Film-Tech

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Kinotone

257 TENTH AVE., P. O. BOX 508, PATERSON, N. J. 07544

SERVICE

FP23C

C O N T E N T S

FP-23C TECHNICAL DATA

	Standardly Equipped	Also available as:
POWER:	120VAC 60HZ	220VAC 60-50HZ
CURRENT CONSUMPTION:	2A @ 120VAC	
FILM SPEED:	24fps foward	24fps,30fps foward & reverse
DRIVE MOTORS:	120 VAC non-sync	220VAC non-sync 120VAC & 220VAC synchronous
LENS HOLDER:	70.6mm Ø	101mm Ø (4") 2X - 70.6mm manual turret 2X - 70.6mm motorized turret with aperture changer
FILM BREAK SWITCHES& PROXIMITY CUE SENSORS:	1- film break switch 1- film break/slit switch	single or double cue sensor
DOWSER:	24VAC held open & closed	
SHUTTER EFFICIENCY:	54%	
FRAMING LAMP:	Ph13849 24V 3W	
PICTURE STABILITY:	Less than 0.2%	Less than 0.1%
OPTICAL SOUNDHEAD:		
Exciter lamp	3874C (6.5V-1.48A)	7251C (5V-4A)
Wow & Flutter	Less than 0.2%	
Scanning slit	2.13mm X 15 microns	
Stabilized sound	Less than 6 sec.	
WEIGHT:	105# (48kg)	
DIMENSIONS:	17.5"H X 17"W X 15"D	

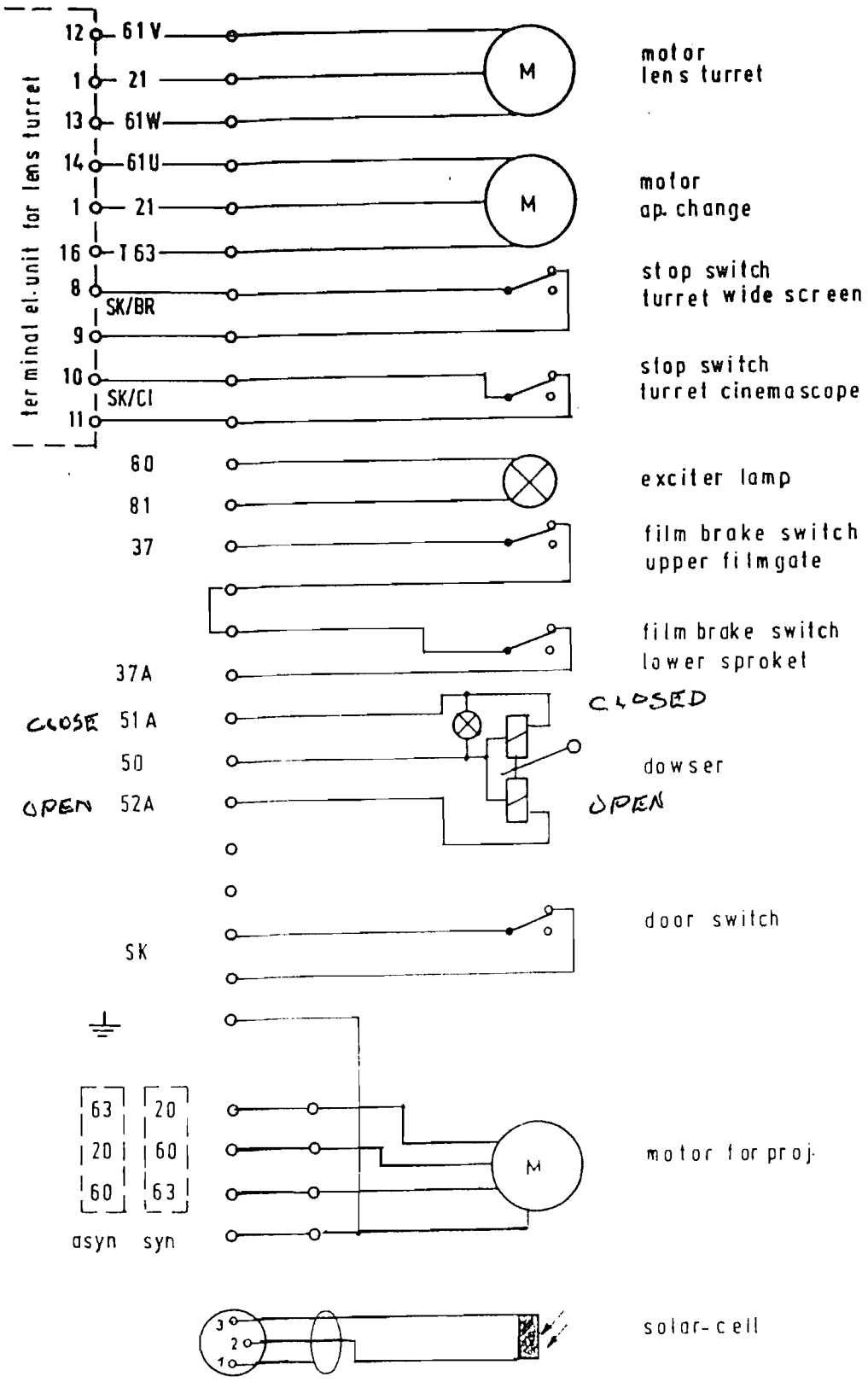
AVAILABLE ACCESSORIES: 6000' reel arms
6000' reel/platter guidance arms
exciter lamp power supplies (6.5V & 5V)

WARNING!

The FP-23C is equipped with a film break/slit switch that is located on the holdback sprocket assembly and is identified by a red cap.

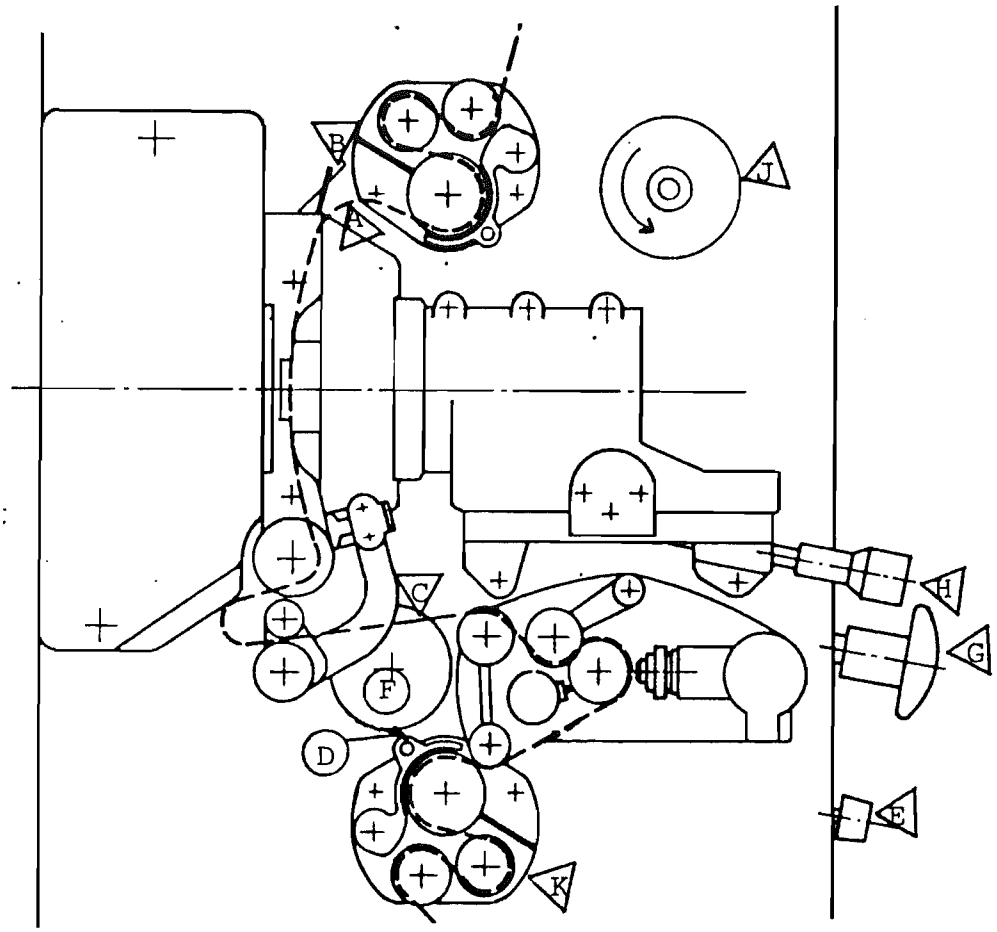
After the projector is threaded the red cap must be pulled so that the film sits between the two halves of this roller.

IF THIS IS NOT DONE -- SERIOUS FILM DAMAGE WILL RESULT!



terminal strip

THREADING DIAGRAM



FP-23C
OPERATIONAL HINTS

- Be sure that the film at point "A" does not touch film break switch "B" while projector is in operation.

- To insure that the lower loops are correct after threading - depress film at point "C" with finger and it should stop 3/8" above point "D".

- Gate pressure is adjusted with knob "E" and indicated by scale "F". To properly adjust, back off gate pressure to (-) , run projector with film, and increase gate pressure until picture is steady. This method insures the minimum amount of gate pressure, and maximum amount of film care.

- Framing is adjusted by knob "G". For optimum operation keep the framing knob in the middle of its travel by aligning the white dot on knob with corresponding white dot on projector.

- Focus is adjusted by knob "H".

- Always advance film manually after threading by knb "J" to insure that the film is threaded properly on all sprockets.

- Check that the film break/film slit roller "K" is engaged properly.
SEE WARNING on page 2

MAINTENENCE & LUBRICATION

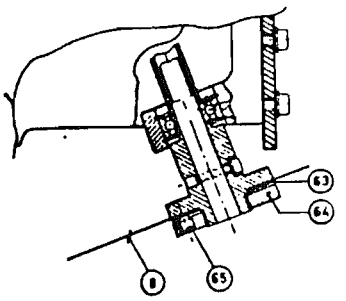
INTERVAL	MAINTENENCE	LUBRICATION	LUBRICANT
DAILY	-clean sprockets,rollers,pad shoes runner strips,skate, aperture & sound drum with toothbrush provided.		
WEEKLY	-clean projection lens with lens tissue and solvent alcohol. -insure that ceramic guide rollers in gate are clean & turning freely,these rollers are reversible for longer wear. -wipe all excess oil & grease drippings from interior & exterior of mechanism.		
MONTHLY	-remove all rollers, clean shafts and lubricate with 1 drop universal oil.	-pivot shaft of chain idler roller -drive chains -lens mount -shutter gear -roller shafts	-universal oil -universal oil -EL4854 -EL4854 -universal oil
TRI-MONTHLY	-check condition of skate,runner strips & sprocket teeth. the white runner strips and sprockets are reversible for longer wear. replace if necessary.	-pivot shaft of dowser, and armature of dowser coil.	-universal oil
YEARLY		-pivot shaft of sound drum pressure roller -pressure roller bearings -sound drum bearings	-8657 -EL4854 -universal oil

Type EL3672 oil is used for the intermittent bath. In the case of new projectors or after the replacement of an intermittent adhere to the following oil change schedule:

1: change oil after 50 hours of operation
2: change oil after 100 hours of operation
3: change oil after 500 hours of operation
4: change oil every 500 hours thereafter

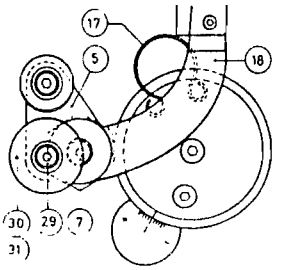
To enjoy the tens of thousands of hours of operation that Kinotone/Philips intermittent movements are world renown for IT IS IMPERATIVE THAT EL3672 PROJECTOR OIL BE USED. DO NOT SETTLE FOR ANY SUBSTITUTE!

PART REPLACEMENT AND ADJUSTMENTS

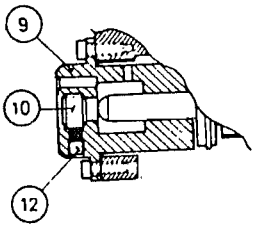


1: Intermittent replacement - REMOVAL

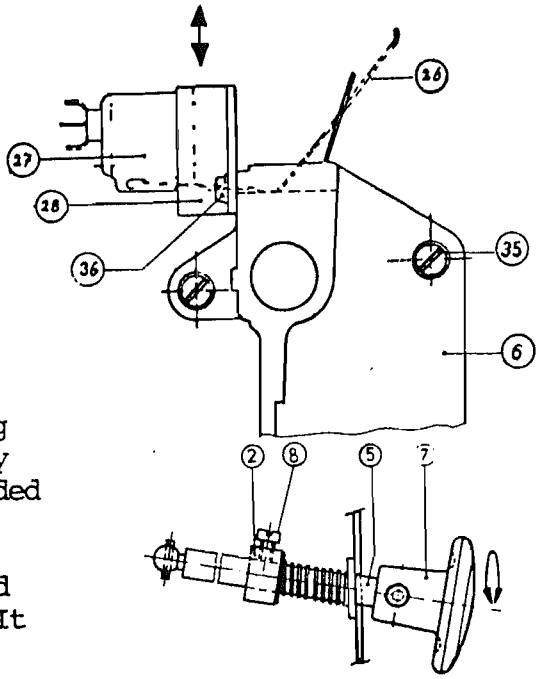
- drain oil and remove chains
- remove shutter cover
- loosen 3 screws (65) in locking ring (64) and remove shutter (8) and clamping washer (63)



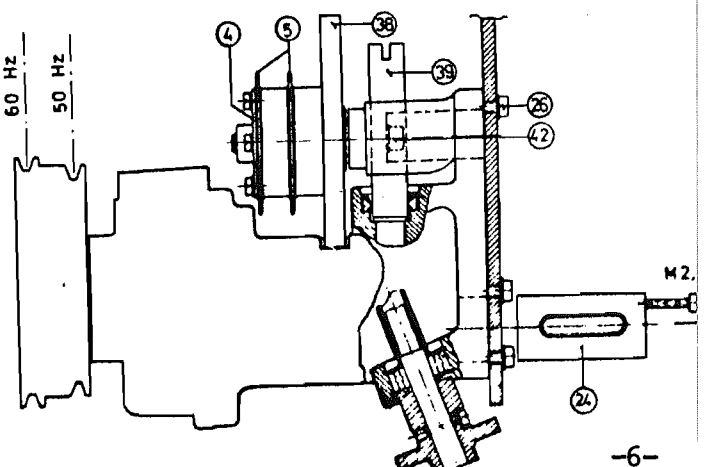
- remove screw (29), cap (31), and roller (30). remove screw (7) , roller plate (5), and lever assembly (18) with spring (17).



- loosen locking set screw (12) and back out end play screw (10) 3 turns.



- loosen 2 screws (36) and remove film break switch assembly from gate.
- remove 4 screws (35) from gate and remove gate assembly by turning framing knob (7) counterclockwise
- after gate assembly is removed continue turning framing knob (7) to facilitate removal of framing bushing (24). Removal of framing bushing (24) may also be facilitated by using a 2.5mm screw threaded into the end of the bushing.
- loosen locking screw (8) on framing shaft (5) and pull the shaft approx. 2" out of the projector. It is not necessary to remove the shaft totally.

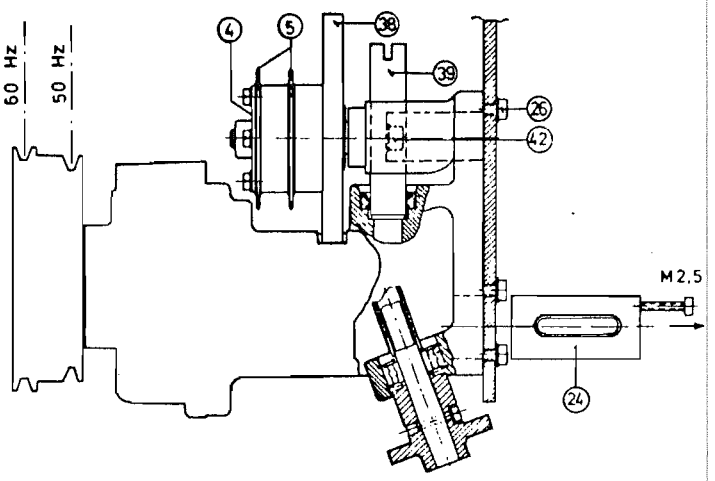


- remove the 4 mounting screws (26) of the intermittent and remove intermittent.

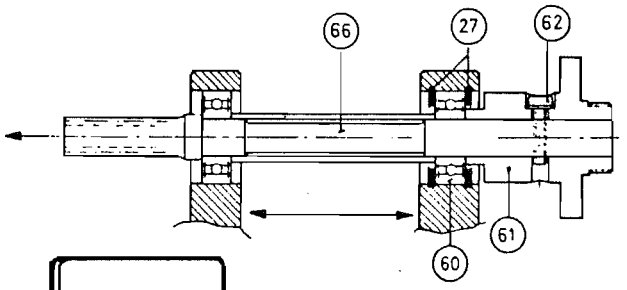
  BE SURE TO SUPPORT THE INTERMITTENT BEFORE THE REMOVAL OF THE LAST SCREW (26).

2: Intermittent Replacement - INSTALLATION

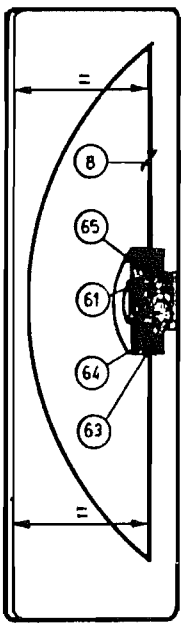
- prior to the installation of the new intermittent it will be necessary to install the shutter drive gear assembly (4-5&38) and shutter shaft onto the new intermittent. Removal of the gear assembly from the old intermittent is accomplished by removing screw (42). Removal of the shutter shaft is accomplished by removing screw (62) and shutter hub (61).
- installation of these assemblies in reverse order of removal. be sure that there is minimal shutter shaft endplay.



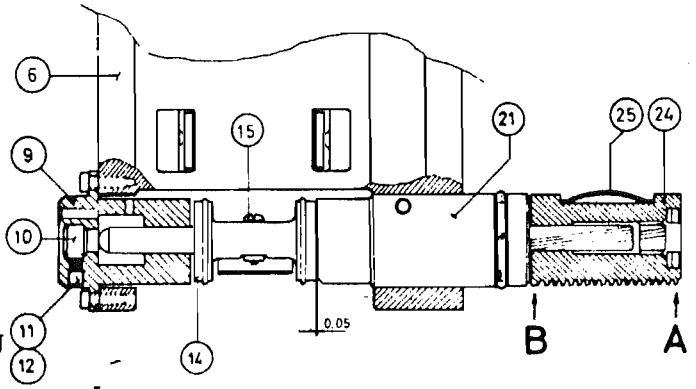
- install intermittent with 4 screws (26). do not tighten screws!
- install framing bushing (24) through faceplate of projector and align the bore of the intermittent casting with the framingbushing bore in the projector face-plate. be sure that the framing bushing turns and slides easily. tighten 4 screws (26)

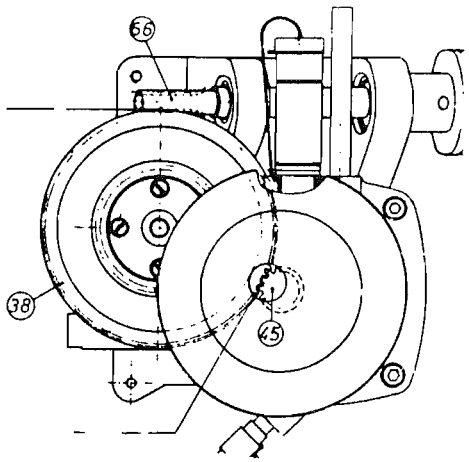


- install shutter (8) , clamping washer (63) and locking ring (64). slightly tighten 3 set screws (65).
  be sure the shutter is not bent!



- install framing bushing (24) with spring (25) on to the intermittent sprocket shaft with the "B" side of the bushing being closest to the sprocket.
- lubricate the o-ring and framing bushing exterior with universal oil and insert the gate assembly with framing bushing attached in to the intermittent. DO THIS CAREFULLY AND SLOWLY. at the same time rotate the fly-wheel of the intermittent SLOWLY so that the framing bushing can properly mesh with the star shaft WITHOUT damage to the framing bushing.
- loosely connect framing shaft (5) with framing shaft (39) and rotate clockwise after framing bushing is engaged with star shaft. this will permit you to install the gate assembly completely in to the inter-mittent. tighten 4 screws (35) in rotation to prevent binding, after these gate mounting screws (35) are tight,turn the intermittent flywheel by hand to insure that there is no binding. if binding exists loosen screws (35) and repeat. insure that the framing bushing is easily racked back and forth by shaft (5).





2: Intermittent Replacement - INSTALLATION

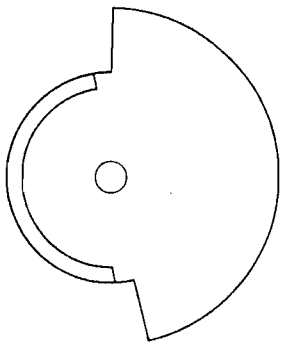
- install film break switch with 2 screws (36)

3: ADJUSTMENT OF INTERMITTENT SPROCKET SHAFT

- loosen locking set screw (11) and turn end-play screw (10) CAREFULLY clockwise until resistance is felt , go 1/8 turn further and STOP. tighten locking screw (11).

4: INTERMITTENT SPROCKET ADJUSTMENT

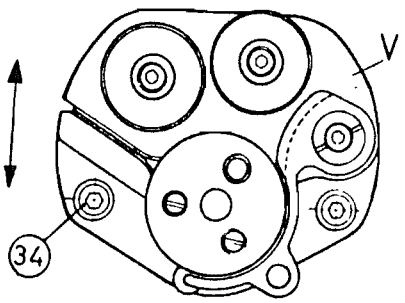
- turn framing knob (7) to right of center



- loosen screw (15) and place a piece of paper (approx 0.05mm thick (.002")) between the sprocket and bushing (21). while pressing the sprocket LIGHTLY against the paper tighten screw (15). remove paper.

- turn the intermittent flywheel by hand, there should be no binding.

- turn framing knob (7) , there should be no lateral (side-to-side) movement of the intermittent sprocket.



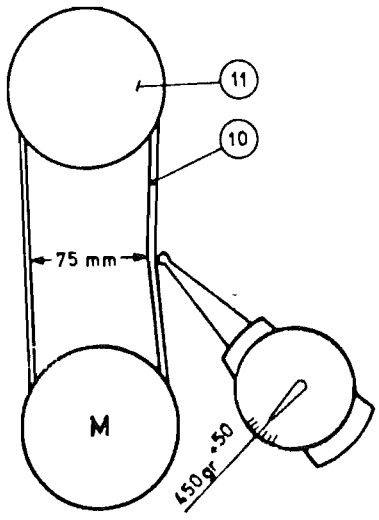
5: INSTALLATION AND ADJUSTMENT OF CHAINS

- TIGHT CHAINS ARE NOISY!
  LOOSE CHAINS RUN QUIETEST!

- the chains used in the FP-23C are superior quality roller chain and will run flawlessly for years.

- install holdback sprocket/friction drive chain around inside chain wheel of intermittent and fasten master link. adjust chain with chain idler roller on left.

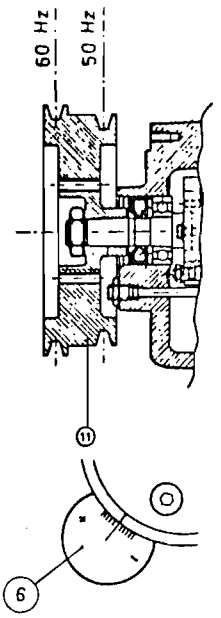
- install feed sprocket drive chain on outside chain wheel of intermittent and fasten master link. adjust chain by loosening screws (34) and moving entire feed sprocket assembly up and down until proper tension is achieved.



6: INSTALLATION OF DRIVE BELT

- belt (10) should be so tensioned so that when a force of 450grams is applied in the middle the inside dimension of the belt should be 75mm (approx. 3"). belt tension can be adjusted by loosening the 1- 6mm allen bolt located to the lower left of the motor.

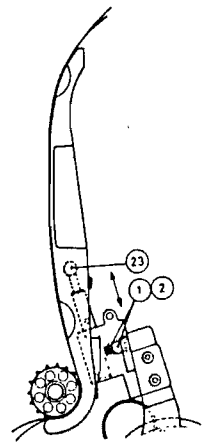
7: INSTALLATION OF THE RUNNER STRIPS



- it is essential that the runner strips be installed in such a fashion that they are perfectly vertical and adapt to the curvature of the film gate. the runner strips must NOT touch the ceramic guide rollers, and the small tabs on the bottom of the runner strips align perfectly with the shoulders of the intermittent sprocket. these tabs must not touch the sprocket teeth.

- always tighten the lower fastening screw of the runner strip first and the upper screw last. ALWAYS TIGHTEN THESE SCREWS BY HAND ONLY!

8: ALIGNMENT OF THE PRESSURE SKATE

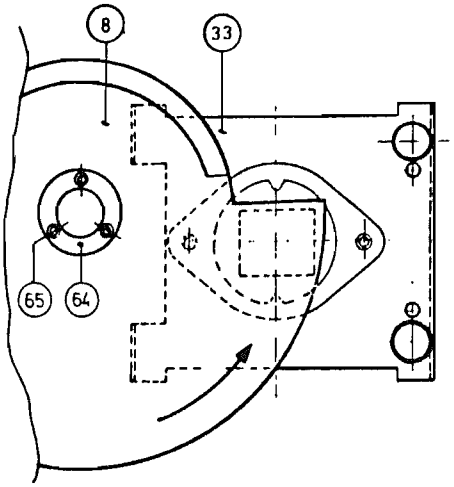


- set the gate pressure adjustment at medium pressure (6)

- insert two thicknesses of film in the gate and thread them around the intermittent sprocket.

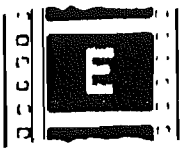
- loosen locking set screw (1) 2 turns, adjust bolt (23) in such a way that there is minimal vertical play when the gate is closed. slightly re-tighten screw (1)

9: SHUTTER ADJUSTMENT



- the 3 screws (65) should be only slightly tightened.

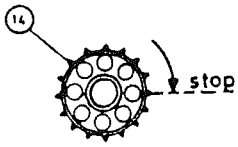
- turn projector by hand, when the intermittent sprocket just starts to turn the shutter should be adjusted so that it just covers the top of the aperture, when the intermittent sprocket has completed its pulldown the trailing edge of the shutter should be at the bottom of the aperture. tighten screws (65).



- if travel ghosting exists at the top of the screen re-adjust the shutter in a clockwise direction.

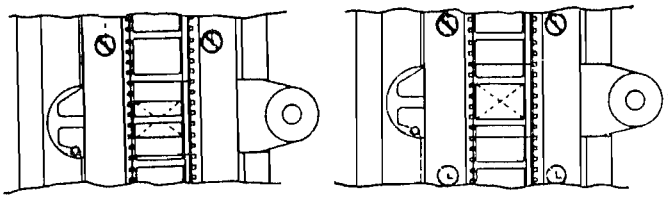
- if travel ghosting exists at the bottom of the picture re-adjust the shutter in a counter-clockwise direction.

10: FRAMING SHAFT ADJUSTMENT



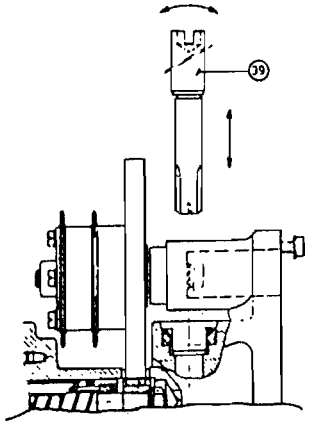
-be sure that intermittent is drained of oil

-the intermittent sprocket should be in a non-pulldown position and the framing knob should be in the middle of its travel. (align white dot on knob with white dot on projector.)



-thread gate with film that has a highly visable frame line.

-if the framing shaft is adjusted correctly then the picture will be in frame when the framing knob is in the center as per "b" and the frame line will be visable in the center of the aperture when the framing knob is rotated to either its far right or far left extreme of travel.



-if the framing shaft is not correctly positioned than framing shaft (39) must be CAREFULLY pulled out and turned a few gear teeth to the right or left as the case may be, and re-inserted CAREFULLY.

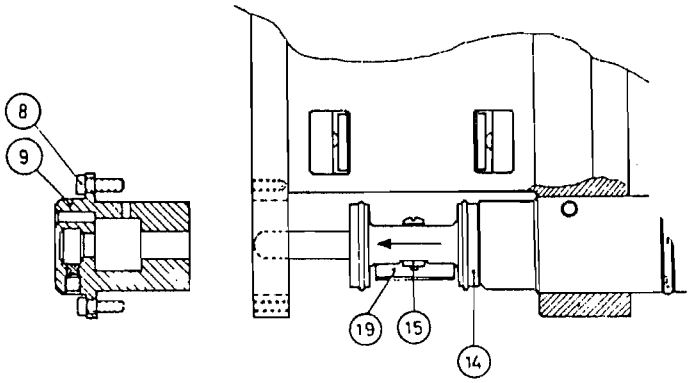
-tighten locking screw (8) on framing shaft collar (2) so that there is a maximum endplay of shaft (5) of approximately 2mm.

11: FILLING THE INTERMITTENT

- remove the cap from the intermittent filling vent. the filling vent is the clear plastic tube on top of the intermittent with a red and green line on it.

- remove the red cap from the long flexible clear plastic drainage tube.

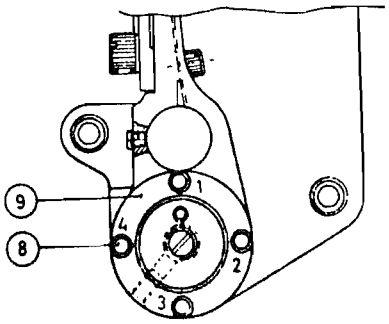
- fill the intermittent with EL3672 intermittent oil thru the drainage tube with the special oil bottle filler cap that is supplied with the oil bottle. the intermittent is full when an oil level that is between the red and green lines on the vent stack is achieved.



- turn intermittent by hand a few times to insure that all the air has escaped thru the vent tube.

- re-install the vent stack cap and drainage tube cap.

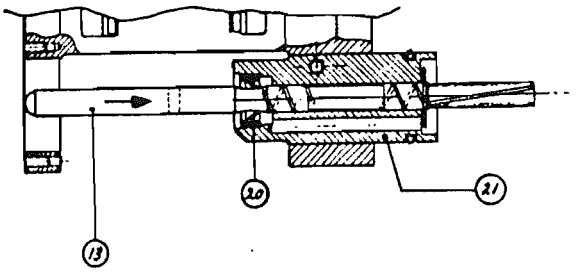
12: INTERMITTENT SPROCKET REPLACEMENT



- remove runner strips, remove screw (15), remove end bearing (9) by removing 4 screws (8)

- remove sprocket in direction of arrow while holding back film stripper (19)

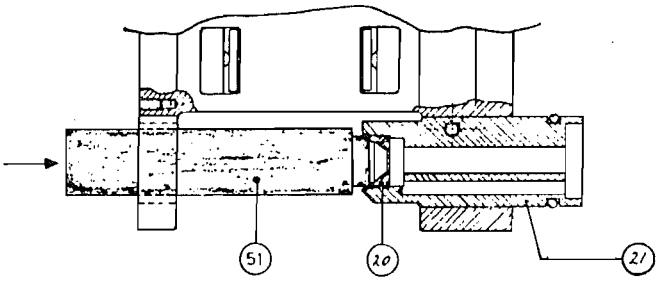
12: INTERMITTENT SPROCKET REPLACEMENT



- remove any burrs from shaft using very fine emery paper, clean, and oil shaft with universal oil.

- install new sprocket an tighten screw (15) slightly, re-install end bearing (9) and tighten 4 screws (8) in rotation. after screws are tight turn intermittent by hand to insure that there is no binding during pulldown.

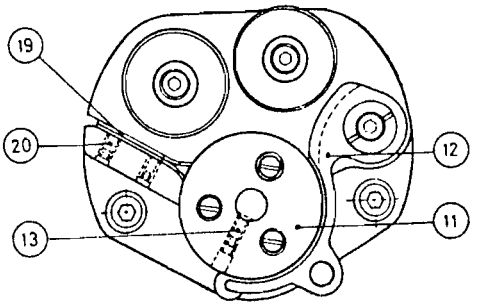
- REFER TO SECTION 4 FOR SPROCKET ADJUSTMENT



- re-install runner strips

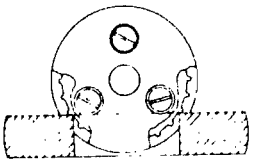
- REFER TO SECTION 7 FOR RUNNER STRIP ADJUSTMENT

13: INTERMITTENT SPROCKET SHAFT OIL SEAL REPLACEMENT

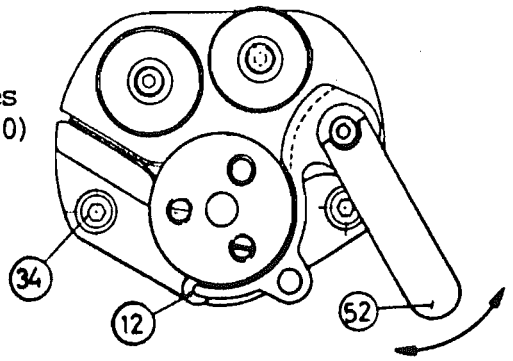


- remove gate assembly as described in SECTION 1
- remove intermittent sprocket as described in SECTION 12
- remove sprocket shaft (13) in direction of arrow.
- remove oil seal (20), be sure not to damage bearing (21)
- oil new oil seal (20) with universal oil and tap into place with mandrel (51)
- oil sprocket shaft with universal oil and re-insert CAREFULLY.
- install sprocket and end bearing as per SECTION 12 and SECTION 4
- it may be necessary to re-adjust end bearing see SECTION 3

14: SPROCKET WAFER REPLACEMENT

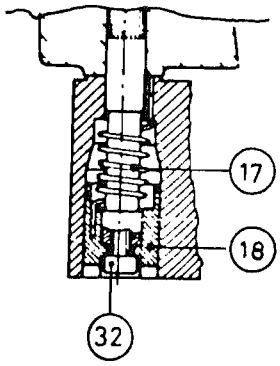


- loosen the 2 screws (20) of the film stripper.
- loosen screw (13) and remove sprocket while holding open the pad shoe
- disassemble sprocket by removing the 3 screws on either side
- replace sprocket wafers and assemble sprocket loosely (the sprocket wafers may be reversed to use the other side of the sprocket teeth)
- align sprocket wafers using guage #395-80016 or an 8mm shaft and a short piece of 35mm steel film
- re-install the sprocket on the shaft, and while holding the chain wheel side of the shaft tighten screw (13). THERE SHOULD BE NO END PLAY OF THIS SHAFT!
- re-install film stripper and adjust it to 2 thichnesses of film clearance from the sprocket. tighten screws (20)



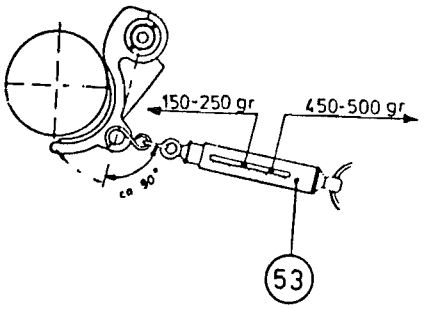
15: FEED AND HOLDBACK SPROCKET PAD SHOE REPLACEMENT

- remove pad shoe hold down screw (32)
- remove pad shoe (12), tension nut (18) and spring (17) from shaft.



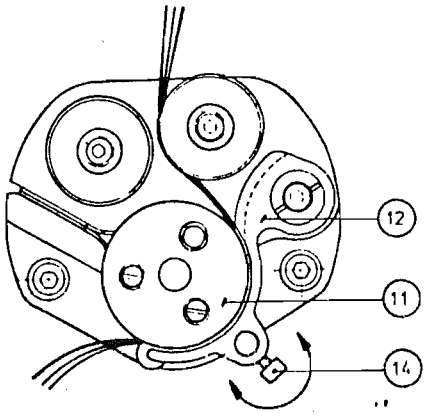
- clean shaft and lubricate with a drop of universal oil.

- install new pad shoe (12), and re-install spring (17) and tension nut (18), and tighten screw (32) snugly. make sure that spring (17) is seated properly in both the small holes in the brass bushing of the pad shoe and the tension nut.



- using spanner wrench #395-50032 (52) inserted into the slots of the tension nut (18) adjust pad shoe opening tension to 450 grams +50 grams - 0 grams.TURN SPANNER WRENCH CLOCKWISE TO INCREASE TENSION.
- tighten locking screw (32)

- thread three pieces of film around sprocket and back off screw (14) off its stop point.

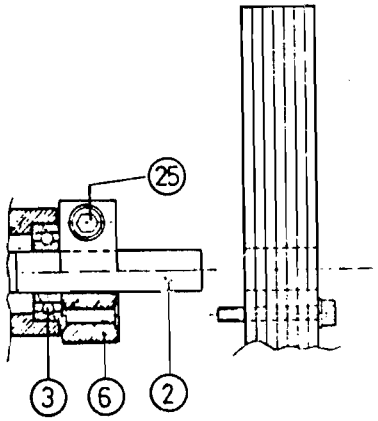


- place a piece of paper between screw (14) and stop point and turn screw (14) until it just touches the paper.

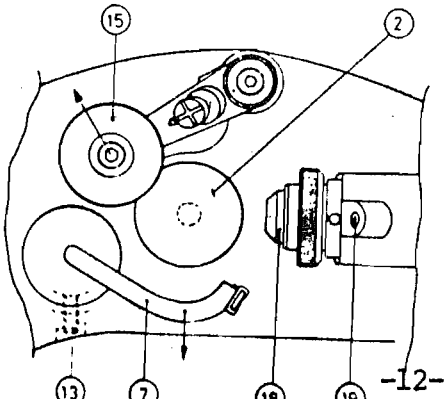
- remove the three pieces of film and paper, the pad shoe is now adjusted for slightly more than 2 thicknesses of film and slightly less than 3 thicknesses .

16: SOUND DRUM, SOUND LENS, AND SOUND OPTIC REPLACEMENT

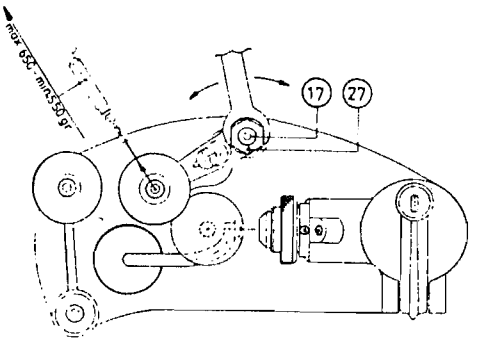
- remove optical flywheel
- remove sound shaft hub (6) by loosening screw (25)
- loosen screw (13) and swing down solar cell holder
- hold up roller assembly (15) and pull out sound drum
- loosen screw (19) and remove sound optic (18)



- re-install in reverse order, be certain that the rear bearing (3) of the sound drum is seated properly in its casting when re-installing the sound drum. THERE SHOULD BE NO END PLAY IN THE SOUND DRUM SHAFT!



17: PRESSURE ROLLER ADJUSTMENT



- loosen screw (17) and with open end wrench adjust tension nut (27) so that there is between 550 - 650 grams of pressure on the pressure roller.

- TURN TENSION NUT (27) COUNTERCLOCKWISE TO INCREASE PRESSURE!

- tighten screw (17)

18: SOUND OPTIC ALIGNMENT

- thread projector with a loop of buzz track test film.

- turn screw (A) until either a "dead spot" or equal loudness of both frequencies is reached

- thread projector with a loop of 1000hz test film

- loosen screw (B) and turn focus ring (C) until maximum level is reached, you now have proper focus adjustment.

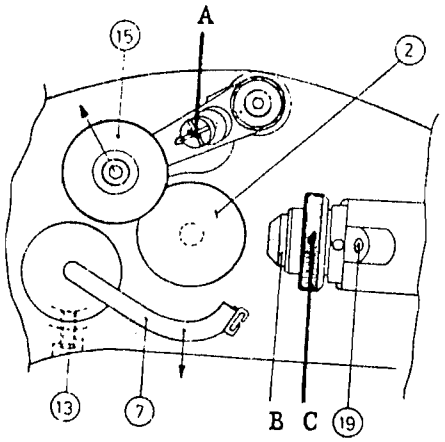
- slightly tighten screw (B)

- thread projector with a loop of 7000hz test film

- loosen screw (19) and turn sound optic assembly until maximum level is reached, you now have proper azimuth alignment

- repeat all steps in this procedure 2 times to assure perfect alignment.

- tighten screws (B) and (19)



19: SHUTTER DRIVE GEAR REPLACEMENT AND ADJUSTMENT

- remove upper and lower chains

- remove screw (42) and remove entire shutter drive gear and chain wheel assembly. screw (42) is accessible from the operator side of the projector with a 5mm hex wrench.

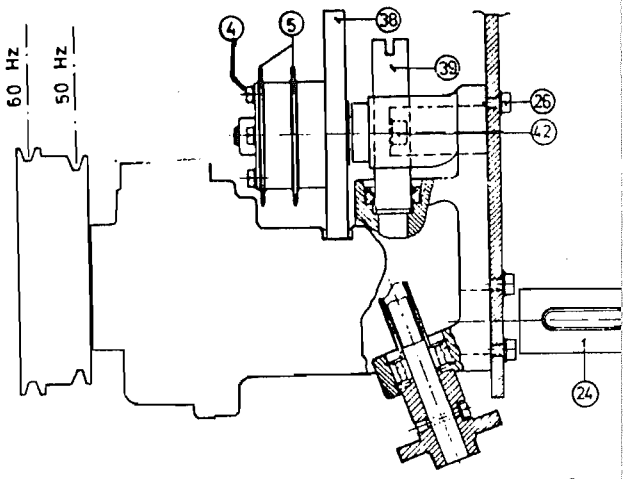
- remove 4 screws (4) and remove shutter drive gear, and replace with new gear, and tighten 4 screws (4).

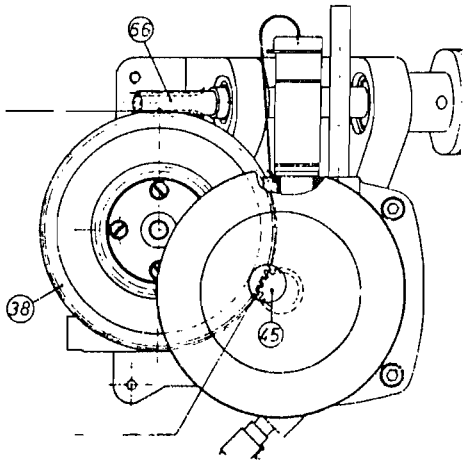
- re-install gear assembly and slightly tighten screw (42)

- gear assembly should mesh nicely with both gears (66 & 45).adjust this mesh so that the axial play of the shutter at the outside edge of the shutter is no greater than 6mm (¼").

- tighten screw (42)

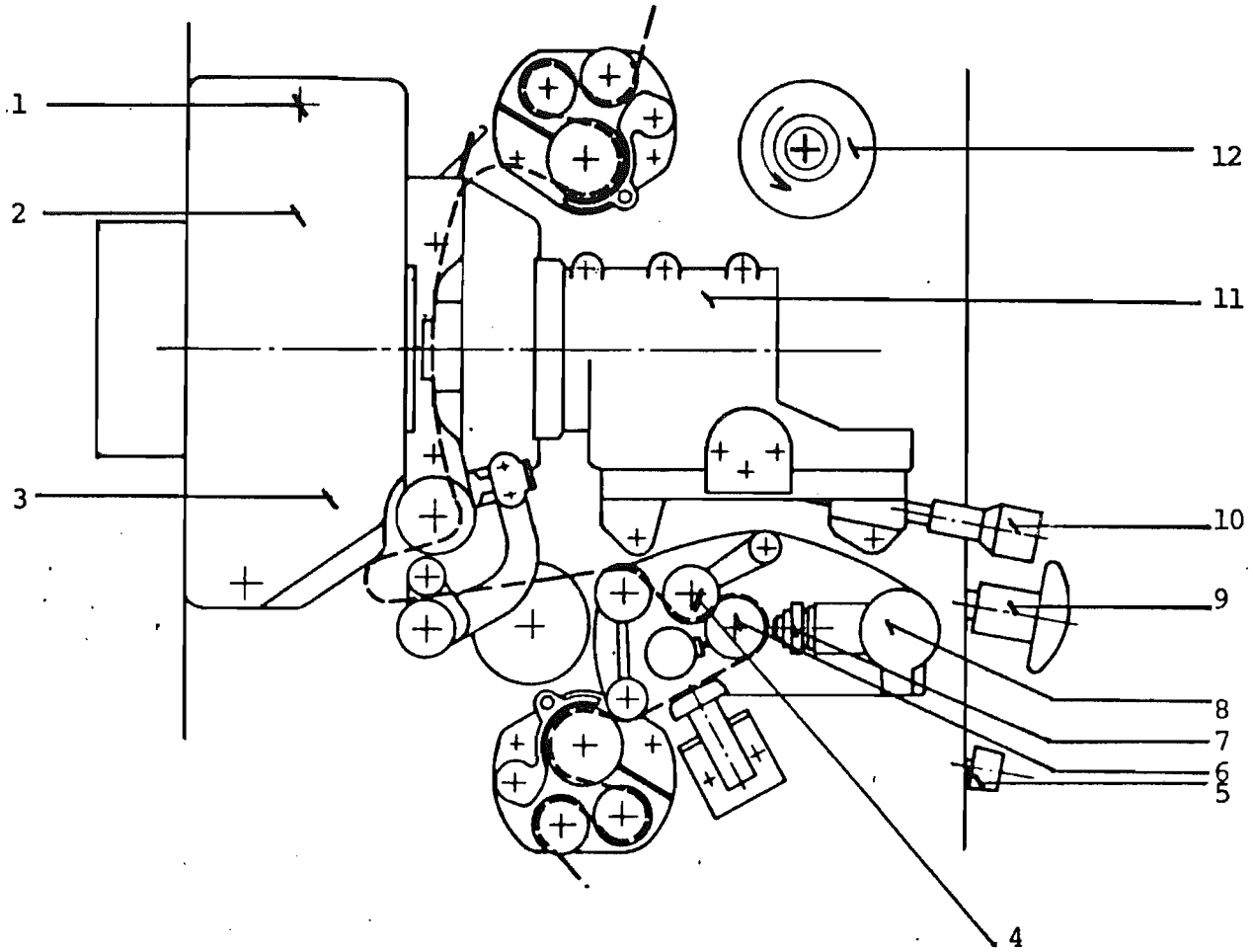
- reinstall chains and see SECTION 5 is chain adjustment is necessary



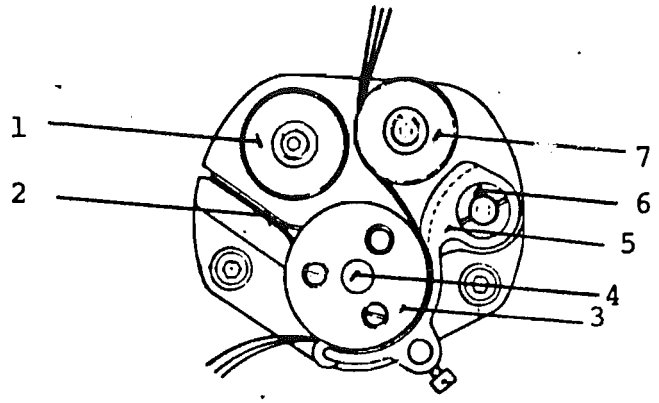


FREQUENTLY USED SPARE PARTS

DESCRIPTION:	PART NUMBER:
Film skate	463-17019
Runner strips	463-10021
Ceramic guide disc	532-50362
Intermittent sprocket	522-30119
Feed & holdback sprocket disc	522-30466
Aperture plates - pinhole	451-14006
for - CS-1.33	451-14004
changer - CS-1.85	451-14005
- 1.33-1.85	451-14003
Feed & holdback sprocket pad shoes	525-30003
Drive belt (synchroflex type)	358-27019
Framing lamp	134-40201A
Exciter lamp 3874C (6.5V-1.48A)	134-80007
7251C (5V-4A)	134-80008
Universal Handy Oil	390-10048
Slide Grease	EL-4854
Cardan Oil	8657
Intermittent Oil	EL-3672

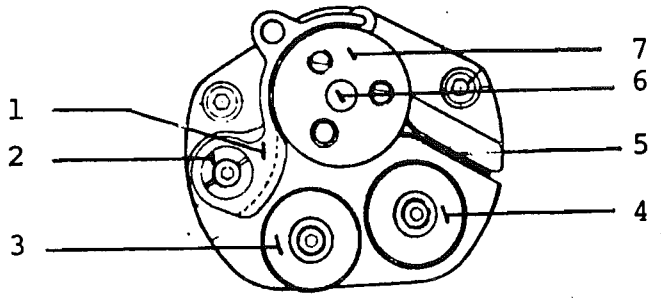


Item	Description	Part Number
1	knurled nut	505-10192
1A	stud for shutter cover	705-14968
2	shutter cover w/o shroud	705-14967
2A	shutter cover shroud	FP-23CP3
3	dowser blade	463-50016
3A	dowser coils 24VAC	280-64007
4	pressure roller	525-60022
4A	pressure roller bearing	520-20061
5	skate pressure knob	413-40152
5A	skate pressure shaft	535-80016
6	sound drum	535-50014
6A	sound drum bearing	520-20047
6B	solar cell	130-90005
7	sound optic	381-20004
8	exciter lamp holder COMPLETE	255-20021
8A	exciter lamp holder DOOR ONLY	693-50058
8B	exciter lamp (3874C)	134-80007
8C	exciter lamp (7251C)	134-80008
9	framing shaft and knob	413-10007
10	focus knob and shaft	
11	lens holder 70.6mm Ø	EL-4029
11A	lens holder 101mm Ø	240-29004
12	inching knob	413-60036



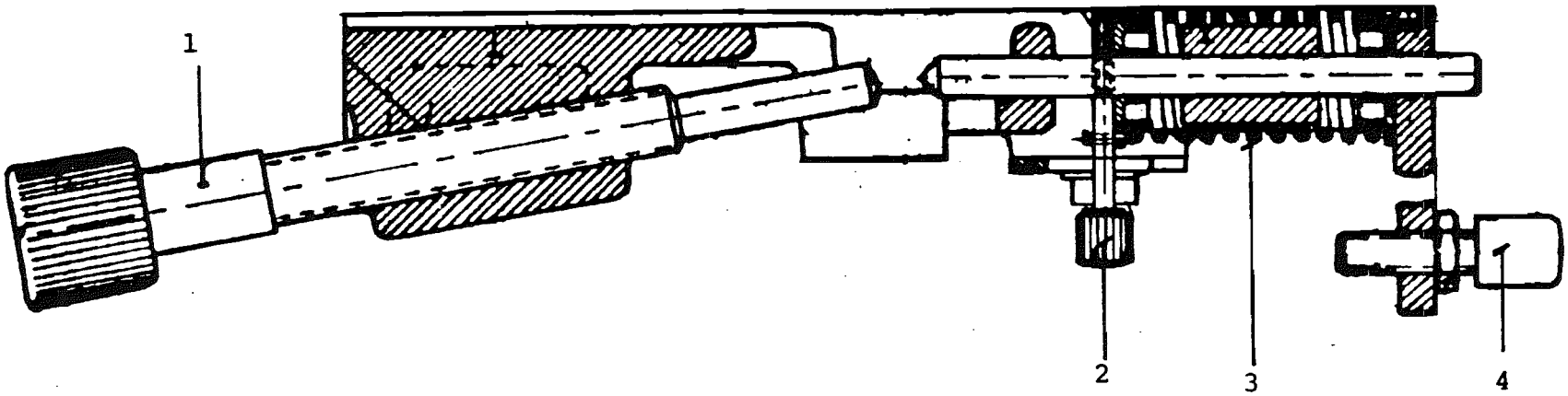
FEED SPROCKET ASSEMBLY

Item	Description	Part Number
1	roller	525-60096
1A	cap	462-70374
2	film stripper	
3	sprocket COMPLETE	522-30104
3A	sprocket WAFER ONLY	522-30466
4	sprocket shaft	535-90485
4A	sprocket shaft bearing	520-20032
5	pad shoe	525-30003
6	tension nut	462-50027
6A	spring	492-40001
7	roller	525-60096
7A	cap	462-70374



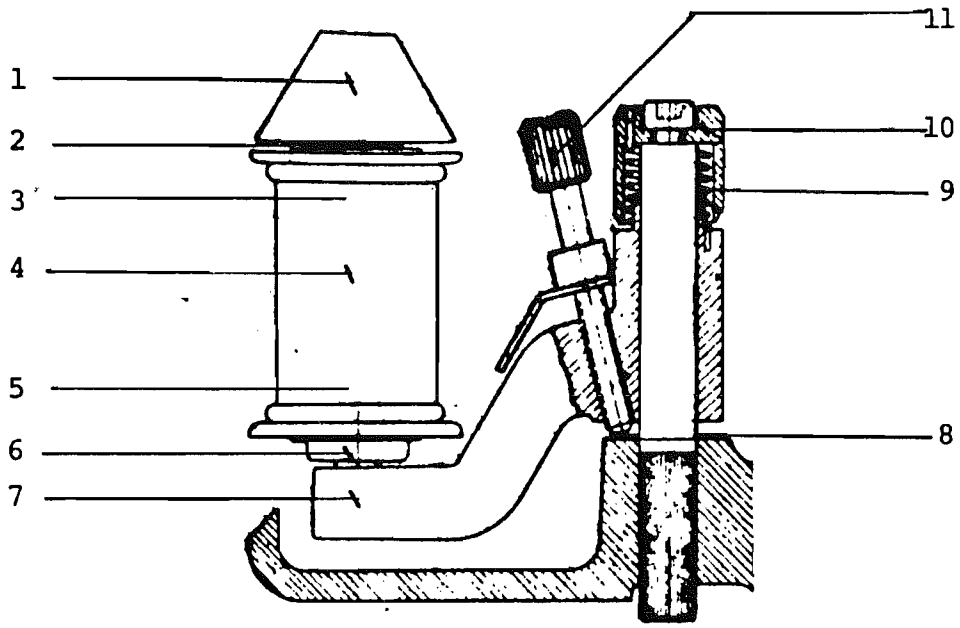
HOLDBACK SPROCKET ASSEMBLY

Item	Description	Part Number
1	pad shoe	525-30003
2	tension nut	462-50027
2A	spring	492-40001
3	roller half	525-60096
3A	cap	462-70374
4	film break/slit roller	
4A	cap (red)	
5	film stripper	
6	sprocket shaft	535-90485
6A	sprocket shaft bearing	520-20032
7	sprocket COMPLETE	522-30104
7A	sprocket WAFER ONLY	522-30466



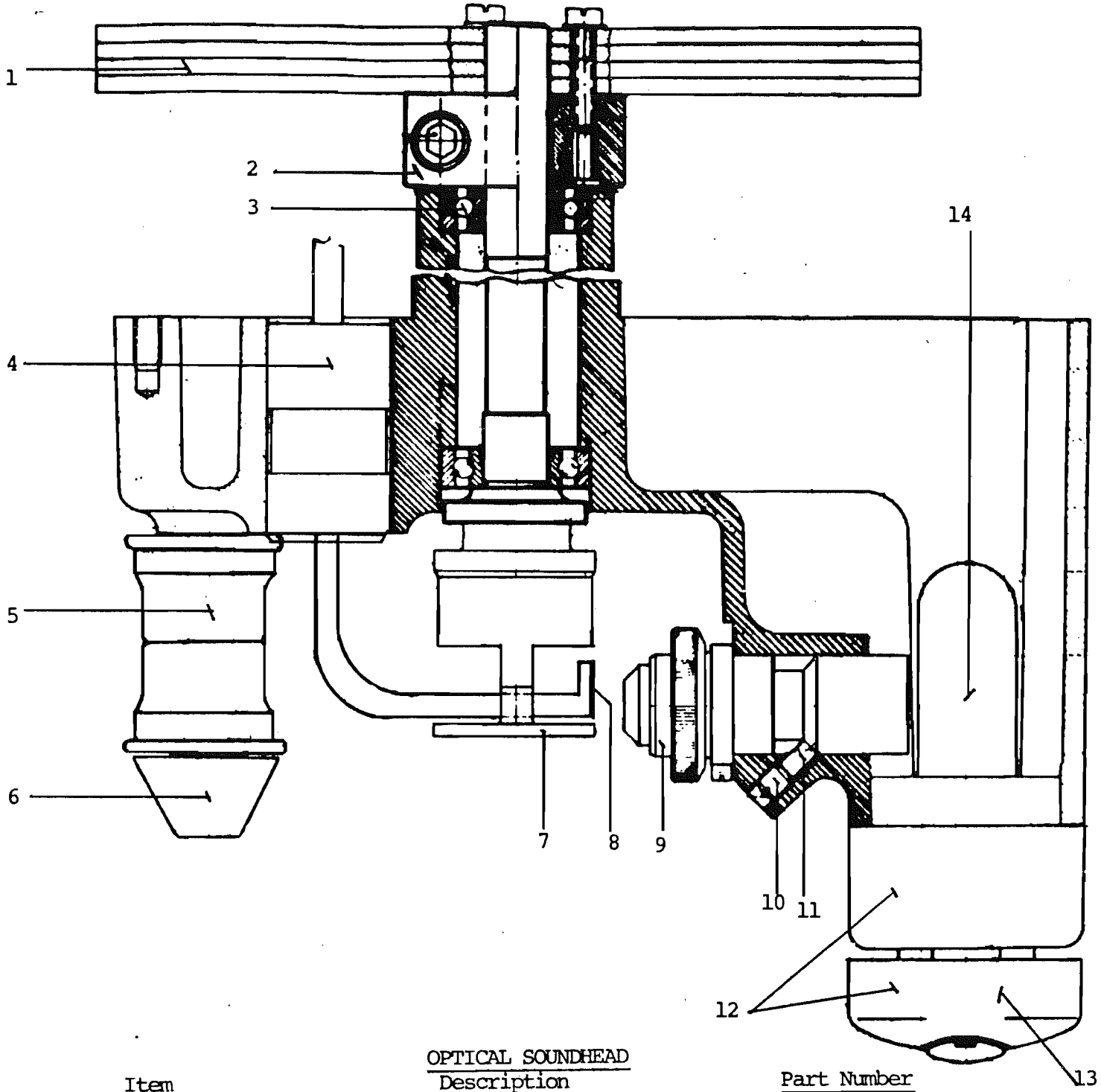
LENS HOLDER FOCUS MOUNT

Item	Description	Part Number
1	focus knob and shaft	
2	pin with knurled nut	535-80089
3	spring	492-40036
4	rubber bumper	462-40032



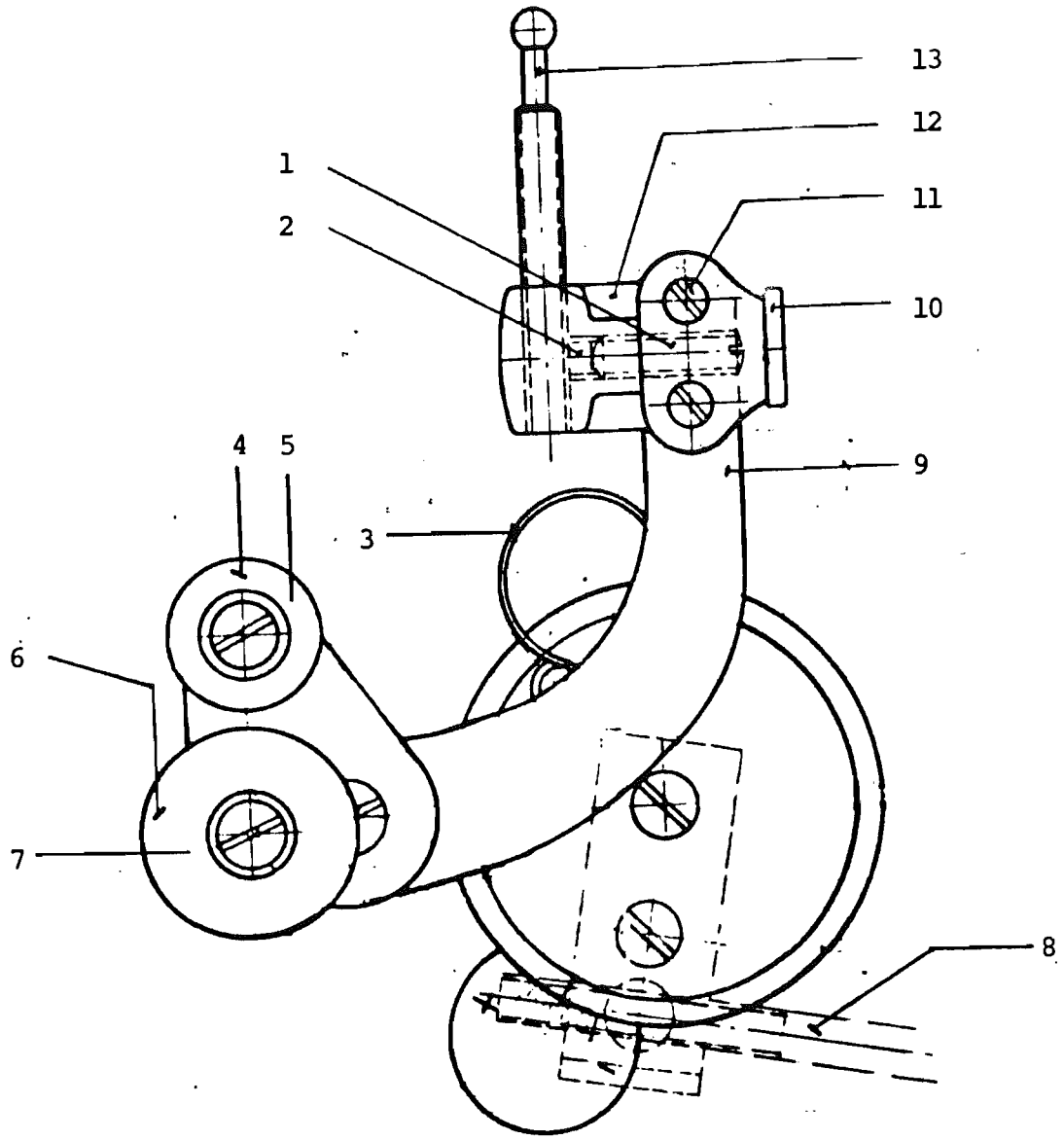
SOUND DRUM PRESSURE ROLLER

Item	Description	Part Number
1	cap	462-70374
2	spacer ring	532-10094
3	bearing	520-20061
3A	circlip	530-70018
4	pressure roller	525-60022
5	bearing	520-20061
5A	circlip	530-70018
6	spacer ring	532-10168
7	lever arm	404-50018
8	washer	532-10373
9	spring	492-40001
10	tension nut	
11	screw	502-10225



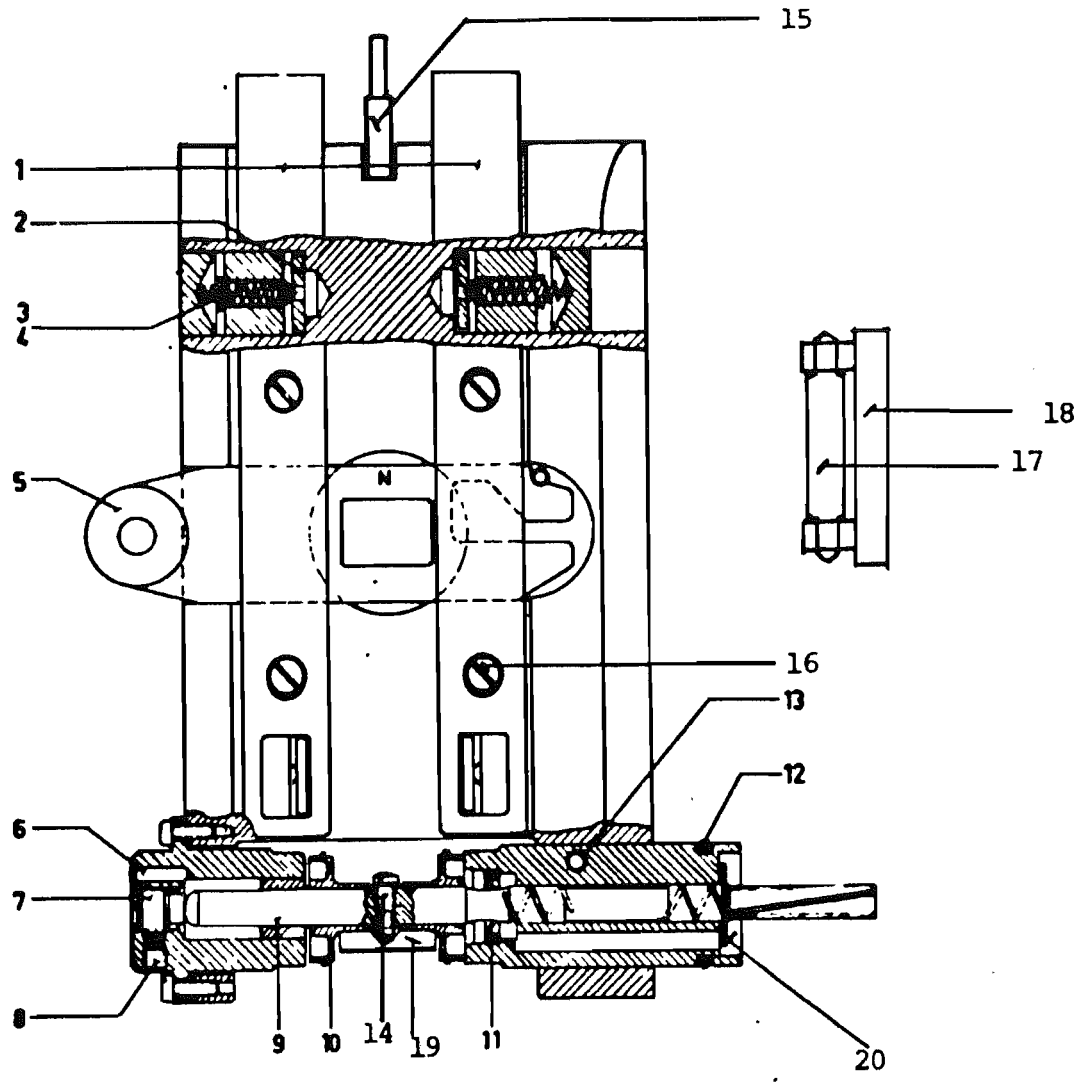
OPTICAL SOUNDHEAD

Item	Description	Part Number
1	flywheel	
2	flywheel collar	
3	bearing	520-20047
4	solar cell holder	
5	upper roller half	525-60096
5A	lower roller half	525-60095
6	upper cap	462-70374
6A	lower cap	462-70373
7	sound drum	535-50014
8	solar cell	130-90005
9	sound lens	381-20004
10	screw	502-10019
11	leather plug	705-15114
12	exciter lamp holder COMPLETE	255-20021
13	exciter lamp holder DOOR ONLY	693-50058
14	exciter lamp (7251C)	134-80008
14A	exciter lamp (3874C)	134-80007



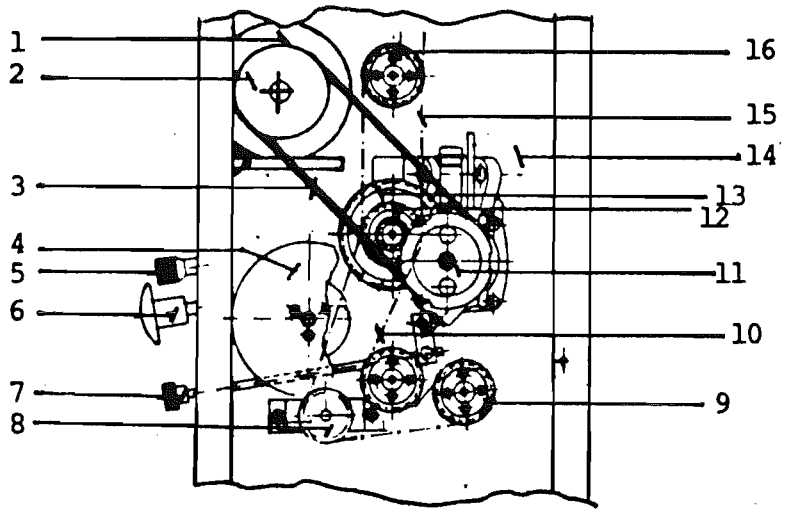
SKATE HOLDER AND GATE PRESSURE DEVICE

Item	Description	Part Number
1	screw	M5 X 15 set screw
2	leather plug	705-15114
3	spring	492-60122
4	cap	462-70373
5	roller half	525-60095
6	cap	462-70374
7	roller half	525-60096
8	skate pressure shaft	535-80016
8A	skate pressure shaft knob	413-40152
9	lever	404-50048
10	lever	498-54007
11	screw	M4 X 20 FHMS
12	skate holder mtg. block	405-94015
13	skate holder pin	535-80184
13A	skate	463-17019



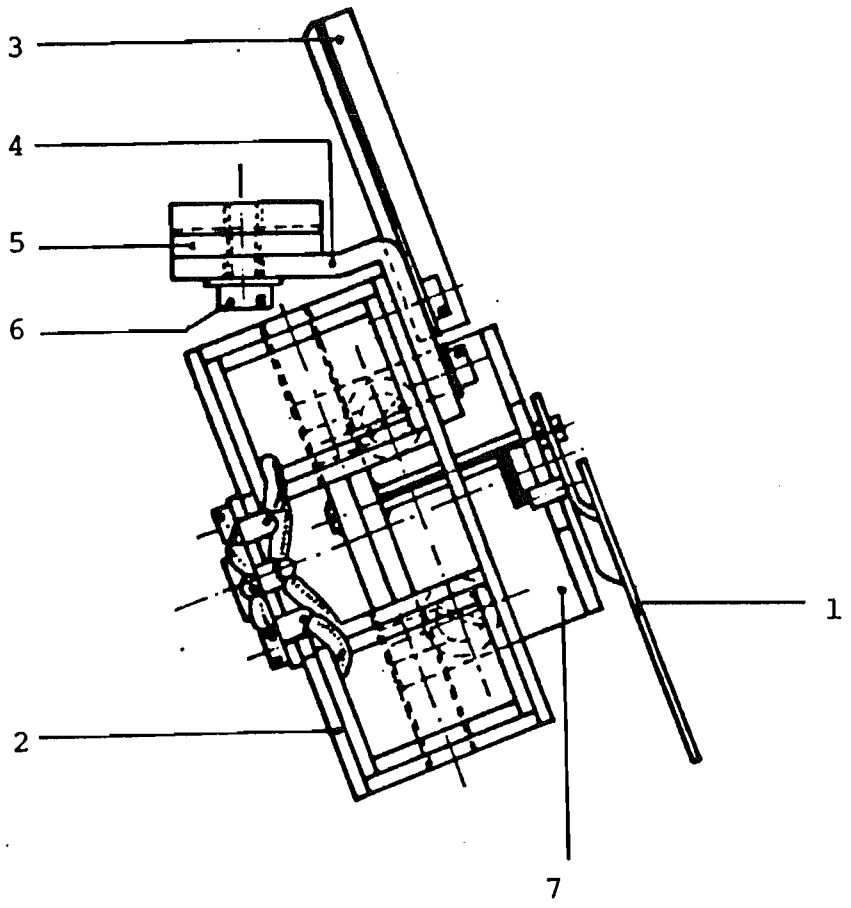
GATE ASSEMBLY AND FRAMING LAMP

Item	Description	Part Number
1	runner strip	463-10021
2	ceramic disc	532-50362
3	spring	492-50076
4	piston	360-40048
5	aperture - pinhole	451-10013
	Units with turret see aperture changer section 1.33	451-10011
	1.85	451-10012
	2.2	451-10009
6	outboard bearing (COMPLETE)	520-17001
7	end play adjustment screw	502-10304
8	locking set screw for #7	502-10273
9	intermittent sprocket shaft	522-30947
10	intermittent sprocket	522-30119
11	oil seal	530-50427
12	o-ring	530-50097
13	roll pin	529-50058
14	screw kit	310-30022
15	film break switch	271-30008
16	screw	502-10336
17	framing lamp	134-40201A
18	framing lamp socket	256-30098
19	film stripper	404-57012
20	circlip	530-70035



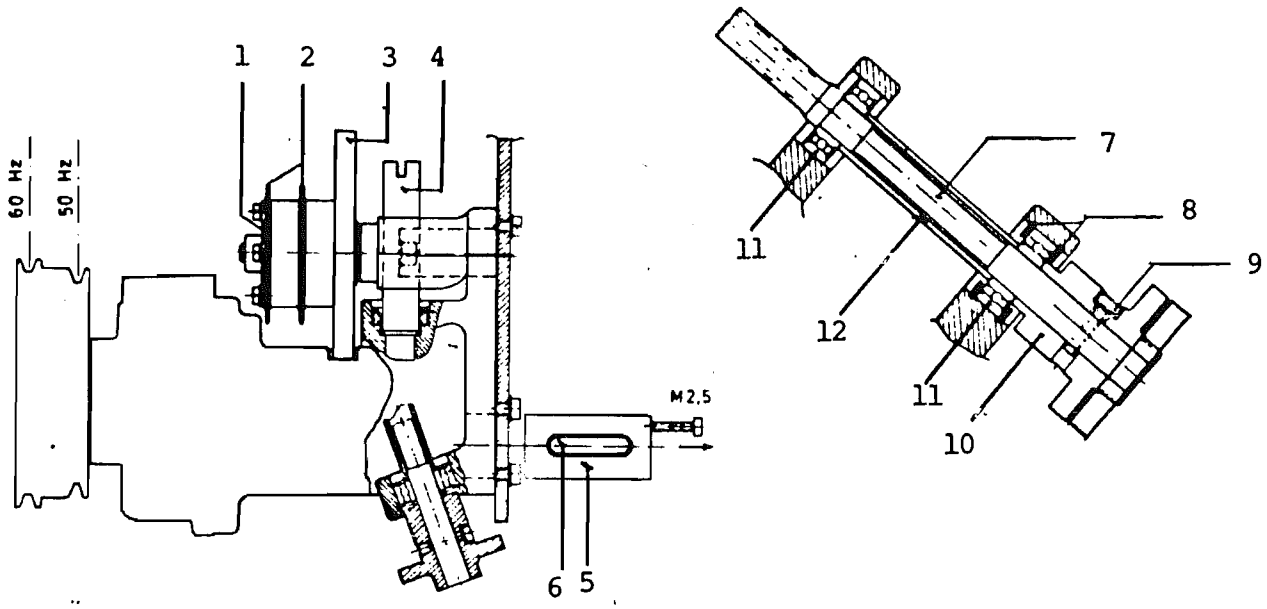
FP-23CX

ITEM	DESCRIPTION	PART NUMBER
1	Motor 120VAC non-synch	361-57004
1A	Motor 120VAC synchronous	361-40009
2	Pulley for motor	522-37009
3	Synchroflex belt	358-27019
4	Flywheel	
5	Focus knob & shaft	
6	Framing knob & shaft	413-10007
7	Skate pressure knob	413-40152
7A	Skate pressure shaft	535-80016
8	Chain idler pulley	731-02500
9	Chain wheel	522-30088
10	Chain	358-57009
11	Flywheel for intermittent	
11A	40 tooth synchroflex pulley	522-37007
12	Chain wheel	522-30088
13	Shutter drive gear	522-30089
14	Shutter	515-20015
15	Chain	358-50007
16	Chain wheel	522-30088



DOWSER BLADE AND CHANGEOVER COIL

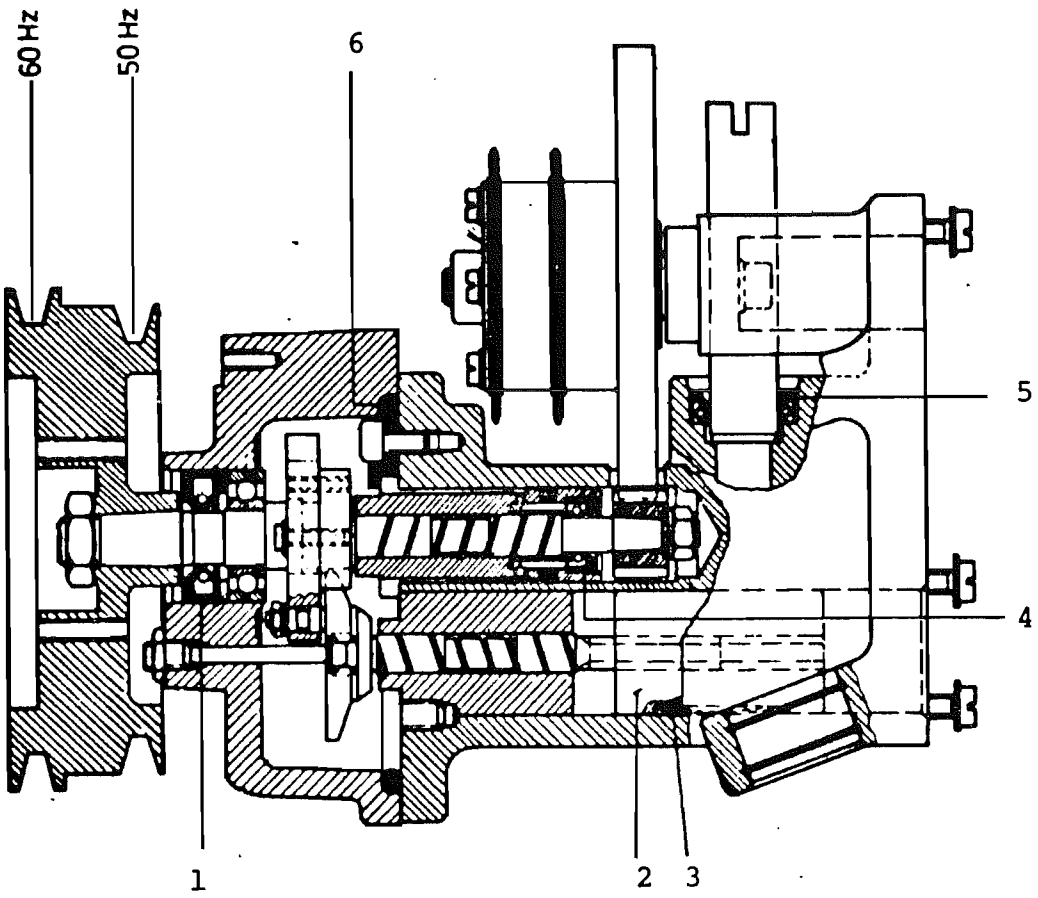
Item	Description	Part Number
1	dowser blade	463-50016
2	dowser coil assembly 24VAC	280-64007
1-7	FP-23 changeover assembly COMPLETE 24 VAC	



INTERMITTENT AND SHUTTER SHAFT

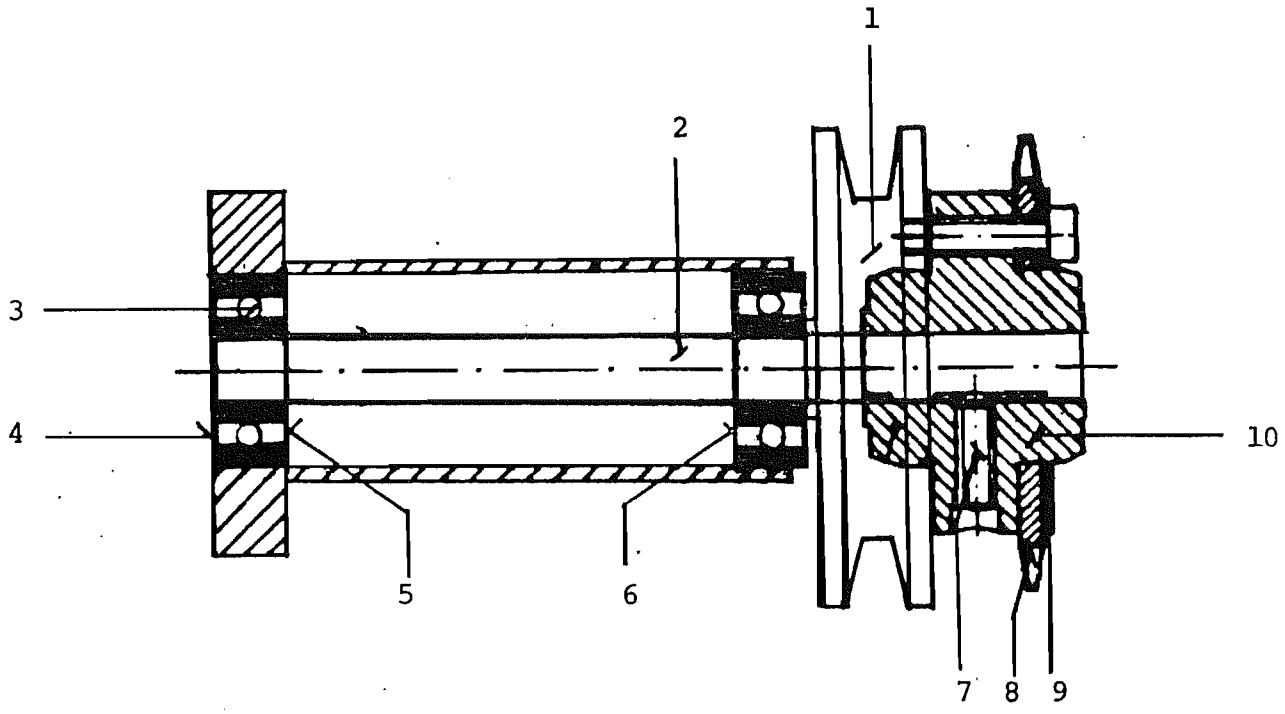
Item	Description	Part Number
1	pressure ring	535-90127
2	chain wheel	522-30088
3	shutter drive gear	522-30089
4	framing shaft	522-30824
5	framing bushing	525-60074
6	spring for framing bushing	492-61368
7	shutter shaft	535-50009
8	circlip	530-70021
9	screw	M4 X 20
10	shutter hub COMPLETE	705-11071
10A	shutter	515-20015
11	bearing	520-20047
12	bearing spacer	705-11137

INTERMITTENT - COMPLETE	525-20017
INTERMITTENT without: shutter shaft,shutter gear assy. &framing bushing	525-20013



INTERMITTENT OIL SEALS

Item	Description	Part Number
1	oil seal	705-30171
2	framing bushing	525-50074
3	spring for framing bushing	492-61368
4	oil seal	532-40006
5	oil seal	705-30172
6	O-ring	530-50147



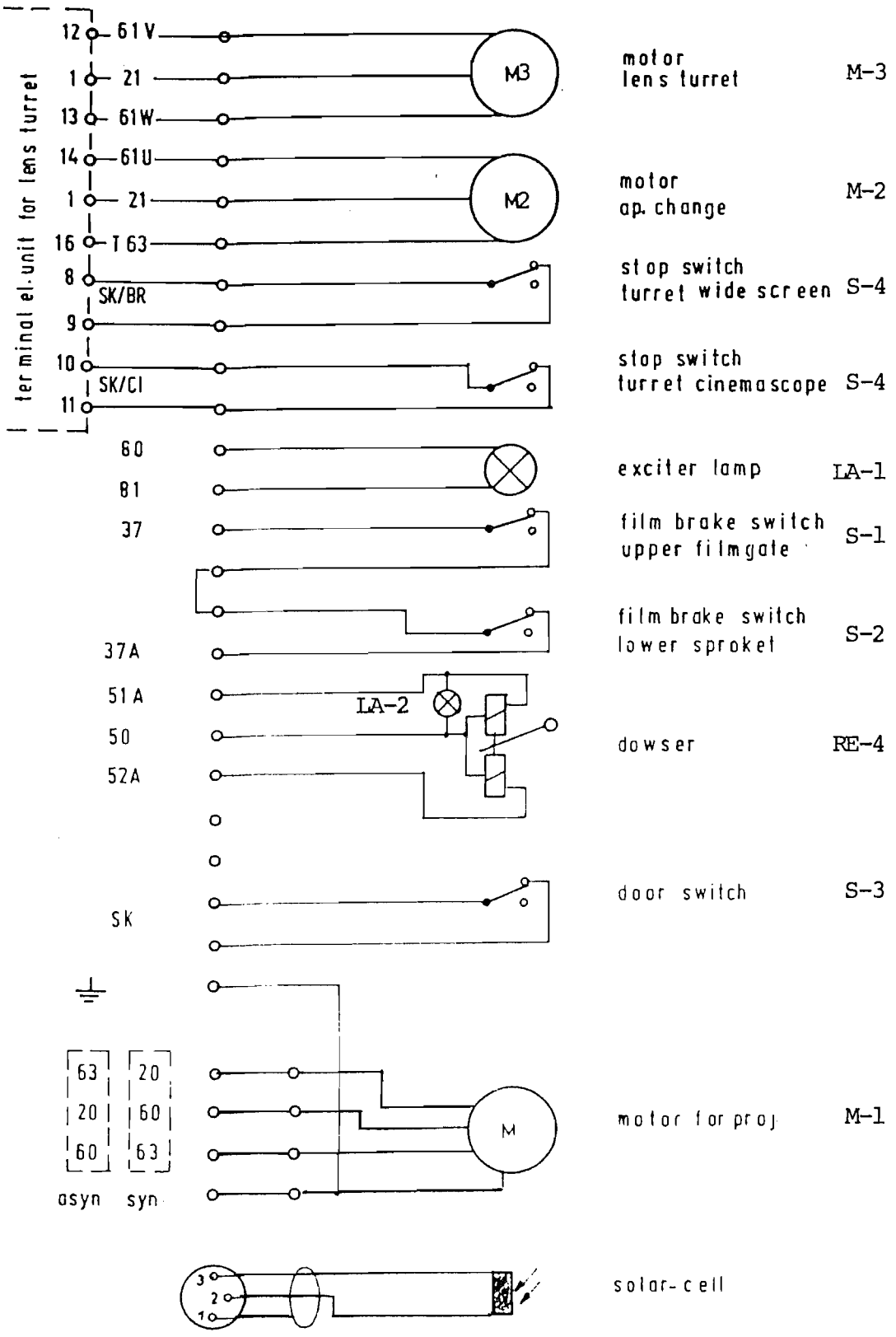
TAKE - UP FRICTION DRIVE ASSEMBLY

FP-23C Type Only

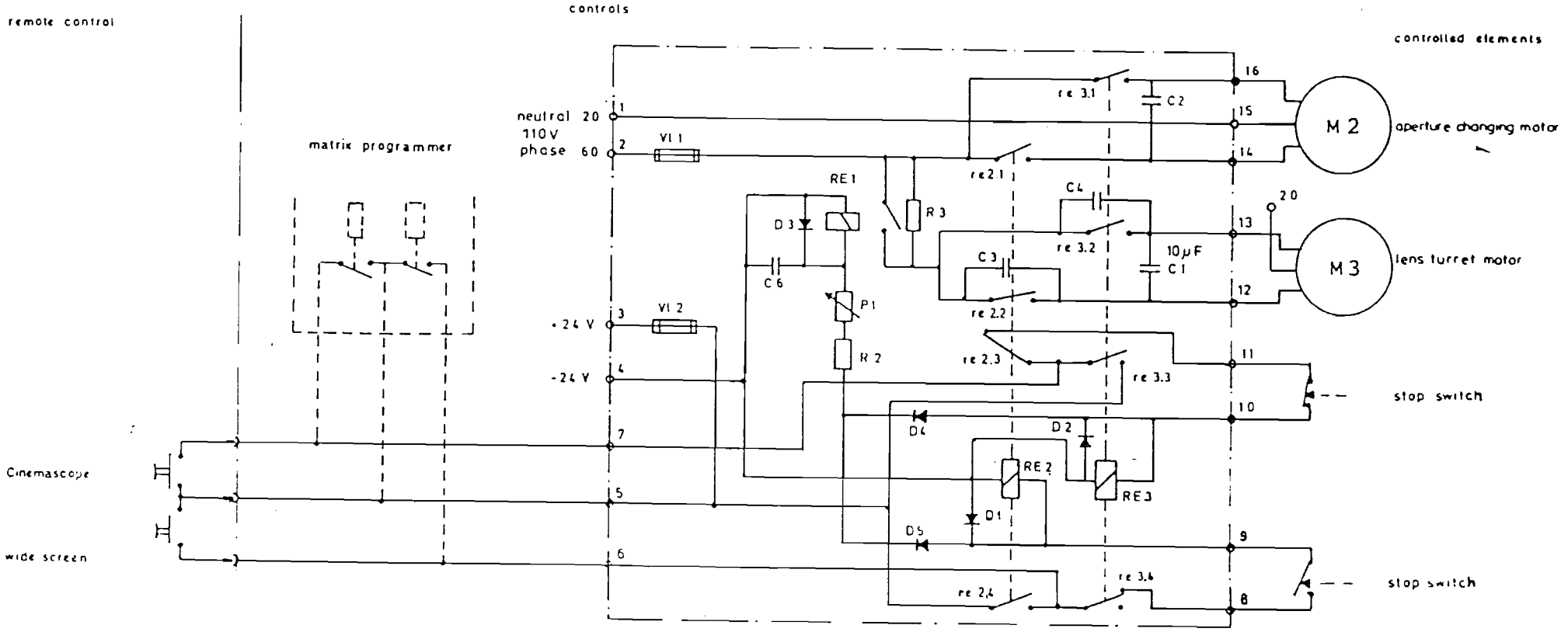
Item	Description	Part Number
1	take-up drive pulley	FP-23CP4
2	shaft	FP-23CP5
3	bearing	520-20032
4-5-6	circlip	
7	screw	M5 X 15 set screw
8	chain sprocket	522-30088
9	pressure ring	535-90127
10	core	705-10773

FP-23CX ELECTRICAL SPARE PARTS

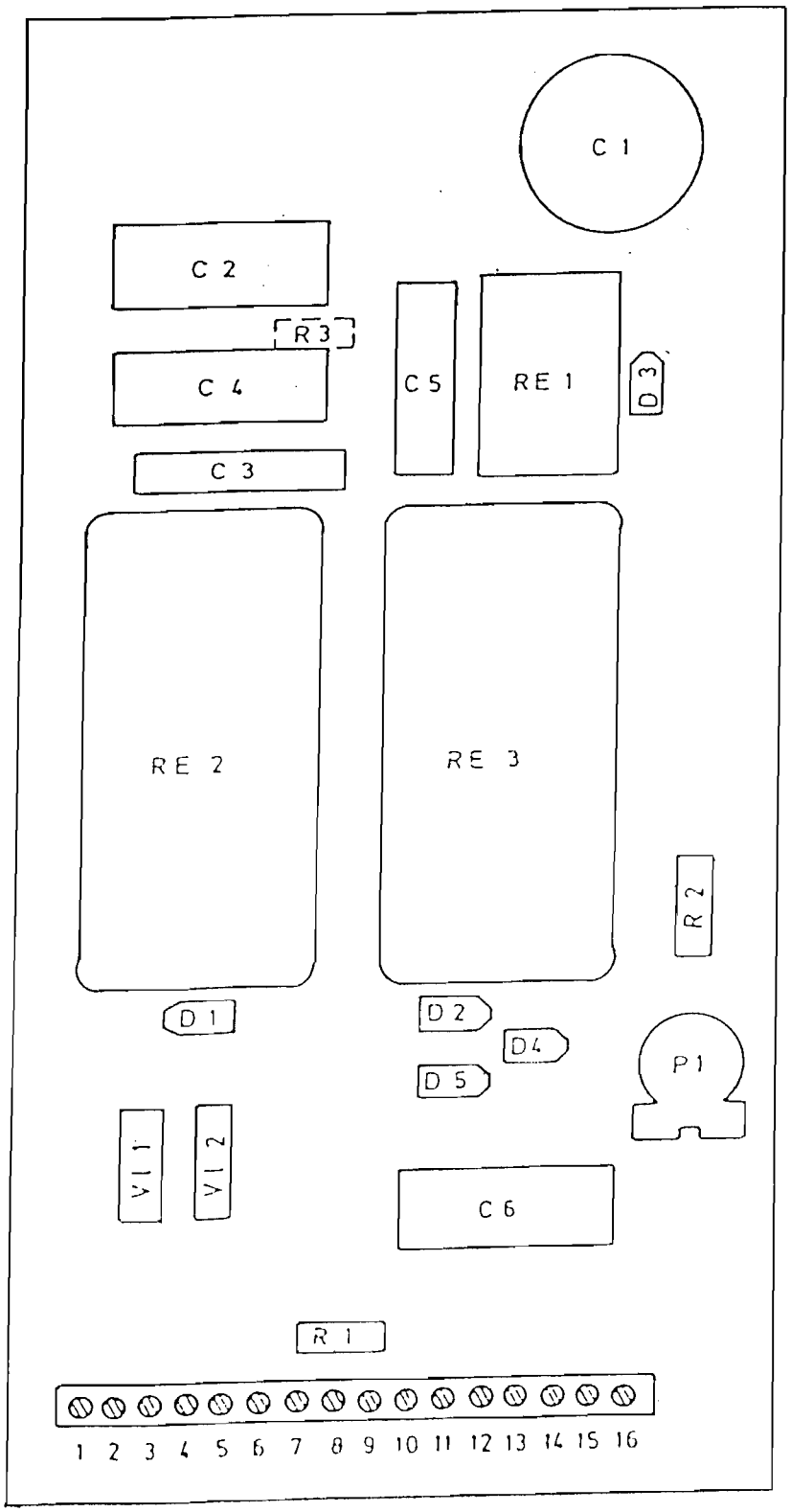
ITEM	DESCRIPTION	PART NUMBER
M-1	Motor non-synch	361-57004
	Motor synchronous	361-40009
C-1	Motor capacitor non-synch	121-17007
	Motor capacitor synchronous	121-17008
LA-1	Exciter lamp 3874C (6.5v)	134-80007
	Exciter lamp 7251C (5v)	134-80008
LA-2	Framing lamp 24v 3w	134-40201A
S-1	Film break switch at gate	271-30008
S-2	Film break switch at sprocket	271-37007
S-3	Door switch	
S-4	Double microswitch turret	271-37001
M-2	Motor for aperture changer	361-84037
M-3	Motor for turret 110v 60hz	361-87003
	Capacitor for above 10mf	121-17009
RE-1	Relay-turret P.C. board	280-77003
RE-2,RE-3	Relay-turret P.C. board	280-74014
RE-4	Picture change over solenoid	280-64007



terminal strip



wiring diagram
lens turret



el. unit for lens turret