

Operating Instructions

LIQUID LIMIT DEVICE

Models: 24-0435 (CL-206)
 24-0437 (CL-204A)
 24-0441/01 (CL-205-8)
 24-0441/02 (CL-205)

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Rev. 0:10/04

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LIQUID LIMIT DEVICE

MODELS 24-0437 (CL-204A), 24-0441/ (CL-205), 24-0435 (CL-206)

I. GENERAL INFORMATION

The Liquid Limit Device, models 24-0437 (CL-204A), 24-0441/ (CL-205) Series, 24-0435 (CL-206), is a device designed to determine the liquid limit of soils. The hard rubber base is formed in a mold to maintain the uniformity of hardness, size and density of all devices. Precision molded cam control parts and nylon bearings provide accurate cup drop and smooth operation. These manufacturing techniques result in a better correlation of test results performed in laboratories around the world.

All models include a removable pin cup assembly for easy cleaning and inspection and ten precision molded **Plastic Grooving Tools** 24-0451 (CL-220). An optional **Grooving Tool** 24-0461 (CL-218A) is available. The 24-0437 (CL-204A) model incorporates a mechanical counter which automatically records the number of cup drops during testing. The 24-0441/ (CL-205) model incorporates a totally enclosed gear motor system which drives the liquid limit device and mechanical counter assembly. The 24-0435 (CL-206) model is a hand operated unit without a mechanical counter.

II. RELATED USER DOCUMENTATION

These operating instructions do not contain the necessary information on the specific test procedures. Please refer to ASTM D-4318 or AASHTO T-89 for additional testing information.

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III. OPERATION

- A. Follow test procedure and operation as given in appropriate documentation.
- B. Position cup to desired distance from base. The hinge position of the cup can be moved forward or backward by loosening the top knurled head screw (Fig. 1, #19; Fig. 2, #13; Fig. 3, #25) and turning the knurled adjusting screw (Fig.1, #1; Fig. 2, #17; Fig. 3, #20). This raises and lowers the cup so its distance from the base is adjustable. After adjustment, secure the desired position by tightening the top knurled head screw.
- C. On models 24-4037 (CL-204A) and 24-0441/ (CL-205) Series, zero the counter by turning the black knob clockwise.
- D. To start the motorized model, 24-0441/ (CL-205) Series, turn the switch to "ON" after connecting the power cord to a power line of appropriate voltage. Model 24-0441/02 (CL-205) requires 110v and Model 24-0411/01 (CL-205-8) requires 220v.
- E. The cup is attached to the sliding holder by a removable pin (Figs. 1 & 2, #3; Fig. 3, #13). Pull the pin out to remove the cup assembly for cleaning and inspection.

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IV. SPECIFICATIONS

A. MODEL 24-0437 (CL-204A)

Counter	Mechanical; records number of cup drops
Cup	Spun brass; pin and slot mounting
Base	Molded hard rubber
Cam	Molded, self-lubricating plastic
Housing	Aluminum; holds cup and drop adjustment parts
Grooving Tools	ASTM type; plastic; pkg. of 10 (included)
Weight	Net 6-1/2 lbs. (2.9 kg)

B. MODEL 24-0441/ (CL-205) SERIES

Gear Motor	Attached to metal base; enclosed in housing with on-off switch
Counter	Mechanical; records number of cup drops
Cup	Spun brass; pin and slot mounting
Base	Molded hard rubber
Cam	Molded, self-lubricating plastic
Housing	Aluminum; holds cup and drop adjustment parts
Grooving Tools	ASTM type; plastic; pkg. of 10 (included)

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Overall Dimensions 8-1/2"w. x 15"d. x 7-1/2"h. (216 x 381 x 191 mm)

Weight Net 14-1/2 lbs. (6.6 kg)

C. MODEL 24-0435 (CL-206)

Cup Spun brass; pin and slot mounting

Base Molded hard rubber

Cam Molded, self-lubricating plastic

Housing Aluminum; holds cup and drop adjustment parts

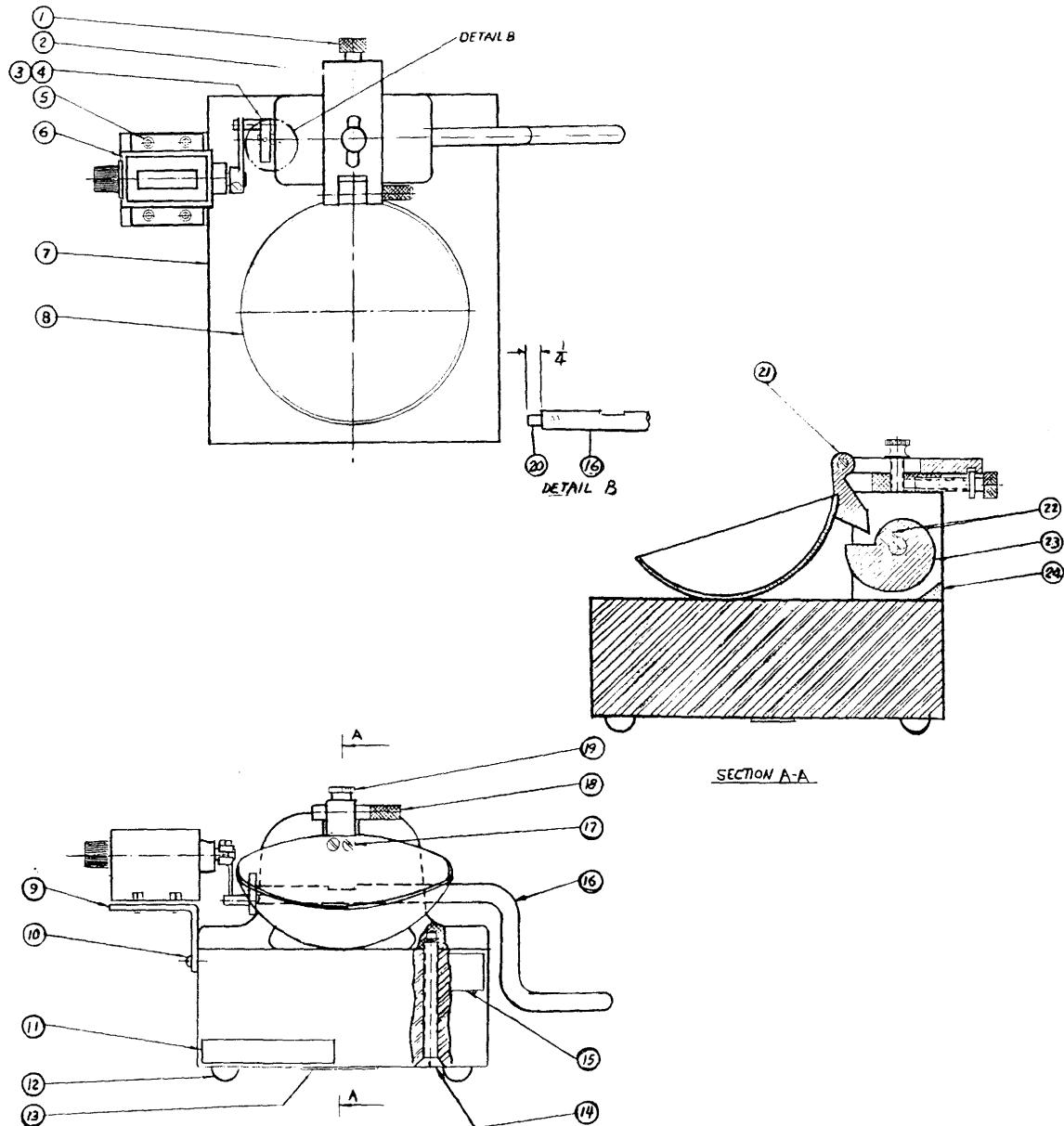
Hand Crank Aluminum

Grooving Tools ASTM type; plastic; pkg. of 10 (included)

Weight Net 5-1/4 lbs. (3.6 kg)

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FIGURE 1 -- MODEL 24-0437 (CL-204A)



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PARTS LIST -- MODEL 24-0437 (CL-204A)

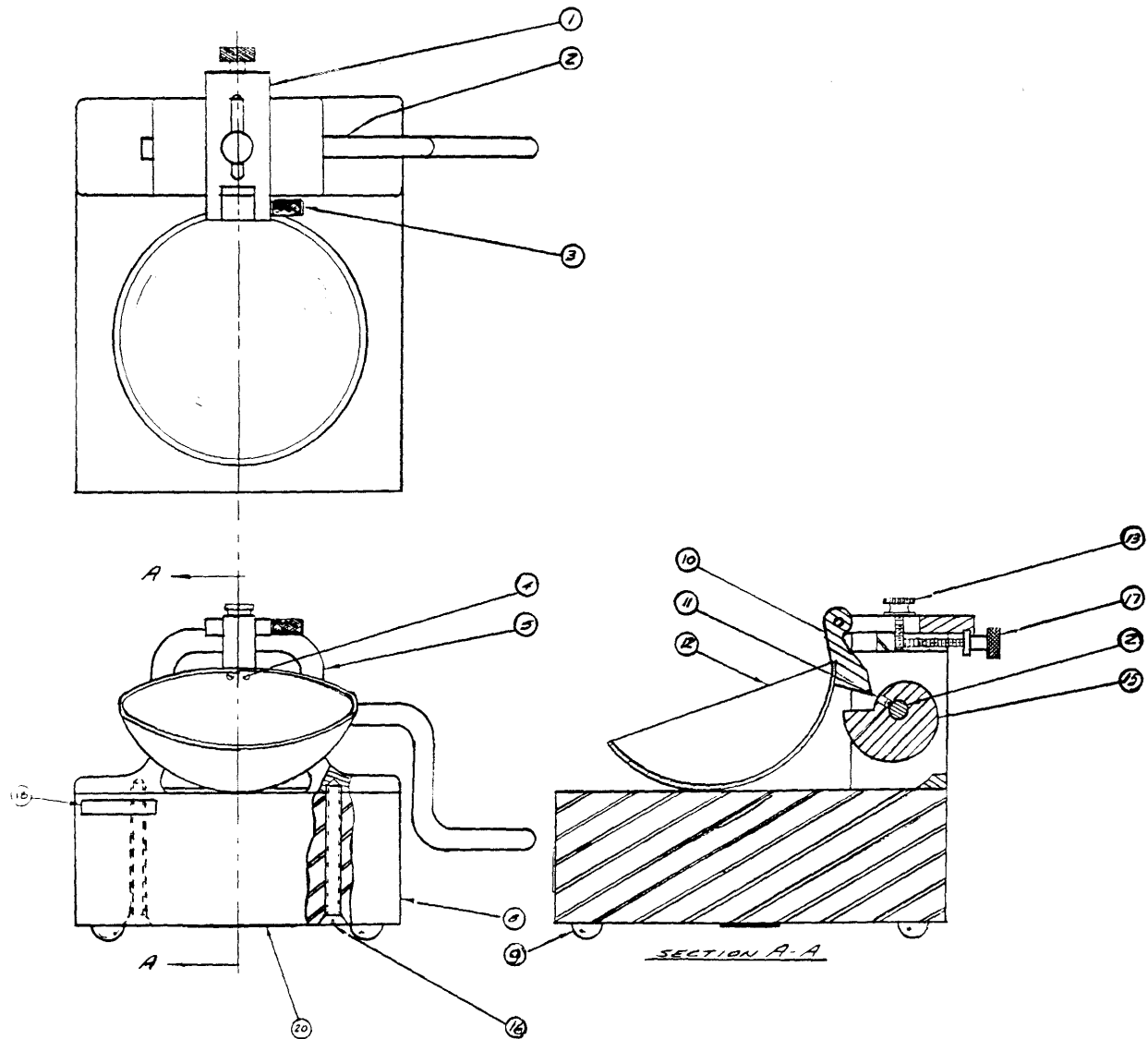
Item No.	Part No.	Description	Req'd.
1	3322-0007	Knurled Adjusting Screw	1
2	3222-0001	Sliding Holder	1
3	9518-0001	4-40 x 3/16 lg. Set Screw	1
4	3346-0001	Crank Wheel Ass'y	1
5	9507-0013	5-40 x 1/4 lg. Soc.Cap Hd. Screw	4
6	1207-0026	Counter	1
7	3346-0003	Hard Rubber Base	1
8	24-0435/10 (CL-227)	Liquid Limit Cup	1
9	3346-0002	Mounting Bracket	1
10	9515-0007	#8 x 1/2 lg. Pan Hd Self-Tap Screw	2
11	9302-0022	Nameplate (Soiltest)	1
12	9401-0019	Rubber Foot	4
13	9302-0035	Data Plate	1
14	9507-0011	1/4-20 x 2 1/4 Flat Head Screw	2

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Item No.	Part No.	Description	Req'd.
15	9302-0028	ELE Logo	1
16	3322-0015	Crankshaft	1
17	9507-0010	5-40 x 1/4 lg. Flat Head Screw	2
18	3322-0003	PIN	1
19	9519-0005	10-32 x 1/2 lg Knurled Screw	1
20	8909-0058	Dowel Pin 3/16 Dia x 1/2 lg.	1
21	3322-0004	Cam Follower	1
22	9517-0028	1/4-20 x 1/4 lg. Set Screw	1
23	3322-0013	Cam	1
24	3322-0014	Housing Ass'y	1
25	24-0451 (CL-220)	Grooving Tool	1 pk.

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FIGURE 2 -- MODEL 24-0435 (CL-206)



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PARTS LIST -- MODEL 24-0435 (CL-206)

Item No.	Part No.	Description	Req'd.
1	3322-0001	Sliding Holder	1
2	3322-0015	Crankshaft	1
3	3322-0003	Pin	1
4	9507-0010	5-40 x 1/4 lg. Flat Head Screw	2
5	3322-0014	Housing Ass'y	1
8	9912-0041	Hard Rubber Base	1
9	9401-0019	Rubber Foot	4
10	3322-0004	Cam Follower	1
11	9517-0025	1/4-20 x 1/4 lg. Set Screw	1
12	24-0435/10	Brass Cup	1
13	9519-0005	10-32 x 1/2 lg Knurled Screw	1
15	3322-0013	Cam	1
16	9507-0011	1/4-20 x 2 1/4 Flat Head Screw	2
17	3322-0007	Knurled Adjusting Screw	1

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Item No.	Part No.	Description	Req'd.
18	9302-0022	Nameplate	1
19	24-0451 (CL-220)	Grooving Tool	1 pk.
20	9302-0035	Data Plate	1

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PARTS LIST -- MODEL 24-0411/02 (CL-205)

Item No.	Part No.	Description	Req'd.
1	3302-0006	Shaft	1
2	1207-0014	Counter	1
3	3302-0007	Cover	1
4	3302-0010	Mounting Base	1
5	8805-0003	Motor	1
6	3302-0018	Sprocket, 10 Teeth 5/16 Bore	1
7	3302-0011	Motor Mounting Bracket	1
8	9427-0008	Chain 1/4 Pitch, 33 Link	1
9	9427-0012	Chain Master Link, 1/4 Pitch	1
10	3346-0002	Counter Mounting Bracket	1
11	3302-0017	Sprocket 12 Teeth 1/4 Bore 24-0441/01 (CL-205-8)	1
12	3322-0004	Cam Follower	1
13	3322-0003	Pin	1
14	3322-0001	Sliding Holder	1
15	0907-0027	Toggle Switch	1

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16	9403-0003	Line Cord Grommet	1
17	3302-0022	Housing Ass'y.	1
18	24-0435/10 (CL-206)	Brass Cup	1
19	3302-0012	Hard Rubber Base	1
20	3322-0007	Knurled Adjusting Screw	1
21	9517-0028	1/4-20 x 1/4 lg. Set Screw	1
22	3322-0013	Cam	1
23	9507-0010	5-40 x 1/4 lg. Flat Head Screw	2
24	9507-0011	1/4-20 x 2 1/4 Flat Head Screw	2
25	9519-0005	10-32 x 1/2 lg Knurled Screw	1
27	9507-0013	5-40 x 1/4 lg. Soc. Cap Hd. Screw	4
28	9302-0022	Nameplate	1
29	3302-0015	Sprocket 1/4 Bore 10 Teeth	1
30	9401-0019	Rubber Feet	4
31	9507-0012	1/4-20 x 1 lg. Flat Hd. Mach. Screw	2
32	8903-0003	Counter Coupling	1

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Item No.	Part No.	Description	Req'd.
33	3302-0013	Shaft Spacer	2
35	9515-0007	#8-1/2 lg. Pan Hd. Type A Philips, Self Tapping Screw	2
36	8608-0015 8608-0016	3-Conductor Line Cord w/Plug 24-0441/02(CL-205) 24-0441/01 (CL-205-8)	1
37	2205-0003	Wire Nut	3
38	9506-0024	#10-32 x 3/4 lg. Flt. Hd. Mach. Screw	2
39	9505-0002	#8-32 x 1/2 lg. Soc. Hd. Cap Screw	2
40	0907-0001	On-Off Switch Plate	1
41	9411-0002	Cable Clamp	1
42	9511-0012	#8-32 x 1/2 lg. Soc. Hd. Cap Screw	2
43	9701-0018	#8 Brass Washer	2
44	9702-0003	#8 Lock Washer	2
45	1901-0064	"Push On" Terminal	4
46	8601-1304	Stranded Wire #20 x 2 lg. Blue	1
47	8601-1004	Stranded Wire #20 x 6 lg. Black	1
48	8702-0007	#18 Plastic/Glass Tubing 4" lg.	1

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Item No.	Part No.	Description	Req'd.
49	1508-0005	Transformer 24-0441/01 (CL-205-8)	1
50	8601-0029	Wire #18 Black 1' 24-0441/01 (CL-205-8)	1
51	24-0451 (CL-220)	Grooving Tool	1 pk.
52	9518-0023	#10-32 x 3/16 Soc Set Screw	2
53	1901-0034	Terminal #6	1
54	9302-0035	Data Plate	1

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