

Aero-Motive

W A Woodhead Industries, Inc. Company

Cable Reel Hazardous Location Series: 2400X, 2600X and 2800X

All electrical connections to and from this reel must be made in accordance with art. 500 - 503 of the National Electric Code per classification of installation.

Hazardous Locations: These series reels are specially designed for use in hazardous location areas. These reels have enclosures which are designed for use in Class I, Division I, Group C & D; Class II, Division II, Group E & G; and Class III locations as defined by the National Electric Code.

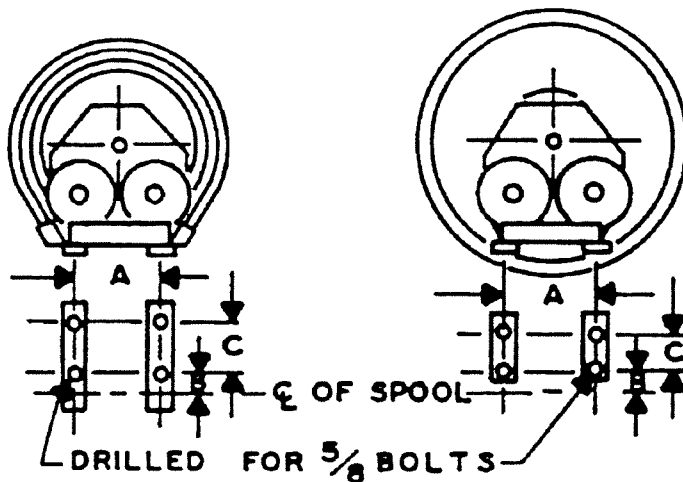
Junction boxes are permanently sealed at the mainshaft ends in the factory. Slip Rings are oversized, and constructed of extra heavy material.

CAUTION: Lockout all electrical power and remove all spring tension from the reel before opening any enclosures, or performing any service to this reel. Fuse protection should be provided.

I. Reel Installation

A. Mounting:

POW-R-MATIC Cable reels are equipped with a fixed base and can be mounted in any position - either base up or base down, wall mounted, or in any position which allows the mainshaft to be horizontal. The reel should be mounted so that it is level, and the centerline of the drum is in line with the cable run. If the reel cannot be mounted in this way, special cable guides and additional tension may be required.



MOUNTING HOLE DIMENSIONS

Catalog Number	Dimensions		
	A In./mm	B In./mm	C In./mm
2445	15.25 (387)	0.25 (6)	9.00 (299)
2470	15.25 (387)	1.75 (45)	9.00 (299)
2670 & 2870	11.25 (286)	11.25 (286)	16.94 (430)
2875	11.25 (286)	11.25 (286)	6.06 (154)
2676 & 2876	11.25 (286)	11.25 (286)	8.25 (210)
2677 & 2877	11.25 (286)	11.25 (286)	10.44 (265)
2678 & 2878	11.25 (286)	11.25 (286)	12.56 (319)
2679 & 2879	11.25 (286)	11.25 (286)	14.75 (375)

When a Reel is mounted overhead, it is recommended that a secondary chain, bracket, or other device be used to prevent the Reel from falling if the mounting bolts are removed or loosened from vibration.

II. Cable Installation / Replacement

⚠ CAUTION: Lockout all electrical power and remove all spring tension from the reel before opening any enclosures, fuse protection should be provided.

A. Remove cover (JG-71) from entrance ring, and the cable clamp (JG-63) on spool.

B. Determine length to strip outer jacket of working cable:

1. Remove seal fitting cover (DP-87).
2. Insert cable through watertight cable connector (JG-64) and feed cable through until cable end reaches the brush terminal furthest away.
3. Mark outer jacket at location inside seal fitting (DP-83).
4. Remove cable and strip outer jacket six (6) inches past mark.

C. Securing Cable:

1. The stripped end of the cable should be passed from the inside of the drum out through the slot in the flange adjacent to the cable clamp (JG-63).
2. The cable should be inserted through the watertight cable connector (JG-64) until the outer jacket becomes visible in the seal fitting (DP-83). The individual conductors pass through the entrance ring (DP-88) wall into the slip ring enclosure. After insuring the individual conductors reach their proper brush terminals, tighten watertight cable connector (JG-64).
3. Secure individual conductors to proper brush terminals (JG-69). Cut lengths as required.
4. Place cable clamp (JG-63) over the cable and tighten securely so as not to pinch cable by slot of flange.

D. Potting:

1. Replace seal fitting cover (DP-87).
2. Rotate spool so that seal fitting (DP-83) points downward.
3. Mix sealing compound per instructions and fill seal fitting with compound. *Important:* Do not overfill. Compound must not overflow to entrance ring assembly (DP-88).
4. After sealing compound is dry, replace cover (JG-87).

E. When replacing cable it is also necessary to replace watertight cable connector (JG-64) reducing bushing (JG-65) if required, seal fitting (DP-83), "O" - Ring (DP-84), and seal fitting cover (DP-87). These parts should always be on hand along with sealing compound for cable replacement.

II. Cable Installation / Replacement (cont'd.)

- F. Reverse wind the cable onto the reel, keeping track of the number of turns required to retract the cable for use in Section IV below, making sure that all twists and kinks are removed from the cable. Twists left in the cable can cause an erratic wrapping pattern on the spool and shorten cable life. This is especially true with multiple conductor control cable.

NOTE: When reverse winding the Reel, you will hear a clicking sound, as the springs disengage from the drive hubs. This is a protective device to prevent damage to the spring while reverse winding, all springs will re-engage when the cable is pulled out.

III. Fixed Connections

- ⚠ CAUTION:** Lockout all electrical power before making connections. Fuse protection should be provided. Do not, at any time, remove or disturb the sealing compound around the internal wiring.
- A. Remove cover of junction box (JG-58) to gain access of wires from slip ring leads in main shaft.
 - B. All attachments, wiring, and conduit connections at this junction box must be made in accordance with N.E.C. requirements for hazardous locations.
 - C. The proper supply conductors may now be connected to the corresponding lead wires from the mainshaft, and check continuity on all conductors.
 - D. When all connections check out O.K., then the cover may be replaced on junction box.
- ⚠ CAUTION:** If any potted seals are removed or disturbed, return reel to factory for repair of seals. Do not terminate the free end of the working cable until the reel is pretensioned. (See Section IV).

IV. Pretensioning Spring Motor

POW-R-MATIC Reels are *not* pretensioned at the factory. It will be necessary to apply set-up turns to the drum to pretension the Reel (in much the same way as a window shade is pretensioned).

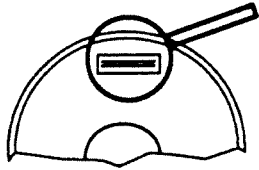
A. Determining Number of Pretension Turns

There are two methods of determining the proper number of pretension turns to be applied to the Cable Reel.

Method 1.

There is an instruction plate located on the flange. This instruction plate states the maximum number of turns available in the Reel. The instruction plate also has a space for the number of set-up turns to pretension the Reel. (If this box is blank, go to Method 2). Using the figure obtained from the set-up turn box proceed to IV B.

IV. Pretensioning Spring Motor*(cont'd.)*



IMPORTANT	
<input type="checkbox"/>	MAXIMUM TURNS AVAILABLE
<input type="checkbox"/>	SET-UP TURNS REQUIRED (AVERAGE)

Method 2.

If the set-up turn box is blank, use the following procedure:

Determine the number of revolutions of the cable drum to wrap up the working cable. Subtract the number of turns required, to wrap the cable on the drum, from the maximum turns available (obtained from the instruction plate on the flange). Divide the answer by two. This will give you the average number of pretensioning set-up turns.

EXAMPLE: A reel has 200 ft. of working cable. You determine by counting the number of revolutions that the drum rotates 20 times to wrap up the working cable. The instruction plate states that there are a maximum of 50 turns available.

$$\begin{array}{r}
 50 \text{ turns available} \\
 -20 \text{ turns to wrap cable on drum} \\
 \hline
 30
 \end{array}$$

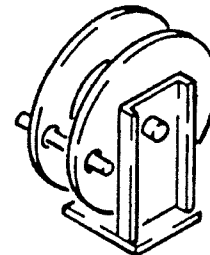
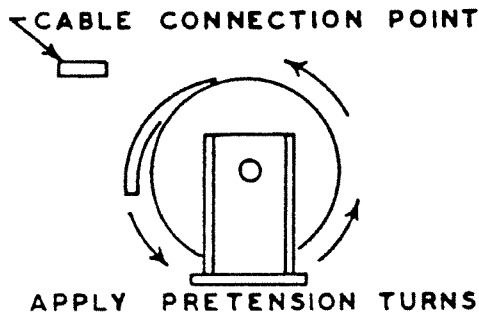
$$30 \text{ turns} \div 2 = 15 \text{ set-up turns}$$

This reel would have 15 pretension set-up turns applied.

B. Applying Pretension - Set-up Turns

After determining set-up turns, follow the prescribed steps below for application. Make sure there are no twists or kinks in the cable, and that all cable is on the reel.

NOTE: When reverse winding the reel, you will hear a clicking sound as the springs disengage from the drive hubs. This is a protective device to prevent damage to the spring while reverse winding. All springs will re-engage when the cable is pulled out



IV. Pretensioning Spring Motor *(cont'd.)*

1. Pull the cable out far enough to allow one full wrap of cable to be wrapped back around the drum. Place a bar through the holes located near the edge of the flanges to prevent the drum from turning while the cable is placed on the reel.

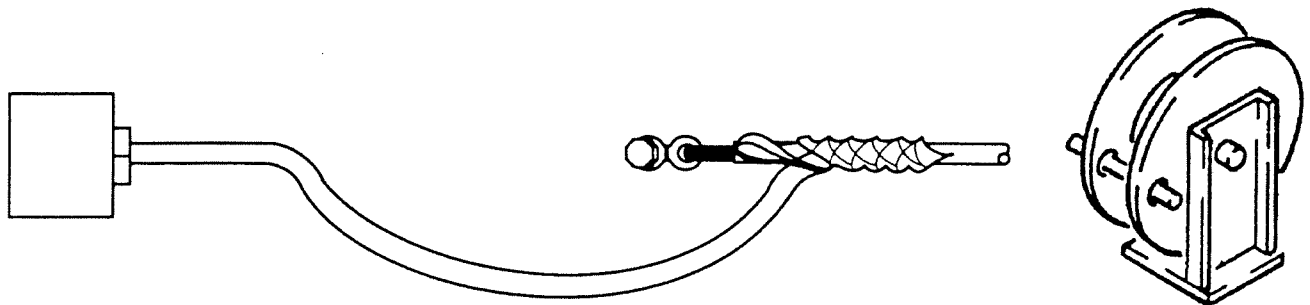
This places one (1) pretension set-up turn on the reel. Repeat the previous procedure until the proper number of set-up turns (as determined in A-1 or A-2 above) have been applied.

V. Cable Anchoring

- ⚠ CAUTION:** Before terminating or anchoring cables **ALWAYS** pull all of the cable off of the reel (against the spring tension) to be sure that there are enough turns of the reel, for the cable travel. If you reach the end of the spring before all cable is removed from the drum **STOP** and remove pretension turns. Remove any twists or kinks from the cable while cable is extended, before retracting.

Failure To Comply With The Above Procedure Can Result In Damage To The Reel And Cable.

- A. Attachments, wiring and conections at working cable termination must be made in accordance with N.E.C. requirements for hazardous locations.
- B. Pull the working cable (against the tension of the reel) to the connection point, with adequate slack to make the connections. Place a bar through the holes near the edge of the flanges to relieve the tension on the cable, and hold the pretension turns on the reel. Make sure there are no twists or kinks in the cable.
- C. When anchoring the cable, a cable grip should be incorporated in such a way as to allow a slack in the cable prior to entering the connection points. See illustration below.



- ⚠ CAUTION:** (Except on reels that are furnished with external tensioning devices) **NEVER** add or remove set-up turns when cable is terminated. **Failure To Comply With These Practices Can Lead To Premature Cable Failure.**

- ⚠ CAUTION:** **NEVER** apply so many turns that the springs are worked to the end of their travel. Always leave several turns between the end of the spring and the position of the drum when the cable is fully extended. If the spring reaches the end of its travel before satisfactory tension is achieved, consult the factory (Telephone: (616) 381-1242)

VI. Servicing POW-R-MATIC Cable Reels

NOTE: It is not recommended that any field repairs be made on any of the internal sealed components, such as main shaft (JG-28) and seal fitting (DP-83). Please consult factory.

⚠ CAUTION: Before performing any sevice, **ALWAYS** disconnect and lock out all electrical power and **ALWAYS** remove all reel spring tension. **Failure To Comply With These Practices Can Result In Injury To Personnel, Or Damage To Equipment.**

A. Spring Motor Replacement

1. Be sure spring motor is adequately supported. Lifting hooks have been provided for this.
2. Remove the four (4) bolts (JG-42) and bolts (JG-3) then remove rear support bracket (JG-6), and extra support (JG-5) when used.
3. Slide the spring motor back to disengage from the drive shaft.
4. Read the enclosed spring motor instructions (SM0088-02) carefully before attempting any internal spring or part replacement.
5. To replace spring motor, reverse the above procedure.
6. After spring motor is reinstalled, repeat the spring tensioning producure described in the pretensioning section. Page 4.

B. Collector Ring Replacement

⚠ CAUTION: Disconnect and lock out all power to the reel before servicing the collector ring. **DO NOT** at any time remove or disturb the sealing comound around the internal wiring.

1. Remove collector ring cover (JG-71) by turning the cover counterclockwise.
2. Disconnect the leads of working cable from the brush terminals.
3. Disconnect the lead wires from the main shaft to the collector rings by removing the connectors (JG-73).
4. Remove brush holder assemblies (JG-69) from studs (JG-68) by releasing the clip on side of brush holder over stud, carefully, so as not to scratch surface of slip ring when removing brush holder.
5. Remove collector ring by loosening the set screws and then slide collector ring off main shaft.
6. To reassemble, reverse above procedure. The collector ring should be snug against the entrance ring assembly (DP-88).

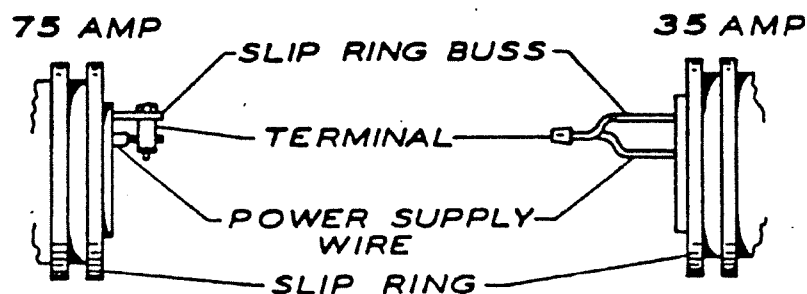
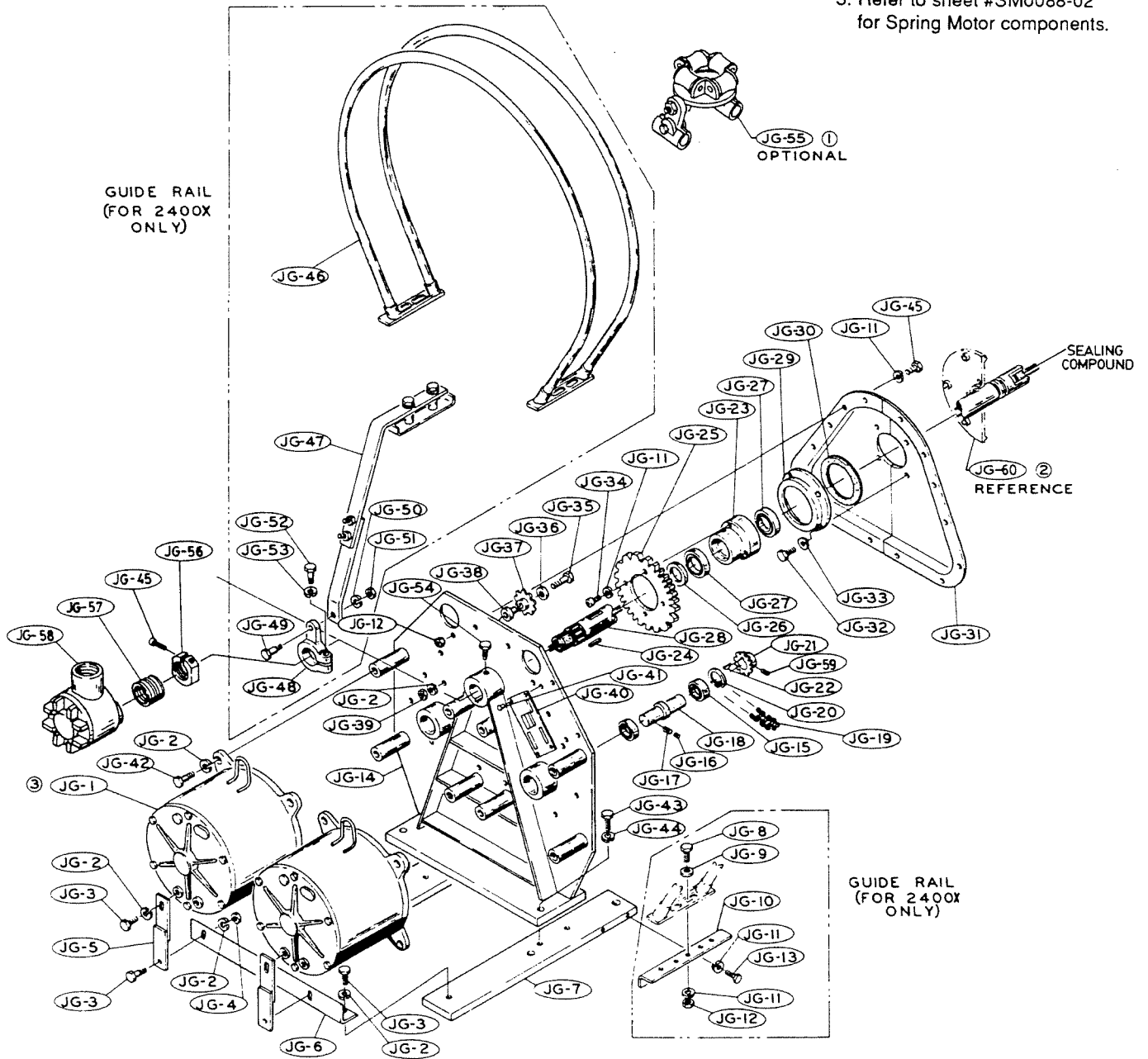
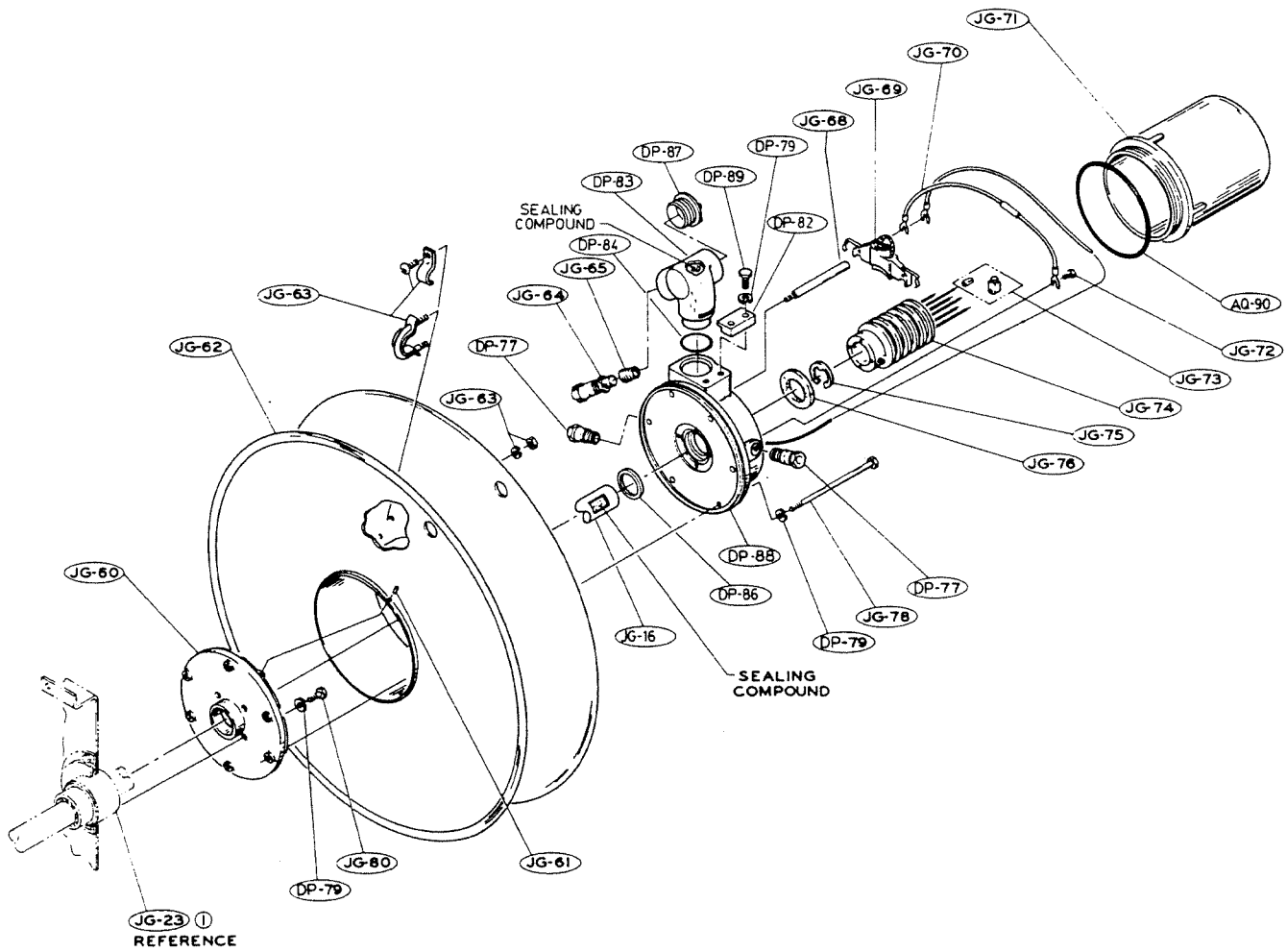


FIGURE-B

1. Refer to sheet #SM0083-01 for Guide & Mounting.
2. See Sheet #8 for Spool & Slip Ring components.
3. Refer to sheet #SM0088-02 for Spring Motor components.



1. See sheet #7 for Frame & Drive components.



Item No.	Part Number	Quantity	Description
JG-1*	**	2	Spring Motor
JG-2	101-P-21	15	Lockwasher (3/8) (2400X)
	101-P-21	13	Lockwasher (3/8) (2600X & 2800X)
JG-3	32-P-105	6	Screw (3/8-16 x 7/8) (Qty. 4, 2600X & 2800X)
JG-4+	151-P-110	2	Nut (3/8-16)
JG-5+	59875	A/R	Support - Motor
JG-6	59874-3	1	Support - Motor Angle (2400X)
	59874-4	1	Support - Motor Angle (2600X & 2800X)
JG-7	**	2	Mounting Foot (2400X)
	**	2	Mounting Foot (2600X & 2800X)
JG-8+	30-P-117	4	Screw (1/4-20 x 1) Hex. Hd.
JG-9+	126-P50	4	Washer (1/4)
JG-10+	40266	2	Mounting Bracket
JG-11	101-P-30	22	Lockwasher (1/4) (2400X)
	101-P-30	14	Lockwasher (1/4) (2600X & 2800X)
JG-12	151-P-20	10	Nut (1/4-20) (2400X)
	151-P-20	14	Nut (1/4-20) (2600X & 2800X)
JG-13+	30-P-111	4	Screw (1/4-20 x 5/8)
JG-14	61169	1	Stand Weld. 61169 - (2400X)
	61170	1	Stand Weld.(61170 - (2600X & 2800X)
JG-15*	376-P-120	4	Ball Bearing
JG-16*	230-P-151	2	Pin
JG-17*	230-P-133	2	Pin
JG-18	43703	2	Shaft
JG-19*	1158-P-2	A/R	Chain #40 (Charted on 61231)
JG-20	581-P-75	4	Retaining Ring (1.850 Dia.)
JG-21	**	2	Sprocket (Charted on 61231)
JG-22	751-P-11	2	Key (1/4 x 3/4)
JG-23	40806	1	Sprocket Hub
JG-24	40773-2	1	Key
JG-25	**	1	Sprocket (Charted on 61231)
JG-26	40119	1	Spacer
JG-27	40005	2	Bearing
JG-28	**	1	Main Shaft
JG-29	61167	1	Retainer - Felt Washer
JG-30	40816	2	Felt Washer
JG-31	61234	1	Sprocket Housing
JG-32	30-P-211	4	Screw (#10-24 x 1/4)
JG-33	101-P-15	4	Lockwasher (#10)
JG-34	29-P-108	4	Screw, Socket (1/4-20 x 5/8)
JG-35	32-P-112	1	Screw (3/8 -16 x 2)

Item No.	Part Number	Quantity	Description
JG-36	C01010222	1	Washer (3/8)
JG-37	380-P-3	1	Sprocket Idler
JG-38	40825	1	Shaft
JG-39	151-P-110	1	Nut (3/8-16)
JG-40	M13060094	1	Name Plate
JG-41	209-P-23	4	Rivet
JG-42	32-P-103	8	Screw (3/8-16 x 1)
JG-43	34-P-13	4	Screw (1/2-13 x 1 1/4)
JG-44	101-P-16	4	Lockwasher (1/2)
JG-45	29-P-105	11	Screw (1/4-20 x 7/8)
JG-46+	40729-1	1	Rail Ass'y. (2440X 4 in.)
+	49285-3	1	Rail Ass'y. (2470X 7 in.)
JG-47+	40889-3	1	Brace Guide Rail (2440X)
+	40889-4	1	Brace Guide Rail (2470X)
JG-48	40269-1	1	Collar
JG-49+	32-P-103	1	Bolt, Hex. Hd. (3/8-16)
JG-50+	101-P-21	1	Lockwasher (3/8)
JG-51+	151-P-35	1	Nut - Hex. (3/8-16)
JG-52	31-P-30	1	Bolt, Hex. Hd. (5/16-18)
JG-53	101-P-14	1	Lockwasher (5/16)
JG-54	40680	1	Screw
JG-55	41826-2	A/R	Roller Guide (2F, Cable O.D. to 1 1.2")
	43752	A/R	Roller Guide (3F, Cable O.D. to 2")
JG-56	56286	1	Collar
JG-57	1219-P-4	1	Reducer
JG-58	1156-P-4	1	Junction Box
JG-59	53-P-504	2	Set Screw (3/8-16 x 1 1/2) -50 through 53
	53-P-231	4	Set Screw (3/8-16 x 1/4) -56 through 85
JG-60	40805-1	1	End Plate
JG-61	230-P-105	2	Pin - Drive
JG-62	43992-19	1	Spool Ass'y. (2440X)
	43992-22	1	Spool Ass'y. (2470X)
	43993-1	1	Spool Ass'y. (2600X)
	43993-2	1	Spool Ass'y. (2800X)
JG-63	61503-1	1	Cable Clamp (.312 - .499)
	61503-2	1	Cable Clamp (.500 - .624)
	61503-3	1	Cable Clamp (.625 - .749)
	49201-8	1	Cable Clamp (.750 - .874)
	49201-2	1	Cable Clamp (.875 - 1.124)
	49201-4	1	Cable Clamp (1.125 - 1.188)
JG-64*	1156-P-8	1	Connector (.312 - .374)

Item No.	Part Number	Quantity	Description
JG-64*	1156-P-9	1	Connector (.375 - .499)
	1156-P-10	1	Connector (.500 - .624)
	1156-P-11	1	Connector (.625 - .749)
	1156-P-12	1	Connector (.750 - .874)
	1156-P-13	1	Connector (.875 - .999)
	1156-P-14	1	Connector (1.000 - 1.188)
JG-65*	1219-P-5	1	Reducer (1 1/4 to 3/4) (.312 - .499)
	1219-P-4	1	Reducer (1 1/4 to 3/4) (.500 - .749)
JG-68	M25360032	4	Stud (303)
	M25360017	4	Stud (304)
	M25360018	4	Stud (306 & 403)
	M25360019	4	Stud (308 & 404)
	M25360020	4	Stud (310)
JG-69	60507-1	Per. Cond.	Brush Holder (SR300)
	61346-2	Per Cond.	Brush Holder (SR400)
JG-70	1149-P-28	2	Wire - #10 Awg. - Ground (SR300)
	1149-P-31	2	Wire - #4 Awg. - Ground (SR400)
JG-71	40239-1	1	Cover
JG-72	30-P-211	1	Screw (#10-24 x 1/4)
JG-73	900-P-3	Per. Cond.	Connector (SR300)
	61504-2	Per. Cond.	Connector (SR400)
JG-74*	H96420201	1	Slip Ring (SR303)
	H96420202	1	Slip Ring (SR304)
	H96420204	1	Slip Ring (SR306)
	H96420206	1	Slip Ring (SR308)
	H96420208	1	Slip Ring (SR310)
	H96420401	1	Slip Ring (SR403)
	H96420402	1	Slip Ring (SR404)
JG-75	580-P-137	1	Retaining Ring (1 1/2" Shaft)
JG-76	56291	1	Thrust Ring
DP-77	C75990213	2	Drain, Breather
JG-78	40143-35	6	Screw (1/4-20 x 5 3/4) (2440X)
	40143-38	6	Screw (1/4-20 x 8 3/4) (2470X)
	40133-36	6	Screw (1/4-20 x 9 13/16) (2600X & 2800X)
DP-79	101-P-30	12	Lockwasher (1/4)
JG-80	30-P-110	4	Screw (1/4-20 x 3/4)
DP-82	M40460018	1	Retainer
DP-83*	M65730003	1	Sealing Fitting
DP-84*	700-P-79	1	O-Ring
DP-86	C47550111	1	Gasket - Dust Seal
DP-87*	C71180001	1	Cover

Service Manual # SM 3340-03HS
12.

Parts List
Cabel Reel
Hazardous Location

Series
2400X
2600X
2800X

Item No.	Part Number	Quantity	Description
DP-88	H82420002	1	Entrance Ring Ass'y.
DP-89	30-P-117	2	Bolt (1/4-20 x 1)
AQ-90	C47040140	1	O-Ring

- * Recommended Spare Parts.
- * 2400X Series Only.

For further information, see manuals listed;

1. Spring Motor SM0088-02.
2. Guides and Guide Mounts SM0083-01.
3. Slip Rings (SR300) SM9520-01; (SR400) SM9520-02.

Always include Model No. and Serial No. of reel when ordering parts or requesting information.