

# 18" & 20" FLUID CLUTCH

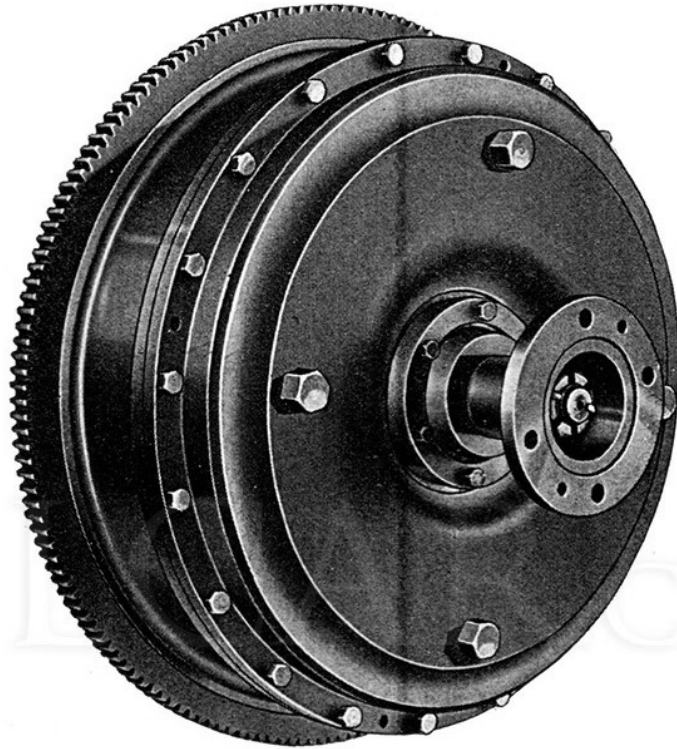


## SERVICE MANUAL



SELF-CHANGING GEARS LIMITED

# 18" & 20" FLUID CLUTCH



## 18" FLUID CLUTCH LIST NUMBERS

5976	5977	5978	5979	5980	5981	6229	6256	6309	6310
7006	7007	7355	7413	7440	7441	7456	7457	7458	7512
7515	7517								

## 20" FLUID CLUTCH LIST NUMBERS

6559	7012	7443	7451	7474	7479	7496			
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BRITISH PATENT 760249

**SELF-CHANGING GEARS LIMITED**  
**LYTHALLS LANE · COVENTRY · ENGLAND**

TELEPHONE: COVENTRY 89081

TELEGRAMS: SELF-CHANGE, COVENTRY

# 18" & 20" FLUID CLUTCH

## CONTENTS

DATA	...	...	...	...	...	...	...	...	...	...	...	Page 4
DESCRIPTION	...	...	...	...	...	...	...	...	...	...	...	Page 4
ROUTINE ATTENTION	...	...	...	...	...	...	...	...	...	...	...	Page 5
OIL SPECIFICATION	...	...	...	...	...	...	...	...	...	...	...	Page 5
OVERHAUL	...	...	...	...	...	...	...	...	...	...	...	Page 6
LIST OF PARTS FOR THE 18" FLUID CLUTCH	...	...	...	...	...	...	...	...	...	...	...	Page 11
LIST OF PARTS FOR THE 20" FLUID CLUTCH	...	...	...	...	...	...	...	...	...	...	...	Page 19

## LIST OF ILLUSTRATIONS

Fig. 1. View of Clutch looking on Output End	...	...	...	...	...	...	...	Page 5
Fig. 2. View of Clutch looking on Input End	...	...	...	...	...	...	...	Page 5
Fig. 3. Main Components of Fluid Clutch	...	...	...	...	...	...	...	Page 6
Fig. 4. Section Through Fluid Clutch	...	...	...	...	...	...	...	Page 7
Fig. 5. Arrangement of the 20" Fluid Clutch	...	...	...	...	...	...	...	Page 9
Fig. 6. Arrangement of the 18" Fluid Clutch	...	...	...	...	...	...	...	Page 9
Fig. 7. Exploded View of the 18" Fluid Clutch	...	...	...	...	...	...	...	Page 17
Fig. 8. Exploded View of the 20" Fluid Clutch	...	...	...	...	...	...	...	Page 27

## 18" & 20" FLUID CLUTCH

### DATA

Type: 18" Fluid Clutch

Oil Capacity: 2 gallons, 7 pints (13.07 litres)

Maximum Torque: 550 lb.-ft. (76.04 mkg)

Weight: 2cwts. 21lbs. (111.13 kg)

Type: 20" Fluid Clutch

Oil Capacity: 4 gallons, 2 pints (19.32 litres)

Maximum Torque: 950 lb.-ft. (131.34 mkg)

Weight: 3 cwts. 18 lbs. (160 kg)

### DESCRIPTION

In combining the fluid and centrifugal couplings it has been sought to utilize the best features of each type, the fluid coupling dealing with the requirements of smooth take-up from rest, while the centrifugal element ensures positive grip of the friction members at high speeds, although the moving parts are relatively light. The manner of their combination also ensures normal overrun braking and the ability to restart the engine when coasting.

The construction is simple. A normal form of vane-type fluid coupling is embodied in the flywheel in the usual manner. The coupling is reduced in section, however, thereby leaving space between its runner and the inside face of the flywheel proper. This reduces the volume of fluid by about a third with the result that the transfer of kinetic energy is less for any given speed and idling drag is therefore lower. Correspondingly, there is a lower limit to the total torque-transmitting capacity at high speed, and it is to deal with this that the centrifugal member is provided.

Between the runner and the inner face of the flywheel is a dished disc or star member attached to the output shaft. This disc carries four brake shoes with friction material facings. They are each pivoted to the disc at one end, duplicate pivot holes being provided so that the shoes can be mounted to have either leading or trailing

characteristics. A garter spring holds the shoes in their retracted position when the output shaft is at rest.

In action, acceleration of the engine produces automatic take-up through the fluid coupling with maximum smoothness. Then, as the output shaft speed rises, the friction clutch shoes are thrown outwardly by centrifugal action so that contact with the flywheel drum is established. From this point the transmission efficiency of the fluid coupling ceases to be of great consequence because rising speed of the runner shaft results in the drive being taken over fully by the centrifugal component.

It will be apparent that as the clutch shoes are carried on the output member they can be fully engaged by the centrifugal effect of road speed driving through the transmission, thus engine braking is effectively retained down to idling speed. Furthermore, a dead engine can be started by coasting or a "lost" engine can be recovered in the same way.

An interesting detail of the design is that by reducing the depth of the fluid coupling, the centrifugal element is incorporated behind it without increasing the overall thickness of the flywheel assembly. This allows the unit to be accommodated in a standard layout without any change or re-positioning of chassis components.

## ROUTINE ATTENTION

The filler plug should be removed once a week and the oil level checked. Top up to level of filler plug if necessary. This check should be carried out when the oil is cold.

If an excess oil leak is suspected check the gland seal, and renew if necessary.

### FILLING THE UNIT WITH OIL

To fill the unit with oil proceed as follows :—

Turn the unit until a filler plug stands in the 12 o'clock position.

Remove the plug and fill with oil until the unit is full and oil is up to the level of the filler hole.

Replace the plug.

### OIL SPECIFICATION

A turbine type oil conforming to Shell Tellus 27 is the ideal, but alternatively a normal engine type oil will give satisfactory service.

Check oil level weekly.

Renew oil at every engine overhaul.



FIG. 1. VIEW OF CLUTCH LOOKING ON OUTPUT END

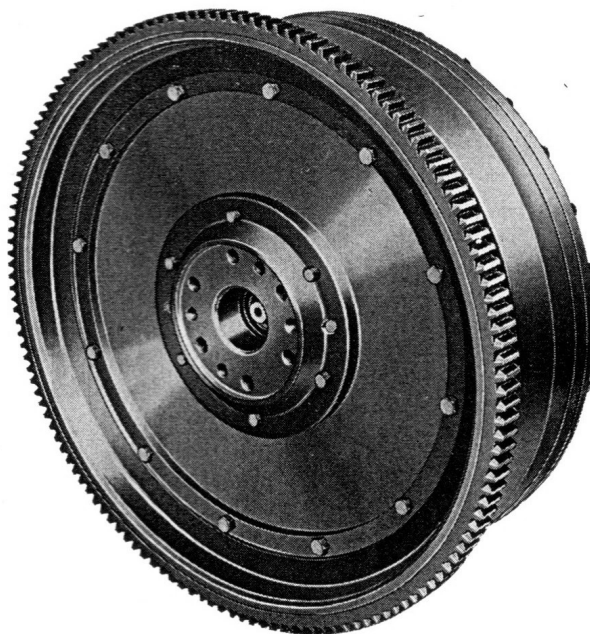


FIG. 2. VIEW OF CLUTCH LOOKING ON INPUT END

# OVERHAUL

(See Fig. 6)

The overhaul procedure described herein although based on the 18" fluid clutch is applicable to the 20" clutch, the two units being almost identical, the slight differences being covered within the text.

## TO REMOVE THE COMPLETE FLUID CLUTCH

To remove the clutch from the engine first remove the bolts (6), spring washers (5) and lift away the rear casing (7) complete with the shaft and associate parts. The bolts holding the front casing to the crankshaft can then be removed and the front casing assembly withdrawn.

## TO DISMANTLE (See Fig. 6)

1. Remove the split pin (16), slotted nut (15), washer (17), and withdraw the coupling (18).
2. Remove the nuts (21), stiffener ring (12), and withdraw the gland seal (13), followed by the joint (11), spacing ring (22), joint (10) and rubbing washer (19).
3. The shaft (14) can now be pressed clear of the bearing (32). The bearing (32), and bearing housing (if fitted) can then be withdrawn.

4. The shaft (14), which is complete with runner (27), reaction member (4), and clutch shoe assembly (42), can now be dismantled as follows:—

Remove the nuts (35) from the bolts (33), and withdraw the shaft.

Remove the nuts (39), washers (40), from the bolts (41), and withdraw the runner (27) and baffle plate (25) from the reaction member (4).

The clutch shoe assembly (42) can now be removed from the reaction member (4) by withdrawing the garter spring (31).

**Note:** On the 20" fluid clutches it will be found that a distance piece has been incorporated between the runner and reaction member (see item 10, fig. 5).

This can be removed when the runner and reaction member are separated. A separating ring has also been fitted between the front and rear casings (see item 4, fig. 5).

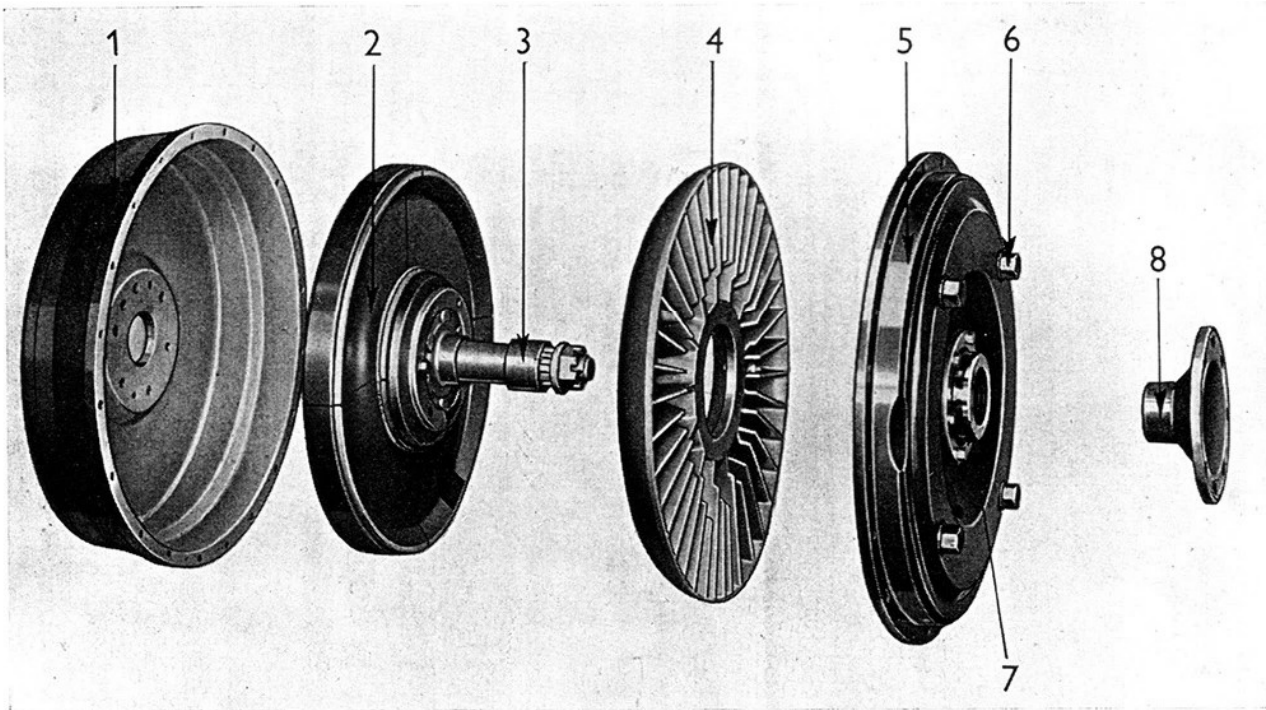


FIG. 3. MAIN COMPONENTS OF THE 18" FLUID CLUTCH

1. Front Casing  
2. Clutch Assembly

3. Shaft  
4. Runner

5. Rear Casing  
6. Filler Plug

7. Gland Seal  
8. Coupling Flange

## TO ASSEMBLE (See Fig. 6)

**IMPORTANT:** Ensure that all parts are clean and suitable for further service.

1. Replace the clutch shoe assembly (42), complete with the segments and linings, onto the reaction member (4), first ensuring that the insert block (29), is free on the pin (30). Replace the garter spring (31).
2. The shaft can now be replaced into the reaction member and secured into position with bolts (33) and nuts (35) first ensuring that the ferrules (34) are in place in the reaction member.
3. Replace the runner (27) sleeve (if fitted) and baffle plate (25) onto the reaction member and secure it into position with bolts (41), washers (40), and nuts (39).
4. Reposition the rear casing (7) complete with bearing housing (23) and joint (10), over the shaft and press home the bearing (32).
5. Replace the spacing ring (22) onto the face of the bearing housing, first ensuring that the joint (20), is in position.
6. Replace the rubbing washer (19), followed by the joint (11), gland seal (13), and stiffener ring (12), securing in position with nuts (21).
7. Replace the coupling (18), and secure in position with washer (17), slotted nut (15) and split pin (16).
8. The front casing assembly complete with starter ring and separating ring (if fitted) can now be repositioned onto the engine and secured into position.

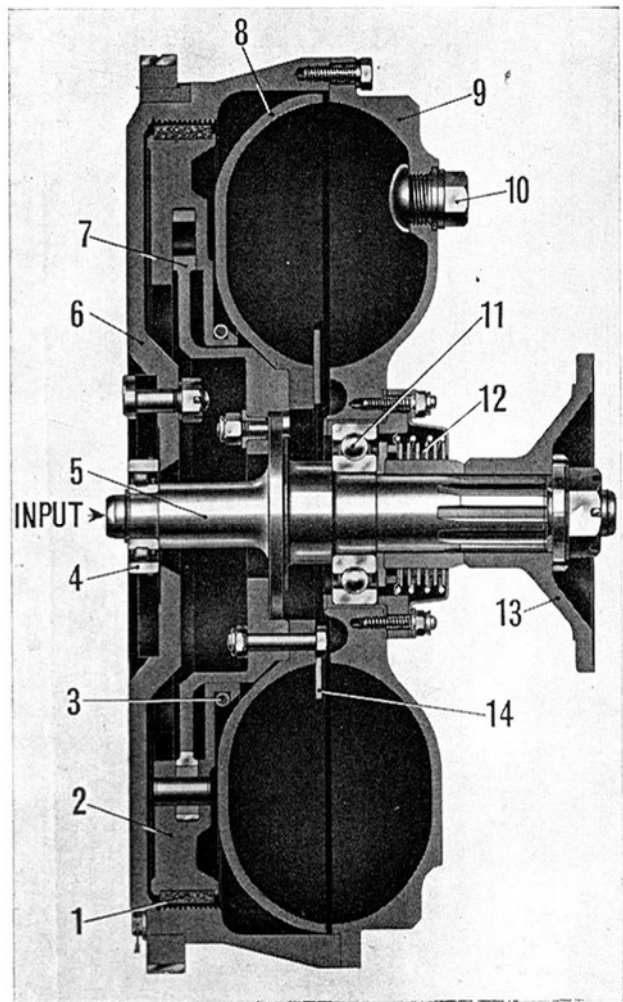


FIG. 4. SECTION THROUGH THE 18" FLUID CLUTCH

- |                        |                     |
|------------------------|---------------------|
| 1. Clutch Lining       | 8. Runner           |
| 2. Clutch Shoe Segment | 9. Rear Casing      |
| 3. Garter Spring       | 10. Plug            |
| 4. Bearing             | 11. Bearing         |
| 5. Shaft               | 12. Oil Seal        |
| 6. Front Casing        | 13. Output Coupling |
| 7. Reaction Member     | 14. Baffle Plate    |

9. The rear casing (9) complete with the shaft and associate parts can now be replaced and secured with bolts (6) and spring washers (5).
10. All nuts and bolts must now be checked to ensure that they are tight, after which the connecting shaft can be bolted to the output coupling and the unit filled with oil. (See 'Filling the unit with oil', page 5).

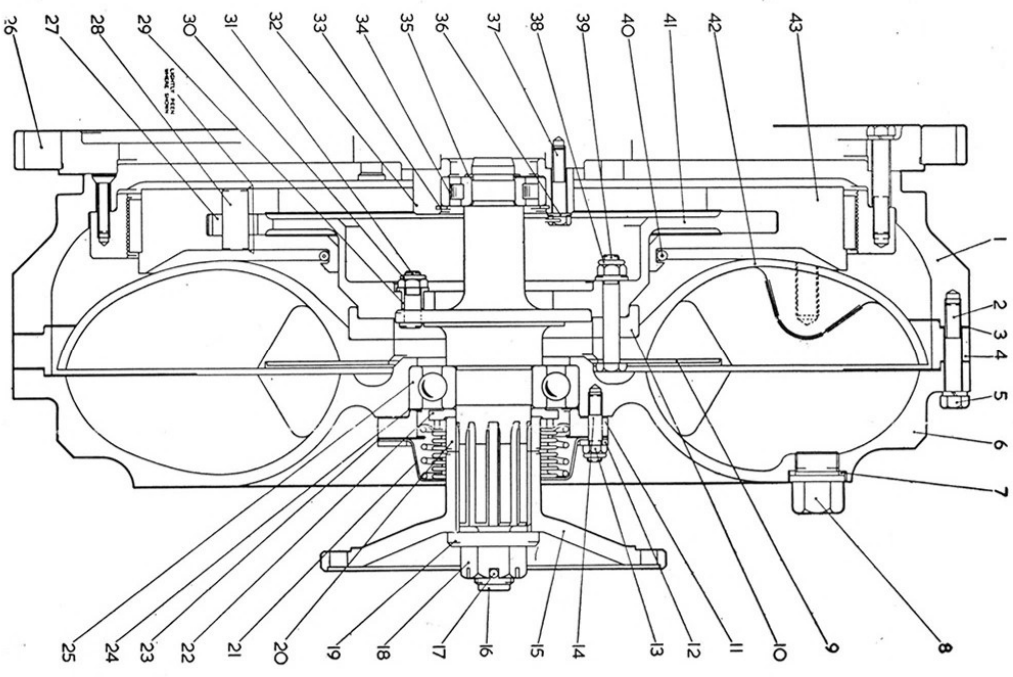


Fig. 5. ARRANGEMENT OF THE 20" FLUID CLUTCH

- 1. Front Casing Assy.
- 2. Bolt
- 3. Gasket
- 4. Separating Ring
- 5. Bolt Casing
- 6. Washer
- 7. Plug
- 8. Baffle Plate
- 9. Distance Piece
- 10. Spacing Ring
- 11. Nut
- 12. Stiffener Ring
- 13. Stud
- 14. Coupling
- 15. Nut
- 16. Split Pin
- 17. Slotted Nut
- 18. Washer
- 19. Distance Piece
- 20. Gland Seal
- 21. Rubbing Washer
- 22. Joint
- 23. Bearing
- 24. Insert Block
- 25. Pin
- 26. Ferrule
- 27. Nut
- 28. Bearing Housing
- 29. Circlip
- 30. Bearing
- 31. Circlip
- 32. Washer
- 33. Nut
- 34. Bolt
- 35. Garter Spring
- 36. Reaction Member
- 37. Runner
- 38. Clutch Shoe Assy.
- 39. Nut
- 40. Split Pin
- 41. Slotted Nut
- 42. Washer
- 43. Distance Piece

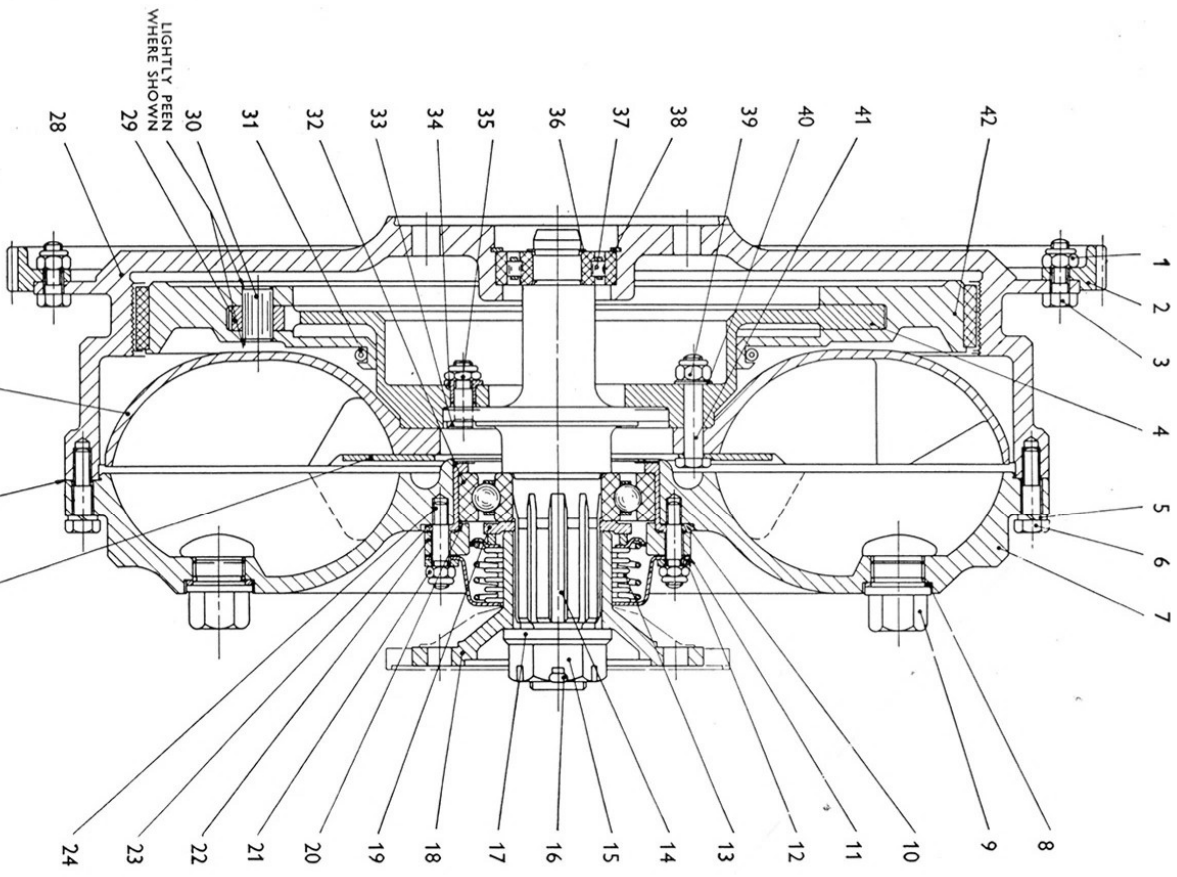


FIG. 6 ARRANGEMENT OF THE 18" FLUID CLUTCH

- 1. Nut
- 2. Starter Ring
- 3. Bolt
- 4. Reaction Member
- 5. Washer
- 6. Bolt
- 7. Rear Casing
- 8. Plug
- 9. Joint
- 10. Joint
- 11. Garter Spring
- 12. Gland Seal
- 13. Shaft
- 14. Nut
- 15. Slotted Nut
- 16. Split Pin
- 17. Washer
- 18. Reaction Member
- 19. Rubbing Washer
- 20. Nut
- 21. Nut
- 22. Spacing Ring
- 23. Bearing Housing
- 24. Stud
- 25. Gasket
- 26. Front Casing
- 27. Insert Block
- 28. Pin
- 29. Garter Spring
- 30. Split Pin
- 31. Starter Ring
- 32. Bolt
- 33. Ferrule
- 34. Nut
- 35. Circlip
- 36. Bearing
- 37. Circlip
- 38. Washer
- 39. Clutch Shoe Assy.
- 40. Nut
- 41. Slotted Nut
- 42. Washer
- 43. Distance Piece
- 44. Garter Spring
- 45. Reaction Member
- 46. Runner
- 47. Clutch Shoe Assy.



# 18" FLUID CLUTCH

## PARTS LIST

List Nos.: 5976, 5977, 5978, 5979, 5980, 5981, 6229, 6256, 6309, 6310, 7006, 7007, 7355, 7413, 7440,  
7441, 7456, 7457, 7458, 7512, 7515, 7517.

(See Fig. 7)

All basic parts are listed below, differing parts being entered under their particular list numbers.

Item No.	Part No.	Description	No. Off	List No.	Remarks
1	10305/15	Stud — $\frac{5}{16}$ " B.S.F. ... ..	6	All List Nos.	Rear Casing to gland seal.
2	17330	Spring Washer $\frac{3}{8}$ " ... ..	20	" " "	Rear Casing to Front Casing.
3	19046	Split Pin $\frac{3}{16}$ " x $2\frac{1}{4}$ " long ... ..	1	" " "	
4	25283	Washer $\frac{3}{8}$ " ... ..	6	" " "	Reaction member to runner.
5	29090	Circlip 25 mm. Ext. ... ..	1	" " "	
6	30021	Roller Bearing ... ..	1	" " "	
7	33275	Runner ... ..	1	" " "	
8	33276	Insert Block ... ..	4	" " "	
9	33285	Bolt ... ..	6	" " "	Reaction member to runner.
10	33287	Garter Spring ... ..	1	" " "	
11	36314	Ball Bearing ... ..	1	" " "	
12	38513	Bolt $\frac{3}{8}$ " B.S.F. ... ..	20	" " "	Rear Casing to Front Casing.
13	38514	Bearing Pin ... ..	4	" " "	
14	38516	Bearing Housing ... ..	1	" " "	
15	38517	Rear Casing ... ..	1	" " "	
16	38518	Joint ... ..	1	" " "	.015" Thick.
17	38519	Pinnacle Nut $\frac{3}{8}$ " B.S.F. ... ..	6	" " "	
18	38520	Pinnacle Nut $\frac{3}{8}$ " B.S.F. ... ..	6	" " "	
19	38582	Washer ... ..	4	" " "	
20	38583	Plug ... ..	4	" " "	
21	38600	Pinnacle Nut $\frac{5}{16}$ " B.S.F. ... ..	6	" " "	
22	38604	Reaction Member ... ..	1	" " "	
23	38673	Gasket ... ..	1	" " "	
24	282711	Ferrule ... ..	6	" " "	
25	282712	Bolt ... ..	6	" " "	
26	521686	Nut — Slotted ... ..	1	" " "	
27	521687	Washer ... ..	1	" " "	
28	521689	Gland Seal ... ..	1	" " "	
29	521690	Spacing Ring ... ..	1	" " "	
30	521691	Joint Ring ... ..	1	" " "	
31	521692	Rubbing Washer ... ..	1	" " "	

Item No.	Part No.	Description	No. Off	List No.	Remarks
32	521693	Stiffener Ring ... ..	1	All List Nos.	
33	521747	Joint ... ..	1	" " "	
34	38537	Front Casing ... ..	1	List 5976, 5979	
35	2546F	Starter Ring ... ..	1	" " "	
36	10873/1	Bolt — $\frac{3}{8}$ " B.S.F. ... ..	12	" " "	
37	38519	Pinnacle Nut $\frac{3}{8}$ " B.S.F. ... ..	12	" " "	
38	38562	Runner Shaft ... ..	1	" " "	
39	11763	Circlip for Roller Bearing $2\frac{1}{2}$ " Int. ... ..	1	" " "	
40	38567	Coupling Flange ... ..	1	List 5976 only	
	38608	Coupling Flange ... ..	1	" 5979 "	
41	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	List 5976, 5979	
	33279	Shoe Liner ... ..	1	" " "	Sub-Assembly 4665
	38624	Shoe Segment ... ..	1	" " "	
42	37849	Baffle Plate ... ..	1	" " "	
	38619	Front Casing ... ..	1	List 5977, 5980	
	257756	Starter Ring ... ..	1	" " "	
	17529	Bolt $\frac{3}{8}$ " B.S.F. ... ..	12	" " "	
	17330	Spring Washer $\frac{3}{8}$ " ... ..	12	" " "	
	11763	Circlip for Roller Bearing $2\frac{1}{2}$ " Int. ... ..	1	" " "	
	38567	Coupling Flange ... ..	1	List 5977 only	
	38608	Coupling Flange ... ..	1	" 5980 "	
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	List 5977, 5980	
	33279	Shoe Liner ... ..	1	" " "	Sub-Assembly 4665
	38624	Shoe Segment ... ..	1	" " "	
	37849	Baffle Plate ... ..	1	" " "	
	38562	Runner Shaft ... ..	1	" " "	
	4804	Assembly of Front Casing and Starter Ring	1	List 5981, 5978	
	33271	Front Casing ... ..	1	" " "	Assembly 4804
	A72327	Starter Ring ... ..	1	" " "	
	38655	Starter Ring Keep Plate ... ..	5	" " "	
	33277	Starter Ring Key ... ..	1	" " "	
	38163	Bolt — $\frac{5}{16}$ " B.S.F. ... ..	10	" " "	
	38562	Runner Shaft ... ..	1	" " "	
		Locking Wire ... ..		" " "	
	38567	Coupling Flange ... ..	1	List 5978 only	
	38608	Coupling Flange ... ..	1	" 5981 "	
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	List 5981, 5978	
	33279	Shoe Liner ... ..	1	" " "	Sub-Assembly 4665
	38624	Shoe Segment ... ..	1	" " "	
	37849	Baffle Plate ... ..	1	" " "	
	38562	Runner Shaft ... ..	1	" " "	
	38890	Front Casing ... ..	1	List 6229	
	11763	Circlip for Roller Bearing $2\frac{1}{2}$ " Int. ... ..	1	" "	
	38608	Coupling Flange ... ..	1	" "	
	38567	Coupling Flange ... ..	1	" "	
	A6234	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	" "	
	33279	Shoe Liner ... ..	1	" "	Sub-Assembly A6234
	41211	Shoe Segment ... ..	1	" "	
	46160	Baffle Plate ... ..	1	" "	

Item No.	Part No.	Description	No. Off	List No.	Remarks
	38562	Runner Shaft ... ..	1	List 6229	
	38859	Front Casing ... ..	1	List 6256	
	11763	Circlip for Roller Bearing 2½" Int. ...	1	" "	
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	" "	} Sub-Assembly 4665
	33279	Shoe Liner ... ..	1	" "	
	38624	Shoe Segment ... ..	1	" "	
	37849	Baffle Plate ... ..	1	" "	
	38562	Runner Shaft ... ..	1	" "	
	39845	Front Casing ... ..	1	List 6309, 6310	
	E8055	Starter Ring ... ..	1	" " "	
	11763	Circlip for Roller Bearing 2½" Int. ...	1	" " "	
	38567	Coupling Flange ... ..	1	List 6309 only	
	38608	Coupling Flange ... ..	1	" 6310 "	
	38562	Runner Shaft ... ..	1	List 6309, 6310	
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	" " "	} Sub-Assembly 4665
	33279	Shoe Liner ... ..	1	" " "	
	38624	Shoe Segment ... ..	1	" " "	
	37849	Baffle Plate ... ..	1	" " "	
	38537	Front Casing ... ..	1	List 7006	
	2546F	Starter Ring ... ..	1	" "	
	10873/1	Bolt ¾" B.S.F. ... ..	12	" "	
	38519	Pinnacle nut ¾" B.S.F. ... ..	12	" "	
	11763	Circlip for Roller Bearing 2½" Int. ...	1	" "	
	33316	Coupling Flange ... ..	1	" "	
	521688	Distance Piece ... ..	1	" "	
	521694	Runner Shaft ... ..	1	" "	
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	" "	} Sub-Assembly 4665
	33279	Shoe Liner ... ..	1	" "	
	38624	Shoe Segment ... ..	1	" "	
	37849	Baffle Plate ... ..	1	" "	
	44182	Front Casing ... ..	1	List 7007	
	OE411	Starter Ring ... ..	1	" "	
	521604	Coupling Flange ... ..	1	" "	
	521688	Distance Piece ... ..	1	" "	
	521694	Runner Shaft ... ..	1	" "	
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	" "	} Sub-Assembly 4665
	32279	Shoe Liner ... ..	1	" "	
	38624	Shoe Segment ... ..	1	" "	
	37849	Baffle Plate ... ..	1	" "	
	A6679	Sub-Assembly Front Casing and Adaptor Ring ... ..	1	List 7355	
	44716	Front Casing ... ..	1	" "	} Sub-Assembly A6679
	44717	Starter Ring Adaptor ... ..	1	" "	
	19153	Bolt 5/16" B.S.F. ... ..	12	" "	
	17329	Spring Washer 5/16" ... ..	12	" "	
	4851	Starter Ring Gear ... ..	1	" "	
	43882	Coupling Flange ... ..	1	" "	

Item No.	Part No.	Description	No. Off	List No.	Remarks
	521688	Distance Piece ... ..	1	List 7355	
	521694	Runner Shaft ... ..	1	" "	
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	" "	
	33279	Shoe Liner ... ..	1	" "	
	38624	Shoe Segment ... ..	1	" "	
	37849	Baffle Plate ... ..	1	" "	
	43809	Front Casing ... ..	1	List 7413	
	11763	Circlip for Roller Bearing 2½" Int. ... ..	1	" "	
	38562	Runner Shaft ... ..	1	" "	
	40146	Coupling Flange ... ..	1	" "	
	3756	Assembly Layrub Coupling ... ..	1	" "	
	31546	Input Coupling — Outer Member ... ..	1	" "	
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	" "	
	33279	Shoe Liner ... ..	1	" "	} Sub-Assembly 4665
	38624	Shoe Segment ... ..	1	" "	
	37849	Baffle Plate ... ..	1	" "	
	31546	Input Coupling — Outer Member ... ..	1	" "	
	44182	Front Casing ... ..	1	List 7440	
	OE411	Starter Ring ... ..	1	" "	
	45710	Coupling Flange ... ..	1	" "	
	38562	Runner Shaft ... ..	1	" "	
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	" "	
	33279	Shoe Liner ... ..	1	" "	} Sub-Assembly 4665
	38624	Shoe Segment ... ..	1	" "	
	37849	Baffle Plate ... ..	1	" "	
	38619	Front Casing ... ..	1	List 7441	
	11763	Circlip for Roller Bearing 2½" Int. ... ..	1	" "	
	45694	Coupling Flange ... ..	1	" "	
	38562	Runner Shaft ... ..	1	" "	
	4665	Sub-Assembly Shoe Segment and Liner ... ..	1	" "	
	33279	Shoe Liner ... ..	1	" "	} Sub-Assembly 4665
	38624	Shoe Segment ... ..	1	" "	
	37849	Baffle Plate ... ..	1	" "	
	A6852	Sub-Assembly Front Casing ... ..	1	List 7456	
	45803	Front Casing ... ..	1	" "	} Sub-Assembly A6852
	45802	Starter Ring Adaptor ... ..	1	" "	
	45796	Rivet ... ..	12	" "	
	45801	Adaptor Ring ... ..	1	" "	
	46147	Gasket ... ..	1	" "	.005" Thick
	13632	Dowel ... ..	1	" "	
	40268	Coupling Flange ... ..	1	" "	
	3756	Layrub Coupling ... ..	1	" "	
	31546	Input Coupling — Outer Member ... ..	1	" "	
	38562	Shaft Runner ... ..	1	" "	
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	" "	
	33279	Shoe Liner ... ..	1	" "	} Sub-Assembly 4665
	38624	Shoe Segment ... ..	1	" "	
	37849	Baffle Plate ... ..	1	" "	

Item No.	Part No.	Description	No. Off	List No.	Remarks
	A6852	Sub-Assembly Front Casing ... ..	1	List 7457	
	45803	Front Casing ... ..	1	" "	} Sub-Assembly A6852
	45802	Starter Ring Adaptor ... ..	1	" "	
	45796	Rivet ... ..	12	" "	
	45801	Adaptor Ring ... ..	1	" "	
	46147	Gasket ... ..	1	" "	
	13632	Dowel ... ..	1	" "	
	40268	Coupling Flange ... ..	1	" "	
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	" "	
	33279	Shoe Liner ... ..	1	" "	} Sub-Assembly 4665
	38624	Shoe Segment ... ..	1	" "	
	38562	Runner Shaft ... ..	1	" "	
	37849	Baffle Plate ... ..	1	" "	
	A6852	Sub-Assembly Front Casing ... ..	1	List 7458	
	45803	Front Casing ... ..	1	" "	} Sub-Assembly A6852
	45802	Starter Ring Adaptor ... ..	1	" "	
	45796	Rivet ... ..	12	" "	
	45801	Adaptor Ring ... ..	1	" "	
	46147	Gasket ... ..	1	" "	
	13632	Dowel ... ..	1	" "	
	38567	Coupling Flange ... ..	1	" "	
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	" "	
	33279	Shoe Liner ... ..	1	" "	} Sub-Assembly 4665
	38624	Shoe Segment ... ..	1	" "	
	38562	Runner Shaft ... ..	1	" "	
	37849	Baffle Plate ... ..	1	" "	
	44182	Front Casing ... ..	1	List 7515	
	OE411	Starter Ring ... ..	1	" "	} Sub-Assembly 4665
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	" "	
	33279	Shoe Liner ... ..	1	" "	
	38624	Shoe Segment ... ..	1	" "	
	38562	Runner Shaft ... ..	1	" "	
	37849	Baffle Plate ... ..	1	" "	
	46402	Front Casing ... ..	1	List 7512	
	38608	Coupling Flange ... ..	1	" "	} Sub-Assembly 4665
	11763	Circlip for Roller Bearing 2½" Int. ... ..	1	" "	
	4665	Sub-Assembly Clutch Shoe Segment and Liner ... ..	1	" "	
	33279	Shoe Liner ... ..	1	" "	
	38624	Shoe Segment ... ..	1	" "	
	38562	Runner Shaft ... ..	1	" "	
	37849	Baffle Plate ... ..	1	" "	
	46401	Front Casing ... ..	1	List 7517	
	38567	Coupling Flange ... ..	1	" "	} Sub-Assembly 4665
	11763	Circlip for Roller Bearing 2½" Int. ... ..	1	" "	
	4665	Sub-Assembly Clutch Shoe Segment & Liner ... ..	1	" "	
	33279	Shoe Liner ... ..	1	" "	
	38624	Shoe Segment ... ..	1	" "	
	38562	Runner Shaft ... ..	1	" "	
	37849	Baffle Plate ... ..	1	" "	

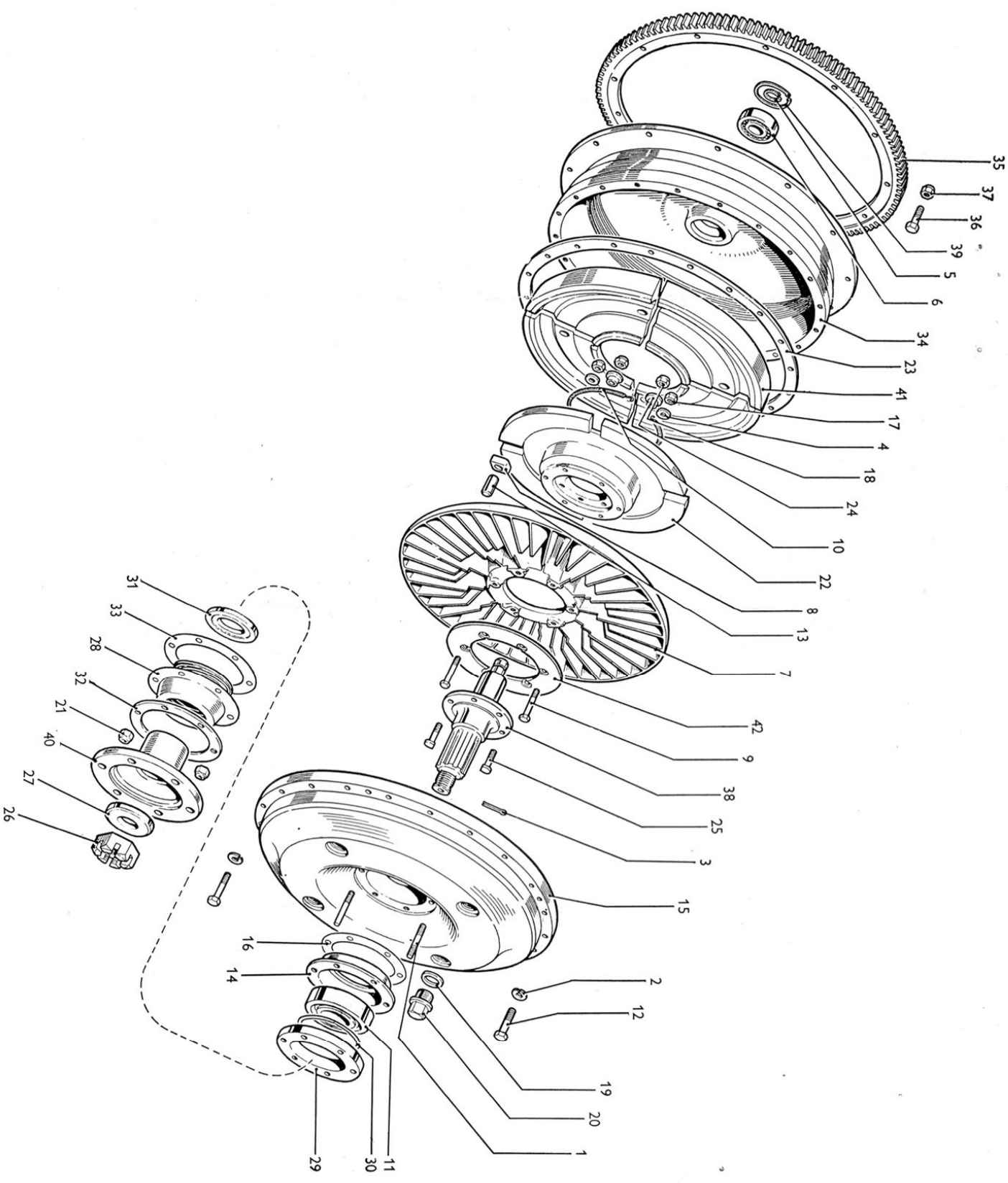


FIG. 7. EXPLODED VIEW OF THE 18" FLUID CLUTCH

## 20" FLUID CLUTCH

### PARTS LIST

LIST Nos. 6559, 7443, 7451, 7474, 7479, 7496

LIST 6559  
(See Fig. 8)

Item No.	Part No.	Description	No. Off	List No.	Remarks
1	O.E 411	Starter Ring ... ..	1	6559	
2	16487	$\frac{7}{8}$ " B.S.F. Slotted Nut ... ..	1	"	
3	19046	Split Pin $\frac{3}{16}$ " x $2\frac{1}{4}$ " Long ... ..	1	"	
4	25282	$\frac{1}{2}$ " Dia. Plain Washer ... ..	4	"	
5	30021	Roller Bearing ... ..	1	"	
6	4023	Sub.-Assy. of Clutch Shoe Segments and Linings ... ..	1	"	4 per Set Sub-Assembly 4023
	33272	Clutch Shoe Segments ... ..	1 Set	"	
	33279	Clutch Shoe Linings ... ..	1 Set	"	
7	33276	Insert Block ... ..	4	"	
8	33278	Clutch Shoe Pin ... ..	4	"	
9	25283	$\frac{3}{8}$ " Dia. Plain Washer ... ..	6	"	
10	33287	Garner Spring ... ..	1	"	
11	38519	$\frac{3}{8}$ " B.S.F. Pinnacle Nut ... ..	6	"	
12	38520	$\frac{3}{8}$ " B.S.F. Pinnacle Nut ... ..	6	"	
13	38600	$\frac{3}{8}$ " B.S.F. Pinnacle Nut ... ..	6	"	
14	40210	$\frac{5}{16}$ " B.S.F. Stud ... ..	6	"	
15	41277	Coupling ... ..	1	"	
16	A5988	Assembly of Front Casing ... ..	1	"	A.5988
	41363	Front Casing ... ..	1	"	
	41367	Serrated Ring ... ..	1	"	
	43666	$\frac{5}{16}$ " B.S.F. Csk. Head Screw ... ..	12	"	
	17330	$\frac{3}{16}$ " Spring Washer ... ..	12	"	
	17954	$\frac{3}{8}$ " B.S.F. Bolt ... ..	12	"	
	41366	Adapter Ring ... ..	1	"	
17	41364	Rear Casing ... ..	1	"	
18	41365	Distance Ring ... ..	1	"	
19	41368	Runner ... ..	1	"	
20	41369	Reaction Member ... ..	1	"	
21	41370	Distance Piece ... ..	1	"	
22	41371	Bolt—Reaction Member ... ..	6	"	
23	41372	Runner Shaft ... ..	1	"	
24	41373	Bearing Housing ... ..	1	"	
25	41374	Distance Piece ... ..	1	"	
26	41375	Gasket ... ..	2	"	
27	41376	Washer ... ..	1	"	
28	41379	$\frac{3}{8}$ " U.N.F. Bolt ... ..	4	"	Bearing Housing to Crankshaft.

## 20" FLUID CLUTCH

### LIST 6559 (Continued)

Item No.	Part No.	Description	No.Off	List No.	Remarks
29	41380	$\frac{3}{8}$ " B.S.F. Bolt ... ..	30	6559	Rear Casing to to Front Casing.
30	281809	25 m/m. Ext. Circlip ... ..	1	"	
31	282711	Ferrule ... ..	6	"	
32	282712	Bolt ... ..	6	"	
33	282713	Plug ... ..	4	"	
34	282714	Washer ... ..	4	"	
35	521689	Gland Seal ... ..	1	"	
36	521690	Spacing Ring ... ..	1	"	
37	521691	Joint Ring ... ..	1	"	
38	521692	Rubbing Washer ... ..	1	"	
39	134493	Ball Bearing ... ..	1	"	
40	46293	Internal Circlip ... ..	1	"	
41	521693	Stiffener Ring ... ..	1	"	
42	521747	Joint ... ..	1	"	
43	42636	Baffle Plate ... ..	1	"	
44	17330	$\frac{3}{8}$ " Spring Washer ... ..	30	"	Rear Casing to Front Casing.

### LIST 7443 & 7474

Item No.	Part No.	Description	No.Off	List No.	Remarks
	5708	Starter Ring ... ..	1	7443, 7474	For Roller Bear- ing.
	11763	Circlip, Int. ... ..	1	" "	
	16487	$\frac{7}{8}$ " B.S.F. Slotted Nut ... ..	1	" "	Rear Casing.  4 per Set. Sub-Assembly 4023
	17330	$\frac{3}{8}$ " Dia. Spring Washer ... ..	30	" "	
	19046	Split Pin $\frac{3}{16}$ " x $2\frac{1}{4}$ " long ... ..	1	" "	
	25283	$\frac{3}{8}$ " Dia. Plain Washer ... ..	6	" "	
	30021	Roller Bearing ... ..	1	" "	
	33276	Insert Block ... ..	4	" "	
	17309	$\frac{5}{8}$ " Dia. Plain Washer ... ..	6	" "	
	4023	Sub-Assy. of Clutch Shoe Segments & Linings ... ..	1	" "	
	33272	Clutch Shoe Segments ... ..	1 set	" "	
	33279	Clutch Shoe Lining ... ..	1 set	" "	
	33278	Clutch Shoe Pin ... ..	4	" "	
	33287	Garter Spring ... ..	1	" "	
	38519	$\frac{3}{8}$ " B.S.F. Pinnacle Nut ... ..	6	" "	
	38520	$\frac{3}{8}$ " B.S.F. Pinnacle Nut ... ..	6	" "	



## 20" FLUID CLUTCH

### LIST 7443 & 7474 (Continued)

Item No.	Part No.	Description	No.Off	List No.	Remarks
	38600	$\frac{5}{16}$ " B.S.F. Pinnacle Nut ... ..	6	7443, 7474	
	40210	$\frac{5}{16}$ " B.S.F. Stud ... ..	6	" "	
	41277	Coupling ... ..	1	List 7443 only	
	521604	Coupling ... ..	1	List 7474 only	
	41364	Rear Casing ... ..	1	7443, 7474	
	41365	Distance Ring ... ..	1	" "	
	A6831	Assembly of Front Casing ... ..	1	" "	
	45725	Front Casing ... ..	1	" "	
	41367	Serrated Ring ... ..	1	" "	
	43666	$\frac{5}{16}$ " B.S.F. Csk. Head Screw ... ..	12	" "	} A6831
	17330	Washer ... ..	12	" "	
	17954	$\frac{5}{8}$ " B.S.F. Bolt ... ..	12	" "	
	44318	Starter Ring Adaptor ... ..	1	" "	
	41368	Runner ... ..	1	" "	
	41369	Reaction Member ... ..	1	" "	
	41370	Distance Piece ... ..	1	" "	
	41371	$\frac{3}{8}$ " B.S.F. Bolt ... ..	6	" "	} Reaction Member
	41372	Runner Shaft ... ..	1	" "	
	41374	Distance Piece ... ..	1	" "	
	41375	Gasket ... ..	2	" "	
	41376	Washer ... ..	1	" "	
	41380	$\frac{3}{8}$ " B.S.F. Bolt ... ..	20	" "	} Rear Casing to Front Casing.
	42636	Baffle Plate ... ..	1	" "	
	44313	Adaptor ... ..	1	" "	
	44315	$\frac{5}{8}$ " U.N.F. Bolt ... ..	6	" "	
	44316	$\frac{5}{8}$ " U.N.F. Bolt ... ..	6	" "	
	44317	Dowel ... ..	2	" "	
	44333	Dowel ... ..	2	" "	
	44334	Locking Plate ... ..	3	" "	
	134493	Ball Bearing ... ..	1	" "	
	281809	25 m/m. Circlip, Ext. ... ..	1	" "	
	282711	Ferrule ... ..	6	" "	
	282712	Bolt ... ..	6	" "	
	282713	Plug ... ..	4	" "	
	282714	Washer ... ..	4	" "	
	521689	Gland Seal ... ..	1	" "	
	521690	Spacing Ring ... ..	1	" "	
	521691	Joint Ring ... ..	1	" "	
	521692	Rubbing Washer ... ..	1	" "	
	521693	Stiffener Ring ... ..	1	" "	
	521747	Joint ... ..	1	" "	

## 20" FLUID CLUTCH

### LIST 7451

Item No.	Part No.	Description	No.Off	List No.	Remarks
	11763	Circlip, Int. ... ..	1	7451	For Roller Bearing.
	16487	$\frac{7}{8}$ " B.S.F. Slotted Nut ... ..	1	"	
	17330	$\frac{3}{16}$ " Spring Washer ... ..	30	"	
	19046	Split Pin ... ..	1	"	
	25282	$\frac{1}{8}$ " Dia. Plain Washer ... ..	4	"	
	25283	$\frac{3}{16}$ " Dia. Plain Washer ... ..	6	"	
	30021	Roller Bearing ... ..	1	"	
	4023	Sub-Assy. of Clutch Shoe Segments and Linings ... ..	1	"	4 per Set Sub-Assembly 4023
	33272	Clutch Shoe Segments ... ..	1 set	"	
	33279	Clutch Shoe Linings ... ..	1 set	"	
	33276	Insert Block ... ..	4	"	
	33278	Clutch Shoe Pin ... ..	4	"	
	33287	Garter Spring ... ..	1	"	
	36559	$\frac{5}{16}$ " U.N.F. Bolt ... ..	4	"	Bearing Housing to Front Casing.
	38519	$\frac{3}{8}$ " B.S.F. Pinnacle Nut ... ..	6	"	
	38520	$\frac{3}{8}$ " B.S.F. Pinnacle Nut ... ..	6	"	
	38600	$\frac{5}{16}$ " B.S.F. Pinnacle Nut ... ..	6	"	
	40210	$\frac{5}{16}$ " B.S.F. Stud ... ..	6	"	
	41277	Coupling Flange ... ..	1	"	
	41364	Rear Casing ... ..	1	"	
	41365	Distance Ring ... ..	1	"	
	41368	Runner ... ..	1	"	
	41369	Reaction Member ... ..	1	"	
	41370	Distance Piece ... ..	1	"	
	41371	Bolt ... ..	6	"	Reaction Member
	41372	Runner Shaft ... ..	1	"	
	41374	Distance Piece ... ..	1	"	
	41375	Gasket ... ..	2	"	
	41376	Washer ... ..	1	"	
	41380	$\frac{3}{8}$ " B.S.F. Bolt ... ..	30	"	Rear Casing to Front Casing.
	42636	Baffle Plate ... ..	1	"	
	A6851	Assembly of Front Casing ... ..	1	"	A.6851
	45758	Front Casing ... ..	1	"	
	45782	Serrated Ring ... ..	1	"	
	45793	Starter Ring Adaptor ... ..	1	"	
	45796	Rivet ... ..	8	"	
	45797	Rivet ... ..	12	"	
	45795	Bearing Housing ... ..	1	"	
	281809	25 m/m. Ext. Circlip ... ..	1	"	
	282711	Ferrule ... ..	6	"	
	282712	Bolt ... ..	6	"	
	282713	Plug ... ..	4	"	
	282714	Washer ... ..	4	"	
	521689	Gland Seal ... ..	1	"	
	521690	Spacing Ring ... ..	1	"	
	521691	Joint Ring ... ..	1	"	

## 20" FLUID CLUTCH

### LIST 7451 (Continued)

Item No.	Part No.	Description	No.Off	List No.	Remarks
	521692	Rubbing Washer ... ..	1	7451	
	521693	Stiffener Ring ... ..	1	"	
	521747	Joint ... ..	1	"	
	134493	Ball Bearing ... ..	1	"	

### LIST 7479

Item No.	Part No.	Description	No.Off	List No.	Remarks
	11763	Circlip, Int. ... ..	1	7479	For Roller Bearing.
	16487	$\frac{7}{8}$ " B.S.F. Slotted Nut ... ..	1	"	
	17330	$\frac{3}{8}$ " Spring Washer ... ..	45	"	15-Starter Ring. 30-Rear Casing.
	19046	Split Pin ... ..	1	"	
	25283	$\frac{3}{8}$ " Dia. Plain Washer ... ..	6	"	
	30021	Roller Bearing ... ..	1	"	
	4023	Sub-Assy. of Clutch Shoe Segment and Linings ... ..	1	"	4 per Set. Sub-Assembly 4023
	33272	Clutch Shoe Segments ... ..	1 set	"	}
	33279	Clutch Shoe Linings ... ..	1 set	"	
	33276	Insert Block ... ..	4	"	
	33278	Clutch Shoe Pin ... ..	4	"	
	33287	Garner Spring ... ..	1	"	
	38519	$\frac{3}{8}$ " B.S.F. Pinnacle Nut ... ..	6	"	
	38520	$\frac{3}{8}$ " B.S.F. Pinnacle Nut ... ..	6	"	
	38600	$\frac{5}{16}$ " B.S.F. Pinnacle Nut ... ..	6	"	
	38562	Runner Shaft ... ..	1	"	
	40210	$\frac{5}{16}$ " B.S.F. Stud ... ..	6	"	
	40879	$\frac{1}{2}$ " U.N.F. Bolt ... ..	8	"	
	41277	Coupling ... ..	1	"	
	41364	Rear Casing ... ..	1	"	
	41365	Distance Ring ... ..	1	"	
	41368	Runner ... ..	1	"	
	41369	Reaction Member ... ..	1	"	
	41370	Distance Piece ... ..	1	"	
	41371	Bolt ... ..	6	"	ReactionMember
	41375	Gasket ... ..	2	"	
	41376	Washer ... ..	1	"	
	41380	$\frac{3}{8}$ " B.S.F. Bolt ... ..	30	"	Rear Casing to Front Casing.

## 20" FLUID CLUTCH

### LIST 7479 (Continued)

Item No.	Part No.	Description	No.Off	List No.	Remarks
	42636	Baffle Plate ... ..	1	7479	
	42862	$\frac{3}{8}$ " U.N.F. Setscrew ... ..	15	"	
	A7040	Assembly of Front Casing ... ..	1	"	
	46406	Front Casing ... ..	1	"	} A.7040
	45782	Serrated Ring ... ..	1	"	
	46407	Starter Ring Adaptor ... ..	1	"	
	45797	Rivet—Serrated Ring ... ..	1	"	
	46409	Rivet—Starter Ring Adaptor ... ..	12	"	
	46408	Crankshaft Adaptor ... ..	1	"	
	46410	Dowel ... ..	2	"	
	46411	Locking Plate ... ..	4	"	
	46413	Gasket ... ..	1	"	Crankshaft Adaptor.
	185K17	Starter Ring ... ..	1	"	Coupling Adaptor.
	134493	Ball Bearing ... ..	1	"	
	281809	25 m/m. Circlip Ext. ... ..	1	"	
	282711	Ferrule ... ..	6	"	
	282712	Bolt ... ..	6	"	
	282713	Plug ... ..	4	"	
	282714	Washer ... ..	4	"	
	521689	Gland Seal ... ..	1	"	
	521690	Spacing Ring ... ..	1	"	
	521691	Joint Ring ... ..	1	"	
	521692	Rubbing Washer ... ..	1	"	
	521693	Stiffener Ring ... ..	1	"	
	521747	Joint ... ..	1	"	

### LIST 7496

Item No.	Part No.	Description	No.Off	List No.	Remarks
	5708	Starter Ring ... ..	1	7496	
	11763	Circlip—Int. ... ..	1	"	For Roller Bearing
	16487	$\frac{7}{8}$ " B.S.F. Slotted Nut ... ..	1	"	
	17330	$\frac{3}{8}$ " Dia. Spring Washer ... ..	30	"	Rear Casing
	A6831	Assembly of Front Casing ... ..	1	"	
	45725	Front Casing ... ..	1	"	} A.6831
	44318	Starter Ring Adaptor ... ..	1	"	
	43666	$\frac{5}{16}$ " B.S.F. Csk. Screw ... ..	12	"	
	41367	Serrated Ring ... ..	1	"	
	17330	$\frac{3}{8}$ " Dia. Spring Washer ... ..	12	"	
	17954	$\frac{3}{8}$ " B.S.F. Bolt ... ..	12	"	

## 20" FLUID CLUTCH

### LIST 7496 (Continued)

Item No.	Part No.	Description	No. Off	List No.	Remarks
	19046	Split Pin ... ..	1	7496	
	25283	$\frac{3}{8}$ " Dia. Plain Washer ... ..	6	"	
	30021	Roller Bearing ... ..	1	"	
	4023	Sub-Assy. of Clutch Shoe Segments and Linings ... ..	1	"	4 per Set Sub-Assy. 4023
	33272	Clutch Shoe Segments ... ..	1 set	"	
	33279	Clutch Shoe Lining ... ..	1 set	"	
	33276	Insert Block ... ..	4	"	
	33278	Clutch Shoe Pin ... ..	4	"	
	33287	Garner Spring ... ..	1	"	
	38519	$\frac{3}{8}$ " B.S.F. Pinnacle Nut ... ..	6	"	
	38520	$\frac{3}{8}$ " B.S.F. Pinnacle Nut ... ..	6	"	
	38600	$\frac{5}{16}$ " B.S.F. Pinnacle Nut ... ..	6	"	
	40210	$\frac{5}{16}$ " B.S.F. Stud ... ..	6	"	
	41277	Coupling ... ..	1	"	
	41364	Rear Casing ... ..	1	"	
	41365	Distance Ring ... ..	1	"	
	41368	Runner ... ..	1	"	
	41369	Reaction Member ... ..	1	"	
	41370	Distance Piece ... ..	1	"	
	41371	$\frac{3}{8}$ " B.S.F. Bolt ... ..	6	"	Reaction Member
	41372	Runner Shaft ... ..	1	"	
	41374	Distance Piece ... ..	1	"	
	41375	Gasket ... ..	2	"	
	41376	Washer ... ..	1	"	
	41380	$\frac{3}{8}$ " B.S.F. Bolt ... ..	30	"	Rear Casing to Front Casing.
	42636	Baffle Plate ... ..	1	"	
	44313	Adaptor ... ..	1	"	
	44315	$\frac{5}{8}$ " U.N.F. Bolt ... ..	6	"	
	44317	Dowel ... ..	2	"	
	44333	Dowel ... ..	2	"	
	44334	Locking Plate ... ..	3	"	
	46266.B	$\frac{5}{8}$ " U.N.F. Capscrew ... ..	6	"	
	134493	Ball Bearing ... ..	1	"	
	281809	23 m/m. Circlip Ext. ... ..	1	"	
	282711	Ferrule ... ..	6	"	
	282712	Bolt ... ..	6	"	
	282713	Plug ... ..	4	"	
	282714	Washer ... ..	4	"	
	521689	Gland Seal ... ..	1	"	
	521690	Spacing Ring ... ..	1	"	
	521691	Joint Ring ... ..	1	"	
	521692	Rubbing Washer ... ..	1	"	
	521693	Stiffener Ring ... ..	1	"	
	521747	Joint ... ..	1	"	

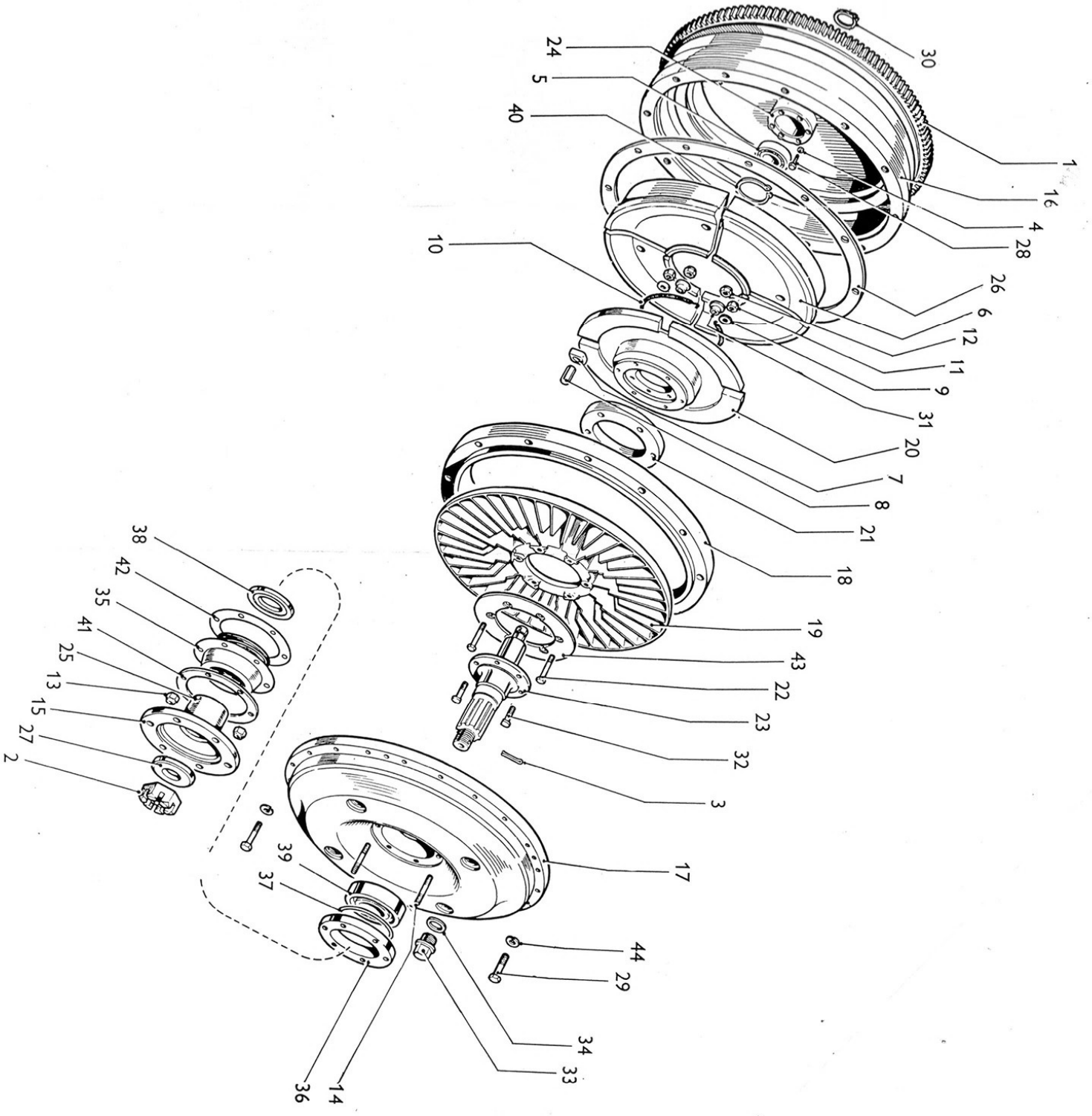


FIG. 8. EXPLODED VIEW OF THE 20" FLUID CLUTCH