

# Electric Eel<sup>®</sup>

## MODEL Z5-AF Drain Cleaning Machine

### Operator's Manual



**!! DANGER !!**

**FOR YOUR SAFETY**

Before you operate or  
maintenance this equipment,  
READ this manual carefully  
and completely!

Purchase Date: \_\_\_\_\_

Serial Number: \_\_\_\_\_



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*Proudly Made in The USA Since 1939*

# Description, Specifications, and Equipment

## DESCRIPTION

The Electric Eel Model Z5-AF Drain Cleaning machine is the newest of Electric Eel's complete line of quality sewer and drain cleaning equipment. This cage/drum machine is specifically designed for 1 ¼" to 3" lines through 100 feet.

## STANDARD FEATURES

1. Automatic cable feeder that advances and retrieves cable with the push of a lever.
2. Cable guide attached to feeder to ensure operator does not handle rotating cable.
3. Power cord is wrapped around conveniently placed brackets for safe, problem-free transport.
4. Additional rear bar shields motor and allows for flexible two-position operation.
5. Easy-to-use foot-operated switch allows the use of both hands when working with cable guide and feeder.
6. Ground Fault Circuit Interrupter (GFCI) safety feature comes standard with 20 foot power cord.

7. Heavy duty, durable tubular frame provides stability and balance while in operation.
8. Cast aluminum nose cone bracket with bearing supported guide tube.
9. Cable available in ½" certified music wire with genuine galvanized aircraft wire inner core for longer life.
10. Unique inner cage/drum design helps to prevent cable buckling.
11. Built-in cage/drum-shaft slip clutch minimizes cable and tool breakage and provides overload protection.
12. Impact-resistant plastic belt-guard for additional operator safety.
13. Rugged 1/3 H.P. motor delivers optimum cleaning power.
14. Wheel brake to stabilize unit while in operation.
15. 10" wheels for better maneuverability.
16. Handle folds down for easy transport and storage.

## SPECIFICATIONS

- **Cage/Drum Capacity:** Up to 100 ft. of 1/2" certified music wire with genuine galvanized aircraft wire inner core cable.

- **Line Capacity:** 1 ¼" to 3" lines up to 100 Ft.
- **Weight:** Machine only – 61 lbs.
- **Frame:** 1" diameter tubing framework
- **Clutch:** Dual disc cage/drum shaft slip clutch
- **Motor:** 1/3 H.P.

## STANDARD EQUIPMENT

Electric Eel Model Z5-AF comes complete with:

- Z5-AF unit with auto cable feeder
- 75 Ft. of ½" certified music wire with genuine galvanized aircraft wire inner core cable
- 5 Cleaning tools including:
  - DN-10 general purpose tool
  - DN-11 drill for hard stoppages
  - DN-12 finishing tool
  - DN-14 drill for 2" – 3" lines
  - DN-16 clean up tool for 3" lines

## SAFETY INSTRUCTIONS

The following safety rules for operating Electric Eel Sewer and Drain Cleaning equipment **MUST** be read carefully before operating this machine.

**WARNING:** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).


DANGER






To prevent serious injuries including:

- Shock, electrocution or burns due to improper grounding.
- Serious injuries to body, limbs or hands and feet due to cables that twist, kink and break.
- Eye injuries caused by loose cable, thrown debris or splashed water.

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READ SAFETY INFORMATION THOROUGHLY!

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DANGER


TO PREVENT SERIOUS BODILY INJURY:

### GENERAL SAFETY

1. **ALWAYS** wear **HEAVY** leather gloves and safety glasses when operating equipment.
2. Place machine cable guide at pipe opening. **NEVER** have exposed cable.
3. **DO NOT** wear loose clothing or jewelry while operating this machine.
4. Use foot switch to operate machine while keeping good footing and balance at all times. **DO NOT OVERREACH.**

5. Machine, foot switch and cable should be operated by one person only. Additional personnel in the working area should observe all safety instructions.
6. **ALWAYS** keep all guards in place during operation.
7. **ALWAYS** wear rubber-soled non-slip shoes.
8. **ALWAYS** avoid direct contact of skin, facial area and especially eyes with drain water. Chemical compounds used in drains can result in serious burns and other injuries.
9. Replace fittings, cables and any rotating parts as soon as they become visibly worn. Replace any cables which become fractured, bent, kinked, or any other damage occurs.
10. **NEVER** attempt to service equipment beyond the recommendations of the operating instructions. All other servicing should be referred to qualified service personnel.
11. To maintain safe operation, use only identical replacement parts and cables from Electric Eel.
12. **ALWAYS** keep clear of rotating cages/drums, shafts, pulleys, belts, or other rotating parts.



**DANGER**



**TO PREVENT SERIOUS BODILY INJURY AND TO AVOID DANGER FROM ELECTRICAL SHOCK:**

1. **ALWAYS** use a Ground Fault Circuit Interrupter (GFCI) with a properly grounded outlet for all electrical cords, connections, and parts as installed by factory and **DO NOT** make any alterations.
2. **NEVER** use machine in damp or wet conditions.
3. **NEVER** expose machine to rain.
4. **THE USER SHOULD NEVER ATTEMPT TO SERVICE THE ELECTRICAL COMPONENTS.** For safety reasons, all electrical replacement components should be installed by a qualified electrician.
5. **ALWAYS** disconnect the power cord from the electrical source before making any adjustments or changes to power units.
6. If an extension cord is used, the power source **MUST** be equipped with a Ground Fault Circuit Interrupter (GFCI) and properly grounded.
7. Only use 14/3 or larger three-wire extension cords with three-prong grounding plugs and three-pole receptacles.

8. When using extension cord outdoors, only use those intended for outdoor use. (Indicated on cord by suffix "W-A" after cord type.)

## **THE GROUND FAULT CIRCUIT INTERRUPTER (GFCI)**

This machine is equipped with a Ground Fault Circuit Interrupter (GFCI) which is designed to prevent a serious electrical shock. This device should be tested on the job site before putting the machine into operation as follows:

1. To ensure protection against electric shock, test the device before each use. When test button is pushed in, the indicator light should go off. Reactivate the device by pushing the reset button in. If the indicator light goes on, the device is ready for use. **DO NOT** use the device if the indicator light does not go on when reset or if the indicator light remains on, when the test button is pushed in.
2. This device does not guard against electric shock resulting from defects or faults in any wiring supplying power to this device, or from contact with both circuit conductors.



**TO PREVENT SERIOUS BODILY INJURY AND TO AVOID DANGER FROM ROTATING CABLES AND EQUIPMENT:**

1. **USE CAUTION AT ALL TIMES.** Cable can twist or kink and cause serious injury. Fingers or other body parts can be caught in rotating parts.
2. **NEVER** handle the rotating cable.
3. **NEVER** handle any cable under tension. Relieve all tension build up before attempting to handle cable.
4. **NEVER** operate machine without cable guide in place.
5. Use feeder to advance or retract cable with motor switch in **FORWARD** position for **ALL** cleaning operations.
6. **DO NOT** continue to operate machine when cleaning tool becomes stuck in obstruction. **Excess torque on a cable could cause it to fracture.** (Refer to operating instructions to free cleaning tool.)
7. **NEVER** force a tool and cable into a pipeline blockage. This may overload the cable or tool and cause it to fracture.
8. **ALWAYS** wear **HEAVY** leather gloves and safety glasses when operating machine.
9. Use correct tool for the job or application. Check the tool listing for the correct tool and line size.

10. To maintain safe and efficient operation, thoroughly clean all cables with water after use. Acids in the drain and sewer lines attack and deteriorate the metal of the cables and tools. Deterioration will cause weakness in cable and tools and result in fracture or breakage.
11. Replace all cables and tools that become deteriorated, worn, kinked, bent, or any other damage that occurs.

## MACHINE SET-UP



### **TO PREVENT SERIOUS BODILY INJURY:**

**THIS MACHINE IS EQUIPPED WITH A CAGE/DRUM/DISC CLUTCH. THE MAXIMUM TORQUE OF THE CLUTCH SETTING MUST NEVER EXCEED 35 INCH/LBS.**

**NEVER USE ANY CABLE IN THIS MACHINE OTHER THAN ELECTRIC EEL GALVANIZED AIRCRAFT WIRE REINFORCED MUSIC WIRE CABLE IN 1/2" DIAMETER.**

**DISCONNECT POWER CORD BEFORE ANY SET UP OR MAINTENANCE IS ATTEMPTED.**

This machine comes completely assembled except for cable.

## CAGE/DRUM REMOVAL

1. Disconnect power cord before any set up or maintenance is attempted.
2. Remove auto cable feeder from mount by removing two (2) 5/16" bolts on the underside of the mount.
3. Remove pulley guard by unscrewing the thumb screw/knob on the top of the pulley guard.
4. Push down on motor to compress spring. This will allow the belt to be removed.
5. Pull spring loaded pin on rear of cable axle.
6. Slide cage/drum unit with clutch assembly forward.
7. Use reverse procedure for reinstalling cable assembly.
8. Reinstall pulley guard.
9. Reinstall feeder on mount.

## CABLE INSTALLATION

1. Disconnect power cord before any set up or maintenance is attempted.
2. Completely uncoil cable to be installed. This will help avoid unnecessary kinking.
3. Insert approximately 12" of cable through the feeder and the guide tube into the cage/drum. The cable should coil in the

cage/drum in the same direction as the decal indicates on the rear of the cage/drum.

4. Attach cable anchor (DN-6) to end of cable.
5. Grasp cable inside the cage/drum near the end and position cable anchor on end so that the 1/4-20 screw can be inserted through the hole in the rear of the cage/drum into the cable anchor.
6. Insert remaining cable into the cage/drum.

## **AUTO FEEDER ALIGNMENT**

- Disconnect power cord before any set up or maintenance is attempted.
- Machine is shipped with auto cable feeder aligned with opening in nose cone of cage/drum.
- If feeder mounting post height or alignment is altered, loosen the set screw which attaches the feeder to the mounting post. Insert a 5/8" diameter rod through the feeder and align with the nose cone opening. Retighten set screw and locking nut. Remove the rod from the feeder. Feed cable back through the feeder.

## **MAINTENANCE**

- Disconnect power cord before any set up or maintenance is attempted.
- Maintenance on the Model Z5-AF machine should be minimal for the life expectancy of the machine.
- The cage/drum/clutch should be exercised daily.

Exercise as follows:

1. Wearing **HEAVY** leather gloves, hold pulley firmly with one hand and grasp cage/drum with the other hand.
2. Rotate cage/drum back and forth several times ensuring that the cage/drum clutch assembly slips (the cage/drum clutch assembly moves while pulley remains fixed).

## **CLUTCH ADJUSTMENT**

- Disconnect power cord before any set up or maintenance is attempted.
- The clutch setting of 35 inch/lbs. must **NEVER** be exceeded.
- The clutch setting in most cases will not need to be adjusted for the life of the machine.
- If the clutch needs to be reset, the following procedure should be used:

1. Obtain an inch/lbs. torque wrench and E-20 from Electric Eel.
  2. Fit the adapter to the nose cone of the Model Z5-AF machine as per included instructions with the adapter.
  3. Check the setting of the clutch with the torque wrench.
- If adjustment is needed, proceed as follows:
    1. Remove feeder as described in cage/drum removal.
    2. Remove 4 cage/drum bolts from aluminum backing plate. This will allow cage/drum removal and expose clutch mechanism.
    3. Move clutch adjustment bolt 1/8<sup>th</sup> of a turn tighter or looser as needed and recheck setting after reassembly of cage/drum. Repeat the procedure as needed to obtain 35 inch/lbs. maximum.
    4. Reassemble and check all 4 bolts for tightness.
    5. Reinstall feeder on mount.

**OPERATOR MUST BE THOROUGHLY FAMILIAR WITH ALL SAFETY INSTRUCTIONS BEFORE OPERATING EQUIPMENT.**

### **FOR AUTOMATIC CABLE FEEDER**

1. Attach a small spear-type cleaning tool to the end of the cable. This tool will enable you to bore a starter hole in the obstruction, allowing backed-up water to drain.
2. Place machine cable guide at pipe opening. **NEVER** have exposed cable.
3. Position foot actuator for easy operator accessibility.
4. Make sure switch is in the **FORWARD** position. Run machine in **FORWARD** at all times during cleaning operation.
5. Place one **HEAVY** leather gloved hand on the cable guide to control cable as it rotates inside; and use the other hand to work the Feeder Control Lever. **DANGER:** Operator must keep one **HEAVY** leather gloved hand on cable guide at all times during operation.
6. In order to feed cable, the operator must move the feeder control lever from **NEUTRAL** (the position midway between FORWARD and REVERSE) to the **FORWARD** position, while depressing the foot actuator.

## **OPERATING INSTRUCTIONS**



**NOTE:** The speed at which the cable is fed initially can be controlled by moving the feeder control lever toward **FORWARD** to increase speed and moving back toward **NEUTRAL** to slow speed.

**NOTE:** If the feeder control lever is initially put in **FORWARD** but the cable is not advancing, then turn the cable tension knob in a clockwise direction until the cable begins to advance. **DO NOT** over-tighten cable tension knob as it may damage feeder bearings.

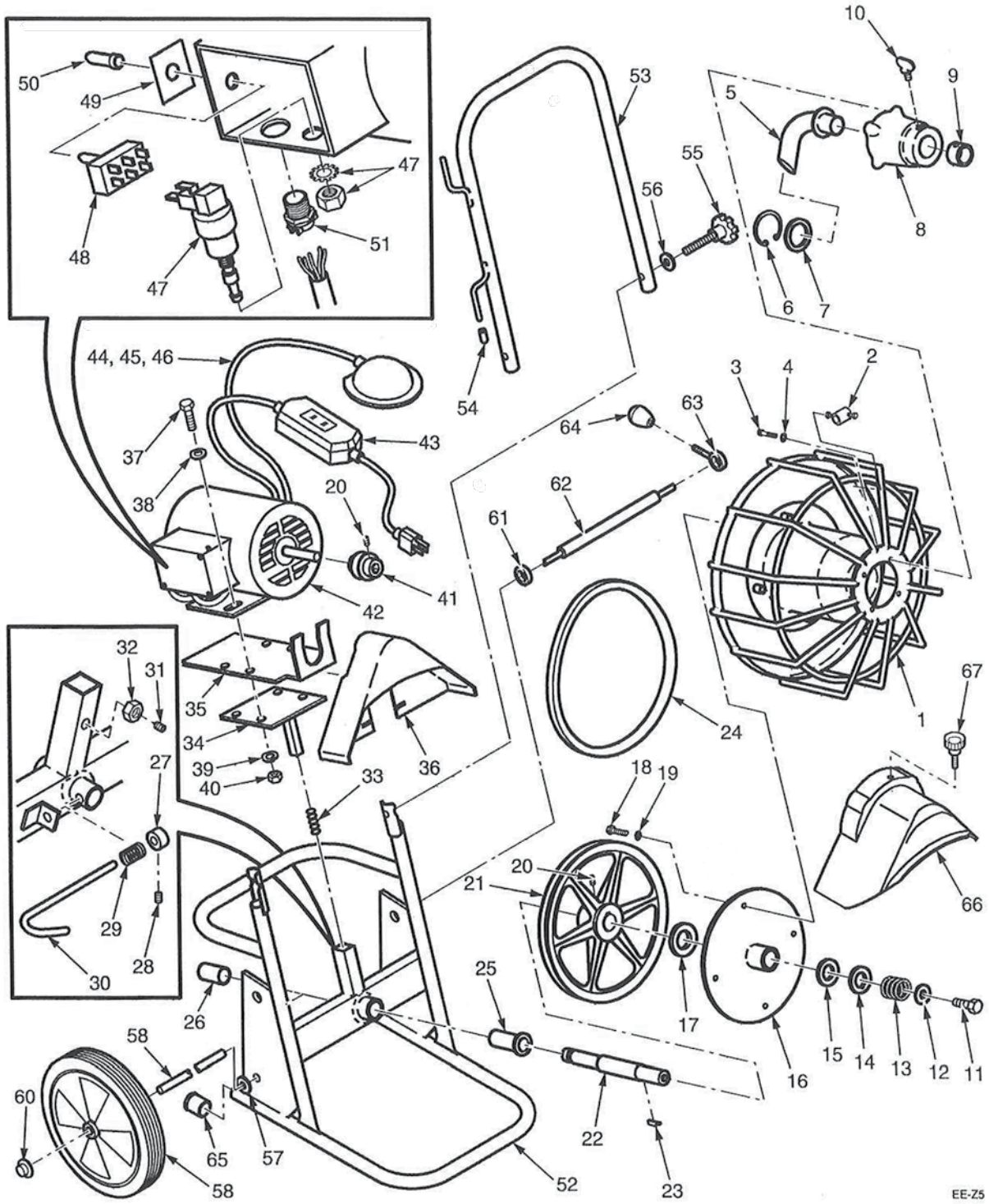
7. Continue to automatically feed cable until obstruction is met. When cable begins to drag or rotation becomes difficult, move the lever to the **NEUTRAL** position and allow tool to cut away at the obstruction.  
**DANGER: NEVER** force the cable or tool into the obstruction. Choose the proper feeding speed in order to give a smooth cutting action.
8. If tool becomes hung up in the obstruction, move control lever to the **REVERSE** position to back out tool.
9. After tool as been removed from obstruction, move control lever back to the **FORWARD** position and continue to work through obstruction.
10. To retrieve cable from line, move control lever to the **REVERSE** position (while continuing to operate cage/drum in forward rotation) and cable

will back out of line and feed into cage/drum.

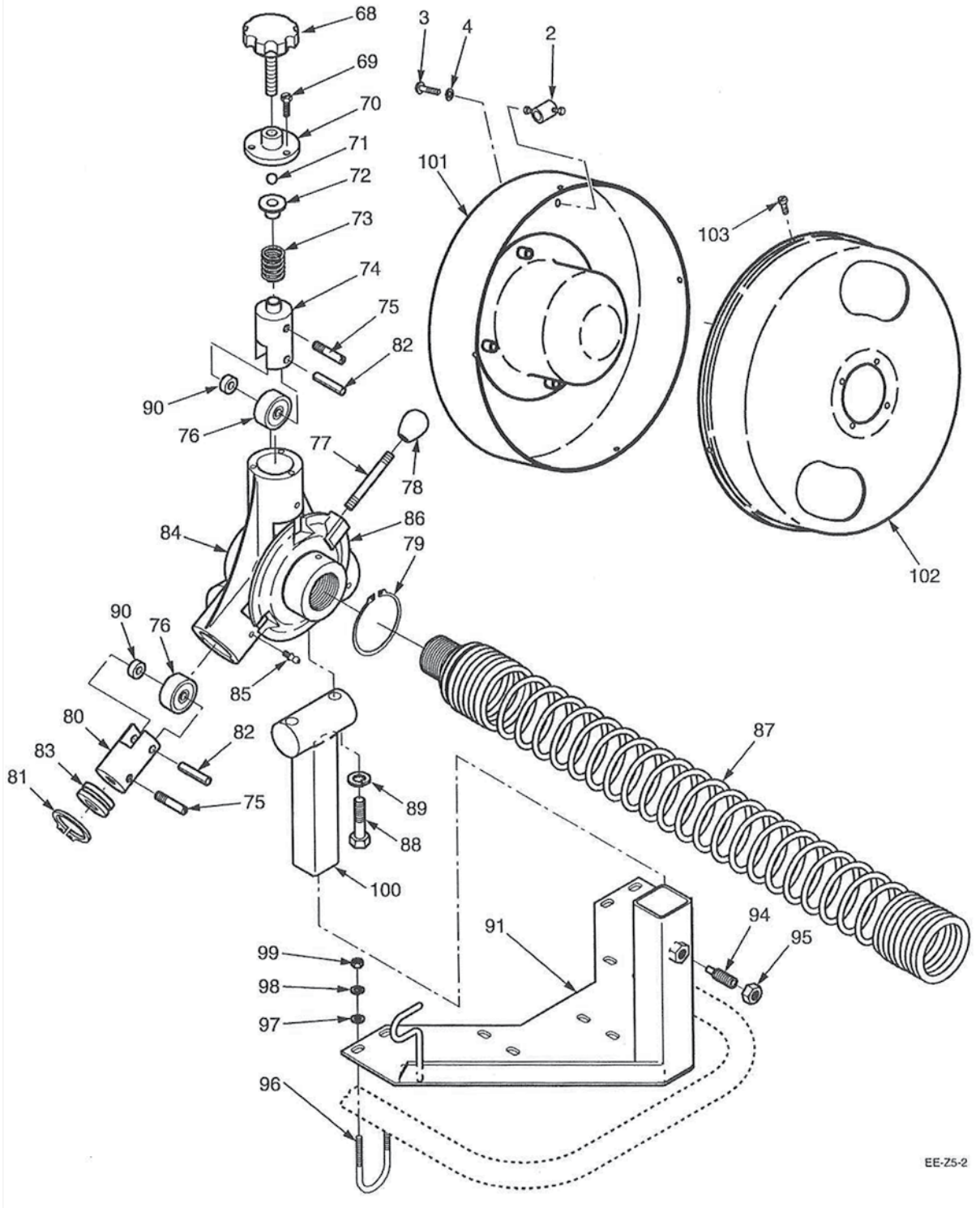
**NOTE:** It is recommended to use a continuous flush of water to clean tool, cable, and sewer line as cable is retrieved.

11. When tool is close to cleanout opening, return Control Lever to **NEUTRAL** position, release foot actuator, and allow machine to come to a complete stop.  
**DISCONNECT POWER CORD.**
12. Pull remaining cable and tool from sewer line and hand-feed cable back into machine.

# MODEL Z5 DRAIN CLEANING MACHINE - AUTO FEED



MODEL Z5 DRAIN CLEANING MACHINE - AUTO FEED



## MODEL Z5 DRAIN CLEANING MACHINE - AUTO FEED

ITEM NUMBER	PART NUMBER	DESCRIPTION	AMT
1	Z-6*	Welded Drum/Cage Assembly . . . . .	1
2	DN-6	Cable Anchor . . . . .	1
3	MS102412HH	10-24 x 1/2 Hex Head Machine Screw . . . . .	4
4	LW10	Lockwasher . . . . .	4
	ED-4A**	Guide Tube and Bracket Assembly . . . . .	1
5	ED-4	Guide Tube). . . . .	1
6	RR175	Retaining Ring . . . . .	1
7	N-5-4	Retaining Washer . . . . .	1
8	ED-5	Bracket . . . . .	1
9	ED-6	Collar. . . . .	1
10	WS516	5/16-18 Wing Screw . . . . .	1
	EE-1A***	Drive Assembly w/Clutch 1 . . . . .	1
11	CSHH12201	1 1/2-20 x 1 Hex Head Capscrew . . . . .	1
12	WA716P	Flatwasher . . . . .	1
13	N-14	Spring . . . . .	1
14	EE-3	Drive Disc . . . . .	1
15	EE-4	Front Friction Disc . . . . .	1
16	EE-2	Drum Mounting Plate . . . . .	1
17	EE-5	Rear Friction Disc . . . . .	1
18	CSHH142034	1/4-20 x 3/4 Hex Head Capscrew . . . . .	4
19	LW14	Lockwasher . . . . .	4
20	SS51618516	5/16-18 x 5/16 Set Screw . . . . .	2
21	EE-6	10" Pulley). . . . .	1
22	EE-1	Drive Shaft . . . . .	1
23	N-15	Clutch Key. . . . .	1
24	4L390	V-Belt). . . . .	1
25	OBSF243216	Front Bronze Bushing . . . . .	1
26	OBSS243220	Rear Bronze Bushing . . . . .	1
27	EE-8	Retainer Pin Collar . . . . .	1
28	SS103218	10-32 x 1/8 Set Screw . . . . .	1
29	EE-15	Retainer Pin Spring . . . . .	1
30	EE-7	Retainer Pin . . . . .	1
31	SS5162458DP	5/16-24 Set Screw Dog Point . . . . .	1
32	NU51624FHP	5/16-24 Hex Nut . . . . .	1
33	EE-9	Motor Tension Spring . . . . .	1
34	R-23	Motor Mount . . . . .	1
35	R-22	Adapter Plate. . . . .	1
36	EE-12	Belt Guard . . . . .	1
37	CSHH516181	Motor Mount Capscrews. . . . .	4
38	WA516S	Motor Mount Flatwashers . . . . .	4
39	LW516	Motor Mount Lockwasher. . . . .	4
40	NU51618FHP	Motor Mount Nuts. . . . .	4
41	N-8	Motor Pulley . . . . .	1
42	EM-1/3	1/3 H.P. Motor w/Fwd-Rev Switch . . . . .	1

**MODEL Z5 DRAIN CLEANING MACHINE - AUTO FEED**

ITEM NUMBER	PART NUMBER	DESCRIPTION	AMT
43	GFCI	Ground Fault Circuit Interrupter w/Cord . . .	1
44	FP-1A****	Air Foot Pedal Transmitter w/Air Hose . . . .	1
45	FP-1	Foot Pedal Only. . . . .	1
46	FP-2	Air Hose Only . . . . .	1
47	TBS3218	Air Activated On/Off Switch. . . . .	1
48	SW-FR	Forward/Reverse Switch . . . . .	1
49	SW-FRP	Forward/Reverse Switch Plate . . . . .	1
50	SW-BOOT	Toggle Switch Boot. . . . .	1
51	TSC12	Two-Screw Connector. . . . .	1
	Z-1A*****	Frame Assembly . . . . .	1
52	Z-1	Frame Base . . . . .	1
53	Z-2A	Frame Handle . . . . .	1
54	DL6CAP	Cord Hook Cap . . . . .	2
55	DE-7	Tension Handle . . . . .	2
56	WA38S	Flatwasher . . . . .	2
57	WA12S	Flatwasher . . . . .	8
58	Z-5	Axle . . . . .	1
59	C-W10	10" Diameter x 5/8 Wheel. . . . .	2
60	PN12	Pushnuts . . . . .	2
61	DF-8	Brake Rod Collar. . . . .	1
62	Z-4	Brake Rod . . . . .	1
63	Z-3	Brake Lever. . . . .	1
64	DE-14	Brake Lever Knob. . . . .	1
65	RD1CP16	Cap Plug . . . . .	2
66	EE-16	Belt Guard . . . . .	1
67	TS14	Thumb Screw . . . . .	1
68	FE-4	Tension Handle . . . . .	1
69	CSSH83212	8-32 x 1/2 Socket Head Cap Screw. . . . .	3
70	FE-3	Top Feeder Cap . . . . .	1
71	BB-38	3/8" Ball Bearing. . . . .	1
72	DE-8	Ball Baring Retainer . . . . .	1
73	FE-5	Tension Spring. . . . .	1
74	FE-6	Top Feeder Insert. . . . .	1
75	DE-12	Feeder Control Fingers . . . . .	3
76	FE-7	Feeder Bearing . . . . .	3
77	DE-13	Control Lever . . . . .	1
78	DE-14	Control Lever Knob. . . . .	1
79	RR168	Retaining Ring . . . . .	1
80	FE-8	Lower Feeder Insert. . . . .	2
81	RR100	Retaining Ring . . . . .	2
82	RP5161516	5/16 x 1" Roll Pin . . . . .	3
83	FE-9	Control Bearings . . . . .	2
84	FE-1	Feeder Body . . . . .	1
85	GZ1428S	Grease Zerk 1/4-28 Short . . . . .	3
86	FE-2	Feeder Control Plate . . . . .	1

**MODEL Z5 DRAIN CLEANING MACHINE - AUTO FEED**

ITEM NUMBER	PART NUMBER	DESCRIPTION	AMT
87	EZ-GTA	Guide Spring Assembly . . . . .	1
88	CSHH51618112	5/16-18 x 1 1/2 Hex Head Cap Screw . . . . .	2
89	LW516	5/16 Lockwasher . . . . .	2
90	C145181	Spacer . . . . .	3
91	EZ-1A	Auto Feed Base . . . . .	1
92	MS83214SS	8-32 x 1/2 Mechine Screw . . . . .	4
93	ZP-2	Front Cable Drum . . . . .	1
94	SS5162458DP	5/16-24 x 5/8 Dog Point Set Screw . . . . .	1
95	NU51624FHP	5/16-24 Hex Nut . . . . .	1
96	UB1420	1/4-20X U Bolt . . . . .	4
97	WA14S	1/4" Flatwasher . . . . .	4
98	LW14	1/4 Lockwasher . . . . .	4
99	NU1420FHP	1/4-20 Hex Nut . . . . .	4
100	EZ-2A	Feeder Mounting Post Assy . . . . .	1
101	ZP-1	Rear Cable Drum w/Inner Drum . . . . .	1
102	MS83214SS	8-32 x 1/2 Mechine Screw . . . . .	4
103	ZP-2	Front Cable Drum . . . . .	1

- \* Includes Item 2
- \*\* Includes Items 5-10
- \*\*\* Includes Items 11-23
- \*\*\*\* Includes Items 45 and 46
- \*\*\*\*\* Includes Items 25-32 and 52-59

**NOTES:**

# *Electric Eel*®

**CALL TOLL FREE  
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