

### IMPORTANT SAFETY INSTRUCTIONS

Please read this manual carefully and follow its instructions. Improper use or failure to follow these instructions could result in serious injury, death or property damage. Operators should be instructed in the safe and proper use and maintenance of this product. Keep this manual for future reference.

The following safety precautions call attention to potentially dangerous conditions.



**DANGER:** Immediate hazards which **WILL** result in severe personal injury or death.



**WARNING:** Hazards or unsafe practices which **COULD** result in severe personal injury or death.



**CAUTION:** Hazards or unsafe practices which **MAY** result in *minor* personal injury or product or property damage.

### INSTALLATION



**WARNING:** Lock out all electrical power and remove all spring tension from the reel before opening any enclosure or performing any service to this reel. Make sure all circuits carry appropriate fuse protection. Hazards or unsafe practices **COULD** result in severe personal injury or death.



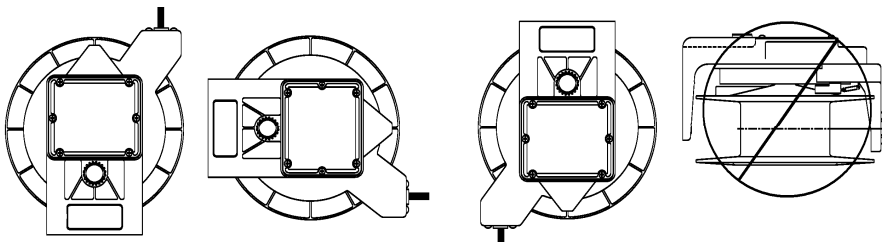
**WARNING:** Failure to read, understand, and follow these instructions creates hazards that **COULD** result in personal injury or death.



**CAUTION:** Instruct operators in the safe, proper use, and maintenance of the reel. Keep this manual for future reference. Hazards or unsafe practices **MAY** result in *minor* personal injury or product or property damage.

#### MOUNTING

The fixed base of the reel allows mounting in several different positions including base up, base down, or wall mounted. Here are general mounting requirements:



- Main-shaft must be horizontal.
- Centerline of the spool assembly must be in line with the cable run.
- When mounted overhead in base up position, add a secondary chain, bracket or other safety device to prevent reel from falling in case the mounting bolts are removed or become loosened by vibration.



**DANGER:** A secondary safety cable or chain is to be attached to all reels mounted overhead to prevent reel from falling. Immediate hazards **WILL** result in severe personal injury or death.

All reels mounted over head should have a secondary support chain to protect personnel in case of structure or mounting component failure. Attach one end of secondary support chain or cable to secondary support point on reel. Attach other end of secondary support chain or cable to a support component other than that which supports the reel. The chain or cable should be as short as possible allowing reel to drop no more than 6 to 12 inches if the primary connection is released. A secondary support is offered as an accessory item.

#### PIVOT BASE

If optional pivot base is used, four roller cable guide reel will align reel to direction of cable pull.

## WIRING

**NOTE: On model 228BH and CSA listed reels--in Canada--, the green wire has been grounded to the frame of the reel and spool, and cannot be used as a power conductor.**

A convenient one inch pipe thread opening has been provided at the bottom of the enclosure in base for connecting standard water tight cable connectors or conduit fitting--fittings not supplied. Individual power connections are made to the collector ring bus wires inside the junction box enclosure in base using commercially available twist on wire connectors or compression splices.

amp			220 v		
1 Phase			3 Phase		
Wire	Color	Number	Wire	Color	Number
L1	black	1	L1	black	1
N	white	2	L2	white	2
L3	red	3	L3	red	3
G	green	4	G	green	4

## SAFETY INTERNAL GROUNDING

Standard reels are not grounded internally with the exception of reels built to CSA standards and the model 228BH. Internal grounding must be accomplished by running a jumper wire from the brush assembly to the spool grounding screw provided, and attaching the collector ring ground bus to the bolt provided in the junction box enclosure on back of base. See main illustration and diagram.

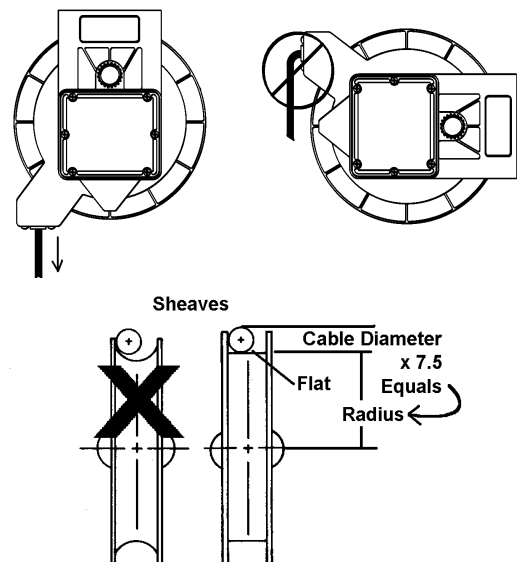
## WIRING SUPPLY CONNECTION

**NOTE: See “Service, Working Cable Replacement/Installation” if cable needs to be installed.**

## ROLLER GUIDE AND SHEAVES

Cable must exit guide in-line with pulling direction. If not, rotate guide arm as needed. The cable guide position is set by rotating spring pocket assembly. Loosen the three clamps holding spring pocket assembly in place by unscrewing the three hex head bolts. Unless required, do not completely remove bolts or clamps. Reposition guide as required, making sure clamps straddle ribs on outside diameter of spring pocket assembly and retighten hex head bolts.

Sheaves are used to bend cable around corners. Typical minimum bend radius of the sheave should be about 7.5 x cable diameter. Requirements can vary depending on cable manufacturer specifications. Sheaves should have flat surfaces for cable to ride on. The movement of cable through a sheave should be in the same plane as the cable spool. Changing planes can greatly reduce cable life.



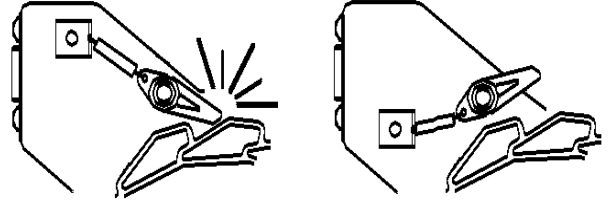
## CABLE WINDING

There are many types of cable that may be installed on your cable reel depending on application. Select the cable most appropriate for your application requirements. Many cables come from the factory with a wax-like film that can encourage uneven wrapping. At initial set up it is common to use a dry lubricant (talc powder), or silicone based grease to encourage more even winding. Also critical to proper winding is the adequate setting of “Spring Tension”. See appropriate section. In some cases sheaves and unanticipated application features can require more tension than offered with standard reels. Contact factory for application assistance.

## OPERATION

### RATCHET LOCK

All models are supplied with a ratchet lock that works in any position. If ratchet lock is not required--constant tension--, move spring clip and spring to adjacent cable guide screw.



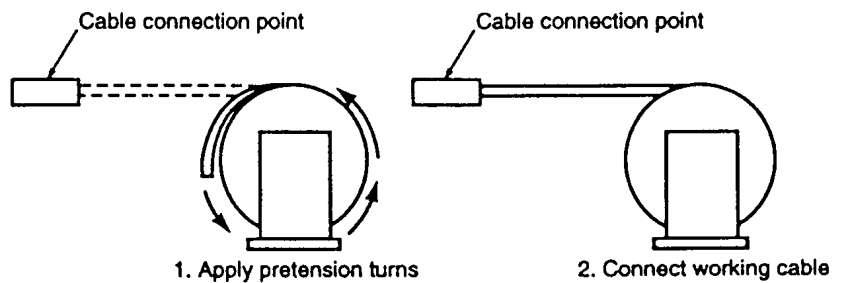
### SPRING TENSION

**CAUTION:** Do not connect working end of cable until the reel is properly pretensioned. Hazards or unsafe practices MAY result in *minor* personal injury or product or property damage.

**CAUTION:** Failure to test for adequate spring revolutions can cause spring damage. Hazards or unsafe practices MAY result in *minor* personal injury or product or property damage.

**NOTE:** A minimum 2 pre-tension turns is required. Additional turns can added as long as one unused spring turn remains when cable is fully extended. If entire cable cannot be pulled out, decrease spring tension until full one turn remains.

Reels shipped with cable end attachments (handlamps, plugs, etc.) are pre-tensioned at factory. All other reels require pretensioning turns to spool assembly before connecting cable. Set spring tension by turning fully wrapped reel through a specific number of revolutions or turns.



Number of pretension turns depends on application and desired tension. **A minimum of 2 set up turns is needed for most applications.** Additional tension may be added by repeating above process. After tension is set, connect cable free end. Failure to pretension reel may result in insufficient tension to retract and may shorten spring life.

## SERVICE

### BULB REPLACEMENT--model 228BH

**CAUTION:** Always check for shorts and continuity before turning on electrical power. Hazards or unsafe practices MAY result in *minor* personal injury or product or property damage.

Remove guard on hand lamp by removing screws on base of guard.

**NOTE:** Use a 75-watt or smaller bulb. A rough service bulb is recommended.

### MAINSRING

**WARNING:** Always disconnect electrical power before dismantling any part of the reel. Fuse size must not be greater than maximum amperage capacity of cable. Remove all spring tension before attempting any service. Hazards or unsafe practices COULD result in *severe* personal injury or death.

**WARNING:** To prevent personal injury, death or property damage, handle all springs with care. Use suitable protective gloves for spring handling. Hazards or unsafe practices COULD result in *severe* personal injury or death.

**WARNING:** To prevent personal injury, death or property damage, hold center of spring down as the hub is pulled out. If the center is allowed to rise up, the spring may escape from its container. Hazards or unsafe practices COULD result in *severe* personal injury or death.

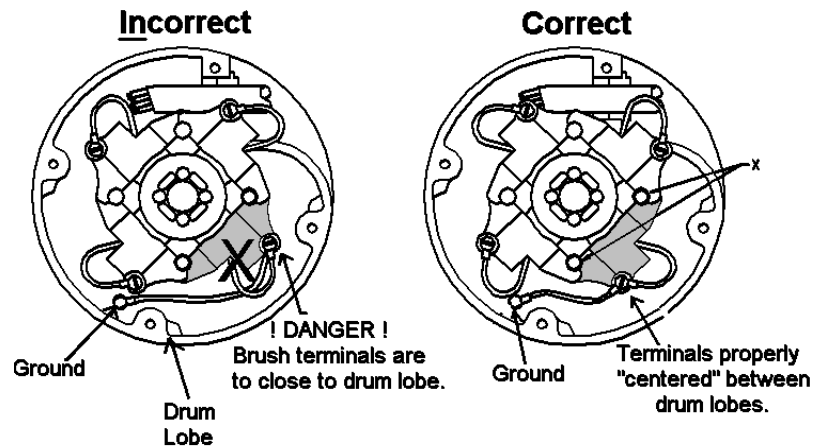
If reel will not develop tension or retract cable, spring assembly may need to be replaced. Remove junction box cover. Disconnect line-input wires from collector ring bus wires. Also disconnect cable free end and allow spring to unwind completely. Remove screw, shaft retainer, the pull complete spool assembly with cable from base. Remove cable guide, spring clip, ratchet spring, shoulder bolt and ratchet pawl from spring pocket assembly. Remove spring pocket assembly from base and replace with new part. To reassemble, reverse the above procedure making sure the dimple in the shaft retainer is toward the main shaft. Re-tension cable reel as per instructions.

#### COLLECTOR RING REPLACEMENT

- ⚠ **WARNING:** Disconnect and lock out all power to reel and remove all tension on spring before servicing collector ring assembly. Hazards or unsafe practices **COULD** result in severe personal injury or death.
- ⚠ **CAUTION:** Check continuity and replace all covers before turning on electrical power. Hazards or unsafe practices **MAY** result in *minor* personal injury or product or property damage.
- ⚠ **WARNING:** Check placement of brush holder assemblies to make sure terminal locations are centered between the protruding lobes on the inner and outer drums. Hazards or unsafe practices **COULD** result in severe personal injury or death.

**NOTE:** Check position of cable entry in relationship to studs marked by "X" in figure. Replace subsequent brush assemblies in clockwise rotation

To service the collector ring assembly, remove junction box cover and disconnect bus wires in junction box. Remove cover, if required, and outer drum-half. Unclip brush assembly from brush studs and remove. Notice position of brush assembly. Remove all brush assemblies from collector ring. Loosen collector ring set screw & slide collector ring off main shaft. To reassemble, reverse above procedure. The last brush assembly--one closest to steel hub on collector ring--must be assembled on brush studs indicated by the "X" in the figure BELOW.



#### WORKING CABLE REPLACEMENT/INSTALLATION

- ⚠ **WARNING:** Disconnect and lock out all power to reel and remove all tension on spring before servicing collector ring assembly. Hazards or unsafe practices **COULD** result in severe personal injury or death.
- ⚠ **CAUTION:** Check continuity and replace all covers before turning on electrical power. Hazards or unsafe practices **MAY** result in *minor* personal injury or product or property damage.

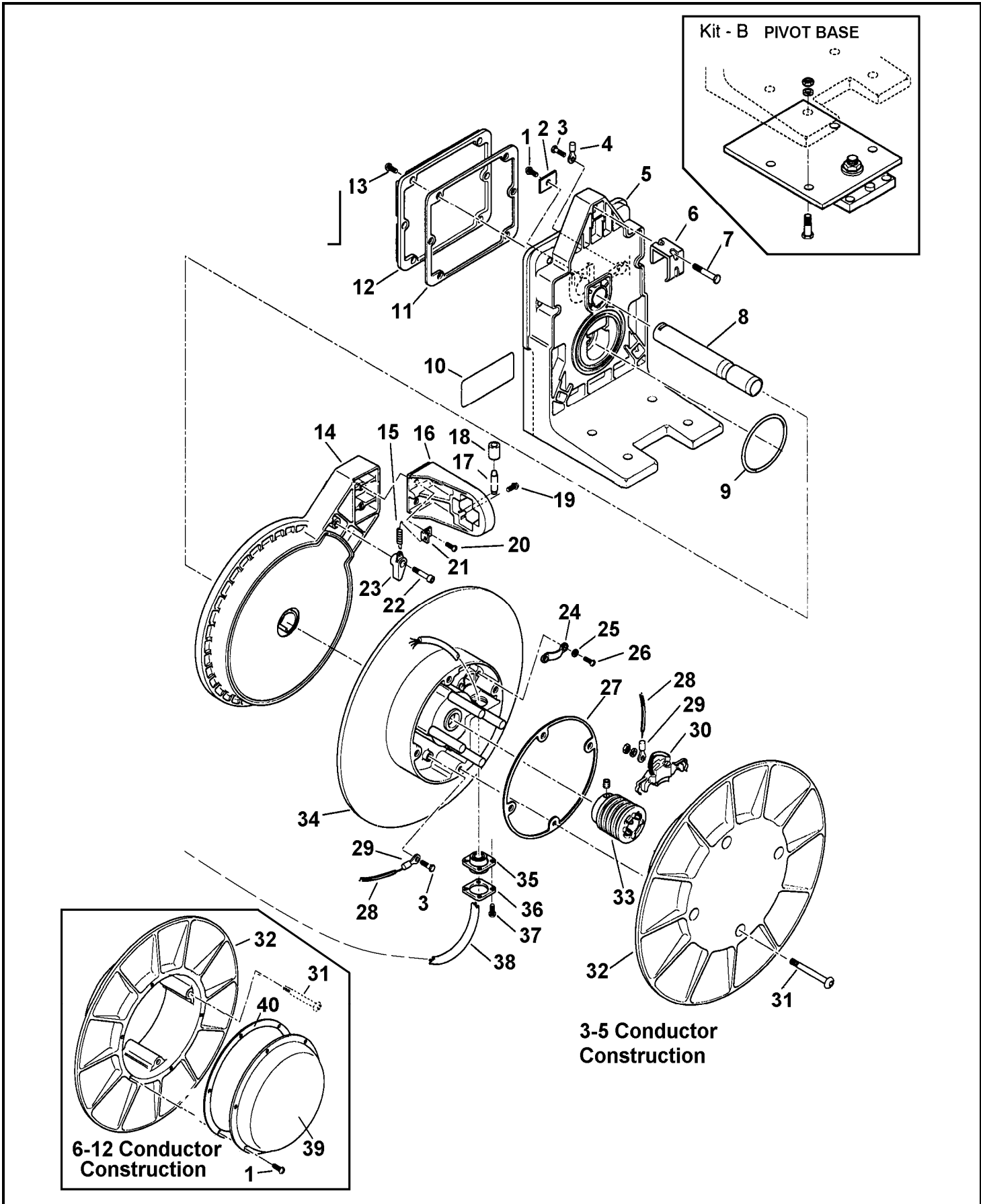
**NOTE:** Cable seal is a bellows type seal designed to fit different size cables. Pull out the bellows in one direction and cut the seal so that the through opening is at least 1/8" diameter smaller than the working cable. Always cut the seal smaller than required. More of the seal may be cut off if necessary.

The procedure below applies to both new installations and for replacement of working cable. To install/replace cable loosen seal cover and cable seal. Remove cover, if required, and outer drum half. Loosen or remove cable clamp & individual conductors of working cable from brush assemblies. Pull working cable through opening of inner drum & remove seal cover, & cable seal from old working cable.

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Place seal cover and cable seal over replacement cable. To reassemble, reverse the above procedure. Be sure to connect working cable conductors to the proper brush assembly. Re-tension spring .

## **REPLACEMENT PARTS**



**POW-R-MITE REEL REFERENCE CHART FOR REELS WITH CABLE INCLUDED.**

Reel Model	Includes Cable:				Reel w/o Cable #
	Cable Number	Length (ft)	Size	OD"	
9224	85-1630	31	16-3	.430	095105203
9228	85-1630	51	16-3	.430	095105203
9234	85-1640	31	16-4	.485	095105204
9238	85-1640	51	16-4	.485	095105204
9253	85-1430	26	14-3	.560	095105203
9358	85-1430	51	14-3	.560	095104203
9363	85-1440	26	14-4	.605	095104204
9367	85-1440	46	14-4	.605	095104204
9383	85-1230	26	12-3	.640	095104203
9385	85-1230	36	12-3	.640	095104203
9394	85-1240	31	12-4	.670	095104204
9242	85-1030	21	10-3	.695	095105203
9206	86-1660	46	16-6	.565	095105206
9208	86-0202	39	16-8	.645	095105208

9306	85-0506	36	14-6	.740	095104206
9308	86-0203	21	14-8	.795	095104208
92481	86-0202	51	16-8	.645	095106208
92401	AMR62120150	31	16-10	.720	095106210
92411	87-0108	31	16-12	.740	095106212
92482	86-0203	31	14-8	.845	095106208
92402	86-0803	21	14-10	.905	095106210
92433	85-1230	51	12-3	.640	095106203
92443	85-1240	41	12-4	.670	095106204
92463	85-0508	31	12-6	.800	095106206
92483	86-0204	21	12-8	.915	095106208
92434	85-1030	41	10-3	.695	095106203
92444	85-1040	31	10-4	.750	095106204
92464	85-0510	21	10-6	.880	095106206

Reference Number	Part Number	Qty.	Description
1	AMC03500231	1	Screw pan head M5x12mm
	AMC03500231	7	Screw pan head m5x12mm 6-12 conductors
2	AMM41100003	1	Shaft retainer
3	AMC03510130	2	Bolt hex head M5x10mm
4	AM00041P0127	1	Terminal - for #10-#12 AWG wire
	AM00041P0126	1	Terminal - for #16-#14 AWG wire
5	AMM04160004	1	Base
6		3	Clamp-Included in Clamp Kit "D" below.
7		3	Bolt hex head M6-Included in Clamp Kit "D" below.
8	AMM34370002	1	Main shaft – 3 to 5 conductors
	AMM34370003	1	Main shaft – 6 to 8 conductors
	AMM34370004	1	Main shaft – 10 to 12 conductors
9	AMC47040141	1	O-ring
10		1	Name plate
11	AMM14240007	1	Junction box gasket
12	AMM04540004	1	Junction box cover
13	AMC03500253	6	Screw pan head M6x16mm
14	AMH41220074	1	Spring pocket assembly -- 0951-04-xxx
	AMH41220075	1	Spring pocket assembly -- 0951-05-xxx
	AMH41220076	1	Spring pocket assembly -- 0951-06-xxx
	AMH41220078	1	Spring pocket assembly -- 0951-08-xxx
	AMH41220079	1	Spring pocket assembly -- 0951-09-xxx
15	AMC60610121	1	Extension spring
16	AMM04730007	1	Cable guide frame See Kit "E"
17	AMM24060125	4	Roller shaft See Kit "E"
18	AMM86700006	4	Roller See Kit "E"
19	AMC03500253	4	Screw pan head M6x16mm See Kit "E"
20	AMC03500255	2	Screw pan head M6x20mm See Kit "E"
21	AMM53350002	1	Spring clip
22	AMC15070225	1	Screw shoulder M8x10x16
23	AMM86750002	1	Ratchet pawl
24	AMM70780007	1	Cable clamp
25	AMC01070517	2	Flat washer M5
26	AMC03500233	2	Screw pan head M5x16 OD .380-.539

	AMC03500235	2	Screw pan head M5x20 OD .540-.699
	AMC03500237	2	Screw pan head M5x25 OD .700-.925
27	AMM14210026	1	Drum gasket -- Included in Drum Kits "C" below
28	AMR61210586	.5 ft	Wire - green #10 -- ground only
29	AM00041P0126	2	Terminal - ground only -- AWG #16 and #14
	AM00041P0127	2	Terminal - ground only -- AWG #10 and #12
30	AM6050500000	AR	Copper brush assembly - quantity one per 9th digit
31		4	Screw -- Included in Drum Kits "C" below
32		1	Outer drum half -- Included in Drum Kit "C" below
33	AM5856700021	1	Collector ring subassembly – 3 cond.
	AM5856700022	1	Collector ring subassembly – 4 cond.
	AM5856700023	1	Collector ring subassembly – 6 cond.
	AM5856700024	1	Collector ring subassembly – 8 cond.
	AM5856700009	1	Collector ring subassembly – 10 cond.
	AM5856700011	1	Collector ring subassembly – 12 cond.
34		1	Inner drum half -- Included in Drum Kit "C" below
35	AMM86550002	1	Cable seal
36	AMM37810027	1	Seal cover
37	AMC03500201	4	Screw, cheese head M4x12mm
38	See chart	AR	Cable
39	AM5876200000	1	Cover – 6 to 8 conductor
	AM5876100000	1	Cover – 10 to 12 conductor
40	AM4350600000	1	Gasket – 6 to 12 conductor
Kit B	9501	1	Pivot base – optional
Kit C	AMH05040001	AR	Drum Kit - 3, 4 & 5 Cond. -- Includes Reference Numbers 27, 31, 32 & 34
	AMH05040002	AR	Drum Kit - 6 & 8 Cond. -- Includes Reference Numbers 27, 31, 32 & 34
	AMH05040003	AR	Drum Kit – 10 & 12 Cond. -- Includes Reference Numbers 27, 31, 32 & 34
KIT D	AMH05040013	1	Clamp Kit; 3 sets, Stainless Steel-Includes Reference Numbers 6 & 7.
KIT E	AMH26340009	1	Roller Guide Kit Reference Numbers 16, 17, 18, 19 & 20.

Above parts are all painted Yellow