

SERVICE MANUAL

AND

PARTS LIST

FOR

*Super
Standard*

PROJECTORS

THE

STANDARD PROJECTOR COMPANY

34 DUNORLAN ROAD AND ACKLAND STREET
EDWARDSTOWN
SOUTH AUSTRALIA



Distributors for Australia and Overseas

R.C.A. OF AUSTRALIA PTY. LTD.

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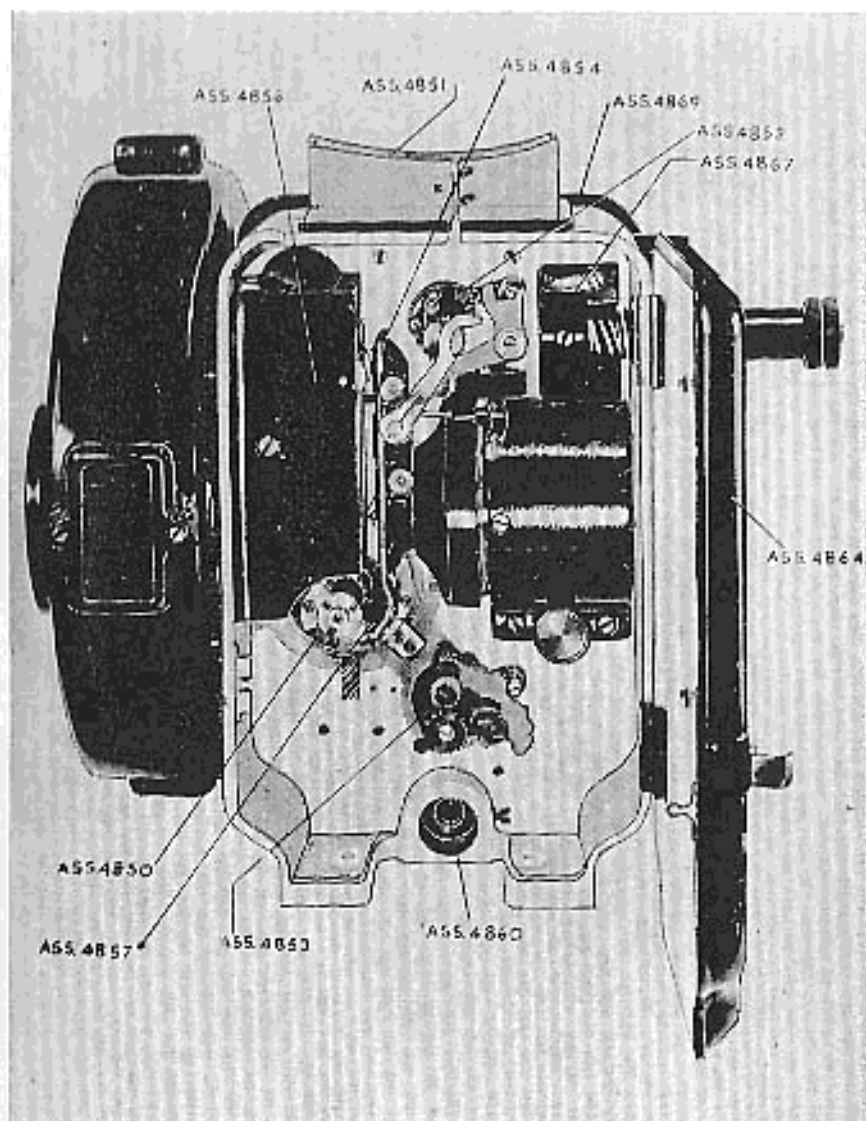
Foreword

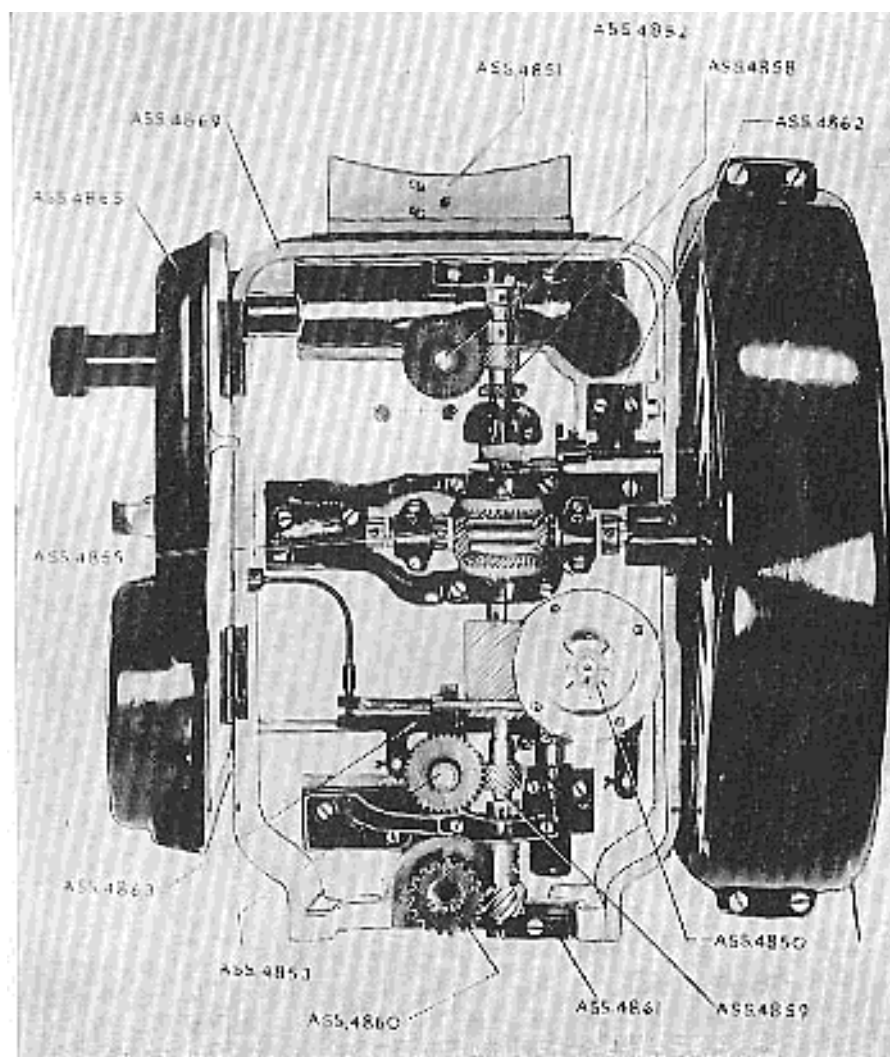
The projection of motion pictures has developed into an exacting science, to which laboratories have devoted considerable time and effort.

It is conceded that the modern projector of today must function within limits unknown in the history of motion pictures.

The Super Standard Projector has been developed from the knowledge and standards of the Society of Motion Picture and Television Engineers of America, and when operated under the conditions set out herein, this Projector will give many years of satisfactory service.







ASSEMBLIES

- 4161 Projector complete
- 4850 Intermittent Movement 90° complete
- 4851 Film Trap complete
- 4852 Upper Sprocket Bearing Assembly complete
- 4853 Lower Sprocket Bearing Assembly complete
- 4854 Moveable Gate Assembly complete
- 4855 Shutter Shaft Assembly complete
- 4856 Water-cooled Gate Assembly complete
- 4857 Film Guide Assembly complete
- 4858 Upper Vertical Shaft Assembly complete
- 4859 Lower Vertical Shaft Assembly complete
- 4860 Main Drive Assembly complete
- 4861 Thrust Block Assembly complete
- 4862 Automatic Cut-off complete
- 4863 Correction Lever complete
- 4864 Front Door Assembly
- 4865 Rear Door Assembly, upper
- 4866 Shutter and Shutter Guard Assembly
- 4867 Lens Jacket complete
- 4869 Main Body Assembly complete

SUB ASSEMBLIES

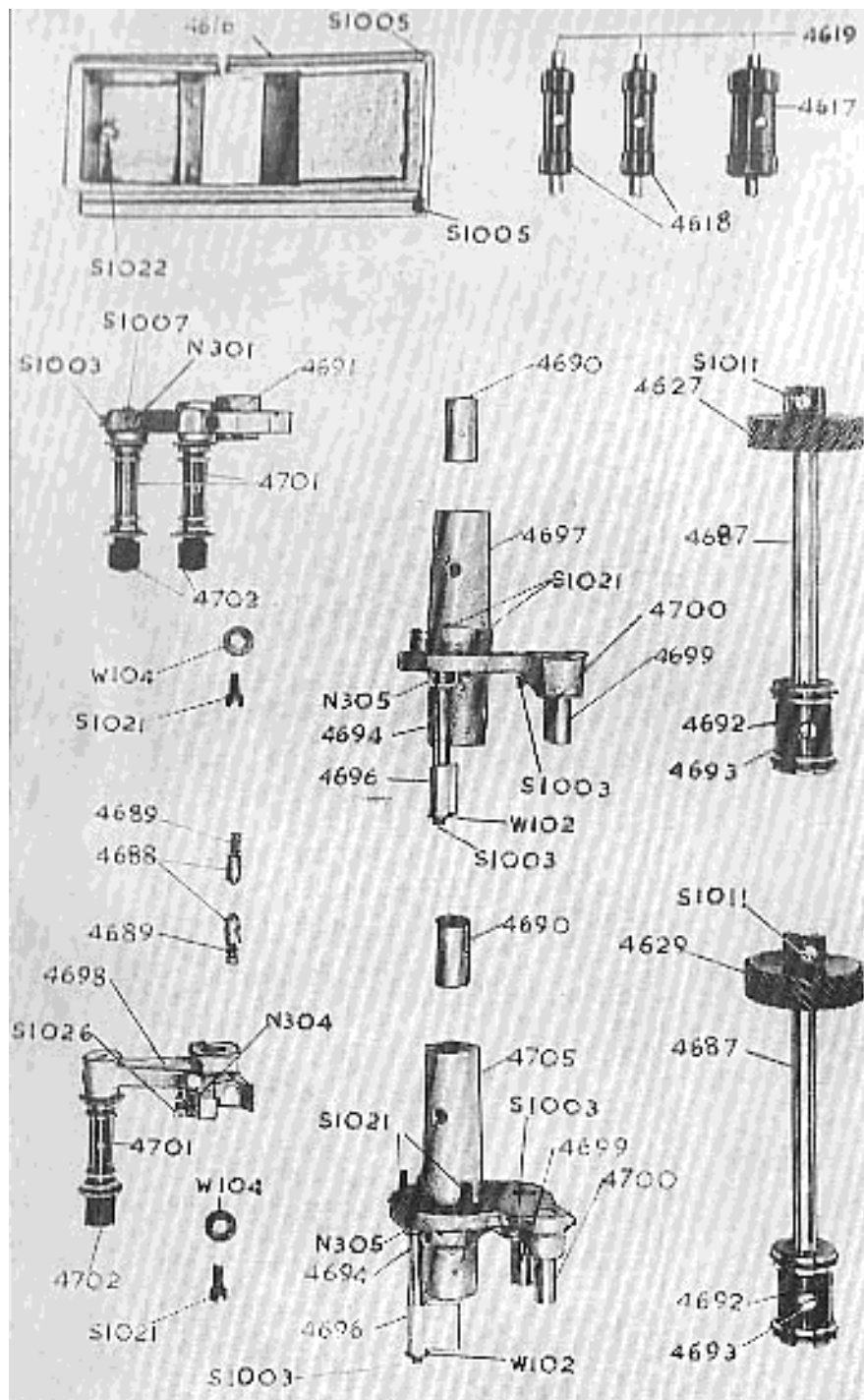
- 4750 Shaft Shutter Outer RH with Gear and two Inner Bushes
- 4708 Cam, Intermittent, complete



Part No.	DESCRIPTION	Assembly No.	Illustratic Page
4600	Main Body	4161	5
4601	DOOR, Front	†4864	14
4602	GLASS, Front Door	4864	14
4603	KNOB, Front, Rear Door and Mag. (2)	†4864/5 & 4814	14
4604	HINGE, Front and Rear Door (4)	†4864/5	14
4605	CLAMP PLATE, Front Door Glass (4)	†4864	14
4606	DOOR, Rear Upper	†4865	14
4607	DOOR, Rear Lower	†4865	14
4608	NAMEPLATE	4865	14
*4609	CATCH, Door Part, Front and Rear Door (4)	†4864/5	4 & 5
*4610	CATCH, Body Part, Front and Rear Door (4)	†4864/5	14
4611	GUARD, Shutter Front	4866	14
4612	GUARD, Shutter Rear Removeable	4866	14
4613	PLATE, Retaining, Spot Sight Glass	4866	14
4614	GLASS, Spot Sight	4866	14
4615	GASKET, Spot Sight Glass	4866	14
4616	TRAP, Film	†4851	8
4617	ROLLER, Film Trap, Large	†4851	8
4618	ROLLER, Film Trap, small (2)	†4851	8
4619	STUD, Film Trap Roller (6)	†4851	8
4620	GEAR, Flywheel	†4850	20
4621	GEAR, Movement Idler	†4850	20
4622	GEAR, Shutter Spiral Bevel Gear LH	†4855	18
4623	GEAR, Shutter Spiral Bevel Gear RH	4855	18
4624	GEAR, Movement Drive Vert. Slide	†4859	18
4625	GEAR, Main Drive Fabric	†4860	18
4626	GEAR, Main Drive Vert. Steel	†4859	18
4627	GEAR, Top Sprocket Fabric	4852	8
4628	PINION, Top Sprocket Steel	4858	18
4629	GEAR, Bottom Sprocket Fabric	†4853	8
4630	PINION, Bottom Sprocket Steel	†4859	18
4631	GEAR, Nylon Shutter Vert. Drive Spiral Bevel (2)	†4858/9	18
4632	JACKET, Lens	4867	22
4633	SLEEVE, Slide Lens Jacket	4867	22

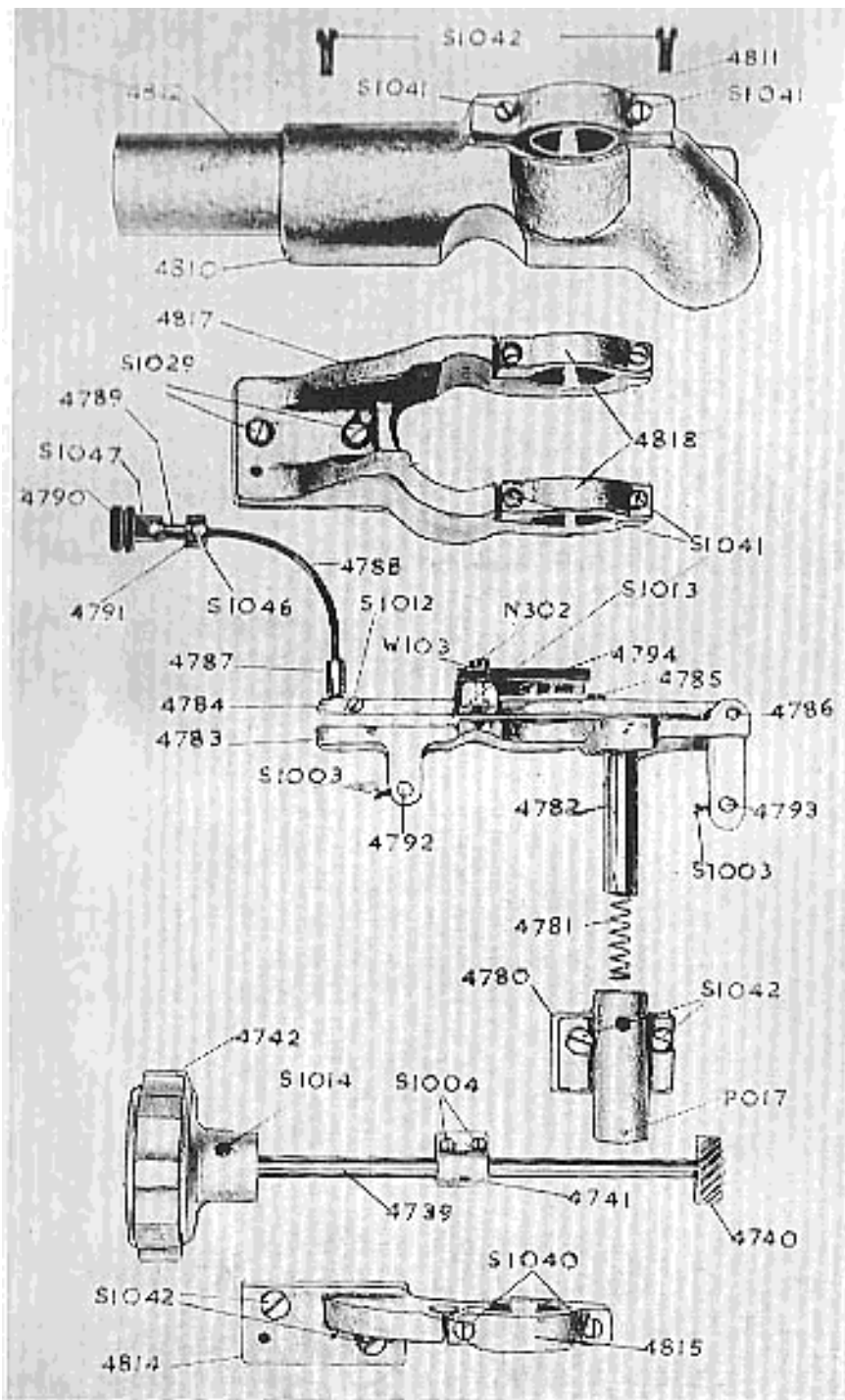
NOTE: * Not sold separately.

† Interchangeable with Standard Seventy-five Model.



Part No.	DESCRIPTION	Assembly No.	Illustration Page
4634	ROD, Lens Jacket Slide (2)	4867	22
4635	SPRING, Lens Jacket Slide (2)	†4867	22
4636	SHAFT, Lens Jacket	4867	22
4637	SPRING, Lens Jacket	†4867	22
4638	BOSS, Lens Jacket	†4867	22
4639	NUT, Focus, knurled	†4867	22
4640	THRUST RACE, Focus Nut	4867	22
4641	SCREW, Adj. Lens Jacket Upper	4867	22
4642	LOCK NUT, Adj. Screw Upper	4867	22
4643	SCREW, Adj. Lens Jacket Lower	4867	22
4644	KNOB, Lens Clamp	†4867	22
4645	GATE, Water-cooled Main Body	4856	12
4646	PLATE, Water-cooled Gate Back	4856	12
4647	TUBE, Flex. for Water-cooled Gate (2)	4356	22
4648	RUNNER, Film (2)	4856	12
4649	ROLLER, Lateral Guide (2)	†4856	12
4650	SHAFT, Lateral Guide Roller	4856	12
4651	COLLAR, Lateral Guide Roller	†4856	12
4652	SPRING, Lateral Guide Roller	†4856	12
4653	SCREW, Mounting Water-cooled Gate	4856	12
4654	DOWEL, Water-cooled Gate (2)	4869	4
4655	APERTURE, Slip-in (to order)	4856	22
4656	BEARING, Gate Sliding Shaft	4854	12
4657	BLOCK, Moveable Gate	4854	12
4658	SHAFT, Moveable Gate Block	4854	12
4659	SCREW, Adjusting Moveable Gate	†4854	12
4660	NUT, Lock for Adjusting Screw	†4854	12
4661	STUD, Removeable Door (2)	†4854	12
4662	KNOB, Knurled, Removeable Door (2)	4854	12
4663	BRACKET, Removeable Door	4854	12
4664	PLATE, Removeable Door	†4854	12
4665	APRON, Film Guide	†4854	12
4666	PLATE, Outer, Film Guide (2)	†4857	12

NOTE: † Interchangeable with Standard Seventy-five Model.



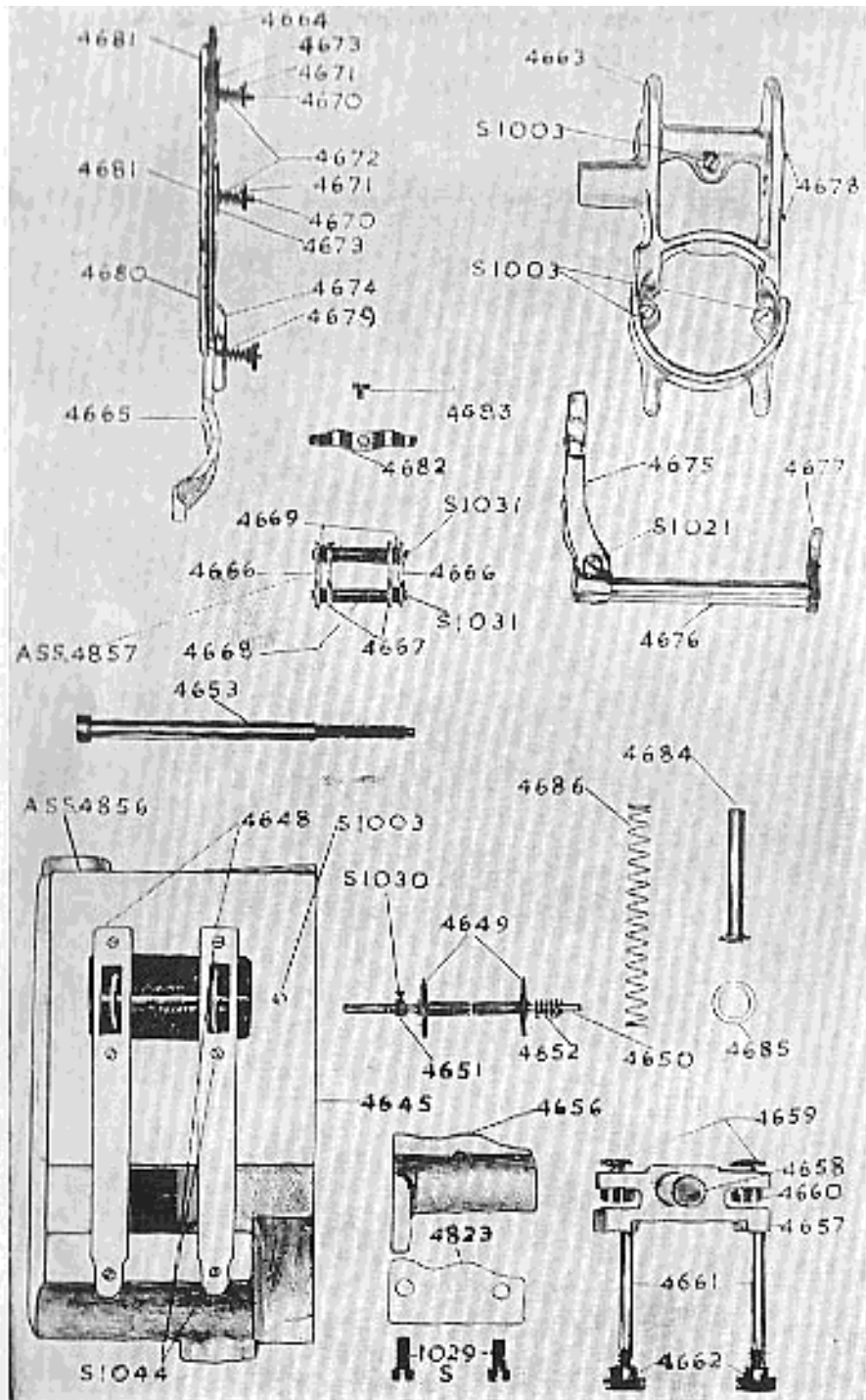
Part No.	DESCRIPTION	Assembly No.	Illustration Page
4667	PLATE, Inner, Film Guide (2)	†4857	12
4668	STUD, Film Guide (2)	†4857	12
4669	COLLAR, Distance Film Guide (4)	†4857	12
4670	STUD, Tension Pressure Pad (3)	†4854	12
4671	KNOB, Tension Pressure Pad (3)	‡4854	12
4672	SPRING, Tension, Upper and Inter Pressure Pad (2)	‡4854	12
4673	PLATE, Upper and Inter. Tension (2)	†4854	12
4674	PLATE, Lower Tension (1)	†4854	12
4675	LEVER, Finger Grip Chrome	4854	12
*4676	SHAFT, Gate Opening	4854	12
*4677	CAM, Gate Opening	4854	12
*4678	PIN, Stop Gate Cam	4854	12
4579	SPRING, Tension Lower Press. Pad	†4854	12
4680	PAD, Lower Pressure (1)	†4854	12
4681	PAD, Upper and Inter. Pressure (4)	†4854	12
4682	SPRING, Tension Film Guide	‡4854	12
4683	SCREW, Tension Spring Film Guide	‡4854	12
4684	PLUNGER, Moveable Gate Shaft	4854	12
4685	SPACER, Moveable Gate Shaft	4854	12
4686	SPRING, Moveable Gate Shaft	4854	12
4687	SHAFT, Upper and Lower Sprocket (2)	†4852/3	8
4688	PLUNGER, Upper & Lower Press. Brackets (2)	†4852/3	8
4689	SPRING, PLUNger, Upper & Lower Pressure Bracket (2)	‡4852/3	8
4690	BUSH, Inner and Outer Self-lub. Upper and Lower Sprocket Bearings (4)	‡4852/3	8
4691	ARM, Lower Pressure Bracket	‡4853	8
4692	SPROCKET, Upper and Lower Feed (2)	†4852/3	8
4693	SCREW, Grub Sprocket (2)	†4852/3	8
4694	SHAFT, Film Stripper, Upper and Lower (2)	†4852/3	8
4695	NUT, Lock, Film Stripper, Upper & Lower (2)	†4852/3	8
4696	BLADE, Film Stripper, Upper and Lower (2)	†4852/3	8
4697	BEARING, Upper Sprocket	‡4852	8

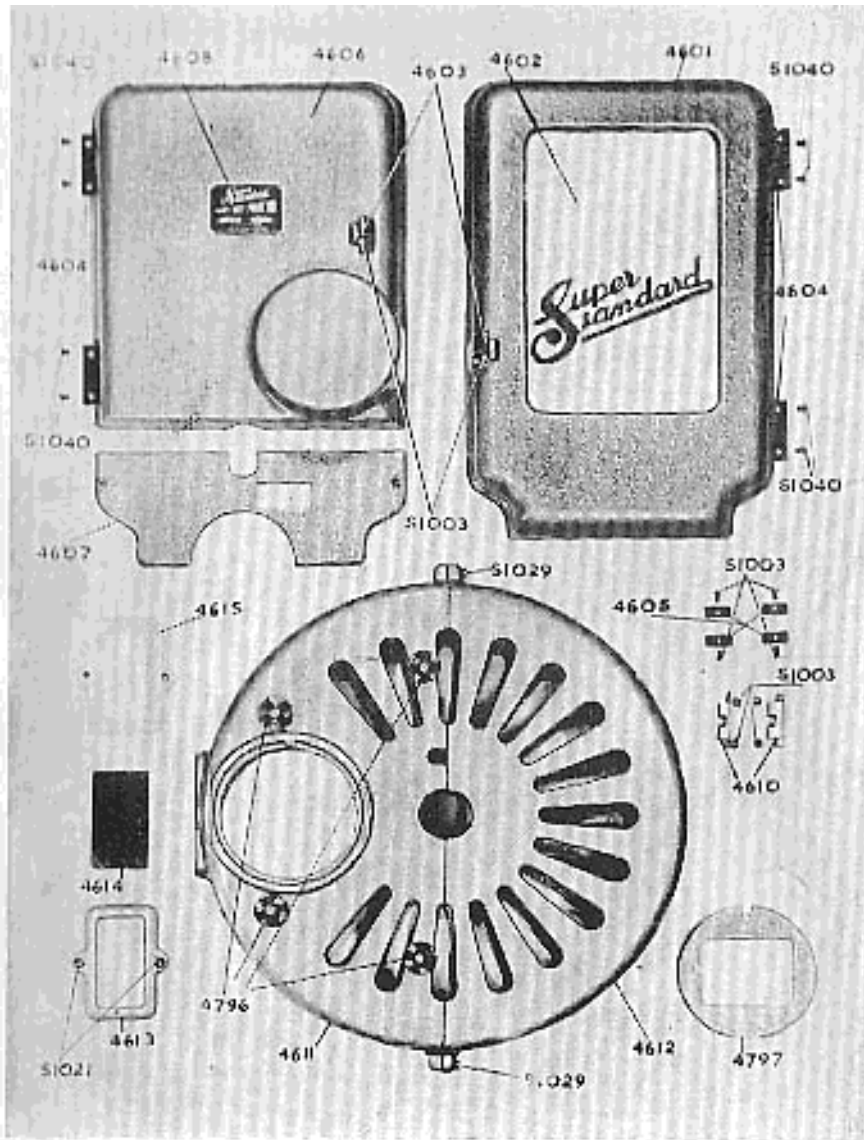
NOTE: † Interchangeable with Standard Seventy-five Model.

Part No.	DESCRIPTION	Assembly No.	Illustration Page
4698	BRACKET, Upper Pressure	†4852	8
4699	PIVOT, Upper and Lower Press. Bracket (2)	†4852/3	8
4700	STOP, Upper and Lower Press. Bracket (2)	†4852/3	8
4701	ROLLER, Upper and Lower Press. Bracket (3)	†4852/3	8
4702	SHAFT AND KNOB, Upper and Lower Press. Bracket Roller (3)	†4852/3	8
4703	SCREW, Adj. Upper Pressure Bracket	†4852	8
4704	NUT, Lock, Upper Pressure Bracket	†4852	8
4705	BEARING, Lower Sprocket	†4853	8
4706	BUSH, Intermittent Idler Shaft	†4850	20
4707	SHAFT, Intermittent Idler	†4850	20
4708	SHAFT, Intermittent Cam. Comp.	†4850	20
*4709	SHAFT, Intermittent Cam.	†4850	20
*4710	PIN, Intermittent Cam.	†4850	20
*4711	PLATE, Intermittent Cam.	†4850	20
4712	CAM, Correction, Intermittent Body	†4850	20
4713	SPROCKET, Intermittent	†4850	20
4714	PLATE, Intermittent Stripper	†4850	20
4715	DOWEL, Removeable Bearing Housing	†4850	20
4716	DEFLECTOR, Oil	†4850	20
*4717	FLYWHEEL, Intermittent	†4850	20
*4718	FLYWHEEL, Auxiliary	†4850	20
4719	MAIN BODY, Intermittent Movement	†4850	20
*4720	ARM, Outer Bearing Intermittent Movement	†4850	20
*4721	HOUSING, Remov. Bearing Inter. Movement	†4850	20
4722	BUSH, Inter, Intermittent Starwheel	†4850	20
4723	BUSH, Outer, inter. Starwheel	†4850	20
4724	COLLAR, Inter. Starwheel	†4850	20
4725	STARWHEEL AND SHAFT, Intermittent	†4850	20
4726	GLASS, Oil Level Sight	†4850	20
4727	GASKET, Oil Level Sight Glass	†4850	20
4728	RING, Locking, Oil Level Sight Glass	†4850	20
4729	BUSH, Intermittent Cam. Shaft	†4850	20
4730	SCREW, Thrust Hardened Cam. Shaft	†4850	20

NOTE: * Not sold separately.

† Interchangeable with Standard Seventy-five Model.

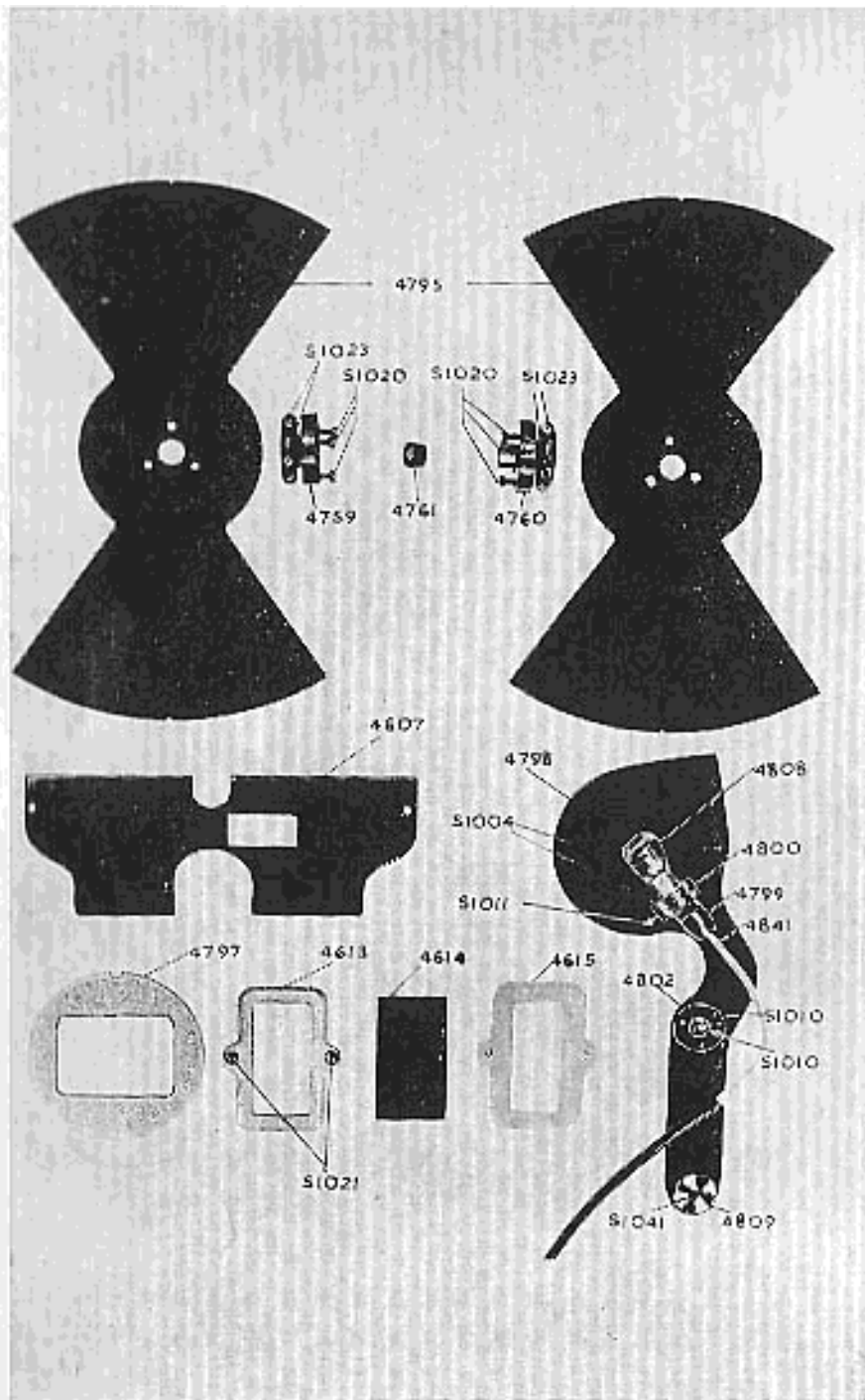




Part No.	DESCRIPTION	Assembly No.	Illustration Page
4731	NUT, Lock, Hardened Cam. Shaft	†4850	20
*4732	DOWEL, Correction Cam.	†4850	20
4733	GEAR, Rack Intermittent Body	†4850	20
4734	LUBRICATOR, Intermittent Body	†4850	20
4735	SCREW, Set, Intermittent Flywheel	†4850	20
4736	SCREW, Intermittent Sprocket	†4850	20
4737	CLAMP BLOCK (3)	†4869	18
4738	SCREW, Adj. Clamp Block (3)	†4869	18
*4739	SHAFT, Framing	†4869	10
*4740	GEAR, Framing	†4869	10
4741	BEARING, Framing Bracket	†4869	10
4742	HANDWHEEL, Framing	*4869	10
*4743	BRACKET, Shutter Shaft	4855	18
4744	SHAFT, Shutter, Inner, Long	4855	18
4745	HOUSING, Bush, L.H. Shutter Shaft Brg. Steel	4855	18
4746	BUSH, L.H. Oil-less Shutter Shaft Bearing	4855	18
4747	COLLAR, Adj. Thrust Shutter Shaft (left hand)	†4855	18
4748	GRUB SCREW, Hardened Shutter Shaft Adj. Collar, L.H.	†4855	18
4749	WASHER, Thrust (Nylon), L.H. Spir. Gear Shutter Shaft	4855	18
4750	SHAFT, Shutter, Outer Short R.H., with Gear and two Inner Bushes	4855	18
4751	SHAFT, Shutter, Short Outer, R.H.	4855	18
4752	BUSH, Oil-less Inner for Short Outer Shutter Shaft	4855	18
4753	COLLAR, Adj. Shutter Shaft, R.H.	4855	18
4754	SCREW, Grub, Hardened for Shutter Shaft Adj. Collar, R.H.	4855	18
4755	BUSH, Oil-less for Shutter Shaft Bearing, R.H., Short	4855	18
4756	WASHER, Thrust (Nylon) Shutter Shaft, R.H., Gear End.	4855	18

NOTE: * Not sold separately.

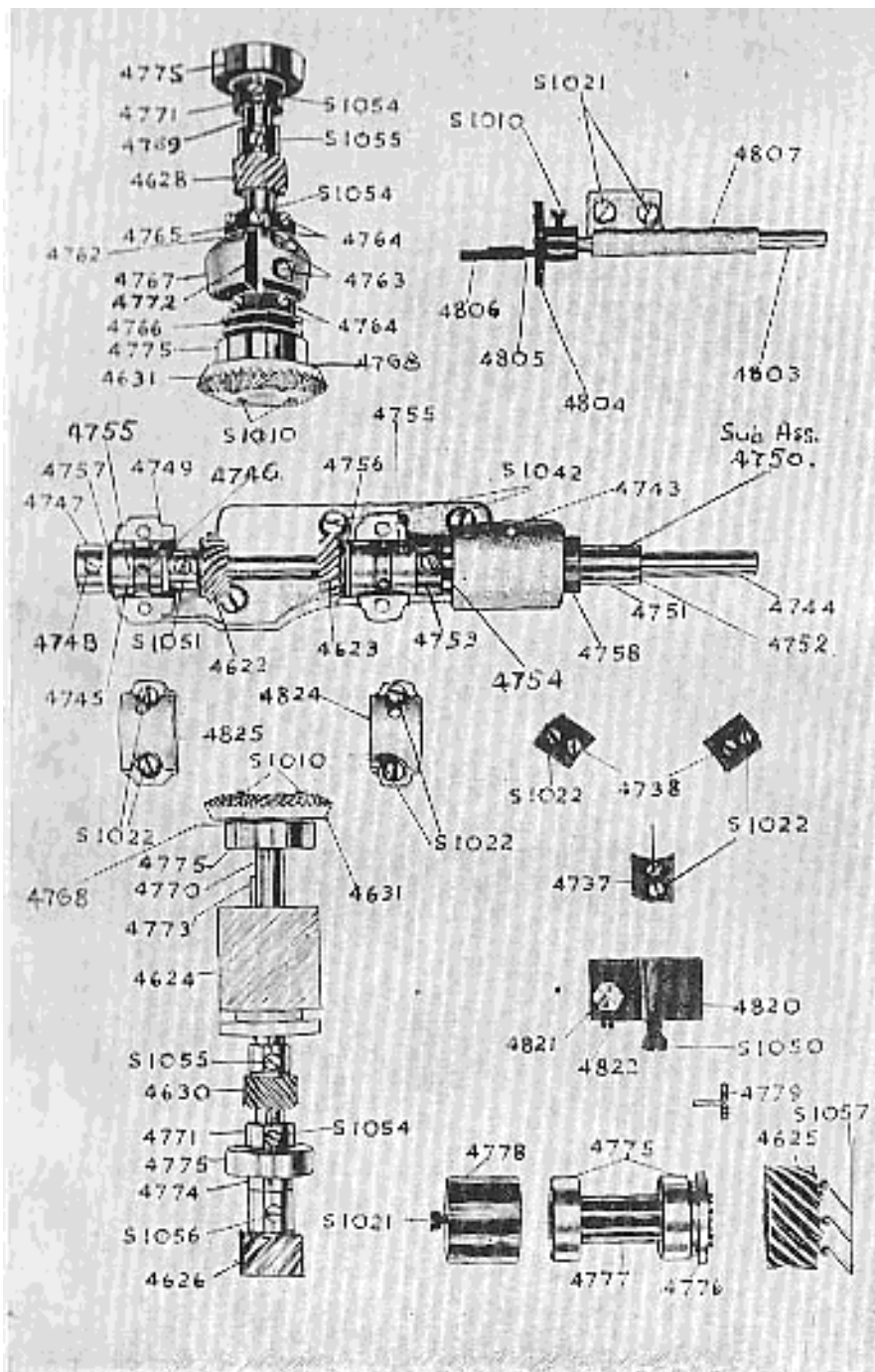
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Part No.	DESCRIPTION	Assembly No.	Illustration Page
4757	WASHER, Thrust (Nylon) Shutter Shaft, L.H. Collar	†4855	18
4758	BUSH, Oil-less Shutter Shaft, for end of Shutter Bracket, Long	4855	18
4759	BOSS, Inner, Shutter	4868	16
4760	BOSS, Outer, Shutter	†4868	16
4761	SPACER, Fabric, Shutter Boss	4860	16
4762	LINK, Governor Weight (4)	†4858	18
4763	SCREW, Governor Weight, Long (4)	†4858	18
4764	SCREW, Governor Weight, Short (4)	†4858	18
4765	BLOCK, Mounting Links, Upper	†4858	18
4766	BLOCK, Lifting Governor, Lower	†4858	18
4767	WEIGHT, Governor (2)	†4858	18
*4768	HOLDER, Ball Race and Gear, Upper and Lower Vert. Shafts (2)	†4858/9 4858	18
*4769	SHAFT, Vertical, Upper	4859	18
*4770	SHAFT, Vertical, Lower	4858	18
4771	HOLDER, Ball Race, Upper and Lower (2)	†4858/9	18
4772	TUBE, Spacer, Governor	†4858	18
*4773	KEY, Vertical Shaft Lower	4859	18
4774	DISTANCE PIECE, Lower Vert. Shaft	†4859	18
4775	BALL RACE, Sealed for Vert. Shaft and Main Drive Shaft (6)	4858/9 & 4860	18
4776	SHAFT, Main Drive	†4860	18
4777	DISTANCE PIECE, Ball Race	†4860	18
4778	BLOCK, Thrust, Main Drive Shaft	†4860	18
4779	SCREW, Main Drive Ball-Race Clamp (3)	†4860	18
4780	BEARING, Correction Lever	†4863	10
4781	SPRING, Correction Lever	†4863	10
*4782	SHAFT, Correction Lever	†4863	10
*4783	LEVER, Correction	†4863	10
*4784	ARM, Moving, Correction Lever	†4863	10
4785	SCREW, Correction Lever, Hard., Thrust	†4863	10
*4786	PIVOT, Correction Lever	†4863	10
*4787	SCREW, Adjusting, Correction Lever	†4863	10
*4788	CABLE, Flexible, Correction Lever	†4863	10

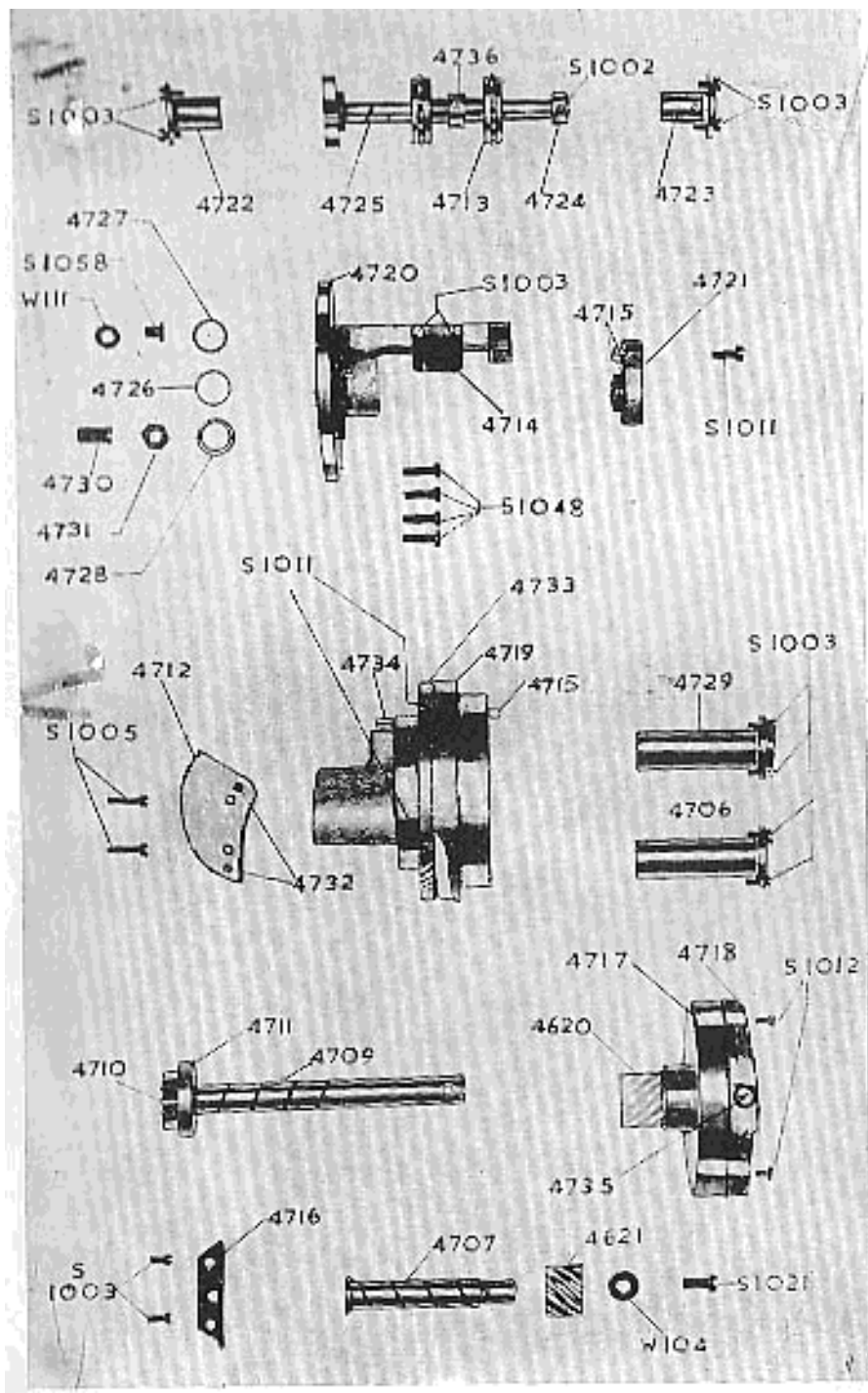
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No. Part	DESCRIPTION	No. Assembly	Page Illustration
*4789	SHAFT, Knob End, Correction Lever	†4863	10
4790	KNOB, Correction Lever	†4863	10
4791	COLLAR, Correction Lever	†4863	10
4792	SHAFT, Adjusting, Short, Correction Lever	†4863	10
4793	SHAFT, Adjusting, Long, Correction Lever	†4863	10
4794	PLATE, Yoke Thrust	†4863	10
4795	SHUTTERS (2)	4866	16
4796	PAD, Shutter Housing Mounting (4)	†4866	14
4797	SHIELD, Heat	4866	14
4798	PLATE, Automatic Cut-off	†4862	16
4799	HOLDER, Lamp, D.C., Auto. Cut-off	†4862	16
4800	CLAMP, Lamp Holder, Auto. Cut-off	†4862	16
4801	WIRE, Pilot Lamp	†4862	16
4802	BOSS, Automatic Cut-off Plate	†4862	16
4803	SHAFT, Automatic Cut-off	†4862	18
4804	BOSS, L.H., Automatic Cut-off	†4862	18
4805	PIN, Boss, Automatic Cut-off	†4862	18
4806	FULCRUM BLOCK, Automatic Cut-off	†4862	18
4807	BRACKET, Automatic Cut-off Bearing	†4862	18
4808	LAMP, Pilot	†4862	16
4809	WEIGHT, Balance, Auto. Cut-off	†4862	16
*4810	BEARING, Top and Air Draft Tunnel	4869	10
*4811	STRAP, Top Bearing	4869	10
*4812	TUBE, Top Bearing	4869	10
*4813	DOWEL, Top Brg. and Air Draft Tunnel	†4869	5
*4184	BRACKET, Bottom Bearing	†4869	10
*4815	STRAP, Bottom Bearing	4869	10
*4816	DOWEL, Bottom Bearing	4869	10
*4817	BRACKET, Intermediate	4869	10
*4818	STRAP, Intermediate Bracket	4869	10
*4819	DOWEL, Intermediate Bracket	4869	5
*4820	BLOCK, Vert. Shaft Lower Thrust	†4861	18
4821	SCREW, Lower Thrust Vert. Shaft	†4861	18
4822	SCREW, Lower Thrust Lock, Vert. Shaft	†4861	18
4823	SHIM, Gate Sliding Shaft Bearing	4854	12

NOTE: * Not sold separately.

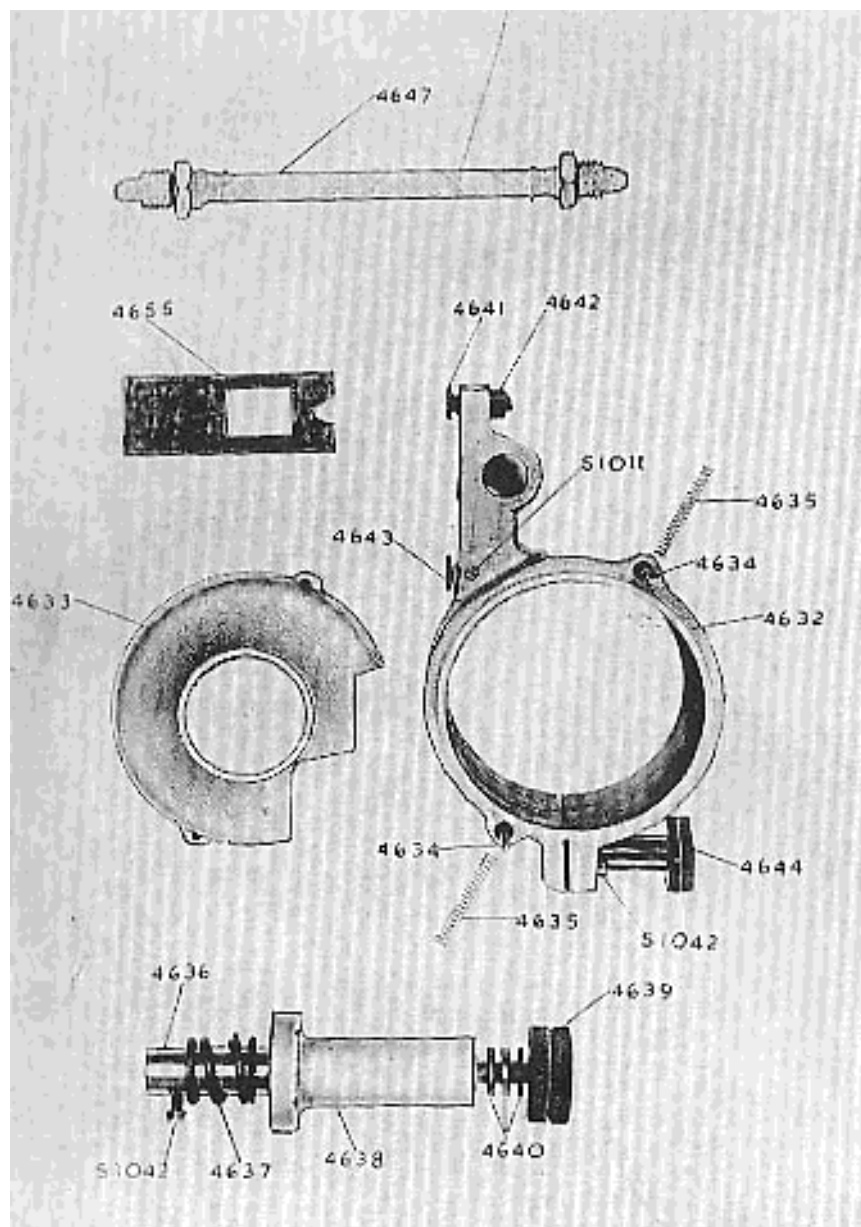
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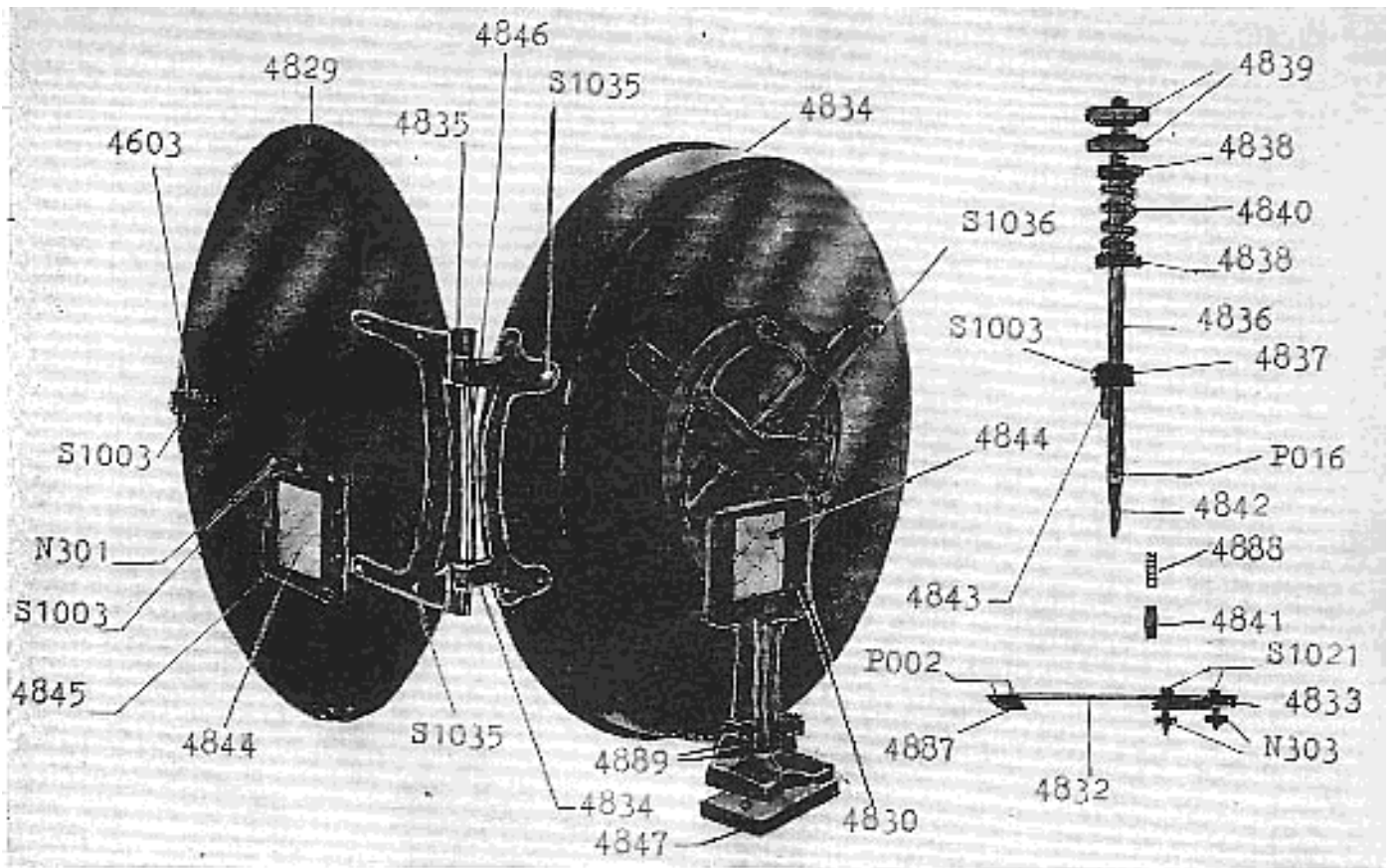


Part No.	DESCRIPTION	Assembly No.	Illustration Page
*4824	CAP, Bearing for Shutter Shaft, R.H.	4855	18
*4825	CAP, Bearing for Shutter Shaft, L.H.	4855	18
4826	MAGAZINE, complete	†4161	23
4827	SPRING, Glass, Retaining	†4826	23
4828	BOX, Magazine	†4826	23
4829	LID, Magazine	†4826	23
4830	ARM, Magazine	†4826	23
4831	CATCH, Magazine, complete	†4826	23
4832	PLATE, Magazine Catch	†4826	23
4833	SPACER, Plate Magazine Catch	†4826	23
*4834	HINGE, Magazine, Box part	†4826	23
*4835	HINGE, Magazine, Lid part	†4826	23
*4836	SHAFT, Magazine, complete	†4826	23
*4837	COLLAR, Magazine shaft	†4826	23
4838	SEAT, Spring, Magazine Shaft	†4826	23
4839	NUT, Adjusting, Magazine Shaft	†4826	23
4840	SPRING, Magazine Shaft	†4826	23
*4841	PLUNGER, Magazine Shaft	†4836	23
*4842	TURN BUCKLE, Magazine Shaft	†4836	23
*4843	PIN, Catch, Magazine Shaft	†4836	23
4844	GLASS, Magazine	†4826	23
4845	FRAME, Magazine Glass	†4826	23
*4846	PIN, Magazine Hinge	†4826	23
4847	PLATE, Magazine Arm	†4826	23
4848	GASKET, Intermittent Movement	†4850	20
4849	DOWEL, for Top, Intermediate and Bottom Vertical Bracket, Shutter Bracket	4869	5
4870	DOWEL, Water-cooled Gate	4869	5
*4871	DOWEL, Thrust Block	†4820	18
4887	KNOB, Magazine Catch	†4826	23
4888	SPRING, Turnbuckle Plunger Magazine Shaft	†4826	23
4889	SCREW, Magazine	†4826	23

NOTE: * Not sold separately.

† Interchangeable with Standard Seventy-five Model.





INSTRUCTIONS
FOR
REMOVAL AND REPLACEMENT OF PARTS
ON THE *Super Standard* MECHANISM

NOTE

All of the following instructions attending the removal of parts from the mechanism are written with the assumption that the mechanism is removed from the machine table or base, and assuming that the mechanism is no way connected up with the motor or machine in any manner, although most of them can be carried out with the projector installed.

When ordering parts, be sure to include part number and name, all of which tends to eliminate any misunderstanding of the order.

The instructions embodied in the following pages may seem somewhat complicated, but in practice they are quite simple, embodying as they do, the exact procedure which is followed at the Standard factory by assembly specialists equipped with knowledge through years of experience and training.

Instruction No. 1 Most of the bearings in the projector are either sealed-for-life
Oiling the life precision ball races or high-grade phosphor bronze
Projector self-lubricating bearings. However, it is recommended that
all of the self-lubricating bearings are oiled at least once during each performance. These are located on the shutter shaft (three positions) and the top and bottom feed sprocket bearings, which may be oiled from either side of the projector. When the projector is operating at an upward angle, such as in Drive-in Theatres, it is necessary to oil the end of the Shutter Shaft P4744 once each performance. However, the small oil hole which is situated at the end of and in the centre of the Shutter Shaft P4744 can be neglected when the machine is projecting at a downward angle or level, as the other lubrication points are quite capable of taking care of the bearings by gravitation.

It is also important before each performance to oil the Yoke P4794, the Main Drive Fabric Gear P4625 and the Vertical Slide Gear P4624, together with the nylon Shutter Gear P4631 and the Top and Bottom Sprocket Fabric Gears P4627 and P4629 respectively. These parts depend upon regular lubrication for long life. The correct level of the Intermittent Movement Assembly P4850 is for the oil to be located at **the top of the Oil Glass Sight** when the red line on the casing of the assembly is **parallel to the mounting face of the projector**, not necessarily the floor of the projection booth. It is a good plan to remove the Drain Plug S1058 on the Intermittent Movement Assembly P4850 and drain the oil once every two

months. **Particular care must be taken to ensure that the Oil Plug is replaced and the oil bath refilled to the correct level** before the Projector is put to further use. **Do not neglect to oil the Outer Bearing P4721** of the Intermittent Movement. A drop of oil occasionally placed on the Moveable Gate Block Shaft P4658 will prove an advantage. Top and Bottom Sprocket Assemblies P4852 and P4853 have oil holes which may be oiled from either side of the Projector. Oil Correction Bracket P4780.

It is essential that the proper oil is used on all parts of the Projector and the Manufacturers recommend Shell Vitrea 31 or the exact equivalent of that grade in another brand of oil. Proper operation of the Projector depends on the correct grade of oil as much as regular oiling of all parts, and the life of the Projector will be prolonged if oiled in accordance with the instructions above.

Instruction No. 2 Remove Removeable Film Gate Assembly P4854 by means of the two knurled knobs P4662. Remove the Set Screw P4735 from the Flywheel P4717, which can then be removed. Ensure the Intermittent Movement is framed with the oil indicator line parallel with the bottom of the Projector. Remove Screw P4653 from the Water-cooled Gate P4856 and allow the Water-cooled Gate Assembly P4856 to come away from the mounting face supported by the Flexible Cables P4647. A piece of cloth wrapped around the Water-cooled Gate will prevent it from scratching or damaging the paintwork. Remove the Screws S1022 from the Keeper Block P4738. Press down the Correction Lever P4863 and the Intermittent Movement P4850 may be withdrawn from the Projector with a slight turning motion to ensure that the Correction Cam P4712 is in align with the cavity for the Main Body provided for its clearance.

Instruction No. 3 Ensure that the Intermittent Movement Assembly P4850 and its mounting hole are entirely free from grit and dirt. **To replace the Intermittent Movement Assy. P4850.** Apply a small amount of oil to the cavity. Press down the Correction Lever Assembly P4863 and replace the Intermittent Movement Assembly P4850. It may be necessary to slightly turn the Intermittent Movement Assembly P4850 firstly to permit entry of the Cam P4712 through the entrance provided and secondly to assist the engagement of the Framing Gear P4740 with the Rack Gear P4733. Turning the Handwheel P4742 will also assist. The Correction Lever Assembly P4863 may now be released, thereby allowing the Correction Cam P4712 to contact the Thrust Screw P4785. Replace the three Keeper Blocks P4737 and, after tightening the Screws S1022 and ensuring the curve of the Blocks P4737 are not fouling the body of the Intermittent Movement P4719, proceed now to adjust the Adjusting Screws P4738 alternatively until sufficient framing tension has been acquired. It may be necessary to make adjustment to these three Screws several times to acquire the proper tension. It is important not to have the tension too tight, as this will cause shearing of the Handle Screw S1014. To assemble Intermittent Fly-

wheel P4717 on Cam Shaft P4709, **line up the head of Set Screw P4375 with slot on end of Cam Shaft P4709**, ensuring that the red mark on the teeth of the nylon Gear P4620 coincides with the meshing mark on the end of the teeth of the steel Gear P4621, otherwise correct matching of these two Gears will not be obtained. It is usual before tightening the clamp Screw P4735 to pull Flywheel P4717 towards the end of the Flywheel Shaft P4709 and then tighten Screw P4735 in that position to prevent the end play being taken up on the face of the Gear P4620. The end play of the Cam P4709 is adjusted by means of the Screw P4730 and Locking Nut P4731 situated on the working side of the Intermittent Movement Assembly P4850.

See latter portion of instruction No. 5 for the refitting of the Water-cooled Gate Assembly P4856 and retime the Shutters P4795 as instruction No. 4.

Instruction No. 4 Firstly loosen Locking Screw S1012 and adjust the Shutter **Timing the Twin Correction Knob P4790** so that the end of the Flexible Cable **Rear Shutters P4795.** (threaded portion P4787) is midway between its adjustment. Remove the Shutter Cover P4612, the Inspection Cover P4613 with Glass P4614. Loosen Clamp Screws S1023 on the Shutter Bosses P4759 and P4760 so that the Shutters can be turned without undue strain on their respective Shafts and yet have sufficient drag to hold them substantially in position whilst the Projector may be turned by hand. Turn the mechanism so that the Sprocket P4713 of the Intermittent Movement has moved exactly two teeth. Then, holding the Flywheel P4717-8, the Shutter P4795 nearest the Projector is turned until the timing mark on its periphery lines up with the red line in the frame of the Shutter Cover P4611, with approximately $\frac{1}{8}$ -inch clearance between the Shutter Boss P4759 and the end of the Bushing P4758 of the Shutter Shaft. The Screw S1023 may now be tightened on the Shutter Boss P4759, and the Intermittent Movement Assembly P4850 once more turned to ensure that all of the above instructions have been carried out. It is now necessary to revolve the Outer Shutter P4795 so that it is in align with the Inner Shutter and its timing mark coinciding with the red line on the frame of the Shutter Cover P4611. Before tightening clamp Screws S1023 on the Outer Shutter Boss P4760, it is necessary to push the Shutter Boss P4760 against the Fibre Distance Piece P4761 and then **slide it away $\frac{1}{16}$ -inch from the other Shutter Boss P4769, to ensure that it is in no way controlling the end play of the respective Shutter Shafts P4744 and P4751.** It is unnecessary to ensure accuracy beyond $\frac{1}{16}$ -inch or $\frac{3}{16}$ -inch when retiming the Shutters, as the Shutter Correction Knob P4790 can be used to accurately set the timing of the Shutters whilst the Projector is in operation.

Instruction No. 5 The Water-cooled Gate Assembly P4856 may be easily removed without disconnecting the Flexible Water Lines P4647 which are permanently connected to the Assembly on installation. With the Moveable Gate in the open position and all clamps holding Flexible Pipes removed, the **To remove the Water-cooled Gate Assembly P4856.**

Screw P4653 can be undone and the Water-cooled Gate Assembly P4856 withdrawn from its dowels and any exchange of parts such as the Film Runners P4648 or the Guide Rollers P4649 may be carried out. It is desirable that a piece of cloth be placed between the Water-cooled Gate and the Projector to prevent damage to the paintwork of the Projector Body or the Film Gate whilst the various operations are being carried out. It is important to ensure that the mounting face, together with the face of the Water-cooled Gate Assembly P4856, are free from any foreign matter before the Water-cooled Gate is replaced. Ensure that the Gate Sliding Block P4657 together with the Spring P4686 and the Plunger P4684, are in position and, with the aid of a fine steel rule or wide-pointed screwdriver, compress the spring on the end of the Plunger P4684. The Water-cooled Gate may then be returned to its position, whilst the Plunger P4684 and Spring P4686 are compressed to allow the Water-cooled Gate access. The Screw P4653 may then be replaced and tightened.

Great care must be taken to ensure that the Water-cooled Gate Assembly P4856 is completely filled with water and the lines free from air locks before the Projector is used. Likewise the water must be flowing freely from the outlet. Unless this is done, the sudden heat from the Arc Lamp may cause a fracture due to the sudden expansion.

Instruction No. 6 To remove and re-adjust the Gate Slide Block P4656. First remove Lens Jacket P4632 by Screw S1042, then remove the two Screws S1029 from the non-operating side of the Projector. The Assembly can then be removed from the working side of the Projector quite readily. When re-fitting this part, it is necessary to ensure that the working face of the Shim P4823 is entirely free from any foreign matter. The mounting Screws S1029 may now be replaced from the non-working side. After adjusting and aligning the moveable section of the Film Gate, it is necessary to have the Water-cooled Gate Assembly P4856 in position. The Gate Slide Block P4656 is so adjusted by means of its Screws S1029 that there is a clearance measured with a feeler gauge (or similar gauge) of .050 to .055 at the top of the gate between the top of the Plate P4664 and the Film Runners P4648 and at the bottom of the Film Gate the clearance of .015 to a maximum of .025 is obtained between the flat contact portion of the Apron P4665 and the Film Runners P4648 when the Film Gate is in the closed position. These limits will ensure that the Gate is correctly aligned and the Pressure Pads will have the necessary pressure likewise allowing the Apron P4665 to assume its proper position. If the Apron P4665 has been distorted through handling or a new one is fitted, it may be necessary to reset the Apron P4665 so that the Film Gate Assembly P4857 has a tension of one or two thicknesses of film when the Film Gate is in the closed position. Any tension in excess of two thicknesses of film is excessive and could cause mis-alignment of the Apron, with consequent film damage. It is pointed out that great care must be taken when setting the Apron P4665 to ensure that the Mounting Screws S1032 are not stripped.

Instruction No. 7
To remove and re-
place the Upper
Sprocket Bearing
P4852 and Lower
Sprocket Bearing
P4853.

Remove the Set Screw P4693 from the Sprocket, thus allowing the withdrawal of the Shaft P4687 with Gear P4629 from the non-operating side of the Projector. Remove the Pressure Brackets P4691 and P4698 by means of the Screw S1021 carefully. Take care not to lose the Plunger P4688 and Spring P4689. The three Mounting Screws S1021 may then be removed from the Bearing and the Bearings P4697 and P4705 removed from the Main Body.

When replacing these Assemblies, it is necessary to adjust the mesh of the Gears P4627 and P4629 so that there is a little back-lash in the teeth. It is also necessary to ensure that there is a little end play in the Sprocket Shaft P4687 by means of the Adjusting Screw P4693 of the Sprocket P4692. The two oil holes on the Bearings P4687 and P4705 are for convenience of oiling and also to act as a breather. It is unnecessary to oil both of these oil holes at the one time.

Instruction No. 8
To remove and re-
place the Upper
Vertical Shaft
Assembly P4858.

Loosen Screws S1022 on the Straps P4825 and P4824 of the Shutter Bracket. The Spiral Gears P4622 and P4623 may then be moved apart. Remove the Screws S1041 from the Top Bearing Strap P4811 and, likewise, from the Intermediate Bracket Strap P4818. The Upper Vertical Shaft Assembly P4858 can then be removed.

The replacement of this Assembly is done in a similar manner to that mentioned above. However, it is necessary that the back cone of the nylon Spiral Gear P4631 and the back cone of the steel Spiral Gear P4622 and P4623 be adjusted so that they are in align with each other and that the back lash between the Gears be within two or three thousandths of an inch or, in other words, adjusted so that there is a slight gap between the teeth of the Gears. It has been found that the mesh of the top nylon Gear P4631 should have a little more clearance in the teeth of its meshing mates P4622 and P4623 than the bottom nylon Gear P4631 which actually takes the load of driving. This ensures long wear and a silent running Projector.

Instruction No. 9
Removing and re-
placing the Lower
Vertical Shaft
Assembly P4859.

Remove the Flywheel P4717-8 by means of the Screw P4735. Remove the Nuts (2) N302 and Washers W103 from the Yoke Plate P4794. By pressing on the Correction Lever Assembly P4863 as close as possible to the hardened Thrust Screw P4785, the Correction Lever Assembly P4863 can be moved downwards and the Yoke Plate P4794 withdrawn from its screws and the Gear P4624. The Shutter Gears P4622 and P4623 must be moved apart as contained in instruction No. 8, and then remove the Screws S1041 and S1040 from the Top Strap P4818 and the Bottom Strap P4815, allowing the Vertical Shaft to be withdrawn.

When replacing this Assembly, it is necessary that the Yoke Plate P4794 operates freely until the groove of the Gear P4624 and the meshing of the nylon

Spiral Gear P4631 is so adjusted that the back cone of the meshing Gears P4622 and P4623 are in align with each other with little or no back lash in the teeth in a similar manner as mentioned in Instruction No. 8. However, it is good practice to have the lower nylon Bevel Gear P4631 adjusted to have less back lash than that of the top nylon Gear P4631, also mentioned in Instruction No. 8.

The satisfactory operation of the Shutter Assembly materially is given to the correct mesh of the nylon Bevel Gear P4631 and the steel Bevel Gears P4622 and P4623, and great care must be taken to ensure that these are adjusted in accordance with these instructions. It may be necessary to periodically adjust the Thrust Collars P4747 and P4753 by means of their Screws P4748 and P4754 respectively. The correct adjustment for the thrust is no end play. **Any end play in any of these two units will cause severe knocking and shuddering of the Shutter Shafts with consequent interference of Projection.** The Intermittent Flywheel P4717 can now be replaced on the Cam Shaft P4709, lining up the head of the Set Screw P4735 with the slot on the end of the Cam Shaft P4709, ensuring that the red mark on the teeth of the nylon Gear P4620 coincides with the meshing mark on the end of the teeth of the steel Gear P4621.

The Vertical Thrust Block Adjusting Screw P4821 should be adjusted with .005" clearance from the ball thrust of the Vertical Shaft and the Screw P4822 relocked. It will be readily understood that the correct meshing of the nylon Bevel Gears P4631 and Pinion P4622 and P4623 may not be possible unless the Thrust Screw P4821 be slackened off if it causes interference.

Instruction No. 10 Remove Intermittent Movement Assembly P4850 as contained in Instruction No. 2. Next carry out Instruction No. 9 for the removal of the Lower Vertical Shaft Assembly P4859.

Undo locking Screw S1012 and turn Correction Lever Knob P4790 until its end P4787 is free from the Correction Lever Assembly P4863. Remove Screws S1042 from the Bracket P4780 and the whole Assembly may be withdrawn. Care must be taken not to distort this Assembly, as it causes misalignment with the Yoke P4794 and the slot of the Gear P4624. Re-assembly of the Correction Lever Assembly P4863 is carried out in a similar manner to that mentioned in the dismantling, but it is necessary by means of the two Screws S1042 in the Bracket P4780, to ensure that the Yoke Plate P4794 is so adjusted that the Yoke Plate P4794 is quite free in the Gear P4624, and prove by turning the Lower Vertical Shaft P4770 and checking the amount of drag. A slight pressure with the fingers at the end of the Correction Lever near the Flexible Cable end P4787 upward or downward will indicate which way the Bracket P4780 will have to be moved to obtain correct alignment of the Yoke P4794. Several attempts at this adjustment may be necessary, but there is sufficient clearance in the screw holes of the Bracket P4780 for this to be accomplished. **Any undue strain on the slot of the Gear P4624 when carrying out this adjustment may damage or break the flange of the Gear P4624.** In practice, all of these adjustments can be carried out quite quickly, although the instructions appear to

be involved. The adjusting Shafts P4792 and P4793 should not be disturbed in the above operation. However, it is necessary for the whole Assembly to move freely on the Shaft P4782, and adjusting Shafts P4792 and P4793 must have approximately 1/64-inch clearance between them. They are also used for ensuring that the Correction Lever P4784 and P4783 are essentially parallel with the back casing of the Projector, which in turn causes the correct location of the hardened Thrust Screw P4785 and proper provision for the adjustment of the Yoke Plate P4794 with its lateral alignment with the Gear P4624. The Flexible Cable P4787 may then be screwed into position by means of Knob P4790, care being taken not to cross-thread the shaft. The Screws S1042 in the Bracket P4780 must be tightened firmly.

Instruction No. 11
To remove and
assemble the Main
Drive Assembly
P4860.

Remove the Lower Vertical Shaft Assembly P4859 as contained in Instruction No. 9. Remove the Gear P4625 by means of the five Screws S1057. This will allow access to the Thrust Screws P4779 and, after they have been withdrawn, the Assembly can be pushed through from the operating side of the Projector after removal of the Thrust

Block P4778 by means of a piece of dowel wood, care being taken not to damage the seal of the special ballrace P4775. The assembling of this part is carried out in a similar manner to the dismantling, but **great care has to be taken when assembling the Gear P4625 that the teeth of the Main Drive Shaft P4776 do not damage the bore of the Fabric Gear P4625**, as this will cause it to run eccentrically or out of true. If this has unfortunately occurred, the gear may be rotated one hole, which will assist in overcoming the damaged portion of the bore of Gear P4625. It is usual to place the Gear P4625 on to the shoulder of the clutch and carefully rotate it until one Screw S1057 aligns with a hole. This screw is then replaced and, once it has been started, the other four screws are then placed in position. The Gear P4625 being firmly held on the spigot of the Clutch P4776 until all screws have been re-tightened. The Thrust Block P4778 can then be replaced and slightly tapped with a piece of dowel wood or the end of a screwdriver to ensure that the whole Assembly is properly located upon the Thrust Screws P4779. It is also necessary to ensure that these instructions be carried out when the drive of the Projector is removed.

Instruction No. 12
Replacing or Reversing
the Intermittent
Sprocket P4713 on
the Intermittent
Movement Assy.
P4850.

First remove the Sprocket Screw P4736 and then ensure that the Starwheel P4725 is not engaged with the Cam Pin P4710. Now, remove the Collar P4724 by means of the two Screws S1002. The Outer Bearing P4721 may now be removed after the Screw S1011 has been unscrewed. The Stripper P4714 may be loosened by means of the Screws S1003 but not necessarily removed, and the Sprocket P4713 carefully withdrawn with a twisting motion right and

left. The reversing or fitting of a new Sprocket is carried out in a similar manner, care being taken not to force the Intermittent Sprocket P4713 on to the Starwheel

Shaft P4725. If it is a little tight, apply a small amount of oil and, with a lapping motion of turning left and right respectively, as well as moving the Sprocket back and forth on the Shaft, lap or fit the Intermittent Sprocket P4713 to its Shaft. This operation and application of oil may have to be repeated two or three times in the case of a Sprocket which has the bore on the lower end of the tolerance being fitted to a Starwheel which has its diameter on the high end of the manufacturer's tolerance, although there is only one or two ten-thousandths of an inch involved.

Care must be taken to ensure that the Starwheel has a little end play with no oil applied to the face of the Collar P4724 when finally completing this operation. The application of a spot of oil to the Collar P4724 immediately takes up the end play and may be observed to creep or move when the Sprocket P4713 or Starwheel P4725 is thrust one way and then the other. The observation of the movement of oil at this spot is a good indication of whether the operation has been carried out in the proper manner, but if shake or movement of the Starwheel Thrust is observed, too much end play is apparent.

Care must also be taken not to turn or run the Projector whilst this operation is being carried out, as the Starwheel P4725, moving inwards against the Cam Assembly P4708 would cause serious damage.

Care must be observed in refitting the Stripper P4714 if it has been removed, as it will be noticed that there is a slight "set" in the plate itself to prevent interference with the boss or set screw of the Intermittent Sprocket P4713. The reversal of the Intermittent Sprocket is generally not recommended, as the apparently unworn surfaces of the teeth are, in fact, worn irregularly, caused by the over-run of the film whilst the Intermittent Sprocket is coming to rest. This wear, although very slight, produces jumpy pictures when the Sprocket is reversed.

Instruction No. 13 By undoing the four Screws S1029, remove the Shutter Guard P4612. Carefully turn the Automatic Cut-off Plate P4798 towards the open position and, at the same time, assist this movement by carefully separating the Governor Weights P4767 with the fingers on the Upper Vertical Shaft simultaneously. This will obviate any damage to the Links P4762 because of the contra or reverse motion of moving the Automatic Cut-off Plate P4798. The Pilot Lamp P4808 is now in an accessible position and may be removed or replaced. It is unnecessary to remove the Holder P4799 or the Screw S1011 in carrying out this operation. However, it is advisable to check the Screw S1011 to ensure that it has not become loose. The flat twin Wire P4841 must be on the flat to ensure flexibility, as this could cause drag and unnecessarily slow up the operation of the Automatic Cut-off. The position of the Automatic Cut-off Plate P4798 is adjusted by means of the Screw S1010 on its Shaft P4803 so that the Pilot Light P4808 is approximately 1/16-inch clear of the Shutter Guard P4611. **Excessive clearance may cause interference with the Shutter Blade P4795, causing the Automatic Cut-off to stick, or alternatively may cause the Pilot Lamp P4808 to rattle against the face of the Shutter Guard P4611.**

Instruction No. 14 To remove, replace or adjust the Lens Jacket Assembly
Adjustment of the P4867, pass a piece of thread through the bore of the Lens
Lens Jacket P4632 and the Lens Slide P4633. Tie to hold same
Assembly P4867. in compressed position. Now remove Screw S1042 and
by means of the Knurled Knob P4639 the Lens Shaft P4636
may be removed. The replacement is carried out in a similar manner. However,
to make the necessary adjustments for the proper functioning of the Lens Jacket
Assembly (which may have to be carried out if the Lens Boss P4638 has been
removed or loosened), the following procedure should be adhered to: after
removing the Lens Jacket P4632 as outlined above, screw in the Top Adjusting
Screw P4641 after the Locking Nut P4642 has been loosened. Also loosen the
Screw S1011 on the Bottom Adjusting Screw P4643. The Lens Jacket is returned
to the Projector minus the Spring P4637 (for adjusting purposes only) and the
Lens Bore or Holder is then compared laterally with the hole in the Projector
Body. It may then be necessary to adjust the Bottom Screw P4643, returning
the Lens Jacket P4632 to the Projector after each adjustment until it is central
laterally with the Body as mentioned above. When this condition is reached, the
Screw S1011 can be tightened and the Control Spring P4637 refitted and the Lens
Jacket P4632 securely affixed in position by the Screw S1042. It is unnecessary
to place this screw into position whilst the Bottom Adjusting Screw P4643 is being
adjusted, as described earlier. By means of a screwdriver, the Top Adjusting
Screw P4641 can then be adjusted and the Lock Nut P4642 locked into position
with a tube box spanner and a screwdriver passing through the centre of the
spanner. The correct adjustment is obtained when there is no "shake" of the Lens
Jacket P4632 when it has 3/16-inch gap between it and the body of the Pro-
jector. It is not intended that the Lens Jacket move any closer than 1/8-inch nor
more than 1/4-inch from the projector casing. A little grease on the Thrust Races
P4640 occasionally will ensure that the Focus works freely. **It is imperative that
there be no "shake" of adjusting screws P4641 and P4643, as this will cause
irregular and intermittent picture jump from the vibration and focus adjustment.**

Instruction No. 15 After the Intermittent Movement Assembly P4850 has been
To dismantle and removed from the Projector (see Instruction No. 2), drain
Assemble the Inter- the oil through the Drain Plug S1058. The four Screws
mittent Movement S1048 can be removed from the Outer Bearing Bracket Arm
Assembly P4850. P4720. Ensure that the Cam Pin P4710 is not in the en-
gaged position in the slots of the Starwheel P4725. The
Outer Bearing Bracket Arm P4720 can then be moved laterally sideways,
swinging on its Dowel P4715 and lifted away from the Main Body P4719. Care
must be taken that the gasket is not broken. The procedure to remove any of
the other associated parts is obvious.

The refitting of new parts to the Intermittent Movement is not recommended
unless the proper tools and experience are to hand to carry out this work, as the
Intermittent Movement on the Modern Projector is a delicate piece of apparatus
and the fitting of the Cam Shaft P4709 into its Bearings P4729 and also the

lapping of the Cam Pin P4710 into the slots of the Starwheel P4725, when necessary, and the fitting of the Inner and Outer Bushes P4722 and P4723 respectively, has to be controlled within very fine limits for the correct functioning of the Projector. However, the lapping of these shafts into position with oil and no abrasive can sometimes be carried out by persons who have the necessary skill. This is done by applying a little oil to the end of the shaft, proceeding to enter it into the Bush and by turning the shaft backwards and forwards, at the same time allowing it to re-enter the Bearing, the operation of lapping can be carried out. In practice, the manufacturers leave the bearings and shafts a little on the neat side for this operation to be carried out. Too much caution cannot be observed in the cleanliness, particularly in the final assembly of these parts. After they have been washed in white spirit, the following should be strictly adhered to: assemble intermediate Shaft P4707 with a little oil on the Shaft itself, replace Gear P4621, Washer W104 and Screw S1021. This shaft must revolve freely with little or no end play. A little oil is then applied to the Cam Shaft P4709, which in turn is placed in its Bushing P4729. If the Starwheel P4725 has been removed, this can be re-assembled in a similar manner, ensuring that there is little or no end play in the Starwheel Shaft controlled by the Collar P4724 and the Screw S1022. Ensure that the Starwheel surfaces and the Cam surface are free from oil. Replace gasket and Outer Bearing P4720, ensuring that the Cam Pin will not be in the engaged position. Carefully replace the Outer Bearing Bracket P4720 and the four Screws S1048, but do not tighten these screws up too tightly. Turn the Cam Shaft P4709 slowly to ensure that the parts have been correctly assembled. With the Pin in the non-engaged position, feel the clearance between the Cam P4711 and the Starwheel P4725 by turning the Sprocket backwards and forwards. There should be just a slight suggestion of movement, indicating the clearance between these two components necessary for a steady picture and quietness of operation. Now carefully turn the Cam Shaft P4709 and check each contour of the Starwheel P4725 for the Clearance as outlined. It may be necessary to adjust the Outer Bearing Bracket P4720 by swivelling on the Dowel Pin P4715 in either direction to achieve the correct adjustment as outlined above.

WARNING:—On no account should the Starwheel P4725 be adjusted with no clearance with the Cam P4711. This will cause a definite seizure with serious results.

A slight tightness of the passage of the Cam Pin P4710 through the slots of the Starwheel P4725 can be ignored, but it is most important that this is not confused with the clearance of the contours of the Starwheel P4725 with the contour of the Cam P4711.

It is again pointed out that if the above adjustments are carried out with the contact parts of the Starwheel P4725 and Cam P4711 dry, a definite clearance will be felt, but the moment oil is introduced into the Movement, it is then impossible to feel the clearance because the oil will occupy the clearance previously determined.

Attach the Flywheel P4717-8 temporarily and spin the Flywheel by hand after oiling to ensure that all parts have been assembled correctly and no noise exists. It will also be noticed that the tightness (if any) experienced by the passage of the Cam Pin P4710 through the slots of the Starwheel P4725 **cannot be felt when the Flywheel P4717-8 is attached to the Shaft.** After ensuring that all of the above has been carried out, the Intermittent Movement Assembly P4850 can be refitted to the Projector.

As mentioned earlier, the fitting of new parts to the Intermittent Movement Assembly, with the exception of the Intermittent Sprocket P4713, is not recommended. This is a factory operation and is best handled by experienced Technicians with proper Testing Instruments and Precision tools. Contact your local Service Branch for a spare Intermittent Movement Assembly when your own needs servicing.

RECOMMENDATIONS AND SERVICE INSTRUCTIONS

1. Adjust periodically when necessary the end thrust of the Shutter Shaft Collars.
2. Always oil the Projector according to the oiling instructions.
3. Occasionally check over Screws on moving Shafts to ensure they have not worked loose. Use a proper screwdriver suitable for the size screws and do not over-tighten.
4. Ensure that the Water-cooled Film Gate is always full before operating Projector. Never run water straight from the mains into it, as it must function at not more than 8 pounds per square inch. A restricting valve will not reduce the pressure, only the quantity. Use a syphon tank fitted with a float bulb, which will give approximately 2-3 pounds per square inch.
5. Avoid permitting light from the Arc Lamps to enter the Projector unless it is running.
6. Do not carry out major repairs unless you have the technical knowledge and proper tools.
7. Do not use force when changing the Intermittent Sprocket, and care must be taken to ensure that the proper thrust is obtained after fitting the Sprocket by means of the Collar.
8. On no account turn the Projector whilst the Sprocket is being interchanged.
9. Never force the Projector when it seems stiff. It may need oil or an obstruction may have found its way into the working parts, or the thrusts on the Shutter Shaft may have been adjusted too tightly.
10. Be familiar with the various oil holes on the Projector to ensure that none are overlooked.
11. Always ensure that the film path is free from emulsion, dirt and grit.
12. Take great care not to bend the Apron of the Intermittent Film Guide when this Assembly has been removed for cleaning purposes.
13. The oil hole in the Upper Magazine Shaft can be overlooked.
14. It is always necessary to ensure all Pad Rollers are turning.

15. The reversal of the Intermittent Sprocket generally is not recommended, see Instruction 12.
16. It is recommended that the framing position be set one sprocket hole below the central position for a period and then set one sprocket hole above to attain even wear on Intermittent Sprocket and Gears alike.
17. After fitting new Gears, make sure that they have been liberally oiled before even turning the Projector by hand. This is particularly important with Gears P4624 and P4625, as it causes irregular wear.
18. Most causes of a noisy Projector are the result of improper thrust adjustment of Collar on Shutter Shafts P4747 and P4753; incorrect back lash or back cone alignments of Shutter Gear P4622-P4623, and Nylon Gear P4631. Loose Screw P4735 in Flywheel P4717-8 and undue end play of Cam Assembly P4708 are other causes.
19. Running an incorrectly adjusted Projector produces uneven wear on Gears, together with resulting ghosting and intermittent flicker or shuddering.
20. Occasionally remove Upper Magazine and dismantle and clean Film Trap Rollers P4617 and P4618, and cavity.
21. Adjust Pressure Brackets when required by means of S1026 and Lock Nut N304 on the Top Bracket and S1007 and Lock Nut N301 on the Bottom Bracket, so that leading Roller P4701 has two thicknesses of film clearance with Sprockets P4692.
22. The spring tension of the Pressure Brackets P4691 and P4698 are materially obtained by the setting of the flat on the Stop Pins P4700, which should be approximately 45 degrees with the centre line of the Pin P4700 and the Pivot P4699. At all times it must not be fierce, but resilient.
23. The Inspection Glass P4614 must always be free; which is influenced by the Gaskets P4615 to allow for expansion.
24. If the Shutter Bracket P4743 has been removed, it is necessary to ensure that it is at right angles to the Vertical Shaft P4769 and P4770 and not necessarily to the Projector before meshing the Gears P4622, P4623 and P4631. It will be noticed that only one Dowel is employed for this purpose.

WARRANTY

The Standard Projector Company, hereinafter called the Company warrants all parts, except those hereinafter specified, on Projectors, and new replacement parts sold by it when used therein, to be free, under normal use and service, from defects in material and workmanship for a period in the case of Projectors, and new replacement parts thereof, of ninety (90) days from the date of their delivery to the original retail purchaser or until the Projectors have been operating for two hundred (200) hours, whichever shall first occur.

This warranty shall be limited to shipment to the purchaser without charge, except for transportation, of the part or parts intended to replace those acknowledged by the Company to be defective, provided that freight is prepaid both ways for the defective part or parts, such parts to be returned to the factory. The Company cannot, however, and does not accept responsibility in connection with Projectors, or replacement parts sold by the Company when they have been altered outside its own factory, so as, in the opinion of the Company, to affect their stability or reliability, nor in connection with Projectors that have been loaded or operated beyond their capacity. The Company makes no warranty whatsoever with respect to pilot lamps, flexible cables, wire or glass. The Company is not responsible for any undertaking or representation concerning its products other than herein stated and hereby excludes all other warranties and conditions expressed or implied.