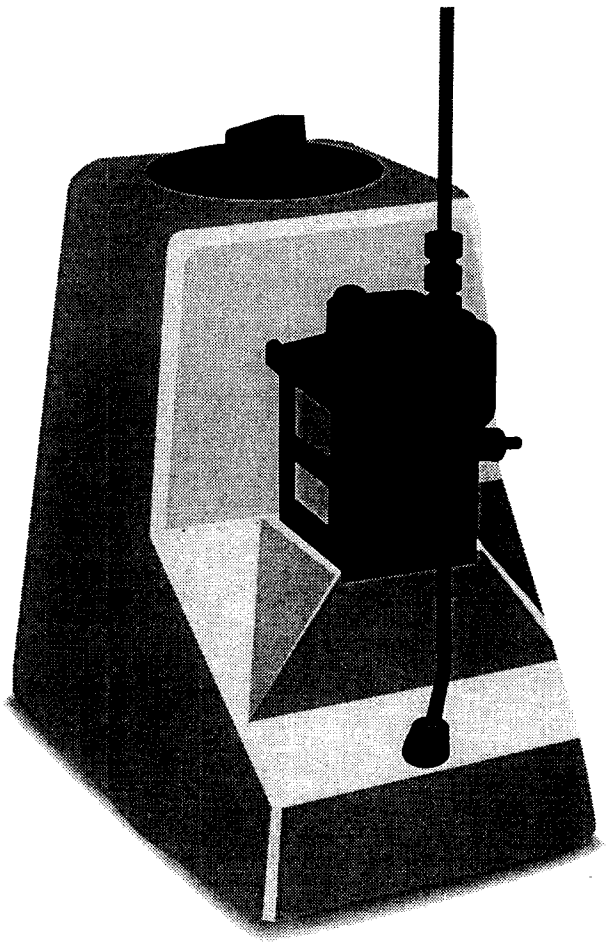
FPUTS1500 Series

Pump/Tank Metering System



OMEGA®

An OMEGA Technologies Company

Operator's Manual

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Unpacking Information

Remove the Packing List and verify that you have received all equipment, including the following (quantities in parentheses):

Pump and Tank system (1)
6 inches of clear PVC suction tubing with Flow Indicator (1)
5 Ft. of opaque high pressure discharge tubing (1)
Mounting Hardware (1)
Heavy-duty Threaded Injection/Anti-siphon Valve (1)
Operator's Manual (1)

If you have any questions about the shipment, please call the OMEGA Customer Service Department.

When you receive the shipment, inspect the container and equipment for signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE

The carrier will not honor damage claims unless all shipping material is saved for inspection. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

TABLE OF CONTENTS

Chapter 1 Description

The FPUTS1500 Series is a practical, efficient, self-contained metering system made up of a heavy-duty tank and metering injector pump. The sturdy polyethylene tank is extra thick for durability and is available in 7, 15 or 30 gallon capacity. The tank is rectangular in shape for convenient storage and features a multi-position opening that lets the operator open, close, or vent the lid.

The system includes the FPUDT1500 metering injector pump. Features include a heavy-duty cartridge valve pump head of injection-molded polypropylene, outfitted with PVDF fittings, ceramic ball checks, Viton O-ring seals, and Hastelloy C valve springs; a durable Teflon/EPDM diaphragm; attractive weather-resistant black Valox housing; ball bearing gear motor; and a flow indicator.

The FPUTS1500 system may also be ordered with a built-in electronic percentage timer for even more precise feed control. This option lets the operator adjust the feed with just the timer or adjust both the stroke of the diaphragm and the timer.

1.1 Features

- Simple Intake and Discharge Check-valve Pump Design
- Quick-adjusting Feed Mechanism
- 125 PSI Maximum Pressure Rating
- Polyethylene Tank with UV Inhibitor
- Tank-Flooded Liquid End
- 7, 15, or 30 Gallon Tank Sizes

1.2 Available Models

1.2.1 Tanks

Part Number	Capacity
FTNK-7	7 gallons
FTNK-15	15 gallons
FTNK-30	30 gallons

1.2.2 Pumps*

Part Number	Max. GPD	Max.mL/min	Strokes/min	Max. PSI
FPUDT1501	8.3	22	14	125
FPUDT1503	17.4	46	30	125
FPUDT1505	29.2	77	45	125
FPUDT1507	34.9	92	60	125
FPUDT1509	68.4	180	125	125

***Pump Options**

To get built-in control stroke and timer, add suffix "-D" to part number

For 230 Vac/60Hz, add suffix "–230V60" to part number

For 220 Vac/50Hz, add suffix "–220V50" to part number

For 24 Vac/60Hz, add suffix "–24V60" to part number

1.2.3 Pump/Tank System**

7-Gal. Capacity Part Number	15-Gal. Capacity Part Number	30-Gal. Capacity Part Number	Strokes /min.	Max. GPD	Max. mL/min.
FPUTS1501	FPUTS1501-15	FPUTS1501-30	14	8.3	22
FPUTS1503	FPUTS1503-15	FPUTS1503-30	30	17.4	46
FPUTS1505	FPUTS1505-15	FPUTS1505-30	45	29.2	77
FPUTS1507	FPUTS1507-15	FPUTS1507-30	60	34.9	92
FPUTS1509	FPUTS1509-15	FPUTS1509-30	125	68.4	180

****Pump/Tank System Option**

For units with dual timer pump, add suffix "-D" to part number

Chapter 2 Installation

2.1 Locating the Pump and Mounting

CAUTION

Always wear goggles and protective clothing when working around corrosive materials

CAUTION

Be sure your installation does not constitute a cross-connection. Check your local plumbing code.

- Choose a well-ventilated area located near the electrical supply and injection point.
- The injector must be mounted on the tank. See the pump installation section below.
- The tank is made of sturdy polyethylene plastic and is resistant to many chemicals.

2.2 Installing the Pump

1. Install the mounting bracket (#12 in parts diagram and parts list in the "Parts of the Pump" section) to the back of the pump using one of the black Phillips-head screws (#13).
2. Pre-tighten the other two black Phillips-head screws (#13) into the tank wall inserts.
3. Secure the pump to the tank by slipping the mounting bracket over the screws in the tank wall inserts.

2.3 Installing the Suction Tube

1. Attach the bottom of the flow indicator assembly (#70000-700, not shown in parts list) to the footvalve (C-340-6V, #28 in parts diagram and parts list). Tighten the tube nut to the footvalve neck. Make sure the arrow and the face of the flow indicator assembly are facing upward in the direction of the flow.
2. Attach the top of the flow indicator assembly to the bottom cartridge valve of the pump head. Tighten the tube nut to the neck of the cartridge valve.
3. Make sure all of the tube nuts are securely tightened (hand tighten only).

2.4 Installing the Discharge Tube

1. Connect the opaque discharge tube to the outlet valve on the top of the pumphead. Do not overtighten the fitting.
2. Install the injection fitting to existing plumbing.
3. Trim the discharge tube to the minimum required to connect to the injection fitting.

2.5 Electrical Connections

★★★WARNING – RISK OF ELECTRIC SHOCK★★★

Be certain you connect the unit to the proper supply voltage. Using the incorrect voltage will damage the injector and may result in injury. (The unit's voltage requirement is printed on the serial number label.)

- 115V Model Pumps are supplied with a groundwire conductor and a grounding-type attachment plug. To reduce the risk of electric shock, be certain that it is connected only to a properly-grounded, grounding-type receptacle. A ground fault interrupter (GFI) receptacle is recommended for use in wet locations.
- 24V and 230V Model Pumps are supplied with a junction box and cover. To reduce the risk of electrical shock when field wiring, be certain that a grounding conductor is attached to the green grounding conductor, located inside the junction box.

2.6 Assembly Drawing

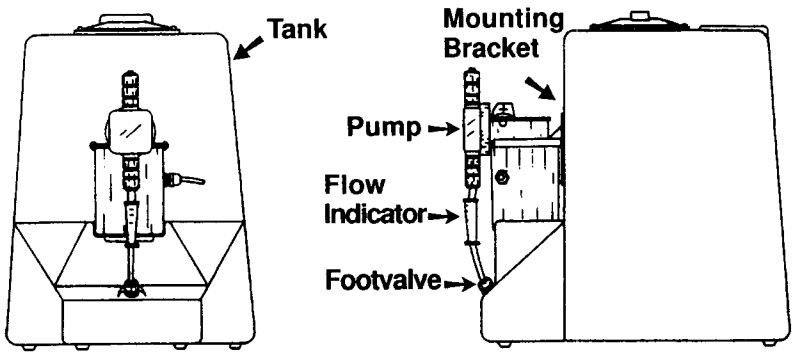

Figure 2-1. Parts of the Pump and Tank System

Chapter 3 Wiring

115Vac Wiring Color Code

Green	Ground
Black or yellow	Hot
Blue	Common

220Vac Wiring Color Code

Green	Ground
Black or yellow	Hot
Brown	Common

230Vac Wiring Color Code

Green	Ground
Black or yellow	Hot
Red	Common

24Vac Wiring Color Code

Green	Ground
Blue	Hot
White	Common

Chapter 4 Operation

4.1 Priming

1. To aid in priming and to reduce vapor lock, hold the discharge tubing in a continual upward slope **AWAY FROM YOUR FACE AND BODY.** Be certain the footvalve is immersed in your solution.
2. Turn the stroke adjustment knob to MAX.
3. Turn on the pump.
4. When the fluid nears the injection end of the discharge tubing, turn off the pump and connect the tubing to the injection fitting. Check all connections for leaks.

DO NOT OVER TIGHTEN!

4.2 Adjusting the Feed Rate

The stroke length can be adjusted from 0 to 100% by means of a mechanical, cam-style adjustment assembly.

1. With the pump running, loosen the set screw.
2. Turn the adjustment knob to the desired setting on the adjustment dial.
3. While holding the adjustment knob, tighten the set screw.

4.3 Measuring the Feed Rate

The pump output may vary due to installation factors such as line pressure, fluid viscosity, suction lift, length of discharge tube, etc. This volumetric test will take into account these factors and give an accurate feed rate measurement. The test should be performed after a break-in period of approximately 50,000 strokes. For example, a 125 rpm pump would require 6.6 hours of break-in.

1. With the pump installed under normal operating conditions, place the footvalve/strainer in a large graduated container.
2. Fill the container with the solution to be injected, and run the pump until all air is removed from the suction line.
3. Refill the container, if necessary, and with the foot valve in the solution, note the amount of fluid in the container.
4. Run the pump for a measured amount of time (e.g., 1 minute) and note the amount of fluid injected. **NOTE:** The longer the testing time, the more accurate the measurement.

4.4 Maintenance Procedures

4.4.1 The Diaphragm

The FPUDT1500 series diaphragm is designed to provide long life with little maintenance. However, the service life can be adversely affected by the chemicals used, amount of back pressure, motor RPM and stroke length. The diaphragm should be checked frequently for signs of wear and replaced when necessary.

4.4.1.1 Procedure for Inspecting and Replacing the Diaphragm

1. Disconnect the electricity to the pump.
2. Release any pressure that may be in the discharge lines.
3. Remove the pumphead cover and the four screws that pass through the pump head, securing it to the motor mount.
4. Visually inspect the diaphragm for signs of splits, cracks, rubber swelling or other damage.
5. To replace the diaphragm, turn the stroke adjustment knob located on the top of the injector to *min* (counterclockwise), and lock it with the set screw.
6. Grasp the diaphragm firmly with both hands (or pliers if necessary) and unscrew the diaphragm from the drive assembly (counterclockwise).
7. Before installing your new diaphragm, be sure that any spacers that may have been located behind the old diaphragm are also on your new diaphragm. These spacers are important and affect the stroke length.
8. Screw the new diaphragm all the way into the drive assembly. (Do not use tools — hand tighten only!)
9. Reset the stroke adjustment knob to MAX (diaphragm at full back stroke).
10. Install the pump head, being sure to tighten the four mounting screws with equal tension.

4.4.2 Cleaning – When Used as a Hypochlorinator

- The most common problems occur from deposits that can build up in the pumphead, footvalve, injection fitting and cartridge valves (wetted parts). Keeping these parts clean will dramatically decrease down time plus increase the life of the pump.
- For simple maintenance cleaning, remove the injection fitting and footvalve/strainer and cartridge valves. Disassemble and clean the individual parts with clean water. For removing harsh deposits that can build up on the wetted parts, clean the individual parts with a weak (5%) solution of muriatic acid (hydrochloric acid).
- Refer to Figures 4-1 and 4-2 when reassembling the valves. Be sure all valves are working properly before installing.

4.5 Parts of the Valves

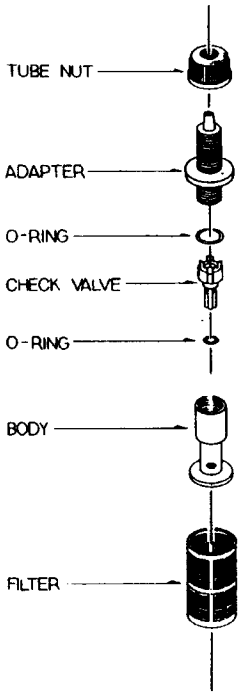

Figure 4-1. Footvalve/Strainer

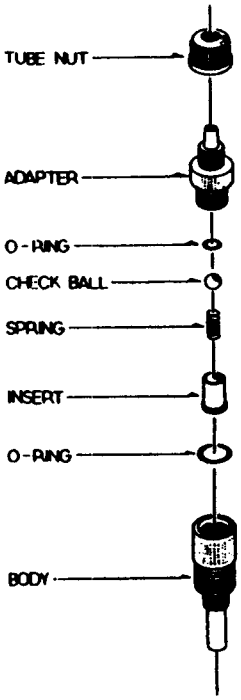

Figure 4-2. Heavy-Duty Injection Fitting

Chapter 5 Parts of the Pump

5.1 Exploded View

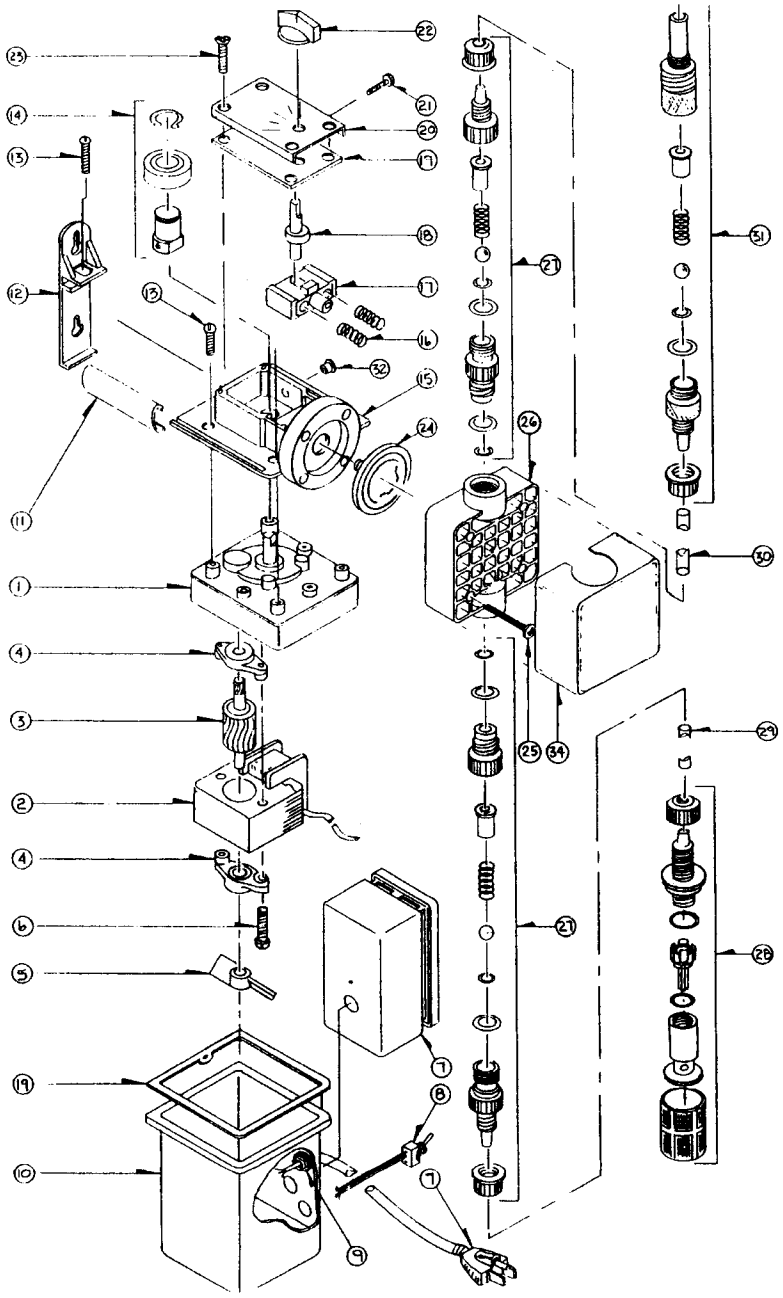

Figure 5-1. Exploded View of the Pump

5.2 Parts List

No.	Part Number	Description
1.	C-618P-14	Gearbox, S/A, 14 RPM
	C-618P-30	Gearbox, S/A, 30 RPM
	C-618P-45	Gearbox, S/A, 45 RPM
	C-618P-60	Gearbox, S/A, 60 RPM
	C-618P-125	Gearbox, S/A, 125 RPM
2.	C-615P-1	Stator, S/A 115V/60Hz, blue/black leads
	C-615P-2	Stator, S/A 230V/60Hz, red/black leads
	C-615P-3	Stator, S/A 220V/50Hz, red/black leads
	C-615P-4	Stator, S/A 24V/60Hz, blue/black leads
	C-615P-6	Stator, S/A 230V/60Hz, red/yellow leads
	C-615P-8	Stator, S/A 220V/50Hz, red/yellow leads
	C-615P-9	Stator, S/A 115V/60Hz, blue/yellow leads
3.	C-616PN	Rotor, S/A with shaft and spacers
4.	C-612PB	Bearing bracket with bearing
5.	C-612F	Fan
6.	C-625	Screw, 8-32 x 2½", Phillips
7.	90010-110	Power cord, SJTW/A, 115V models
	C-308JN	Junction box with cover, 230V & 24V models
8.	A-022	Power switch (optional – 115V models)
9.	A-033N	Cord, strain relief, 115V models
10.	C-1508PN	Motor cover, 115V model with cord
	C-1508PN-1	Motor cover, 115V model with cord & switch
	C-1508PN-2	Motor cover, junction box models
11.	C-628N	Clamp, cover assembly
12.	C-1521N	Tank mounting bracket
13.	C-624N	Screw, 10-32 x ½", Phillips pan black
14.	R-1507	Drive cam assembly, .055 stroke #2
	C-1507-4A	Drive cam assembly, .100 stroke #4
15.	C-1501A	Motor mount, Valox
16.	C-1514N	Spring, return stirrup
17.	C-1513N-1	Stirrup with slide bearings
18.	R-1505N	Adjustment cam, .055 stroke #2
	C-1505N-4	Adjustment cam, .100 stroke #4
19.	90006-547	Gasket Set
20.	C-1503N-2	Cover, adjustment cam with dial
21.	C-1519N	Screw, cam lock, 6-32 x 1.125"
22.	C-1502	Knob, stroke adjustment
23.	C-1525N	Screw, 6-32 x .375", Phillips oval black
24.	C-406T-15N	Diaphragm, S/A, Teflon coated EP
	C-406VT-15N	Diaphragm, S/A, Teflon coated Viton
25.	C-504HD	Screw, Noir HD pumphead, 10-32 x 1¼"
	C-3204	Screw, HD pumphead, 10-32 x 1¾"

Parts List (continued)

No.	Part Number	Description
	C-504	Screw, Std. pumphead, 10-32 x 1.37"
26.	C-535	Pumphead, heavy-duty, Noir, poly-pro
	C-513-1	Pumphead, heavy-duty, large acrylic
	C-513-6	Pumphead, heavy-duty, large poly-pro
27.	C-5378K-6V	Cartridge valve set, Kynar/Viton
	C-5378K-6E	Cartridge valve set, Kynar/EP
28.	C-340-6V	Foot valve/strainer, polypro/Viton
	C-340-6E	Foot valve/strainer, polypro/EP
29.	70000-700	Tubing, suction, 3/8" O.D. x 6" clear PVC w/ flow indicator
30.	C-335-6	Tubing, discharge, 3/8" O.D. x 5 Ft. opaque PE
31.	A-014HD-6V	Injection/anti-siphon valve, ½ PSI, Viton
	A-014HD-6E	Injection/anti-siphon valve, ½ PSI, EP
32.	90008-138	Hole plug, .312 black
33.	C-346	Ceramic weight (not shown)
35.	C-535F-1	Pumphead cover

Chapter 6 Troubleshooting

Symptom	Possible Causes	Corrective Action
Injector will not prime (will not work)	1. Pressure on discharge line 2. Injection and/or footvalve assembly is clogged 3. Valves were reassembled incorrectly after cleaning	1. Release pressure until primed 2. Clean fittings (see Section 4.4.2) 3. See Section 4.5 for installation diagrams
Feed rate is erratic or less than rated on label	1. Stroke adjustment knob is not tightened 2. Pressure at injection point is erratic	1. Tighten set screw 2. The maximum feed rate is calculated at 0 PSI. Increasing pressure will decrease feed rate.
Swollen O-rings	1. O-ring material is not compatible with the chemical being used	1. Replace with compatible O-rings
Feed rate is higher than maximum rated feed on label	1. Solution is being siphoned through pump 2. Anti-siphon valve is not working properly	1. Install an anti-siphon valve with a higher rating 2. Check assembly (see Section 4.5), replace valve if necessary
Bent drive shaft (output gearshaft)	1. Recommended maximum pressure has been exceeded	1. Replace output shaft and install a pressure relief valve.

Chapter 7 Tank Specifications

Tank Model	FTNK-7	FTNK-15	FTNK-30
Weight, kg (lb)	8.6 (19)	12.2 (27)	15.9 (35)
Capacity, gallons	7	15	30
Height (A), cm (in)	44.5 (17.5)	55.9 (22)	68.9 (27)
Width (B), cm (in)	30.5 (12)	39.4 (15.5)	50.8 (20)
Depth (C), cm (in)	40.6 (16)	49.5 (19.5)	61 (24)

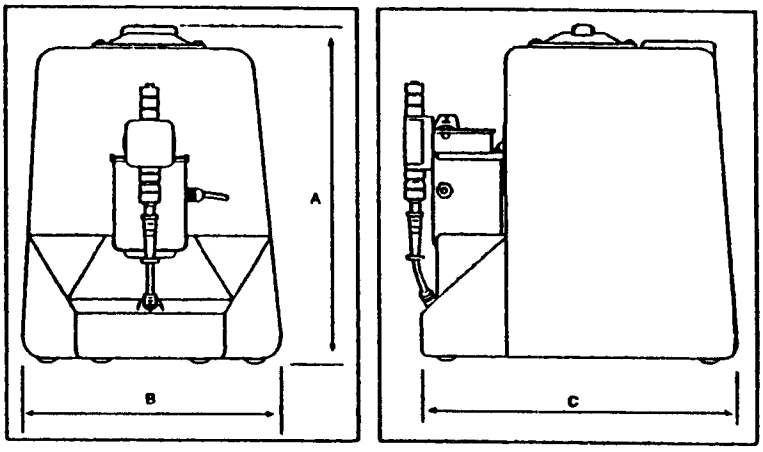

Figure 7-1. Outline Drawing of Tank

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OMEGA warrants this unit to be free of defects in materials and workmanship and to give satisfactory service for a period of **13 months** from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product. If the unit should malfunction, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective it will be repaired or replaced at no charge. However, this WARRANTY is VOID, if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear or which are damaged by misuse are not warranted. These include contact points, fuses, and triacs.

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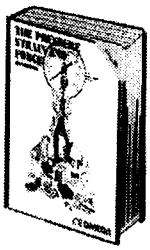

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