

# Film-Tech

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These manuals are designed to facilitate the exchange of information related to cinema projection and film handling, with no warranties nor obligations from the authors, for qualified field service engineers.

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**35mm PROJECTOR MECHANISM**  
**Type MSC, SA**  
Parts Catalog

Rev. 8/98

**STRONG INTERNATIONAL**

a division of Ballantyne of Omaha, Inc.

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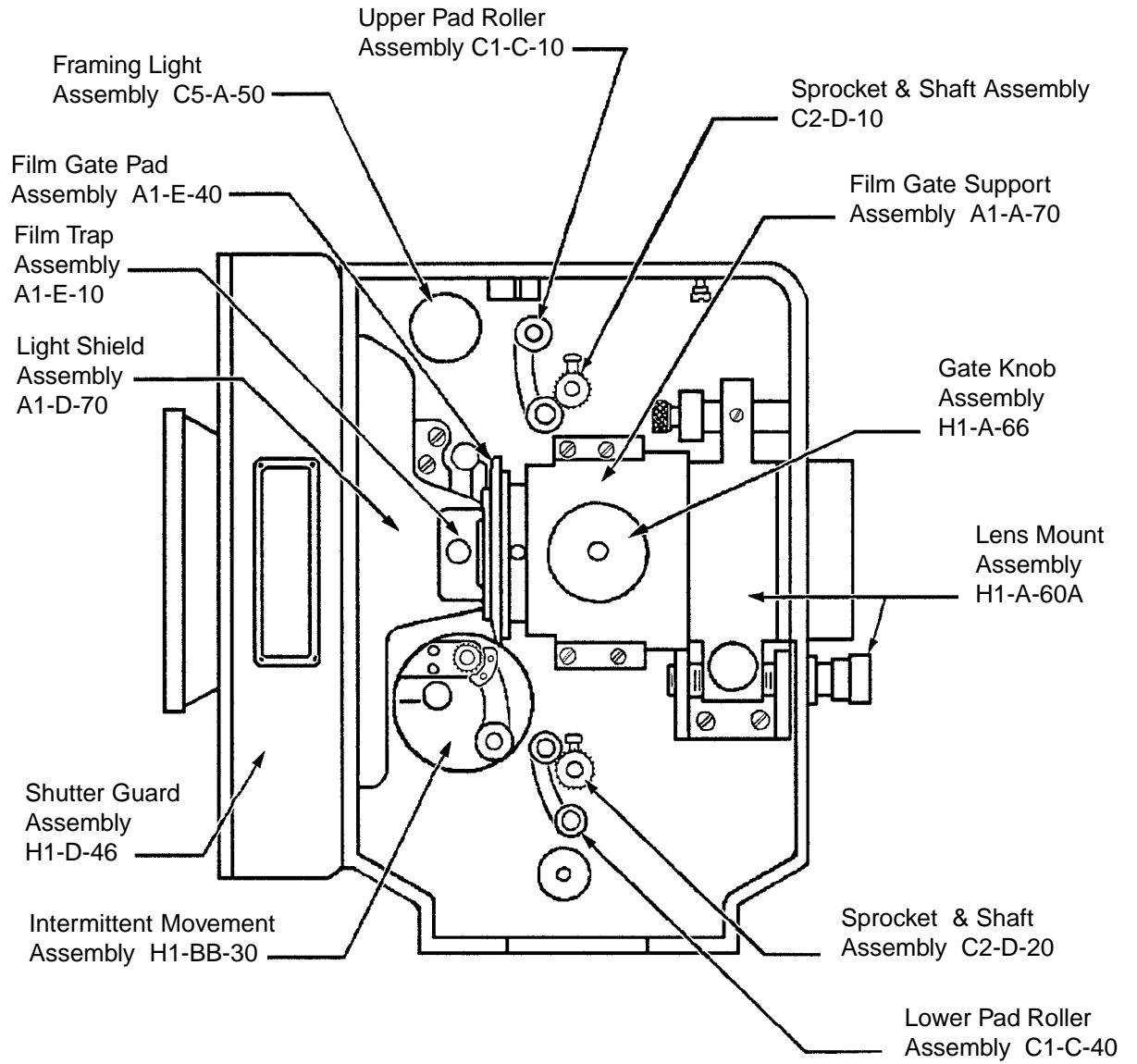
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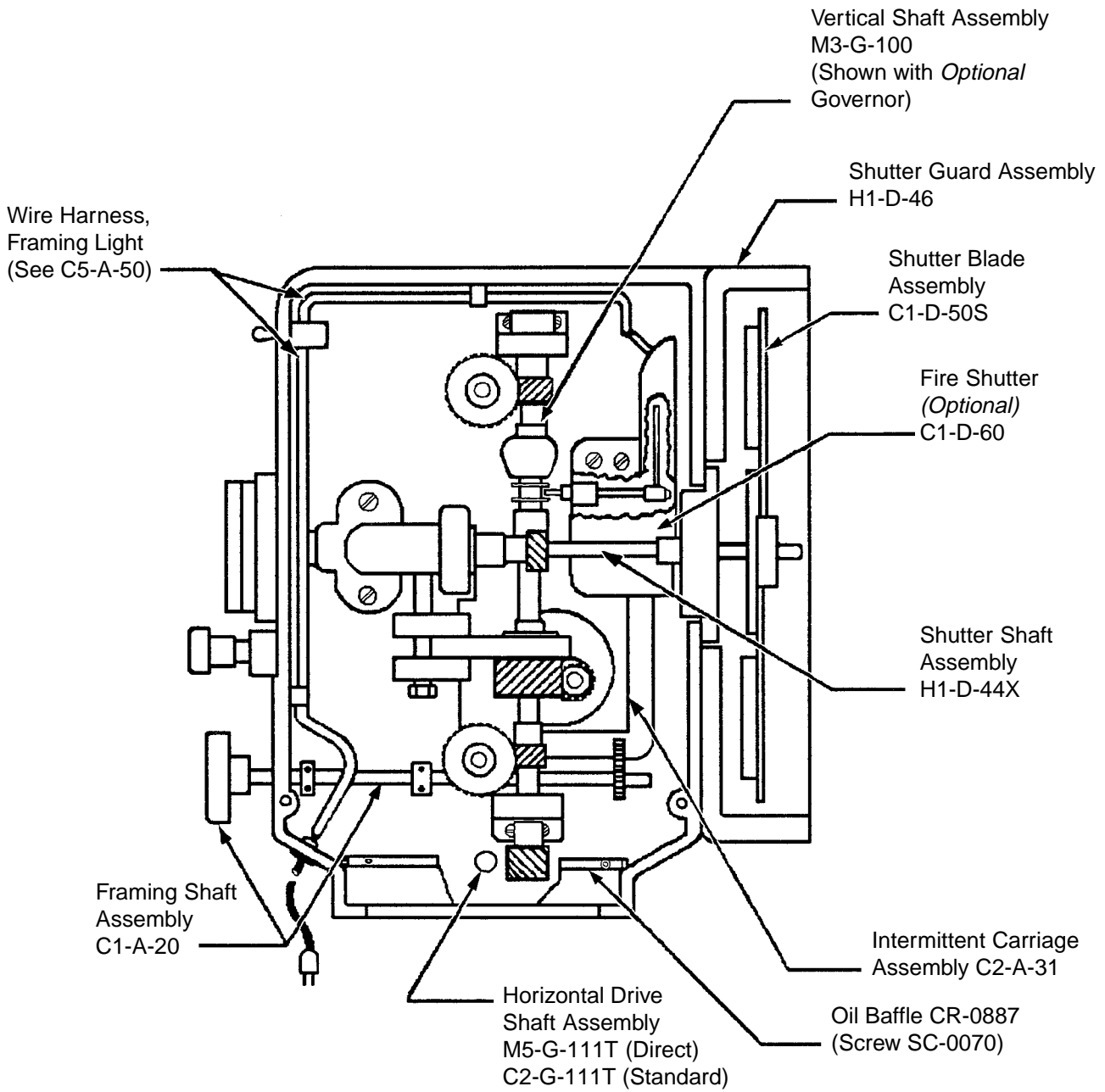
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# MAJOR ASSEMBLIES



OPERATING SIDE

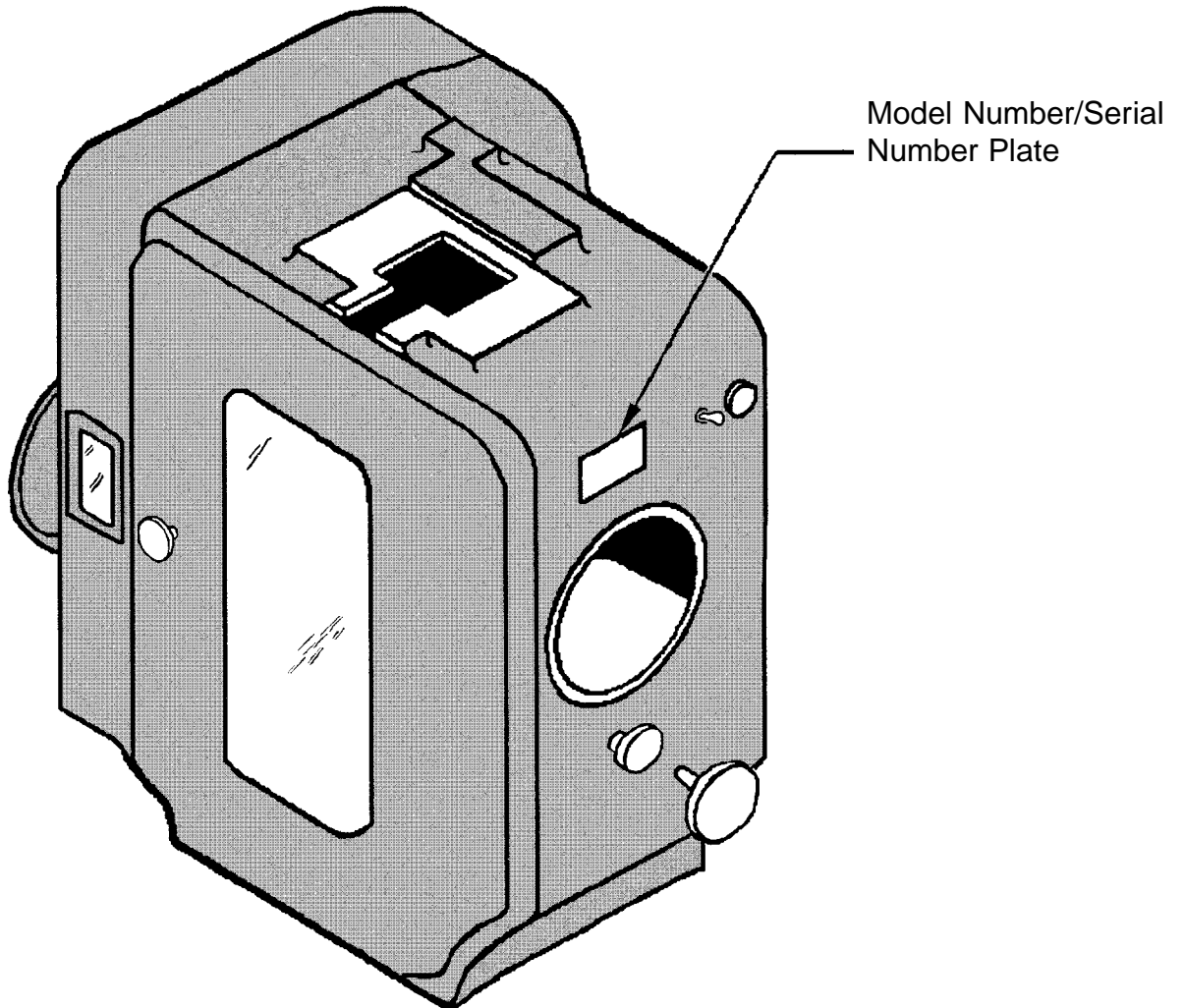
MAJOR ASSEMBLIES



NOTE: See Soundhead Book for Drive Belts & Pulleys

DRIVE SIDE

When ordering parts, include:  
MODEL NUMBER  
SERIAL NUMBER  
PART NUMBER



Century Replacement Parts are sold through authorized  
Strong International Dealers *only*.

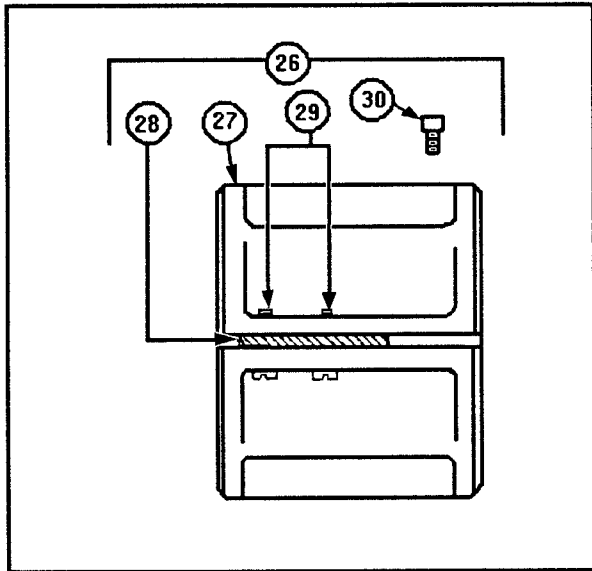
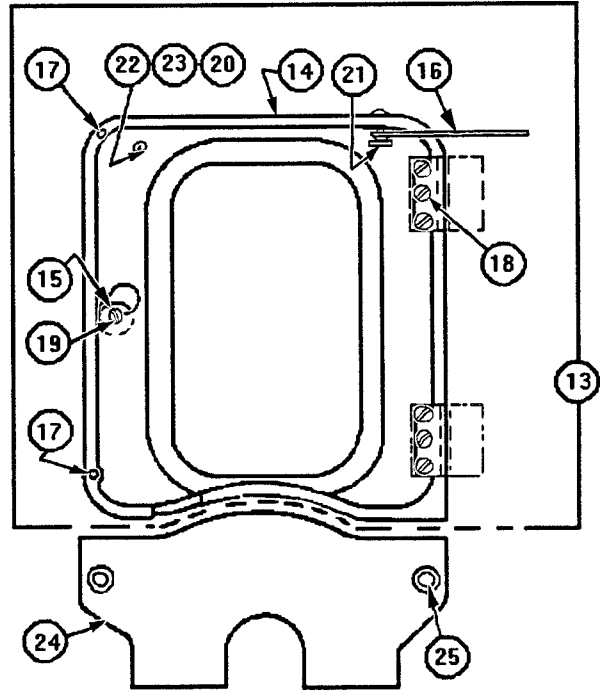
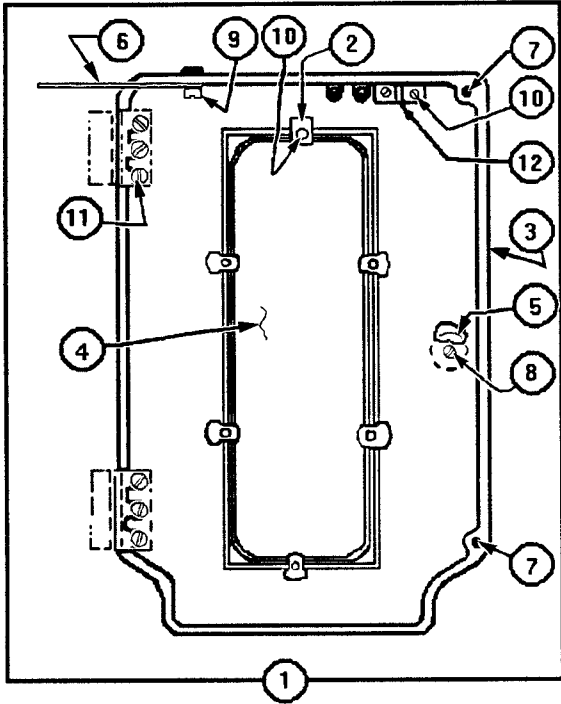


## MAIN FRAME & PIN ASSEMBLY (82-60051)

<u>Part No.</u>	<u>Description</u>
H1-A-80	Main Frame & Pin Assembly
A1-D-80	Douser Guide Assembly
BU-0029-D	Sprocket Shaft Bearing Bushing (4 req'd.)
C1-A-11	Door Hinge (4 req'd.)
CR-0598	Lower Drive Side Cover
CR-0887	Grease Baffle Cover
CU-0022	Sprocket Shaft Oil Cup (2 req'd.)
FR-0070	Main Frame Casting
J1-A-14	Quarter-Turn Door Lock
PE-0039	Nameplate
PN-0021	Shutter Bracket Locating Pin (2 req'd.)
PN-0028	Locating Pin, Trap Support & Shutter Bracket (3 req'd.)
PN-0247	Carriage Stop Pin (2 req'd.)
SC-0113	Screw (2 req'd.)
RT-0002	Main Drive Retainer
41-51061	Cover Fastener Screw (2 req'd.)
SC-0125	Nameplate Screw (2 req'd.)
41-51061	Bearing Retaining Screw, Horizontal Drive (2 req'd.)
41-51521	Lens Mount Screw (2 req'd.)
SC-0226	Screw, Door Link
41-51033	Door Catch Mounting Screw, 6-32 x 1/4" (2 req'd.)
SC-0661	Hinge Mounting Screw, 8-32 x 5/16" (4 req'd.)
3041	Changeover Mounting Screw, 10-32 x 3/8" (2 req'd.)
SC-0886	Socket Screw, 3/8-16 x 1" (4 req'd.)
41-51604	Horizontal Drive Retainer Set Screw, 1/4-20 x 1/4"
3052	Pad Roller Arm Retaining Screw, 1/4-20 x 3/8" (2 req'd.)
SC-1374	Front Grease Plug Screw
SC-1874	Set Screw, 1/2-13 x 3/8"
SC-2425	Set Screw, 3/8-16 x 1/2"
SC-2510	Side Cover Screw (2 req'd.)
SD-1130	Heat Shield
DC-0096	Decal, Main Drive Installation
J1-A-14	Receptacle, Quarter-Turn Fastener

### *Associated Parts*

OL-0001	Century Projector Oil (Gallon)
OL-0004	Century Projector Oil, 4 oz.
TU-0380	Century Gear Lubricant



FILM COMPARTMENT DOOR ASSEMBLY (82-60052)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	H1-A-12	Film Compartment Door Assembly
2	CP-0020	Clamp, Door Glass (6 req'd.)
3	DO-0015	Casting, Film Compartment Door
4	GL-0015	Door Glass
5	KN-0047	Door Knob
6	LI-0007	Link, Open Limit
7	SB-0060	Door Stop, Felt (2 req'd.)
8	41-51073	Knob Mounting Screw, 8-32 x 1/2" Bind Head
9	SC-0226	Link Mounting Screw
10	SC-0123	Mounting Screw, Glass Clamp & Door Strike
11	41-51061	Hinge Mounting Screw, 8-32 x 1/4" (6 req'd.)
12	C1-A-76	Catch & Strike, Door

GEAR COMPARTMENT DOOR ASSEMBLY (82-60053)

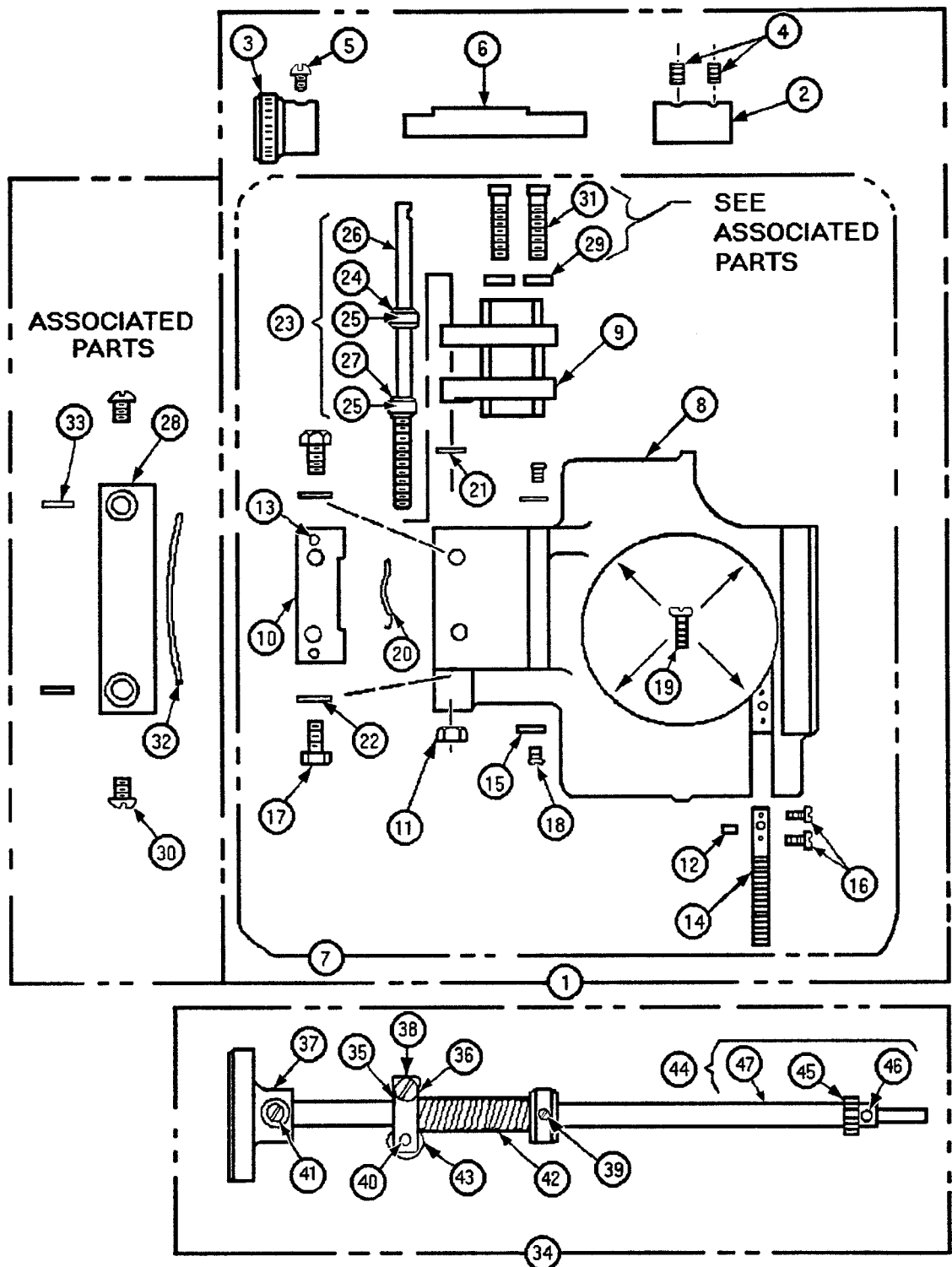
<u>Item</u>	<u>Part No.</u>	<u>Description</u>
13	J1-A-13	Gear Compartment Door Assembly
14	DO-0072	Door Casting
15	KN-0047	Pull Knob
16	LI-0007	Door Link
17	SB-0060	Felt Bumper (2 req'd.)
18	41-51061	Hinge Screw, 8-32 x 1/4" Bind Head (6 req'd.)
19	ST-2465	Door Fastening Stud, Quarter-Turn
20	SC-0226	Link Screw
21	41-51073	Knob Screw, 8-32 x 1/2" Bind Head
22	RI-0624	Retaining Ring
23	SG-2464	Door Fastening Spring

*Associated Parts*

24	CR-0598	Cover, Operating Side
25	SC-0113	Cover Mounting Screw (2 req'd.)

LENS BUSHING & CLAMPING SCREW ASSEMBLY (82-60026)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
26	C1-T-160X	Lens Bushing & Clamping Screw Assembly
27	BU-0193X	Casting, Lens Bushing
28	PE-1040	Bushing Plate, Rubber
29	SC-0574	Clamping Screw (2 req'd.)
30	SC-2238X	Locating Screw



INTERMITTENT CARRIAGE & SHORT SHUTTER ADJUSTMENT ASSEMBLY  
(82-60104)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	C2-A-31	Intermittent Carriage & Shutter Adjustment Assembly
	C2-A-33	Carriage Assembly
2	CG-0014	Coupling
3	KN-0043	Knob
4	2966	Coupler Set Screw, 10-32 x 1/8"
5	00254000	Knob Screw, 8-32 x 1/4" Fillister Head
6	ST-2378	Shutter Adjusting Shaft

INTERMITTENT CARRIAGE ASSEMBLY (82-60105)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
7	C2-A-33	Intermittent Carriage Assembly
	V1-A-32	Shutter Adjustment Screw
8	CA-0004	Carriage Casting
9	BR-0012	Bracket Casting
10	GI-0006	Gib Casting
11	NU-0070	Adjustment Nut
12	PN-0022	Rack Pin
13	PN-0811	Gib Pin (2 req'd.)
14	RK-0004	Framing Rack (Order 81-98152)
15	RT-0003	Spring Retainer (2 req'd.)
16	SC-0075	Rack Screw (2 req'd.)
17	00687000	Gib Screw, 1/4-20 x 1/2" Hex Head (2 req'd.)
18	41-51028	Spring Screw, 6-32 x 1/4" Pan Head (2 req'd.)
19	SC-0106	Intermittent Retaining Screw (4 req'd.)
20	SG-0100	Spring
21	WA-0011	Washer
22	WA-0132	Lockwasher

NOTE: Shutter Fine Adjustment (Items 1-6, Item 23 & Associated Parts) discontinued in 1993.

## SHUTTER ADJUSTMENT SCREW & COLLAR ASSEMBLY (82-20357)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
23	V1-A-32	Screw & Collar Assembly
24*	CL-0007	Collar
25*	PN-0103	Pin (3 req'd.)
26*	SC-0061	Screw
27*	CL-0195	Collar

\* Order V1-A-32

### *Associated Parts*

28	GI-0001	Intermittent Carriage Gib
29	SA-0752	Bracket Screw Spacer (2 req'd.)
30	SC-0071	Gib Screw (2 req'd.)
31	SC-0751	Bracket Screw (2 req'd.)
32	SG-0928	Spring
33	WA-0132	Lockwasher

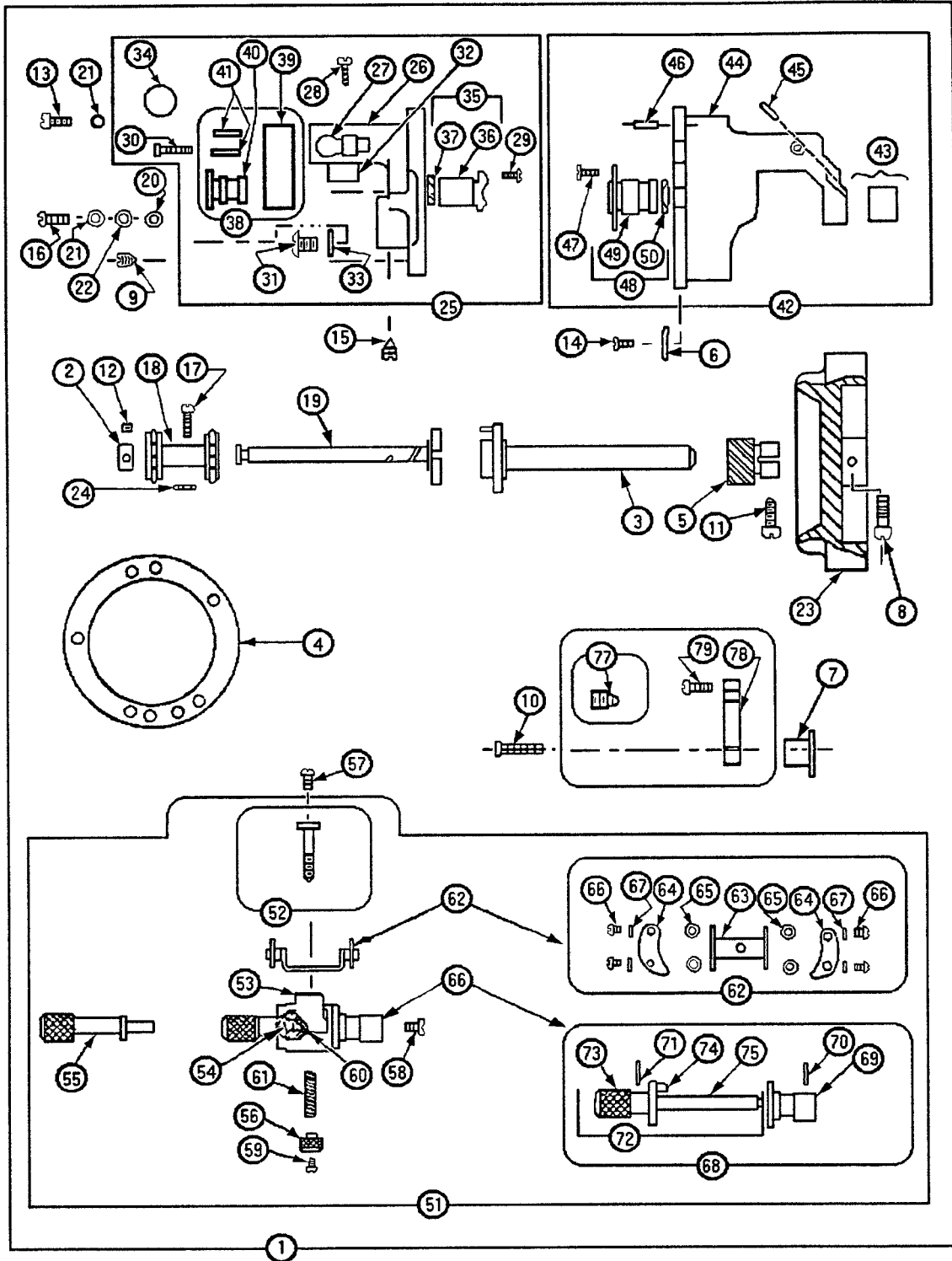
## FRAMING SHAFT ASSEMBLY (82-60095)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
34	C1-A-20	Framing Shaft Assembly
	C1-A-21	Shaft & Pinion Assembly
35	CL-0012	Collar
36	CP-0001	Clamp (2 req'd.)
37	KN-0044	Framing Knob
38	41-51107	Screw, 10-32 x 7/8" Fillister Head
39	SC-0074	Set Screw, 1/4-20 x 1/4"
40	SC-0132	Screw, 10-32 x 1-1/8" Fillister Head
41	41-51365	Set Screw, 10-32 x 3/8"
42	SG-0041	Spring
43	WA-0011	Washer

## FRAMING SHAFT & PINION ASSEMBLY (82-20055)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
44	C1-A-21	Shaft & Pinion Assembly
45	PI-0004*	Pinion
46	PN-0029*	Pin
47	ST-0001*	Framing Shaft

\* Order C1-A-21; Sold as Assembly *only*



## INTERMITTENT MOVEMENT ASSEMBLY (82-60006)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	H1-BB-30C	Intermittent Movement Assembly, 35mm
	H1-BB-16*	Intermittent Cover Assembly
	H1-BB-17*	Intermittent Case Assembly
	H1-BB-26*	Sprocket Pad Assembly
	H1-BB-31*	Cam Thrust Assembly
2	CL-0624	Outboard Collar, Starwheel Shaft
3	CM-0528	Camshaft **
4	GA-0181	Gasket
5	GR-0007	Camshaft Gear
6	PE-0038	Intermittent Stop Plate
7	SA-1321	Cam Thrust Spacer
8	41-51201	Flywheel Screw, 8-32 x 3/4" Socket Head
9	SC-0039	Adjusting Screw (2 req'd.)
10	SC-0069	Cam Thrust Screw
11	00259000	Gear Screw, 8-32 x 5/8" Fillister Head
12	SC-0579	Collar Screw (2 req'd.)
13	SC-1047	Cover Screw (4 req'd.)
14	SC-0134	Stop Plate Screw, 6-32 x 3/8" Hex Head
15	SC-0155	Pad Retaining Set Screw, 1/4-20 x 3/8" Cone Point
16	SC-1010	Oil Drain Screw, 8-32 x 1/2" Fillister Head
17	SC-1322	Sprocket Screw, 5-40 x .55"
18	SK-2205	Intermittent Sprocket, 35mm VKF®
19	SX-1323	Starwheel Shaft **
20	WA-0012	Drain Seal Washer
21	41-70002	Cover Washer (5 req'd.)
22	WA-0126	Steel Washer
23	WH-0124	Flywheel
24	NU-0081	Lock Nut

\* Not Sold as Assembly - Replace Individual Components

\*\* Replace Starwheel & Camshaft in *matched pairs*

Factory Rebuilt Intermittent Movements are available under a Repair/Exchange program. Contact an authorized Strong International Equipment Dealer for detailed information and a **Return Authorization**. Strong International assumes *no liability* for goods returned to the factory without prior authorization.



INTERMITTENT COVER ASSEMBLY (H1-BB-16\*)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
25	H1-BB-16*	Intermittent Cover Assembly
	H1-BB-35	Inner Star Bushing & Ring
	H1-BB-34*	Front Starwheel Bearing Bracket
26	CR-0297	Cover (Order H1-BB-16)
27	CU-0658	Oil Cup
28	SC-0094	Stripper Screw, 6-32 x 1/8" Bind Head
29	SC-0105	Inner Bushing Screw, 4-40 x 1/4" (3 req'd.)
30	41-51195	Outer Bracket Screw, 6-32 x 1/2" Socket Head (2 req'd.)
31	SC-0217	Plug Screw
32	SP-1326	Film Stripper
33	WA-0028	Plug Screw Washer
34	GG-0019	Sight Glass
35	GA-0020	Sight Glass Gasket
36	NU-0010	Nut

INNER STAR BUSHING ASSEMBLY (82-60230)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
37	H1-BB-35	Inner Star Bushing
38	BU-1256	Bushing (Order H1-BB-35)
39	RI-0576	Seal Ring

FRONT STARWHEEL BEARING BRACKET ASSEMBLY (H1-BB-34\*)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
40	H1-BB-34*	Bearing Bracket Assembly
41	BR-0644	Outer Bracket
42	BU-0646N	Outer Bushing
42	PN-0665	Pin (Order H1-BB-34), 2 req'd.

INTERMITTENT CASE ASSEMBLY (H1-BB-17\*)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
44	H1-BB-17*	Case Assembly
	H1-BB-36	Inner Cam Bushing & Ring
45	BU-0040-N	Outer Bushing
46	CS-0529	Case (Order H1-BB-17)
47	PG-0159	Felt Plug
48	PN-0032	Pivot Pin
49	41-51016	Cam Screw, 4-40 x 1/4" Bind Head

\* Not Sold as Assembly - Replace Individual Components

### INNER CAM BUSHING & O-RING ASSEMBLY (H1-BB-36)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
50	H1-BB-36	Bushing & Ring Assembly
51	BU-1257	Bushing (Order H1-BB-36)
52	RI-0577	Seal Ring

### INTERMITTENT SPROCKET PAD & ARM ASSEMBLY (82-60004)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
53	C1-BB-26	Sprocket Pad & Arm Assembly
54	C1-BB-27	Stud & Plate Assembly
	C1-BB-28	Sprocket Pad
	C1-BB-29	Pad Stud
55	AR-0046	Arm Casting
56	BL-0018	Detent Ball (2 req'd.)
57	KN-0030	Knob
58	NU-0046	Knurled Nut
59	41-51032	Pad Screw, 6-32 x 1/4" Bind Head
60	41-51061	Knob Screw, 8-32 x 1/4" Bind Head
61	SC-0708	Nut Stop Screw, 3-48 x 1/8" Round Head
62	SG-0021	Ball Spring
63	SG-2511	Compression Spring

### INTERMITTENT PAD SPRING STUD & PLATE ASSEMBLY (82-60054)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
54	C1-BB-27	Stud & Plate Assembly
	PE-0192	Plate (Order C1-BB-27)
	SU-0702	Stud (Order C1-BB-27)

### INTERMITTENT SPROCKET PAD ASSEMBLY (82-60005)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
64	C1-BB-28	Sprocket Pad Assembly
65	PA-0194	Inner Sprocket Pad
66	PA-0195	Outer Sprocket Pad (2 req'd.)
67	SA-0033	Spacer (4 req'd.)
68	41-51457	Screw, 4-40 x 5/16" Bind Head (4 req'd.)
69	41-70033	Washer, #4 (4 req'd.)

INTERMITTENT SPROCKET PAD, STUD & BUSHING ASSEMBLY (82-20058)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
70	C1-BB-29	Stud & Bushing Assembly
	C1-BB-29A	Pad Stud (Order C1-BB-29)
71	BU-0027	Bushing (Order C1-BB-29)
72	PN-0025	Pin
73	PN-0068	Lock Pin

INTERMITTENT SPROCKET PAD STUD ASSEMBLY (82-20254)

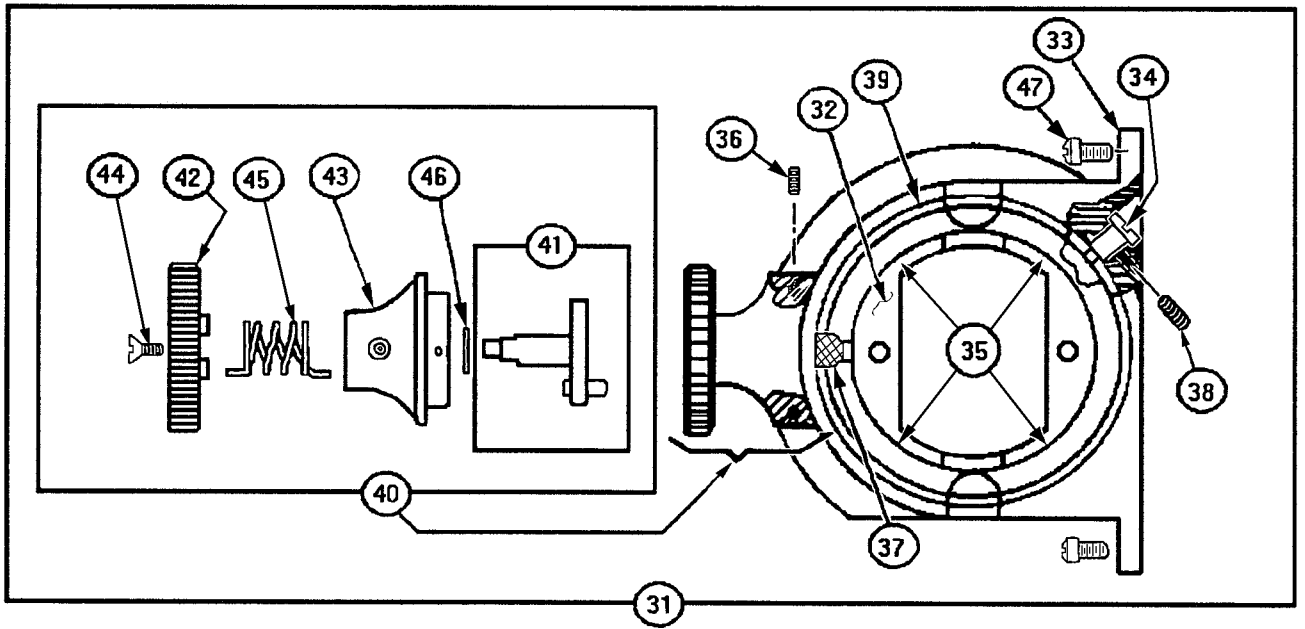
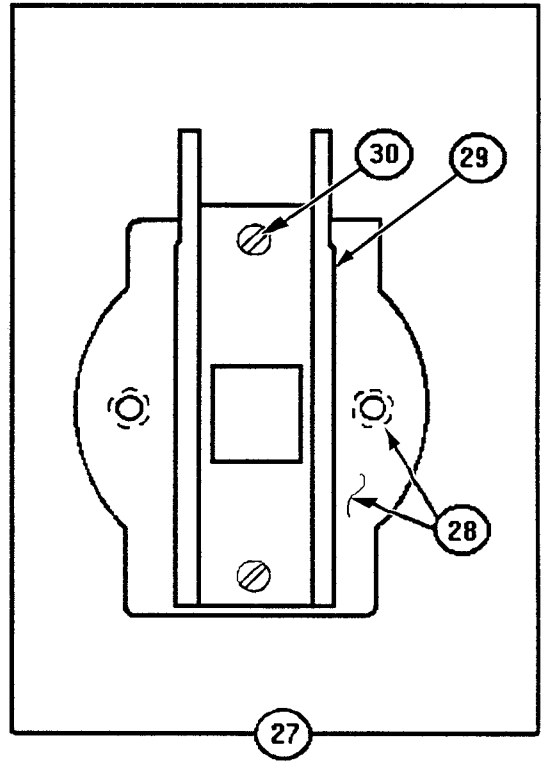
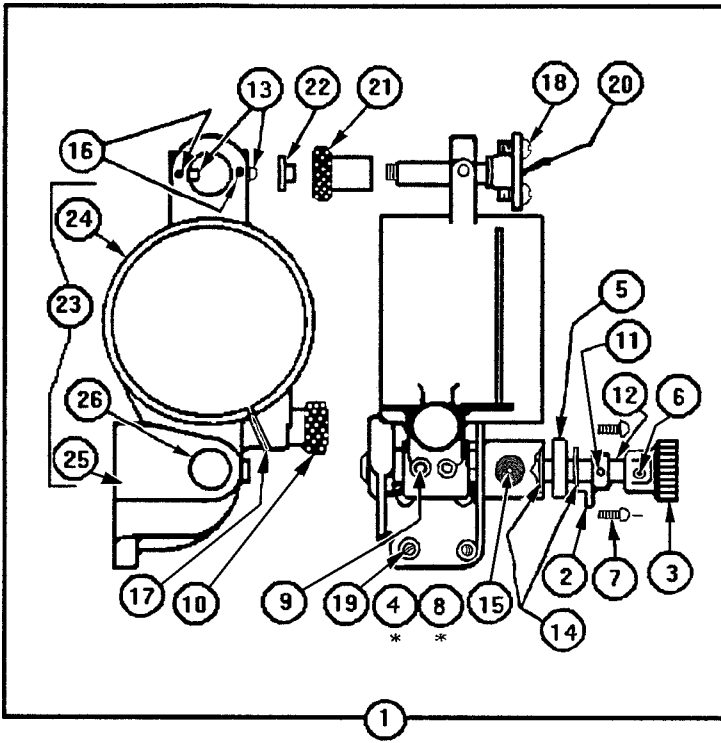
<u>Item</u>	<u>Part No.</u>	<u>Description</u>
74	C1-BB-29A*	Sprocket Pad Stud Assembly
75	KN-0024	Knob
76	PN-0036	Pin
77	SU-0004	Stud

\* Sold as Assembly *only*

CAM THRUST BEARING & BRACKET ASSEMBLY (H1-BB-31\*)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
78	H1-BB-31*	Bearing & Bracket Assembly
79	C1-BB-11	Ball Bearing Assembly
80	BR-0643	Bracket
81	SC-0085	Thrust Screw

\* Not Sold as Assembly - Order Individual Components



FOUR-INCH LENS MOUNT ASSEMBLY (82-60113)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	H1-A-60A	Four-Inch Lens Mount Assembly
	H1-A-59A	Lens Mount Bracket & Focus Rod Assembly
2	CL-0554	Focus Collar
3	KN-0045	Focus Knob
4	PG-0301	Focus Screw Plug
5	SA-1226	Focus Spacer
6	SC-0072	Focus Knob Retaining Screw
7	41-51314	Retaining Screw, 6-32 x 3/8" Fillister Head (3 req'd.)
8	SC-0678	Screw
9	SC-0501	Screw (2 req'd.)
10	SC-1229	Lens Clamp Screw
11	SC-1236	Screw
12	SC-1362	Focus Screw
13	SC-1231	Lens Clamp Screw (2 req'd.)
14	WA-0163	Focus Washer (2 req'd.)
15	SG-0999	Focus Spring
16	SC-0579	Lens Clamp Screw (2 req'd.)
17	WA-0203	Lens Clamp Washer

*Associated Parts*

18	SC-0088	Lens Clamp Screw (3 req'd.)
19	SC-0137	Lens Mount Screw (4 req'd.)
20	SU-1673	Lens Clamp Stud
21	BU-0795	Eccentric Bushing, Lens Mount
22	NU-0079	Nut, Bushing

LENS MOUNT BRACKET & FOCUS ROD ASSEMBLY (H1-A-59A)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
23	H1-A-59A	Lens Mount Bracket & Focus Rod Assembly
24	BR-0601X*	Bracket
25	BR-0663*	Support Bracket
26	RD-0150*	Focus Rod

\* Order H1-A-59A; Sold as Assembly *only*

PRESSURE PAD & PLATE ASSEMBLY, CURVED (82-60049)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
27	A1-E-40	Pressure Pad & Plate
28	A1-E-41	Plate & Studs
29	PA-0853	Pressure Pad Runner, Curved
30	41-51034	Mounting Screw, 6-32 x 1/4" Flat Head (2 req'd.)

## FILM GATE SUPPORT TUBE & BRACKET ASSEMBLY (82-60018)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
31	A1-A-70	Film Gate Support Tube & Bracket Assembly
	H1-A-66	Gate Knob Assembly
32	AD-0097*	Film Gate Adapter
33	BR-0913*	Gate Support Bracket
34	EC-0001	Gate Alignment Eccentric
35	SC-2453	Gate Adapter Screw (4 req'd.)
36	41-51527	Knob Retaining Screw, 8-32 x 1/4" Cone Point
37	SC-0144	Thumb Screw, Gate Retaining
38	00713000	Eccentric Lock Screw, 8-32 x 5/16"
39	TU-0172*	Gate Support Tube

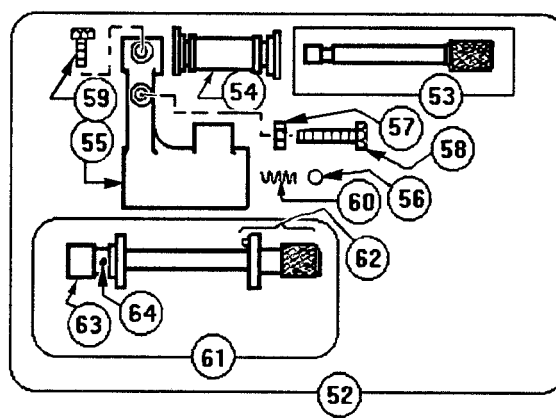
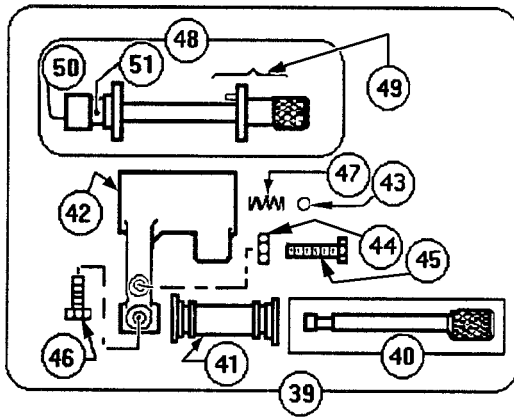
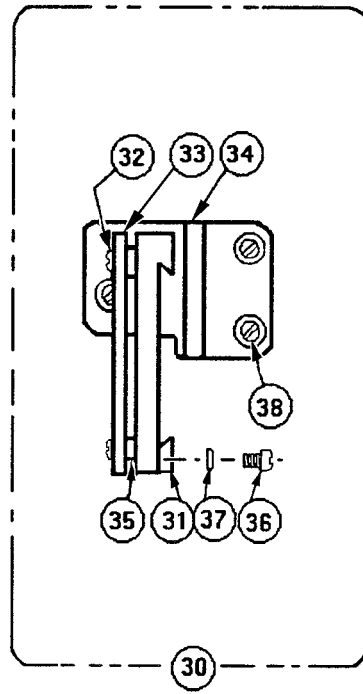
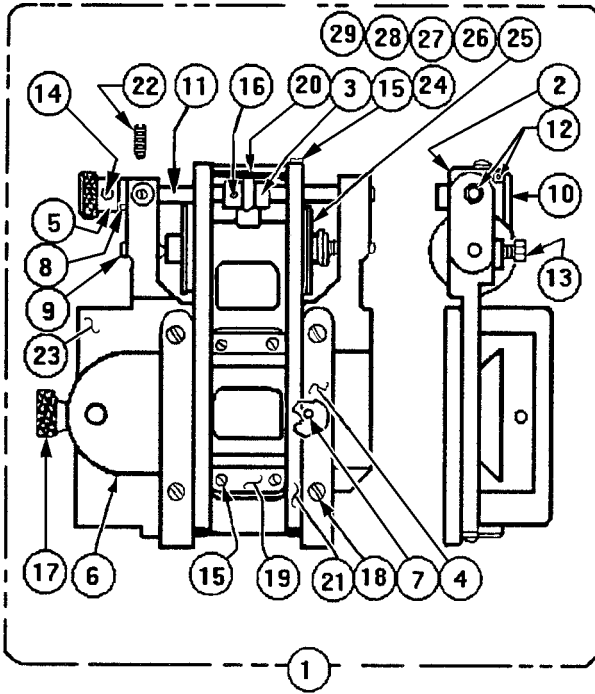
\* Recommend replacing as *Matched Set*

## FILM GATE LOCK KNOB & SHAFT ASSEMBLY (82-60035)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
40	H1-A-66	Film Gate Lock Knob & Shaft Assembly
41	C1-A-67	Lock Shaft & Pin Assembly (82-60022)
42	KN-0027	Knob
43	LO-0045	Lock
44	00354000	Screw, 8-32 x 1/4" Fillister Head
45	SG-0014	Helical Spring, Gate Knob
46	WA-0135	Gate Knob Washer

### *Associated Parts*

47	01432000	Bracket Mounting Screw, 1/4-20 x 1/2" (4 req'd.)
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## FILM TRAP ASSEMBLY (82-60047)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	A1-E-10	Film Trap Assembly, 35mm
	A1-E-12	Lateral Guide Roller Assembly
2	A1-E-13	Spring Retaining Block & Pin Assembly
3	CM-0685	Shoe Tension Cam
4	GU-0016	Studio Guide (2 req'd.)
5	KN-0070	Adjusting Knob, Shoe Tension
6	PE-0518-E4	Aperture Plate, 1.85:1 Standard
6	PE-0518-E8	Aperture Plate, 1.85:1 Undersize
6	PE-0518-E15	Aperture Plate, 2:1 Undersize
7	PN-0519	Aperture Stop Pin
8	PN-0824	Shoe Tension Stop Pin
9	PT-0033	Lateral Guide Roller Pivot (2 req'd.)
10	RD-0281	Rod, Spring Shoe Block
11	RD-0282	Eccentric Cam Rod
12	P-4089	Retaining Ring, Cam Rod (3 req'd.)
13	SC-0134	Pivot Retaining Screw (2 req'd.)
14	P-1971	Knob Set Screw
15	41-51271	Screw, Strap & Spring (8 req'd.), 2-56 x 1/8"
16	P-1971	Cam Set Screw
17	SC-1800	Thumb Screw, Film Trap Retaining
18	SC-0128	Mounting Screw, Studio Guide (4 req'd.)
19	SG-1484	Aperture Plate Spring (2 req'd.)
20	SG-1802	Cam Spring
21	SH-1811	Trap Shoe (Film Strap), 2 req'd.*
22	SC-2431	Spring Shoe Tension Screw
23	TP-0171	Casting, Film Trap
24	WA-0245	Washer, Trap Shoe (2 req'd.)

\* Replace in *matched pairs*

## LATERAL GUIDE ROLLER ASSEMBLY (A1-E-12)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
25	A1-E-12	Lateral Guide Roller Assembly
26	RO-0283	Inner Roller
27	RO-0284	Outer Roller
28	SG-0124	Compression Spring
29	2933	Retaining Ring, for .250" O.D.



FILM TRAP SUPPORT GIB & HEAT SHIELD ASSEMBLY (82-60092)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
30	A1-E-70	Support Gib & Heat Shield Assembly
31	GI-0255	Gib Casting
32	SC-1842	Heat Shield Screw, 5-40 x 5/16" Bind Head (4 req'd.)
33	SD-1808	Heat Shield
34	SO-1804	Trap Support
35	SA-1942	Heat Shield Spacer (4 req'd.)
36	41-51016	Support Screw, 4-40 x 1/4" Bind Head (3 req'd.)
37	WA-0088	Washer (3 req'd.)

*Associated Parts*

38	SC-0137	Trap Support Mounting Screw, 1/4-20 x 1/2" (3 req'd.)
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*See Page 37 for Water Cooled Trap Support.*

UPPER PAD ROLLER ARM ASSEMBLY (82-60096)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
39	C1-C-10	Upper Pad Roller Arm Assembly
	C1-C-13	Pad Roller Stud
40	C1-C-21	Pad Roller Shaft & Knob
41	AR-0001	Arm Casting
42	2908	Detent Ball (2 req'd.)
43	NU-0008	Lock Nut
44	R3-400	Roller
45	SC-0087	Pad Roller Adjust Screw, 8-32 x 7/8" Hex Head
46	41-51416	Pad Roller Shaft Screw, 6-32 x 3/8" Hex Head
47	SG-0021	Spring

UPPER PAD ROLLER ARM STUD, KNOB, & BUSHING ASSEMBLY (82-20304)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
48	C1-C-13	Stud, Knob, & Bushing Assembly
49	C1-C-11*	Stud & Knob
50	BU-0027*	Bushing
51	PN-0025*	Pin

\* Order C1-C-13; Sold as Assembly *only*

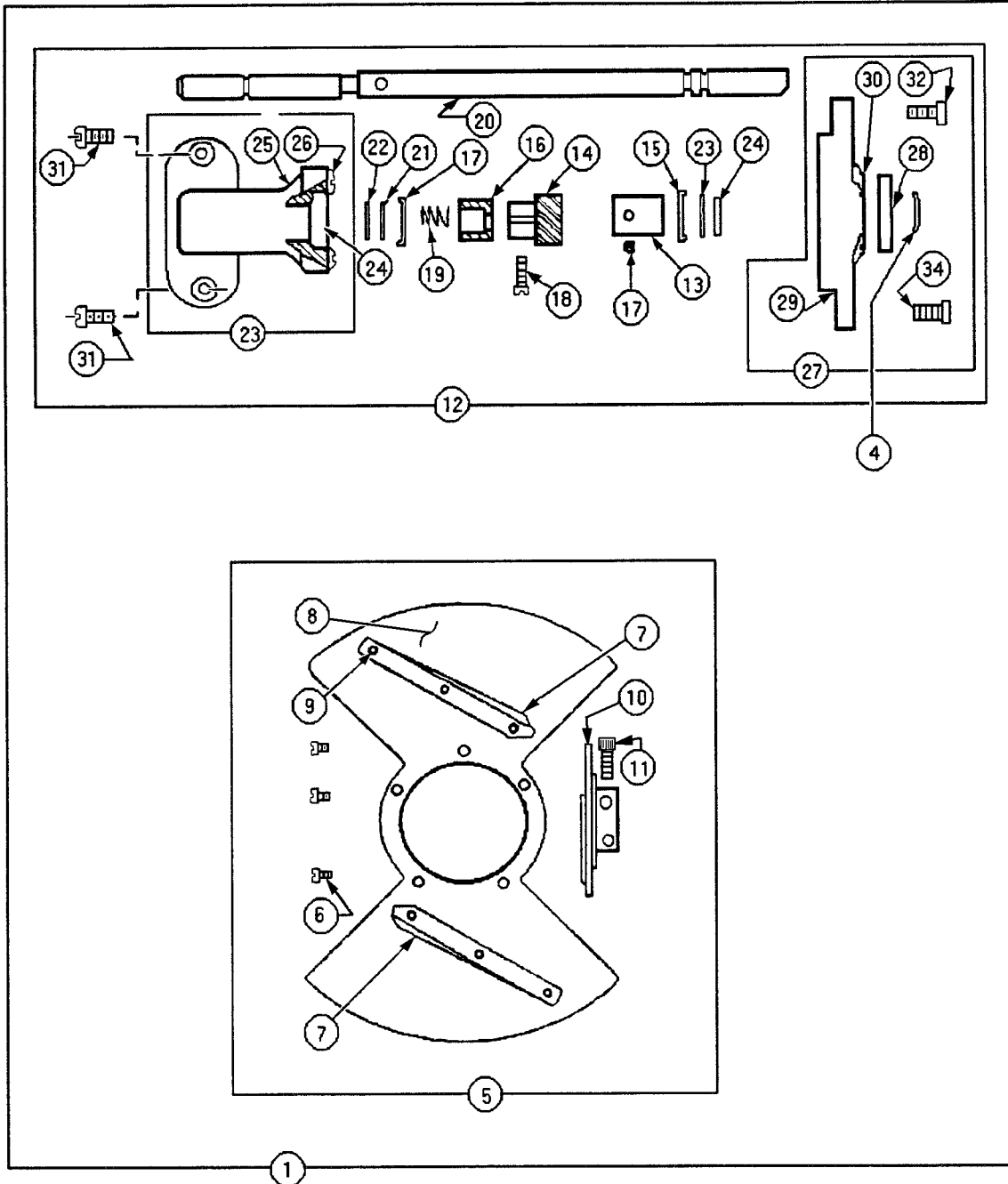
## LOWER PAD ROLLER ARM ASSEMBLY (82-60097)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
52	C1-C-40	Lower Pad Roller Arm Assembly
53	C1-C-21	Shaft & Knob
	C1-C-41	Lower Pad Roller Assembly
54	AR-0021	Arm Casting
55	2908	Detent Ball (2 req'd.)
56	NU-0008	Lock Nut
57	R3-400	Roller
58	SC-0087	Pad Roller Adjust Screw, 8-32 x 7/8" Hex Head
59	41-51416	Pad Roller Shaft Screw, 6-32 x 3/8" Hex Head
60	SG-0021	Spring

## LOWER PAD ROLLER ARM, STUD, KNOB, & BUSHING ASSEMBLY (82-20372)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
61	C1-C-41	Arm, Stud, Knob, & Bushing Assembly
62	C1-C-42*	Arm, Stud, & Knob
63	BU-0027*	Bushing
64	PN-0025*	Pin

\* Order C1-C-41; Sold as Assembly *only*



#### SHUTTER & SHAFT ASSEMBLY (H4-D-40X\*)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	H4-D-40X*	Shutter & Shaft Assembly
	C1-D-50S	Shutter Blade Assembly, 100° 1/32"
	H1-D-44X	Shutter Shaft Assembly
4	SG-0016	Shutter Hub Spacer Spring

\* Not Sold as Assembly - Order Individual Components

#### STEEL SHUTTER BLADE ASSEMBLY, LARGE DIAMETER, 100° (82-60001)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
5	C1-D-50S	Shutter Blade Assembly, 1/32" Steel
6	SC-0128	Shutter & Hub Screw (5 req'd.)
7	BD-0026	Shutter Blade Air Vane
8	BD-1454	Shutter Blade, 100°
9	RV-0647	Rivet, Air Vane
10	HB-0044	Shutter Hub
11	41-51201	Shutter Hub Clamp Screw, 8-32 x 3/4" Socket Head

#### SHUTTER SHAFT & BRACKET ASSEMBLY, SINGLE (82-60036)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
12	H1-D-44X	Shutter Shaft & Bracket Assembly
	C2-D-42	Front Shutter Bracket Assembly
	C1-D-45	Rear Shutter Bracket Assembly
13	CL-0128	Thrust Collar
14	GR-0007	Steel Gear
15	RT-0061	Bearing Retainer (2 req'd.)
16	RT-0062	Pressure Spring Retainer
17	41-51176	Collar Set Screw, 10-32 x 3/16"
18	00259000	Gear Screw, 8-32 x 5/8" Fillister Head
19	SG-2494	Pressure Spring
20	ST-1397X	Shutter Shaft
21	WA-0130	Thrust Washer, Neoprene (2 req'd.)
22	WA-0131	Thrust Washer, Steel (2 req'd.)

#### SHUTTER SHAFT BRACKET & BALL BEARING ASSEMBLY (82-60031)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
23	C2-D-42	Bracket & Bearing Assembly
24	BG-0009	Ball Bearing
25	BR-0186	Front Bracket
26	41-51061	Screw, 8-32 x 1/4" Bind Head

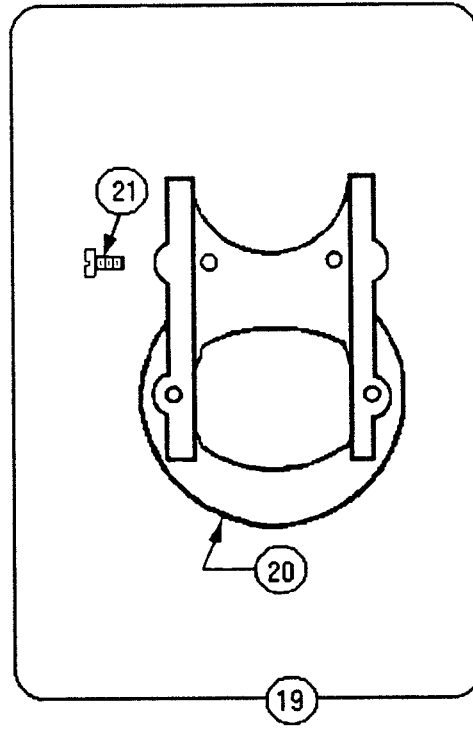
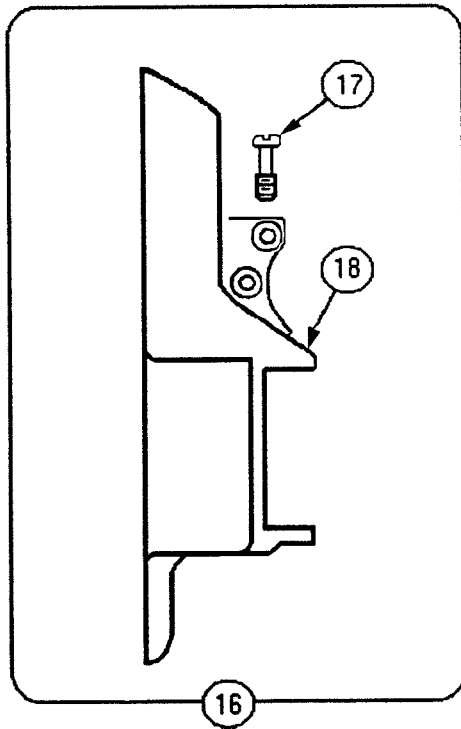
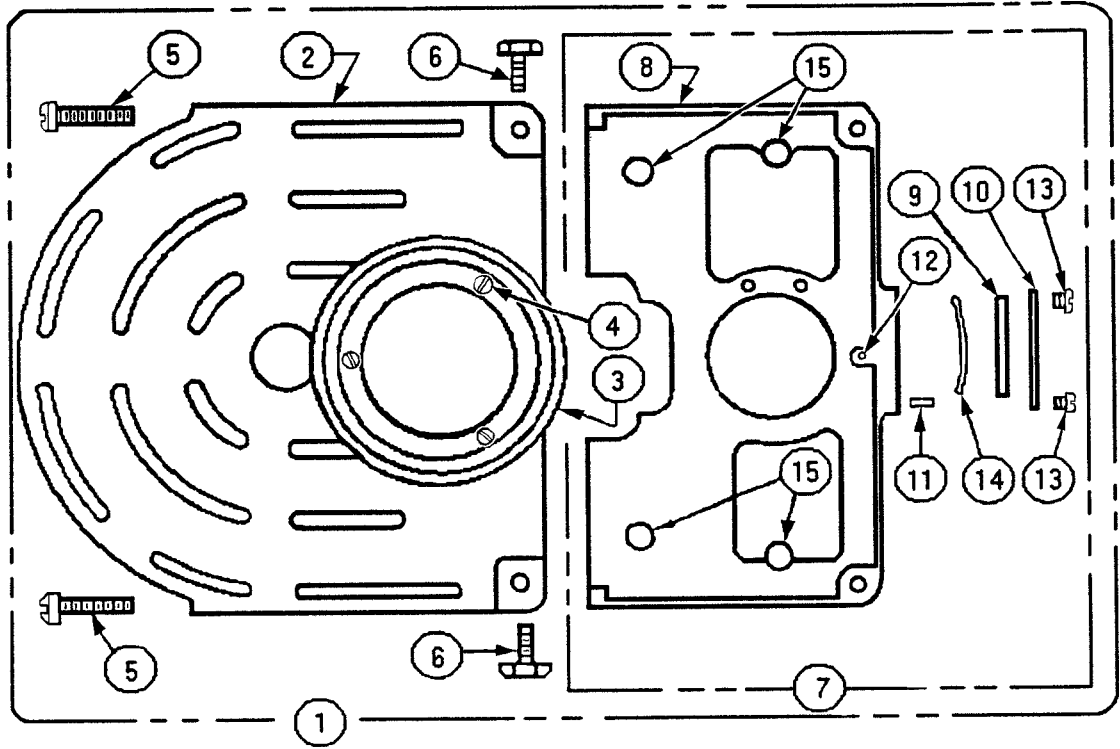
SINGLE SHUTTER BRACKET & BALL BEARING ASSEMBLY (82-60023)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
27	C1-D-45	Bracket & Bearing Assembly
28	BG-0009	Ball Bearing
29	BR-0014	Rear Bracket
30	41-51061	Screw, 8-32 x 1/4" Bind Head (4 req'd.)

*Associated Parts*

31	41-51521	Shutter Bracket Mounting Screw (2 req'd.)
32	3072	Shutter Bracket Mounting Screw (4 req'd.)

For *Optional* Double Shutter, see Page 34 of this Booklet.



SHUTTER GUARD ASSEMBLY (82-60011)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	H1-D-46	Shutter Guard Assembly
	H1-D-43	Shutter Guard, Fixed
2	GD-0185	Shutter Guard, Removable <sup>1,2</sup>
3	HD-0076	Hood, Light Shield
4	SC-1265	Screw, 8-32 x 3/8" Fillister Head (3 req'd.)
5	41-51111	Screw, 10-32 x -1/4" Fillister Head (2 req'd.)
6	H-2655	Screw, 1/4-20 x 1/2" Hex Head (2 req'd.)

FIXED SHUTTER GUARD ASSEMBLY (H1-D-43\*)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
7	H1-D-43*	Shutter Guard, Fixed
8	GD-0202	Shutter Guard (as shown) <sup>1</sup>
-	GD-0278	Shutter Guard (for use with <i>optional</i> Heat Shield) <sup>2</sup>
9	GL-0018	Sight Glass, Tinted
10	HO-0005	Sight Glass Holder
11	PN-0280	Spring Pin
12	PN-0647	Alignment Pin, Shutter Timing
13	41-51011	Glass Holder Screw, 3-48 x 1/4" Bind Head (4 req'd.)
14	SG-0044	Spring

\* Not Sold as Assembly - Order Individual Components

*Associated Parts*

15	SC-1109	Mounting Screw (for GD-0202), 4 req'd.
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<sup>1</sup> May be ordered as "Matched Pairs" (Order 82-20132)

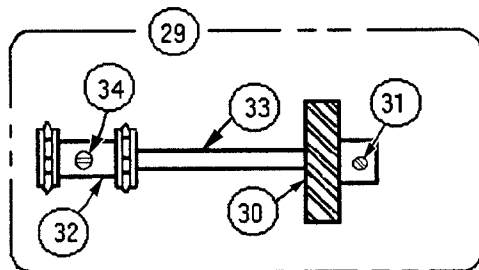
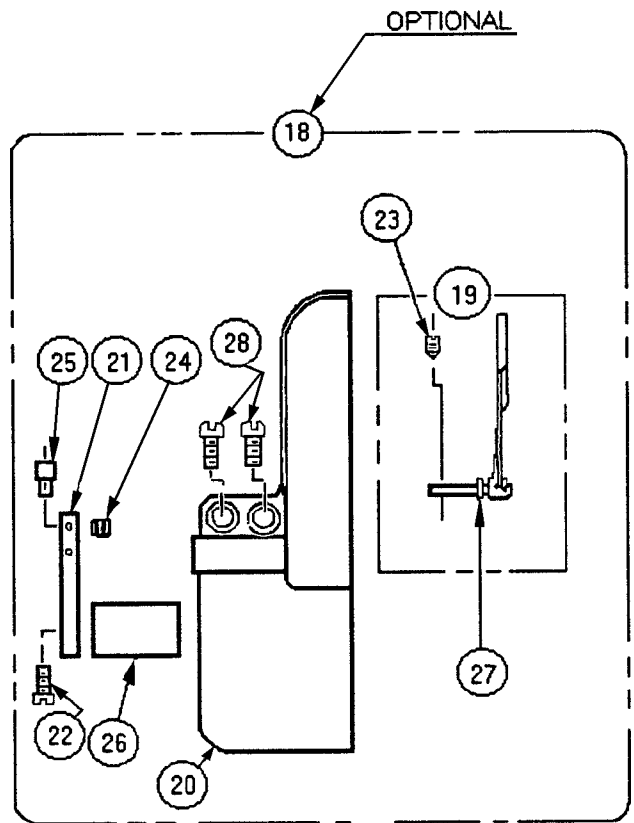
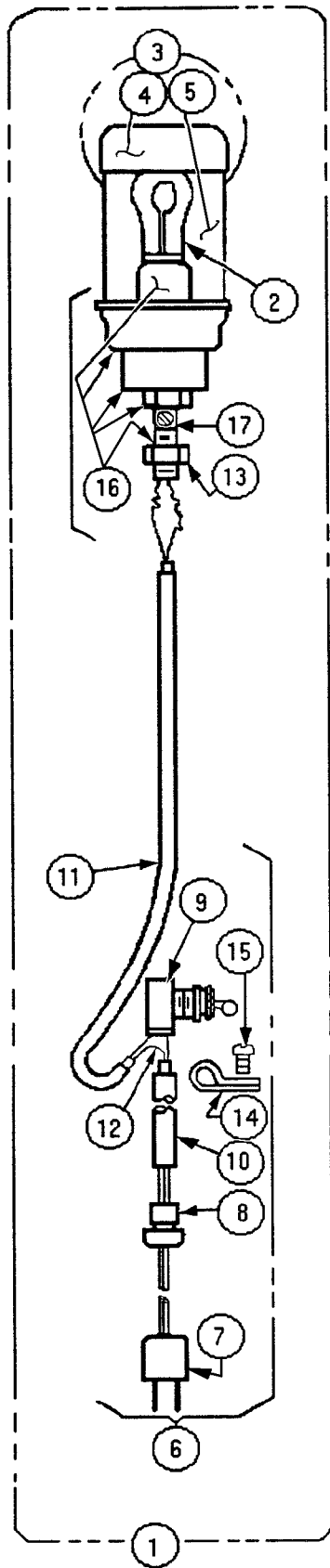
<sup>2</sup> May be ordered as "Matched Pairs" (Order 82-20310)

LIGHT SHIELD ASSEMBLY (A1-D-70)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
16	A1-D-70	Light Shield Assembly
17	SC-0051	Mounting Screw (2 req'd.)
18	SD-1799	Shield Casting

*Individual Parts*

19	A1-D-80	Douser Guide & Heat Shield
20	SD-1130	Heat Shield, Aluminum
21	00255000	Mounting Screw, 8-32 x 5/16" Fillister Head (2 req'd.)
	9402	Changeover Douser Plate (see Page 39, "Changeover")





FRAMING LIGHT ASSEMBLY (82-70047)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	C5-A-50	Framing Light Assembly
	C3-A-53	Framing Light Shield
	C5-A-54	Socket Assembly
2	LP-0122	Bulb, 12 V.AC

FRAMING LIGHT SHIELD ASSEMBLY (82-70008)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
3	C3-A-53	Framing Light Shield Assembly
4	SD-1997	Cover
5	SD-2477	Glass

FRAMING LIGHT SOCKET & WIRE ASSEMBLY (C5-A-54)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
6	C5-A-54	Socket & Wire Assembly
	C3-A-55	Socket Assembly
7	WI-0356	Framing Light Cord
8	CP-0890	Cable Clamp
9	NU-0006	Nut
10	SW-2467	Toggle Switch
11	TU-0003	Insulator
12	TU-0193	Insulator
13	WI-0277	White Wire

*Associated Parts*

14	CP-0883	Cable Clamp
15	41-51032	Clamp Screw, 6-32 x 1/4" Bind Head
	PE-1299	Switch Plate (ON-OFF)
	21-40011	Molex Receptacle
	31-62006	Molex Pin (2 req'd.)
	TF-0368	Stepdown Transformer, 120-12 V.AC (not shown)

FRAMING LIGHT SOCKET ASSEMBLY (82-70030)

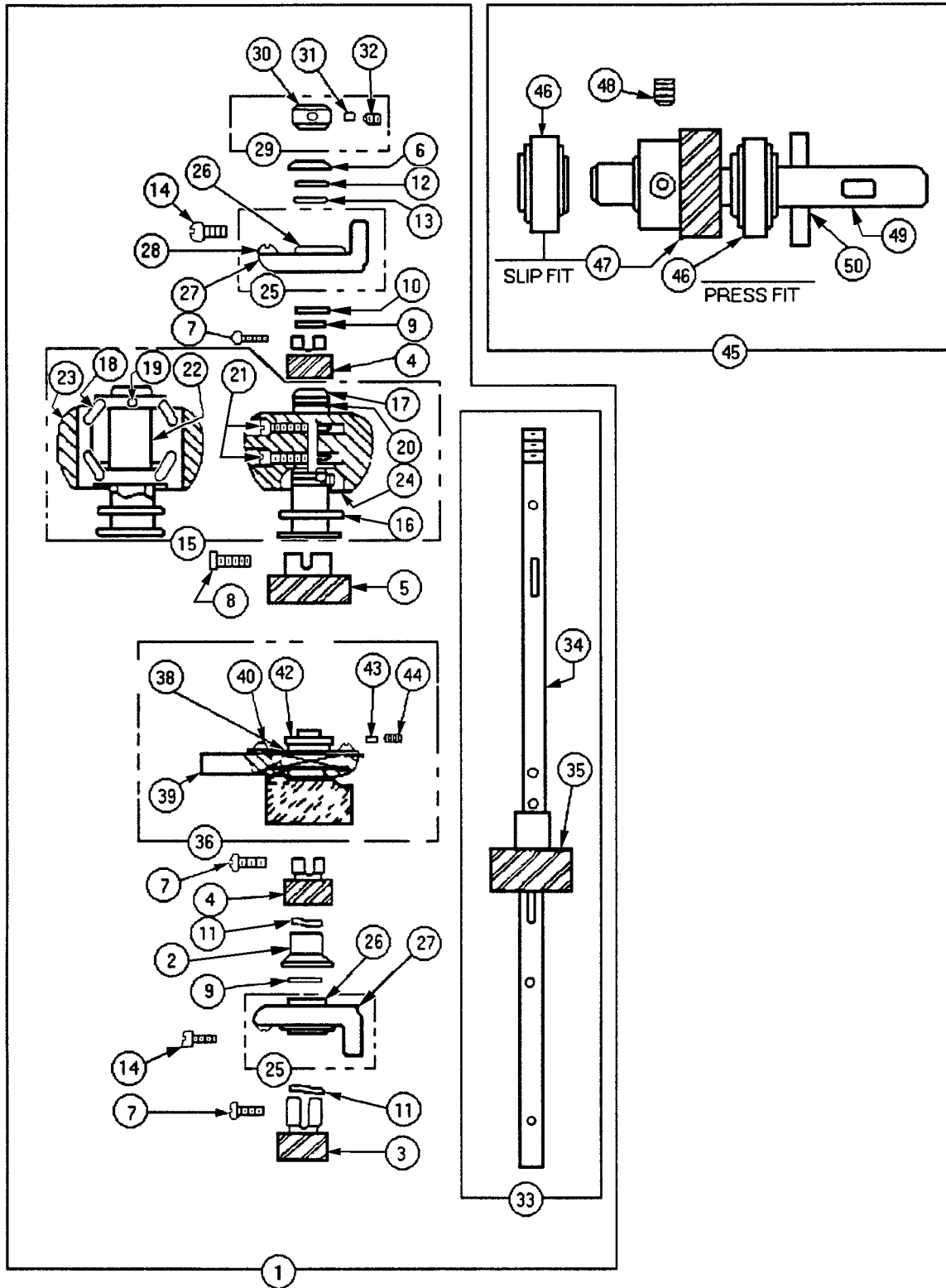
<u>Item</u>	<u>Part No.</u>	<u>Description</u>
16	C3-A-55	Socket Assembly
17	SC-0172	Screw

AUTOMATIC FIRE SHUTTER SHAFT, *OPTIONAL* (82-60258)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
18	C1-D-60	Fire Shutter Assembly
19	C1-D-64	Fire Shutter Arm & Shaft Assembly
20	BG-0017	Housing, Cast Aluminum
21	CK-0011	Crank
22	00256000	Screw, 8-32 x 3/8" Fillister Head
23	SC-2468	Set Screw, 8-40 x 1/4" Cone Point (2 req'd.)
24	41-51460	Set Screw, 8-40 x 3/16" Hardened
25	SU-0026	Stud
26	WT-0008	Counterweight
27	WA-0241	Washer
28	SC-0137	Mounting Screw, 1/4-20 x 1/2" Fillister Head (2 req'd.)

SPROCKET SHAFT ASSEMBLY, UPPER & LOWER (82-60030)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
29	C2-D-10	Sprocket Shaft Assembly (2 req'd.)
30	GR-0010	Fibre Gear
31	41-51195	Gear Screw, 6-32 x 1/2" Socket Head
32	SK-2204	Film Sprocket, 35mm VKF®
33	ST-0002	Sprocket Shaft
34	41-51038	Sprocket Screw, 6-32 x 1/2" Fillister Head



SINGLE SHUTTER VERTICAL SHAFT & GOVERNOR ASSEMBLY (82-60086)

Governor Assembly required with *optional* Fire Shutter only

SINGLE SHUTTER VERTICAL SHAFT ASSEMBLY, STANDARD (82-60088)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	M3-G-100A	Vertical Shaft & Governor Assembly
	M3-G-100B	Vertical Shaft Assembly, <i>less</i> Governor
	C1-G-22	Governor Weight Assembly
	C1-G-31	Ball Bearing Bracket (2 req'd.)
	C1-G-44	Upper Thrust Collar
	C3-G-93	Vertical Shaft, Key, & Gear Assembly
	C1-G-95	Intermittent Drive Bracket & Nut
2	CL-0028	Lower Collar (2 req'd.)
3	GR-0005	Sprocket Drive Gear (2 req'd.)
4	GR-0207	Shutter Drive Gear
5	GR-0182	Vertical Shaft Driven Gear
6	RT-0061	Washer Retainer
7	P-1432	Gear Screw, 8-32 x 5/8" Socket Head
8	41-51201	Shutter Gear Screw, 8-32 x 3/4" Socket Head
9	WA-0003	Fibre Thrust Washer (2 req'd.)
10	WA-0010	Steel Thrust Washer
11	WA-0014	Spring Washer (2 req'd.)
12	WA-0130	Neoprene Washer
13	WA-0131	Steel Thrust Washer

*Associated Parts*

14	3069	Vertical Shaft Mounting Screw, 1/4-20 x 5/8" (4 req'd.)
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GOVERNOR WEIGHT ASSEMBLY, *OPTIONAL* (82-60158)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
15	C1-G-22	Governor Weight Assembly
16	HO-0003	Link Holder
17	HO-0004	Link Holder
18	LI-0003	Link (4 req'd.)
19	SC-2468	Set Screw, 8-40 x 1/4"
20	SC-0135	Governor Link Screw (4 req'd.)
21	SC-0136	Screw, 5-40 x 57/64" Hardened (4 req'd.)
22	SV-0042	Sleeve
23	WT-0006	Weight (2 req'd.)
24	WA-0296	Washer (2 req'd.)

VERTICAL SHAFT BALL BEARING & BRACKET ASSEMBLY (82-60025)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
25	C1-G-31	Bearing & Bracket Assembly (2 req'd.)
26	BG-0009	Ball Bearing
27	BR-0020	Bracket Casting
28	41-51061	Bearing Retainer Screw, 8-32 x 1/4" (3 req'd.)

VERTICAL SHAFT UPPER THRUST COLLAR ASSEMBLY (82-60102)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
29	C1-G-44	Upper Thrust Collar Assembly
30	CL-0101*	Collar
31	PG-0013*	Plug (2 req'd.)
32	H-3719*	Collar Set Screw, 6-32 x 1/4" (2 req'd.)

\* Order C1-G-44

VERTICAL SHAFT, KEY, & GEAR ASSEMBLY (82-20256)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
33	C3-G-93	Vertical Shaft, Key, & Gear Assembly
34	ST-1796	Shaft
	KY-0053-J	Key (2 req'd.)
35	GR-0366R	Intermittent Drive Gear

INTERMITTENT DRIVE BRACKET & NUT ASSEMBLY (82-60103)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
36	C1-G-95	Drive Bracket & Nut Assembly
	C1-G-23	Ball Bearing & Bracket Assembly
	C1-G-24	Drive Gear Assembly

INTERMITTENT DRIVE & BRACKET ASSEMBLY (82-60101)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
37	C1-G-23	Ball Bearing & Bracket Assembly
38	BG-0006A	Ball Bearing
39	BR-0003*	Bracket Casting
40	41-51061	Screw, 8-32 x 1/4" Bind Head (as req'd.)
	WA-0239	Washer (2 req'd.)

\* Order C1-G-23

INTERMITTENT DRIVE GEAR NUT ASSEMBLY (C1-G-24)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
41	C1-G-24	Drive Gear Nut Assembly
42	NU-0001*	Nut
43	PG-0013*	Plug (2 req'd.)
44	H-3719*	Set Screw, 6-32 x 1/8" (2 req'd.)
* Order C1-G-24		

HORIZONTAL DRIVE SHAFT ASSEMBLY for DIRECT DRIVE (82-60181)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
45	M5-G-111T	Horizontal Drive Shaft Assembly
	C2-G-112	Drive Shaft & Bearings (see below)
46	BG-0006A	Ball Bearing (2 req'd.)
47	GR-0328	Main Drive Gear
48	SC-0074	Set Screw, 1/4-20 x 1/4" (2 req'd.)
49	ST-2154	Order C2-G-112
50	RI-0617	Oil Seal Ring
NOTE: Direct Drive = (1) Drive Belt		

HORIZONTAL DRIVE SHAFT ASSEMBLY for STANDARD DRIVE (82-60161)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
45	C2-G-111T	Horizontal Drive Shaft Assembly
	C2-G-112	Drive Shaft & Bearings (see below)
46	BG-0006A	Ball Earing
47	GR-0302	Main Drive Gear
48	3052	Set Screw, 1/4-20 x 3/8" (2 req'd.)
49	ST-2154	Order C2-G-112
50	RI-0617	Oil Seal Ring
NOTE: Standard Drive = (2) Drive Belts		

HORIZONTAL DRIVE SHAFT & BEARINGS ASSEMBLY (82-60033)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
	C2-G-112	Drive Shaft & Bearings
46	BG-0006A	Ball Bearing (2 req'd.)
49	ST-2154	Horizontal Drive Shaft

## DOUBLE SHUTTER PROJECTOR

### DOUBLE SHUTTER SHAFT, BRACKET, GEARS, & BLADE ASSEMBLY (82-60068)

<u>Part No.</u>	<u>Description</u>
J4-D-50	Double Shutter Shaft, Bracket, Gears, & Blade Assembly
J8-D-51	Double Shutter Blade & Hub, Inner
J8-D-52	Double Shutter Blade & Hub, Outer
H1-D-54*	Shutter Shaft Bracket & Ball Bearing
SG-0016	Shutter Spring
SA-2044	Shutter Spacer
3072	Socket Screw, 1/4-20 x 1/2"

\* Not Sold as Assembly - Order Individual Components

### INNER SHUTTER BLADE & HUB ASSEMBLY (82-60118)

<u>Part No.</u>	<u>Description</u>
J8-D-51	Inner Shutter Blade & Hub
C2-D-56	Hub & Clamp Screws
J8-D-59	Shutter & Air Vanes
SC-0128	Fastening Screw (5 req'd.)

### INNER SHUTTER HUB ASSEMBLY (82-60108)

<u>Part No.</u>	<u>Description</u>
C2-D-56	Shutter Hub Assembly
HB-0045	Hub
41-51201	Clamping Screw, 8-32 x 3/4" Socket Head (2 req'd.)

### INNER SHUTTER BLADE & AIR VANE ASSEMBLY (82-60124)

<u>Part No.</u>	<u>Description</u>
J8-D-59	Shutter Blade Assembly
BD-0026	Air Vane (2 req'd.)
BD-1083	Shutter Blade, Inner
SC-0094	Vane Screw, 6-32 x 1/8" Bind Head (6 req'd.)

## OUTER SHUTTER BLADE & HUB ASSEMBLY (82-60123)

<u>Part No.</u>	<u>Description</u>
J8-D-52	Shutter Blade & Hub Assembly
C2-D-49	Hub & Clamp Screws
SC-0128	Fastening Screw (5 req'd.)
BD-1082	Shutter Blade, Outer

## OUTER SHUTTER HUB ASSEMBLY (82-60032)

<u>Part No.</u>	<u>Description</u>
C2-D-49	Shutter Hub Assembly
HB-0044	Hub
41-51201	Clamping Screw, 8-32 x 3/4" Socket Head (2 req'd.)

## DOUBLE SHUTTER SHAFT BRACKET & BALL BEARING ASSEMBLY (H1-D-54\*)

<u>Part No.</u>	<u>Description</u>
H1-D-54*	Double Shutter Shaft Bracket & Bearing Assembly
C2-D-42	Shutter Shaft Bracket & Bearing Assembly
C2-D-55A*	Double Shutter Intermittent Bracket Assembly
CL-0128	Shutter Shaft Thrust Collar
GR-0007	Intermittent & Shutter Drive Gear
RT-0061	Thrust Washer Retainer (2 req'd.)
RT-0062	Shutter Shaft Spring Retainer
SC-0023	Set Screw, 10-32 x 3/16"
P-1432	Screw, 8-32 x 5/8" Socket Head
ST-1397X	Shutter Shaft
WA-0130	Steel Washer (2 req'd.)
WA-0131	Spring Washer (2 req'd.)

\* Not Sold as Assembly - Order Individual Components



INTERMEDIATE BRACKET, GEARS, & BALL BEARING ASSEMBLY (C2-D-55A\*)  
for Double Shutter Projectors

<u>Part No.</u>	<u>Description</u>
C2-D-55A*	Intermediate Bracket, Gears, & Bearing Assembly
C1-D-39	Intermediate Shutter Shaft & Bearing Assembly
C2-D-53B	Outer Rear Bracket, Gear, & Bearing Assembly
BG-0009B	Ball Bearing
BR-0016	Bracket Casting
CL-0035	Thrust Collar
GR-0007	Steel Gear
GR-0072	Reverse Shutter Gear
00259000	Screw, 8-32 x 5/8" Fillister Head
H-2525	Screw, Collar & Gear; 6-32 x 1/2" Fillister Head (2 req'd.)
SC-0112	Screw, Bearing Retaining (2 req'd.)
SC-0131	Screw, Reverse Gear & Bearing Retaining (2 req'd.)
SG-0086	Thrust Spring
WA-0005	Fibre Thrust Washer
WA-0017	Steel Thrust Washer (2 req'd.)
WA-0254	Thrust Washer

\* Not Sold as Assembly - Order Individual Components

*Associated Parts*

3072	Mounting Screw, Intermediate Bracket (4 req'd.)
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DIRECT DOUBLE SHUTTER BRACKET & BALL BEARING ASSEMBLY (82-60160)

<u>Part No.</u>	<u>Description</u>
C2-D-53B	Direct Double Shutter Bracket & Bearing Assembly
C2-D-53A	Bearing & Matched Gear Assembly
BR-0015	Bracket Casting
CL-0747	Inner Spacing Collar
SA-2043	Spacer
SC-0882	Collar Set Screw, 6-32 x 1/4"
WA-0009	Washer

GEAR & BALL BEARING ASSEMBLY for DOUBLE SHUTTER (82-60159)

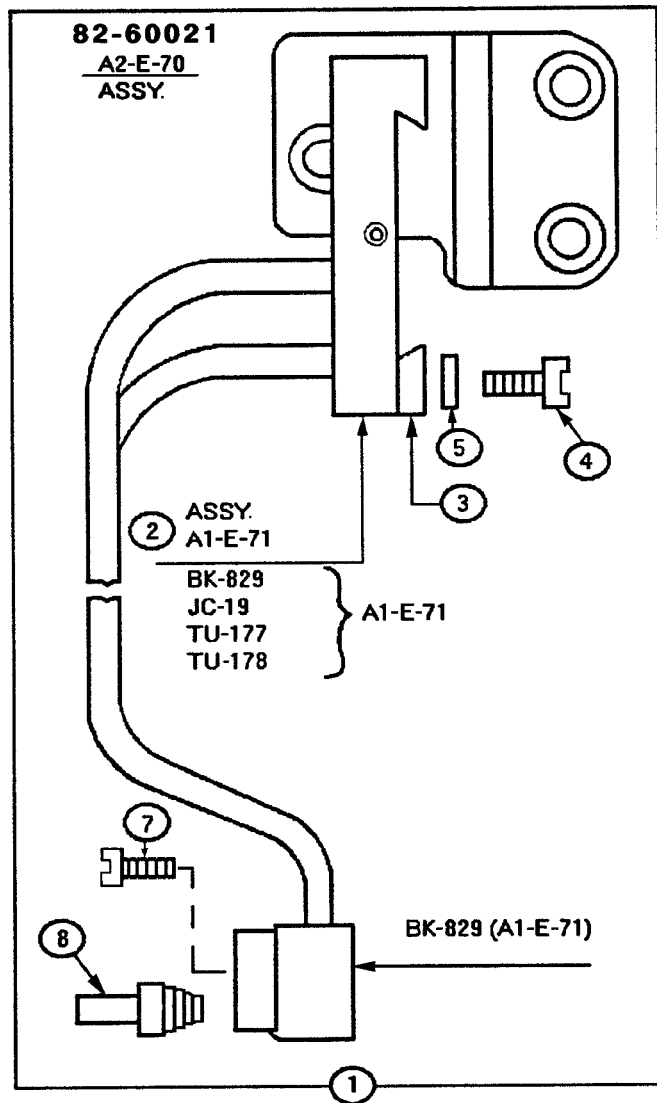
<u>Part No.</u>	<u>Description</u>
C2-D-53A	Gear & Ball Bearing Assembly
BG-0006A	Ball Bearing (2 req'd.)
BR-0015	Bracket Casting
GR-0013	Intermediate Shutter Gear (2 req'd.)

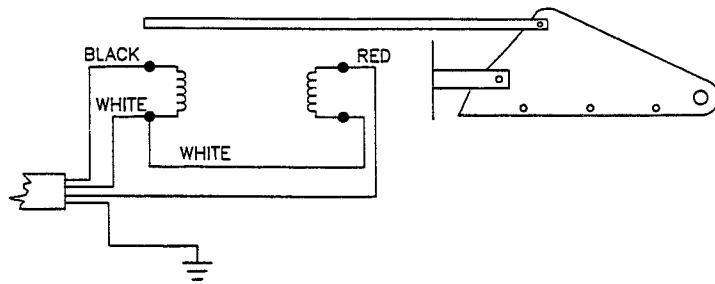
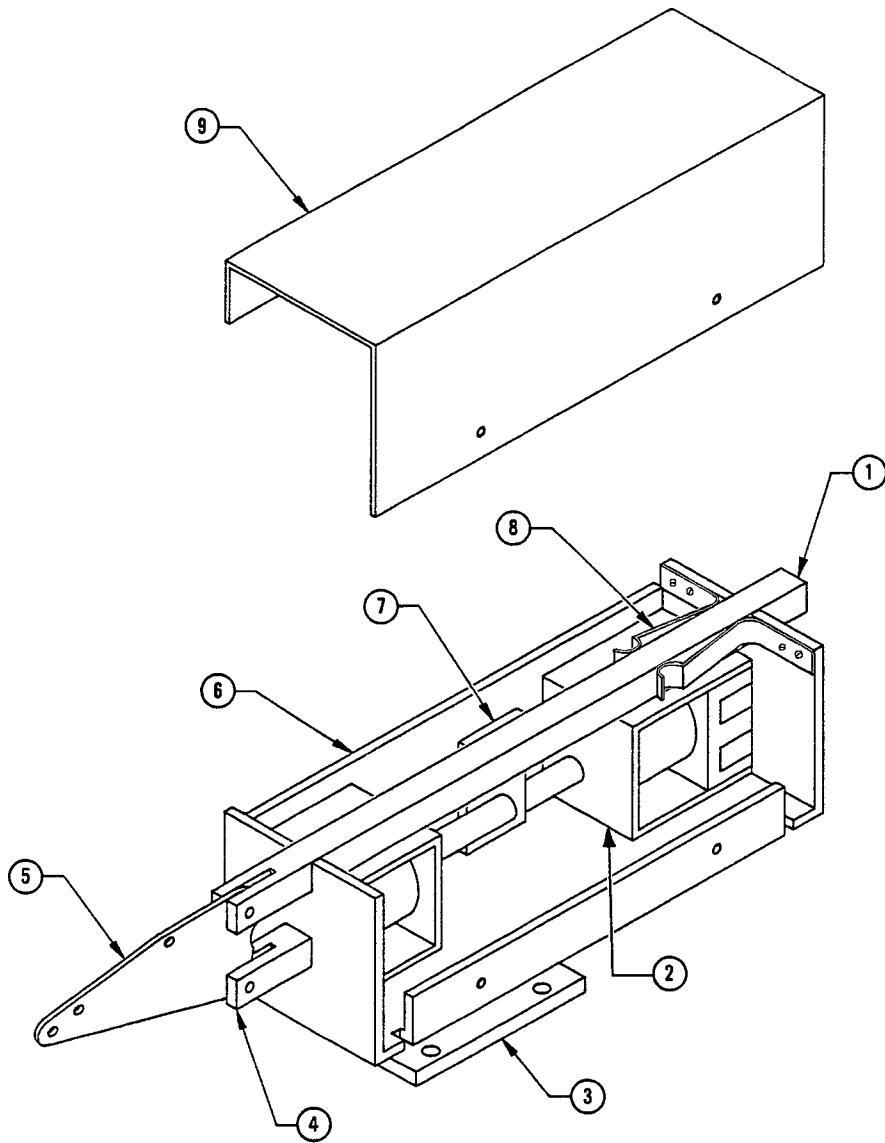
ADDITIONAL PARTS for WATER-COOLED PROJECTORS

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	A2-E-70	Film Trap Support Gib, Water-Cooled (Complete)
2	A1-E-71	Support Gib/Water Cell with Tubes & Connector Block
3	GI-0255	Film Trap Support Gib with Water Cell
4	41-51016	Fastening Screw, 4-40 x 1/2" Bind Head (3 req'd.)
5	WA-0088	Washer (3 req'd.)
6	00259000	Fastening Screw, 8-32 x 5/8" Fillister Head
7	SC-0137	Mounting Screw, 1/4-20 x 1/2" Fillister Head (3 req'd.)
8	81-20001	Hose Connector, Nylon (2 req'd.)

*Associated Parts*

01432000 Mounting Screw, 1/4-20 x 1/2" Allen Screw (3 req'd.)





CENTURY PICTURE CHANGEOVER DEVICE, 115 V.AC (82-60218\*)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	P-7922	Push Rod
2	51-55005	Solenoid, 115 V.AC (2 req'd with 82-60218)
-	51-55006	Solenoid, 230 V.AC (2 req'd. with 82-60219*)
-	81-55006	Solenoid, 24 V.AC (2 req'd. with 82-60283*)
-	00236000	Solenoid Mounting Screw, 8-32 x 5/16" Flat Head
3	P-7926	Base Plate
4	P-7923	Pivot Block, Bell Crank
-	P-7966	Clevis Pin, 1/8" Diameter
-	01704000	Cotter Pin, 1/16" Diameter
5	P-7892	Bell Crank
-	P-7966	Clevis Pin, Bell Crank Pivot; 1/8" Diameter
-	01704000	Cotter Pin, 1/16" Diameter
6	P-7919	Bracket, Changeover Body
-	41-13008	Cable Clamp, 90°
7	P-7925	Connector Plate
-	41-51325	Screw, 6-32 x 3/8" Socket Head (2 req'd.)
-	P-7966	Clevis Pin, Plate to Solenoid Armature; 1/8" Diameter
-	01704000	Cotter Pin, 1/16" Diameter
8	P-7920	Spring (2 req'd.)
-	41-51016	Screw, 4-40 x 1/4" (4 req'd.)
9	P-7924	Cover
-	41-51412	Cover Mounting Screw, 6-32 x 1/4" Pan Head (Black)

*Associated Parts*

9403	Linkage Rod, Changeover Douser
9402	Douser Plate & Rod Clamp Assembly
P-1676	Clamp Screw, Douser Plate to Linkage Rod; 6-32 x 1/4"
51-71007	Cable, (4) Conductor, Type SO (6 feet req'd.)

\* Order 82-60219 for 230 V.AC Changeover Assembly (Complete)  
 Order 82-60283 for 24 V.AC Changeover Assembly (Complete)

