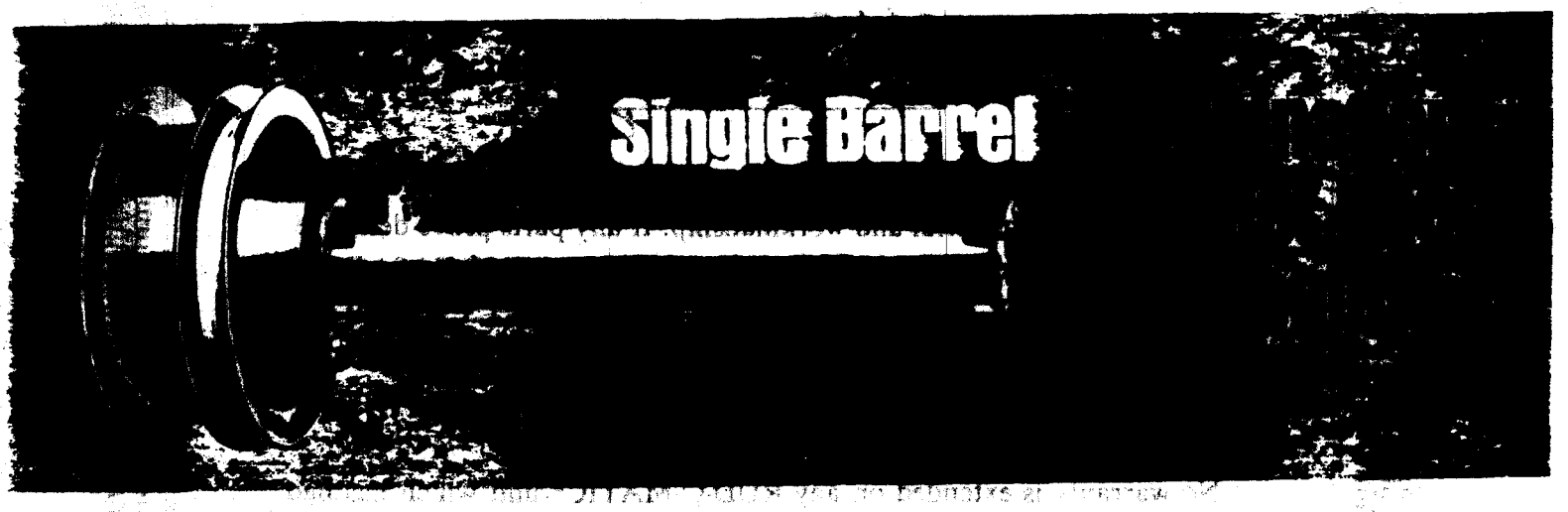
RUD-O-MATIC



SPECIFICATIONS AND RECOMMENDATIONS FOR SINGLE BARREL CMR

COMBINATION & STANDARD MAGNET REELS					MAGNETS		AMPERE 2 CONDUCTOR				
Model	Spooling Length	Tagline Cable Pullout From Neutral	Maximum Turns of Magnet Reel	Spring Dimension L368 wire	Dia.	Approx. Weight	DC Volts	Cold Amps	Elect. Cable	Generator Plant (KW)	Headroom (inch)
624	30"	45 ft.	8	6" dia., 24" closed, 36" free	26"	900	230	8	No. 10	2	23

USED WITH HIGH VOLT-LOW AMP DC POWER

Operation & Maintenance Manual

Warranty

RUDOMATIC® inc. warrants each new RUD-O-MATIC® unit to be free from defects in material and workmanship. If any parts prove defective, new parts will be furnished at no cost. RUD-O-MATIC® TAGLINES, RUD-O-MATIC® COMBINATION MAGNET REELS AND TAGLINES, and spare parts for these units are warranted for a period of one year from the date of the original sale. All warranty claims must be handled directly with RUDOMATIC® inc., Los Angeles, California.

No warranty is extended on any RUD-O-MATIC® unit which has had its serial number altered, effaced, or removed.

This warranty is in lieu of all other warranties, expressed or implied; and no person is authorized to assume for RUDOMATIC® inc. any other liabilities in connection with the sale of RUD-O-MATIC® products.

Rudomatic Taglines are sold and serviced by authorized dealers throughout the world. Contact Rudomatic factory, 2131 E. 25th Street, Los Angeles, California 90058, for information on nearest authorized dealer in your area. Telephone: 213/582-6314. Telex: 67-4714.

GENERAL DESCRIPTION

Rud-O-Matic® Single Barrel Combination Magnet Reel and Tagline (CMR)

The complete unit — magnet reel, tagline, and fairlead assembly — mounts on a crane boom and consists of: tagline reel with steel tagline cable; electric cable drum reel; collector ring assembly containing brushes and insulated wire assembly; spring-loaded cylinder; fairlead pipe and two sheave-type guides — one for steel tagline cable and one for electric cable.

The CMR operates on a coil spring principle. Because both tagline reel and cable drum revolve together, the unit holds protective margin of slack originally set on electric cable while maintaining continuous, positive tension to steady the magnet and its load.

Shear Pin Breaking Point. A shear pin in the main bearing of all models will prevent coil spring overwinding by breaking and releasing spring tension if magnet reel exceeds maximum recommended number of turns. Consult proper columns in charts to determine maximum number of magnet reel turns for model before shear pin will break.

NOTE: Order extra Shear Pins to have on hand for future convenience.

ASSEMBLY

All Rud-O-Matic® Magnet Reels are completely assembled at the factory and shipped ready for mounting.

SAFETY PRECAUTIONS

Where applicable, safety precautions are included in paragraphs containing instructions on installation and disassembly procedures. Safety and maintenance data under normal operational conditions is contained in a separate section on page 4.

LUBRICATION

Use S.A.E. 90 heavy oil. A large decal, plainly visible on housing of every Rud-O-Matic® Magnet Reel, provides precise data on amount of oil required for each model. To lubricate (Fig. A), remove oil plug on housing near cable and ½-inch black pipe plug on end plate. Add oil per decal guide until oil level lines up with plug hole on end plate. Do not fill past plug hole. Replace plugs.

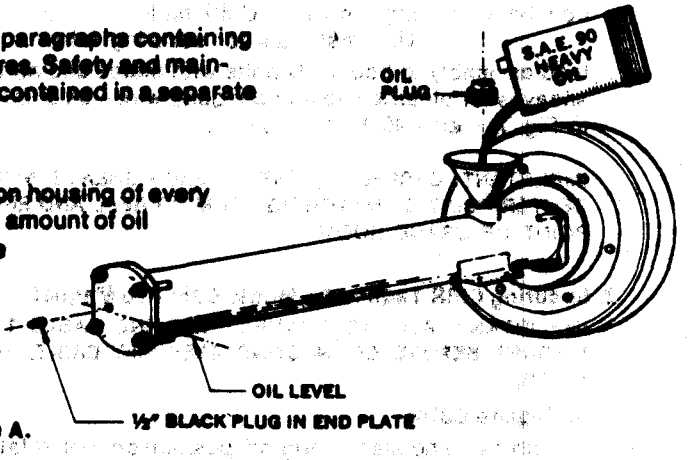


Figure A.

BASIC FUNCTION. The Rud-O-Matic® Combination Magnet Reel and Tagline mounts on a crane boom and performs as follows:

1. Expedites the carrying of electric cable and current to the magnet during scrap-handling and recycling operations.
2. Maintains protective margin of slack at all times on electric cable.
3. Revolves automatically to pay out and take in required amount of electric cable.
4. Holds magnet and load steady regardless of boom angle while both are suspended in air.

Operation is completely automatic after installation.

INSTALLATION

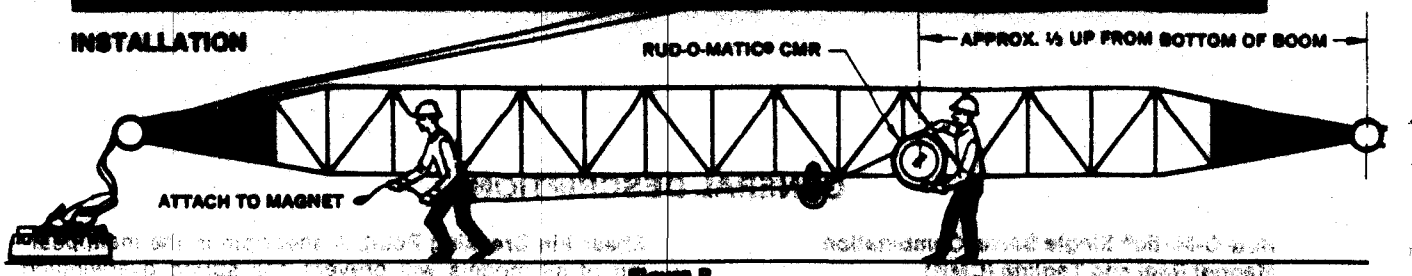


Figure B.

Mounting Single Barrel CMR On Crane Boom

The Rud-O-Matic® Single Barrel CMR mounts with reel outside boom structure, either side. SAFETY PRECAUTION: ALWAYS MOUNT UNIT WITH REEL ON OPPOSITE SIDE OF CRANE OPERATOR CAB. USE TWO-MAN TEAM.

1. Mounting Reel and Housing Section

Lower crane and boom to ground level. Locate unit approximately ⅓ up from bottom of boom (Fig. B, above). Set in position by placing housing (oil plug side up) through framework and securing to bottom side of boom (Fig. B photo, above). Materials for securing unit to boom—U bolts with plates, nuts, and lock washers—are located on housing. Remove and use as shown in Fig. J Items 38 & 39, page 6.

2. Mounting Fairlead Assembly

Complete fairlead assembly component mounts approximately two feet from CMR unit at next convenient position on upper boom side. Fairlead pipe mounts parallel to CMR housing with bolt holes on same side as CMR reel.

Use materials for securing fairlead assembly to boom—U bolts with plates and nuts, sheaves for electric cable and tagline wire—as shown in Fig. J, Items 40 & 48, page 6.

IMPORTANT: CAREFULLY LINE UP EACH SHEAVE WITH CENTER POINT OF MATCHING DRUM OR REEL AND END POINT OF CRANE BOOM.

3. Securing CMR Tagline & Electric Cable To Magnet

IMPORTANT: ALWAYS CONNECT TAGLINE CABLE TO MAGNET BEFORE CONNECTING ELECTRIC CABLE TO MAGNET.

a. Tagline Cable

With cable hooked in original position on reel, rotate reel counterclockwise (Fig. C) three complete revolutions from neutral position (no tension). Using two-man team, one man holds reel in stationary position while second man unhooks cable and passes end over sheave guide. First man releases reel as second man walks out enough length to reach magnet (Fig. B, page 2). First man again holds reel in stationary position while second man secures end to magnet. Tagline is now functional and ready for pre-operation testing (see page 3).

b. Electric Cable

NOTE: To determine length of electric cable see Specifications Chart, page , top. Use tagline cable pullout figures as guide. Allow for margin of slack.

Proceed only after tagline has been secured and tested. Use two-man team. Remove drum reel cover. Pass electric cable terminals through slot on drum reel and under clamp that secures cable to drum interior (Fig. C); connect terminals to brass studs on collector ring plate. Drum reel is then held in stationary position while cable is wound around it, passed over sheave guide, and connected to magnet terminal box (Fig. D). IMPORTANT: ALLOW MARGIN OF SLACK. CABLE SHOULD NOT BE TAUT. ALL TENSION SHOULD BE CARRIED BY STEEL TAGLINE.

If excess slack is apparent on electric cable due to insufficient length to complete another wrap around drum, pull excess inside drum through slot on reel and secure to electric cable clamp. BUT ALWAYS

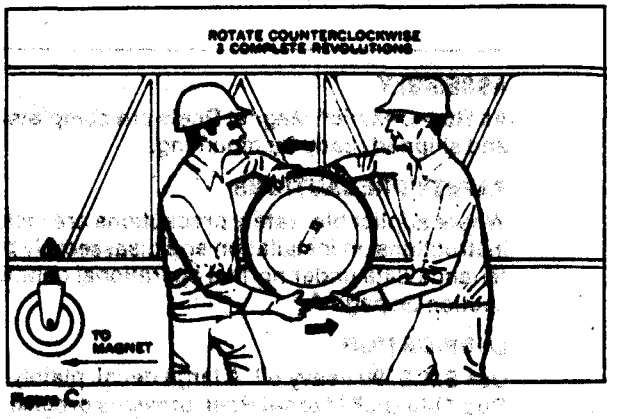


Figure C.

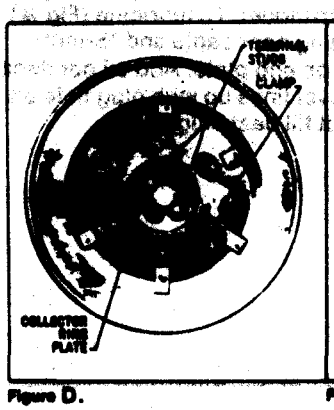


Figure D.

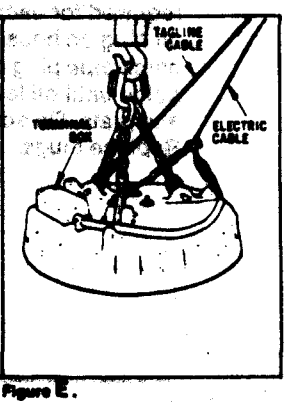


Figure E.

ALLOW SUFFICIENT MARGIN OF SLACK ON ELECTRIC CABLE SO THAT IT DOES NOT BECOME TAUT DURING OPERATIONS. Replace drum cover. NOTE: Wires from generator connect to exterior terminals visible on underside of collector ring housing.

Electric cable is now ready for pre-operation testing with previously tested tagline in position on crane and secured to magnet.

PRE-OPERATION TEST

A. Combination Magnet Reel & Tagline (CMR)

IMPORTANT: ALWAYS TEST TAGLINE FIRST – BEFORE ELECTRIC CABLE IS CONNECTED TO MAGNET.

1. Tagline Pre-Operation Test

Position crane boom over dirt surface at approximate 35° angle. Raise magnet to maximum height. Drop magnet to ground. Raise to height of not less than 15 feet while swinging magnet through 45° arc. Return magnet to original position. During test observe crane hoisting lines to make certain they do not twist enough to cross over and foul operations. If tagline and magnet function smoothly without hindrance, tagline is operational and ready for testing with electric cable connected to magnet (see paragraph 3 below). Should twisting occur, additional tension will be required.

2. To Add Tension

Lower boom to ground level. Use two-man team. Turn cable reel counterclockwise to release sufficient slack tagline cable to permit one additional turn around reel (Fig. F). One man holds reel in stationary position while second man wraps cable (Fig.G). After completion of turn, release reel. Repeat pre-operation test.

3. Electric Cable & Tagline Joint Pre-Operation Test

With tagline operational, electric cable connected to magnet per instructions in Installation Section (paragraph 3b, page 2 .), and current ready to use, position crane boom over dirt adjacent to scrap load at 35° angle. Raise magnet to maximum height. Drop magnet to ground. Use current to take on load. Raise to height of not less than 15 feet while swinging magnet through 45° arc. Drop load and return magnet to original position. During test observe operation to make certain electric cable maintains margin of slack and does not foul tagline or crane hoisting lines. If electric cable and tagline do not function smoothly with magnet, lower boom to ground level and make necessary adjustments in cable slack or tagline tension. Repeat pre-operation test.

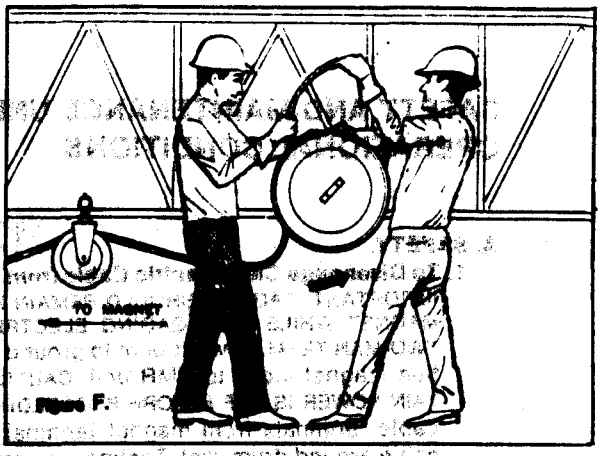


Figure F.

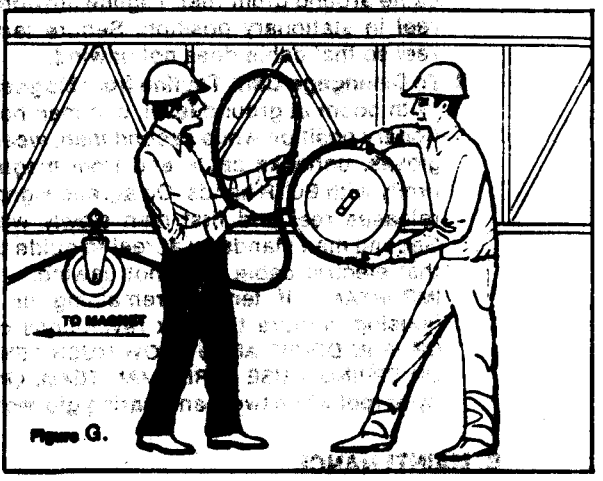


Figure G.

OPERATION INSTRUCTIONS

All CMR and Standard Magnet Reels function automatically after installation and pre-testing. No further operational procedure is required.

SAFETY AND MAINTENANCE UNDER OPERATIONAL CONDITIONS

A. SAFETY

1. To Disengage CMR Electric Cable from Magnet

IMPORTANT: TAGLINE SHOULD REMAIN HOOKED UP TO MAGNET WHILE DISENGAGING ELECTRIC CABLE. USE TWO-MAN TEAM. Lower boom to ground level and position magnet close to CMR unit. CAUTION: MAKE CERTAIN POWER IS OFF BEFORE PROCEEDING. Disconnect cable terminals from magnet terminal box and wind cable around drum reel. Tagline tension will hold drum reel in stationary position. Secure terminal ends on reel so that cable does not unwind.

2. To Disengage CMR Tagline from Magnet

With boom at ground level, one man holds reel in stationary position while second man, wearing protective gloves, unhooks cable end from magnet and grasps firmly with BOTH hands. On agreed signal, second man releases reel and first man slowly walks in tagline. Second man stands by at reel to guide tagline and see that electric cable does not unwind.

IMPORTANT: If tension remaining on spring inside housing is more than six revolutions of cable reel — OR IF IN DOUBT ABOUT HOW MUCH TENSION REMAINS ON SPRING — USE THREE-MAN TEAM. One man stands by at reel while two men wearing gloves walk in tagline.

B. MAINTENANCE

1. Lubrication (See Fig. A, Page 1)

Lubrication should be checked at the start of each new job. Use S.A.E. 90 heavy oil. Remove oil plug near reel on barrel housing. Add oil as necessary per decal guide until oil level lines up with plug hole on end plate. Do not fill past plug hole. Replace plug.

2. Inspection for Wear or Damage

Inspect unit (CMR or SMR) and fairlead assembly for routine wear. Replace sheaves if uneven wear in grooves is apparent. Inspect tagline cable for routine wear. If signs of frayed ends or wear are visible, replace cable.

3. Preventive Maintenance to Avert Coil Spring Overwinding

Coil spring overwinding can only occur in magnet reels and taglines that do not contain bearings with shear pins. To prevent coil spring overwinding in these earlier models, cable reel should not exceed maximum number of turns recommended for a specific model. See complete Specification Chart, page 6 , for correct number of allowable turns to prevent coil spring overwinding.

All current magnet reels and taglines are manufactured with bearings containing shear pins. They are designed so that the shear pin breaks and releases spring tension if cable reel exceeds maximum recommended number of turns. (See Shear Pin Breaking Point, page 1 .)

4. Storage Between Use

For brief periods of inactivity it is not necessary to drain oil from housing. CAUTION: ALWAYS STORE UNIT WITH HOUSING IN HORIZONTAL POSITION TO PREVENT OIL FROM LEAKING THROUGH OIL SEAL.

For long periods of inactivity, lubrication oil should be drained from housing. Loosen four nuts on end plate. Tilt unit to remove final oil residue. Tighten four nuts. Store unit in horizontal position.

PREPARATION FOR DISASSEMBLY TO REPLACE WORN PARTS

SAFETY PRECAUTION: ALL TENSION MUST BE RELEASED FROM COIL SPRING INSIDE HOUSING BEFORE COMBINATION MAGNET REEL AND TAGLINE CAN BE DISASSEMBLED. USE TWO-MAN TEAM.

Alternate procedures for releasing spring tension in housing are given below. Use method that best suits type of mount and condition of unit.

A. COMBINATION MAGNET REEL & TAGLINE (CMR)

1. Release Of Spring Tension With Tagline Cable Remaining On Reel. Refer to Fig. P.

a. IMPORTANT: REMOVE ELECTRIC CABLE FROM DRUM REEL BEFORE ATTEMPTING TO RELEASE SPRING TENSION. Proceed as follows: Lower boom to ground level and position magnet close to CMR unit. CAUTION: MAKE CERTAIN POWER IS OFF BEFORE PROCEEDING. Disconnect electric cable terminals from magnet terminal box. Remove electric cable drum cover (Item 2). Disconnect electric cable terminals from brass studs on collector ring plate (Item 9) and release cable from clamp (Item 3). Unwind electric cable from drum and pull terminals out through slot on drum reel.

b. With boom at ground level, tagline cable remains hooked to magnet. This is reverse of procedure used to add tension. One man holds reel in place while second man removes one loop of cable from reel. First man then turns reel clockwise one turn to take up cable slack, thus reducing tension on spring by one turn. Repeat procedure until all tension on spring is released. Unit is now ready for disassembly.

SAFETY PRECAUTION: ALWAYS WORK FROM SIDE OF HOUSING UNTIL ALL TENSION IS RELEASED AND COIL SPRING IS COMPLETELY UNWOUND. DO NOT STAND IN FRONT OF END PLATE OR BEHIND CABLE REEL.

DISASSEMBLY (CMR)

With all tension released from coil spring (see previous section on preparation for disassembly), disassembly can begin. Entire procedure may be carried out with units secured to boom or overhead crane. If preferred, however, for easier working convenience units can be dismantled from structures prior to disassembly and removed to table or bench. Dismantling may require burning off U bolts that secure units to cranes. When re-mounted, it will be necessary to replace U bolts. SAFETY PRECAUTION: BEFORE STARTING DISASSEMBLY ON BENCH, UNITS SHOULD BE SECURELY TIED DOWN WITH C-CLAMPS OR EQUIVALENT MEANS.

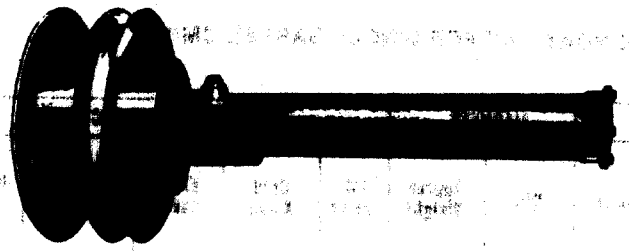


Figure H.

COMBINATION MAGNET REEL & TAGLINE (CMR)

A. DISASSEMBLY STEPS. Refer to Fig.

1. Remove electric cable drum reel cover (Item 2).
2. Remove six cap screws (Item 7) connecting tagline reel (Item 6) to collector ring assembly (Item 9).

2(A). STANDARD MAGNET REEL ONLY. Remove six cap screws (Item 7) connecting adapter plate (Item 37) to collector ring assembly (Item 9).

3. Remove collector ring housing cover (Item 12).
4. Remove ¼" hex nuts from brush set (Item 10).
5. Remove brush set (Item 10) from collector ring housing (Item 13).
6. Remove ⅝"x 2¾" cap screws (Item 9A) from collector ring assembly (Item 9).
7. Remove collector ring assembly from shaft (Item 23).
8. Remove four ⅝" hex nuts (Item 14) from collector ring housing.
9. Remove collector ring housing (Item 13).
10. Remove head bearing (Item 15).
11. Remove shaft welded to coupling (Item 21).
12. Remove four hex nuts connecting small end plate (Item 35) to tagline housing (Item 31 – right).
13. Remove end plate, thrust washers, and gaskets (Items 33, 34, & 36).
14. Remove propeller, tubing, and coupling (welded), (Item 27) through back.
15. Remove Spring (Item 30) from housing.

REASSEMBLY PROCEDURE

Reverse disassembly steps listed above.

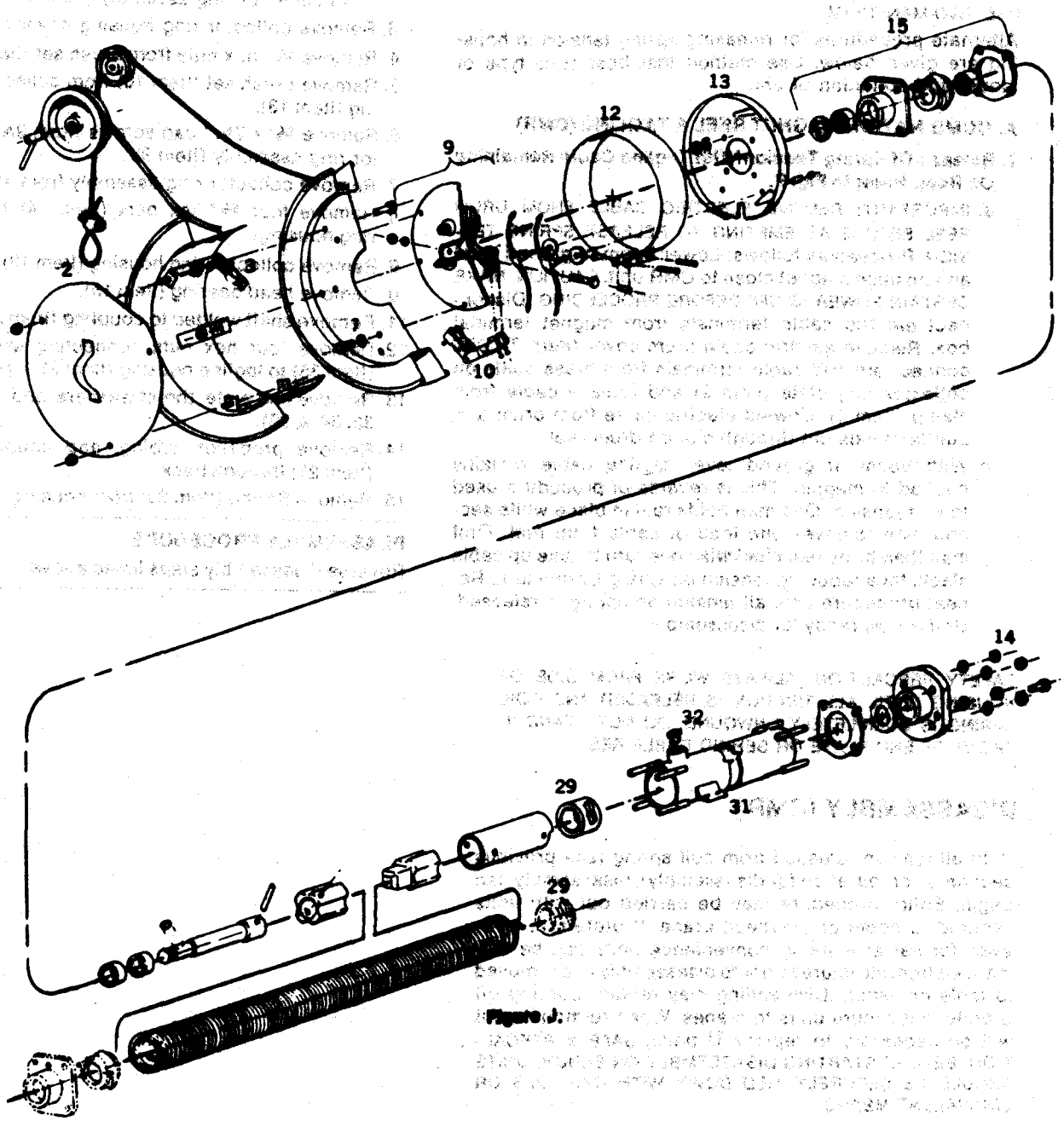


Figure J.

SPECIFICATIONS AND RECOMMENDATIONS FOR SINGLE BARREL CMR

COMBINATION & STANDARD MAGNET REELS											
Model	Housing Length	Tagline Cable Pullout From Neutral	Maximum Turns of Magnet Reel	Spring Dimension (.393 wire)	Dia.	Approx. Weight	DC Volts	Cold Amps	Elect. Cable	[illegible]	Headroom (inch)
624	30"	45 ft.	8	6" dia., 24" closed, 36" free	26"	900	230	8	No. 10	2	23

USED WITH HIGH VOLT-LOW AMP DC POWER