

**SPARE PARTS LIST  
AND PRICE LIST**

*for the*

**G.C. PROJECTOR**



**JANUARY 1948**

ROSS LTD., Optical Works, Clapham Common, London, S.W.4



K-BUCKLEY

## FOREWORD

**I**N the preparation of this Spare Parts Catalogue every effort has been made to present the clearest illustration possible of even the smallest components with the object of ensuring that parts when required are ordered by their correct catalogue numbers.

The various parts have been presented in the most logical order, starting with the Projector Head and working down from the Top Spool Box.

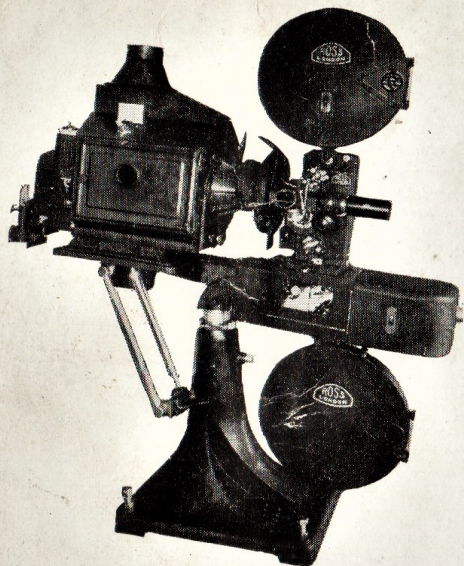
Adaptations for various sound assemblies are dealt with at the end of the book.

The list applies to the current "G.C." Projector, which design for the moment holds good for the new "Streemlite" equipments introduced in 1947.

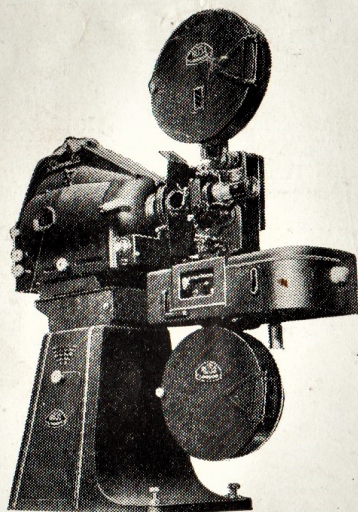
A Spare Parts Catalogue is in course of preparation for the Streemlite Arc and Pedestal not shown here.

Ross distributors carry a full range of spares at all their branches, and as far as possible orders for parts should be addressed to the branch nearest your cinema. The addresses of all branches in the United Kingdom are given on page 47.





This list applies to the G.C. projector illustrated here



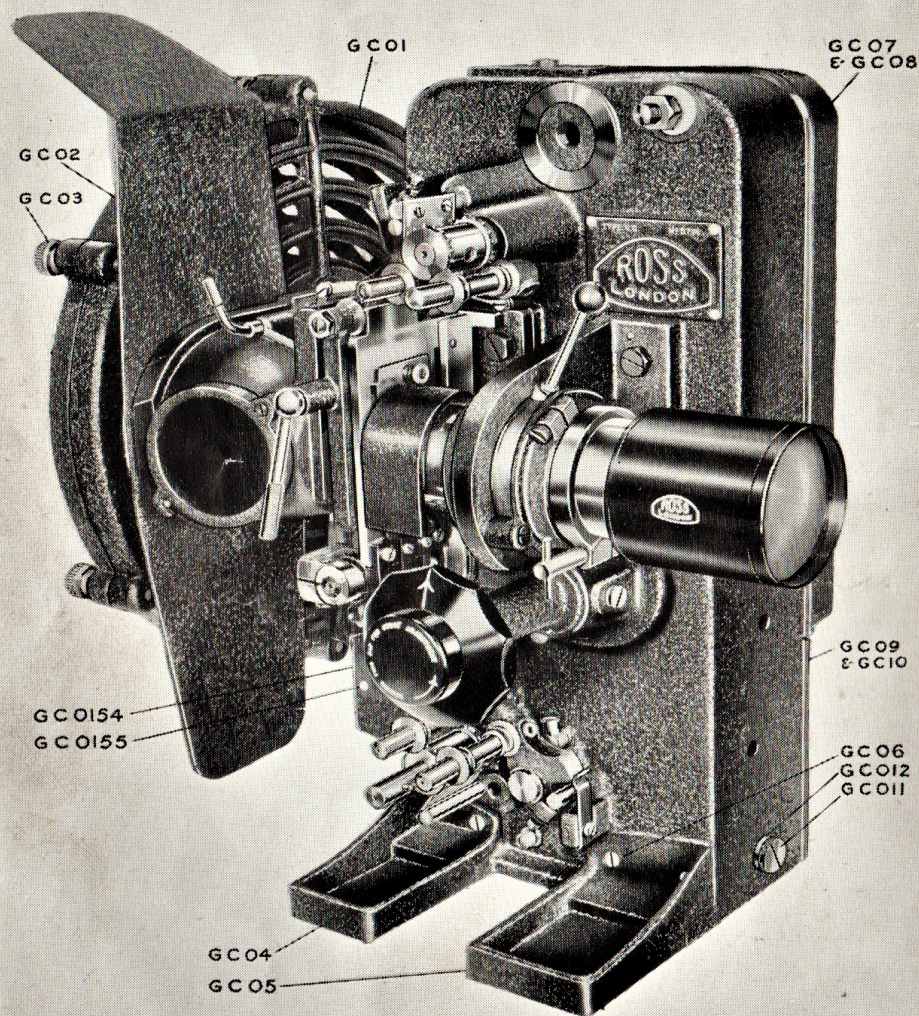
For the new Ross Streamlite equipments see separate Spare Parts List

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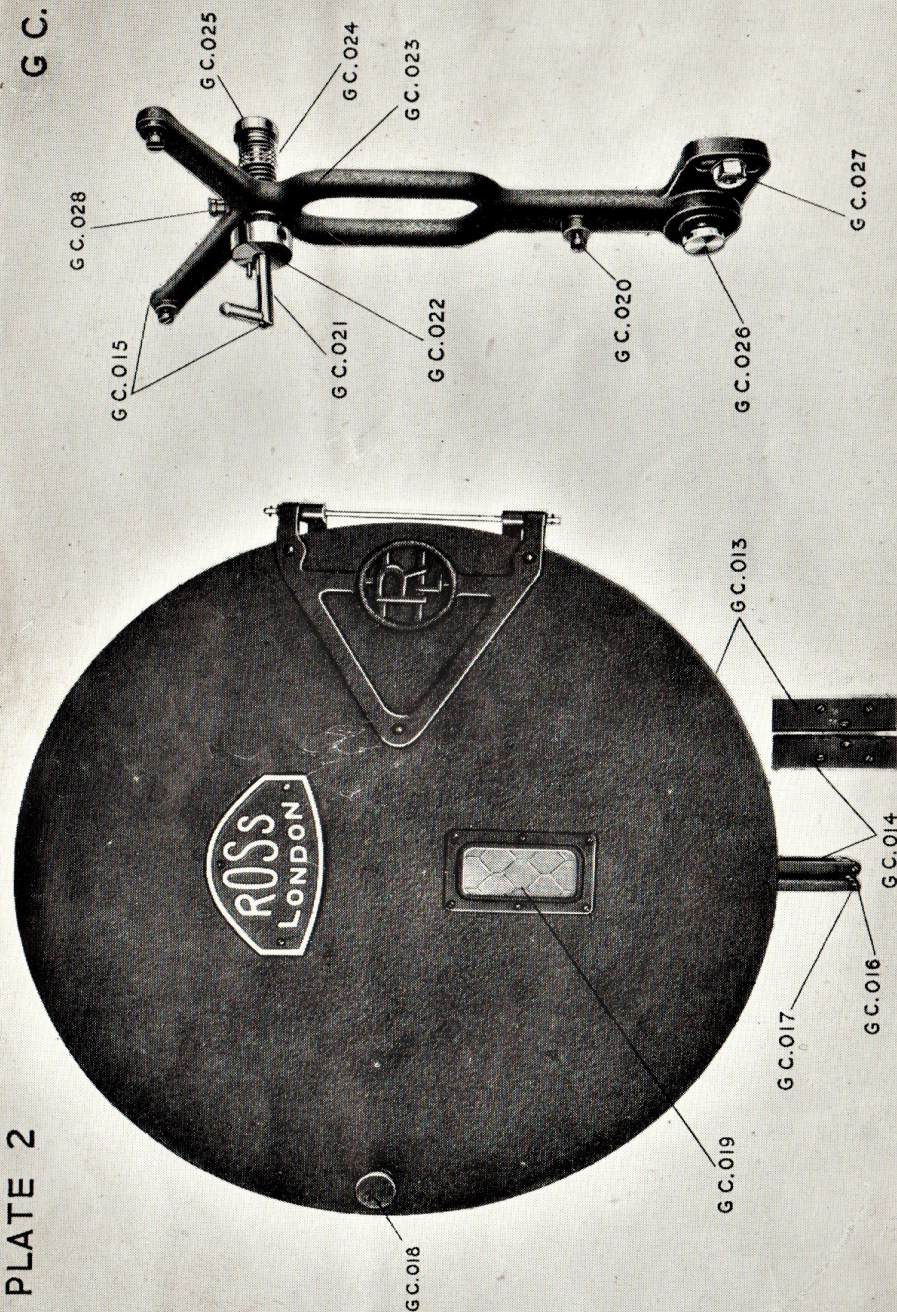




## PROJECTOR HEAD

No.	Description	£	s.	d.
GC. 01	Rear Shutter Guard .. .. .	2	4	0
GC. 02	Rear Shutter Guard Cover .. .. .	2	4	0
GC. 03	Rear Shutter Guard Milled Screws (each) .. .. .		3	3
GC. 04	Cast Base Tray (back) .. .. .		7	6
GC. 05	Cast Base Tray (front) .. .. .		7	6
GC. 06	Cast Base Tray Screws (Set of 2) .. .. .			6
GC. 07	Top Cover for Gearing .. .. .	1	10	0
GC. 08	Top Cover Milled Screw .. .. .		7	6
GC. 09	Bottom Cover for Gearing .. .. .		15	0
GC. 010	Bottom Cover Screws (each) .. .. .			4
GC. 011	Base Drain Plug .. .. .		3	0
GC. 012	Base Drain Plug Leather Washer .. .. .			6
GC. 0360	Base Guide Rollers with Bracket .. .. .	1	15	0
GC. 0361	Base Guide Rollers (each) .. .. .		7	6
GC. 0362	Base Guide Rollers Spindle with Nut and Clips .. .. .		4	0





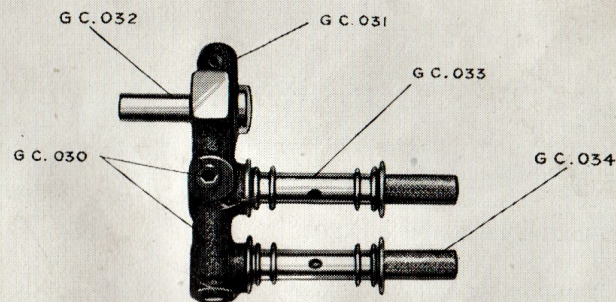
## 18-inch TOP SPOOL BOX ASSEMBLY

No.	Description	£	s.	d.
GC. 013	Spool Box only, complete with Film Trap .. ..	8	0	0
GC. 014	Film Trap complete with 6 screws and Dust Traps ..	3	10	0
GC. 015	Top Arm Casting complete with Spindle Assembly and Fixing Screws .. .. .	3	15	0
GC. 016	Film Trap Rollers (each) .. ..	5		6
GC. 017	Film Trap Roller Studs (each) .. ..	2		6
GC. 018	Knob and Catch for Spool Box Door .. ..	5		6
GC. 019	Spool Box Glass Window (each) .. ..	4		0
GC. 020	Spool Box Fixing Screws (each) .. ..			4
GC. 021	Top Arm Spindle with Sneck .. ..	1	3	6
GC. 022	Top Arm Spindle Driving Collar with Pin and Screw ..	7		6
GC. 023	Top Arm Spindle Driving Collar Washer.. ..	2		0
GC. 024	Top Arm Spindle Spring .. ..	1		6
GC. 025	Top Arm Spindle Spring Collar with Screw .. ..	3		6
GC. 026	Top Arm Pivot .. ..	6		0
GC. 027	Top Arm Clamping Nut and Washer .. ..	1		0
GC. 028	Top Arm Oil Cup .. ..	2		6

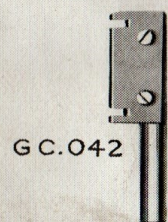


# PLATE 3

G.C.



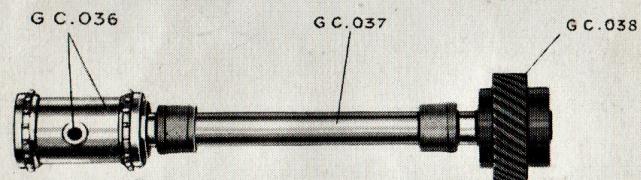
G.C. 029



G.C. 042



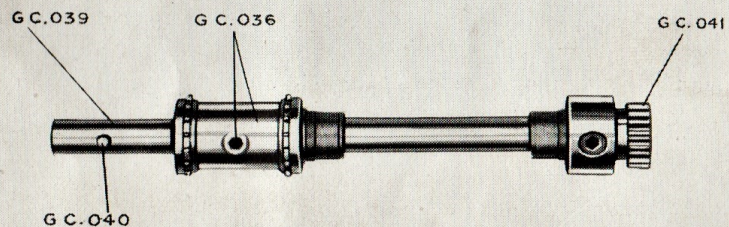
G.C. 035



G.C. 036

G.C. 037

G.C. 038



G.C. 039

G.C. 036

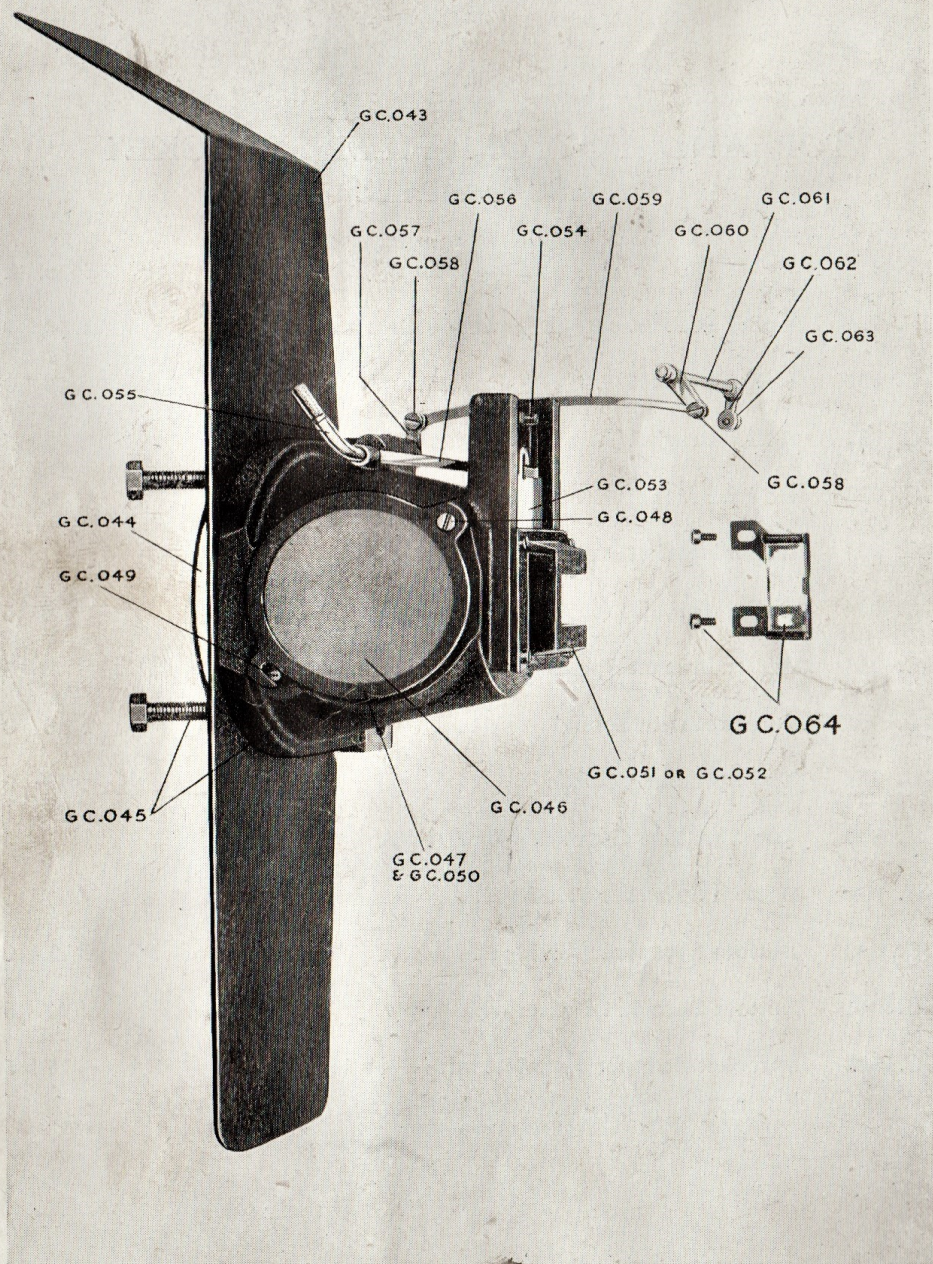
G.C. 041

G.C. 040

## TOP AND BOTTOM FILM SPROCKET ASSEMBLIES

No.	Description	£	s.	d.
GC. 029	Roller Bracket complete with Rollers and Pivot ..	2	10	0
GC. 030	Roller Bracket with two Grub Screws .. ..	15	0	
GC. 031	Roller Bracket Stop Screw with Nut .. ..	2	6	
GC. 032	Roller Bracket Pivot .. ..	4	6	
GC. 033	Roller Bracket Rollers (each) .. ..	7	6	
GC. 034	Roller Spindles (each) .. ..	4	6	
GC. 035	Roller Bracket Spring with Screw and Washer ..	2	0	
GC. 036	Sprocket with Screw .. ..	1	10	0
GC. 037	Top Sprocket Spindle .. ..	15	0	
GC. 038	Top Sprocket Gear with Screw .. ..	1	0	0
GC. 039	Bottom Sprocket Spindle .. ..	17	6	
GC. 040	Bottom Sprocket Driving Pin .. ..	1	0	
GC. 041	Bottom Sprocket Pinion with Screw .. ..	17	6	
GC. 042	Sprocket Stripper complete with Spindle .. ..	7	6	

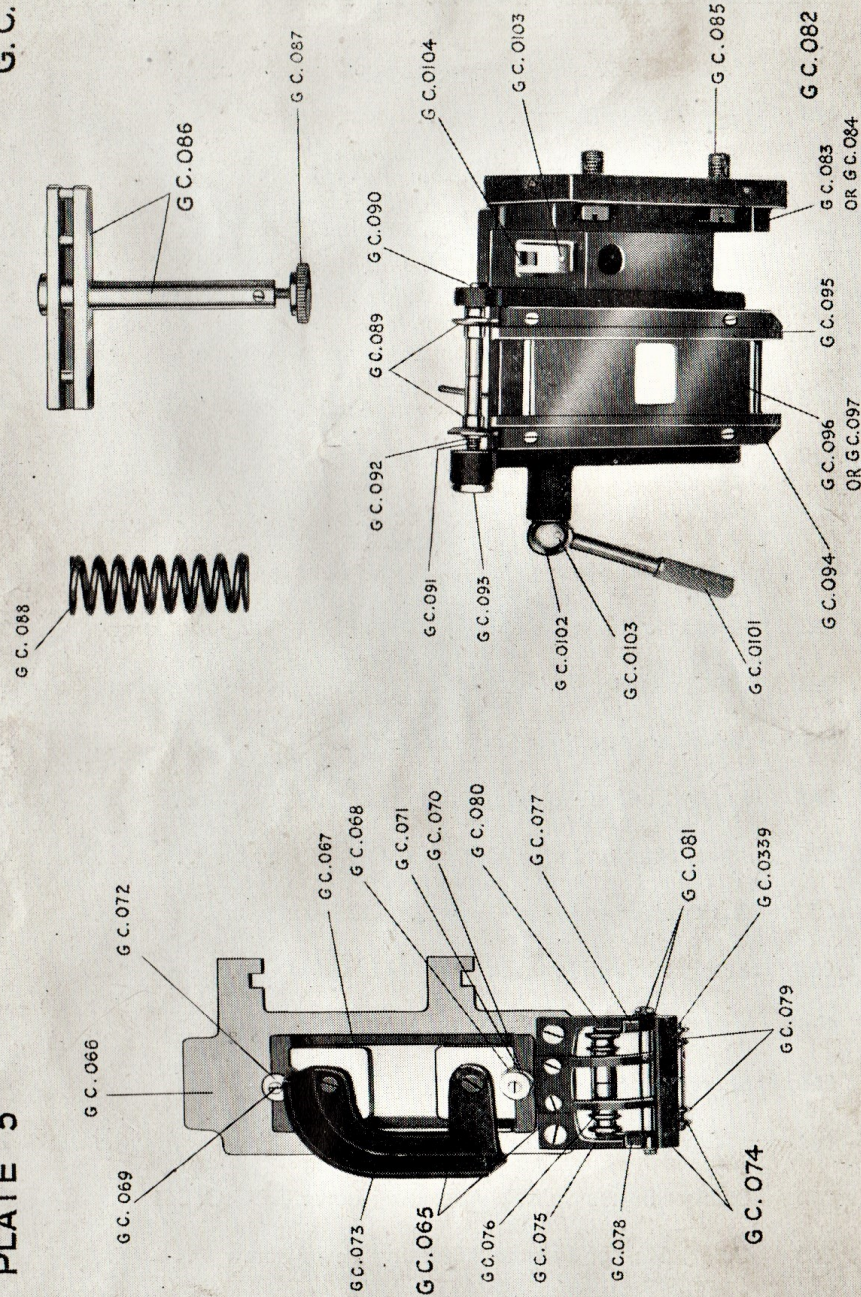




# HEAT SHIELD AND SAFETY SHUTTER

No.	Description	£	s.	d.
GC. 043	Heat Shield Plate .. .. .	10	6	
GC. 044	Heat Shield Asbestos Ring .. .. .	2	0	
GC. 045	Heat Shield Bracket with Two Fixing Screws .. .. .	3	0	0
GC. 046	Ruby Glass Window for Gate Inspection.. .. .	3	0	
GC. 047	Window Frame .. .. .	9	6	
GC. 048	Window Frame Pivot .. .. .	2	0	
GC. 049	Window Frame Stop .. .. .	1	0	
GC. 050	Window Wire Ring .. .. .	1	6	
GC. 051	Heat Shield Mask Cone with Four Screws .. .. .	10	0	
GC. 052	Heat Shield Mask Cone Rear Projection with Four Screws .. .. .	10	0	
GC. 053	Safety Shutter .. .. .	3	0	
GC. 054	Safety Shutter Stop Screws (each) .. .. .		6	
GC. 055	Safety Shutter Spindle, hand operating .. .. .	3	6	
GC. 056	Safety Shutter Lever (long) on GC. 055 .. .. .	4	6	
GC. 057	Safety Shutter Lever (short) on G.C. 055 .. .. .	4	6	
GC. 058	Safety Shutter Pivot Screws for Link on GC. 059 .. .. .		6	
GC. 059	Safety Shutter Link .. .. .	3	6	
GC. 060	Safety Shutter Link Lever on GC. 061 .. .. .	4	6	
GC. 061	Safety Shutter Link Lever Spindle .. .. .	1	6	
GC. 062	Safety Shutter Spindle Actuating Lever on G.C. 061 .. .. .	4	6	
GC. 063	Safety Shutter Spindle Actuating Lever Screw .. .. .	1	0	
GC. 064	Gate Illuminating Reflector in Frame with Two Screws .. .. .	7	6	

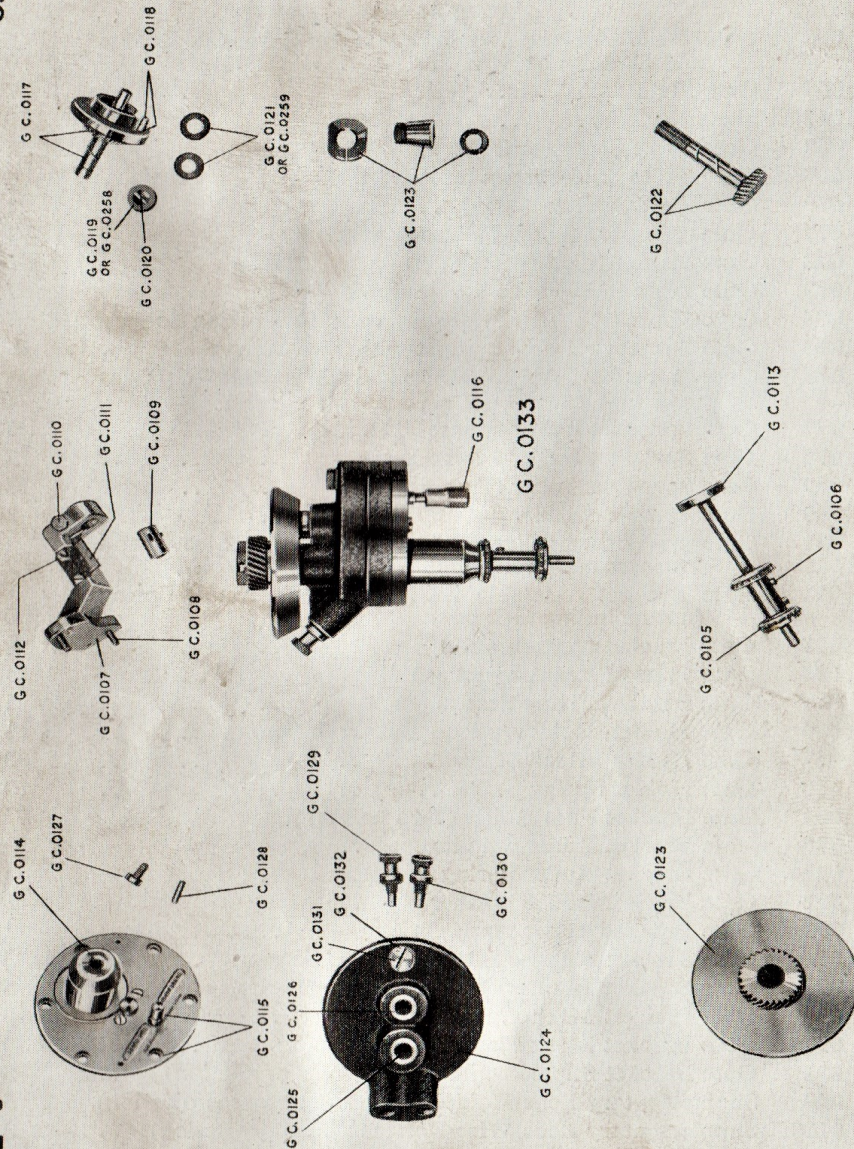




## GATE ASSEMBLY

No.	Description	£	s.	d.
GC. 065	Gate Plate Assembly complete with Sprocket Rollers and Skate as shown .. .. .	9	0	0
GC. 066	Gate Plate .. .. .	3	7	6
GC. 067	Skate .. .. .	15	0	
GC. 068	Gate Skate Studs (each) .. .. .	2	0	
GC. 069	Gate Skate Stud Screws (each) .. .. .		6	
GC. 070	Gate Skate Springs (each) .. .. .	1	0	
GC. 071	Gate Skate Shouldered Washers (each) .. .. .	1	0	
GC. 072	Gate Skate Milled Nuts (each) .. .. .	1	6	
GC. 073	Gate Light Shield with Two Screws .. .. .	7	6	
GC. 074	Gate Sprocket Roller Assembly with Two Fixing Screws .. .. .	3	5	0
GC. 075	Gate Sprocket Roller Bracket with Two Screws .. .. .	15	0	
GC. 076	Gate Sprocket Roller Forked Springs (Set of Two) with Two Screws .. .. .	4	0	
GC. 077	Gate Sprocket Roller Frame R.H. ....	3	0	
GC. 078	Gate Sprocket Roller Frame L.H. ....	3	0	
GC. 079	Gate Sprocket Roller (Two halves) .. .. .	12	6	
GC. 080	Gate Sprocket Roller Spindle (Upper) .. .. .	2	6	
GC. 081	Gate Sprocket Roller Pivot Spindle with Sleeve and Washers and Split Pins .. .. .	2	6	
GC. 082	Gate Bracket Assembly with Gate Holder and Spring (not including GC. 065) .. .. .	11	0	0
GC. 083	Gate Bracket (casting only) .. .. .	3	10	0
GC. 084	Gate Bracket (rear projection) .. .. .	3	15	0
GC. 085	Gate Bracket Fixing Screws (each) .. .. .	1	6	
GC. 086	Gate Holder, including Rod and Grub Screw .. .. .	3	0	0
GC. 087	Gate Holder Milled Screw .. .. .	3	0	
GC. 088	Gate Holder Spring .. .. .	3	6	
GC. 089	Gate Bracket Film Roller (Two halves) .. .. .	17	6	
GC. 090	Gate Bracket Roller Spindle .. .. .	10	6	
GC. 091	Gate Bracket Roller Spring .. .. .	9		
GC. 092	Gate Bracket Roller Washer .. .. .	1	0	
GC. 093	Gate Bracket Roller Hexagon Nut .. .. .	1	0	
GC. 094	Gate Bracket Runner L.H. with Two Screws .. .. .	1	5	0
GC. 095	Gate Bracket Runner R.H. with Two Screws .. .. .	1	5	0
GC. 096	Gate Bracket Mask Plate .. .. .	1	10	0
GC. 097	Gate Bracket Mask Plate (rear projection) .. .. .	1	10	0
GC. 098	Gate Bracket Supplementary Lens (rear projection) .. .. .	2	5	0
GC. 099	Supplementary Lens Holder with Screw (rear projection) .. .. .	1	5	0
GC. 0100	Supplementary Lens Wire Retainer (rear projection) .. .. .	2	0	
GC. 0101	Gate Opening Handle .. .. .	7	6	
GC. 0102	Gate Handle Spindle .. .. .	2	0	
GC. 0103	Gate Handle Spindle Taper Pins (each) .. .. .	4		
GC. 0104	Gate Opening Roller with Pivot .. .. .	5	0	
GC. 0339	Gate Sprocket Roller Spindle (lower) .. .. .	2	0	





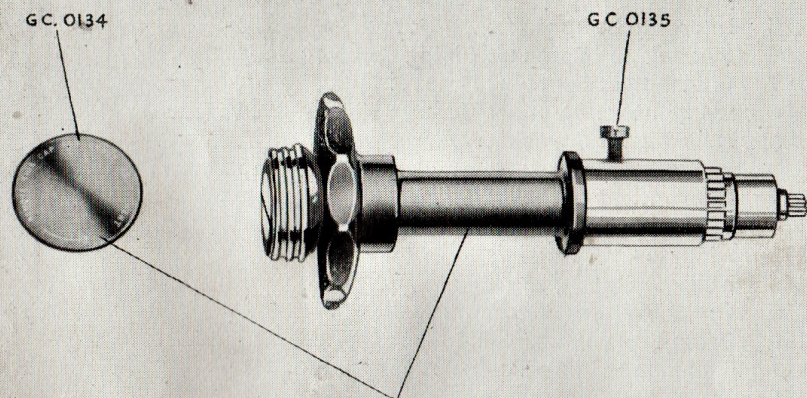
## CROSS BOX ASSEMBLY

No.	Description	£	s.	d.
GC. 0105	Intermittent Sprocket .. .. .	2	5	0
GC. 0106	Intermittent Sprocket Fixing Screws (each) .. .. .	2	0	
GC. 0107	Intermittent Sprocket Bracket .. .. .	1	15	0
GC. 0108	Intermittent Sprocket Bracket Fixing Screws (each) .. .. .		6	
GC. 0109	Intermittent Sprocket Bracket Bush .. .. .	5	0	
GC. 0110	Intermittent Sprocket Bracket Bush Clamp Screws .. .. .	1	0	
GC. 0111	Intermittent Sprocket Stripper .. .. .	7	6	
GC. 0112	Intermittent Sprocket Stripper Screw (each) .. .. .		6	
GC. 0113	Maltese Cross .. .. .	4	10	0
GC. 0114	Maltese Cross Bush .. .. .	7	6	
GC. 0115	Cross Box Cover with Stud .. .. .	3	0	0
GC. 0116	Cross Box Cover Milled Nut .. .. .	2	6	
GC. 0117	Cross Box Cam with Gear, Pin and Roller .. .. .	5	0	0
GC. 0118	Cross Box Cam Pin and Roller .. .. .	10	0	
GC. 0119	Cross Box Cam Collar .. .. .	2	6	
GC. 0120	Cross Box Cam Collar Pin .. .. .		6	
GC. 0121	Cross Box Cam Washers (Set of Two) .. .. .	1	0	
GC. 0122	Flywheel Spindle with Gear .. .. .	1	10	0
GC. 0123	Flywheel with Gear, Taper Bush and Nut .. .. .	2	17	6
GC. 0124	Cross Box (casting only) complete with Bearing Bushes .. .. .	3	10	0
GC. 0125	Cross Box Bushes (Set of Two) for GC. 0122 .. .. .	10	0	
GC. 0126	Cross Box Bush for GC. 0117 .. .. .	5	0	
GC. 0127	Cross Box Cover Screws (each) .. .. .		6	
GC. 0128	Cross Box Cover Pins (each) .. .. .		6	
GC. 0129	Cross Box Filler Screws (each) .. .. .	2	6	
GC. 0130	Cross Box Filler Screw Washers (each) .. .. .		6	
GC. 0131	Cross Box Drain Screw .. .. .	2	0	
GC. 0132	Cross Box Drain Screw Washer .. .. .		6	
GC. 0133	Cross Box complete (not including GC. 0107) .. .. .	35	0	0
GC. 0258	Cross Box Cam Retaining Clip .. .. .	2	0	
GC. 0259	Cross Box Cam Retaining Clip Washer .. .. .	1	0	

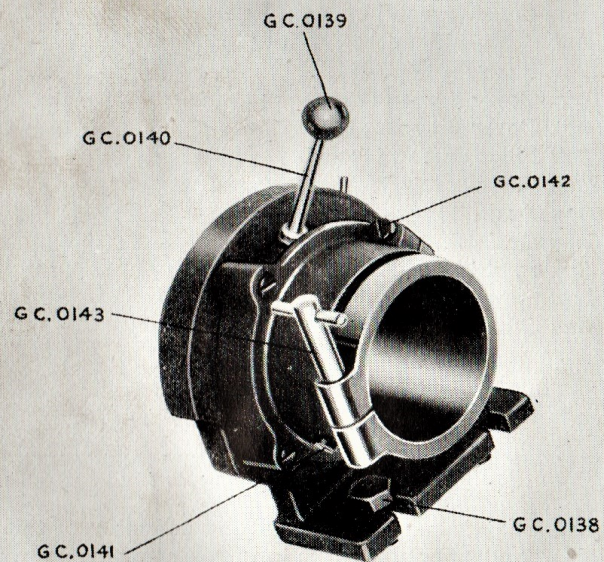
### IMPORTANT NOTE.

Special care is required in the removal and assembly of this part of the projector and special instructions regarding same will be found on Page 41.





G.C. 0136



G.C. 0137

## FILM FRAMING AND GHOST UNIT

No.	Description	£	s.	d.
GC. 0134	Ghost Adjustment Cap .. .. .	4	6	
GC. 0135	Unit Fixing Screw .. .. .		6	
GC. 0136	Unit complete with Cap and Screw .. .. .	9	15	0

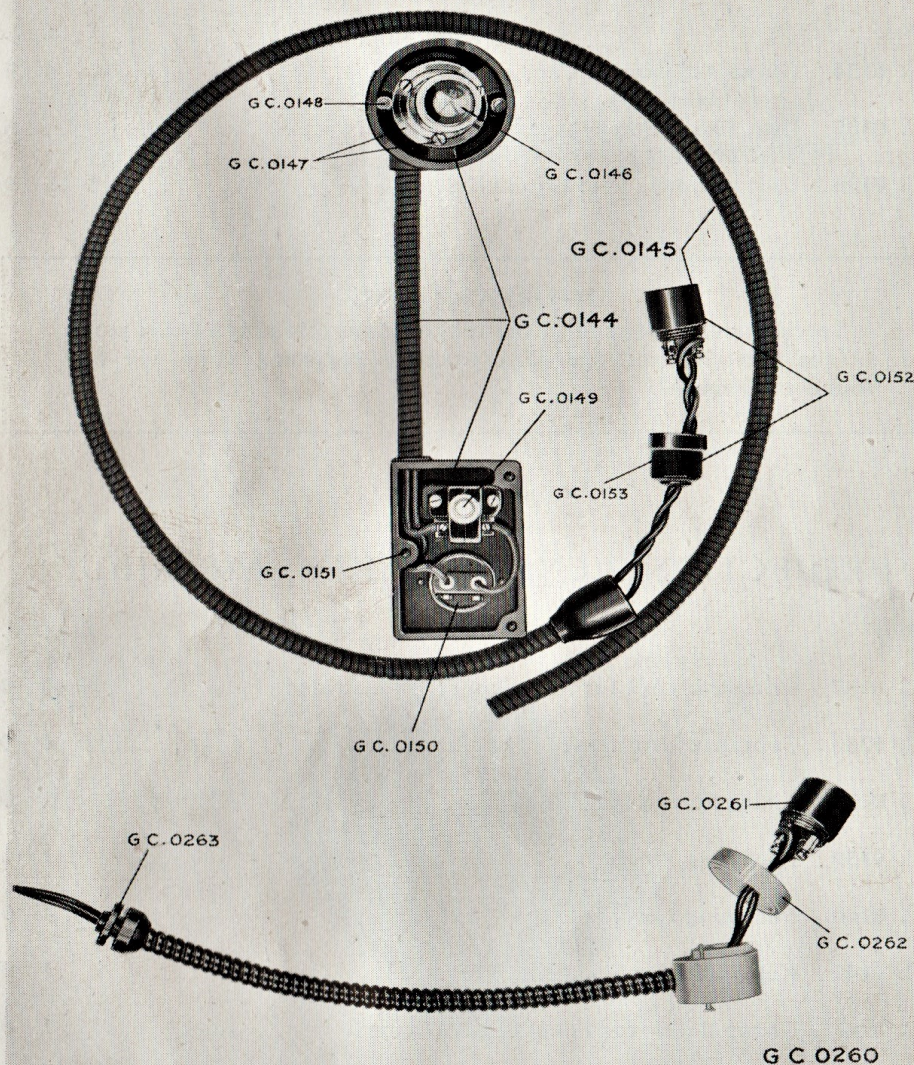
### IMPORTANT NOTE.

Special care is required in the removal and assembly of this part of the projector and special instructions regarding same will be found on Page 42.

## PROJECTION LENS BRACKET ASSEMBLY

No.	Description	£	s.	d.
GC. 0137	Complete Unit for 52.4 diam. (as illustrated) .. .. .	6	10	0
GC. 0363	Complete Unit for 70.65 diam. .. .. .	10	0	0
GC. 0138	Fixing Screws (each) .. .. .	1	0	
GC. 0139	Focussing Knob .. .. .	1	0	
GC. 0140	Focussing Lever .. .. .	4	0	
GC. 0141	Key Screw for Focussing Movement .. .. .	1	0	
GC. 0142	Clamp Screw for Focussing Movement .. .. .	1	0	
GC. 0143	Lens Clamp Tommy Screw with Tommy Bar .. .. .	3	0	



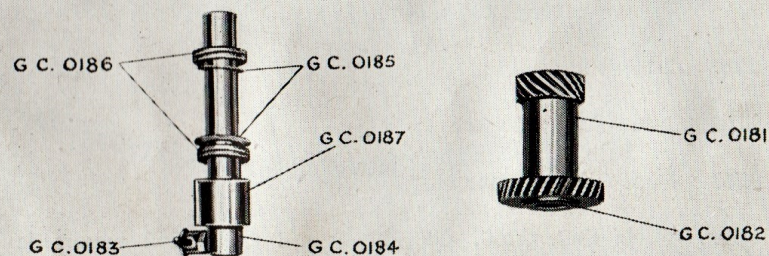
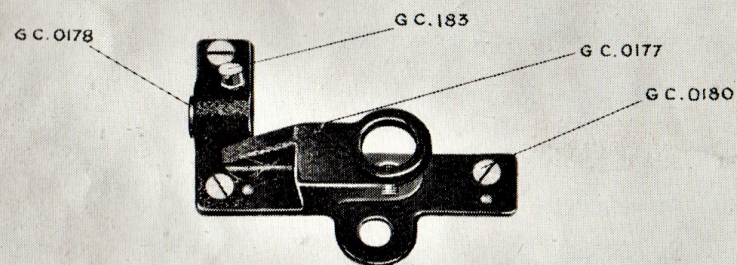
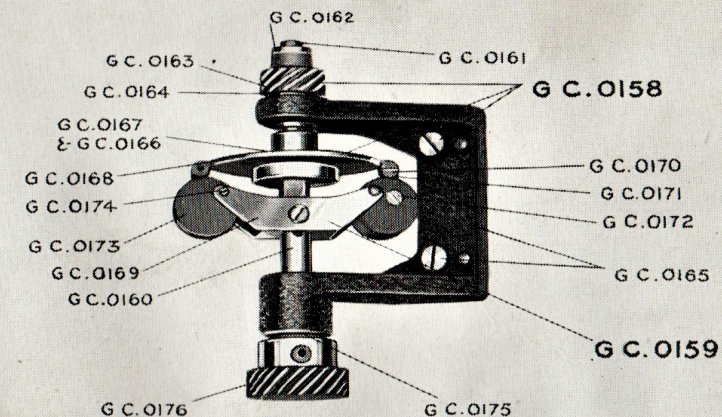


## PILOT LAMP ASSEMBLY

No.	Description	£	s.	d.
GC. 0144	Lampholder and Switch Assembly (less Lamp) .. .. .	2	5	0
GC. 0145	2-Pin Plug with 3 ft. of Flexible Tubing and Wiring (see footnote) .. .. .	18	6	
GC. 0146	Lamp (state Voltage) .. .. .	6	6	
GC. 0147	Lampholder with Three Screws .. .. .	3	0	
GC. 0148	Lampholder Housing Screws (each) .. .. .	2	0	
GC. 0149	Switch with Two Screws .. .. .	8	6	
GC. 0150	2-Pin Socket with Two Screws .. .. .	4	6	
GC. 0151	Switch-housing Screws (each) .. .. .		9	
GC. 0152	2-Pin Plug with Cap (see footnote) .. .. .	4	6	
GC. 0153	Bakelite Cap for 2-Pin Plug (see footnote) .. .. .	2	6	
GC. 0154	Switch Cover Plate (see Plate 1) .. .. .	3	0	
GC. 0155	Switch Cover Plate Screws (Set of Four) (see Plate 1) ..	1	0	
GC. 0260	2-Pin Plug with Flexible Tubing and Wiring (state length of tubing, 20 in. or 36 in.) .. .. .	18	6	
GC. 0261	2-Pin Plug .. .. .	2	0	
GC. 0262	2-Pin Plug Adapter .. .. .	5	0	
GC. 0263	Fuse Box Adapter Nut .. .. .	3	0	

NOTE.—Parts GC. 0260, GC. 0261 and GC. 0262 supersede Part Nos. GC. 0145, GC. 0152 and GC. 0153.





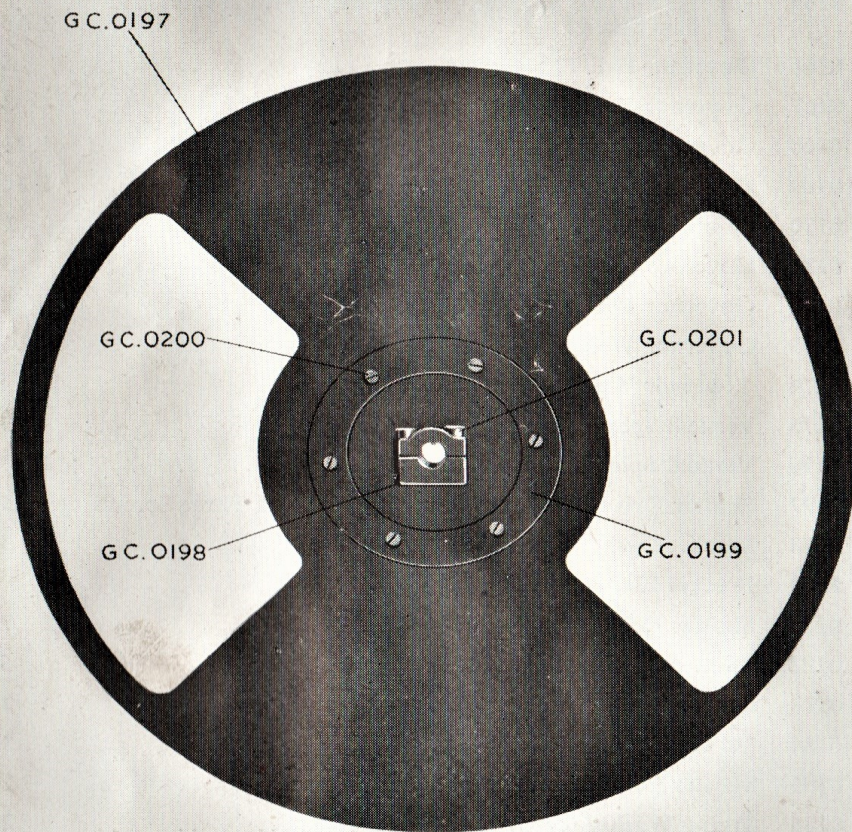
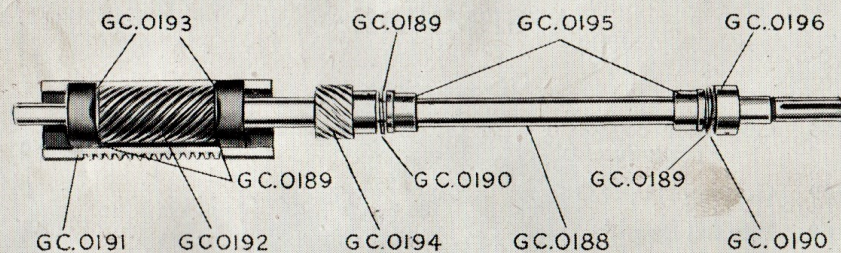
## GOVERNOR AND SHUTTER DRIVE ASSEMBLIES

No.	Description	£	s.	d.
GC. 0158	Governor complete with Gears and Bracket and Two Fixing Screws .. .. .	10	0	0
GC. 0159	Governor Unit Only .. .. .	5	0	0
GC. 0160	Vertical Spindle .. .. .	12	6	
GC. 0161	Vertical Spindle Top Pinion Screw .. .. .			6
GC. 0162	Vertical Spindle Top Pinion Key Washer .. .. .			3 0
GC. 0163	Vertical Spindle Top Pinion .. .. .	1	0	0
GC. 0164	Vertical Spindle Top Bush .. .. .	5	0	
GC. 0165	Vertical Spindle Bracket (casting only) with Bushes and Two Screws .. .. .	1	15	0
GC. 0166	Governor Ball Thrust Cage with Balls .. .. .	6	6	
GC. 0167	Governor Thrust Washers (each) .. .. .			3 0
GC. 0168	Governor Flange .. .. .	1	10	0
GC. 0169	Governor Frame with Grub Screw .. .. .	1	10	0
GC. 0170	Governor Link Top Pivot Screw (each) .. .. .	1	0	
GC. 0171	Governor Link (each) .. .. .	3	0	
GC. 0172	Governor Bottom Pivot Screw (each) .. .. .	2	0	
GC. 0173	Governor Weight (each) .. .. .	6	6	
GC. 0174	Governor Weight Split Pin (each) .. .. .			4
GC. 0175	Vertical Spindle Bottom Bush .. .. .	5	0	
GC. 0176	Vertical Spindle Bottom Gear with Screw .. .. .	1	0	0
GC. 0177	Shutter Drive Bracket with Bush, Oiler and Three Screws .. .. .	1	15	0
GC. 0178	Bracket Bush .. .. .	5	0	
GC. 0180	Bracket Fixing Screws (each) .. .. .			6
GC. 0181	Shutter Drive Double Pinion with Bushes .. .. .	2	7	6
GC. 0182	Shutter Drive Pinion Bushes (each) .. .. .	6	0	
GC. 0183	Oil Cup .. .. .	2	6	
GC. 0184	Oil Cup Adapter .. .. .	3	0	
GC. 0185	Shutter Drive Spindle Flat Washers (each) .. .. .	1	0	
GC. 0186	Spring Washer (each) .. .. .	2	6	
GC. 0187	Shutter Drive Spindle .. .. .	15	0	



# PLATE 10

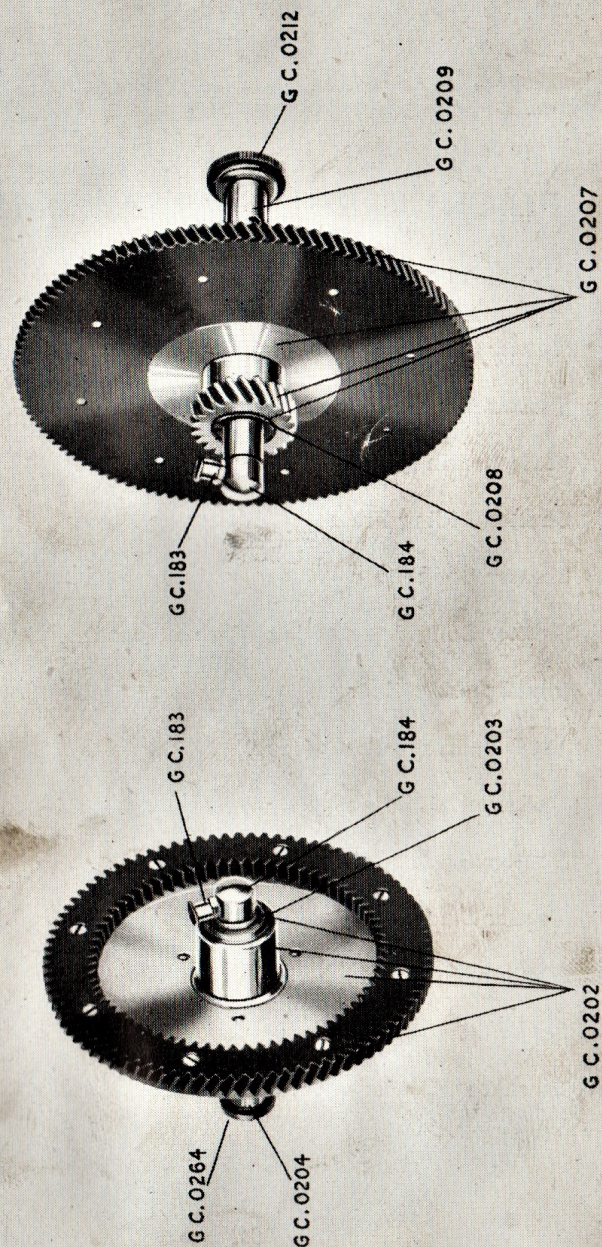
G. C.



## FLICKER SHUTTER ASSEMBLY

No.	Description	£	s.	d.
GC. 0188	Shutter Spindle .. .. .	2	10	0
GC. 0189	Shutter Spindle Flat Washers (each) .. .. .	1	0	
GC. 0190	Main Bearing Spring Washers (each) .. .. .	1	6	
GC. 0191	Shutter Sliding Frame .. .. .	1	7	6
GC. 0192	Shutter Long Gear .. .. .	1	10	0
GC. 0193	Shutter Long Gear Spring Washers (each) .. .. .	2	6	
GC. 0194	Shutter Short Gear .. .. .	1	0	0
GC. 0195	Main Bearing Bushes (each) .. .. .	5	0	
GC. 0196	Collar with Pin .. .. .	2	6	
GC. 0197	Shutter Blade .. .. .	8	6	
GC. 0198	Shutter Blade Boss .. .. .	12	6	
GC. 0199	Shutter Blade Flange .. .. .	5	0	
GC. 0200	Set of Six Flange Screws .. .. .	3	0	
GC. 0201	Shutter Boss Clamp Screws (each) .. .. .	6		



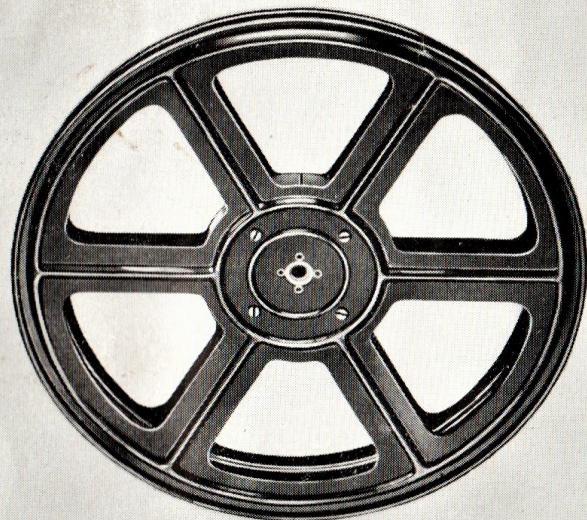
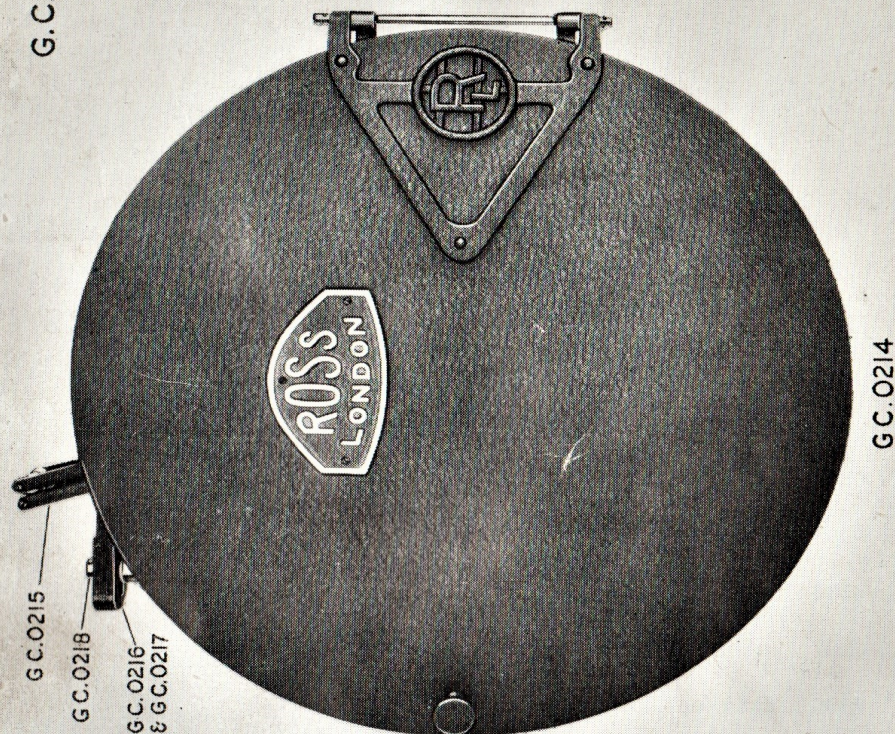


## INTERNAL AND INTERMEDIATE GEARS

6084.  
G.C. M.I.

No.	Description	£	s.	d.
GC. 0202	Internal Gear with Adapter and Bush .. .. .	4	10	0
GC. 0203	Internal Gear Bush .. .. .	5	0	
GC. 0204	Internal Gear Spindle .. .. .	12	6	
GC. 0207	Intermediate Gear and Adapter with Pinion and Bush ..	4	0	0
GC. 0208	Bush for GC. 0207 .. .. .	5	0	
GC. 0209	Intermediate Gear Spindle .. .. .	15	0	
GC. 0183	Oil Cup .. .. .	2	6	
GC. 0184	Adapter .. .. .	3	0	
GC. 0212	Milled Screw .. .. .	2	6	
GC. 0264	Internal Gear Retaining Screw .. .. .	2	6	



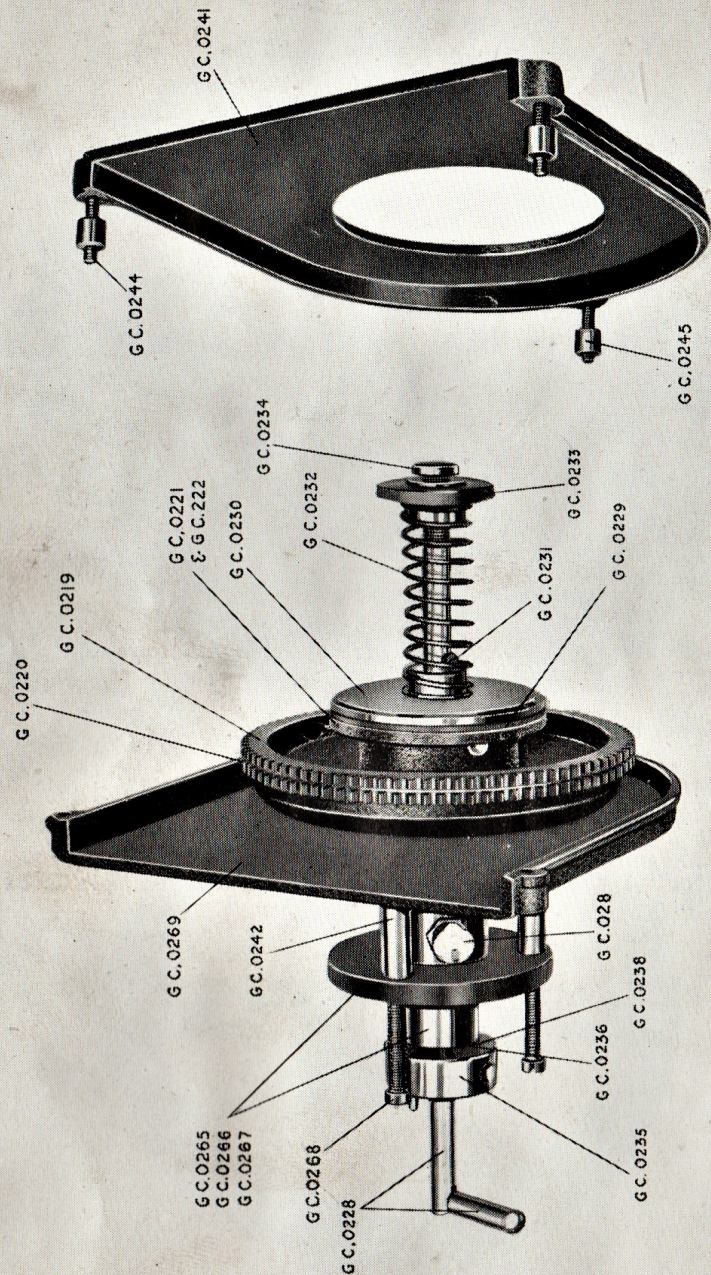


## SPOOLS AND 18-inch BOTTOM SPOOL BOXES

No.	Description	£	s.	d.
GC. 0213	Spool, 14 $\frac{3}{4}$ -in. diameter .. .. .	1	1	0
GC. 0214*	Spool Box only, complete with Film Trap .. .. .	8	0	0
GC. 0215	Film Trap complete with Six Screws .. .. .	3	10	0
GC. 0216*	Bottom Arm Casting with Three Spool Box Screws and Two Fixing Screws .. .. .	2	10	0
GC. 0217	Spool Box Fixing Screws (each) .. .. .			6
GC. 0218*	Arm Fixing Screws (each) .. .. .			6

\* State name and type of Sound Head when ordering. For other Spool Box Parts see list for "18-in. Top Spool Box," Plate 2, and for Spindle Parts, see Plates 13 and 14.





FOR OTHER BOTTOM SPOOL BOX SPINDLE PARTS SEE PLATE 14.

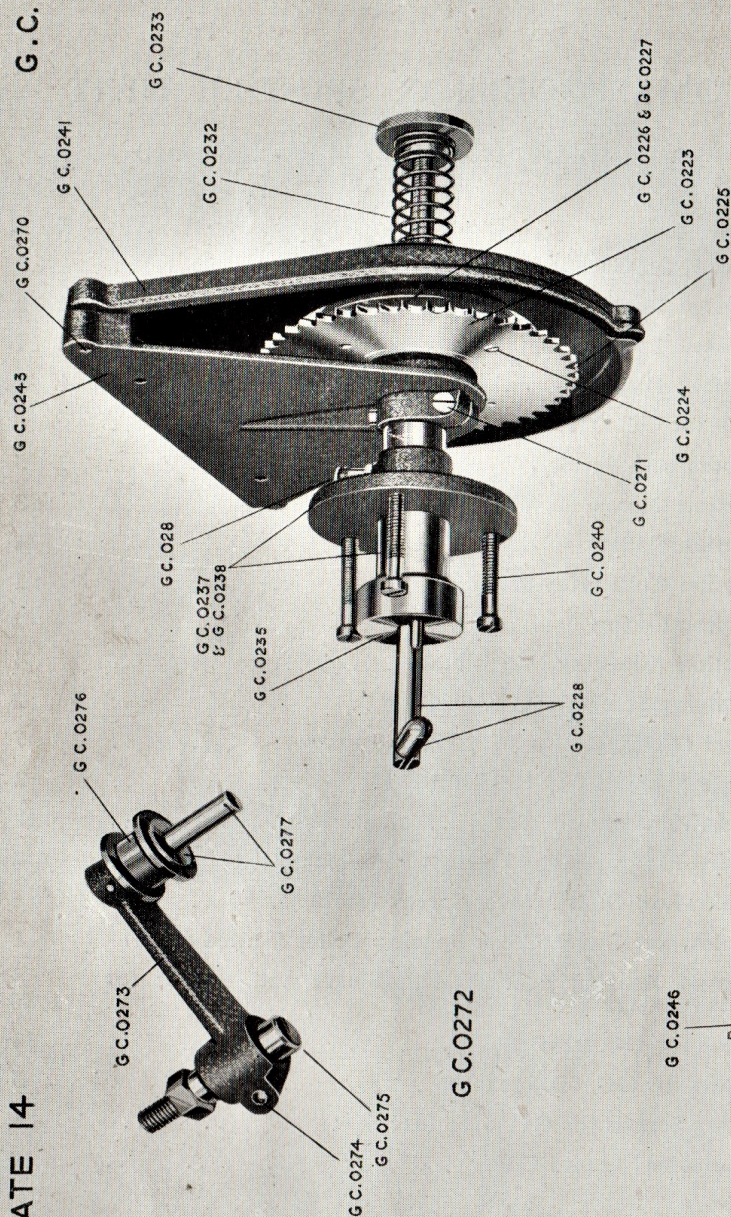
## BOTTOM SPOOL BOX SPINDLE UNIT

(State name and type of Sound Head when ordering.)

No.	Description	£	s.	d.
GC. 028	Bracket Oil Cup .. .. .	2	6	
GC. 0219	Inverted Tooth Chainwheel.. .. .	2	10	0
GC. 0220	Inverted Tooth Chain (state length) .. .. .	2	10	0
GC. 0221	Inverted Tooth Chainwheel Driving Plate with Bush .. .. .	1	0	0
GC. 0222	Bush for GC. 221 .. .. .	5	0	
GC. 0228	Spindle with Neck .. .. .	1	5	0
GC. 0229	Friction Disc .. .. .	3	6	
GC. 0230	Friction Collar .. .. .	10	0	
GC. 0231	Friction Collar Key Screw .. .. .	1	0	
GC. 0232	Friction Spring .. .. .	2	6	
GC. 0233	Friction Adjusting Milled Nut .. .. .	4	6	
GC. 0234	Retaining Screw for GC. 0233 .. .. .	2	6	
GC. 0235	Spool Driving Collar with Pin and Screw .. .. .	7	6	
GC. 0236	Washer behind GC. 0235 if fitted .. .. .	2	6	
GC. 0241	Chainwheel Guard .. .. .	12	6	
GC. 0242	Guard Mounting Rods with Screws (each) .. .. .	2	0	
GC. 0244	Chainwheel Guard Cover Screws (each) .. .. .	6		
GC. 0245	Chainwheel Guard Cover Spacing Collar if fitted (each) .. .. .	1	0	
GC. 0265	Flanged Bearing Bracket with Sleeve and Bushes for GC. 0228 .. .. .	1	10	0
GC. 0266	Sleeve for GC. 0265 .. .. .	10	0	
GC. 0267	Bushes for GC. 0266 (each) .. .. .	5	0	
GC. 0268	Fixing Screws for GC. 0265 (each) .. .. .	1	0	
GC. 0269	Chainwheel Guard Cover .. .. .	10	0	

(For other Bottom Spool Box Spindle Parts see Plate 14.)





FOR OTHER BOTTOM SPOOL BOX SPINDLE PARTS SEE PLATE 13.

## BOTTOM SPOOL BOX SPINDLE UNIT

(State name and type of Sound Head when ordering.)

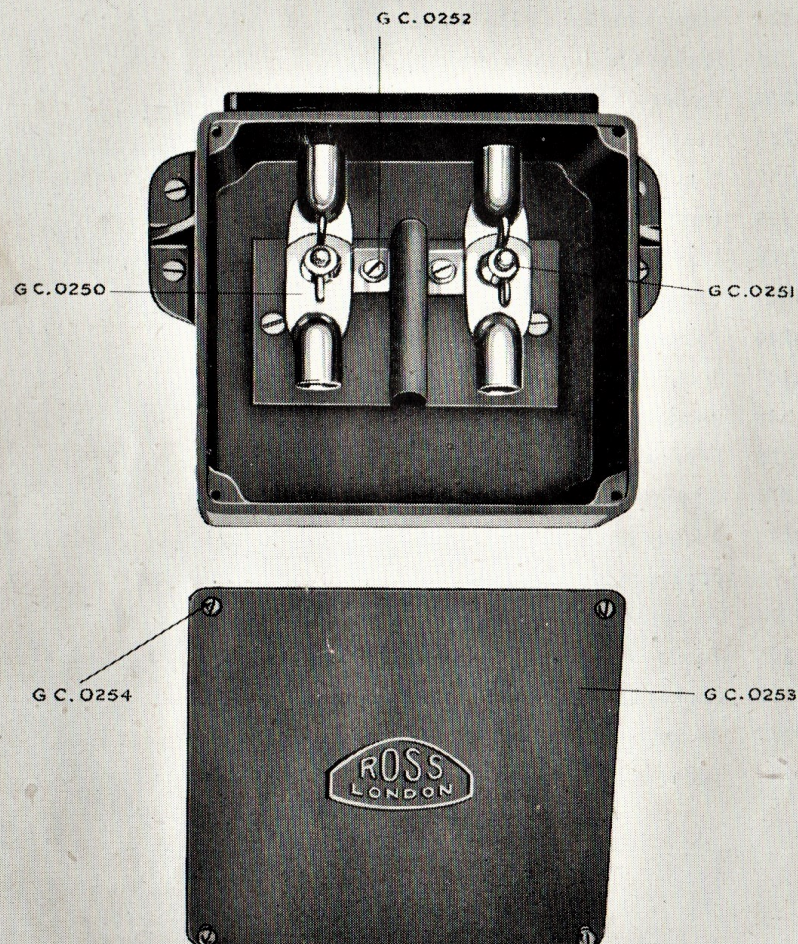
No.	Description	£	s.	d.
GC. 0223	Roller Chainwheel .. .. .	17	6	
GC. 0224	Screws for GC. 0223 (each) .. .. .		6	
GC. 0225	Roller Chain (state length) .. .. .			<i>see below</i>
GC. 0226	Roller Chainwheel Adapter with Bush .. .. .	1	0	0
GC. 0227	Bush for GC. 0226 .. .. .	5	0	
GC. 0237	Flanged Bearing Bracket with Two Bushes for GC. 0228	1	5	0
GC. 0238	Bushes for GC. 0237 (each) .. .. .	5	0	
GC. 0240	Fixing Screws for GC. 0237 (each) .. .. .		6	
GC. 0243	Chainwheel Guard Cover .. .. .	10	0	
GC. 0246	Jockey Chainwheel on Chainguard if fitted .. .. .	7	6	
GC. 0247	Jockey Chainwheel Washer .. .. .	1	0	
GC. 0248	Jockey Chainwheel Pivot and Nut .. .. .	4	0	
GC. 0270	Chainwheel Guard Cover Screws (each) .. .. .		6	
GC. 0271	Chainwheel Guard Cover Clamp Screw .. .. .		6	
GC. 0272	Jockey Arm complete with Stud and Pulley .. .. .	2	10	0
GC. 0273	Jockey Arm with Pulley Spindle and Clamp Screw .. .. .	1	5	0
GC. 0274	Jockey Arm Clamp Screw .. .. .		6	
GC. 0275	Jockey Arm Stud .. .. .	3	6	
GC. 0276	Jockey Pulley with Bush and Grubscrew .. .. .	10	0	
GC. 0277	Jockey Pulley Washer and Split Pin .. .. .	2	0	

(For other Bottom Spool Box Spindle Parts see Plate 13.)

## STANDARD TAKE UP CHAINS

GC. 0255	Roller Chain 116 Pins (W.E. 206A Sound Head) .. .. .	1	0	0
GC. 0256	Roller Chain 137 pins (R.C.A. PS. 24, M.I. 1041 and M.I. 9001 Sound Heads) .. .. .	1	5	0
GC. 0257	Roller Chain 106 pins (B.A.F. P.T.I. Sound Head) .. .. .	1	0	0
GC. 0338	Roller Chain 142 pins (R.C.A. M.I. 9031 Sound Head) .. .. .	1	7	6



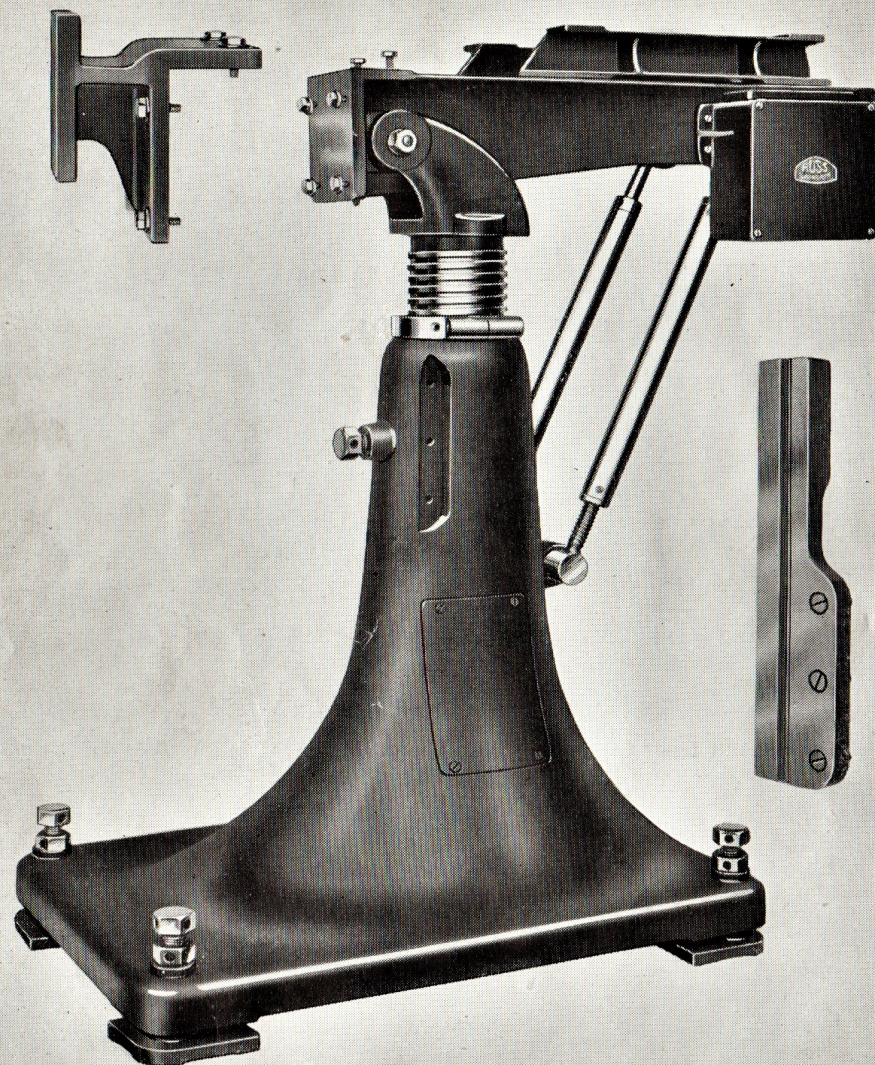


G.C. 0249

## CABLE JUNCTION BOX

No.	Description	£	s.	d.
GC. 0249	Junction Box complete with Cable Adapters .. .. .	3	2	6
GC. 0250	Cable Adapters (each) .. .. .	1	6	
GC. 0251	Wing Nuts (each) .. .. .	1	0	
GC. 0252	Auto Feed Terminal Screw with Washer (each) .. .. .	1	6	
GC. 0253	Cover .. .. .	10	6	
GC. 0254	Set of Four Cover Screws .. .. .	1	6	





# GC. 0278 STAND COMPLETE WITH ARC LAMP SUPPORTS AND JUNCTION BOX

Price .. £39 4s.

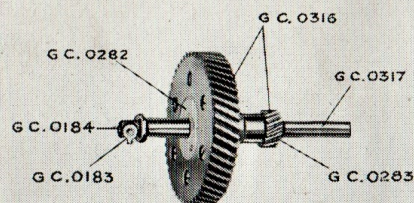
This Stand has been specially designed for interchangeability of Sound Heads of Standard Systems. A series of Adapters have been designed for this purpose, one of which is illustrated. These can be supplied as extras at .. .. £3 15s.

A motor Bracket Adapter as illustrated can be supplied extra if required at .. .. £2 10s.

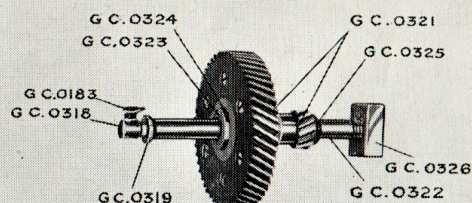


# PLATE 17

G. C.



G C. 0315-TYPE A



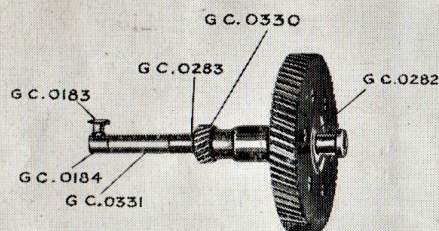
G C. 0320-TYPE B.



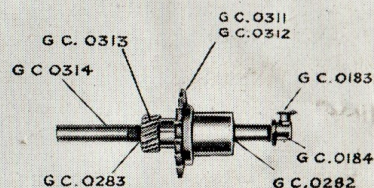
G C. 0328



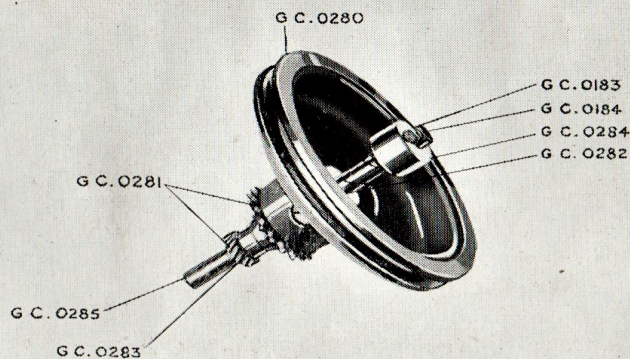
G C. 0327



G C. 0329



G C. 0310



G C. 0279

## ADAPTATION PARTS

FOR R.C.A. M.I. 1041, M.I. 9001 and M.I. 9031 SOUNDHEADS

(NOTE : Two Types of Drive Spindle Assemblies.)

### TYPE A.

No.	Description	£	s.	d.
GC. 0183	Oil Cup .. .. .	2	6	
GC. 0184	Adapter .. .. .	3	0	
GC. 0282	Shouldered Bush for GC. 0316 .. .. .	5	0	
GC. 0283	Plain Bush for GC. 0316 .. .. .	5	0	
GC. 0315	Drive Spindle Assembly complete (superseded by GC. 0320) .. .. .	4	15	0
GC. 0316	Gear with Pinion and Two Bushes .. .. .	3	0	0
GC. 0317	Spindle .. .. .	15	0	

### TYPE B.

GC. 0183	Oil Cup .. .. .	2	6	
GC. 0318	Adapter .. .. .	2	6	
GC. 0319	Adapter Nut .. .. .	1	6	
GC. 0320	Drive Spindle Assembly complete .. .. .	5	0	0
GC. 0321	Gear with Pinion .. .. .	3	0	0
GC. 0322	Spindle .. .. .	15	0	
GC. 0323	Collar .. .. .	5	0	
GC. 0324	Bearing Washer .. .. .	2	6	
GC. 0325	Washer .. .. .	2	6	
GC. 0326	Spindle Nut .. .. .	7	6	
GC. 0327	Take-up Chainwheel for Soundhead .. .. .	12	0	
GC. 0328	Spacing Collar for GC. 0327 .. .. .	7	6	

### DRIVE SPINDLE PARTS FOR W.E. T.A. 7400 SOUNDHEAD.

GC. 0183	Oil Cup .. .. .	2	6	
GC. 0184	Adapter .. .. .	3	0	
GC. 0282	Shouldered Bush for GC. 0330 .. .. .	5	0	
GC. 0283	Plain Bush for GC. 0330 .. .. .	5	0	
GC. 0329	Drive Spindle Assembly complete .. .. .	4	15	0
GC. 0330	Gear with Pinion and Two Bushes .. .. .	3	10	0
GC. 0331	Spindle .. .. .	15	0	

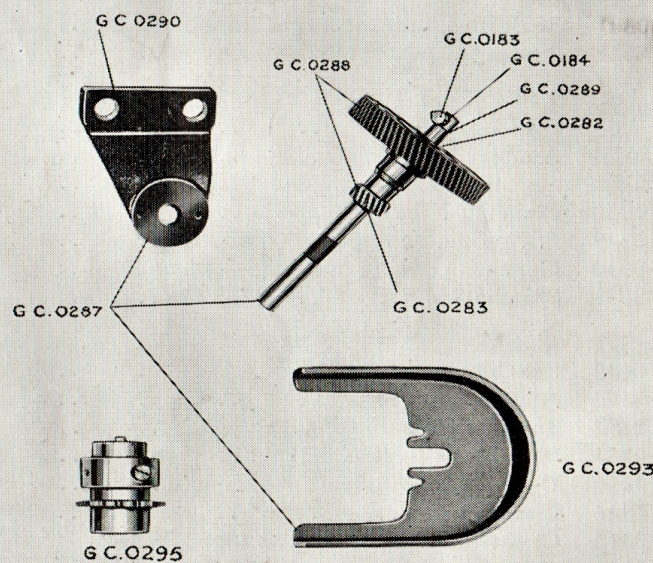
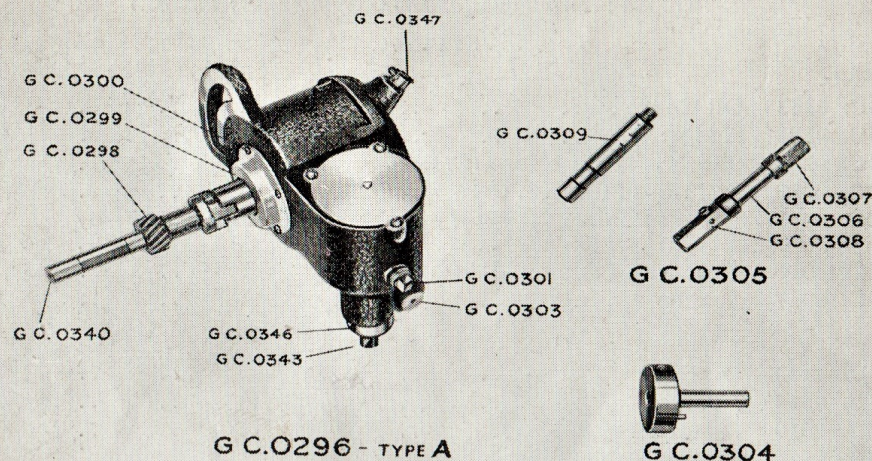
### DRIVE SPINDLE PARTS FOR B.A.F. P.T.1 SOUNDHEAD

GC. 0183	Oil Cup .. .. .	2	6	
GC. 0184	Adapter .. .. .	3	0	
GC. 0282	Shouldered Bush for GC. 0313 .. .. .	5	0	
GC. 0283	Plain Bush for GC. 0313 .. .. .	5	0	
GC. 0310	Drive Spindle Assembly complete .. .. .	4	0	0
GC. 0311	Chainwheel .. .. .	12	0	
GC. 0312	Chainwheel Fixing Screws (Set of Three) .. .. .	1	6	
GC. 0313	Chainwheel Adapter with Pinion and Bushes .. .. .	2	0	0
GC. 0314	Spindle .. .. .	15	0	



# PLATE 18

G. C.



## DRIVE SPINDLE PARTS FOR SILENT PROJECTOR

No.	Description	£	s.	d.
GC. 0183	Oil Cup .. .. .	2	6	
GC. 0184	Adapter .. .. .	3	0	
GC. 0279	Drive Spindle Assembly complete .. .. .	5	5	0
GC. 0280	Pulley .. .. .	1	5	0
GC. 0281	Chainwheel with Pinion and Two Bushes .. .. .	2	0	0
GC. 0282	Shouldered Bush for GC. 0281 .. .. .	5	0	
GC. 0283	Plain Bush for GC. 0281 .. .. .	5	0	
GC. 0284	Collar with Screw .. .. .	7	6	
GC. 0285	Spindle .. .. .	15	0	
GC. 0286	Motor Drive Link Belting (state length) .. .. . per ft.	2	6	

## ADAPTATION PARTS

### FOR W.E. UNIVERSAL BASE SOUNDHEAD

(NOTE : Two Types of Drive Assemblies.)

#### TYPE A (as illustrated)

No.	Description	£	s.	d.
GC. 0296	Drive Unit complete with Pinion and Fixing Screws (superseded by GC. 0348) .. .. .	25	0	0
GC. 0297	Fixing Screws and Washers (each) .. .. .	1	0	
GC. 0298	Pinion .. .. .	2	5	0
GC. 0299	Oil Seal .. .. .	5	0	
GC. 0300	Oil Seal Fixing Screws (Set of Four) .. .. .	2	0	
GC. 0301	Drain Plug .. .. .	3	0	
GC. 0302	Packing for Oil Chamber .. .. .	1	0	
GC. 0303	Cap for Oil Chamber .. .. .	2	6	
GC. 0340	Horizontal Spindle .. .. .	1	0	0
GC. 0341	Horizontal Spindle Gear .. .. .	1	10	0
GC. 0342	Horizontal Spindle Thrust Bearing .. .. .	10	0	
GC. 0343	Vertical Spindle .. .. .	15	0	
GC. 0344	Vertical Spindle Gear and Pin .. .. .	1	10	0
GC. 0345	Vertical Spindle Thrust Bearing .. .. .	6	0	
GC. 0346	Vertical Spindle Plain Collar and Pin .. .. .	7	6	
GC. 0347	Oil Cup .. .. .	2	6	

#### TYPE B

GC. 0348	Drive Unit complete with Pinion and Fixing Screws .. .. .	25	0	0
GC. 0297	Fixing Screws and Washers (each) .. .. .	1	0	
GC. 0298	Pinion .. .. .	2	5	0
GC. 0299	Oil Seal .. .. .	5	0	
GC. 0300	Oil Seal Fixing Screws (Set of Four) .. .. .	2	0	
GC. 0301	Drain Plug .. .. .	3	0	
GC. 0340	Horizontal Spindle .. .. .	1	0	0
GC. 0341	Horizontal Spindle Gear .. .. .	1	10	0



No.	Description	£	s.	d.
GC. 0342	Horizontal Spindle Thrust Bearing .. .. .	10	0	
GC. 0344	Vertical Spindle Gear and Pin .. .. .	1	10	0
GC. 0345	Vertical Spindle Thrust Bearing .. .. .	6	0	
GC. 0347	Oil Cup .. .. .	2	6	
GC. 0349	Vertical Spindle .. .. .	15	0	
GC. 0350	Vertical Spindle Screwed Collar and Grubscrews ..	9	0	
GC. 0351	Vertical Spindle Oil Seal .. .. .	5	0	
GC. 0352	Vertical Spindle Upper Ball Bearing .. .. .	7	6	
GC. 0353	Vertical Spindle Lower Ball Bearing .. .. .	7	6	
GC. 0354	Filler Cap .. .. .	5	0	

GC. 0304	Take-up Adapter for $\frac{3}{8}$ -in. Bore Spools .. .. .	10	0	
GC. 0305	Film Guide Roller Assembly, complete .. .. .	1	2	6
GC. 0306	Guide Roller .. .. .	7	0	
GC. 0307	Guide Roller Spindle .. .. .	4	6	
GC. 0308	Guide Roller Spindle Nut .. .. .	4	6	
GC. 0309	Guide Roller Stud .. .. .	5	0	

#### ADAPTATION PARTS FOR W.E. 206A SOUNDHEADS

GC. 0183	Oil Cup .. .. .	2	6	
GC. 0184	Adapter .. .. .	3	0	
GC. 0282	Shouldered Bush for GC. 0288 .. .. .	5	0	
GC. 0283	Plain Bush for GC. 0288 .. .. .	5	0	
GC. 0287	Drive Spindle Assembly complete with Bracket and Guard .. .. .	7	0	0
GC. 0288	Gear with Pinion and Two Bushes .. .. .	3	0	0
GC. 0289	Spindle .. .. .	15	0	
GC. 0290	Bracket with Spindle Set Screw .. .. .	1	5	0
GC. 0291	Spindle Set Screw (not shown) .. .. .	1	6	
GC. 0292	Bracket Fixing Screws and Washers (each) ..	1	0	
GC. 0293	Guard .. .. .	12	6	
GC. 0294	Guard Fixing Screws and Washers (each) ..		6	
GC. 0295	Take-up Chainwheel for Soundhead, with Screws ..	2	2	6

#### MISCELLANEOUS ACCESSORIES (Not illustrated)

GC. 0332	Sprocket Remover .. .. .	15	0	
GC. 0333	Handle (for Threading Film) .. .. .	1	5	0
GC. 0334	Key for $\frac{5}{16}$ -in. Grubscrews .. .. .	1	0	
GC. 0335	Key for $\frac{1}{4}$ -in. Grubscrews .. .. .	1	0	
GC. 0336	Ross Oil No. 1 (1 Pint) .. .. .	2	6	
GC. 0337	Ross Grease No. 2 (4 ozs.) .. .. .	1	3	
GC.	Ross Oil No. 3 (1 Pint) .. .. .	2	6	

## SPECIAL INSTRUCTIONS FOR REMOVING AND REPLACING THE CROSS BOX ASSEMBLY

When it is required to reverse or change the intermittent sprocket the cross box should be completely withdrawn, as it will be found to greatly facilitate this operation.

### TO REMOVE CROSS BOX

- (1) Set racking to central position, and the red arrow on the ghost adjustment screw to its red index line.
- (2) Turn to the gearing side of the machine and remove the intermediate gear by unscrewing the centre screw.
- (3) Loosen the sprocket stripper screws (beside the intermittent sprocket) so that the stripper falls clear of the sprocket teeth.
- (4) The cross box is held in position by a retaining nut, situated below the intermittent sprocket. This nut should be removed with the aid of a large screwdriver. If the cross box is tight in its bearing, and cannot easily be pulled out by hand, the retaining screw should be carefully tapped with the handle of a screwdriver to assist removal.
- (5) The two screws retaining the intermittent sprocket can now be removed and the sprocket withdrawn from the cross box. Every care should be taken to avoid damage to the spindle and the cross box during this operation and when fitting the new sprocket.

NOTE.—A special tool for withdrawing and inserting intermittent sprockets can be supplied, and its use will greatly facilitate this work.

### TO REPLACE CROSS BOX

- (1) Before attempting to replace cross box, slacken off screw securing outside bearing bush of the intermittent sprocket, and ease the bush outwards so that the sprocket does not thrust against it when replacing cross box.
- (2) Insert cross box into the projector, replace and tighten retaining nut.
- (3) Readjust the outside bearing bush up to the intermittent sprocket, leaving a very slight amount of end play for the latter. Tighten the bearing clamping screw.
- (4) Tighten up the intermittent sprocket stripper screws.
- (5) Set red line on shutter spindle gear opposite to red line on adjacent shutter spindle bearing.
- (6) Set red line on flywheel opposite to red dot between filler screws on cross box.
- (7) Replace intermediate gear and tighten centre screw.
- (8) Check lining up of gears by rotating the mechanism a few revolutions in the normal running direction and see that the red lines on shutter pinion and flywheel again line up with their respective marks.



## SPECIAL INSTRUCTIONS FOR REMOVING AND REPLACING THE RACKING AND GHOST ADJUSTMENT

When it is necessary to remove this unit for any reason, care must be taken when reassembling to ensure the correct positioning of the unit relative to the cross box and to the shutter spindle sliding pinion. It will be found to be most convenient to use the central position in each case for this purpose.

### TO REMOVE UNIT

- (1) Set racking to central position, and the red arrow on the ghost adjustment screw to its red index line.
- (2) The unit is held in position by a cheese-head screw situated in the boss on the film side of the main frame. This screw should be removed to permit the complete unit to be withdrawn.

IMPORTANT.—The machine must not be run without the Ghost and Racking unit in position as damage will occur to the shutter sliding pinion and the shutter driving pinion.

It will be found convenient to maintain all gearing in the position as left when the unit was withdrawn.

If the relative positions of shutter sliding pinion and cross box have become moved before insertion of the new unit, set to instructions Nos. 4 and 5 below.

### TO REPLACE UNIT

- (1) Before replacing or fitting a new unit, the indicator lines at the handle end of the unit must be lined up and set to their central position, i.e. at right angles to the tapped hole for the securing screw.
- (2) The unit may now be inserted, care being taken to ensure that the retaining screw holes are in line with each other to avoid having to rotate the unit to line up these holes and thus upsetting the central positions of the cross box and shutter pinion relative to the index marks on the unit.
- (3) Replace and tighten the securing screw.
- (4) Check that the shutter spindle sliding pinion travels evenly each side of its driving pinion, and that the washers at each end of the sliding pinion do not touch the driving pinion when the racking handle and the ghost adjustment screw are rotated to their maximum positions in both directions.

IMPORTANT.—If it is found that the washers do touch the driving pinion, the mechanism must on no account be rotated as considerable damage will be done to the hardened washers and driving pinion. The racking and ghost adjustment unit should again be removed, and the sliding pinion set to its central position, and the cross box turned to the centre of its racking travel. The racking and ghost adjustment unit should now be lined up and replaced, and lining up checked as before to avoid damage.

- (5) The racking movement should now be checked by threading up a length of film and checking that a rack of one frame is obtained when racking handle is rotated from one extreme position to the other. If one frame is not obtained, the cross box was not in its central position, and the above procedure should be repeated until the correct teeth of the pinions are in engagement.

## CARE AND MAINTENANCE OF THE ROSS "G.C." PROJECTOR

Every projectionist will realise that the projector demands the utmost care if it is to render a good picture and give long and satisfactory service.

Cleanliness and sufficiency of lubrication are the two first considerations and not until these things are attended to can the machine be expected to give the service demanded of it.

Any adjustment which it becomes necessary to make should receive most careful consideration. If there is any doubt about the matter the services of the makers should be called upon.

Ross Limited are always glad to render assistance to anyone with a Ross installation in their care. It is by such co-operation that they have gained the high reputation which they enjoy. Become familiar with your machine and tend it carefully. Every night, or at times when not in use, cover up the whole machine, so as to prevent, as far as possible, the settling of dust upon the working parts.

Before the daily run the machine should be thoroughly wiped over with a clean cloth to remove all surplus oil and dust which is bound to collect during the course of the previous day's run. Particular attention should be paid to the traps of the spool boxes where an accumulation of dust is apt to scratch the emulsion surface of the film.

### LUBRICATION OF BEARINGS

All rollers upon which the film bears should be kept clean and should revolve freely. If oil is necessary, use only the Ross No. 3 Oil which is a thin bearing oil.

It is obvious that if a roller is allowed to clog and remain stationary for any length of time, a flat will develop upon it due to the constant friction of the film over the portion on which it bears.

The mechanism has been thoroughly tested and "run in" at the factory, but like all new mechanisms will require a little longer than your old projector to warm up each morning until this newness wears off.

Regular oiling is essential for efficient operation. The use of a proper grade oil with the correct degree of viscosity cannot be over emphasised, and on no account should any other grade than that supplied by the makers be used.

The oil supplied by Ross Limited has been carefully tested and the right degree of refinement obtained for its use on the Ross Projector.

Ross No. 3 oil should be applied to all bearings daily. It should be done systematically, starting from the top spool box spindle bearing down to the take-up spindle, so that no bearing is missed.

### CROSS BOX AND GEAR TEETH

Ross No. 1 oil is a heavier grade than No. 3 and is intended for use in the cross box and on the gear teeth (except shutter spiral gears which need No. 2 grease, as these are subject to considerable rubbing friction). The supply of oil to the Maltese cross box is of vital importance as this houses the heart of the projector which simply must receive an efficient and regular supply.



Both cross box filler screws should be removed when topping up with oil. The cross box should be completely filled.

NOTE.—After the first week of running the cross box should be drained of oil, by releasing the drain plug and the filler screws, and recharged with fresh oil. This makes certain that the supply of oil in the box is clean.

In addition to these precautions regarding the lubrication of the working parts of the projector, care should be exercised in keeping the surplus oil wiped off as dust amalgamating with surplus oil is apt to find its way into the various bearings, to which damage will result by abrasion and possible seizure.

## GEAR BOXES AND SHUTTER GEARS

Ross No. 2 grease is intended primarily for use on shutter spiral gears and in gear boxes such as are fitted when projectors are used on the Western Electric Company's Universal Base Sound Equipment.

## GENERAL

The film sprockets should be kept free from dust, wax, or small particles of emulsion which are known to interfere with the steadiness of the picture if allowed to accumulate on the intermittent sprocket. This can best be done by the frequent application of a stiff toothbrush to the teeth. Considerable trouble is sometimes experienced with the accumulation of emulsion on the gate pressure springs and the gate film track surfaces. This invariably happens when new copies are being run and even in cases where these are previously waxed the deposit appears when most of the wax has been worn off.

Emulsion deposit is best removed by the use of a copper coin or special tool made of brass, the edges of which are kept reasonably sharp.

The application of water to an exceptionally tenacious deposit of emulsion has the effect of softening the same, so that a damp cloth will be found to be most effective in keeping the gate free from deposit. The pressure springs and gate surfaces should be rubbed over with a little tallow or wax after such operation, so as to keep down the formation of deposit as much as possible. An occasional minute inspection of the bearing surfaces of the sprockets should be made, especially those of the intermittent, as these are heavily taxed by doing the work of pulling the film through the gate against the action of the pressure springs. When the sprocket teeth show signs of hooking or under-cutting this is a clear case for replacement, but it should be remembered that the Ross intermittent sprocket is reversible, thus giving double life. The Ross top and bottom sprockets can be interchanged.

## GATE TENSION

The amount of spring tension on the gate is a point which in many cases does not obtain the attention it deserves. The first duty of the skates is to bring the film to a dead stop in front of the gate aperture when the intermittent stops, and their second duty is to hold the film perfectly flat over the gate aperture during this period of rest.

If the tension on the skates is too weak it will be seen that the rapidity with which the film is drawn through the gate will cause it to "overshoot" the aperture or, in other words, the film will not come to rest at the exact moment when the intermittent stops, but will continue slightly after the sprocket stops. The effect is a very unsteady or dancing motion upon the screen.

Too much tension has the effect of causing unnecessary wear on the intermittent mechanism and heavy wear upon the perforations in the film. It is possible even for the perforations to be split, thus making it impossible for a steady picture to be obtained from that particular copy.

Efficient means of adjustment are provided on the Ross machine and it is considered advisable always to run with the *least possible amount of tension* consistent with a steady result on the screen.

Under no circumstances apply the full amount of tension if the film continues to show unsteadiness. It is then advisable to look for another cause, e.g., bad film or even a worn or damaged intermittent sprocket or cross box. The Ross Service Engineer should be consulted.

The sprocket rollers on the Ross projector are adjusted so as to allow two thicknesses of film to pass freely. This adjustment should always be maintained and frequent examination made to determine that the rollers revolve freely.

## FILM TAKE-UP

The take-up mechanism is a part which requires careful attention if it is to be expected to function perfectly. Oil must not be allowed to get on the friction plates and friction washer. This results in a jerky movement to the action of the take-up at the commencement of a reel and possible failure to carry the full load of film towards the end of the reel.

The spring tension of the take-up mechanism has also a bearing upon this matter and should be adjusted so that it allows a complete reel to be wound on to the spool without lag towards the end when the spool is becoming fully loaded.

It will be appreciated that jerkiness of movement in the first place and lag in the second place will be harmful to the film by dragging it over the lower sprocket. This, however, can be avoided in Ross take-up by careful attention to the above details.

A point well worth bearing in mind is that with all types of take-up it is advisable to rotate the spool when starting up the machine, to take up all slack film so that film snatch is avoided.

It is as well also to watch for slack film between the top sprocket and the top spool before commencing to run the machine and so again avoid film damage due to snatch.

## THE OPTICAL SYSTEM

The cleaning of the optical system is an operation which should be executed with the greatest of care.

Consider first the mirror of the arc lamp; this is best cleaned by complete removal of the mirror from the mirror holder. The fine carbon dust should be blown from the surface and the backing where it will be found to have collected. This operation should be done with the mirror held downwards so that the dust will tend to fall away from the glass surfaces. The dust can be removed by the use of a very soft camel hair brush.

When this is done the mirror can be rubbed gently with a clean worn piece of cambric soaked in a solution of industrial alcohol, to which an equal quantity of water has been added. This will remove all surface deposit and will not evaporate too quickly, thus allowing a final polish to be given by a further piece of well-washed cambric.



With regard to the projection lens, no dust should be allowed to remain on the lens surface and fingermarks should be avoided as much as possible. It is surprising how dust, if allowed to collect on a lens, has the effect of dispersing and absorbing the light in its passage to the screen. The lens barrels are dust-proof and it will be seldom, if ever, necessary to remove the lens components for the purpose of cleaning the inner surfaces.

Never, if it can be avoided, endeavour to unscrew the lens components, as these are carefully adjusted before being sent out from the works. If, however, it should become necessary, great care should be taken to note the manner in which the components are fitted in, so that they can be replaced in the correct manner. Do not use tissue on any account, or even silk, for cleaning. The best material has been found to be old pieces of cambric which have been well washed. This should be kept in a dry place and free from dust.

*Coated Projection Lenses* require particular care during cleaning. If the lenses are greasy or smeared it is permissible to slightly moisten the soft linen with undiluted industrial alcohol. With coated lenses, however, the linen must be soft and well washed and no other wetting agent than mentioned above should be used. The cloth should be moistened but not wet.

Cover your lenses when not in use. They are valuable optical instruments and this little tip will save your lenses a great deal in the long run.

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*Ross Cinematograph equipment is sold only through accredited Ross agents.*

*The addresses of those supplying in the United Kingdom are listed on page 47.*

*All prices quoted are nett prices to the user in the United Kingdom and ex-works for export.*

*All spare parts are covered by the Ross Guarantee issued with the original machine against defective material or workmanship.*



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