



## **35mm OPTICAL SOUND REPRODUCERS**

Types R3-E, MR3-E, & JR3-E

Instructions & Parts Lists

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### **STRONG INTERNATIONAL**

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\* See Page 23 for *optional* Kelmar Reverse-Scan Kit

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## OPTICAL SOUNDHEAD

### Type R3, MR3, JR3

THE CENTURY OPTICAL SOUNDHEAD is designed for optimal reproduction of all optical sound formats. All film-handling elements are mounted to a rugged one-piece main frame casting for maximum stability. The soundhead is factory tested and inspected before shipping, and requires no preliminary "run-in" period at the installation site.

BEFORE USING the optical soundhead, make certain that the CU-0085 Damping Cup (as illustrated below) has been correctly filled with the FD-0120 Damping Fluid supplied with the unit. Loosen the SC-0526 set screw to release the CU-0085 cup from its holder and fill to the scribed ring inside the cup with the FD-0120 fluid provided. Replace the cup and tighten the set screw.

ALL NECESSARY ADJUSTMENTS to the Century Soundhead are made at the factory in the course of testing and run-in. It is recommended, however, to repeat all optical soundtrack scanning adjustments as a preliminary step in the installation of the sound processing equipment. These adjustments are **extremely crucial** for proper sound reproduction, and vibration and handling in shipping can jar components out of alignment. Qualified sound installation personnel are trained and equipped to perform these procedures.

#### ELECTRICAL SUPPLY REQUIREMENTS:

**Drive Motor** (Domestic): 115 V.AC, 60 Hz. 15 Amperes

**Drive Motor** (Export): 230 V.AC, 50 Hz. 10 Amperes

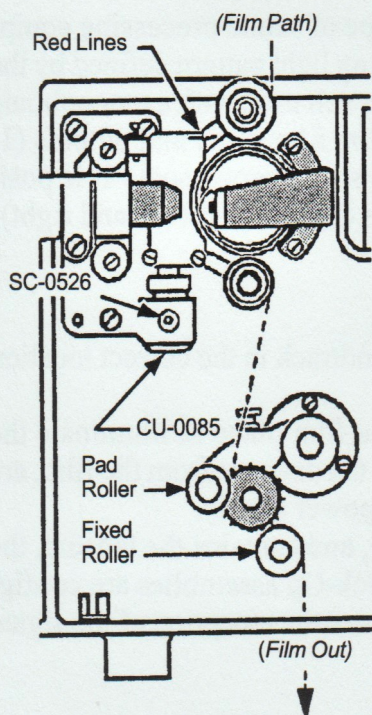
See Page 28 for *Optional* Motor Configurations.

**Exciter Lamp** (Direct Scan): 9 Volts, 4 Amperes \*

**L.E.D. Power Supply** (Reverse Scan): 115/230 V.AC, 50/60 Hz. 3 Amperes

\* The Exciter Lamp must be connected to a listed Exciter Lamp Power Supply installed and wired in conformance to local codes.

#### THREADING



Bring the film from the lower holdback sprocket of the projector mechanism into the soundhead. Open the soundhead pad roller. Thread the film as shown (dashed line) around the impedance drum, under the sprocket, and over the fixed roller. Draw the film taut around the sprocket, and back it off until the (2) red lines (see illustration) are roughly parallel. This indicates correct film tension across the impedance drum. Close the pad roller.

For best performance, periodically clean the interior of the soundhead. Do not allow dust and film residue to accumulate. Any obstruction of the light path of the L.E.D. (Reverse Scan) or the beam of the exciter lamp (Direct Scan) will result in signal loss. Exercise extreme care when working around the solar cell assembly of the Direct-Scanning soundhead. The mirrors on the head of the solar cell are very fragile and are easily damaged. DO NOT reposition the soundtrack scanning components (L.E.D. head, slit lens, etc.).

When ordering replacement parts for the Century Soundhead, please reference both the MODEL and SERIAL number on the Data Plate of the unit.



## ADJUSTMENTS

PAD ROLLERS, when closed, must allow a clearance distance of (2) thicknesses of film between the rollers and the face of the sprocket. This is accomplished by setting the pad roller arm stop screw (Item 7, Page 10) to stop the pad roller closure at the desired (2) film thickness distance between the pad roller (Item 3, Page 10) from the face of the sprocket. Tighten lock nut (Item 6, Page 10) to fix this setting.

MAINTAIN correct belt tension. Tension should be sufficient to allow the belt cogs to firmly engage the pulley teeth, but *do not overtighten*. Excessive belt tension can damage shafts and pulleys and cause premature bearing failure.

ADJUSTMENTS to those components relevant to scanning the optical soundtrack are best performed by qualified personnel equipped with the necessary test equipment. Attempts to effect field repairs without use of the required test equipment are generally detrimental to sound quality.

### DIRECT-SCANNING SOUNDHEADS:

1. The **Exciter Lamp** is preset to position the filament of the lamp for maximum light output to the Slit Lens. The adjustable mounting bracket of the exciter lamp is set and locked. Replacement exciter lamps, when installed, will be correctly positioned. A remote **Exciter Lamp Power Supply** provides DC current to the lamp for flicker-free light output.
2. The **Lateral Guide Roller** directs the film path to position the soundtrack in the correct location for scanning. A **Buzz Track** is required for this adjustment.
3. The **Slit Lens** projects the image of the exciter lamp filament to the soundtrack of the film. The **Azimuth** and **Focus** of the slit lens is set and locked. These adjustments require use of **9 kHz** test film.
4. The type and positioning of the **Solar Cell** is determined by the type of sound processing equipment connected to the soundhead. The solar cell collects the pulsating light pattern defined by the slit lens and converts the information into electrical current. A solar cell used with a monophonic sound system is positioned approximately 9/16" (14mm) behind the film plane and outputs (1) channel. A split solar cell is used for SVA (Stereo Variable Area) sound processors. It is positioned no less than 3/16" (5mm) behind the film plane, and outputs (2) channels (left and right).

### REVERSE-SCANNING SOUNDHEADS:

1. The **Lateral Guide Roller** directs the film path to position the soundtrack in the correct location for scanning.
2. A **L.E.D.** (Light Emitting Diode) is positioned directly behind the film plane to illuminate the soundtrack. The horizontal position relative to the soundtrack, and the distance from the film, are set and locked. The L.E.D. is powered by a remote, low-voltage power supply.
3. A **Signal Pick-Up Assembly** is mounted in front of the film plane, and contains the lensing, the solar cells, and terminals for the cell output. All Analog Signal Pick-Up assemblies are configured for SVA optical stereo. This assembly is factory-set to maximize the reception of the signal transmitted by the L.E.D.



## CENTURY REVERSE-SCANNING SOUNDHEADS

Reverse-Scanning Optics, using an infrared L.E.D. (Light Emitting Diode) as a light source, were adopted by Strong International in 1995. A visible-red L.E.D. was adopted in 1997. The L.E.D. features a much longer life (15,000 hours) than an exciter lamp, and eliminates signal loss because of sagging or aging bulb filaments. The one-piece Signal Pick-Up detects only red or infrared inputs, and stray booth lighting does not distort the solar cell output. Channel separation is enhanced by incorporating the solar cells within the sealed lens assembly. Reverse-Scanning soundheads are identified by a /SR suffix on the Equipment Type designation.

The duty cycle (time ON) of the L.E.D. should parallel that of the xenon bulb; the lamphouse elapsed hour meter should approximate L.E.D. hours. L.E.D. manufacturers have noted a 10-20% drop in light output after prolonged (10 year) operation. If a sound signal loss cannot be corrected by fader gain, it may be necessary to replace the L.E.D. Illuminator.

Traditional Direct-Scanning Optics remain available and may be specified on the original equipment order. The exciter lamp DC power supply required for use with the direct-scanning soundhead must be ordered separately; the L.E.D. power supply required for reverse-scanning optics is included with the system. Power supplies of either type are mounted and wired remotely from the soundhead.

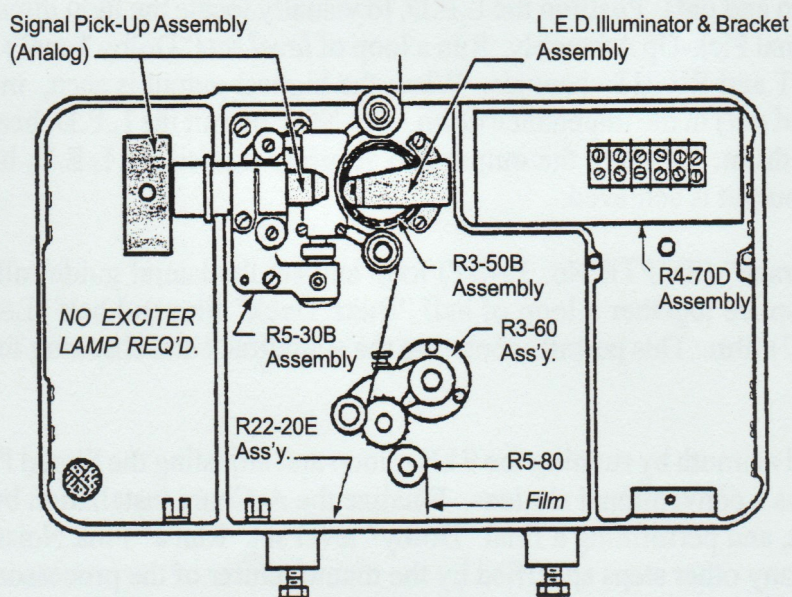
Century Direct-Scanning Soundheads (R3, MR3) already in service can be readily converted to Reverse-Scanning Optics by the installation of Reverse Scan Kits:

81-98259 Reverse-Scanning Soundhead Conversion Kit, Analog

81-98412 Reverse-Scanning Soundhead Conversion Kit, Analog; Digital Convertible

81-98413 Reverse-Scanning Soundhead Conversion Kit, Digital (Dolby SR·D)

Replacement L.E.D. (light source) Heads are easily mounted to the Illuminator Bracket and may be installed upon output decrease or failure of the L.E.D.





## WIRING & ALIGNMENT

### Reverse Scan Sound Reader

Install the L.E.D. Power Supply to the projection console or to a rack adjacent to the soundhead. Mounting brackets should be specified on the original equipment order; 51-06026 for Rack Mounting, 51-06030 for Console Mounting. Route the power leads to the soundhead-mounted L.E.D. Illuminator Assembly using 18 gauge wires for short runs; 16 gauge wires for excessively long runs.

Pre-amp connections to the analog Signal Pick-Up are made to the clearly marked terminals on the back of the unit. These connections include:

#### Power Input

12 V.DC +

12 V.DC -

Ground

#### Solar Cell Output

Right Channel "HI"

Right Channel "LO"

Ground (Shield)

Left Channel "HI"

Left Channel "LO"

It is recommended to use (2) shielded two-conductor cables to connect the solar cell outputs, but use of a three-conductor, single-shield cable is permitted. If using three-conductor cable, strap the two "LO" terminals together. Since very little current is required, 22 gauge wire is adequate. DO NOT interconnect *input* and *output* grounds.

#### ADJUSTMENTS (Analog):

Energize the L.E.D. and connect test equipment to Solar Cell Output terminals. Turn the sound processor's *level* and *high frequency* adjustment to minimum settings.

Loosen, but do not remove, the socket head screw clamping the analog L.E.D. head to its mounting post and bracket. Loosening this screw permits moving the L.E.D. head up and down, and on the horizontal plane (in and out). Position the L.E.D. to visually locate the light directly opposite the lens opening of the Signal Pick-Up Assembly. Run a loop of *level set* ("Dolby Tone") film and observe the output of the LEFT and RIGHT channels. When the highest output is seen, move the L.E.D. head horizontally (in and out) in the impedance drum. DO NOT permit the L.E.D. head to touch the inside of the impedance drum. Observe the output and securely tighten the L.E.D. head clamping screw when the highest output is achieved.

Run a "Buzz Track" (SMPTE No. 35-BT) loop and set the lateral guide roller as required. It is recommended to splice together a loop of half "Buzz Track" film and half "Left/Right Alignment" (Dolby Cat. No. 97) film. This permits centering the soundtrack and checking for cross-talk simultaneously.

Set the focus and azimuth by running the 9 kHz. loop and adjusting the Signal Pick-Up Assembly in the same manner as a conventional slit lens. Finalize the A-Chain installation by again checking the L.E.D. adjustment, and performing a final "Dolby" level set. Run a "Pink Noise" loop for equalization, and perform any other steps specified by the manufacturer of the processor.

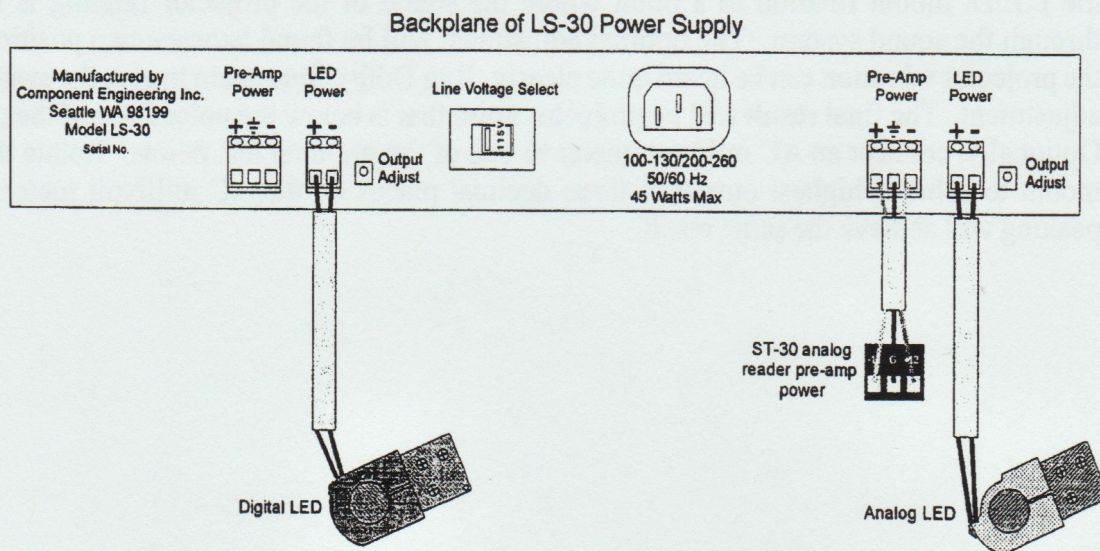


## ADJUSTMENTS (Digital):

Perform the above procedure, but do not consider the analog installation complete until also setting the digital scanning components. In order to best accommodate the scanning of TWO soundtracks, some fine adjustments to the analog scanning will be re-set in the course of digital alignment.

The visible L.E.D. Dual Reader is supplied with the LS-30 Modular Power Supply. The LS-30 contains (2) of the universal power supply modules. The output adjustments, however, are wired to the chassis, so the modules can be interchanged without resetting the output level.

- The *left* unit is factory set at 450 mA. to power the *analog* L.E.D. The *right* unit is set at 550 mA. to power the *digital* L.E.D.
- The L.E.D.'s are bipolar; the power supply cannot damage an L.E.D. through reversed polarity. It is safe to try reversing the polarity if you have power but no light. **Accidental connection of the L.E.D. to the pre-amp power terminals will damage the L.E.D.**
- The L.E.D. and pre-amp power wiring terminals, the output adjustments, and the AC line voltage selector switch are all located on the back plane of the LS-30 cabinet. **Carefully inspect the connections and settings before powering up the LS-30.** See the illustration below.
- Power supply module fuses are accessible by removing the module from the chassis.
- The pre-amp power to the analog reader (Signal Pick-Up) is 12 V.DC+, ground, and 12 V.DC-. The ground *must* be connected at both ends as it is circuit reference zero volts.



NOTE: The LS-30 can be replaced with (2) LS-40 units.



### *Preliminary Adjustment*

- Power up the LS-30 Power Supply and the Audio Processor.
- Observe that both L.E.D.'s emit visible light.
- Connect a dual-trace oscilloscope to the left and right test points of the processor pre-amp.
- Thread and run Dolby *Tone Test* film (Cat. No. 96t).
- Observe oscilloscope traces and "Dolby" level indicators in the processor.
- If tone is visible on both channels, set to "Dolby" level.
- If not, check L.E.D. alignment and focus the optics. Then set "Dolby" level.
- Thread and run SMPTE "Buzz" track.
- Adjust lateral guide roller as required to obtain (2) very low, equal residual signals.

### *Analog L.E.D. Alignment*

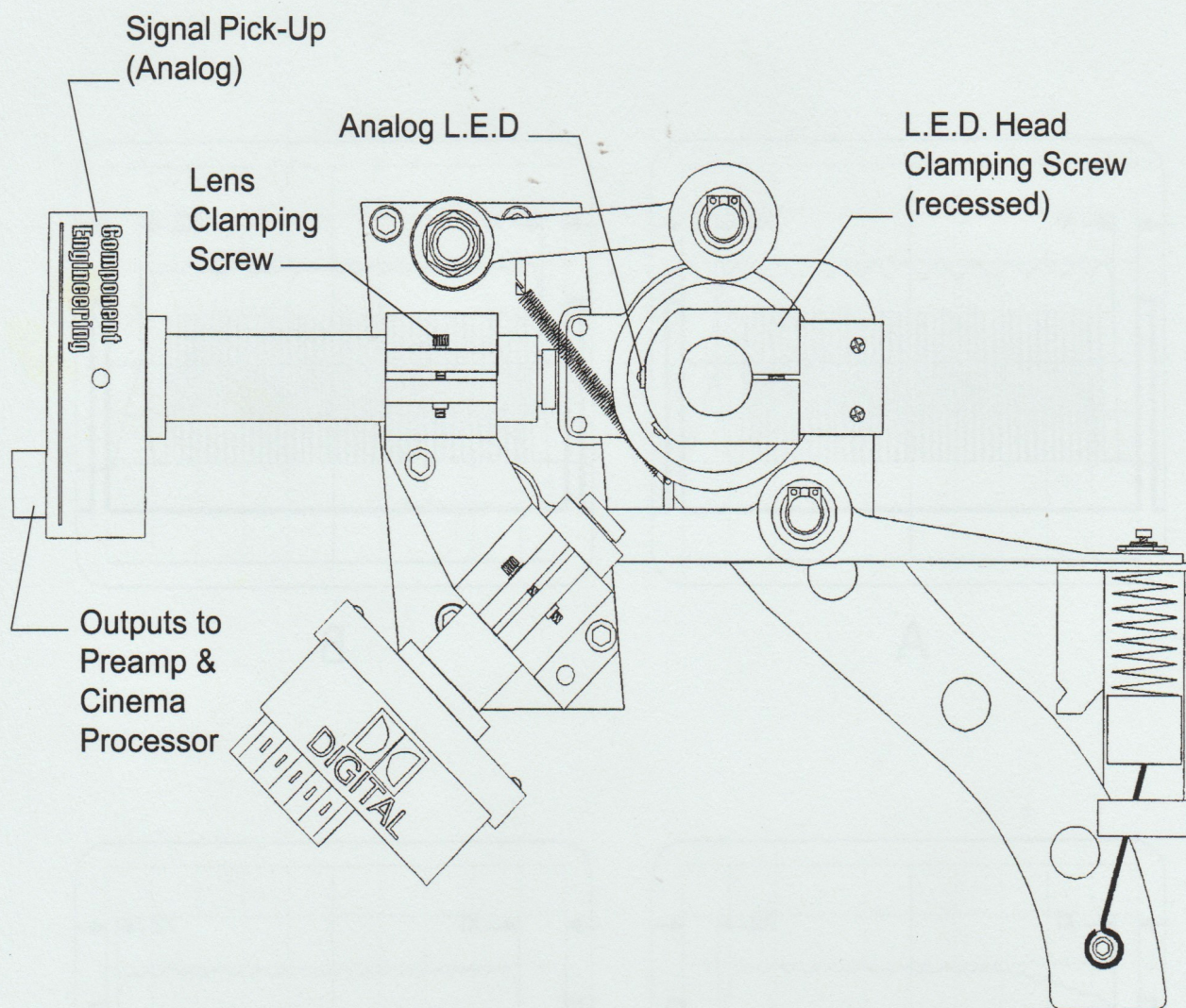
The analog L.E.D. must be aligned before the digital.

- Turn both *left* and *right* channel pre-amp gain adjustments on your cinema processor to FULL DOWN; if using a Dolby CP-500, turn to 50%. The goal is to have equal gain on both channels.
- Thread and run Dolby *Tone Test* film (Cat. No. 96t).
- View the pre-amp outputs on the oscilloscope screen.
- Rotate the L.E.D. mount assembly to reach the maximum amplitude of both traces.
- Move the assembly laterally to get both traces as high and equal as possible.
- Complete the standard "A" chain alignment.

**To minimize microphonics, the L.E.D. must be very accurately aligned.**

- With the power amplifiers OFF, turn the processor and monitor gains FULL UP. Select a film format and the correct projector on the processor. Run the projector with no film. Fine-adjust the L.E.D. mount rotation to a point where the sound of the projector running is not heard through the sound system. The optimal adjustment will be found *between* two positions where the projector vibration can be heard quite clearly. Run Dolby *Tone* again to give the system a final adjustment. The final result will be projector noise that is below the noise floor of the processor.
- Optionally, connect an AC millivolt meter to one of the pre-amp test points. Rotate the L.E.D. mount to achieve highest output to three decimal places on the AC millivolt meter. Careful peaking will achieve the same result.

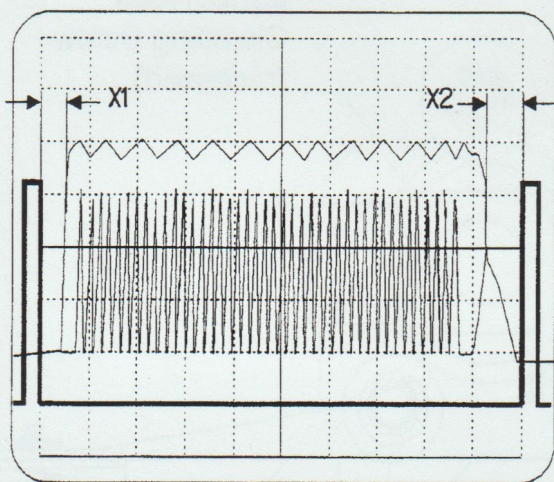




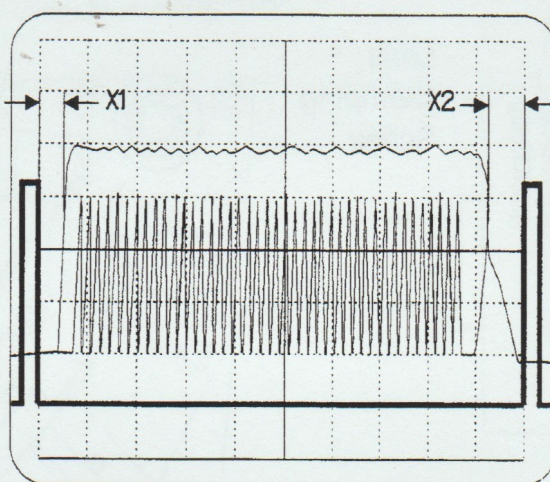


## Digital Reader Alignment

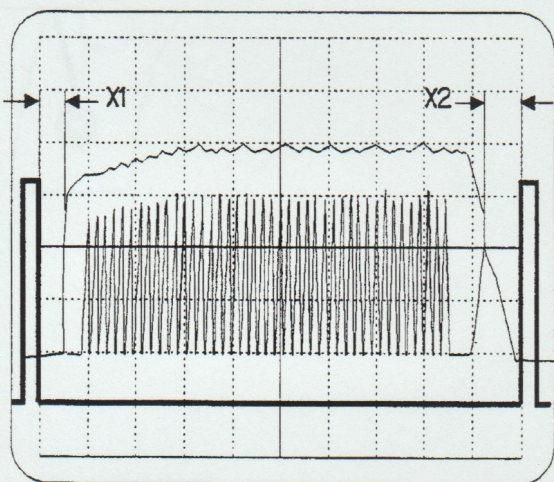
- Thread and run a reel of Dolby-encoded film.
- Connect a dual-trace oscilloscope to the Dolby Digital Processor per the following instructions.
- Refer to the oscilloscope traces below in reference to the following instructions:



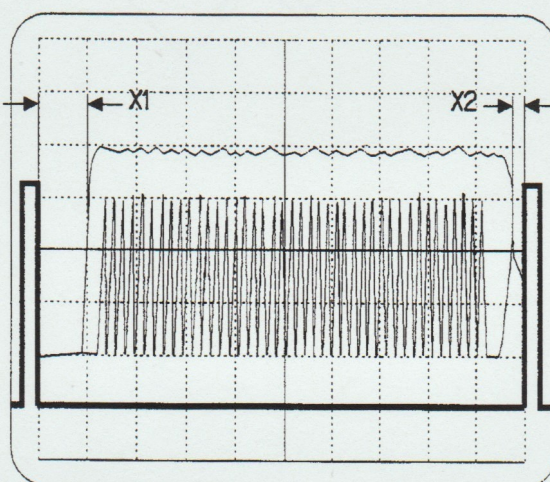
A



B



C



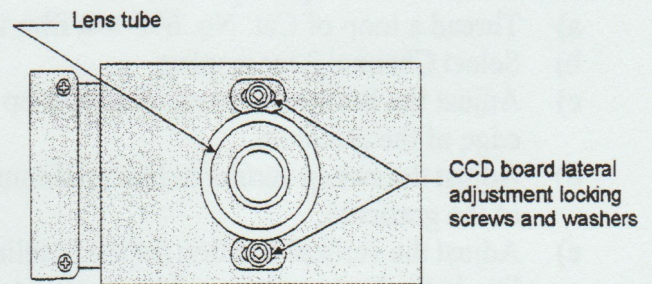
D



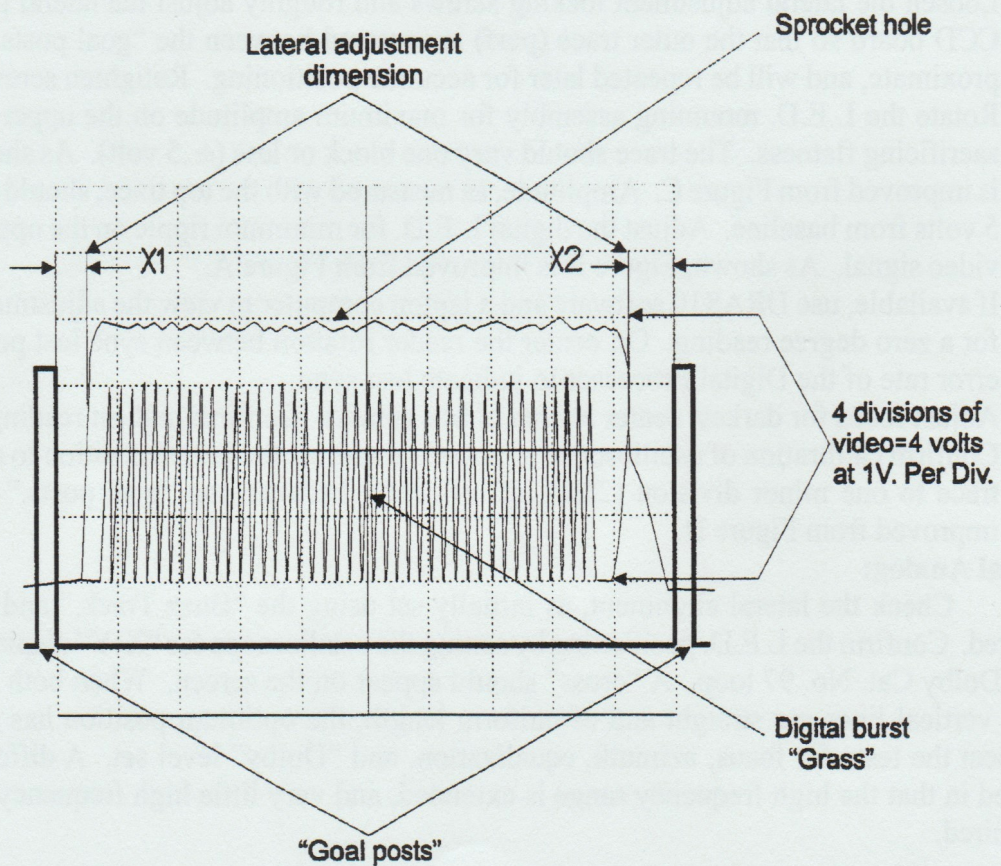
**Figure B is in optimal alignment.**

- In Figure A, the top of the sprocket hole has (12) large saw teeth. The differential between the high and low points is 1/3 volt.
- Figure B shows more saw teeth with less differential. This is obtained by fine-adjusting the rotation of the L.E.D. holder.
- In Figure C, the sprocket hole is falling off on the left, indicating uneven light. This is improved by moving the L.E.D. holder laterally until a flatter trace is obtained.
- In Figure D, the CCD board is misaligned laterally. Dimension X2 is smaller than X1. This can be improved by loosening the (2) CCD board mounting screws and moving the board until the X1 and X2 dimensions look like Figure B.

The correct alignment is offset to the left by one minor division. That is, the sprocket hole will be 1/5 of a square off-center toward the left "goal post" on the 'scope screen.



digital lens and pre-amp



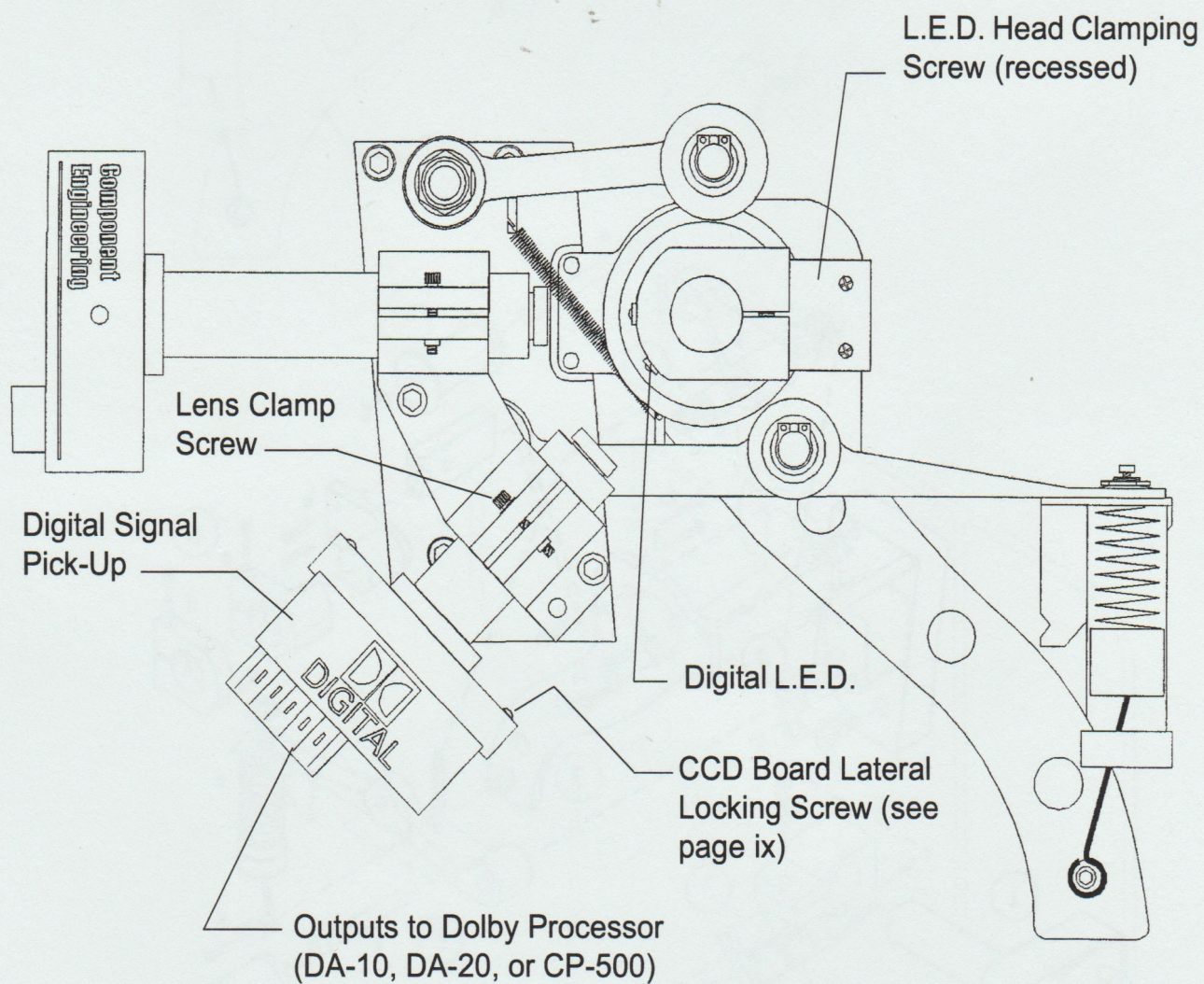


## Instructions for Alignment of Readers for Dolby Digital

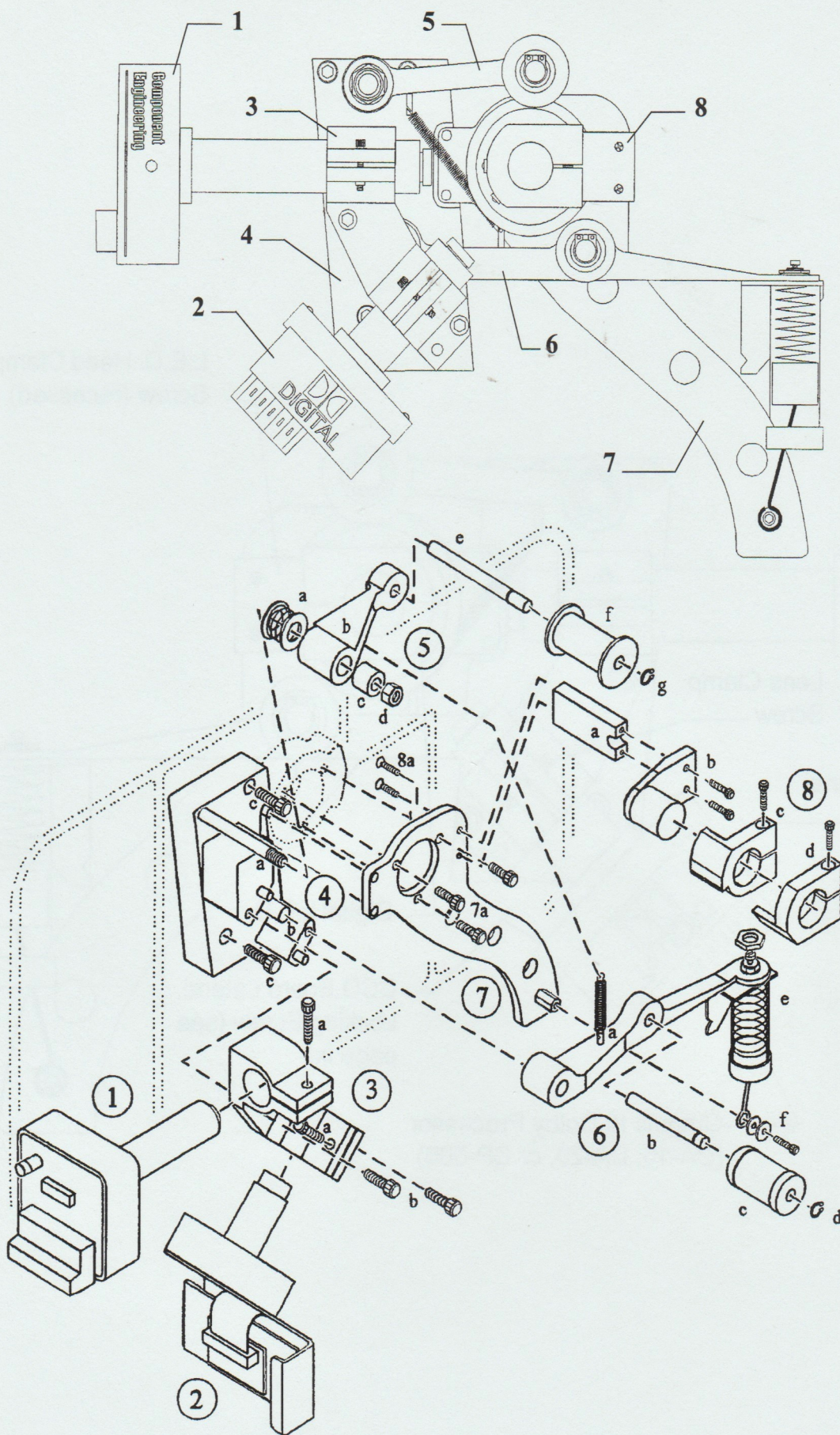
1. **Connect a dual-trace oscilloscope** to test points on Video Acquisition Card (Cat. No. 605 or 670). Oscilloscope should be 20 MHz. minimum.
  - a) Connect Channel 1 to **Video** test point; connect this probe ground only to **Gnd.** test point.
  - b) Connect Channel 2 to **Clamp** test point.
  - c) Set both channels *Volt/Div.* controls to 1 volt/div. Set vernier to calibrate. Ensure that probes are *not* at X10.
  - d) Set horizontal sweep rate to 2 usec/div.
  - e) Set trigger to channel 2 and positive polarity, adjust trigger level, and lock on signal.
2. **Calibrate oscilloscope to processor:**
  - a) Thread a loop of Cat. No. 69P test film into projector and reader; start machine.
  - b) Select Channel 2 for display.
  - c) Adjust the horizontal position to line up the inside edge of the left "goal post" with the left edge of the graticule.
  - d) Adjust the sweep vernier to line up the inside edge of the right "goal post" with the right edge of the graticule.
  - e) Adjust the vertical position for the baseline of the clamp signal (Channel 2) to coincide with a line in the lower section of the graticule.
  - f) Select either *Alternate* or *Chop* to give the brightest display of both channels.
  - g) Adjust the vertical position of the video signal (Channel 1) to coincide with the same line as the clamp signal.
3. **Alignment of the Reader:**
  - a) Loosen the lateral adjustment locking screws and roughly adjust the lateral position of the CCD board so that the outer trace (perf) is centered between the "goal posts." This is approximate, and will be repeated later for accurate positioning. Retighten screws.
  - b) Rotate the L.E.D. mounting assembly for maximum amplitude on the upper trace without sacrificing flatness. The trace should vary one block or less ( $\pm .5$  volt). As shown, Figure B is improved from Figure C. Amplitude, as measured with the top trace, should be between 2-5 volts from baseline. Adjust the digital L.E.D. for minimum ripple on the upper trace of the video signal. As shown, Figure B is improved from Figure A.
  - c) If available, use DRAS10 software and a laptop computer to view the adjustment of azimuth for a zero degree reading. Or, center the reader rotation between sync lost points using the error rate of the Digital Processor to indicate lost sync.
  - d) Adjust focus for darkest center in area of bits (grass). Confirm highest reading with DRAS.
  - e) Confirm calibration of oscilloscope as above. Readjust the lateral position to align the outer trace to one minor division (2/10) left of center between the "goal posts." Figure B is improved from Figure D.
4. **Final Analog:**

Check the lateral alignment, as initially set using the "Buzz Track," and correct as required. Confirm the L.E.D. positioning by setting the oscilloscope for "X-Y" display and running the Dolby Cat. No. 97 loop. A "cross" should appear on the screen. When both the horizontal and vertical lines are straight and of uniform length, the optimum position has been reached. Repeat the tests for focus, azimuth, equalization, and "Dolby" level set. A difference may be noted in that the high frequency range is extended, and very little high frequency boost will be required.









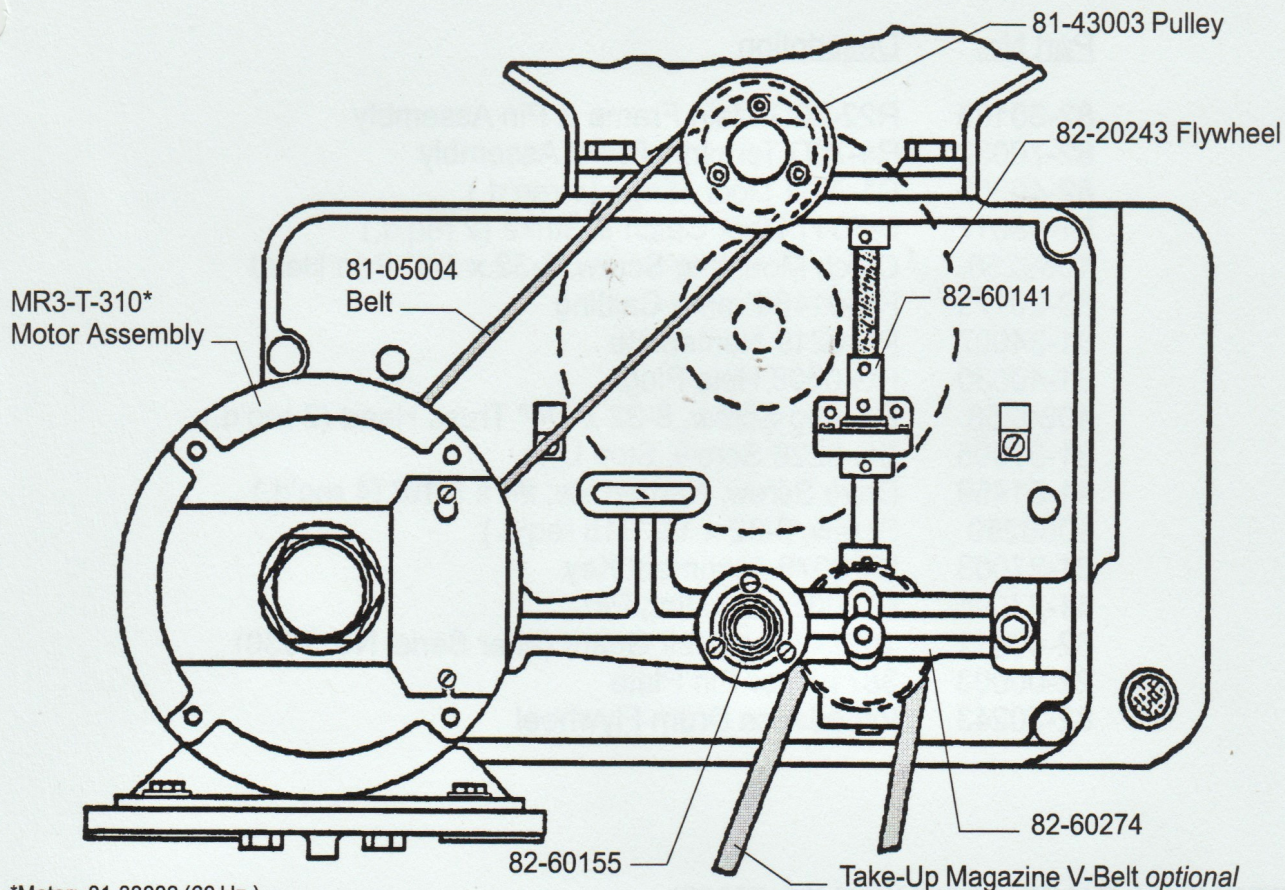


## PARTS LIST

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	81-98236	Signal Pick-Up Assembly, Analog
2	81-98454	Signal Pick-Up Assembly, Digital
-	51-98272	Cable, 30 foot length (not shown)
3	81-98439	Lens Tube Bracket
3a	4080750	Clamping Screw, 8-32 x 3/4"
3b	4100620	Mounting Screw, 10-32 x 5/8"
4	81-98452	Adapter Block
4a	81-98437	Upper Control Arm Shaft
4b	81-98436	Lower Control Arm Shaft
4c	4100500	Mounting Screw, 10-32 x 1/2"
5	81-98435	Upper Roller Arm Assembly
5a	81-98434	Spring
5b	81-98433	Arm Casting
5c	81-98432	Bearing
5d	4258002	Nut, 1/4-20 FlexLock
5e	81-98431	Roller Shaft
5f	91-98430	Roller
5g	21-48016	Snap Ring
6	91-98443	Lower Roller Arm Assembly
6a	81-98442	Arm Casting
6b	81-98441	Roller Shaft
6c	91-98440	Roller
6d	21-48016	Snap Ring
6e	81-98429	Damper
6f	4060372	Screw, 6-32 x 3/8"
-	4067101	Flatwasher, #6
7	81-98451	Adapter Plate
7a	4080502	Mounting Screw, 8-32 x 1/2"
8	81-98422	L.E.D. Head Assembly (Analog & Digital, as shown)
8	81-98428	L.E.D. Head Assembly (Analog only)
8a	91-98427	Spacer
8b	81-98426	Stud Plate
-	4060375	Assembly Screw, 6-32 x 3/8" Flat Head
8c	81-98425	L.E.D. Head, Analog
8d	81-98422	L.E.D. Head, Digital
-	4080750	Clamping Screw, L.E.D. Head; 8-32 x 3/4"
-	51-30006	L.E.D. Illuminator
	51-98307	L.E.D. Power Supply, LS-30-2R (not shown)

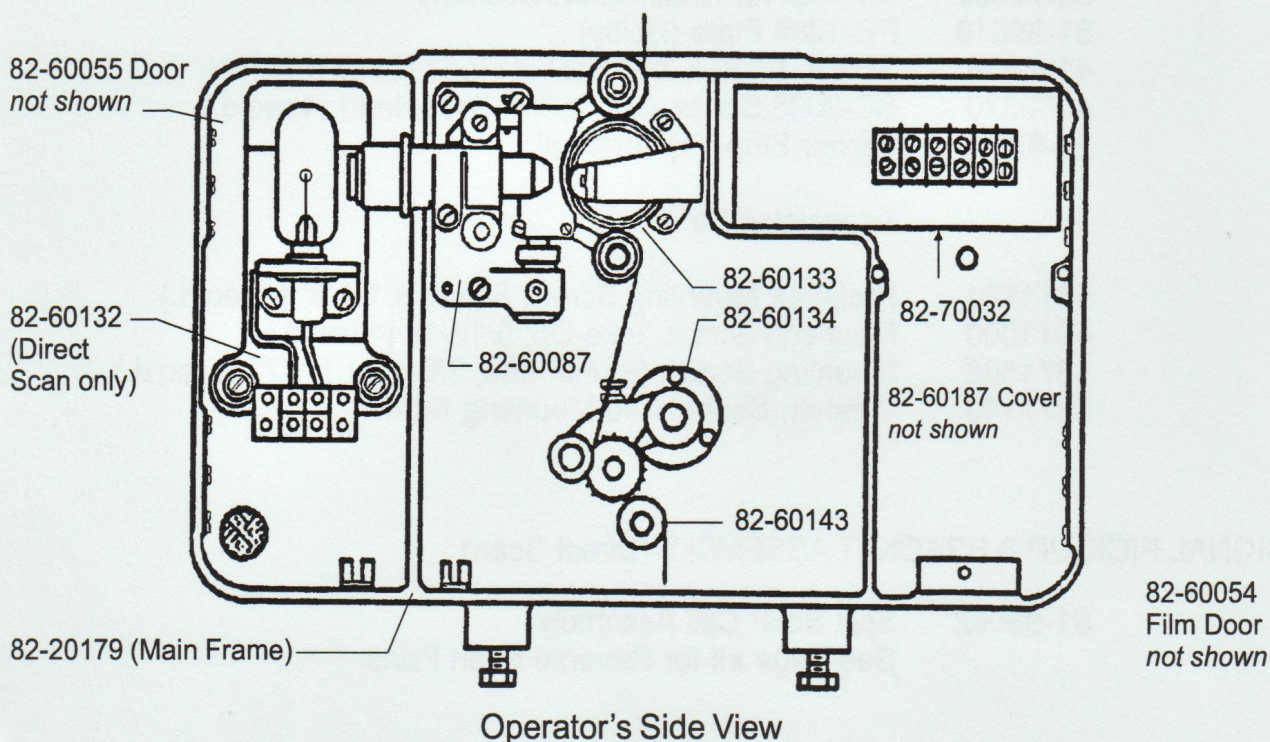


# CENTURY SOUNDHEAD, Main Frame Overview



\*Motor: 81-33003 (60 Hz.)  
 Motor: 51-33013 (50 Hz.)  
 Flywheel: 82-20096  
 Pulley: 81-43008

MR3 DIRECT DRIVE, Off-Operator Side View  
 (see Pages 21 & 22 for R3 Standard Drive)



Operator's Side View



## MAIN FRAME & PIN ASSEMBLY (82-60185)

<u>Part No.</u>	<u>Description</u>
82-60185	R22-20G Main Frame & Pin Assembly
82-70032	R4-70D Terminal Panel Assembly
82-40365	C1-A-11 Door Hinge (4 req'd.)
51-98017	P-7041 Door Catch & Strike (2 req'd.)
4060250	Catch Mounting Screw, 6-32 x 1/4" Pan Head
82-20179	FR-0146 Frame Casting
81-34007	PE-0219 Nameplate
81-40030	PG-0608 Hole Plug
4080258	Bearing Screw, 8-32 x 1/4" Truss Head (3 req'd.)
81-51005	SC-0226 Screw, Stop Link
41-51459	Drive Screw, Nameplate; #4 x 3/16" (4 req'd.)
4080250	Screw, 8-32 x 1/2" (15 req'd.)
81-27003	KY-0079 Alignment Key
41-37004	PN-0021 Locating Pin
82-40412	10274 Front Belt Guard (after Serial No. 7030)
22-00003	3871 Door Pin Plate
82-20243	Impedance Drum Flywheel

## TERMINAL PANEL ASSEMBLY (82-70032)

<u>Part No.</u>	<u>Description</u>
82-70032	R4-70D Terminal Panel Assembly
81-39010	PE-1289 Plate (Dolby)
4100374	Screw, 10-32 x 3/8" Socket Head (2 req'd.)
4060370	SC-2096 Screw, 6-32 x 3/8" Bind Head (4 req'd.)
21-62003	Barrier Strip, (4) Terminal

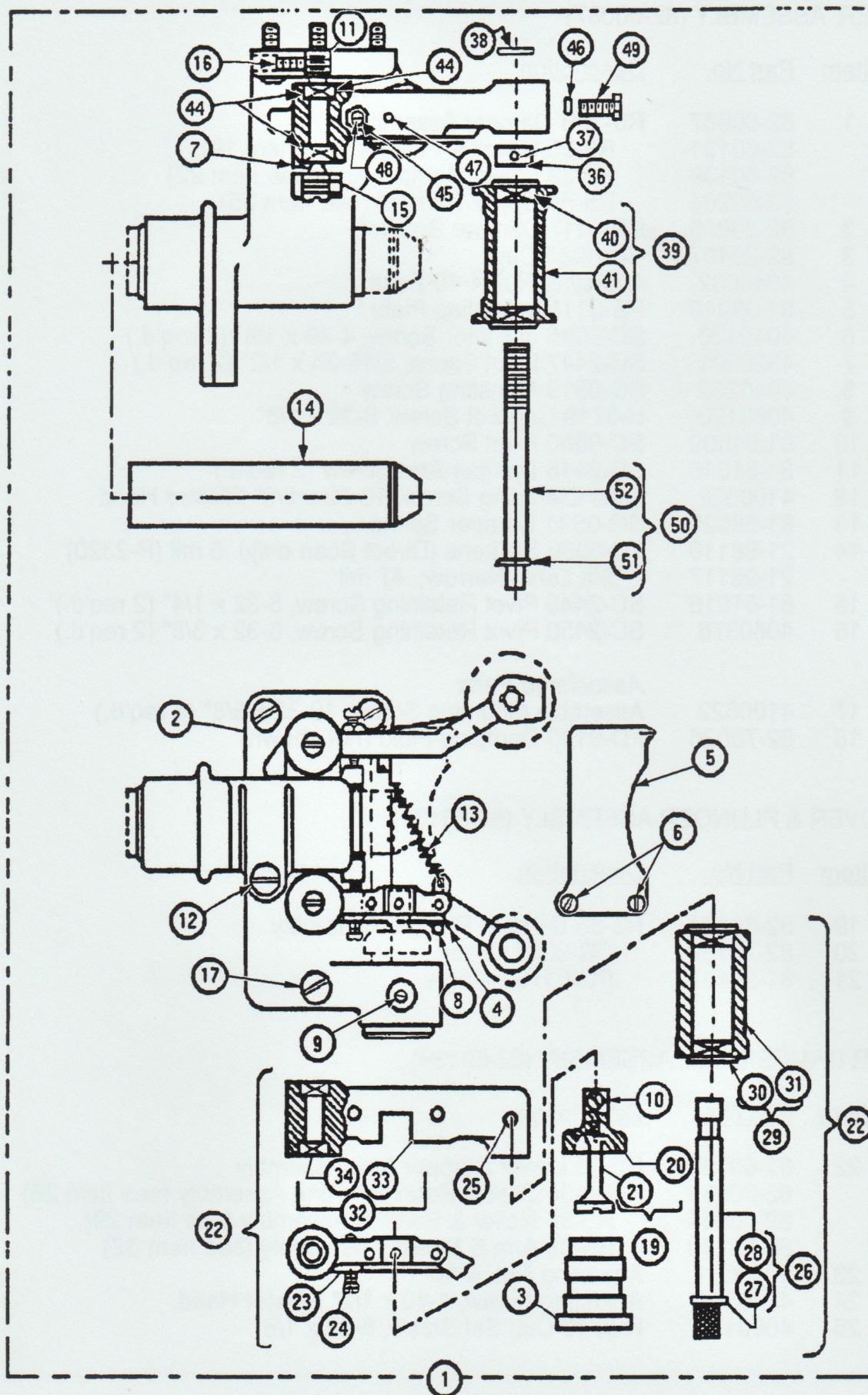
### *Associated Parts*

4371120	Projector Mounting Screw, 3/8-16 x 1-1/8" (4 req'd.)
4311000	Mounting Screw, Take-Up; 5/16-18 (4 req'd.)
4371502	Mounting Screw, Soundhead; 3/8-16 x 1-1/2" (4 req'd.)
4377103	Washer, Soundhead Mounting Screw

## SIGNAL PICK-UP & BRACKET ASSEMBLY (Direct Scan)

81-98062	Split Solar Cell Assembly See Page xii for Reverse Scan Parts
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## DAMPER ASSEMBLY (82-60087)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	82-60087	R5-30B Damper Assembly
	82-60131	R3-35 Cover & Plunger (see Item 19)
	82-60139	R5-33 Lower Damper Arm (see Item 22)
	82-60204	R5-50 Upper Damper (see Item 35)
2	82-20095	BR-0117 Damper Bracket
3	82-20407	CU-0085 Cup
4	4048002	Adjusting Nut, 4-40 Esna
5	81-39019	PE-0118 Indicating Plate
6	4040120	SC-0096 Indicator Screw, 4-40 x 1/8" (2 req'd.)
7	4320501	SC-2447 Pivot Screw, 5/16-24 x 1/2" (2 req'd.)
8	4040252	SC-0519 Adjusting Screw
9	4080120	H-3719 Cup Set Screw, 8-32 x 1/8"
10	81-51009	SC-0550 Pivot Screw
11	81-51015	SC-2446 Damper Arm Screw (2 req'd.)
12	4100622	Lens Clamping Screw, 10-32 x 5/8" Fillister Head
13	81-58025	SG-0591 Damper Spring
14	21-98116	TU-0030 Slit Lens (Direct Scan <i>only</i> ) .6 mil (P-2320)
-	21-98117	Slit Lens, Narrow; .47 mil
15	81-51015	SC-2445 Pivot Retaining Screw, 6-32 x 1/4" (2 req'd.)
16	4060376	SC-2450 Pivot Retaining Screw, 6-32 x 3/8" (2 req'd.)
<i>Associated Parts</i>		
17	4100622	Assembly Mounting Screw, 10-32 x 5/8" (3 req'd.)
18	82-70026	FD-0120 Damping Fluid (not shown)

## OIL COVER & PLUNGER ASSEMBLY (82-60131)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
19	82-60131	R3-35 Damper Plunger Assembly
20	82-20180	CR-0083 Cover
21	81-98157	PU-0116 Plunger

## LOWER DAMPER ARM ASSEMBLY (82-60139)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
22	82-60139	R5-33 Lower Damper Arm Assembly
	82-60063	R5-31 Stud & Retaining Ring Assembly (see Item 26)
	82-60064	R5-36 Roller & Bearing Assembly (see Item 29)
	82-60140	R5-38 Arm & Bearing Assembly (see Item 32)
23	4048001	Adjusting Nut, 4-40
24	4040501	Adjusting Screw, 4-40 x 1/2" Fillister Head
25	4080120	H-3719 Cup Set Screw, 8-32 x 1/8"



#### LOWER DAMPER ROLLER STUD & RETAINING RING ASSEMBLY (82-60063)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
26	82-60063	R5-31 Stud & Ring Assembly
27	21-48016	2933 Retaining Ring
28	81-98079	SU-2167 Stud

#### LOWER DAMPER ROLLER & BALL BEARING ASSEMBLY (82-60064)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
29	82-60064	R5-36 Roller & Bearing Assembly
30	81-04003	BR-1149-A Ball Bearing (2 req'd.)
31	82-20062	RO-0551 Lower Roller

#### LOWER DAMPER ARM & BALL BEARING ASSEMBLY (82-60140)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
32	82-60140	R5-38 Arm & Bearing Assembly
33	82-00041	AR-0034 Arm Casting
34	81-04021	BG-0099 Ball Bearing (2 req'd.)

#### UPPER DAMPER ARM ASSEMBLY (82-60204)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
35	82-60204	R5-50 Upper Damper Arm Assembly
	82-60065	R5-37 Roller & Bearing Assembly (see Item 39)
	82-60205	R5-51 Damper Arm Assembly (see Item 42)
	82-60142	R5-52 Arm Stud & Ring Assembly (see Item 50)
36	82-20020	CL-0084 Thrust Collar
37	4040122	SC-0578 Collar Fastener Set Screw, 4-40 x 1/8"
38	81-48004	RI-0550 "E" Ring

#### UPPER DAMPER ROLLER & BALL BEARING ASSEMBLY (82-60065)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
39	82-60065	R5-37 Roller & Bearing Assembly
40	81-04003	BR-1149-A Ball Bearing (2 req'd.)
41	81-49009	RO-0549 Roller



## UPPER DAMPER ARM & MISCELLANEOUS PARTS (82-60205)

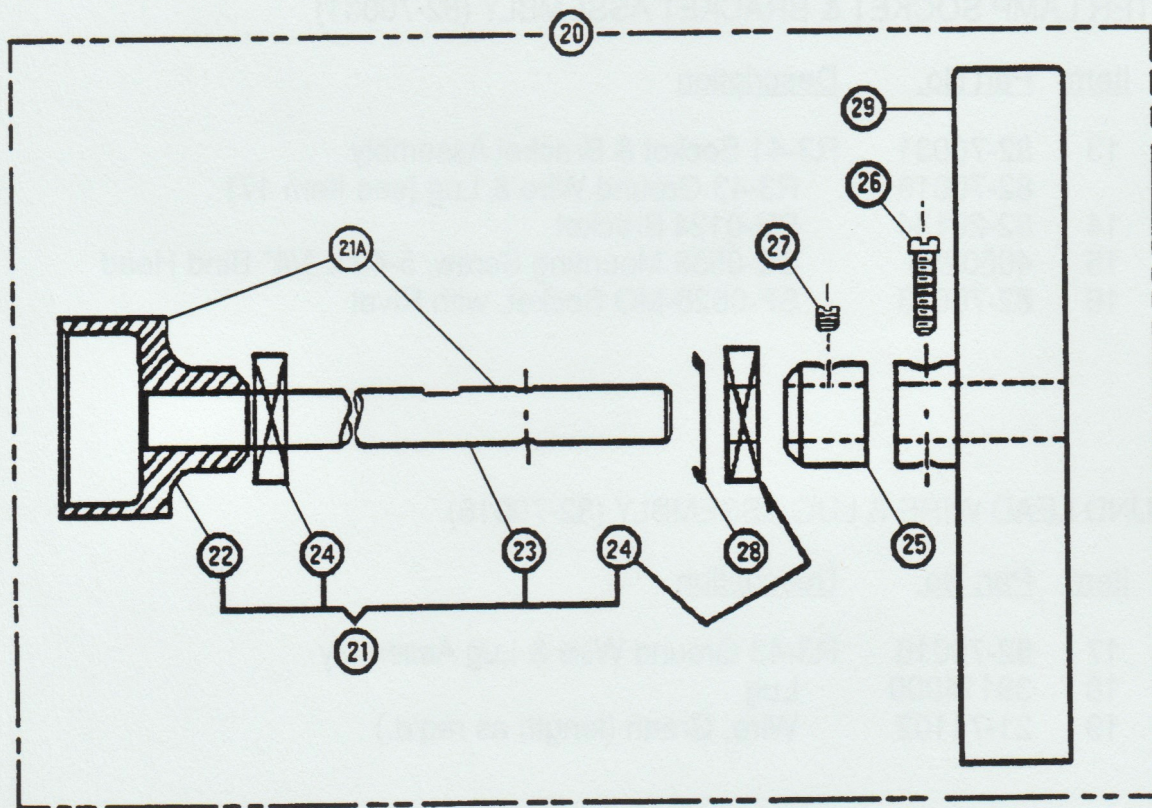
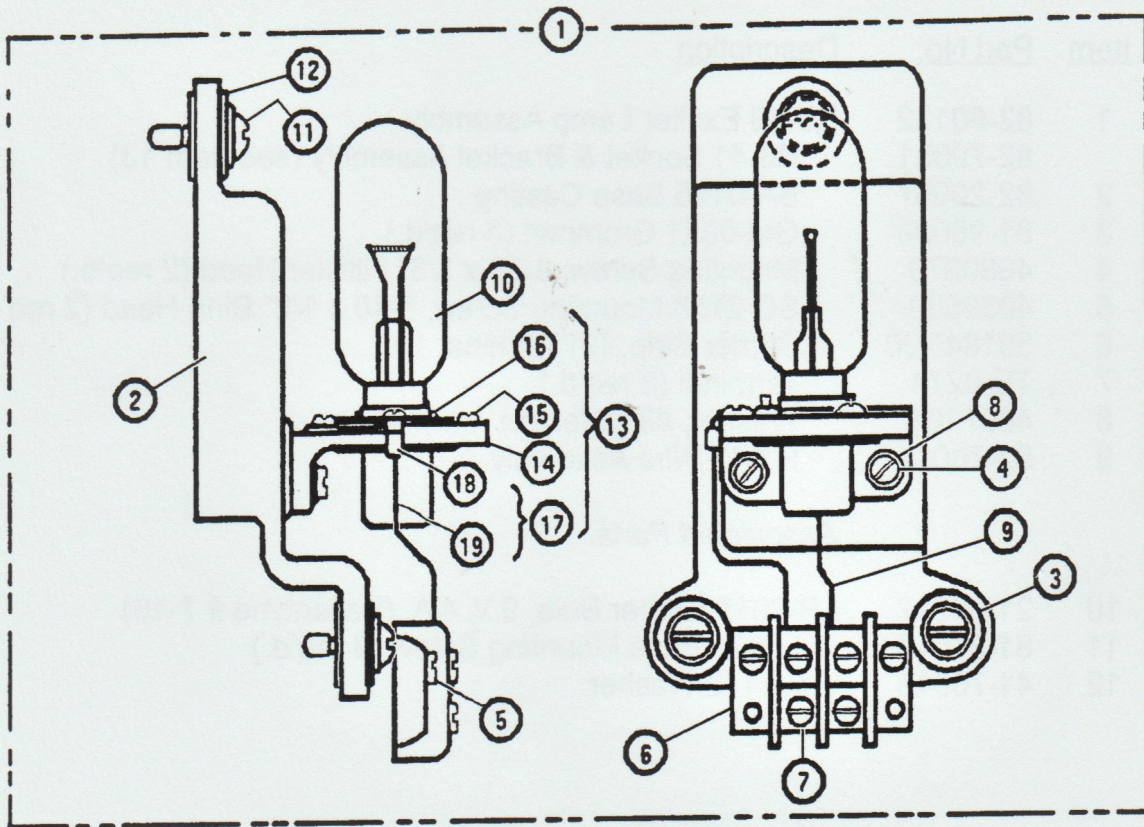
<u>Item</u>	<u>Part No.</u>	<u>Description</u>
42	82-60205	R5-51 Arm Assembly
43*	82-00020	AR-0198 Upper Arm
44*	81-04021	BG-0099 Ball Bearing (2 req'd.)
45*	4048001	Lock Nut, 4-40 Esna
46*	81-40017	PG-0013 Fibre Plug
47*	81-98130	SU-0554 Stud
48*	4040501	Stop Screw, 4-40 x 1/2" Fillister Head
49*	4080379	SC-2434 Screw, 8-32 x 3/8" Hex Head

\* Order 82-60205; Sold as Assembly only

## UPPER DAMPER ARM STUD & RETAINING STUD RING (82-60142)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
50	82-60142	R5-52 Stud & Ring Assembly
51	21-48016	2933 Retaining Ring
52	82-20373	SU-2298 Stud, Grooved







### EXCITER LAMP ASSEMBLY (82-60132) *Direct Scan Models only*

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	82-60132	R3-40 Exciter Lamp Assembly
	82-70031	R3-41 Socket & Bracket Assembly (see Item 13)
2	82-20067	BA-0125 Base Casting
3	81-98028	GM-0051 Grommet (3 req'd.)
4	4080370	Mounting Screw, 8-32 x 3/8" Fillister Head (2 req'd.)
5	4050500	SC-2158 Mounting Screw, 5-40 x 1/2" Bind Head (2 req'd.)
6	39184R00	Barrier Strip, (2) Terminal
7	TE-0274	Terminal (8 req'd.)
8	4087101	Washer, #8 (2 req'd.)
9	82-70017	R3-47 Wire Assembly

#### *Associated Parts*

10	21-30012	LP-0015 Exciter Bulb, 9 V. 4 A. (Ballantyne # 7-16)
11	81-51013	SC-2521 Base Mounting Screw (3 req'd.)
12	41-70045	WA-0142 Washer

### EXCITER LAMP SOCKET & BRACKET ASSEMBLY (82-70031)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
13	82-70031	R3-41 Socket & Bracket Assembly
	82-70016	R3-43 Ground Wire & Lug (see Item 17)
14	82-20134	BR-0124 Bracket
15	4050250	SC-0539 Mounting Screw, 5-40 x 1/4" Bind Head
16	82-70033	SF-0628-MO Socket, with Rivet

### GROUND LEAD WIRE & LUG ASSEMBLY (82-70016)

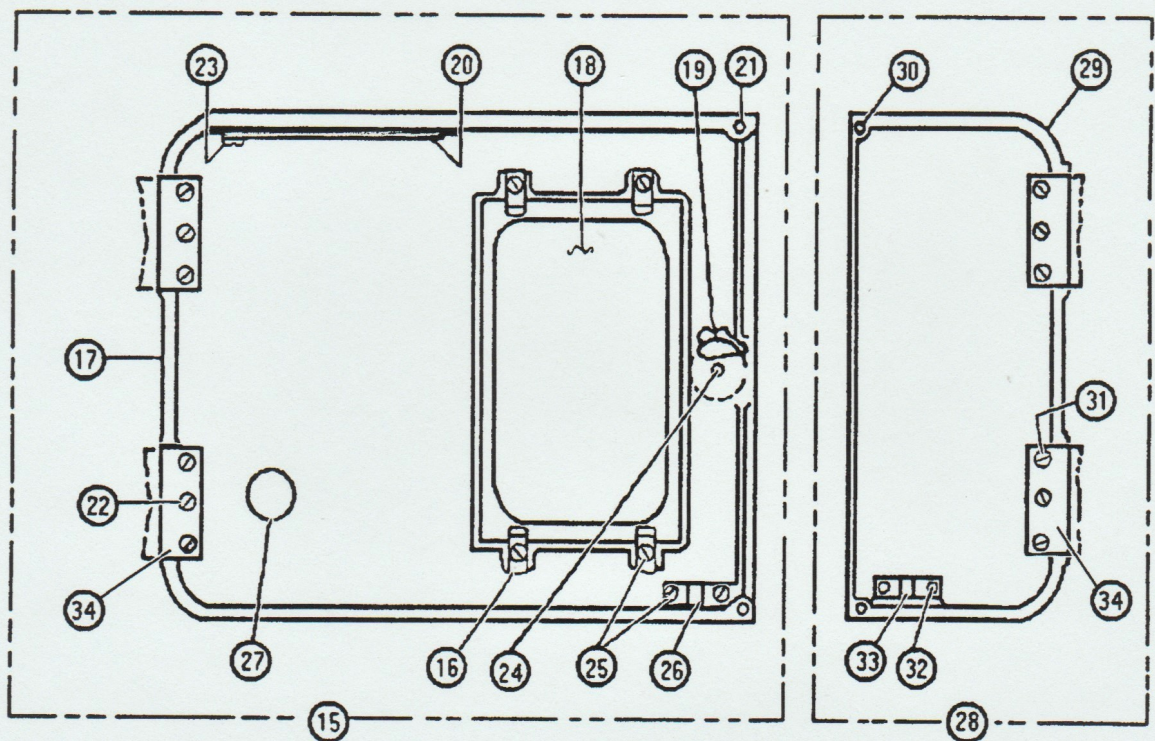
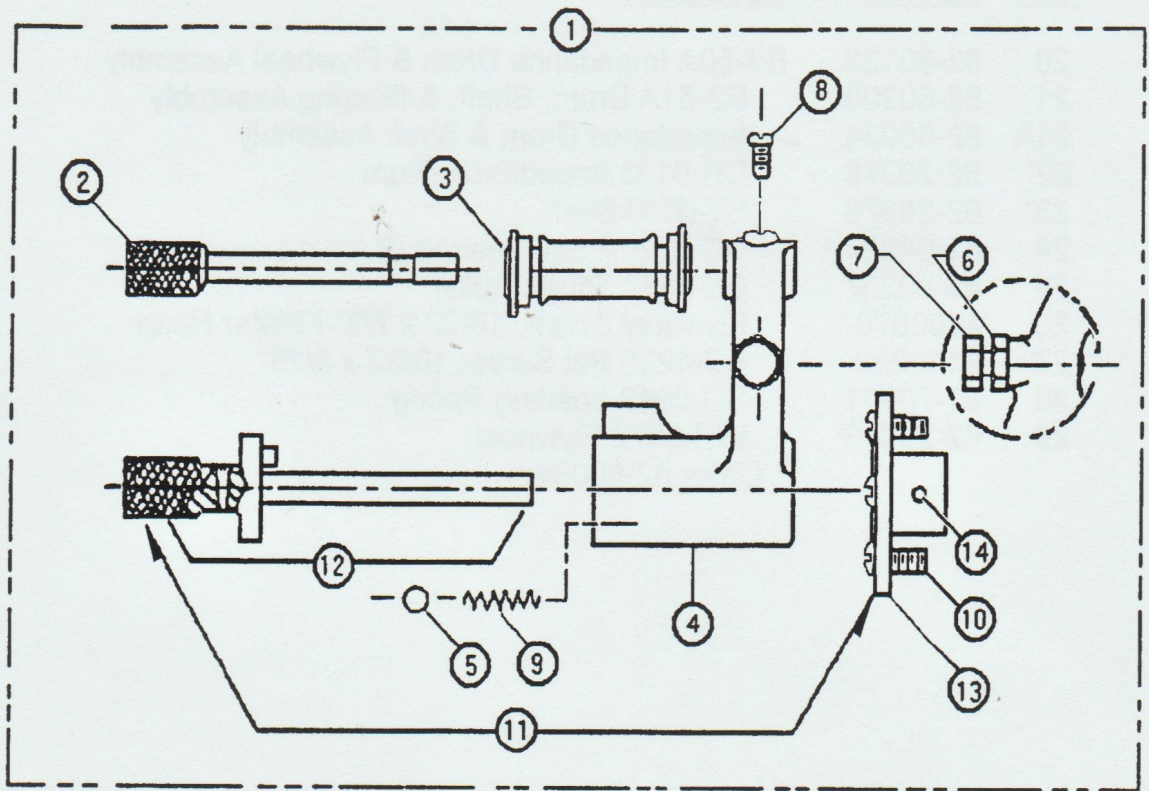
<u>Item</u>	<u>Part No.</u>	<u>Description</u>
17	82-70016	R3-43 Ground Wire & Lug Assembly
18	39114000	Lug
19	21-71102	Wire, Green (length as req'd.)



## IMPEDANCE DRUM & FLYWHEEL ASSEMBLY (82-60133)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
20	82-60133	R3-50A Impedance Drum & Flywheel Assembly
21	82-60300	R3-51A Drum, Shaft, & Bearing Assembly
21A	82-00034	Impedance Drum & Shaft Assembly
22*	82-20378	DR-0133 Impedance Drum
23*	82-20379	ST-0546 Shaft
24	81-04024	BG-0726A Ball Bearing (2 req'd.)
25	82-20257	CL-0082 Thrust Collar
26	4100870	Flywheel Screw, 10-32 x 7/8" Fillister Head
27	4100252	SC-1236 Set Screw, 10-32 x 3/16"
28	81-70001	SG-0943 Loading Spring
29	82-20243	WH-0072 Flywheel
* Order 82-00034		







## PAD ROLLER ARM ASSEMBLY (82-60134)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	82-60134	R3-60 Pad Roller Arm Assembly
2	82-20381	C1-C-21 Shaft & Knob
	82-20298	R2-31 Pad Roller Stud (see Item 11)
3	82-60057	R3-400 Pad Roller
4	82-20111	AR-0033 Arm Casting
5	31-04001	2908 Detent Ball (2 req'd.)
6	4088001	NU-0008 Lock Nut, 8-32
7	4080872	SC-0087 Adjusting Screw, 8-32 x 7/8" Hex Head
8	4060374	Stud Retaining Screw, 6-32 x 3/8" Hex Head
9	81-58002	SG-0021 Detent Spring (2 req'd.)

### *Associated Parts*

10	408037D	Mounting Screw, 8-32 x 3/8" Fillister Head (3 req'd.)
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## PAD ROLLER STUD, KNOB & FLANGE ASSEMBLY (82-20298)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
11	82-20298	R2-31 Stud, Knob, & Flange Assembly
12*	R2-32	Stud & Knob
	81-98077	SU-0292 Stud
	82-20151	KN-0005 Knurled Knob
	81-37003	PN-0036 Pad Roller Knob Stop Pin
	81-37008	PN-0025 Taper Pin, .094 x 7/16"
	81-37013	PN-0068 Knop Pin, 3/32 x 3/8"
13	82-20241	FL-0008 Flange
14	01545000	PN-0103 Taper Pin

\* Order 82-20298



## FILM COMPARTMENT DOOR ASSEMBLY (82-60054)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
15	82-60054	R3-110A Film Compartment Door Assembly
16	81-10015	CP-0020 Glass Clamp (4 req'd.)
17	82-20332	DO-0017 Door Casting
18	81-18001	GL-0108 Window Glass
19	81-28006	KN-0047 Pull Knob
20	81-98082	LI-0007 Door Link
21	81-22003	SB-0060 Cushion, Felt (2 req'd.)
22	4080250	Hinge Screw, 8-32 x 1/4" Bind Head (6 req'd.)
23	81-51005	SC-0226 Link Screw
24	4080506	Knob Screw, 8-32 x 1/2" Bind Head
25	4060180	SC-0123 Mounting Screw, 6-32 x 3/16" Bind Head (6 req'd.)
26	81-98094	C1-A-76 Door Catch
27	81-40030	PG-0608 Hole Plug

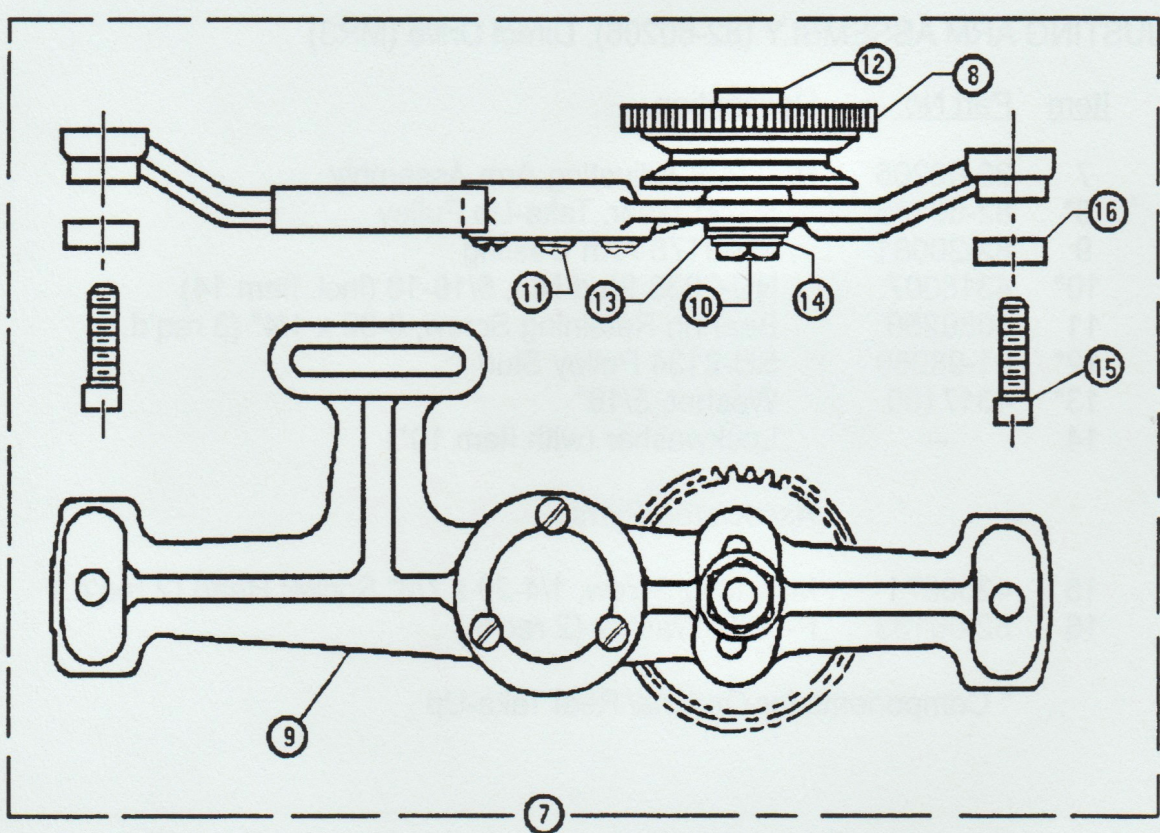
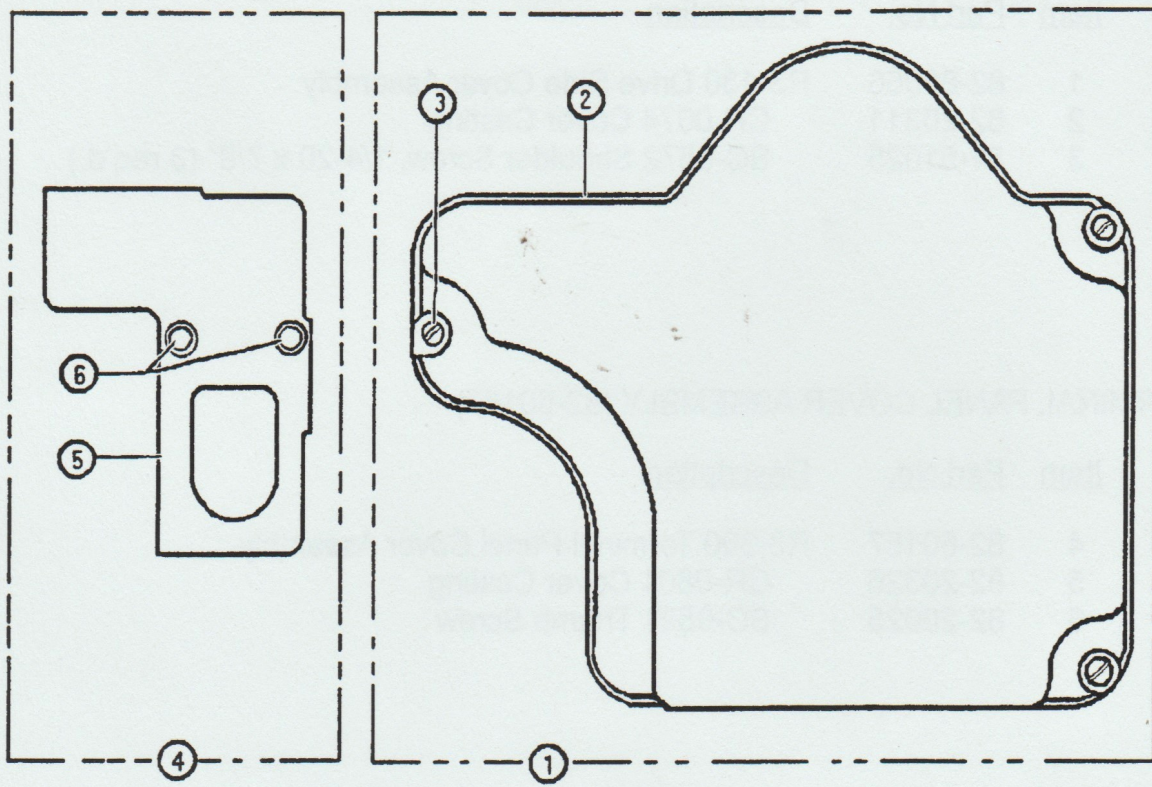
## EXCITER COMPARTMENT DOOR ASSEMBLY (82-60055)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
28	82-60055	R3-120 Exciter Lamp Compartment Door Assembly
29	82-20331	DO-0016 Door Casting
30	81-22003	SB-0060 Cushion, Felt (2 req'd.)
31	4080250	Hinge Screw, 8-32 x 1/4" Bind Head (6 req'd.)
32	4060180	SC-0123 Strike Screw (2 req'd.)
33	81-98094	C1-A-76 Door Catch

### *Associated Parts*

34	82-40365	C1-A-11 Door Hinge (4 req'd.)
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### DRIVE SIDE COVER ASSEMBLY (82-60056)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	82-60056	R3-130 Drive Side Cover Assembly
2	82-20311	CR-0074 Cover Casting
3	81-51025	SC-0572 Shoulder Screw, 1/4-20 x 7/8" (3 req'd.)

### TERMINAL PANEL COVER ASSEMBLY (82-60187)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
4	82-60187	R3-300 Terminal Panel Cover Assembly
5	82-20326	CR-0801 Cover Casting
6	82-20025	SC-0521 Thumb Screw

### ADJUSTING ARM ASSEMBLY (82-60206), Direct Drive (MR3)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
7	82-60206	R50-90B Adjusting Arm Assembly
8*	82-60135	R3-91 Gear, Take-Up Pulley
9	82-20081	AR-0178 Arm Casting
10*	4318007	NU-0038 Stud Nut, 5/16-18 (incl. Item 14)
11	4080250	Bearing Retaining Screw, 8-32 x 1/4" (3 req'd.)
12*	81-98080	SU-2134 Pulley Stud
13*	4317100	Washer, 5/16"
14	--	Lockwasher (with Item 10*)

#### *Associated Parts*

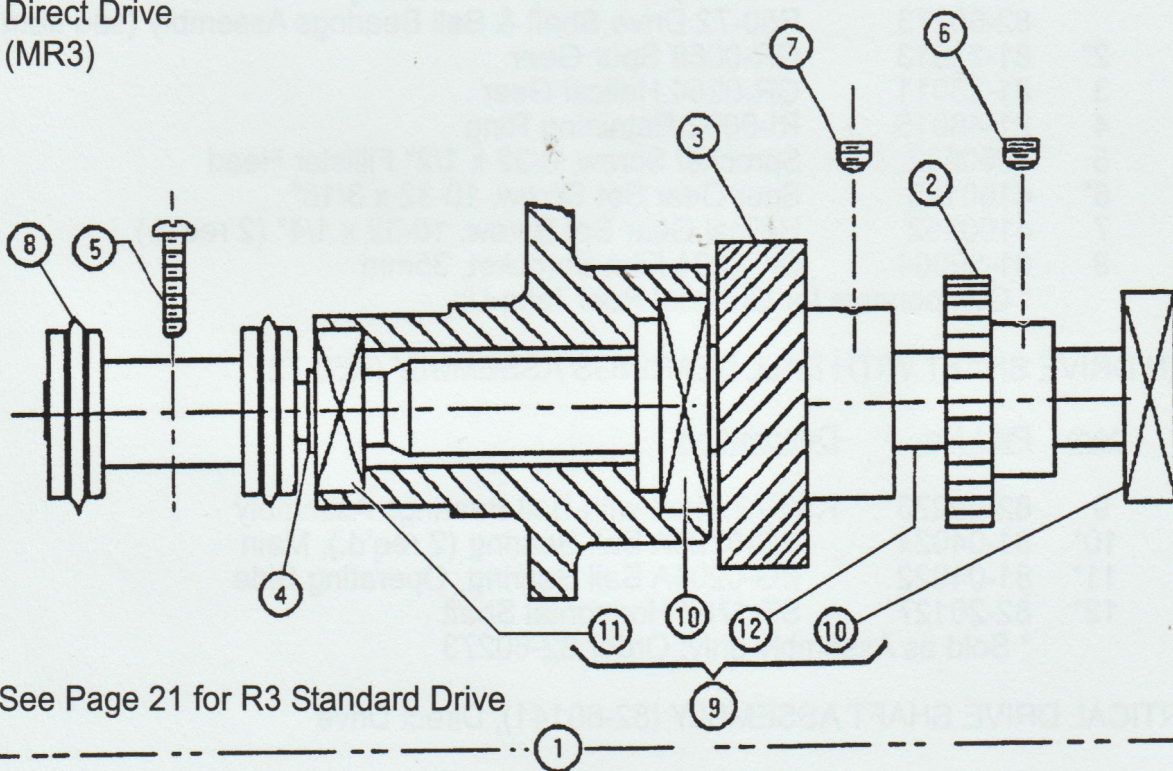
15	4250871	Mounting Screw, 1/4-20 x 7/8" Socket Head (2 req'd.)
16	52-00133	P-7002 Washer (2 req'd.)

\* Components for *Optional* Reel Take-Up

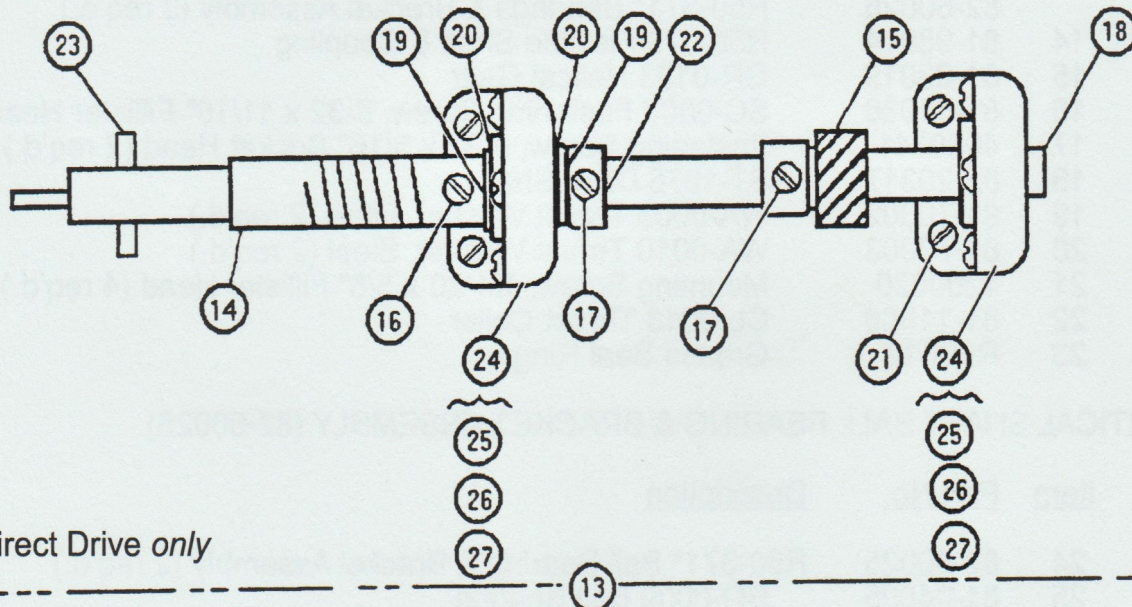
See Page 21 for Adjusting Arm Assembly, Standard Drive (R3)



Direct Drive  
(MR3)



See Page 21 for R3 Standard Drive



Direct Drive only



## HORIZONTAL DRIVE SHAFT ASSEMBLY (82-60148), Direct Drive

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	82-60148	R50-70A Sprocket Shaft Assembly
	82-60273	R50-72 Drive Shaft & Ball Bearings Assembly (see Item 9)
2*	81-23013	GR-0068 Spur Gear
3	81-23011	GR-0254 Helical Gear
4	21-48015	RI-0092 Retaining Ring
5	4060502	Sprocket Screw, 6-32 x 1/2" Fillister Head
6*	4100180	Spur Gear Set Screw, 10-32 x 3/16"
7	4100252	Helical Gear Set Screw, 10-32 x 1/4" (2 req'd.)
8	81-59004	SK-2204 Film Sprocket, 35mm
* Components for <i>Optional</i> Reel Take-Up		

## MAIN DRIVE SHAFT WITH BALL BEARINGS ASSEMBLY (R50-72)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
9	82-60273	R50-72 Shaft with Ball Bearings Assembly
10*	81-04024	BG-0726A Ball Bearing (2 req'd.), Main
11*	81-04022	BG-0204A Ball Bearing, Operating Side
12*	82-20127	ST-1787 Horizontal Shaft
* Sold as Assembly only; Order 82-60273		

## VERTICAL DRIVE SHAFT ASSEMBLY (82-60141), Direct Drive

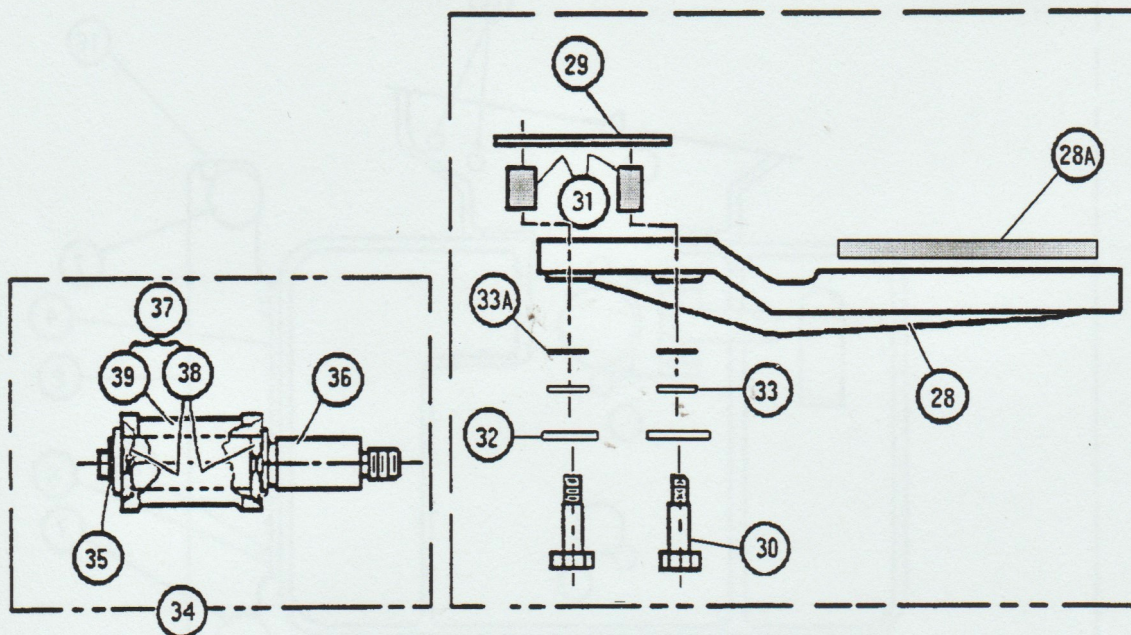
<u>Item</u>	<u>Part No.</u>	<u>Description</u>
13	82-60141	R50-370A Vertical Drive Shaft Assembly
	82-60025	R50-371* Bearings & Bracket Assembly (2 req'd.)
14	81-98014	R50-373 Flexible Shaft & Coupling
15	81-23019	GR-0133 Helical Gear
16	81-51036	SC-0003 Fastening Screw, 8-32 x 11/16" Fillister Head
17	4080311	Fastening Screw, 8-32 x 5/16" Socket Head (2 req'd.)
18	82-20317	ST-1976 Drive Shaft
19	81-70002	WA-0003 Thrust Washer, Fibre (2 req'd.)
20	81-70003	WA-0010 Thrust Washer, Steel (2 req'd.)
21	4250620	Mounting Screw, 1/4-20 x 5/8" Fillister Head (4 req'd.)
22	81-11006	CL-0013 Thrust Collar
23	RI-0612	Grease Seal Ring

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

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
24	82-60025	R50-371* Ball Bearing & Bracket Assembly (2 req'd.)
25	81-04005	BG-0009 Ball Bearing
26	82-20236	BR-0020 Bearing Bracket
27	4080250	Bearing Retaining Screw, 8-32 x 1/4" Bind Head

\* R50-371 & C1-G-31 (in Projector) are interchangeable





#### DRIVE MOTOR SUPPORT COMPONENTS

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
28	82-20303	BR-0921 Motor Support Casting
28A	82-20038	PE-1308 Motor Adapter Plate
	4251252	Plate Mounting Screw, 1/4-20 x 1-1/4" (4 req'd.)
	4257000	Lockwasher, 1/4" (4 req'd.)
	4258001	Hexnut, 1/4-20 (4 req'd.)
29	81-22004	PE-0137 Rubber Shim
30	82-20312	SC-1860 Mounting Screw (4 req'd.)
31	81-98248	TU-0026 Rubber Spacer (4 req'd.)
32	81-70020	WA-0386 Retaining Washer (4 req'd.)
33	41-70046	WA-0068 Steel Washer (4 req'd.)
33A	81-70021	WA-0069 Rubber Washer (4 req'd.)

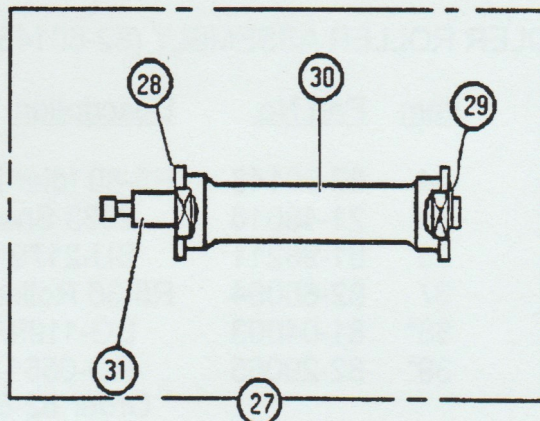
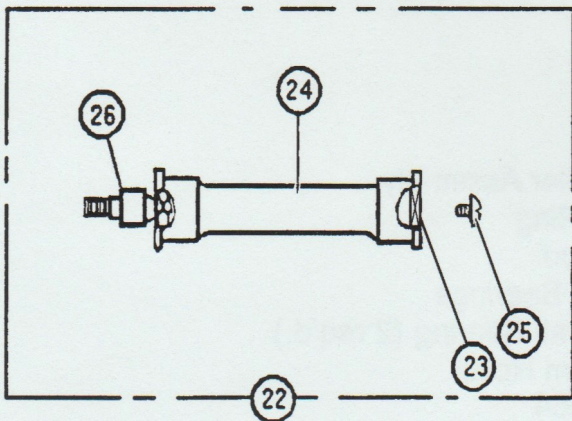
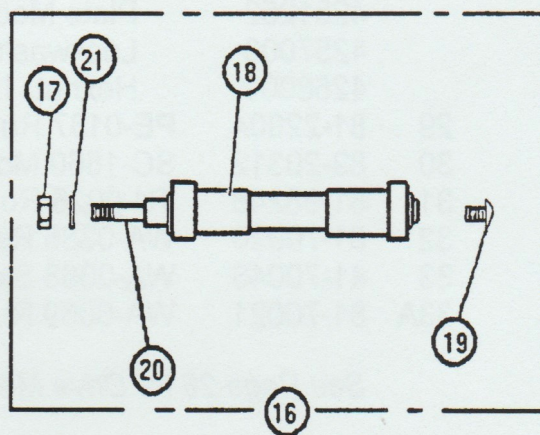
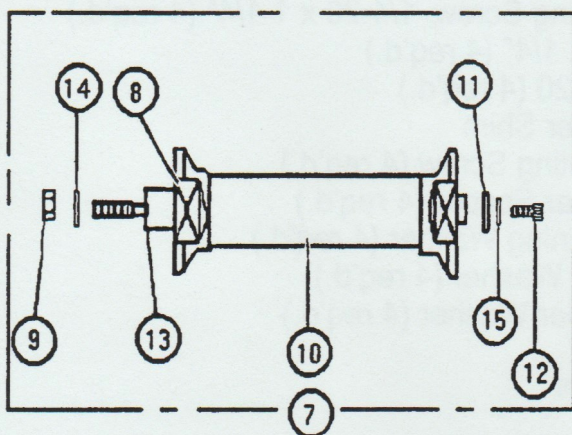
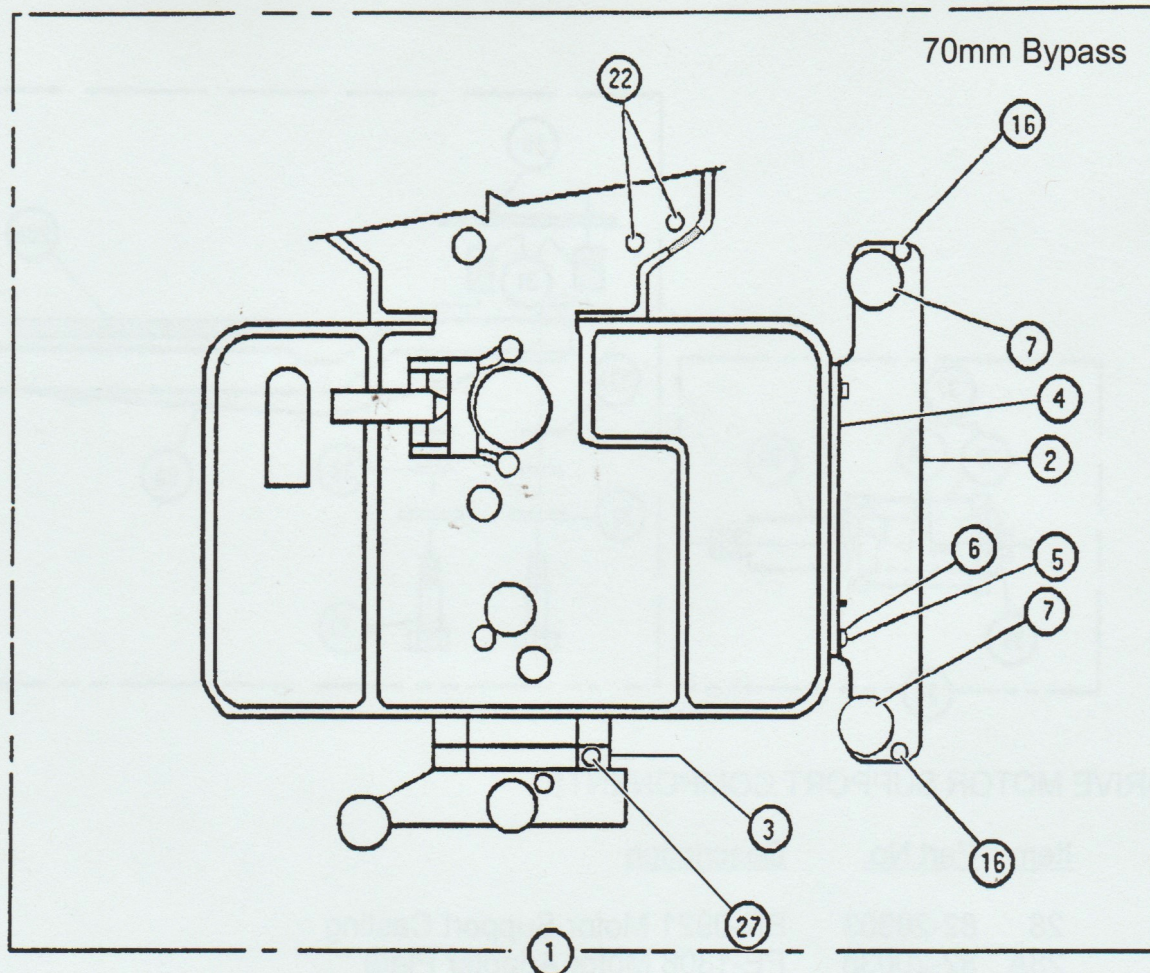
*See Page 28 for Drive Motors*

#### IDLER ROLLER ASSEMBLY (82-60143)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
34	82-60143	R5-80 Idler Roller Assembly
35	21-48016	2933 Snap Ring
36	81-98211	SU-2179 Stud
37	82-60064	R5-36 Roller & Bearings
38*	81-04003	BG-1199A Ball Bearing (2 req'd.)
39*	82-20065	RO-0551 Film Roller
		* Order 82-60064



# 70mm Bypass





## SOUNDHEAD FILM BYPASS KIT (82-60293), JR3-E 70mm Application

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	82-60293	R50-500 Film Bypass Kit
	82-60066	R50-505 Transfer Roller (2 req'd.)
	82-60144	R50-510 Stabilizer Roller (2 req'd.)
	R50-515	Projector Exit Roller (2 req'd.)
	82-60145	R50-520 Failsafe Guide Roller
2	81-06003	BR-1320 Roller Mounting Bracket
3*	82-20103	BK-1322 Failsafe Entrance Roller Block
	81-98252	GD-0334 Guard (not shown; with Item 3)
4	4250375	3052 Bracket Adjusting Set Screw, 1/4-20 x 3/8" (4 req'd.)
5	4251501	3069 Mounting Screw, 1/4-20 x 5/8" Socket Head (2 req'd.)
6	4257102	WA-0070 Washer, 1/4" (2 req'd.)

\* Not included with 82-60293; *Order Separately*

## TRANSFER ROLLER ASSEMBLY, 70mm (82-60066)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
7	82-60066	R50-505 Transfer Roller Assembly
8	81-04002	BG-0133 Ball Bearing (2 req'd.)
9	4318007	NU-0038 Spindle Nut, 5/16-18
10	RO-0614A	Film Roller, 70mm
11	52-00133	P-7002 Washer
12	4250371	SC-1572 Screw, 1/4-20 x 3/8" Socket Head
13	82-20406	SD-2421 Spindle
14	--	Lockwasher (with Item 9)
15	4257001	WA-0302 Lockwasher, 1/4"

## STABILIZER ROLLER ASSEMBLY, 70mm (82-60144)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
16	82-60144	R50-510 Stabilizer Roller Assembly
17	NU-0007	Stud Fastener Nut
18	81-49001	RO-0207 Stabilizer Roller, 70mm
19	4080310	Screw, 8-32 x 5/16" Bind Head
20	SU-2422	Stud
21	4257001	WA-0302 Lockwasher, 1/4"



## PROJECTOR EXIT ROLLER ASSEMBLY (R50-515\*), 70mm

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
22	R50-515*	Projector Exit Roller Assembly
23	81-04026	BG-1260A Ball Bearing (2 req'd.)
24	81-49010	RO-0204 Film Guide Roller, 70mm
25	81-51040	SC-1233 Screw, 8-32 x .2650"
26	81-98036	SU-1478 Roller Stud

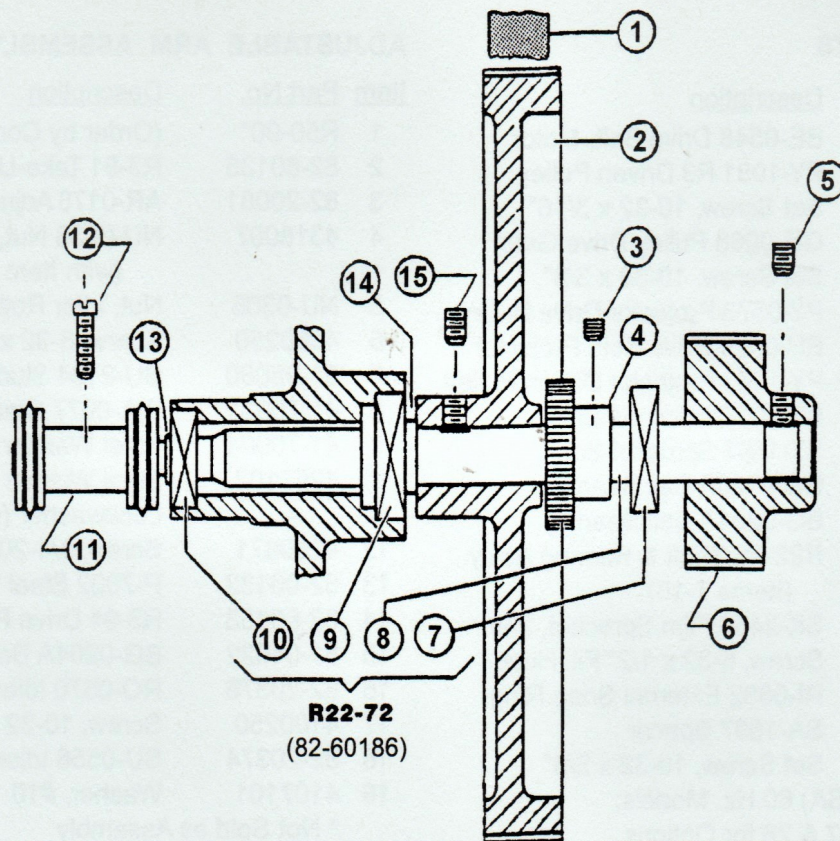
\* Not sold as Assembly - Order Individual Components

## FAILSAFE GUIDE ROLLER ASSEMBLY (82-60145), 70mm

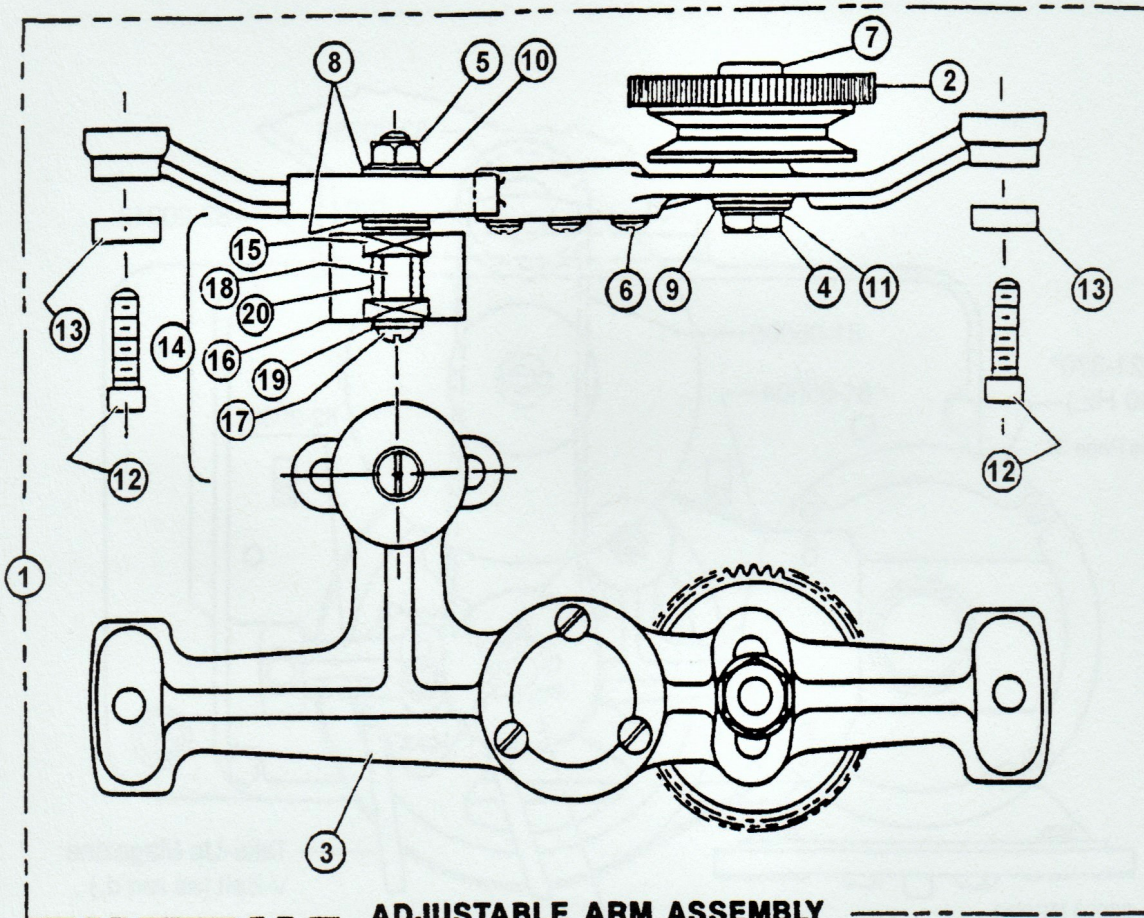
<u>Item</u>	<u>Part No.</u>	<u>Description</u>
27	82-60145	R50-520 Failsafe Guide Roller Assembly
28	81-04026	BG-1260A Ball Bearing (2 req'd.)
29	21-48016	2933 Snap Ring
30	81-49010	RO-0204 Film Guide Roller, 70mm
31	81-98028	SU-2285 Roller Stud



# SHAFT & PULLEYS



**R22-72**  
(82-60186)



## ADJUSTABLE ARM ASSEMBLY

STANDARD DRIVE (R3)

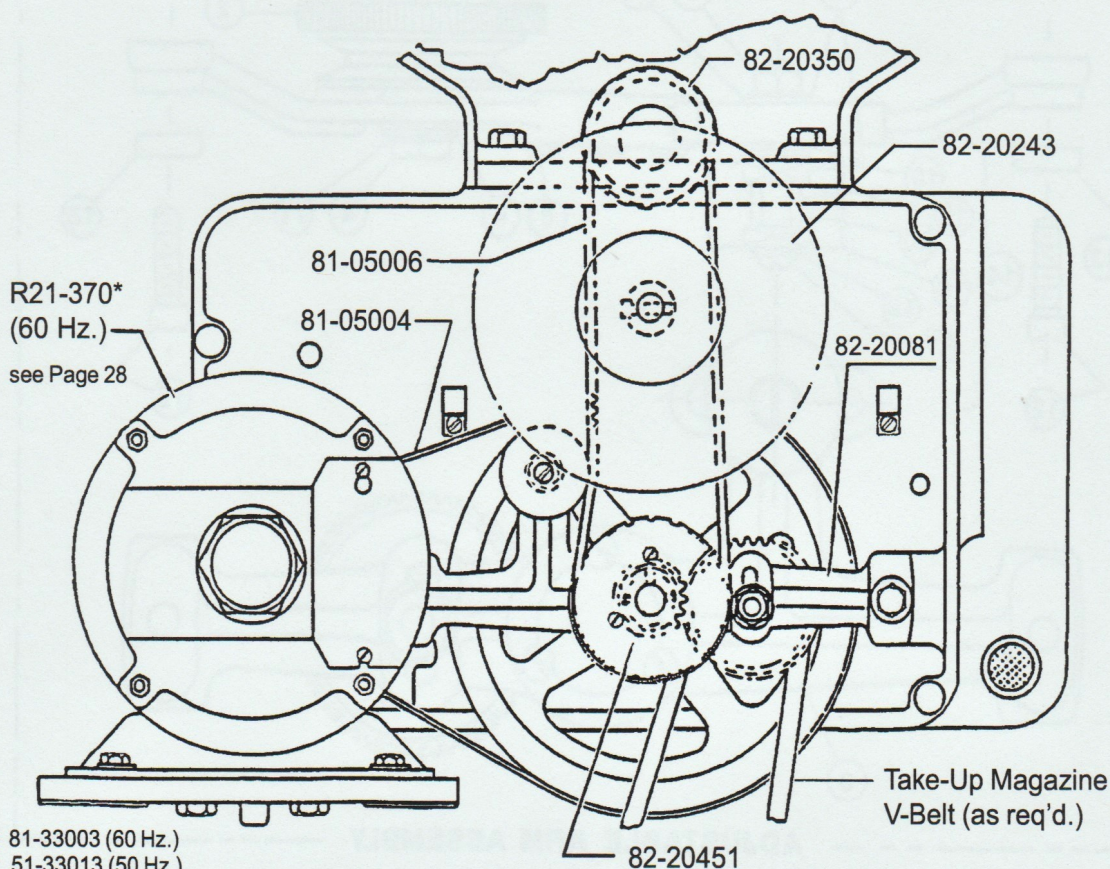


## SHAFT &amp; PULLEYS

Item	Part No.	Description
1	81-05004	BE-0548 Drive Belt, Motor
2	82-20450*	PY-1081 R3 Driven Pulley
3	4100180	Set Screw, 10-32 x 3/16"
4	81-23013	GR-0068 Pulley Drive Gear
5	4100379	Set Screw, 10-32 x 3/8"
6	82-00070	PY-0573 Projector Drive Pulley
-	81-05006	BE-0529 Drive Belt, Projector
-	82-20350	PY-1303 Projector Driven Pulley
7	81-04024	BG-0726A Ball Bearing
8	81-52011	ST-1696 Sprocket Shaft
9	81-04024	BG-0726A Ball Bearing
10	81-04022	BG-0204A Ball Bearing
-	82-60186	R22-72 Shaft & Bearing Ass'y. (Items 7-10)
11	81-59005	SK-2454 Film Sprocket, 35mm
12	4060502	Screw, 6-32 x 1/2" Fil. Head
13	21-48015	RI-0092 External Snap Ring
14	81-56014	SA-1697 Spacer
15	4100379	Set Screw, 10-32 x 3/8"
*	Domestic (USA) 60 Hz. Models; See Pages 27 & 28 for Options.	

## ADJUSTABLE ARM ASSEMBLY

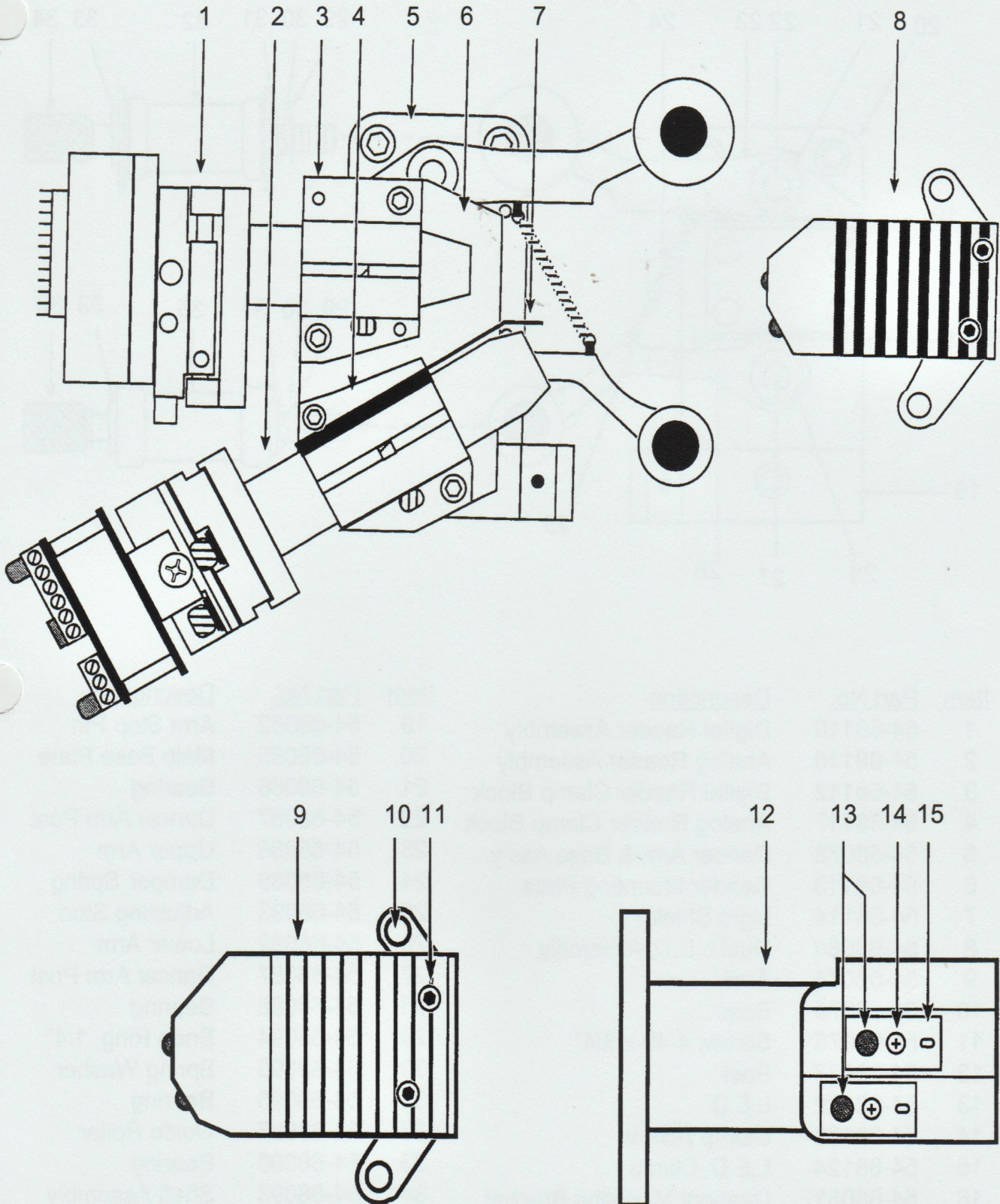
Item	Part No.	Description
1	R50-90*	(Order by Component)
2	82-60135	R3-91 Take-Up Pulley Gear
3	82-20081	AR-0178 Adjustable Arm Casting
4	4318007	NU-0038 Nut, 5/16-18 (with Item 11 Lockwasher)
5	NU-0306	Nut, Idler Roller Stud
6	4050250	Screw, 8-32 x 1/4"
7	81-98080	SU-2134 Stud, Take-Up Pulley
8	41-70031	WA-0077 Steel Washer
9	41-70004	Steel Washer
10	4257102	Steel Washer
11	--	Lockwasher (with Item 4 Nut)
12	4250871	Screw, 1/4-20 x 7/8"
13	52-00133	P-7002 Steel Washer
14	82-60153	R3-94 Drive Pulley & Gear
15	81-04022	BG-0204A Ball Bearing
16	82-20376	RO-0570 Idler Roller
17	4100250	Screw, 10-32 x 1/4"
18	82-20374	SU-0556 Idler Retaining Stud
19	4107101	Washer, #10
		* Not Sold as Assembly



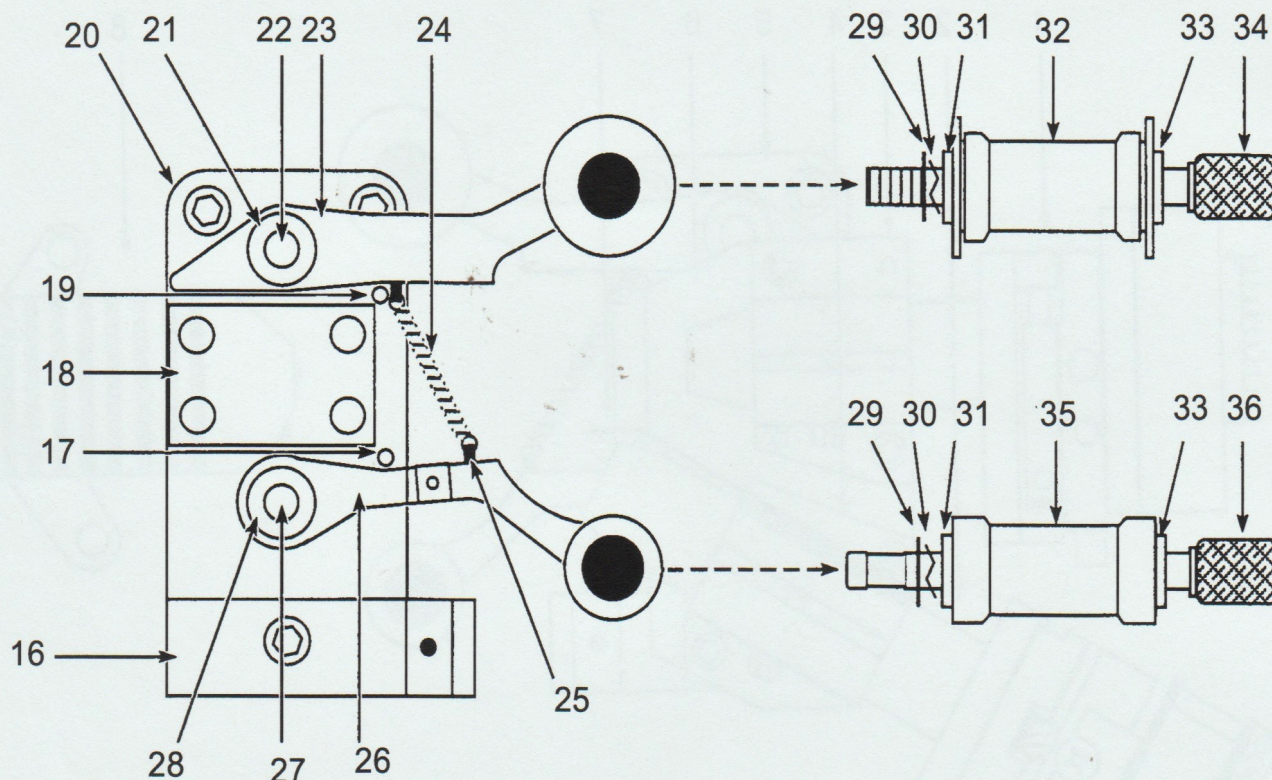
\*Motor: 81-33003 (60 Hz.)  
 Motor: 51-33013 (50 Hz.)  
 Flywheel: 82-20096  
 Pulley: 82-20338



# KELMAR ATD-1274 READER ASSEMBLY (optional)



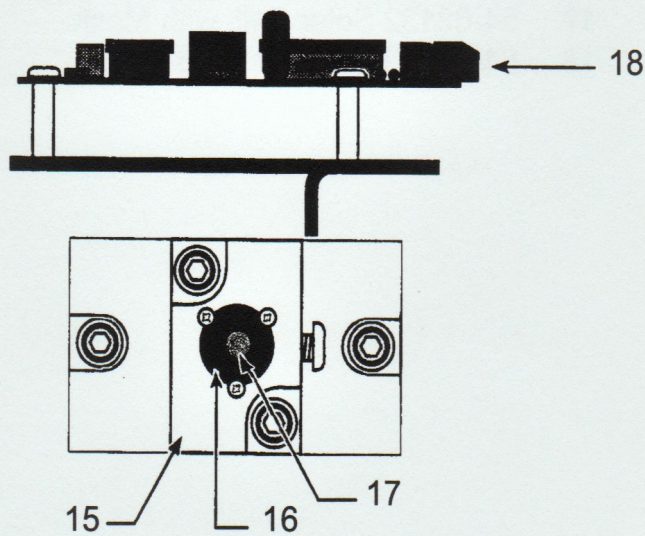
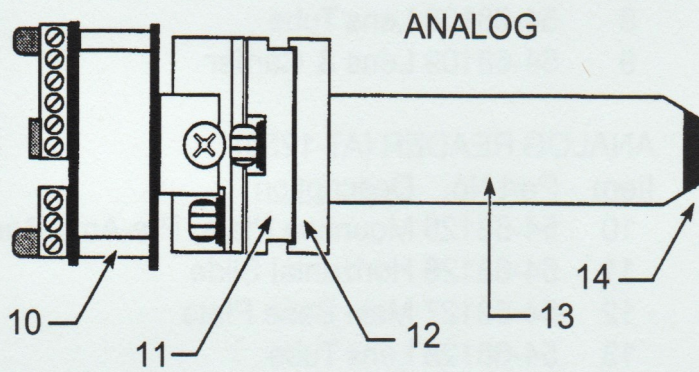
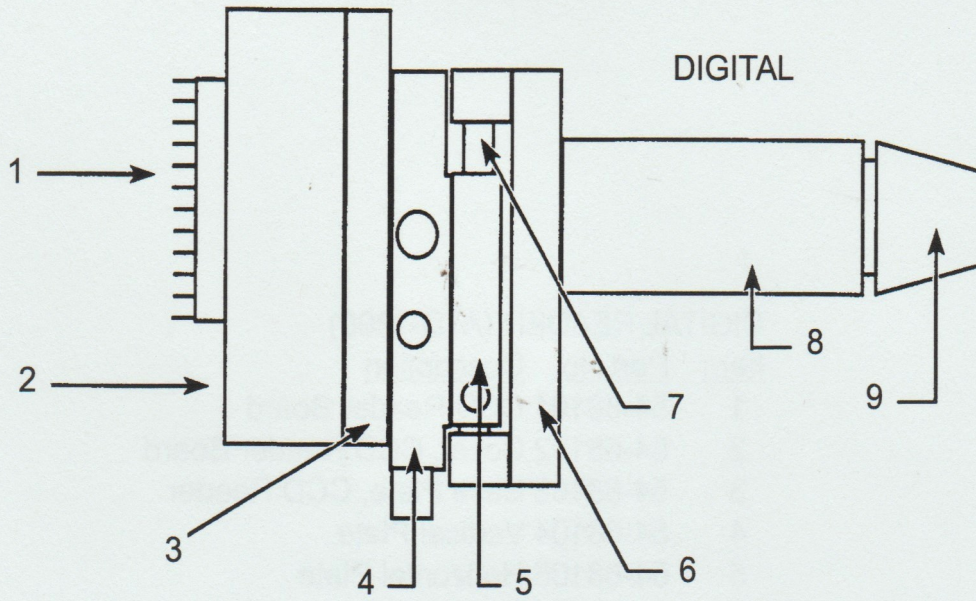




<u>Item</u>	<u>Part No.</u>	<u>Description</u>	<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	54-68110	Digital Reader Assembly	19	54-68082	Arm Stop Pin
2	54-68116	Analog Reader Assembly	20	54-68085	Main Base Plate
3	54-68112	Digital Reader Clamp Block	21	54-68086	Bearing
4	54-68117	Analog Reader Clamp Block	22	54-68087	Dancer Arm Post
5	54-68078	Dancer Arm & Base Ass'y.	23	54-68088	Upper Arm
6	54-68113	Reader Mounting Plate	24	54-68089	Damper Spring
7	54-68114	Light Shield	25	54-68093	Adjusting Stud
8	54-68080	Dual L.E.D. Assembly	26	54-68092	Lower Arm
9	54-68074	Arm	27	54-68087	Dancer Arm Post
10	54-68075	Base	28	54-68086	Bearing
11	54-68076	Screw, 4-40 x 3/4"	29	54-68094	Snap Ring, 1/4"
12	54-68077	Post	30	54-68095	Spring Washer
13	54-68122	L.E.D.	31	54-68096	Bearing
14	54-68123	Clamp Screw	32	54-68097	Guide Roller
15	54-68124	L.E.D. Clamp	33	54-68096	Bearing
16	54-68081	Dashpot Mounting Bracket	34	54-68098	Shaft Assembly
17	54-68082	Arm Stop Pin	35	54-68099	Damper Roller
18	54-68083	Base Plate	36	54-68100	Shaft Assembly



# KELMAR READERS (optional)





#### DIGITAL READER (ATD-1300)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	54-68101	CCD Reader Board
2	54-68102	Cover, CCD Reader Board
3	54-68103	Base Plate, CCD Reader
4	54-68104	Vertical Plate
5	54-68105	Horizontal Plate
6	54-68106	Base Plate
7	54-68107	Horizontal Shaft Runner Shaft
8	54-68108	Lens Tube
9	54-68109	Lens & Carrier

#### ANALOG READER (AT-1250)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
10	54-68125	Mounting Plate, Pre-Amp Board
11	54-68126	Horizontal Slide
12	54-68127	Main Base Plate
13	54-68128	Lens Tube
14	54-68129	Lens
15	54-68130	Vertical Slide
16	54-68131	Solar Cell Retainer
17	54-68132	Solar Cell, with Mask
18	54-68133	Solar Cell Pre-Amp



### **CENTURY DRIVE PULLEYS, .375" Pitch**

<u>Part No.</u>	<u>Bore (inches)</u>	<u>Tooth Count</u>	<u>Order No.</u>
PY-0573	.500	22	82-20451
PY-0575	.500	59	82-00048
PY-0576	.825	12	82-20322
PY-0577	.500	14	81-43024
PY-0578	.438	36	81-43025
PY-1081	.500	50	82-20450
PY-1303	.625	17	82-20350
R3-75	.625	10	82-20338
R3-76	.625	12	82-20322
10224	.500	56	82-00092

### **R3-E (Standard) DRIVE PULLEYS**

<u>Motor rpm</u>	<u>Motor Pulley</u>	<u>Motor Belt</u>	<u>Soundhead Pulley</u>	<u>Projector Belt</u>
1800	82-20338	81-05004	82-20450	81-05006
1750	82-20322	81-05010	82-00048	81-05006
1500	82-20322	81-05004	82-20450	81-05006
1450	81-43024	81-05010	82-00092	81-05006



**CENTURY MOTOR KIT OPTIONS, PULLEYS & BELTS**  
Type MR3-E (Direct Drive)

<u>MOTOR KIT</u>	<u>MOTOR</u>	<u>V.AC</u>	<u>PHASE</u>	<u>HZ.</u>	<u>TYPE</u>	<u>RPM</u>	<u>DRIVE PULLEY</u>	<u>DRIVEN PULLEY</u>	<u>BELT</u>	<u>FLYWHEEL</u>
MR3-T-300 82-60260*	MO-0129 81-33015	415	3	50	Sync	1000	PY-1316 (48) 81-43011	PY-1314 (50) 82-40433	BE-1464 81-05011	WH-0251 82-20096
MR3-T-310 82-60182	MO-0135 81-33003	115-230	1	60	Sync	1800	PY-1317 (52) 81-43008	PY-1312 (65) 81-43003	BE-1474 81-05011	WH-0251 82-20096
MR3-T-320 82-60298*	MO-0132 81-33009	115	1	60	Async	1725	PY-1318 (53) 81-43017	PY-1312 (65) 81-43003	BE-1474 81-05011	WH-0207 82-00077
MR3-T-330 82-60126	MO-0121 81-33006	230	1	50	Async	1425	PY-1320 (64) 81-43013	PY-1312 (65) 81-43003	BE-1474 81-05011	WH-0207 82-00077
82-60298	81-33027 (81-33027 replaces 51-33013)	200-230	3	60	Sync	1800	PY-1317 (52) 81-43008	PY-1312 (65) 81-43003	BE-1474 81-05011	WH-0251 82-20096
MR3-T-340 82-60183	MO-0128 81-33014	380	3	50	Sync	1000	PY-1315 (72) 81-43002	PY-1314 (50) 82-40433	BE-1463 81-05019	WH-0251 82-20096
MR3-T-350 82-60127*	MO-0127 81-33021	230	3	60	Sync	1200	PY-1313 (78)	PY-1312 (65) 81-43003	BE-1463 81-05019	WH-0251 82-20096
MR3-T-360*	MO-0126 81-33020	208	3	60	Sync	1200	PY-1313 (78)	PY-1312 (65) 81-43003	BE-1463 81-05019	WH-0251 82-20096
MR3-T-370 82-60264	MO-0119 81-33019	200-440	3	50	Sync	1500	PY-1316 (48) 81-43011	PY-1314 (50) 82-40433	BE-1472 81-05026	WH-0251 82-20096

Number in Parentheses = (Tooth Count)  
Motor Shaft Diameter: .625 inch/15.875mm

\*Not Sold as an Assembly; Order Component Parts

**CENTURY DRIVE MOTORS**

82-33018	MO-0116	115/230 V.AC, 50 Hz. 1 ph.	1400 rpm
81-33019	MO-0119	230 V.AC, 50/60 Hz. 3 ph. Sync	1500 rpm
81-33006	MO-0121	230 V.AC, 50 Hz. 1 ph.	1425 rpm
81-33020	MO-0126	208 V.AC, 60 Hz. 3 ph. Sync	1200 rpm
81-33021	MO-0127	230 V.AC, 60 Hz. 3 ph. Sync	1200 rpm
81-33014	MO-0128	380 V.AC, 50 Hz. 3 ph. Sync	1000 rpm
81-33009	MO-0132	115/230 V.AC, 60 Hz. 1 ph.	1725 rpm
81-33003	MO-0135	115/230 V.AC, 60 Hz. 1 ph.	1800/1500 rpm
82-60017	MO-0135 Kit (with Mounting Plate)		1800/1500 rpm
81-33027		220/440 V.AC, 50/60 Hz. 3 ph. Sync	1800 rpm

Motor Mounting Hardware: (4) 4310500 Screws, 5/16-18 x 1/2" Hex Head  
(4) 4317102 Flat Washer, 5/16"