).
9. Remove grease seal (9) from housing. Using a lint free rag, clean old grease from needle bearings (inside housing). **USE NO SOLVENT.** Lightly lubricate needle bearings with recommended grease. Remove dust and debris from housing (7). Install new grease seal (9) in housing (7). (Note: on 1090-05261-XX the lip faces OUT, on 1090-05262-XX, the lip faces IN.)
10. Install the shaft assembly (14) into the housing (7).
11. Refer to final assembly.

REFER TO PAGES 12 & 13 FOR A COMPLETE LISTING OF SERVICE PARTS.

Service Procedures

7000 SERIES
 "D-8" SERIES DESIGN
 1090-07050-XX



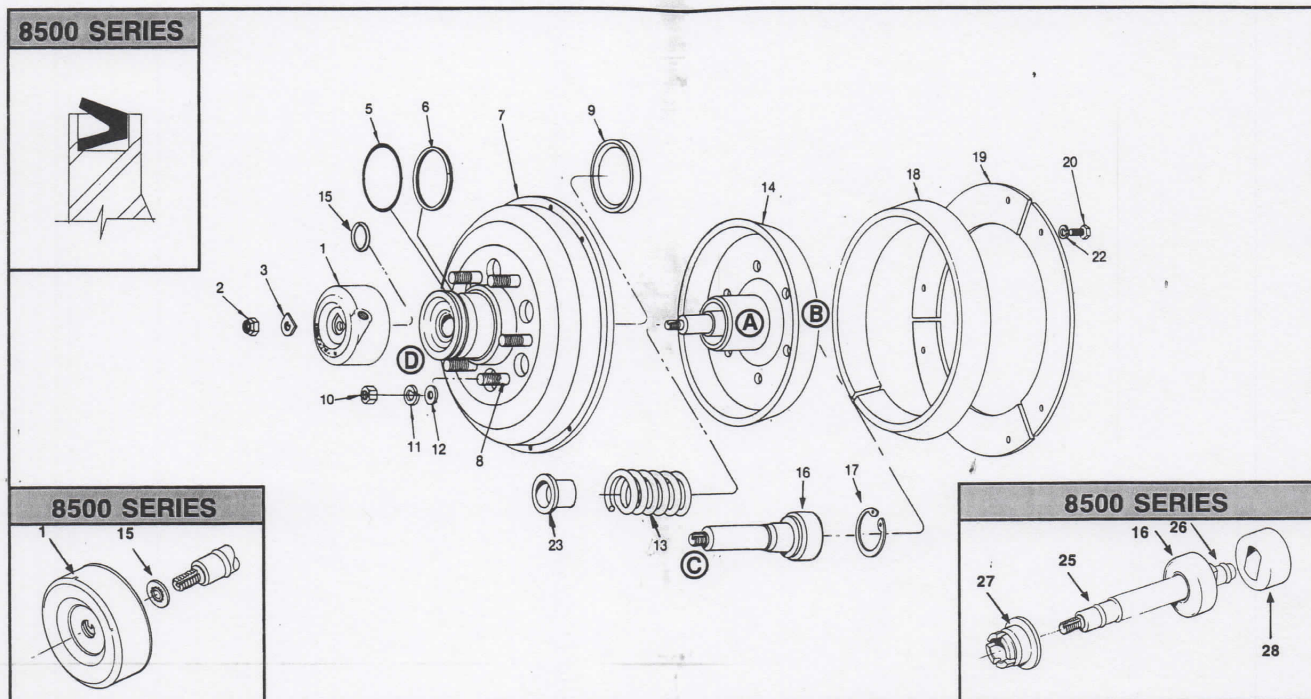
1. Remove the cylinder hardware (2, 3) and the cylinder (1).
 2. Inspect the cylinder for cracks or scoring of o-ring surface inside. Replace if necessary. Inspect the dust seal (6). Replace only if pieces are missing from it. (Note: the dust seal is not included in repair kit and must be ordered separately.) See page 11. Set cylinder aside.
 3. Withdraw shaft assembly (14) from bearing housing (7). Inspect the surface (A) on shaft (14) for signs of ANY wear or brinneling. If found, discontinue overhaul and replace the clutch assembly. Inspect surface (B) on shaft assembly (14) for signs of scoring, burning or cracking. If found, replace shaft assembly (14).
 4. Rotate the piston rod (C) while checking bearing for smoothness. If bearing feels rough, replace piston rod assembly (16). If it is okay, **DO NOT REMOVE FROM SHAFT**. Clean dust and debris from shaft (14) but do not submerge in solvent. Install new spring (13) and end cap (23) onto piston rod.
 5. Rotate the piston (D) on bearing housing (7). Bearing should turn smoothly. If not, replace bearing housing (7). Remove grease seal (9) from housing (7). Remove large o-rings (5) from outside of piston and small o-ring (15) from inside of piston. Clean dust and debris from housing (7) but do not submerge in solvent. Using a lint free rag, clean old grease from needle bearings inside housing (7). **USE NO SOLVENT**. Lightly lubricate needle bearings with recommended grease. Install new grease seal (9) in housing (7). Lubricate large (5) and small (15) o-rings with recommended grease and install in outer and inner piston grooves.
 6. Inspect the lining surface of wear plate (24) for signs of burning, cracking or scoring. Replace if found.
 7. Install shaft assembly (14) into housing (7).
 8. Refer to final assembly.
- NOTE:** If either the end cap (23), spring carrier or piston rod is damaged, the entire piston rod assembly must be replaced and the new spring end cap (23) (included in piston rod assembly) must be used.

REFER TO PAGE 13 FOR A COMPLETE LISTING OF SERVICE PARTS.

Service Procedures

8000 SERIES
"K-22" FRONT AIR
1090-08000-XX

8500 SERIES
"K-22" INTEGRAL AIR
1090-08500-XX



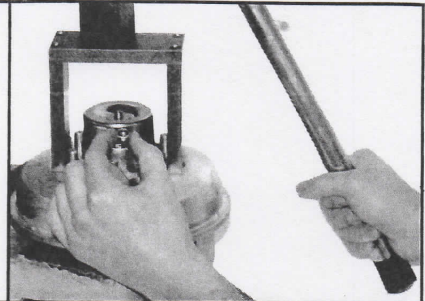
1. Remove the cylinder hardware (2, 3) and the cylinder (1).
2. Inspect the cylinder for cracks or scoring on the o-ring surface inside. Replace if found. Remove o-ring (15) from shoulder inside cylinder. Clean cylinder. Lubricate new o-ring (15) with recommended grease (See page 11) and install on shoulder inside cylinder (1). Set cylinder aside.
3. Withdraw shaft assembly (14) from bearing housing (7). Inspect surface (A) for signs of wear or brinelling. If found, discontinue overhaul and replace clutch assembly. Inspect surface (B) on shaft (14) for signs of scoring, burning or cracking. If found, replace shaft assembly (14).
4. Rotate piston rod (C) and check bearing. If bearing is rough, replace piston rod assembly (16). If bearing is okay, **DO NOT REMOVE PISTON ROD ASSEMBLY FROM SHAFT.** Clean dust and debris from shaft, but do not submerge in solvent. Install new spring (13) and end cap (23) onto piston rod. Set shaft assembly aside.
5. Rotate piston (D) on bearing housing (7). Bearing should turn smoothly. If not, replace bearing housing (7). Remove grease seal (9) from housing (7). Remove large o-ring or lip seal (5) from piston (D). Clean dust and debris from housing (7) but do not submerge in solvent. Inspect lining surface inside housing (7) for scoring, cracking or burning. If found replace housing (7). Using a lint free rag, remove old grease from needle bearings inside housing (7). **USE NO SOLVENT.** Lightly lubricate needle bearing with recommended grease. Install new grease seal (9) in housing. Clean old grease from spring steel dust seal (6). Inspect seal, replace only if pieces are missing. Lubricate dust seal (6) with recommended grease. Lubricate new o-ring (5) with recommended grease and install on piston (D). **NOTE:** 8500 Has a lip seal. Lip should face away from fan studs.
6. Install shaft assembly (14) into housing (7).
7. There is an o-ring located on a shoulder inside the cylinder of the 1090-08000 fan clutch. This o-ring can fall out during disassembly or assembly. (Refer to exploded view on page 8, item 15.) When installing the cylinder, first "stick" the o-ring in place with a little grease. If the o-ring should happen to fall out or get out of place, air will be heard leaking from the cylinder area during a pressure test.
8. On the 8500 only, lubricate and install piston rod o-rings (25 & 26.)
9. Refer to final assembly.

REFER TO PAGE 13 FOR A COMPLETE LISTING OF SERVICE PARTS

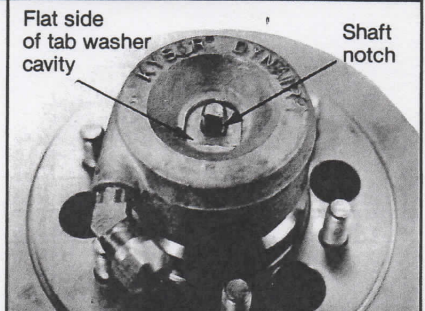
Service Procedures

FINAL ASSEMBLY

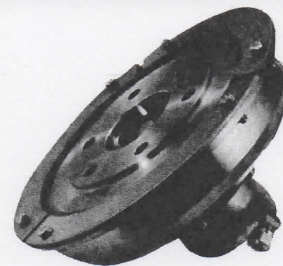
- Use a hand press and a "U" shaped tool to "squeeze" the housing and the shaft assembly together until the piston rod protrudes through the housing far enough to install the cylinder, tabwasher & lockwasher (if required), and the nut.



- Install cylinder as follows: Orient cylinder so that when placed on the shaft assembly, the notch in the piston rod and the flat side of the tabwasher cavity appear as shown here (notch at 90 degrees to flat side of cavity). If this is not done, it will be impossible to install the tabwasher during final assembly. On the 8500, the o-ring (15) must be installed on the end of the piston rod before the cylinder is placed into position. Torque the cylinder nut to 84 lbs.-in. for all models except the 1090-05703-01, which requires 60 lbs.-in. **NOTE:** Do not reuse the cylinder nut, use the new nut in the repair kit along with Loctite® 271 or equal.

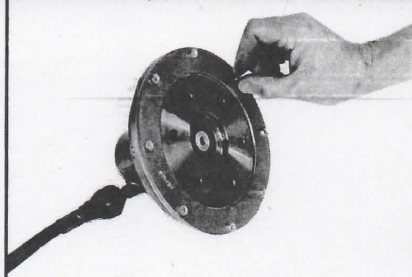
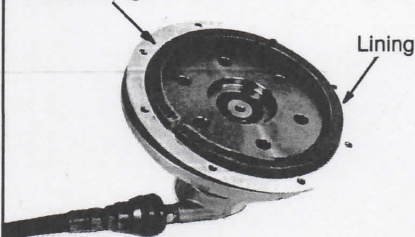


- If the clutch is a 5000, 6000, 8000 or 8500 Series, pressurize the cylinder to 90-120 psi and install the lining. Attach the retaining plate with the appropriate hardware and torque to 30 lbs.-in. **NOTE: IF SERVICING A 7000 "D8" SERIES UNIT WITH DIE CAST HOUSING AND FRICTION RING, CONTINUE ON WITH THE FOLLOWING PROCEDURES:**



NOTE: FOR 7000 "D8" SERIES ONLY

Friction Ring



- Pressurize the cylinder to 90-120 psi and install the friction ring and the lining.

Attach the retaining plate and screws, **BUT DO NOT TIGHTEN**. Snug the screws up **FINGER TIGHT ONLY**.

Release air pressure to engage the clutch and tighten the retaining plate screws to 30 lbs.-in.

Re-apply air pressure to disengage the clutch. **RECHECK** screws to assure all are torqued to 30 lbs.-in. Also, check that there is minimal drag when disengaged. If "grabbing" or excessive drag is noted, repeat the three steps above. (The purpose of the three steps is to center the friction ring. If the ring is not centered, the clutch will drag when disengaged and may be damaged.)



Service Parts

FAN CLUTCH SERIES P/N		KYSOR CLUTCH PART NUMBERS & COMPONENT PARTS NUMBERS ⁽¹⁾			
		1090-05261-XX	1090-05262-XX	1090-05703-XX	1090-06060-XX
COMPONENTS					
KEY	DESCRIPTION				
1	Cylinder Assy.	4043-38255-01	4043-38255-01	4043-38560-01	4043-38443-01
2	Cylinder Nut	3030-00358-01	3030-00358-01	N/A	3029-01371-01
3	Tab Washer	3058-01264-02	3058-01264-02	N/A	3058-01264-02
4	Lock Washer	3059-00870-05	3059-00870-05	N/A	None
5	"O" Ring	3018-01265-01	3018-01265-01	N/A	3018-01265-01
6	Dust Seal	3018-01339-01	3018-01339-01	N/A	3018-01339-01
7	Housing Assy.	N/A	N/A	N/A	N/A
8	Fan Stud	N/A	N/A	N/A	3051-01405-02
9	Grease Seal	3018-01340-01	3018-01340-01	N/A	3018-01425-01
10	Fan Nut	3030-00364-01	3030-00364-01	N/A	3030-00364-01
11	Lock Washer	3059-00870-06	3059-00870-06	N/A	3059-00870-06
12	Flat Washer	3058-00843-07	3058-00843-07	N/A	None
13	Spring	4088-35869-01	4088-35869-01	N/A	4088-35869-01
14	Shaft Assy.	4079-38543-01 (-01 & -04)	4079-38545-01 (-01 Only) 4079-38545-02 (-03 Only)	N/A	N/A
15	"O" Ring	3 of 9002-00741-58	3 of 9002-00741-58	N/A	1 of 9002-00741-58 1 of 9002-00181-48
16	Piston Rod Assy.	4079-38542-01	4079-38542-01	N/A	4079-38614-01
17	Snap Ring	3038-01268-01	3038-01268-01	N/A	3038-01268-01
18	1 Pc. Lining	4026-35868-01	4026-36900-01	N/A	4026-36900-01
18A	2 Pc. Lining	4026-38368-01	4026-39158-01	N/A	4026-39158-01
19	Retaining Plate(s)	1 of 4073-35867-01	1 of 4073-36905-01	N/A	3 of 4073-38444-01
20	Screw	3042-01282-10	3042-01282-10	N/A	3042-01282-08
21	Nut	3030-00348-01	3030-00348-01	N/A	None
22	Lock Washer	3059-00870-03	3059-00870-03	N/A	3059-00870-03
23	Spring End Cap	None	None	N/A	None
24	Wear Plate	None	None	N/A	None
	REPAIR KITS⁽¹⁾	1033-05434-01	1033-05435-01	1033-05714-01	1033-05435-01

NOTES: (1) Items listed in blue screened rows are included in the repair kits.

(2) Due to an engineering change of the 1090-07050-XX, the spring end cap is no longer available. Piston rod assembly 4079-40642-01 must be ordered. For more information, contact Kysor.

- Refer to illustrations on previous pages for correct key numbers.
- The chart shown on the last page of this brochure lists clutches that are no longer produced and the replacement model. If service parts are no longer available, use this chart to determine the current replacement or the Fan Clutch Application Guide, form FC-2, for specific applications.
- **THE 2-PIECE LINING KIT MAY BE USED, IF THERE ARE NO AIR LEAKS, TO REPLACE JUST THE LINING WITHOUT TAKING THE FAN CLUTCH OFF THE ENGINE.**

Service Parts

FAN CLUTCH SERIES P/N COMPONENTS		KYSOR CLUTCH PART NUMBERS & COMPONENT PARTS NUMBERS ⁽¹⁾				
		1090-06620-XX	1090-07050-XX Current Model	1090-08000-XX Current Model	1090-08500-01 Current Model	
KEY	DESCRIPTION					
1	Cylinder Assy.	4043-38443-01	4043-40639-01	4043-41130-01	4043-41795-01	✓
2	Cylinder Nut	3029-01371-01	3029-01371-01	3029-01371-01	3029-01371-01	*
3	Tab Washer	3058-01264-02	3058-01264-02	3058-01264-02	None	
4	Lock Washer	None	None	None	None	
5	"O" Ring	3018-01265-01	9002-00781-68	9002-00491-68	3018-01612-01	* —
6	Dust Seal	3018-01339-01	3018-01453-01	3018-01519-01	3018-01519-01	*
7	Housing Assy.	N/A	4040-40640-01 (-01, -03 & -04)	4040-41131-01 (-01, -02 & -05) 4040-41131-02 (-03 & -04)	301 4040-41131-03	
8	Fan Stud	3051-01405-02	3051-01495-01	3051-01405-01	3051-01405-01	✓
9	Grease Seal	3018-01425-01	3018-01334-01	3018-01507-01	3018-01507-01	✓
10	Fan Nut	3030-00364-01	3030-00364-01	3030-00364-01	3030-00364-01	
11	Lock Washer	3059-00870-06	3059-00870-06	3059-00870-06	3059-00870-06	*
12	Flat Washer	None	3058-00843-07	3058-00843-07	3058-00843-07	
13	Spring	4088-35869-01	4088-39197-01	4088-40615-01	4088-40615-01	*
14	Shaft Assy.	N/A	4079-40641-01 (-01 & -02) 4079-40641-02 (-03 Only) 4079-40641-03 (-04 Only)	4079-41132-01 (-01 & -03) 4079-41132-02 (-02 Only) 4079-41132-04 (-04 Only) 4079-41132-05 (-05 Only)	4079-41132-03	?
15	"O" Ring	1 of 9002-00741-58 1 of 9002-00181-48	1 of 9002-00561-58	1 of 9002-00741-58	3018-01609-01	* —
16	Piston Rod Assy.	4079-38614-01	4079-40642-01	4079-41133-01	4079-42079-01	*
17	Snap Ring	3038-01268-01	3038-01268-01	3038-01510-01	3038-01510-01	✓
18	1 Pc. Lining	4026-35868-01	4026-35868-01	4026-36900-01	4026-36900-01	*
18A	2 Pc. Lining	4026-38368-01	4026-38368-01	4026-39158-01	4026-39158-01	*
19	Retaining Plate(s)	3 of 4073-38424-01	1 of 4073-35867-01	3 of 4073-38444-01	3 of 4073-38444-01	*
20	Screw	3042-01282-08	3042-01282-12	3042-01282-08	3042-01282-08	*
21	Nut	None	3030-00348-01	None	None	
22	Lock Washer	3059-00870-03	3059-00870-03	3059-00870-03	3059-00870-03	*
23	Spring End Cap	None	4001-39006-01 ⁽²⁾	4001-40690-01	4001-40690-01	*
24	Wear Plate	None	4073-39008-01	None	None	
25	"O" Ring	None	None	None	3018-01610-01	* —
26	"O" Ring	None	None	None	3018-01613-01	* —
27	Spring Carrier	None	Included in Piston Rod Assembly	4001-40690-01	4001-40690-01	
28	Coupling	None	None	None	4038-40903-01	* —
	REPAIR KITS ⁽¹⁾	1033-05434-01	1033-05434-02	1033-05435-02	1033-05435-03	

NOTES: Refer to page 12 for all reference notes.

*Needle Bag
Piston Bag*

(2) 4012-40611-01

4012-40617-01

Service Procedures

SPECIFICATIONS - TORQUE AND RECOMMENDED GREASES

Torque specs-Fan Clutch & Fan Hub attaching hardware (Grade 8).		Torque specs-Fan attaching hardware (Grade 5).		ACCEPTABLE GREASES AEROSHELL 5 SHELL Alvania R3 CHEVRON SRI2 AMOCO Rykon Premium #2EP TEXACO RB Premium
Bolt Size	Torque (lbs.-ft.)	Bolt Size	Torque	
5/16"-18	25	5/16"-24 (locknut)	84 (lbs.-in.)	
3/8"-16	45	3/8"-24	26 (lbs.-ft.)	
1/2"-13	107			

NOTE: EMERGENCY LOCK UP PROCEDURE

IN THE EVENT THAT THE CLUTCH LINING IS WORN BEYOND THE OVERHAUL POINT SPECIFIED, AND THE FAN CLUTCH IS NOT DRIVING THE FAN, TEMPORARY REPAIRS CAN BE MADE SO THAT THE VEHICLE CAN BE DRIVEN UNTIL THE LINING CAN BE REPLACED.

THIS LOCK UP PROCEDURE IS ACCOMPLISHED BY REMOVING THE HARDWARE AT THE FRONT OF THE CLUTCH AND SLIDING OFF THE CYLINDER. IF THE CYLINDER WILL NOT SLIDE, APPLY AIR PRESSURE TO THE AIR INLET. INSURE THAT ALL HARDWARE HAS BEEN REMOVED FROM BETWEEN THE FAN AND RADIATOR. ONCE THE CYLINDER IS REMOVED, BLOCK OFF ALL INCOMING AIR. ON FRONT AIR CLUTCHES REMOVE THE AIR LINE FROM IN FRONT OF THE FAN.

THIS PROCEDURE IS FOR EMERGENCY USE ONLY AND THE FAN CLUTCH SHOULD BE REPAIRED AS SOON AS POSSIBLE.

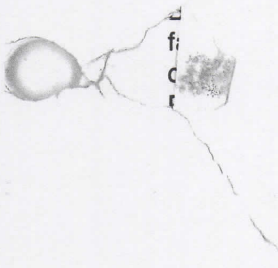
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Clutch Crossover

	ORIGINAL	ORIGINAL (KIT PART NO.)	"S" SERIES CLUTCH	CURRENT MODEL
Model	4208	4208	8S	D-8
Part No.	1090-05261-01	1095-05343-01	1090-06620-01	1090-07050-01(4)
	1090-05261-02	1095-05344-01	1090-06620-02	1090-07050-03(5)
	1090-05261-04	NA	NA	1090-07050-02(1)
Model	4212	4212	12S	K-22
Part No.	1090-05262-01(2)	1095-05345-01(2)	1090-06060-02	1090-08000-01
	1090-05262-03(2)	1095-05346-01(2)	None - (Use 1090-06060-02)	1090-08000-01
Model	3205	3205	8S	D-8
Part No.	1090-05703-01(3)	1095-05704-01(3)	None-(Use 1090-06620-01)	1090-07050-01
	1090-05703-02(3)	1095-05760-01(3)	None - (Use 1090-06620-02)	1090-07050-03

NOTE:

- (1) Requires 1 of a 1097-07825-XX which includes 1 each of 4082-37634-XX mounting rubber, 4038-38806-01 shield and 4038-37641-01 support plate to install the fan on the clutch.
- (2) The clutch spacer must change when making this conversion or use adapter ring 4038-42430-01. The original design has a 1.38 pilot v.s. the 2.00" pilot for the "K" & "S" series.
- (3) The fan blade must also change if using the D-8 clutch. The 3205 clutch has a 2.00" pilot v.s. the 2.56" pilot on the D-8. 1090-05703-XX clutches are available for service replacements.
- (4) A minimum of .25" Spacer must be added if using 1090-07050-01 in place of 1090-05261-01. Use 1096-06547-01.
- (5) Use Kit 1096-06913-01 if converting 1090-05261-02 to 1090-07050-03.



KYSOR | Cadillac

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Technical Service & Troubleshooting
616-779-7528 616-779-7529

FORM #FC 4
12/93
4031-39104-01