Laycock

INSTALLATION

and

SERVICE INSTRUCTIONS

for the

Laycock - Sprague

AIR PUSH

WINDSCREEN WIPER

LAYCOCK ENGINEERING LIMITED · SHEFFIELD 8

NORTH BRITISH LOCOMOTIVE CO. LTD. GLASGOW.

Order No. L 100-16A/2569
Laycock Order No. WSW 581/93

VARIABLE ITEMS ON WINDSCREEN WIPER UNITS AS SUPPLIED TO THE ABOVE ORDER

Motor - Model 3259

Valve Unit Sub-Assembly R.H.	Drg. 42655/1
Valve Unit Sub-Assembly L.H.	Drg. 42655/2
Spindle	Drg. K46072/16
Junk Plate	Drg. 40764/6
Piston Sub-Assembly	Drg. 40770/6

12½" Standard Arm - Model 51877/10

Spring Arm	Drg. K40904/10

18" Blade - Model 2704/19

Blade Holder	Drg. 47539/19
Blade Rubber	Drg. 46560/19

Control Valve - Model 39840/1

Accessories

Setscrew	(Motor)	Ref. K3015
Setscrew	(Control Valve)	Ref. K3002
Rd. Hd. Screw	(Sealing Gland)	Ref. K3939

DESCRIPTION

The Laycock-Sprague Windscreen Wiper is made with single or pantograph arms and the various type of arm available is made up to the customer's specification. The following instructions are provided for installation, operation and maintenance, and are common to all types of Wiper, but where it is necessary to order any spare parts, it is imperative that the Serial Number is quoted with the exact type of Arm Assembly given for that particular Unit. The angle of the sweep radius and the type of locomotive to which the Wiper is fitted should also be notified with the Order. This provides a double check against Parts Numbers given with any Spares Order.

LAYCOCK SPRAGUE
WINDSCREEN WIPER

INSTALLATION.

1. Careful examination should be made of every part, particularly the motor, control valve and blade Arm, to ensure that no damage has been sustained during transit.

2. Make sure that all the air-line connections and the exhaust port are absolutely clean.

3. If the Wiper Arm is of the pantograph type, the pantograph Spindle (Item 3-Figure G) must be fitted prior to the mounting of the motor.

4. After mounting the Control Valve and Motor in their respective places, make sure that they are connected correctly to the air supply — Figure A.

5. There is no need to lubricate the Motor or Control Valve as these are greased liberally with a grease specially suitable for the Leather Cup Washers before the Unit is despatched.

6. Pass the Sealing Gland Assembly over the Motor Spindle, fixing as shown in Figures H or J.

7. Before fitting the Blade Arm Assembly, it is advisable to examine all the pipe joints for air leakage by the use of soapy water. When the air supply is turned on at the Control Valve, the Wiper Motor should operate readily (see Operating Instructions, para. 2).

8. To set the Blade Arm in its correct position, move the Emergency Handle of the Motor to either the extreme Left-hand or Right-hand position. Now set the Blade Arm in the relative position on the Knurled Cone of the Main Spindle, fixing with the Washer and Simmonds Nut (Items 26 and 24, Figure B) respectively. Move the Handle over to the opposite extreme position in order to check the sweep.

9. After fitting the Blade Arm, the blade pressure must be adjusted upon the window by means of the Adjusting Screw and Locknut. These are located at the top of the Arm Boss.

10. In order that maintenance or replacement may be carried out without the loss of reservoir pressure, it is suggested that an Isolating Valve is placed in the air-line between the Control Valve and the Reservoir.

OPERATING INSTRUCTIONS.

MANUAL AND AUTOMATIC PARKING MODELS — Figure A.

1. Rotate the large Control Knob until the inscribed word "RUN" is uppermost
2. Rotate the small Control Knob in a clockwise direction, as indicated on the*
3. To increase wiping speed, rotate the small Control Knob further in a clockwise direction.
4. To reduce the wiping speed, rotate the small Control Knob counter-clockwise.
5. To park the Wiper Blade, turn the large Control Knob until the inscribed word "PARK" is uppermost.
6. The wiper will "PARK" or "RUN" with the speed Control Knob set at any position within the operating range.
7. In the event of an air supply breakdown, shut off by rotating the small Control Knob in a counter-clockwise direction, leaving the large Control Knob in the "RUN" position.
   Operate or park the wiper with the Handle provided.
   When closing the Control Valve it is unnecessary to screw the Control Knob until it is hard home since it does not function as a Needle Valve as an inspection of diagram A will readily show.

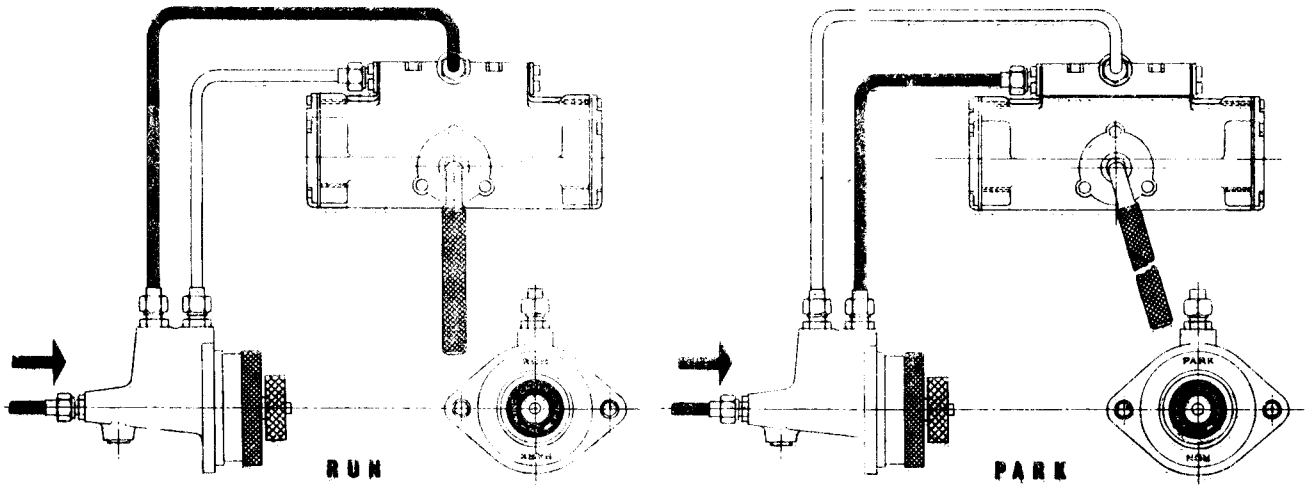


Fig A

IMPORTANT. The wipers are capable of operating at high speed. It is recommended however that the wipers are operated at at a medium speed (50 to 80 complete oscillations per minute) in order that the moving blade will not unduly distract the driver's attention.

* ERRATA add Instruction Disc until the wiper commences to operate.

3. DISMANTLING PROCEDURE.

The following instructions are given assuming that the Motor has been removed from the Cab.

MOTOR UNIT — Figure B.

1. Remove the Valve Unit and Gasket by unscrewing the four Allen Capscrews (Item 21).
2. Withdraw the Handle and Pinion Assembly after removing the three Allen Capscrews (Item 20) in the Piston End Cap (Item 3).
3. To remove the Main Piston, take off both End Caps, Gaskets and Pad (Items 5, 10 and 11) pushing the Piston Assembly out from one end.
4. The Cup Leathers (Item 9) and Junk Plates (Item 29) are simply removed by unscrewing the Retaining Setscrews (Item 23).
5. To assemble, the reverse procedure should be adopted, greasing all components, particularly Cup Leathers, with EVCO BB No. 3 Grease.

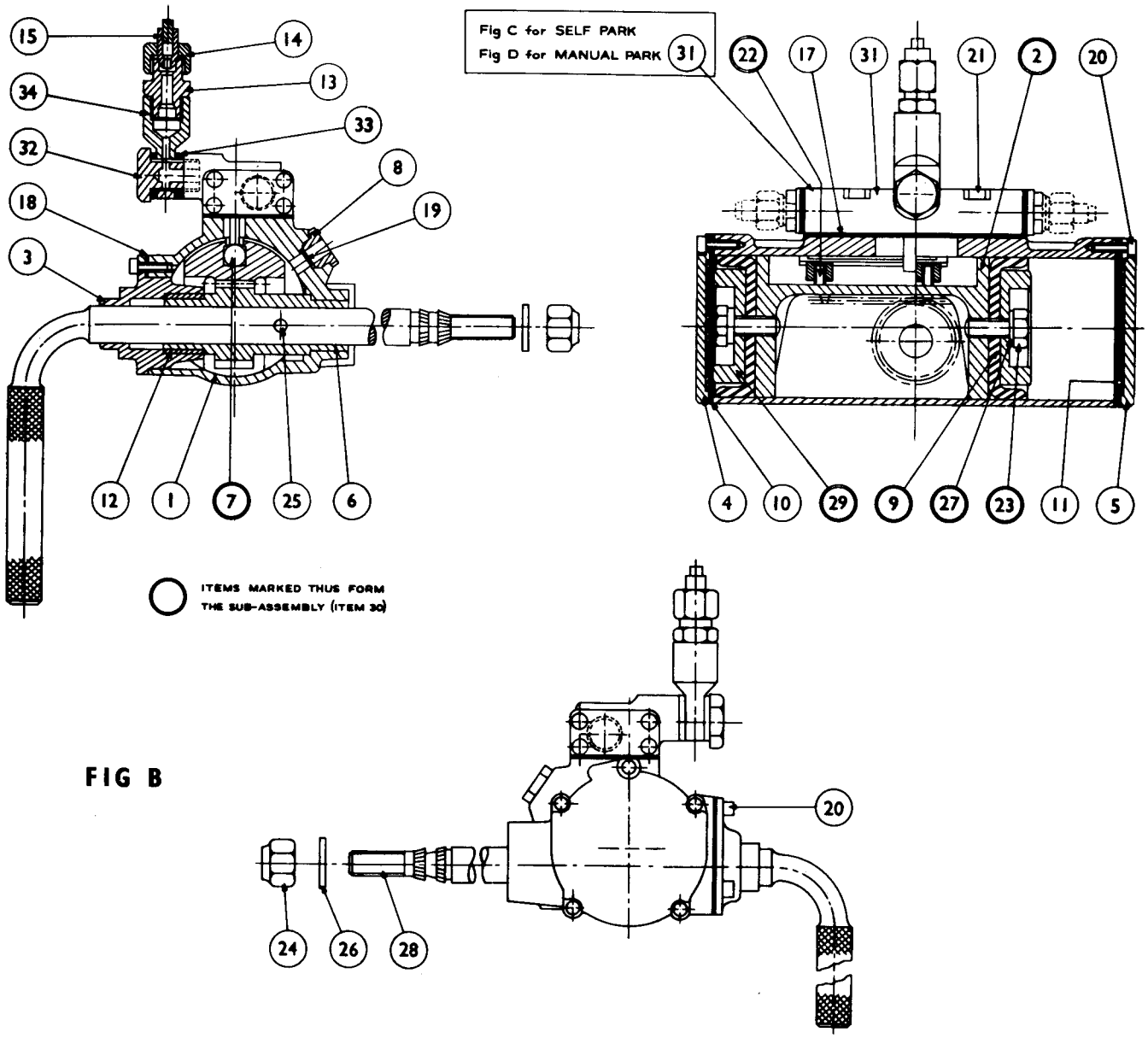


FIG B

VALVE UNIT — SELF-PARKING — Figure C.

1. Unscrew the Operating Pin (Item 7) from the Operating Shuttle (Item 3).
2. Detach both End Plates (Items 2 and 6) together with the Gaskets (Item 8). The Operating, Delivery and Parking Shuttles (Items 3, 4 and 5) respectively may then be pushed out from one end.
3. Care must be taken not to damage the Neoprene Sealing Rings (Item 9) if these are to be removed from their grooves in the Shuttles. It is advisable not to remove them at all until a replacement is required.
4. To assemble, the reverse procedure should be adopted, first greasing the delivery shuttles, etc.

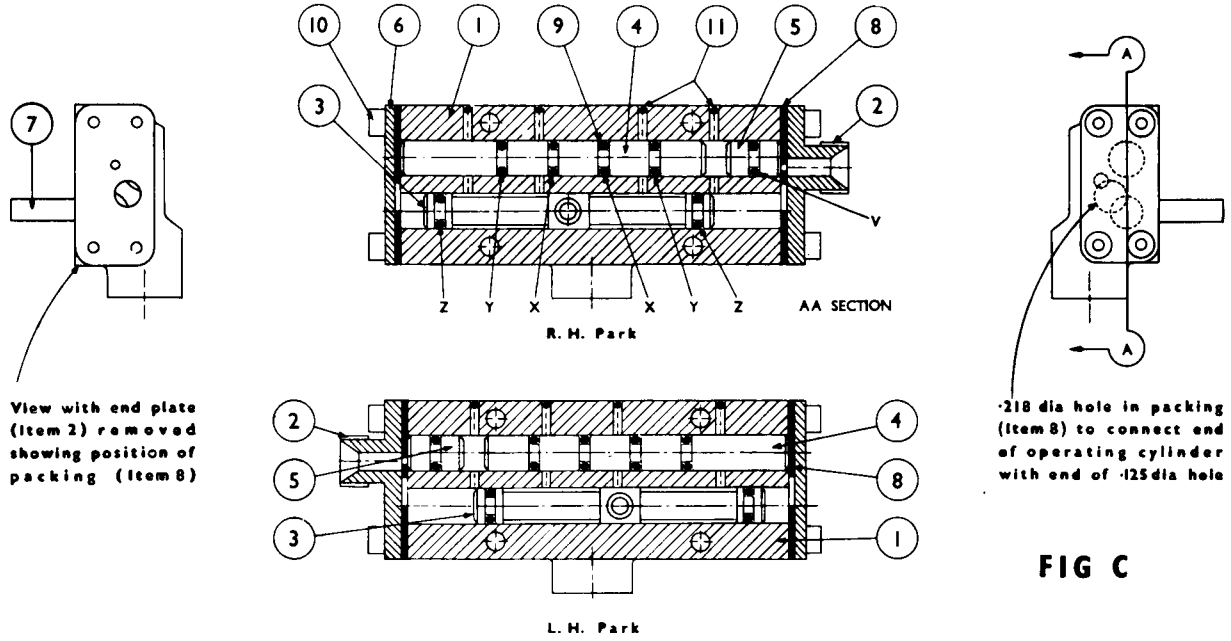


FIG C

VALVE UNIT — MANUAL PARKING — Figure D.

1. Unscrew the Operating Pin (Item 5) from the Operating Shuttle (Item 2).
2. Detach both End Plates (Item 4) together with the Gaskets (Item 6). The Operating and Delivery Shuttles (Items 2 & 3) respectively may then be pushed out from one end.
3. Care must be taken not to damage the Neoprene Sealing Rings (Item 7) if these are to be removed from their grooves in the Shuttles. It is advisable not to remove them at all until a replacement is required.
4. To assemble, the reverse procedure should be adopted, first greasing the delivery shuttles etc.

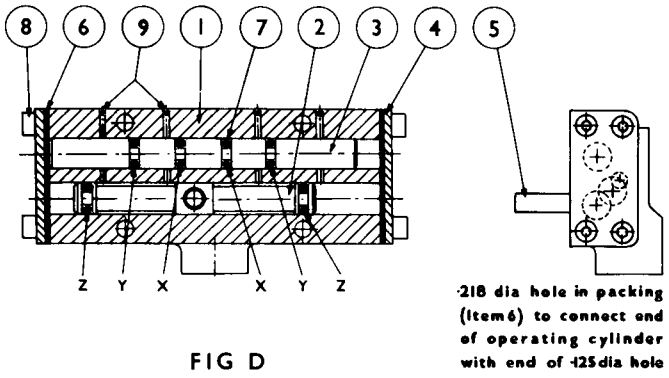
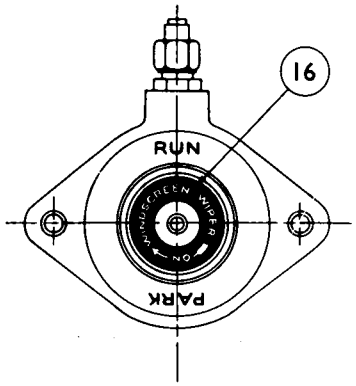


FIG D

PARKING AND CONTROL VALVE UNIT — Figure E.
SPEED CONTROL VALVE — Figure F.

1. Slacken Allen Capscrew (Item 20) and remove small Operating Knob (Item 4)
2. Remove Capscrews (Item 21) and Washer (Item 24) then extract the Parking Valve Handle (Item 7).
3. Withdraw Parking Valve Piston (Item 6) taking care not to lose the Ball Bearing (Item 19) then remove the Spring (Item 13).
4. Rotate the Regulating Spindle (Item 3) counter-clockwise until the Spring (Item 15) pushes the Regulating Disc (Item 5) out. At this stage the Spring may also be removed.
5. Working from the opposite end of the Control Valve Body, the removal of the Union (Item 10) enables the Return Spring (Item 14) to be withdrawn.
6. Insert a screw driver in each end of the Control Valve Body to unscrew the Valve Plunger (Item 17) and Piston (Item 2) and withdraw from their respective bores.



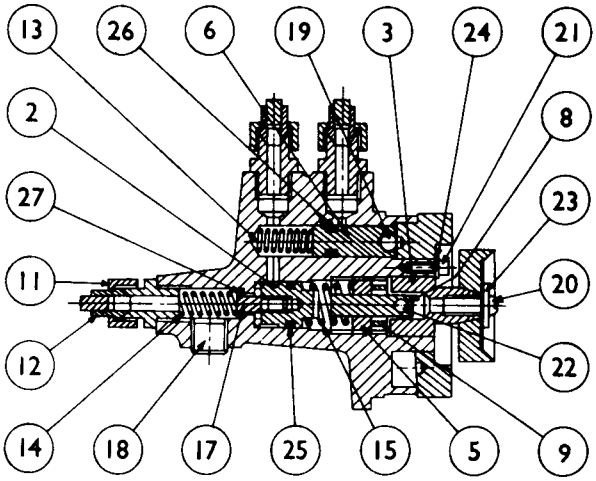
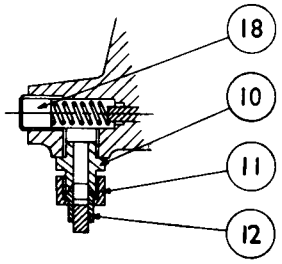
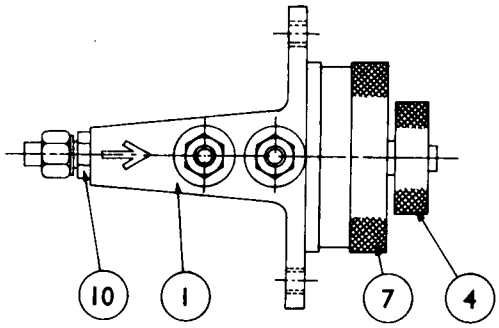


FIG E





SELF PARK

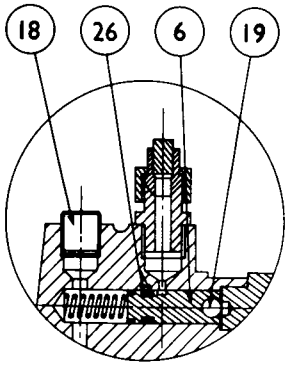
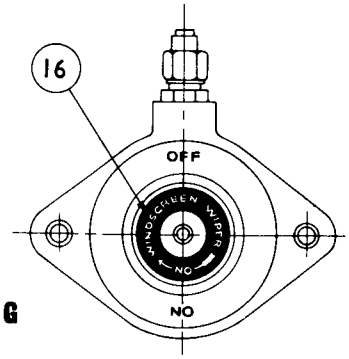


FIG F



MANUAL PARKING

4. MAINTENANCE.

Generally speaking, very little maintenance will be necessary since the wiper equipment has been designed to give long and trouble-free service.

1. BLADE ARM ASSEMBLY (Figures K L M N O P).
   Since the blade arm is exposed to the weather, it is advisable to inspect it every 6 months, making certain that the spring tension in the Arm is sufficient to give a good wipe. (See Installation Section, Para. 8).
   If the Blade Arm is of the pantograph type, attention should be given to the periodic lubrication of the pivot points.
2. MOTOR (Figure - B).
   The Motor does not require any adjustment. The angle of wipe cannot be increased beyond a predetermined maximum as laid down by the customer, this being affected by means of the length of the Junk Plates (Item 29). Annual inspection should be quite sufficient, when the Joints (Item 10), Pads (Item 11) and Cup Leathers (Item 9) should be examined and replaced if necessary. All components must be greased and Cup Leathers soaked in Neatsfoot Oil prior to assembly.
3. VALVE UNIT ASSEMBLY (Figure C).
   No adjustment is required, however, an annual inspection is advised, when the small port holes should be thoroughly cleaned out.
   The Neoprene Sealing Rings (Item 9) and the End Gaskets (Item 8) should be examined for wear and if necessary, replaced. Grease well before final assembly.
4. VALVE UNIT ASSEMBLY (Figure D).
   No adjustment is required, however, an annual inspection is advised, when the small port holes should be thoroughly cleaned out.
   The Neoprene Sealing Rings (Item 7) and the End Gaskets (Item 6) should be examined for wear and if necessary, replaced. Grease well before final assembly
5. CONTROL VALVE (Figures E and F).
   Inspect thoroughly every 12 months, giving special attention to the Valve Plunger (Item 17). Examine the Valve '0' Seal (Item 27) for wear and replace if necessary Examine the Sealing Rings (Items 25 and 26) for wear and replace if necessary.
6. SEALING GLAND ASSEMBLY (Figures H and J).
   Periodically make sure that the Sealing Ring (Item 3) is in good condition in order to prevent the ingress of rain water, condensation, etc., to the coach interior.

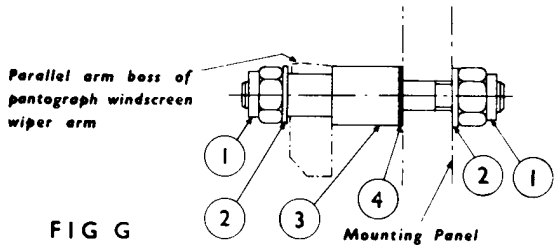
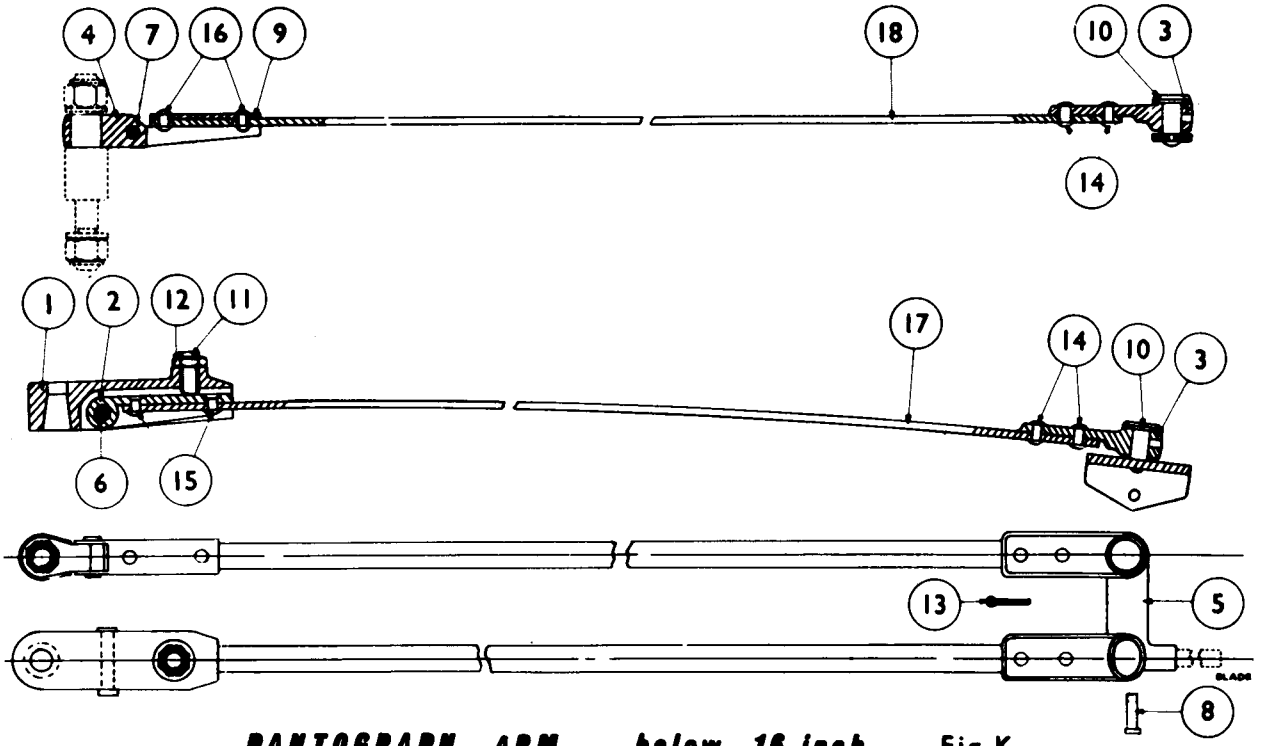
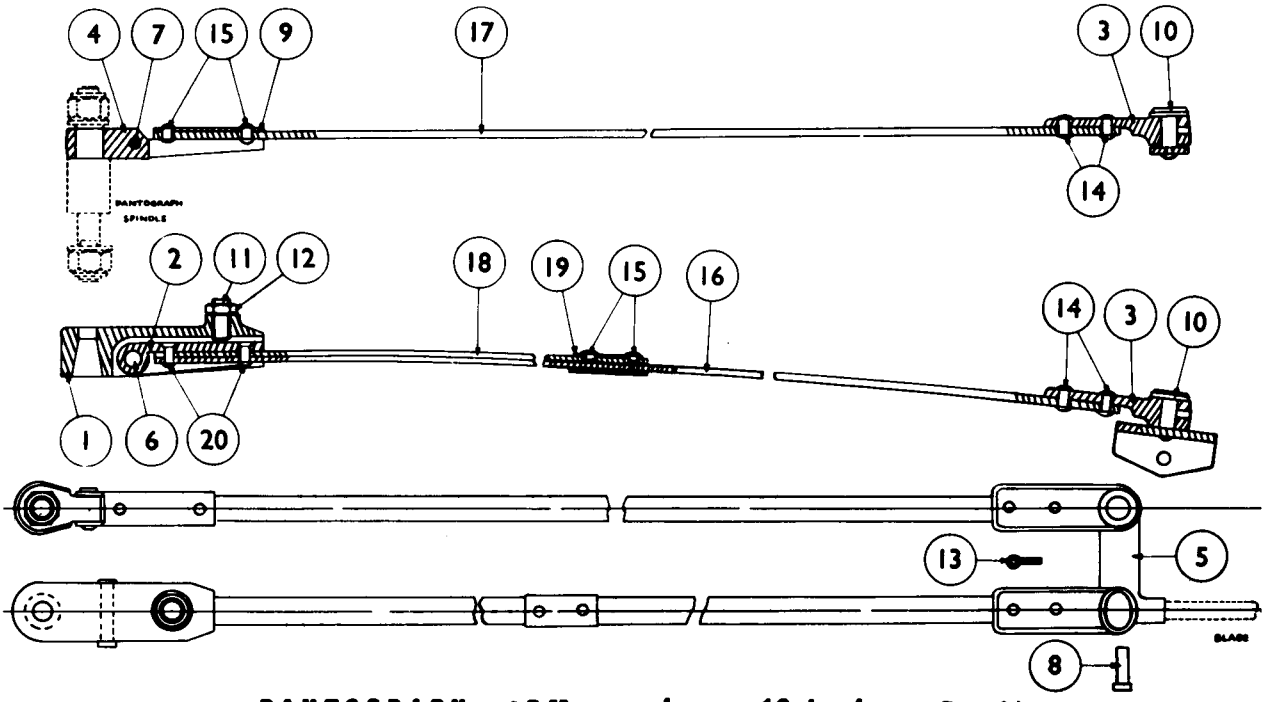


FIG G



PANTOGRAPH ARM **below 16 inch** Fig K



PANTOGRAPH ARM **above 16 inch** Fig N

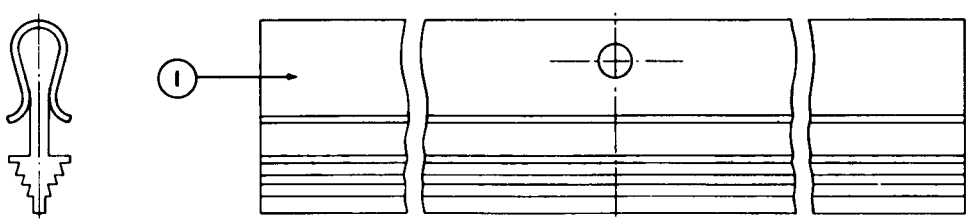
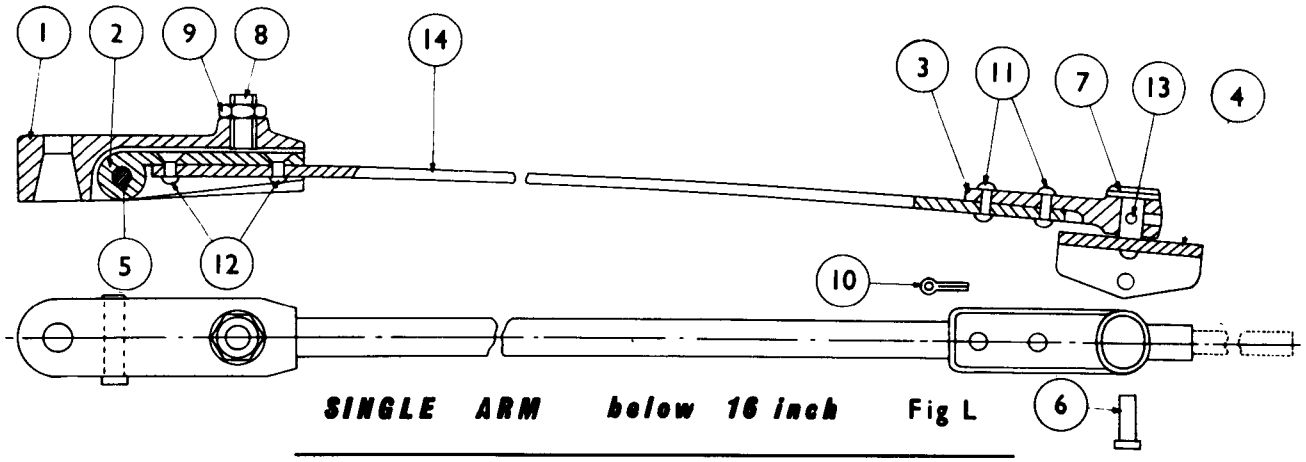
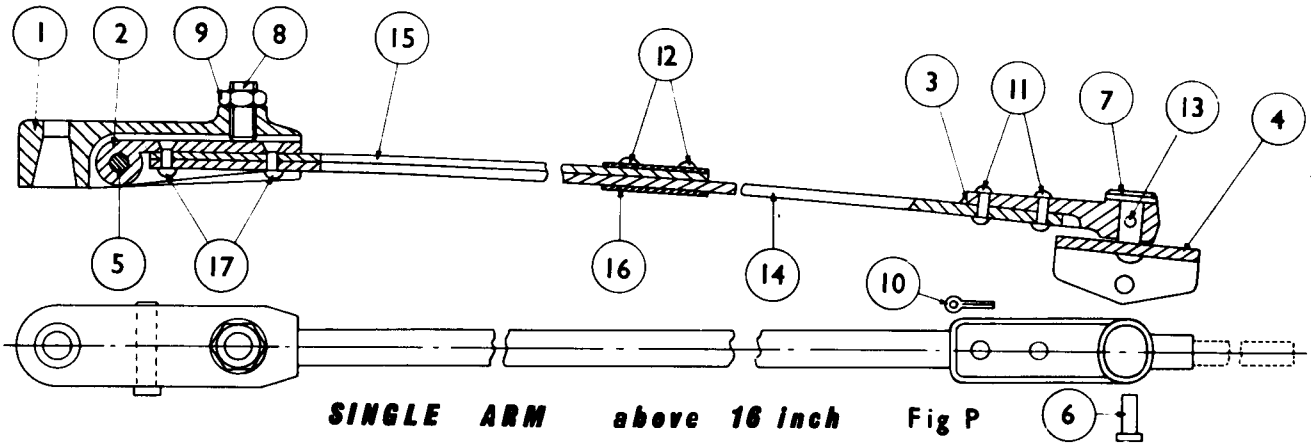


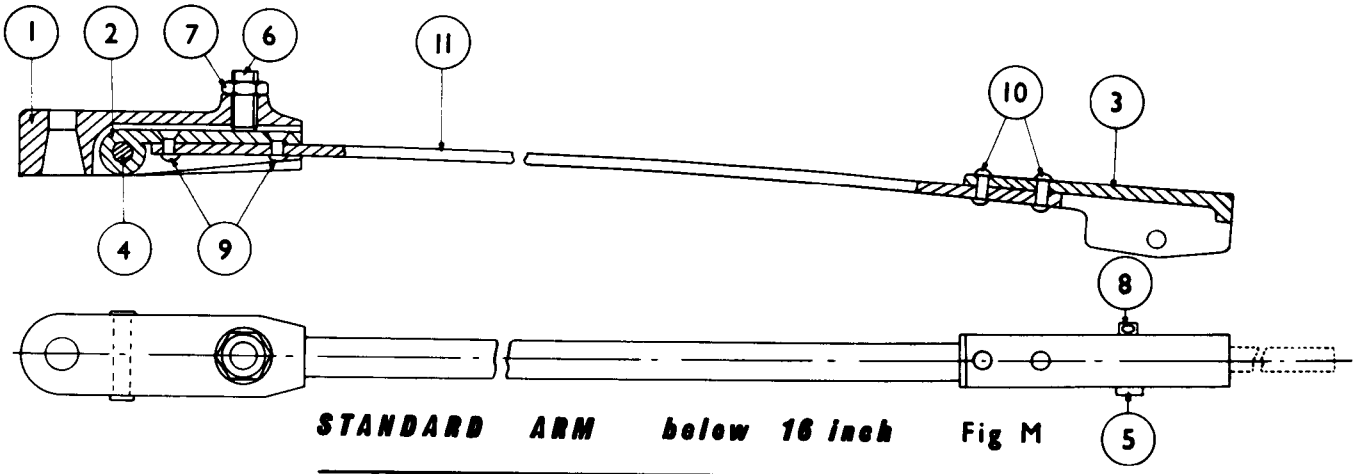
FIG H



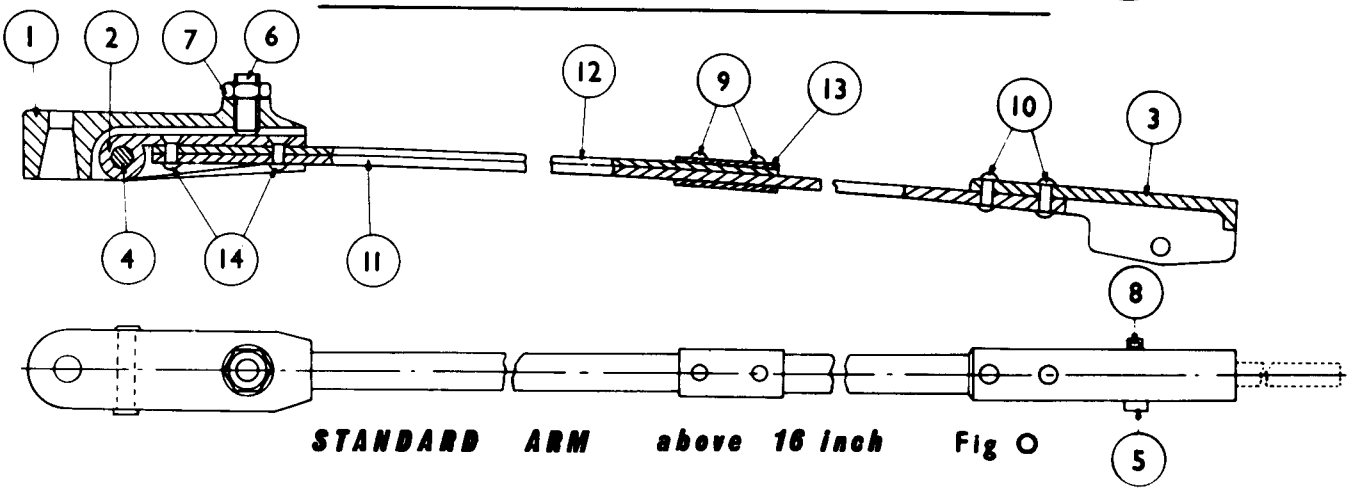
SINGLE ARM below 16 inch Fig L



SINGLE ARM above 16 inch Fig P



STANDARD ARM below 16 inch Fig M



STANDARD ARM above 16 inch Fig O

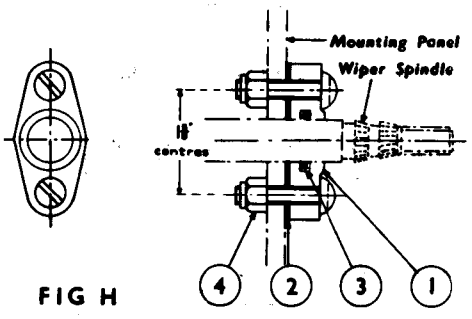


FIG H

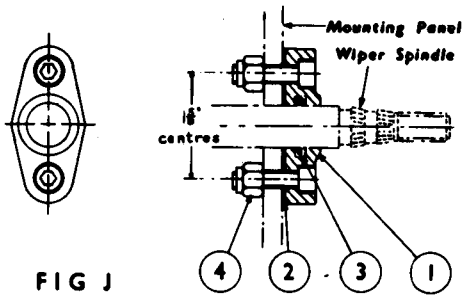


FIG J

5. SERVICE DIAGNOSIS.

If the wiper motor fails to operate, the fault may lie in either (a) the Motor Unit or (b) the Control Valve Unit. First determine in which unit the fault lies.
There are two ways in which this may be done and these are as follows:

Method 1.

Replace the Control Valve Unit with one which is known to be serviceable. If the wiper still fails to operate, the fault is in the Motor Unit. Conversely, if the wiper operates successfully, the fault lies in the Control Valve Unit which has been removed.

Method 2.

Remove the Blade Arm and the Control Valve, and connect direct to the supply (NOT MORE THAN 150 lbs/sq. in.). Turn on momentarily. If the Wiper Motor operates, then the Control Valve is faulty.

NOTE The Blade Arm is removed as a safeguard. since under full pressure the Wiper Motor operates very rapidly.

Having located the fault in either the Motor or the Control Valve, each Unit may be dealt with as indicated in the following paragraphs:

SECTION A. When the Motor Unit is faulty.

The most probable source of trouble in the Motor is the Valve unit and the following is a list of faults and their remedies. It is assumed that the Valve Unit has been removed from the Cylinder Body and connected to the air supply.

REFER TO FIGURE - C FOR SELF-PARK MOTOR.

Fault	Remedy
1. Escaping air is detected from BOTH of the ·046 dia. delivery holes on the mounting face, with the Operating Pin (Item 7) in either of its two extreme positions.	Replace the Sealing Rings (X). Air should escape from only one of the Delivery Holes at a time, depending upon the relative position of the Operating Pin.
2. Compressed air escapes from the elongated slot through which the Operating Pin passes, the Pin itself being in any position.	Replace the Sealing Rings (Y).

Fault	Remedy
3. Compressed air continues to escape from the elongated slot.	Replace the Sealing Rings (Z).
4. Compressed air escapes from the End Plate Union (Item 2).	Replace the Sealing Ring (V) on the Parking Shuttle.
5. Valve changes over with a "metallic click".	The worn End Gaskets (Items 8 and 9) should be replaced.

REFER TO FIGURE D — FOR MANUAL PARK MOTOR.

Fault	Remedy
1. Escaping air is detected from BOTH of the ·046 dia. delivery holes on the mounting face, with the Operating Pin (Item 5) in either of its two extreme positions.	Replace Sealing Rings (X). Air should escape from only one of the Delivery Holes at a time, depending upon the relative position of the Operating Pin.
2. Compressed air escapes from the elongated slot through which the Operating Pin passes, the Pin itself being in any position.	Replace the Sealing Rings (Y).
3. Compressed air continues to escape from the elongated slot.	Replace the Sealing Rings (Z).
4. Valve changes over with "Metallic clicks".	The worn End Gaskets (Item 6) should be replaced.

When the Valve has been serviced and made ready for assembly, it is advisable to make sure that the main Cylinder Unit is serviceable by making the following simple checks (see Fig.B)

1. Examine both Cup Leathers (Item 9) which should be soft and pliable.
2. Make sure that the main delivery ports in the Cylinder are free from dirt.
3. Inspect the End Joints and Pads (Items 10 and 11) for wear.
4. Examine the Reversing Blocks (Item 7) making sure that they are fixed securely in their original positions.

Worn components should be replaced and requisite adjustments made. With the Valve Unit replaced, the Wiper Motor should now operate successfully.

SECTION B. When the Control Valve Unit is faulty.

REFER TO FIGURES E & F

Fault	Remedy
1. Wiper Motor operates intermittently, i.e., the Motor will not always start when the Control Knobs are set in the Starting position.	The valve seat on the Valve Plunger (Item 17) is worn. Replace the Valve Seat (Item 27).
2. The Wiper Motor operates erratically when the speed is varied.	Remedy as in (1) above.
3. Absence on the speed control, i.e. the Wiper Motor operates either two rapidly or too slowly without the range of "in between" speeds.	Caused by Valve (Item 2) sticking and jumping instead of moving gradually when the speed control Knob is turned. Clean out and examine the Sealing Ring (Item 25). Replace is necessary.
4. Excessive air leak from behind the Speed Control Handle when in the "ON" position.	The worn Sealing Ring (Item 25) should be replaced.
5. The Wiper will not move from "PARK" position when the Control Knob is set at "RUN".	The Sealing Rings (Item 26) are worn and leaking badly. These should be replaced.

SPARE PARTS LIST

LAYCOCK-SPRAGUE WINDSCREEN WIPER

MOTOR PARTS. (FIXED-HANDLE Model No. 3259)
SELF-PARK MOTOR Figure B.

Item No.	Description.	Quantity	Drawing No.
1	Cylinder	1	40753
2	Piston	1	40754
3	Pinion End Cap	1	43043
4	End Cap - Left-hand	1	40757
5	End Cap - Right-hand	1	40758
6	Pinion	1	43044
7	Reversing Block	2	40765
8	Felt Retainer	1	39398
9	Cup Leather	2	39400
10	End Cap Joint	2	40766
11	End Cap Pad	2	40767
12	Oil Retaining Bearing	1	43196
13	Union	1	Ref. 147/3
14	Union Nut	2	Ref. 150/3
15	Nipple	2	Ref. 151/3
17	Valve Body Joint	1	40768
18	Pinion End Cap Joint	1	40769
19	Exhaust Felt	1	39404
20	Cap Screw for End Caps	13	Ref. 120/5
21	Cap Screw for Valve Unit	4	Ref. 120/9
22	Allen Setscrew for Reversing Block	2	Ref. 121/9
23	Setscrew for Cup Leather	2	Ref. K3002
24	Simmonds Nut for Spindle	1	Ref. K5701
25	Mills Pin for Spindle	1	Ref. 6316 GP3
26	Washer for Spindle	1	Ref. 1727
27	Packing Washer	2	Ref. 1660
28	Spindle	1	46072 *
29	Junk Plate	2	40764 *
30	Piston Sub-assembly	1	40770 *
31	Valve Unit	1	42655 *
32	Bolt for Banjo Coupling	1	K53326
33	Fibre Packing Washer	2	Ref. 1628
34	Banjo Coupling	1	53325

All parts above except (Item 31) are common to Self-Parking and Manual Parking Units. For Manual Parking Units (Model 3382) Item 31 has Drawing No. 40651.

CONTROL AND PARKING VALVE PARTS

SELF-PARKING MOTOR Model No. 3180. Figure E.

MANUAL-PARKING MOTOR Model No. 47244. Figure F.

Item No.	Description.	Quantity	Drawing No.
1	Valve Body	1	39837
2	Piston	1	39551
3	Regulating Spindle	1	39552
4	Regulating Handle	1	D39553
5	Regulating Disc	1	39554
6	Parking Valve Piston	1	39838
7	Parking Valve Handle	1	D39839
8	Regulating Shaft	1	39555
9	Spacer	1	47634
10	Union	≠ 3	Ref. 147/3
11	Union Nut	≠ 3	Ref. 150/3
12	Nipple	≠ 3	Ref. 151/3
13	Parking Valve Spring	1	J31522
14	Return Spring	1	K34610
15	Pressure Control Spring	1	K39558
16	Instruction Plate	1	39559
17	Valve Plunger	1	39557
18	Socket Head Plug	≠ 1	27144
19	Ball	1	Ref. 9824
20	Roundhead Screw for Item 4	1	D3903
21	Allen Capscrew for Valve Body	3	Ref. 120/7
22	Mills Pin for Item 8	1	Ref. 6304 GP3
23	Washer for Item 20	1	Ref. 1713
24	Washer for Item 21	3	Ref. 1717
25	'O' Seal	1	Ref. 131/10
26	'O' Seal	2	Ref. 9427
27	'O' Seal	1	Ref. 9431

All the above parts are common to Self-Park and Manual-Park Units EXCEPT for the four items marked thus ≠
For MANUAL PARK Units (Model 47244) the quantity for each of the marked items should read 2.

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* Items marked with an asterisk are variable and are supplied to the length and type required by the customer.

VALVE UNIT PARTS

SELF-PARK MOTOR Figure C Model 3186

Item No.	Description.	Quantity	Drawing No.
1	Valve Body	1	40646
2	Connector End Plate	1	42639
3	Operating Shuttle	1	40647
4	Delivery Shuttle	1	55668
5	Check Shuttle	1	42641
6	End Plate	1	K40649
7	Operating Pin	1	K39388
8	End Plate Joint	2	42642
9	'0' Seal for Shuttles	7	Ref. 9431
10	Capscrew for End Plates	8	Ref. 120/1
11	Ball for Valve Body	5	Ref. 9823

MANUAL-PARK MOTOR. Figure D Model 2866

1	Valve Body	1	40646
2	Operating Shuttle	1	40647
3	Delivery Shuttle	1	55669
4	End Plate	1	K40649
5	Operating Pin	1	K39388
6	End Plate Joint	2	42692
7	'0' Seal for Shuttles	6	Ref. 9431
8	Capscrew for End Plate	8	Ref. 120/1
9	Ball for Valve Body	5	Ref. 9823

BLADE PARTS Figure I
Model 2704

Item No.	Description	Quantity	Drawing No.
1	Blade Assembly	1	39427 *

PANTOGRAPH SPINDLE PARTS Figure G
Model 3915

Item No.	Description	Quantity	Drawing No.
1	Simmonds Nut	2	Ref. K5701
2	Washer	2	Ref. 1727
3	Spindle	1	K 46073*
4	Sealing Washer	1	Ref. 1615

ARM PARTS (PANTOGRAPH) Figure K
ARMS BELOW 16 inch Model 2711

Item No.	Description	Quantity	Drawing No.
1	Arm Boss	1	46076
2	Arm Hinge	1	40793
3	Blade Bearing	2	39433
4	Parallel Arm Boss	1	46075
5	Blade Cradle	1	41229
6	Arm Boss Pin	1	40816
7	Hinge Pin	1	39439
8	Cradle Pin	1	52588
9	Parallel Arm Hinge	1	39430
10	Blade Bearing Pin	2	K39434
11	Allen Setscrew for Arm Boss	1	Ref. 3420
12	Nut for Item 11	1	Ref. 5202
13	Split Pin for Cradle Pin	1	Ref. 6006
14	Rivet for Blade Bearing	4	Ref. 7012
15	Rivet for Arm Hinge	2	Ref. 7414
16	Rivet for Parallel Arm Hinge	2	Ref. 7016
17	Spring Arm	1	K40904 *
18	Pantograph Arm	1	K39436 *

ARM PARTS (SINGLE) Figure L
ARMS BELOW 16 inch Model 2701

Item No.	Description	Quantity	Drawing No.
1	Arm Boss	1	46076
2	Arm Hinge	1	40793
3	Blade Bearing	1	39433
4	Blade Cradle	1	41230
5	Arm Boss Pin	1	40816
6	Cradle Pin	1	52588
7	Blade Bearing Pin	1	K47027
8	Allen Setscrew for 1	1	Ref. 3420
9	Nut for 8	1	Ref. 5202
10	Split Pin for 6	1	Ref. 6006
11	Rivet for 3	2	Ref. 7012
12	Rivet for 2	2	Ref. 7414
13	Mills Pin for 3	1	Ref. 6384 GP3
14	Spring Arm	1	K40904 *

ARM PARTS (STANDARD) Figure M
ARMS BELOW 16 inch Model 51877

Item No.	Description	Quantity	Drawing No.
1	Arm Boss	1	46076
2	Arm Hinge	1	40793
3	Blade Cradle	1	51176
4	Arm Boss Pin	1	40816
5	Cradle Pin	1	52588
6	Allen Setscrew for Arm Boss	1	Ref. 3420
7	Nut for Allen Setscrew	1	Ref. 5202
8	Split Pin for Cradle Pin	1	Ref. 6006
9	Rivet for Arm Hinge	2	Ref. 7414
10	Rivet for Blade Cradle	2	Ref. 7012
11	Spring Arm	1	K40904*

ARM PARTS (PANTOGRAPH) Figure N
ARMS ABOVE 16 inch Model 53541

Item No.	Description	Quantity	Drawing No.
1	Arm Boss	1	46076
2	Arm Hinge	1	40793
3	Blade Bearing	2	39433
4	Parallel Arm Boss	1	46075
5	Blade Cradle	1	41229
6	Arm Boss Pin	1	40816
7	Hinge Pin	1	39439
8	Cradle Pin	1	52588
9	Parallel Arm Hinge	1	39430
10	Blade Bearing Pin	2	K39434
11	Allen Setscrew for Arm Boss	1	Ref. 3423
12	Nut for Allen Setscrew	1	Ref. 5202
13	Split Pin for Cradle Pin	1	Ref. 6006
14	Rivet for Blade Bearing	4	Ref. 7012
15	Rivet for Parallel Arm Hinge & Arm Sleeve	4	Ref. 7016
16	Spring Arm	1	K40905*
17	Pantograph Arm	1	K39436*
18	Support Arm	1	K53540*
19	Arm Sleeve	1	53539
20	Countersunk Head Rivet for Arm Hinge	2	Ref. 7415

ARM PARTS (STANDARD) Figure 0
ARMS ABOVE 16 inch Model 56685

Item No	Description	Quantity	Drawing No.
1	Arm Boss	1	46076
2	Arm Hinge	1	40793
3	Blade Cradle	1	51176
4	Arm Boss Pin	1	40916
5	Cradle Pin	1	50588
6	Allen Setscrew for Arm Boss	1	Ref. 3423
7	Nut for Allen Setscrew	1	Ref. 5202
8	Split Pin for Cradle Pin	1	Ref. 6006
9	Rivet for Arm Sleeve	2	Ref. 7016
10	Rivet for Blade Cradle	2	Ref. 7012
11	Spring Arm	1	K40905*
12	Support Arm	1	K53540*
13	Arm Sleeve	1	53539
14	Rivet for Arm Hinge	2	Ref. 7415

ARM PARTS (SINGLE) Figure P
ARMS ABOVE 16 inch Model 56683

Item No.	Description	Quantity	Drawing No
1	Arm Boss	1	46076
2	Arm Hinge	1	40793
3	Blade Bearing	1	39433
4	Blade Cradle	1	41230
5	Arm Boss Pin	1	40816
6	Cradle Pin	1	52588
7	Blade Bearing Pin	1	K47027
8	Allen Setscrew for Arm Boss	1	Ref. 3423
9	Nut for Allen Setscrew	1	Ref. 5202
10	Split Pin for Cradle Pin	1	Ref. 6006
11	Rivet for Blade Bearing	2	Ref. 7012
12	Rivet for Arm Sleeve	2	Ref. 7016
13	Mills Pin for Blade Bearing	1	Ref. 6394 GP3
14	Spring Arm	1	K40905*
15	Support Arm	1	K53540*
16	Arm Sleeve	1	53539
17	Rivet for Arm Hinge	2	Ref. 7415

SEALING GLAND PARTS. (STANDARD

Figure H
Model 54449

Item No.	Description	Quantity	Drawing No.
1	Sealing Gland	1	54446
2	Sealing Gland Joint	1	54447
3	'O' Seal	1	Ref. 131/6
4	Simmonds Nut	2	Ref. K5707

SEALING GLAND PARTS (CAPSCREW)

Figure J
Model 54447

Item No.	Description	Quantity	Drawing No.
1	Sealing Gland	1	54445
2	Sealing Gland Joint	1	54447
3	'O' Seal	1	Ref. 131/6
4	Simmonds Nut	2	Ref. K5707

ACCESSORIES

Setscrew) for Motor	2	Ref. K *
Washer)	2	Ref. 1118
Setscrew) for Control Valve	2	Ref. K *
Washer)	2	Ref. 1114
Setscrew for Sealing Gland	2	Ref. *
Adaptor Plate (2 hole)	1	P.44557
Adaptor Plate (4 hole)	1	P.56688

MODIFICATION Ref. 9431 (O Seal and Figs. C,D,E, & F) should now read 71352.