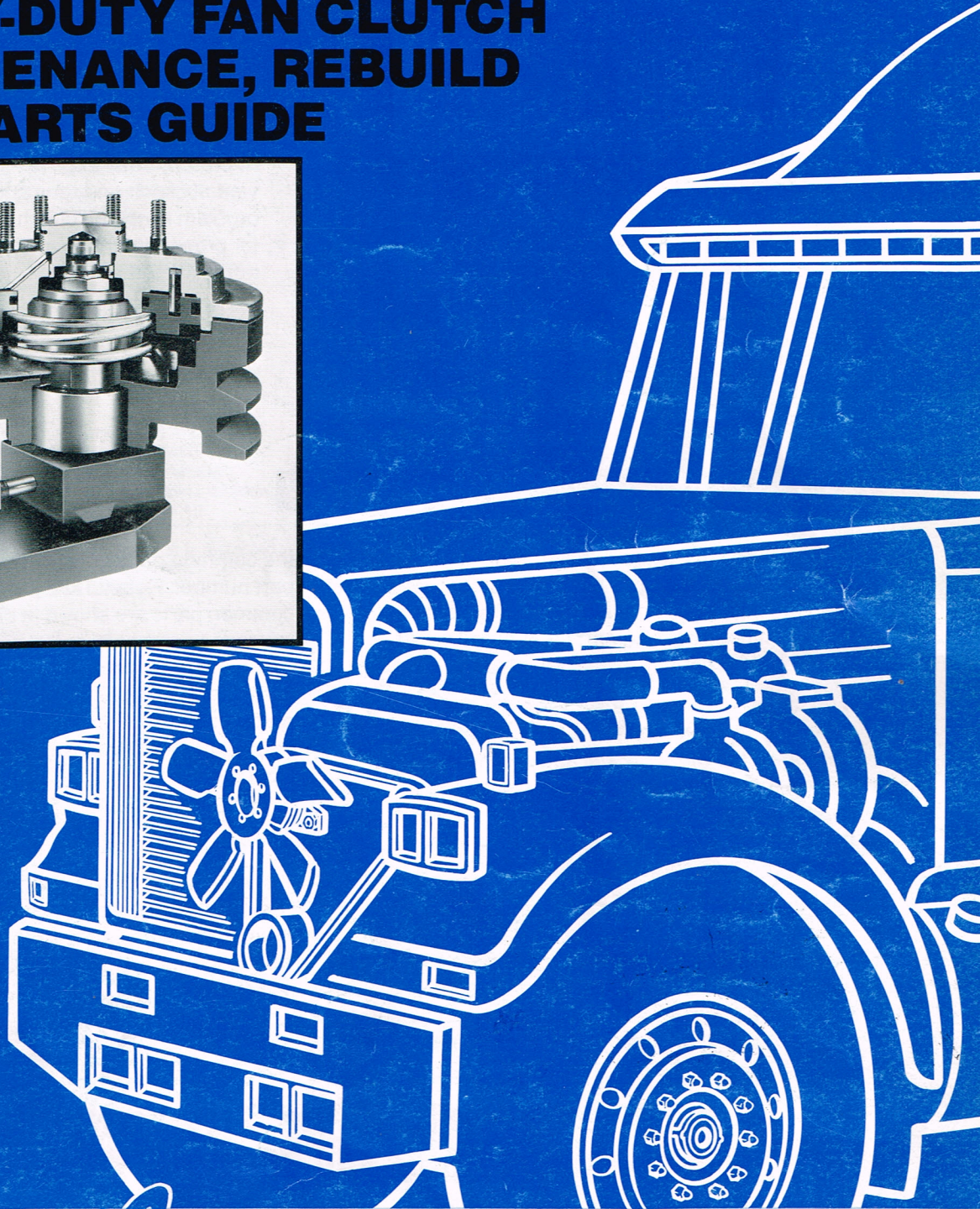
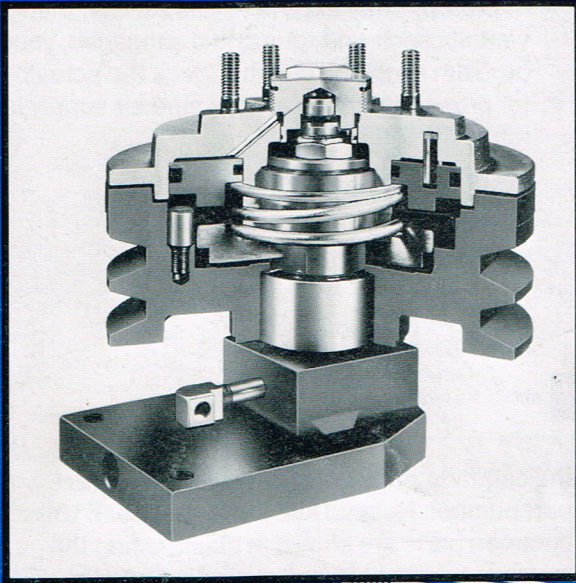


EVANS has the system for Engine Temperature Control

HEAVY-DUTY FAN CLUTCH MAINTENANCE, REBUILD AND PARTS GUIDE



EVANS

T E M P C O N

CAUTION . . . Before You Begin

1. **Before removing clutch from vehicle** consult the Trouble Shooting Guide on Page 3. The problem may not be in the clutch. This step will prevent costly and needless repairs. You should also conduct the following simple test.

a) **With engine off** connect an 80 p.s.i. air source directly to the base of the clutch. Check for leaks. If leaks are detected at the seal plug, replace seal plug only. On some trucks seal plug can be removed without removing the clutch. Note: If seal plug is leaking, air will be coming out of the small hole at the front of the clutch. Be sure to

wipe the inside surface clean before installing new seal plug. ***Leaks in the clutch from any source other than the seal plug will require rebuilding the clutch.***

b) Connect an 80 p.s.i. air source directly to the base of the clutch. Be able to turn this air source ON and OFF, and allow air in the line to vent. ***Keeping hands and yourself clear of clutch, start engine.*** Cycle Air ON, then vent. If clutch engages and disengages, your problem is *not* the clutch. Check the actuator for proper operation and be sure air supply is not restricted.

If Clutch Requires Rebuilding

1. You must determine the Evans Tempcon part number of the clutch you have. The part number is on the data tag on the fan clutch bracket or on the clutch housing. The part number will be an FC or an FCR prefix.
2. If no part number can be found on the clutch, look for a separate tag with a serial number. Determine the make, model and engine of the vehicle the clutch is installed on. Contact your Evans Tempcon distributor or call our service hot line. From the above information you will be advised of the clutch part number.
3. Find the Evans Tempcon part number in the Uncommon Parts Section, Pages 5, 7 or 8. Using the exploded drawing in *that section only*, select the parts needed to make repairs. Common parts to all clutches are shown in blue. Find the corresponding reference number on

the common parts chart to select the correct part number. Rebuild kits are also shown. Uncommon parts are shown in black. Using the reference number from the drawing and the part number of the clutch, select the correct part numbers. If you cannot find your clutch part number, consult your Evans Tempcon distributor or call the Evans Tempcon Service Hot Line.

4. Follow the Rebuilt Procedure outlined on Pages 10 through 14.
5. For replacement of your current clutch with a New FC II Series Clutch, consult the Cross-Reference Guide on Page 15 or use the Evans Tempcon Heavy-Duty Fan Clutch Model Selection Guide (ET 107).

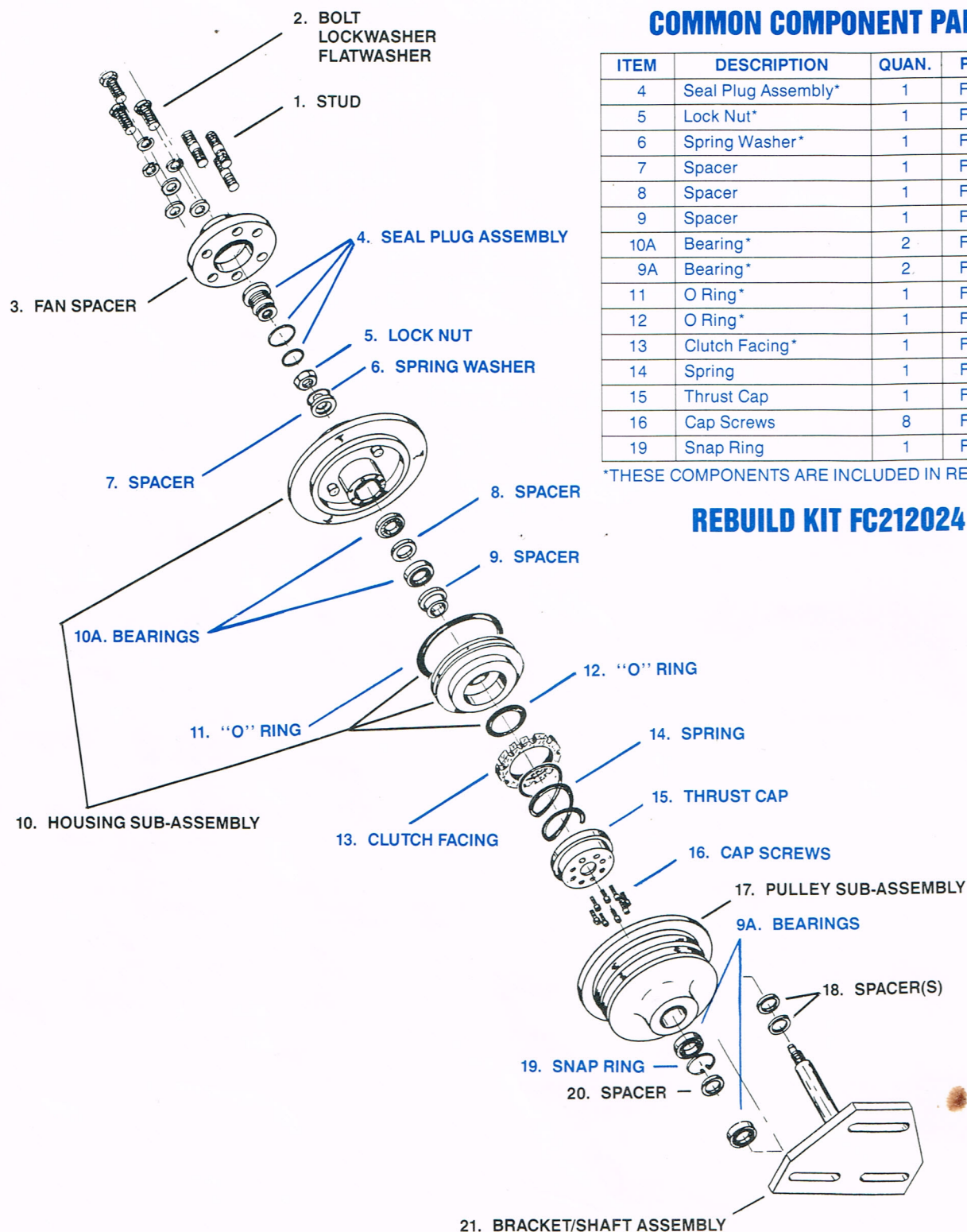
**Evans Tempcon Hot Line Service Number
1-800-354-7088**

The logo for Evans Tempcon, featuring the word "EVANS" in a large, stylized, blue, italicized font, with "TEMPCON" in a smaller, blue, sans-serif font below it.

Trouble Shooting Evans Fan Clutches

PROBLEM	POSSIBLE CAUSE	SOLUTION
Air leak from front	a) Seal plug is leaking.	a) Replace seal plug with new assembly. This can often be done while clutch is still on engine. Note: If seal is leaking, air will be coming out of 1/32" dia. hole located in front section of clutch near the pilot.
Fan remains disengaged	Clutch actuator not functioning. This could be from any one of the following causes: a) Actuator contaminated or defective. b) Air supply to actuator is restricted.	a) Replace actuator. b) Check to make sure fittings are not leaking, make sure air line isn't plugged, that there isn't a leak in the line, or that it's not pinched.
	Clutch actuator is improperly installed. Causes are: a) Actuator not in coolant flow.	a) It's recommended that the actuator be installed in the thermostat housing. If for some reason, the actuator can't be installed in the housing, make sure the element part of the actuator is in good flow of coolant. Note: If the actuator is in the thermostat housing, it should operate within $\pm 4^\circ$ of its setting. This applies only in the thermostat housing.
	Clutch actuator is improperly installed. (Continued) b) Coolant in area where actuator is installed is below temperature setting.	b) Install an actuator with a lower temperature setting. Note: If the actuator is in the thermostat housing, it should operate within $\pm 4^\circ$ of its setting. This applies only in the thermostat housing.
	Air supply to clutch is restricted. Possible causes are: a) leak in fitting. b) Leak in air line. c) Air line pinched. d) Seal plug is leaking.	a), b), and c) Check fittings and air line for leaks. Also make sure line is not pinched or plugged. d) Replace seal plug with new assembly. This can often be done while clutch is still on engine. Note: If seal is leaking air will be coming out of 1/32" dia. hole located in front section of clutch near the pilot.
Fan clutch will not disengage	Fan clutch internal component has failed. Possible causes are: a) Facing worn out b) "O" Rings around piston are worn.	a) Replace clutch facing. b) Replace "O" Rings around piston. Note: If "O" Rings are not sealing, air will be coming out of clutch in area between aluminum housing and the pulley.
	Clutch Actuator not exhausting. Possible causes are: a) Air line from clutch to actuator is restricted. b) Defective actuator. c) Actuator vent plugged.	To check for causes a), b) or c), disconnect air line at clutch. If clutch disengages, then a) b), or c) is the cause. a) Check and make sure air line is not pinched or plugged. b) Replace actuator. c) Clean top of actuator. Must be free of dirt, paint, etc.
Fan clutch engaged, engine running hot	Piston in housing will not return. a) Could be a defective piston or spring.	a) Replace piston and spring.
	a) Problem in coolant system. b) Restriction in front of radiator.	a) Refer to cooling system manual — Service cooling System. b) Check and make sure nothing is obstructing the air flow through the radiator.

FC Series Fan Clutch



COMMON COMPONENT PARTS

ITEM	DESCRIPTION	QUAN.	PART NO.
4	Seal Plug Assembly*	1	FC200002
5	Lock Nut*	1	FC030005
6	Spring Washer*	1	FC030004
7	Spacer	1	FC030043
8	Spacer	1	FC030044
9	Spacer	1	FC030003
10A	Bearing*	2	FC030024
9A	Bearing*	2	FC030024
11	O Ring*	1	FC030027
12	O Ring*	1	FC030028
13	Clutch Facing*	1	FC030009
14	Spring	1	FC030007
15	Thrust Cap	1	FC030045
16	Cap Screws	8	FC030047
19	Snap Ring	1	FC030049

*THESE COMPONENTS ARE INCLUDED IN REBUILD KIT

REBUILD KIT FC212024

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FC Series Uncommon Parts List

ITEM		1	3	10	17	18	21	20
MODEL NUMBER	OLD MODEL NUMBER	STUD	FAN SPACER	HOUSING SUB-ASSY	PULLEY SUB-ASSY	BOTTOM SPACER(S)	BRACKET ASSEMBLY	SPACER
FC212002	FC289	—	—	FC200019	FC200021	FC030051	FC200022	FC030050
FC212015	FC8	FC212155	—	FC200031	FC200088	FC030139	FC200177	FC030043
FC212016	FC65	FC212144	—	FC200008	FC200099	FC030082 FC030250	FC200100	FC030295
FC212017	FC89D	FC212146	—	FC200019	FC200099	FC030050	FC200100	FC030295
FC212018	FC15	FC212144	—	FC200008	FC200105	FC300043 FC030139	FC200106	FC030050
FC212019	FC239	FC212144	—	FC200008	FC200114	—	FC200112	FC030043
FC212021	FC501D	FC212144	—	FC200019	FC200021	FC030139 FC030043	FC200137	FC030050
FC212022	FC507	FC212144	—	FC200008	FC200129	FC030175	FC200130	FC030050
FC212023	FC180D	FC212144	—	FC200019	FC200111	FC030250	FC200110	FC030250
FC212025	FC505	(2)	FC030180	FC200008	FC200144	FC030139	FC200141	FC030050
FC212026	FC282	(1)	—	FC200008	FC200123	FC030250 FC030082	FC200100	FC030295
FC212027	FC515	FC212144	—	FC200008	FC200145	FC030175	FC200067	FC030185
FC212031	FC355D	FC212159	—	FC200019	FC200123	FC030082 FC030250	FC200100	FC030295
FC212032	FC142	FC212155	—	FC200031	FC200156	—	FC200157	FC030043
FC212034	FC53	FC212144	—	FC200008	FC200165	FC030082	FC200166	FC030295
FC212037	FC356D	(1)	—	FC200019	FC200220	—	FC200217	FC030043
FC212038	FC281	(1)	—	FC200008	FC200220	—	FC200217	FC030043
FC212039	FC290	(1)	—	FC200149	FC200123	FC030139	FC200214	FC030043
FC212040	FC47	FC212144	—	FC200008	FC200209	FC030213	FC200206	FC030050
FC212041	FC55	(1)	—	FC200008	FC200240	—	FC200062	FC030213
FC212043	FC352	(1)	—	FC200008	FC200021	FC030050	FC200100	FC030050
FC212044	FC106	FC212144	—	FC200008	FC200145	FC030175	FC200201	FC030185
FC212046	FC105	FC212144	—	FC200008	FC200111	FC030139 FC030175	FC200198	FC030250
FC212048	FC48	FC212144	—	FC200008	FC200174	FC030139	FC200175	FC030043
FC212053	FC286	FC212158	FC030081	FC200008	FC200186	FC030082 FC030139 FC030250	FC200052	FC030295
FC212058	FC36	FC212144	—	FC200008	FC200225	FC030211	FC200222	FC030302

(1) FC03011 BOLT; FC030112 WASHER & FC030113 WASHER

(2) FC030181 BOLT

FC II Fan Clutch

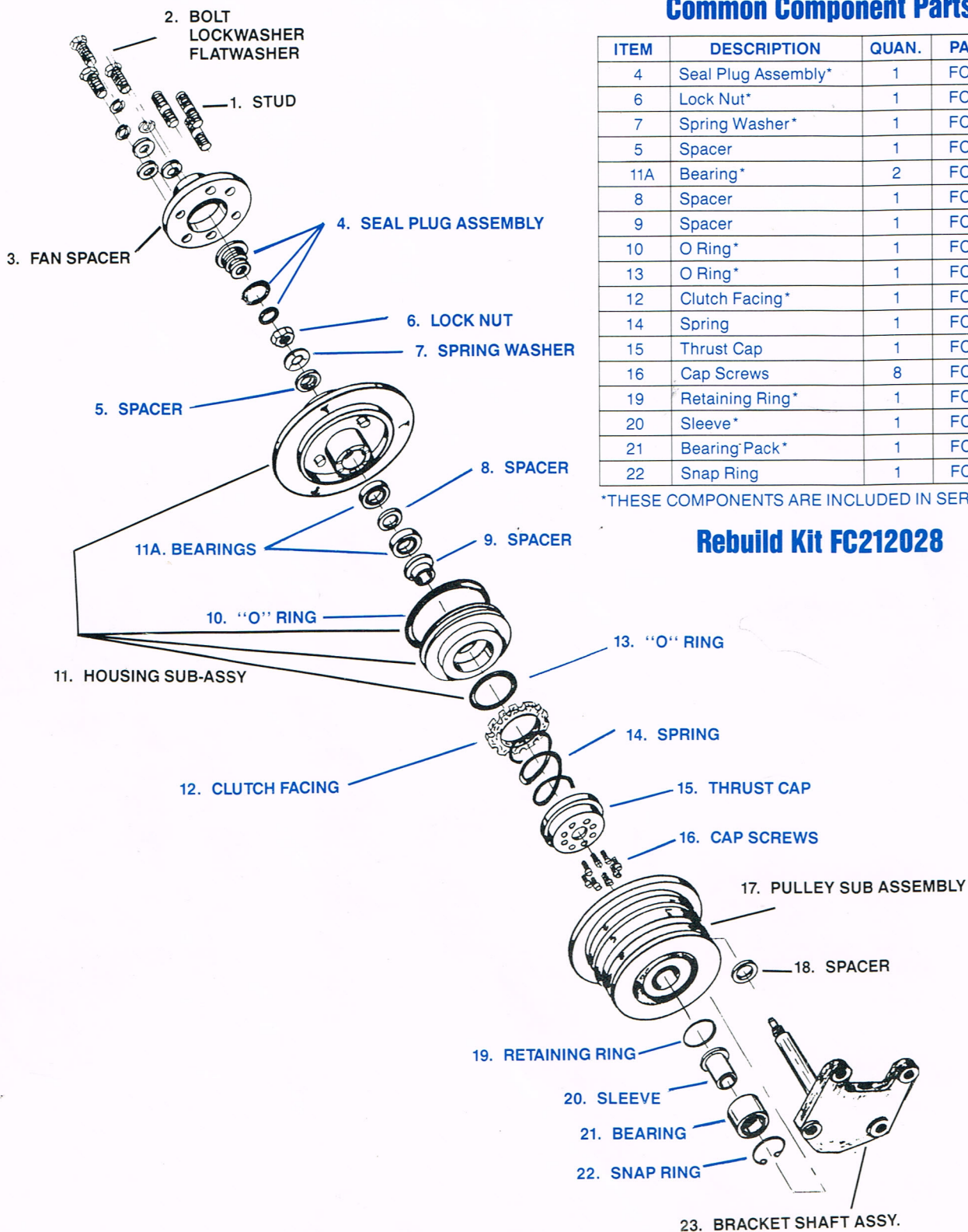
COMFORT AIR, INC.
1610 Center Avenue NE
Grand Rapids, MI 49505
(616) 454-2200
FAX (616) 454-0059

Common Component Parts

ITEM	DESCRIPTION	QUAN.	PART NO.
4	Seal Plug Assembly*	1	FC200002
6	Lock Nut*	1	FC030005
7	Spring Washer*	1	FC030004
5	Spacer	1	FC030003
11A	Bearing*	2	FC030024
8	Spacer	1	FC030043
9	Spacer	1	FC030060
10	O Ring*	1	FC030027
13	O Ring*	1	FC030028
12	Clutch Facing*	1	FC030009
14	Spring	1	FC030007
15	Thrust Cap	1	FC030061
16	Cap Screws	8	FC030047
19	Retaining Ring*	1	FC030064
20	Sleeve*	1	FC030065
21	Bearing Pack*	1	FC030066
22	Snap Ring	1	FC030067

*THESE COMPONENTS ARE INCLUDED IN SERVICE KIT.

Rebuild Kit FC212028



EVANS

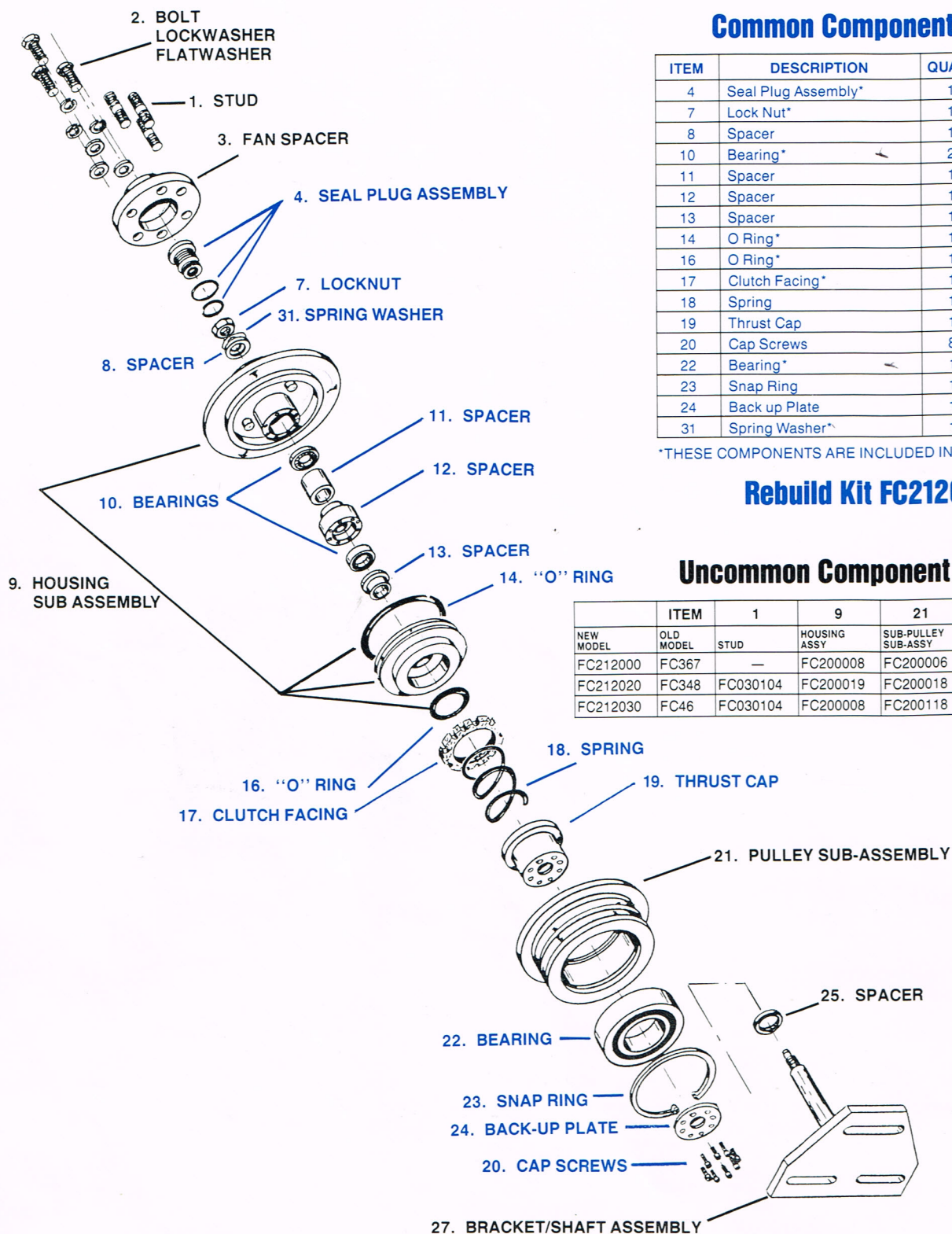
FC II Uncommon Parts List

ITEM		1	3	11	17	18	23
MODEL NUMBER	OLD MODEL NUMBER	STUD	FAN SPACER	HOUSING SUB-ASSY	PULLEY SUB-ASSY	BOTTOM SPACER(S)	BRACKET ASSEMBLY
FC212001	FCR1520	—	—	FC200019	FC200014	—	FC200015
FC212003	FCR1055	(1)	—	FC200019	FC200061	FC030110	FC200062
FC212004	FCR1080	FC212154	—	FC200031	FC200079	FC030130	FC200080
FC212005	FCR1081	FC212155	—	FC200031	FC200053	FC030098	FC200050
FC212006	FCR1233	FC212146	FC030081	FC200019	FC200084	FC030098	FC200085
FC212007	FCR1245	FC212155	—	FC200031	FC200043	FC030090	FC200051
FC212008	FCR1273	FC212144	—	FC200019	FC200071	FC030105	FC200072
FC212009	FCR1286	FC212146	FC030081	FC200019	FC200037	(FC030090) (FC030288)	FC200052
FC212010	FCR1500	FC212144	FC200019	FC200019	FC200057	FC030105	FC200075
FC212011	FCR1501	FC212144	—	FC200019	FC200057	FC030105	FC200072
FC212012	FCR1515	FC212144	—	FC200019	FC200066	FC030119	FC200067
FC212013	FCR1517	FC212144	—	FC200019	FC200053	FC030098	FC200050
FC212014	FCR1528	FC212146	—	FC200019	FC200053	FC030098	FC200050
FC212029	FCR1510	FC212144	—	FC200019	FC200093	FC030090	FC200094
FC212033	FCR1533	—	—	FC200008	FC200161	FC030098	FC200162
FC212035	FCR1213	FC212156	—	FC200149	FC200151	FC030119	FC200152
FC212045	FCR1283	(1)	—	FC200019	FC200182	FC030110	FC200062
FC212047	FCR1082	FC212144	—	FC200008	FC200071	FC030205	FC200100
FC212054	FCR1509	—	—	FC200019	FC200194	FC030098	FC200192
FC212061	FCR1100D	—	—	FC200019	FC200249	FC030311	FC200250
FC212067	FCR1527	FC212152	—	FC200019	FC200061	FC030110	FC200062
FC212068	FCR1527	FC212146	—	FC200019	FC200061	FC030110	FC200062
FC212069	FCR1527	FC212148	—	FC200019	FC200061	FC030110	FC200062
FC212070	FCR1527	—	—	FC200019	FC200061	FC030110	FC200062
FC212071	FCR1354	—	—	FC200019	FC200314	FC030110	FC200062
FC212072	FCR1527	FC212149	—	FC200019	FC200061	FC030110	FC200062
FC212073	FCR1527	—	—	FC200309	FC200061	FC030110	FC200062
FC212074	FCR1504	FC212146	—	FC200019	FC200244	FC030110	FC200245
FC212075	FCR1504	—	—	FC200019	FC200244	FC030110	FC200245
FC212078	FCR1352	FC212146	—	FC200019	FC200255	FC030316	FC200052
FC212079	FCR1082B	FC212146	—	FC200008	FC200071	FC030205	FC200052
FC212080	FCR1082A	FC212149	—	FC200008	FC200071	FC200205	FC200052
FC212081	FCR1352	FC212152	—	FC200019	FC200255	FC030316	FC200052
FC212083	FCR1352	—	—	FC200029	FC200255	FC030316	FC200052
FC212084	FCR1082	—	—	FC200008	FC200071	FC030205	FC200052
FC212085	FCR1352	FC212149	—	FC200019	FC200255	FC030316	FC200052
FC212086	FCR1352	FC212150	—	FC200019	FC200255	FC030316	FC200052
FC212087	FCR1047	—	—	FC200008	FC200260	FC030318	FC200206
FC212088	FCR1290	—	—	FC200149	FC200297	FC030350	FC200298
FC212089	FCR1243	—	—	FC200149	FC200281	FC030350	FC200280
FC212090	FCR1069D	—	—	FC200019	FC200281	FC030350	FC200280
FC212091	FCR1036	—	—	FC200008	FC200292	FC030375	FC200222
FC212092	FCR1088	—	—	FC200019	FC200260	FC030318	FC200303
FC212094	FCR1534	—	—	FC200008	FC200265	FC030090	FC200266
FC212095	FCR1534	FC212145	—	FC200008	FC200265	FC030090	FC200266
FC212096	FCR1534	FC212146	—	FC200008	FC200265	FC030090	FC200266
FC212097	FCR1534	FC212144	—	FC200008	FC200265	FC030090	FC200266
FC212098	FCR1015	—	—	FC200019	FC200233	FC030119	FC200234
FC212099	FCR1015	—	—	FC200019	FC200238	FC030119	FC200234
FC212100	FCR1015	—	—	FC200019	FC200241	FC030119	FC200234
FC212113	FCR1064	FC212155	—	FC200031	FC200194	FC030098	FC200050
FC212114	FCR1081B	FC212154	—	FC200031	FC200053	FC030098	FC200050
FC212115	FCR1064A	FC212155	—	FC200305	FC200194	FC030098	FC200050
FC212116	FCR1081A	—	—	FC200031	FC200053	FC030098	FC200050
FC212117	FCR1064C	FC212154	—	FC200031	FC200194	FC030098	FC200050
FC212118	FCR1081C	—	—	FC200008	FC200053	FC030098	FC200050
FC212119	FCR1064	—	—	FC200031	FC200194	FC030098	FC200050
FC212120	FCR1064C	—	—	FC200019	FC200194	FC030098	FC200050
FC212121	FCR1064C	FC212157	—	FC200305	FC200194	FC030098	FC200050
FC212124	FCR1079D	FC212155	—	FC200031	FC200079	FC030130	FC200080
FC212125	FCR1080D	FC212154	—	FC200031	FC200079	FC030130	FC200080
FC212126	FCR1070D	FC212154	—	FC200305	FC200079	FC030130	FC200080
FC212127	FCR1080D	—	—	FC200031	FC200079	FC030130	FC200080
FC212128	FCR1070D	FC212154	—	FC200305	FC200079	FC030130	FC200080
FC212139	FCR1213	FC212147	—	FC200149	FC200151	FC030119	FC200152
FC212140	FCR1213	FC212151	—	FC200149	FC200151	FC030119	FC200152

(1) FC030111 BOLT; FC030112 WASHER; FC030113 WASHER, LOCK

FC 212165

Large Bearing Fan Clutch



Common Component Parts

ITEM	DESCRIPTION	QUAN.	PART NO.
4	Seal Plug Assembly*	1	FC200002
7	Lock Nut*	1	FC030005
8	Spacer	1	FC030003
10	Bearing*	2	FC030024
11	Spacer	1	FC030029
12	Spacer	1	FC030030
13	Spacer	1	FC030008
14	O Ring*	1	FC030027
16	O Ring*	1	FC030028
17	Clutch Facing*	1	FC030009
18	Spring	1	FC030007
19	Thrust Cap	1	FC030035
20	Cap Screws	8	FC030011
22	Bearing*	1	FC030036
23	Snap Ring	1	FC030034
24	Back up Plate	1	FC030010
31	Spring Washer*	1	FC030004

*THESE COMPONENTS ARE INCLUDED IN REBUILD KIT.

Rebuild Kit FC212042

Uncommon Component Parts

	ITEM	1	9	21	25	27
NEW MODEL	OLD MODEL	STUD	HOUSING ASSY	SUB-PULLEY SUB-ASSY	SPACER	BRACKET ASSY
FC212000	FC367	—	FC200008	FC200006	FC030002	FC200001
FC212020	FC348	FC030104	FC200019	FC200018	FC030043	FC200153
FC212030	FC46	FC030104	FC200008	FC200118	FC030043	FC200041

EVANS

Maintenance Procedure

When unit is under warranty, disassembly and reassembly should be done by an authorized Evans distributor or by the factory.

When to service

Every 250,000 miles or 5000 hrs of operation, it recommended that:

1. FC Series* — Rebuild unit

See Pages 4 and 5 for Rebuild Kit and Parts

2. Large Bearing* Fan Clutch — Rebuild unit using rebuild kit and parts from Page 8.

Every 400,000 miles or 8000 hrs of operation it is recommended that:

FC II Series* be rebuilt. See Pages 6 and 7 for rebuild kits and parts.

At rebuild time it is recommended that you replace the clutch actuator, any selenoid valves and freon override switches.

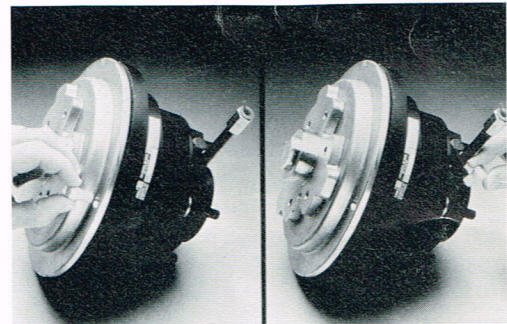
*See Page 2 for directions in determining which style clutch you have.

Mechanical Lock-Up Bolts—Road Service

Mechanical lock-up bolts are stored in the mounting bracket of all Evans Fan Clutches. If the clutch loses air, use these bolts to fasten the pulley to the drive.

NOTE: The bolts are $\frac{3}{8}$ -24x- $\frac{3}{4}$ (Grade 8) and should not be substituted with lesser strength bolts, or failure will result.

To install the bolts, match up the hole location marks, one on the pulley — the other on the drive housing, (this will align the drive clearance with the pulley threaded hole.) Add enough torque to keep them from vibrating loose. **DO NOT try to tighten until the bolt head seats.** These bolts function as pins and do not require clamping force to function, as on other clutches.



What are the main causes of premature fan clutch failure?

Evans' warranty records on fan clutches reveal that almost 50% of all their fan clutches returned for warranty are in 100% perfect working order. This is due mainly to lack of understanding (education) about the operation, maintenance, and trouble-shooting methods for any fan clutch system. See Pages 2 and 3.

Improper belt tension, "too tight", can be a major cause of bearing failure on any fan clutch system. Follow engine manufacturers recommendations.

Temperature controlling devices that are improperly "sized" or installed are frequently the cause for removal of a good fan clutch, regardless of manufacturer. See Trouble Shooting on Page 2.

Dirt and water from a totally contaminated air system can cause both actuator failure and air leaks in the clutch.

Rebuild Procedure

Tools Required:

1. A clamp to hold the clutch on the workbench.
2. A spanner wrench may be required on some older models. Look at the Seal Plug for correct wrench size.
3. 1-1/16" Socket Wrench
4. 9/64" Allen Wrench
5. Air Source (50 PSI)
6. Arbor Press
7. Screwdriver (flat blade)
8. Torque Wrench
9. Loc-Tite 272
10. Loc-Tite 271
11. Snap Ring Puller.

Instructions

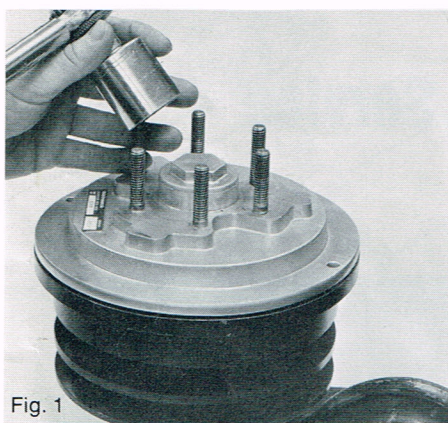


Fig. 1

1. Remove the fan clutch from the engine and clamp the bracket of the clutch to the workbench. Fan mounting side up. Check wrench size needed to loosen seal plug.

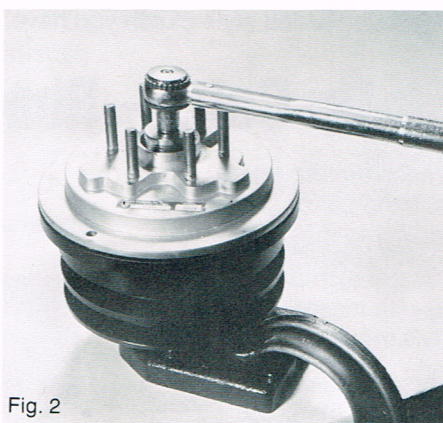


Fig. 2

2. Use the socket (or spanner) wrench to remove seal plug assembly.

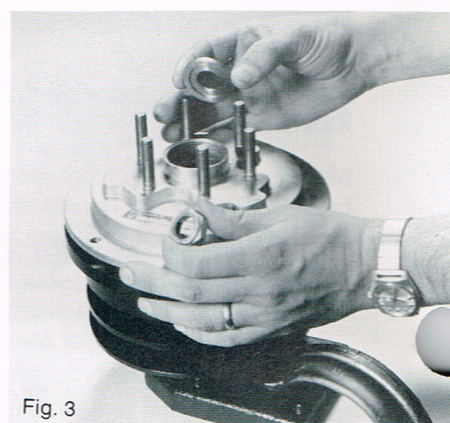


Fig. 3

3. Use the socket wrench to remove lock nut, spacer, and spring washer from end of shaft. Throw away lock nut and spring washer.

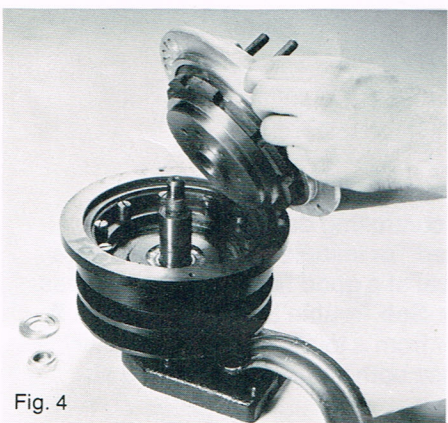


Fig. 4

4. Slide the clutch housing assembly upwards and off the shaft.

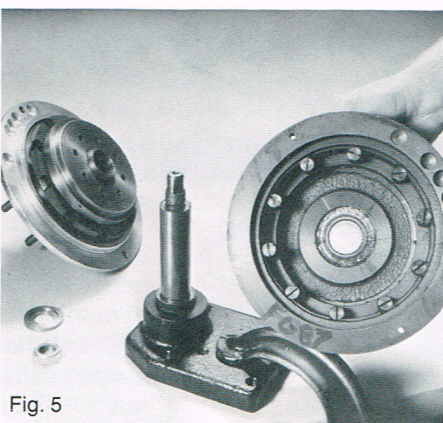


Fig. 5

5. Slide the pulley assembly upwards and off the shaft.

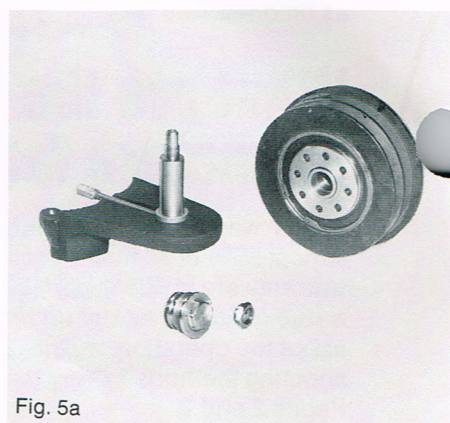


Fig. 5a

- 5a. FOR LARGE BEARING FAN CLUTCH — pull the entire clutch housing and pulley assembly upwards and off the shaft.

EVANS

T E M P C O N

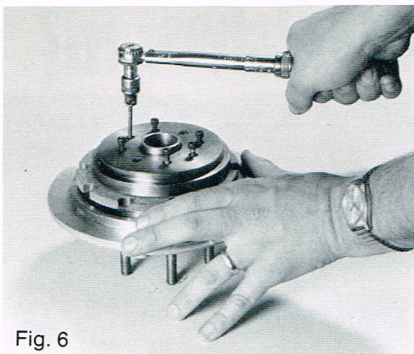


Fig. 6

6. Turn the housing assembly over (fan mounting surface down). Use a 9/64" allen wrench to LOOSEN the eight socket screws in the thrust cap. DO NOT REMOVE THEM until you look at the next instruction.

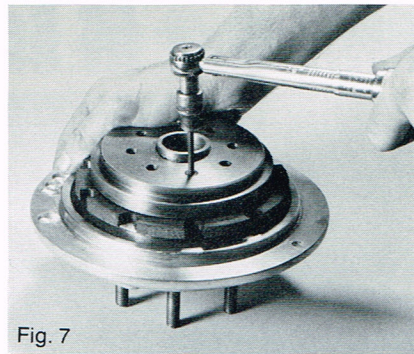


Fig. 7

7. **CAUTION — THE RETURN SPRING LOCATED BETWEEN THE THRUST CAP AND THE PISTON IS IN COMPRESSION!** To remove, proceed carefully. Remove all but one socket screw. With one hand hold down the thrust cap on the side opposite of the remaining screw. Hold the thrust cap firmly and remove the screw. Then with both hands carefully allow the thrust cap to rise until the spring relaxes.

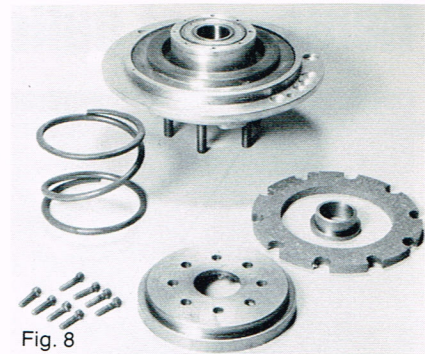


Fig. 8

8. Remove the thrust cap, clutch facing, spring and spacer.

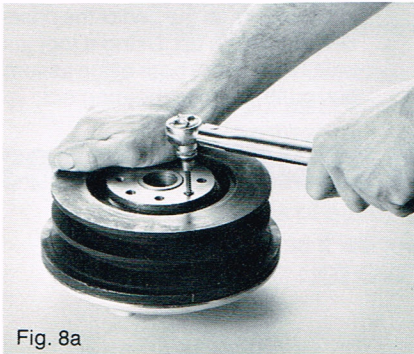


Fig. 8a

- 8a. FOR LARGE BEARING CLUTCHES, use a 9/64" allen wrench to LOOSEN the eight socket screws in the backup plate. **CAUTION!** Remove the backup plate carefully using the procedure outlined for Fig. 7.

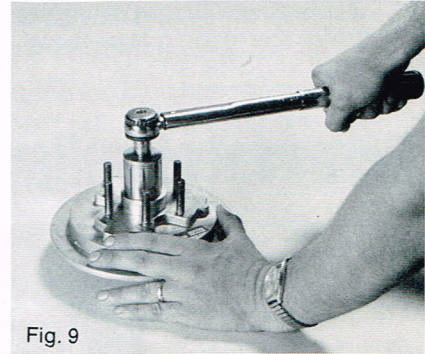


Fig. 9

9. TO REMOVE PISTON ASSEMBLY. Use grease pencil and make a mark across the fan clutch housing and piston. Use this to line up piston on reassembly. Next, replace seal plug assembly by threading into housing assembly. Be sure to tighten.

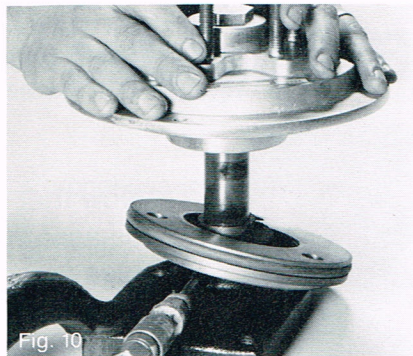


Fig. 10

10. Continue by sliding the housing back onto shaft, which should still be clamped to the work bench. Connect a 50 PSI air hose to the bracket fitting. Hold the housing down firmly on the shaft and turn air on for a second or two. This will blow piston clear of housing. If piston sticks use flat blade screwdriver to pry out.

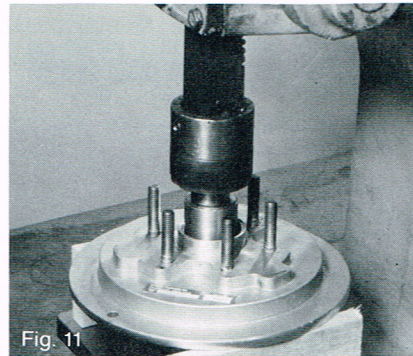
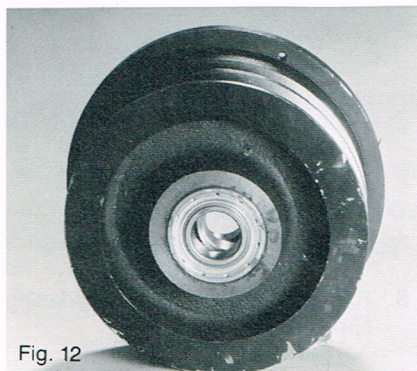


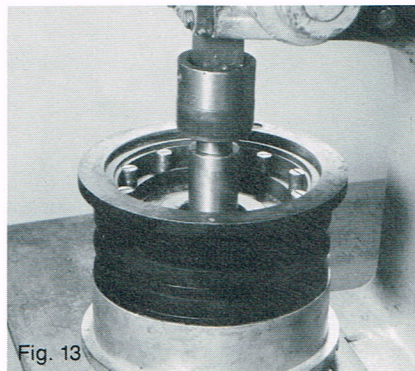
Fig. 11

11. (All styles of clutches) Remove bearings from clutch housing assembly with an arbor press. Support the assembly (fan mounting surface up) above the bed of the press with wooden blocks. Be sure the assembly is level. Slowly and smoothly press the bearing out of the housing.

Removal of pulley bearings — FC Series Clutches



12. The spacer between the two bearings must be moved sideways into the space where the shaft was. Use a screwdriver. Gently but firmly tap the spacer to one side as shown.

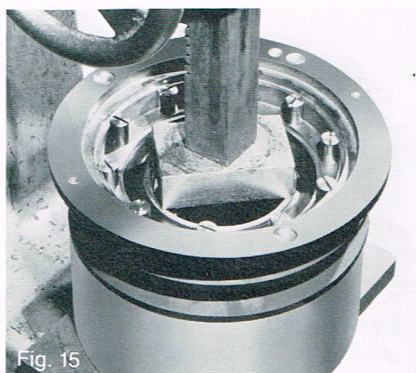


13. Set the pulley assembly on wood blocks on the bed of the arbor press, front surface up. Using a tool slightly smaller than the inner race of the front bearing, bore push against the displaced spacer to push the back bearing out.



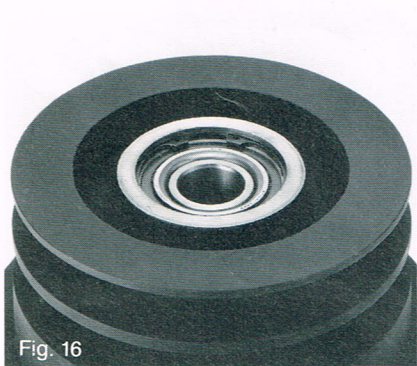
14. To remove the front bearing, turn the pulley assembly over and remove the snap ring. Place assembly on wood blocks on the bed of the press. BACK surface up. Using a tool just smaller than the bore of the assembly, push the front bearing out.

Removal of pulley bearing—Large bearing design clutches

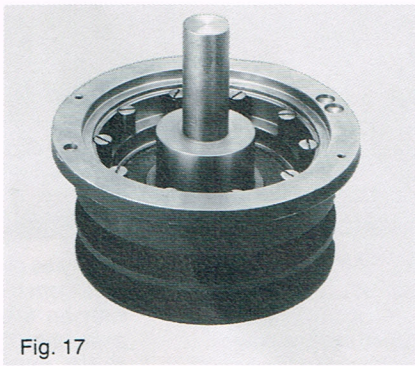


15. Remove the large snap ring. Set the pulley assembly on wood blocks on the arbor press, front surface up. Press bearing out through pulley assembly bore.

Removal of pulley bearing — FC II Clutches



16. Remove retaining and snap rings from front and rear of pulley.



17. Set pulley assembly on wood blocks on bed of press, front surface up. Use a tool slightly smaller than bearing O.D. to push against outer race, removing bearing pack.

Now that the clutch is fully disassembled, use repair kit plus any other required part to begin rebuilding sub-assemblies. Reverse Steps 6-17). See page 13 and 14 for important rebuilding steps.

EVANS

Important Steps in Rebuilding

- A. When replacing o-rings, be sure to lubricate with Type 2 grease.
- B. Use minimal amount of Loctite 271 on bearing OD before installing.
- C. When pressing new bearings in be sure to use tool that presses equally on outer and inner race of bearing. See rebuild tip below.
- D. If bearing bores are not smooth and free of grooves and other damage, you should replace either the clutch housing assembly or pulley assembly. Consult the uncommon parts list for your clutch to obtain part number.
- E. On FC II Fan Clutches, before pressing bearing into pulley housing, press sleeve (Part No. FC030065) into bearing.
- F. On FC II Clutches, install retaining ring in front groove of pulley bore first. Press bearing pack in so it will just touch retaining ring. DO NOT OVER PRESS.
- G. Be sure all bearing bores are cleaned of debris (old Loctite, etc.) before pressing in new bearings.
- H. During re-assembly of thrust cap assembly (ref. Step 6 Disassembly), retighten cap screws with *torque* wrench. Do not exceed 70 in lbs. torque. Be sure to clean old Loctite from cap screws and apply new Loctite 272.
- I. To insure proper balance and easy installation of piston when reinstalling, be sure to line up with mark on housing made during disassembly (Step 9).
- J. For large bearing fan clutches use minimal amount of Locktite 271 on thrust cap surface that fits in bore of pulley bearing (Step 8A).

Evans Tempcon Fan Clutch Rebuild Tip

When rebuilding your EVANS Heavy Fan Clutch, care must be taken when installing bearings to insure proper bearing service life. The following diagram shows a proper and improper bearing installation:

FIGURE A shows the proper bearing pack alignment. This alignment is achieved by using a pressing tool which is perfectly flat and presses uniformly on the inner and outer races of the bearing. Bearings installed in this manner turn free and run cooler. This means that the lubricant will not evaporate and will result in good bearing life.

FIGURE B shows bearings which have been badly preloaded by improper installation. This is caused when the bearing is installed by pressing on the inner race only with a tool such as a pipe or socket. Bearings which are installed in this manner heat up and cause the lubricant to evaporate prematurely. This results in early bearing failure.

A quick and simple check of the bearings after installation will determine if the bearing is free turning. If the bearing is not free turning, or if it feels "rough" or drags", press the last bearing out and re-install it taking care not to "overpress". When the bearings show no sign of "drag" and they are free turning, the unit is ready for final assembly into the clutch.

RACES ALIGNED
PROPERLY WITH A FLAT
PRESSING TOOL SURFACE

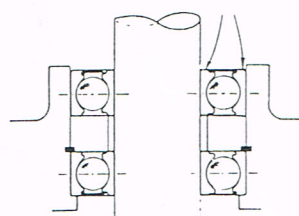


FIG. A

BEARING RACES
MISALIGNED BY
IMPROPER PRESSING TOOL

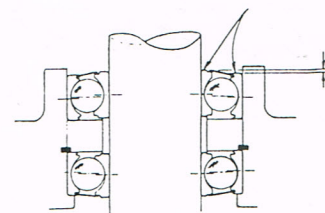
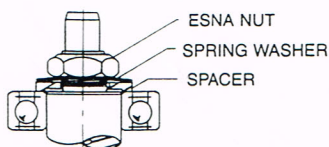


FIG. B.

Important Steps in Re-assembly

After rebuilding sub-assemblies you are ready to re-assemble the entire clutch. To re-assemble clutch, reverse steps 1-4. Be sure to do the following.

- A. Clean and replace all spacers exactly as they were when disassembled. Any spacers damaged or missing should be replaced with new. Consult Parts Section, pages 4 through 8 for part numbers required.
- B. Check the shaft and bracket. Welds should be intact and no visible signs of damage. Shaft should be smooth and free of deep grooves or pits. If any problems are found, replace bracket and shaft assembly. Consult Parts Section, pages 4 through 8.
- C. Always replace lock nut and spring washer with new parts when reassembling.
- D. Install lock nut, spacer and spring washer as shown in drawing. Torque lock nut to 65 ft. lbs.
- E. *Final Check of Clutch* — When fully assembled, clutch and pulley should turn freely with no feel of roughness or drag. There should be no "end play". (Clutch and pulley should not move up and down on shaft). If these conditions exist, disassemble clutch and check bearings and spacers. If you cannot resolve problem, call your Evans distributor or the Service Hot Line.



**Evans Tempcon Hot Line Service Number
1-800-354-7088**

Your Evans Tempcon Fan Clutch is designed for long trouble free service. When rebuilt at the proper time, it will last the life of the vehicle. With the availability of rebuild kits and other parts, a Evans clutch can be renewed as many times as needed.

If the steps outlined above are followed, the rebuilt clutch should be as good as factory new. **Because Evans cannot control the rebuild procedure, we cannot warrant a rebuilt clutch unless it is rebuilt in an Evans Tempcon approved facility.**

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Fan Clutch Cross-Reference

The following clutch cross-reference is for the FC II style clutches, except as noted.

OLD PART NO.	NEW PART NO.	OLD PART NO.	NEW PART NO.
FC8	FC212015*	FC505	FC212132
FC15	FC212098	FC507	FC212022*
FC36	FC212091	FC515	FC212012
FC46	FC212030**	FCR1015	FC212098
FC47	FC212087	FCR1015	FC212099
FC48	FC212110	FCR1015	FC212100
FC53	FC213034*	FCR1036	FC212091
FC55	FC212003		
FC65	FC212016*	FCR1047	FC212087
FC89D	FC212017*	FCR1048D	FC212110
FC105	FC212046*	FCR1055	FC212003
FC106	FC212142	FCR1064	FC212113
FC142	FC212032*	FCR1064	FC212119
FC180D	FC212063	FCR1064A	FC212115
FC239	FC212019*	FCR1064B	FC212117
FC281	FC212038*	FCR1064C	FC212120
FC282	FC212026*	FCR1064C	FC212121
FC286	FC212009	FCR1069D	FC212090
FC289D	FC212002*	FCR1070D	FC212126
FC290	FC212088	FCR1070D	FC212128
FC343	FC212059*	FCR1075	FC212101
FC348D	FC212020**	FCR1075	FC212102
FC352	FC212083	FCR1076	FC212103
FC355D	FC212031*	FCR1077	FC212104
FC356D	FC212037*	FCR1078	FC212105
FC367E	FC212000**	FCR1079D	FC212124
FC501D	FC212011	FCR1080	FC212004
FCR1080D	FC212125	FCR1213	FC212035
FCR1080D	FC212127	FCR1231D	FC212076
FCR1081	FC212005	FCR1232D	FC212077
FCR1081A	FC212116	FCR1233	FC212006
FCR1081B	FC212114	FCR1243	FC212089
FCR1081C	FC212118	FCR1245	FC212007
FCR1082	FC212047	FCR1252	FC212112
FCR1082	FC212084	FCR1267	FC212129
FCR1082A	FC212082	FCR1267	FC212130
FCR1082A	FC212080	FCR1267	FC212131
FCR1082B	FC212079	FCR1272	FC212093
FCR1085D	FC212107	FCR1273	FC212008
FCR1088	FC212092	FCR1279	FC212060
FCR1094	FC212122	FCR1283	FC212045
FCR1094	FC212123	FCR1286	FC212009
FCR1099D	FC212062	FCR1288	FC212111
FCR1100D	FC212061	FCR1290	FC212088
FCR1100D	FC212064	FCR1291	FC212137
FCR1100D	FC212065	FCR1292	FC212136
FCR1100D	FC212066	FCR1292	FC212138
FCR1106	FC212142	FCR1352	FC212078
FCR1180	FC212063	FCR1352	FC212081
FCR1205	FC212134	FCR1352	FC212083
FCR1205	FC212135	FCR1352	FC212085
FCR1213	FC212139	FCR1352	FC212086
		FCR1354	FC212071
FCR1213	FC212140	FCR1500	FC212010
FCR1501	FC212011	FCR1504	FC212074
FCR1504	FC212075	FCR1505	FC212132
FCR1505	FC212133	FCR1509	FC212054
FCR1510	FC212029	FCR1515	FC212012
FCR1516	FC212108	FCR1516	FC212109
FCR1517	FC212013	FCR1520	FC212001
FCR1527	FC212057	FCR1527	FC212067
FCR1527	FC212068	FCR1527	FC212069
FCR1527	FC212070	FCR1527	FC212072
FCR1527	FC212073	FCR1528	FC212014
FCR1533	FC212033	FCR1534	FC212094
FCR1534	FC212095	FCR1534	FC212096
FCR1534	FC212097		

** AVAILABLE IN BIG BEARING PULLEY DESIGN ONLY. * AVAILABLE IN BALL BEARING PULLEY DESIGN ONLY.

EVANS has the system for Engine Temperature Control

Additional Products and Literature

- Engine Temperature Controls and Switches **ET101**

- Heavy-Duty Fan Clutch Maintenance, Rebuild and Parts Guide **ET102**

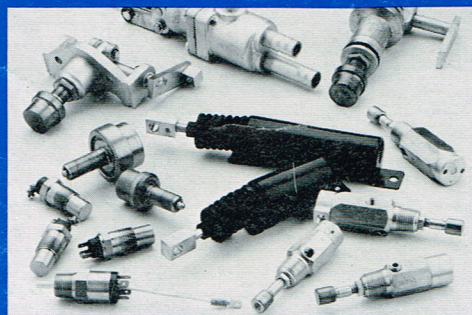
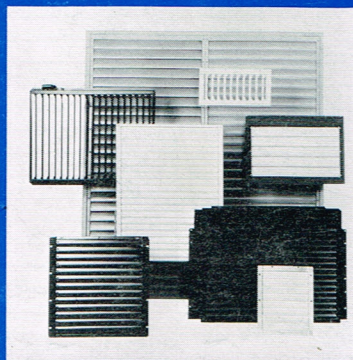
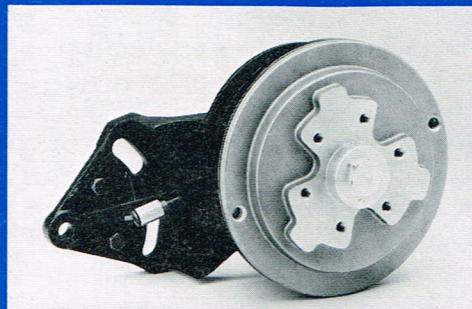
- Heavy-Duty Fan Clutch Story **ET103**

- Engine Temperature Controls Cross Reference **ET104**

- Radiator Shutter Brochure **ET106**

- Fan Clutch Model Selection Guide **ET107**

- Fan Clutch and Controls Installation Bulletin **TB101**



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