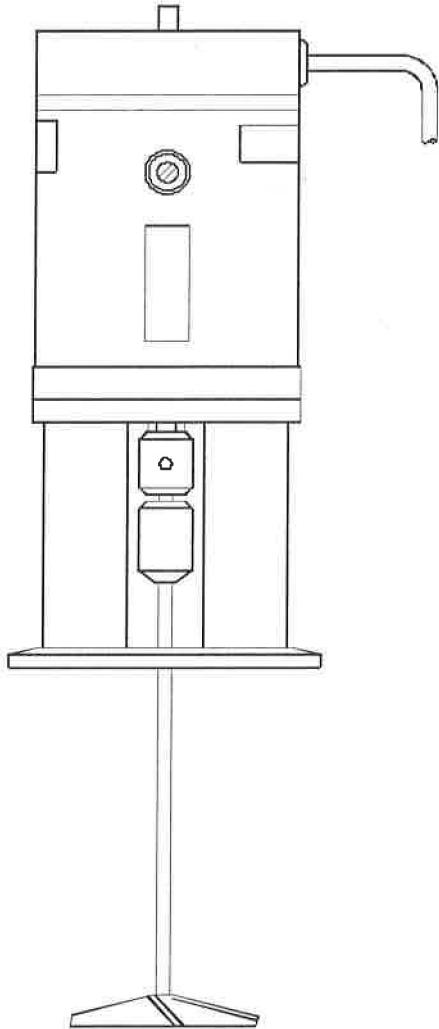


LIGHTNIN®



**Small Scale
General Purpose
Mixers**

**Installation and
Operation**

LIGHTNIN

BK1896

REV. J 11-05-09

LIGHTNIN
2006

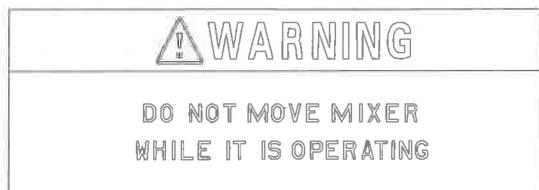
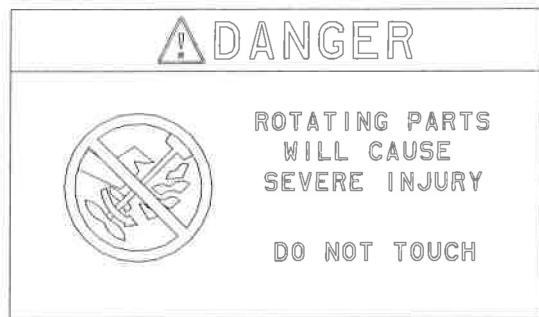
INDEX

	PAGE
Installation and Operation	5
Model G1 Series Dimensions	7
Model G1 Series (with Air Motor) Dimensions	8
Model G1 Series (with Tri-Clover [®] / Air Motor) Dimensions	9
Model G2, G3, & G8 Series Dimensions	10
Model G2, G3, & G8 Series (with Tri-Clover [®]) Dimensions	11
Model G6 Series Dimensions	12
Model G6 Series (with Tri-Clover [®]) Dimensions	13
Model G4 Series Dimensions	14
Mixer Ordering Information	15,16,17,18
Optional Accessories and Pilot Plant Kit Ordering Information	19, 20, 21
Service Record	22

⚠WARNING: DO NOT ATTEMPT TO SERVICE OR ADJUST MIXER WHILE SHAFT/IMPELLER IS ROTATING. DO NOT ALLOW LOOSE CLOTHING OR PARTS OF THE BODY TO COME NEAR THE ROTATING MIXER SHAFT ABOVE OR BELOW THE MIXER BODY. ALWAYS DISCONNECT POWER CORD WHEN SERVICING. POWER CIRCUIT IS LIVE AND ACCIDENTAL START-UP COULD CAUSE PERSONAL INJURY AND/OR EQUIPMENT DAMAGE.

USE ONLY HIGH QUALITY "LIGHTNIN" MIXER SHAFTS IN YOUR "LIGHTNIN" GENERAL PURPOSE MIXER. THE USE OF NON-"LIGHTNIN" MIXER SHAFTS COULD RESULT IN INJURY TO THE OPERATOR OR DAMAGE TO THE GENERAL PURPOSE MIXER. ALWAYS KEEP THE MIXER SHAFT CLEAN. ACCUMULATION OF FOREIGN MATTER ON THE SHAFT COULD INCREASE THE POTENTIAL FOR PERSONAL INJURY.

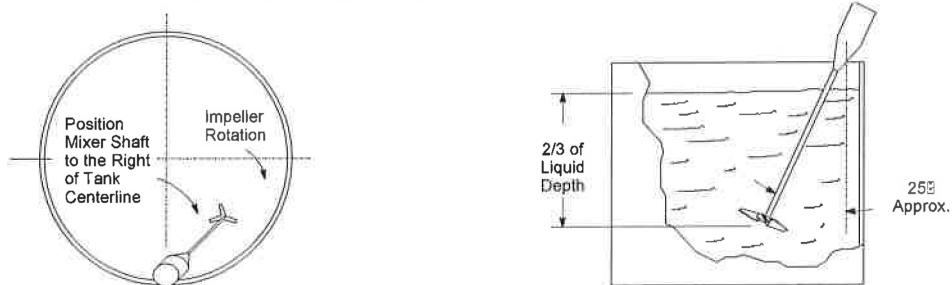
CARE MUST BE TAKEN WHEN SETTING OPERATING SPEEDS OF YOUR GENERAL PURPOSE MIXER. OPERATION AT EXCESSIVE SPEEDS IN SMALL MIXING VESSELS COULD CAUSE THE VESSEL CONTENTS TO SPLASH ON PERSONNEL IN THE AREA.



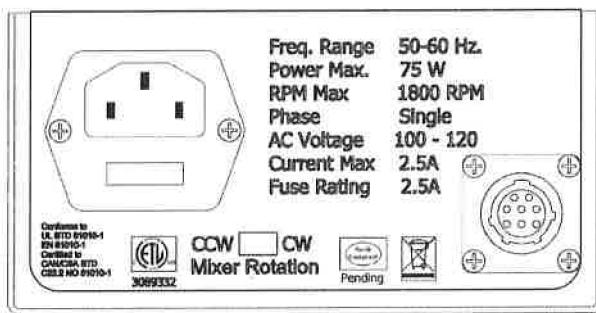
LIGHTNIN General Purpose Installation and Operation

⚠WARNING: DO NOT PLUG CORD INTO POWER RECEPTACLE UNTIL SHAFT & IMPELLER ARE INSTALLED AND MIXER IS PROPERLY ORIENTED IN VESSEL. ALWAYS DISCONNECT POWER CORD BEFORE ADJUSTING SHAFTS OR IMPELLERS.

1. Mount the mixer on the **LIGHTNIN** ring stand (or tank rim) and orient the shaft/impeller in the approximate location illustrated in the plan and elevation views.



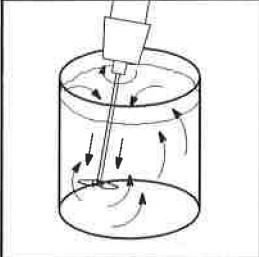
2. **CONNECT POWER CORD THREE PRONG ADAPTER ONLY TO A 115 VAC, 50/60Hz UL APPROVED GROUNDED RECEPTACLE. DO NOT USE GROUNDING ADAPTERS. USE OF OTHER THAN A PROPERLY GROUNDED RECEPTACLE COULD RESULT IN ELECTRICAL SHOCK HAZARD OR CAUSE MALFUNCTIONS IN MIXER CIRCUITRY.**
3. Start the mixer and re-adjust impeller if necessary to achieve desired mixing action.
4. Impeller adjustment (DISCONNECT POWER CORD BEFORE ADJUSTING):
 - a. On G1 Series models without thru-shaft, adjust impeller to desired position on the shaft and secure with set screw.
 - b. G2, G3, & G8 Series have a thru-shaft feature. Impellers can be adjusted by raising or lowering the shaft. Grasp drive shaft, loosen chuck, adjust shaft as desired and retighten chuck.
 - c. G2, G3, & G8 Series have a CW / CCW switch located on the back of the controller to change mixer rotation. **⚠ CAUTION! DO NOT ATTEMPT TO CHANGE DIRECTION WHILE MIXER IS OPERATING.**



5. If a different style or diameter impeller is to be used:
 - a. Install A310, A315, A320 or A100 impellers with the convex face of the blades facing up. Tighten set screw securely.
 - b. Install R100 or R500 impellers with the hub body portion facing up. Tighten set screw securely.
6. Do not allow the mixer housing to become immersed or subjected to excessive splash or spray. Units are rated IP-31.
7. Motor maintenance (DISCONNECT POWER):
 - a. Inspect and clean motor brushes at regular intervals. Remove brush caps and brushes and remove carbon dust accumulations from brush cavities. Wipe brushes with a clean cloth. Brushes should be replaced when they are no more than 1/4 inch in length. See Page 8 for ordering information.
 - b. Model G1 fuse replacement: Replace with 1A, 250V fuse.
 - c. Model G2, G3, & G8 fuse replacement: Replace with 2.5A, 250V fuse.

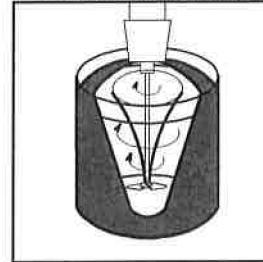
REPOSITIONING DURING THE MIXING CYCLE: Sometimes more than one kind of mixing action is needed. For example, you may first need to dissolve light powders, so start with the mixer centered to create a vortex that quickly disperses them into the batch. Then, to maintain a uniform suspension, or to blend in other fluids, reposition the mixer to.

OPTIMUM MOUNTING
ANGULAR OFF CENTER

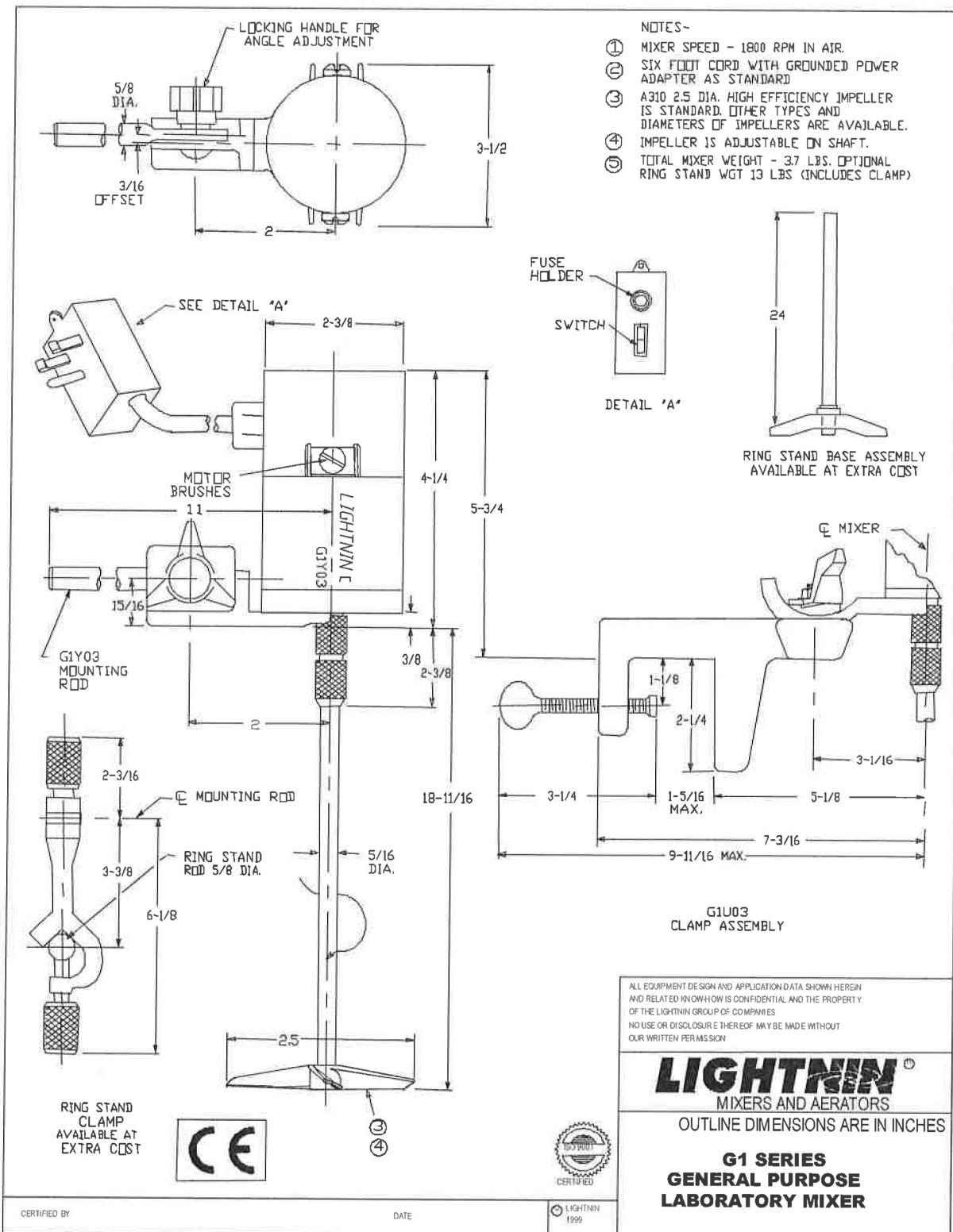


Aiming the shaft off center as shown avoids vortexing and the need for tank baffles. This position achieves strong top to bottom turnover. Optimal for

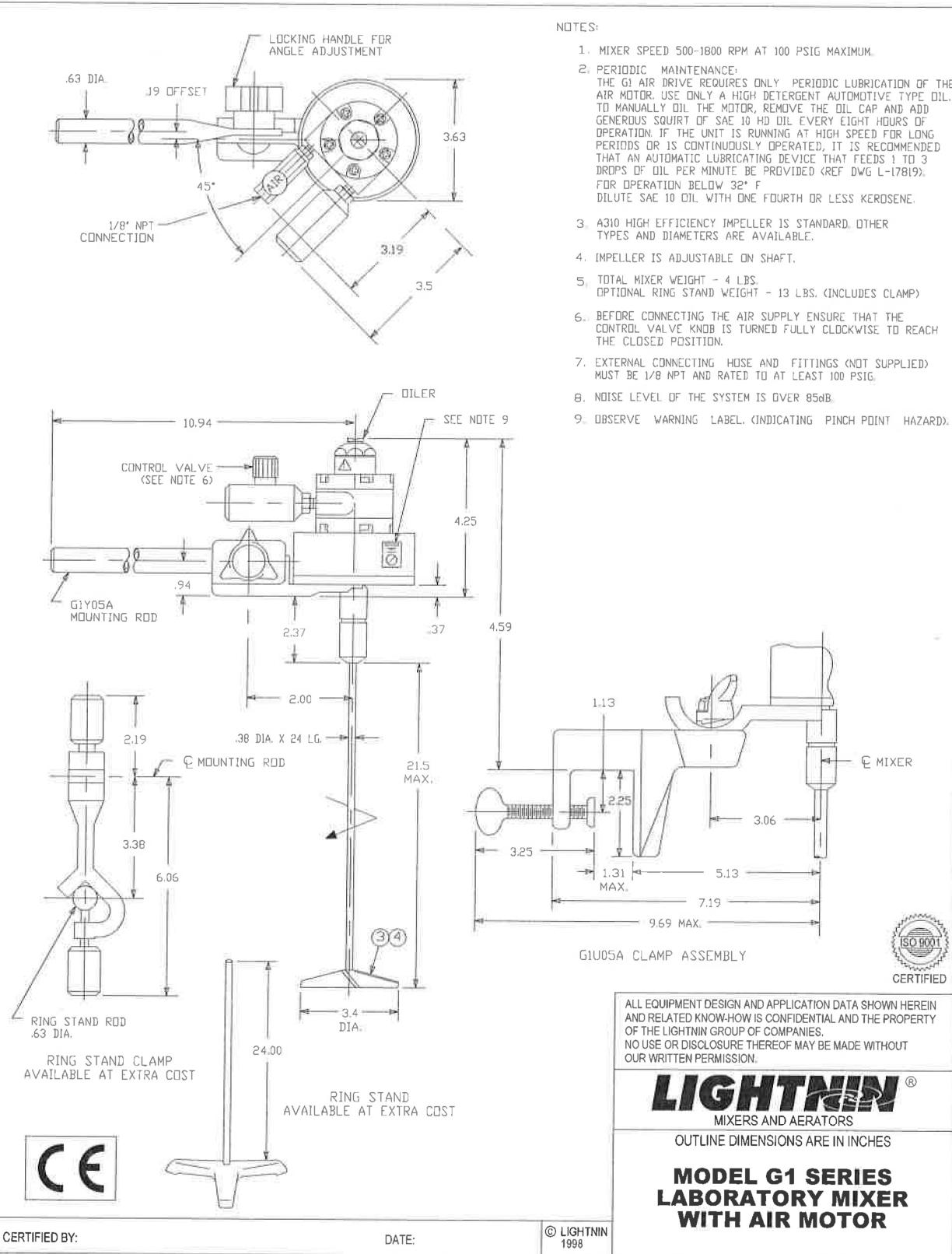
ON CENTER MOUNTING



Creates vortexing in an unbaffled tank. While undesirable for most work, vortexing speeds up the dispersing and dissolving of light liquids and hard-to-wet



DRAWING NO. DS-P-73C (BOOK)

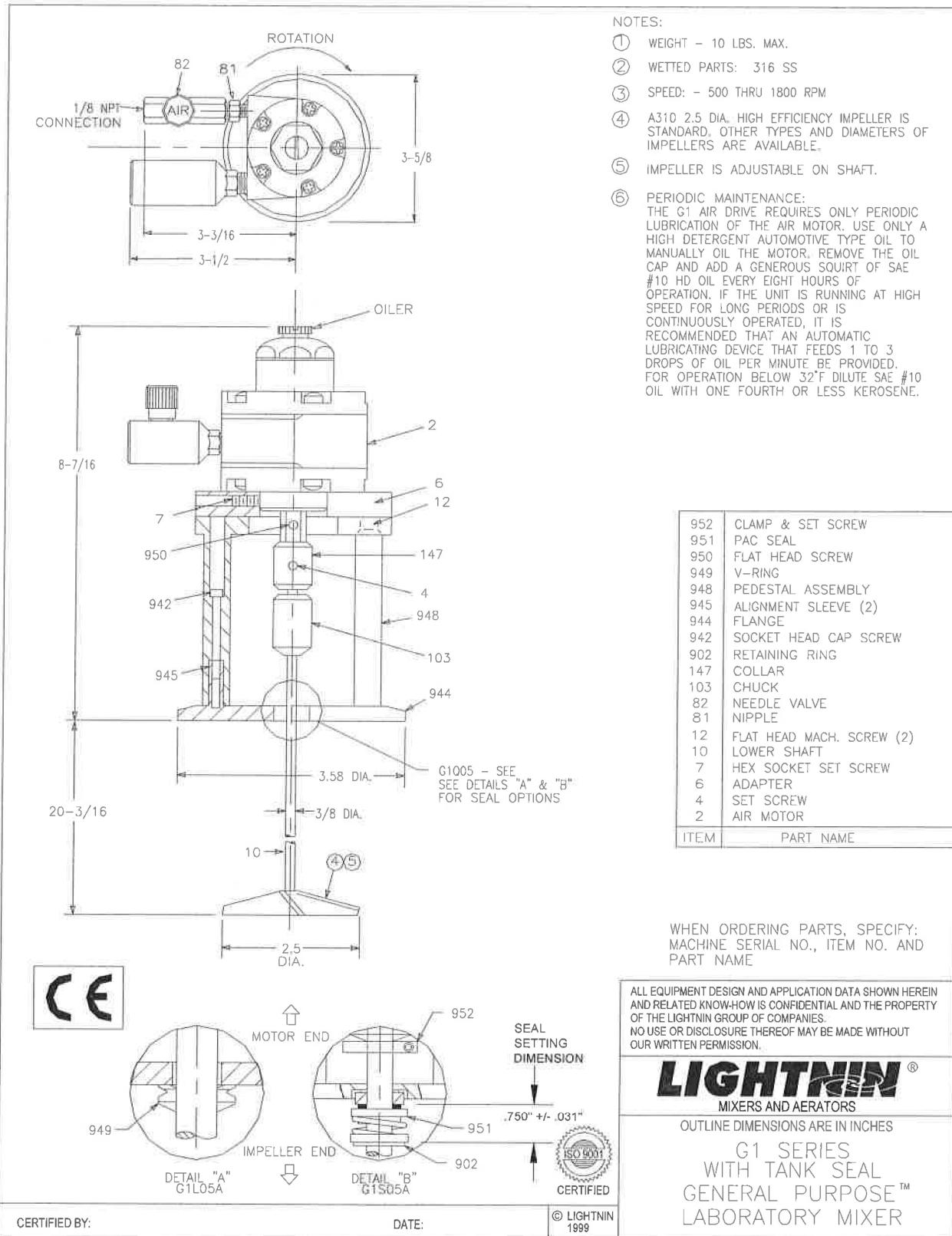


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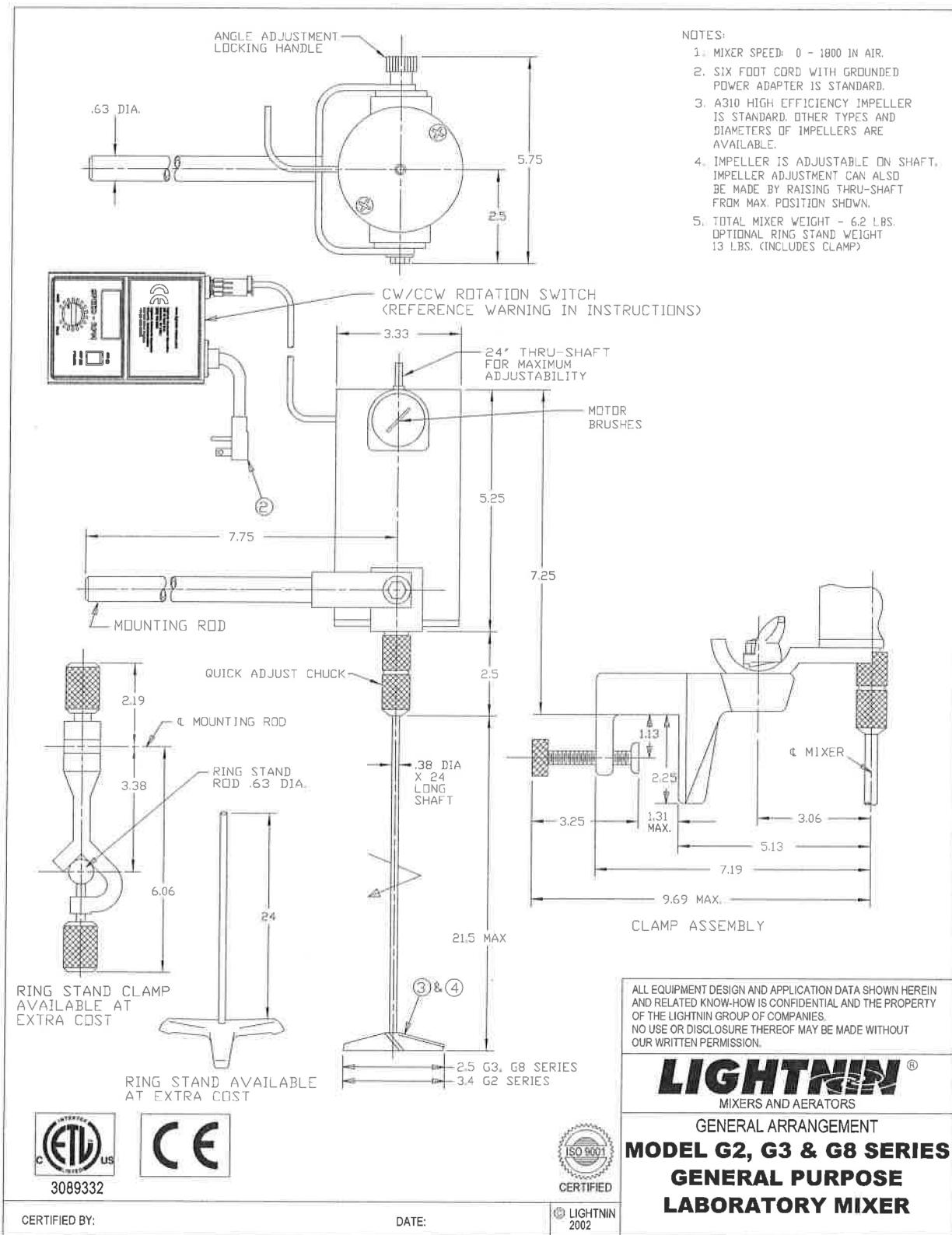
DATE:

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DRAWING NO. DS-P-138A (BOOK)

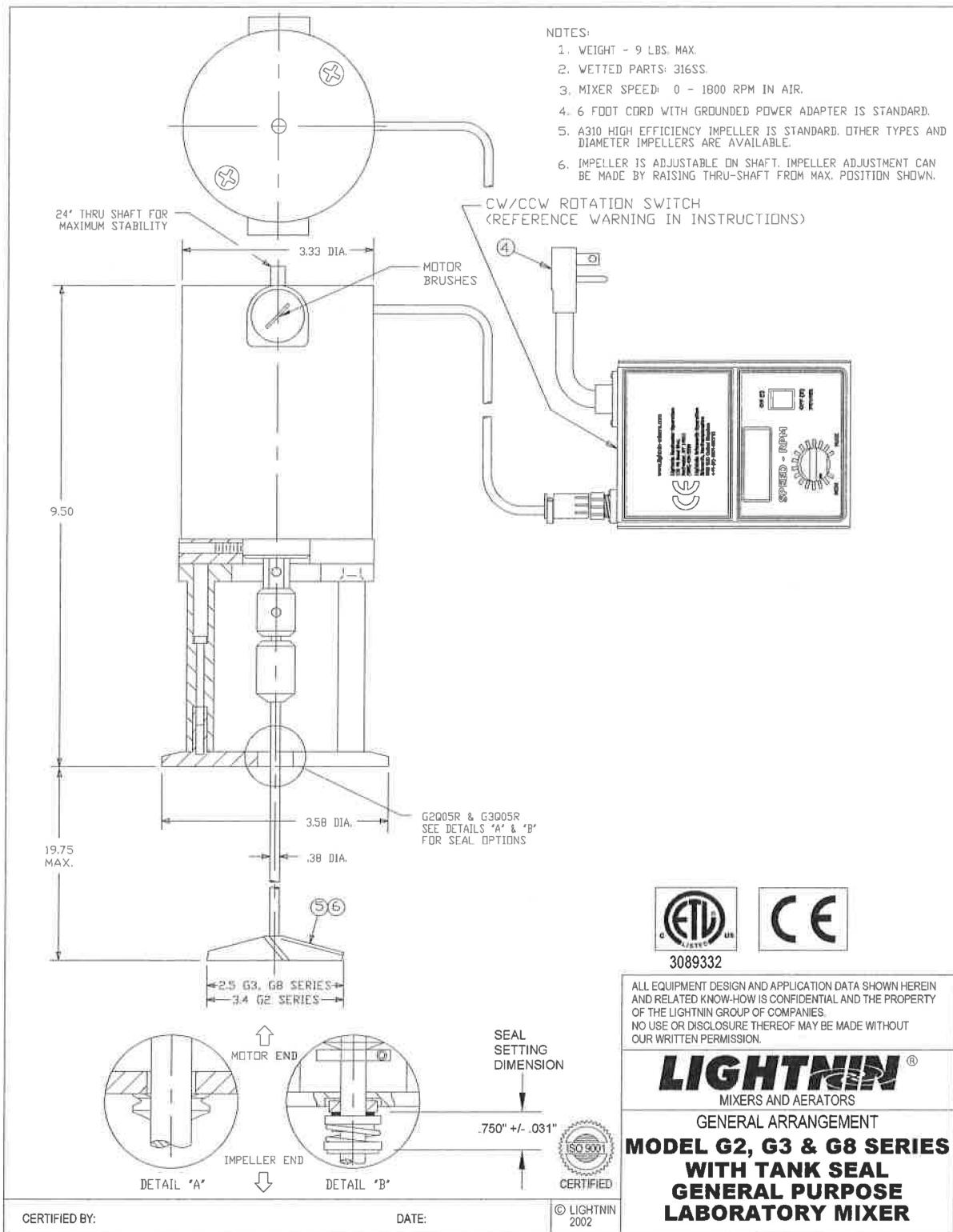


DRAWING NO. DS-P-81D (BOOK)

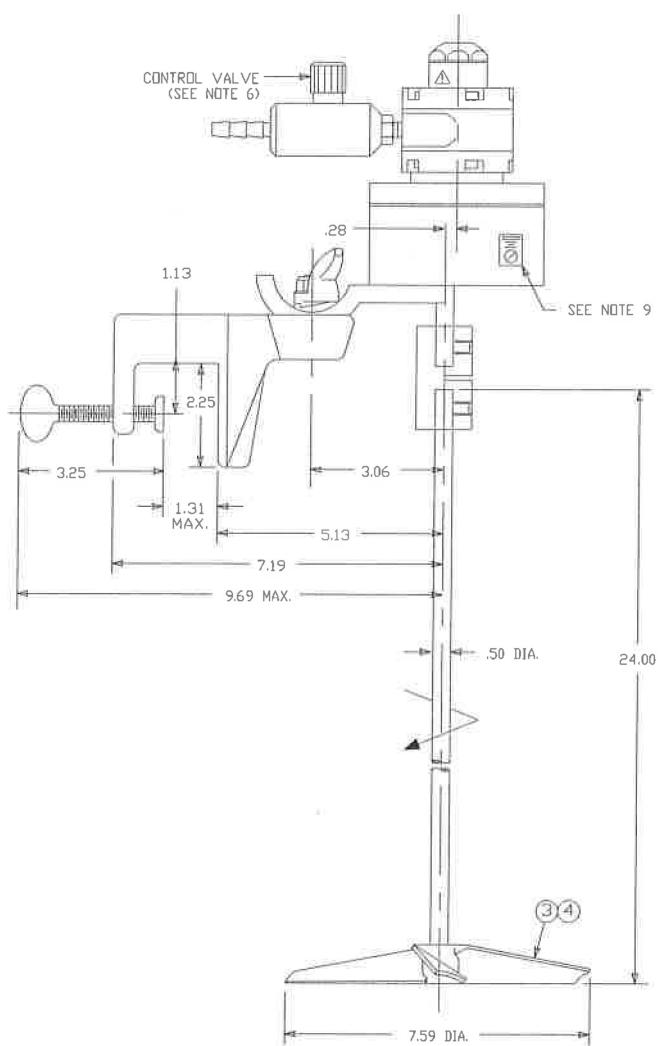
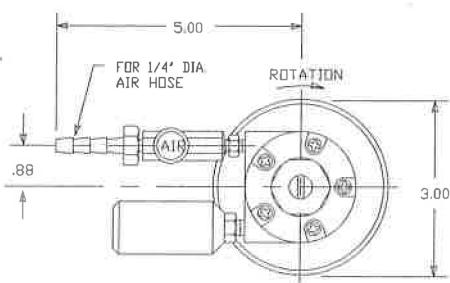


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DRAWING NO. DS-P-82E (BOOK)



NOTES:

1. MIXER SPEED 40-350 RPM AT 100 PSIG MAXIMUM.
2. PERIODIC MAINTENANCE:
THE G6 AIR DRIVE REQUIRES ONLY PERIODIC LUBRICATION OF THE AIR MOTOR. USE ONLY A HIGH DETERGENT AUTOMOTIVE TYPE OIL. TO MANUALLY OIL THE MOTOR, REMOVE THE OIL CAP AND ADD GENEROUS SQUIRT OF SAE 10 HD OIL EVERY EIGHT HOURS OF OPERATION. IF THE UNIT IS RUNNING AT HIGH SPEED FOR LONG PERIODS OR IS CONTINUOUSLY OPERATED, IT IS RECOMMENDED THAT AN AUTOMATIC LUBRICATING DEVICE THAT FEEDS 1 TO 3 DROPS OF OIL PER MINUTE BE PROVIDED (REF DWG L-17819).
3. FOR OPERATION BELOW 32° F:
DILUTE SAE 10 OIL WITH ONE FOURTH OR LESS KEROSENE.
4. A310 HIGH EFFICIENCY IMPELLER IS STANDARD. OTHER TYPES AND DIAMETERS ARE AVAILABLE.
5. IMPELLER IS ADJUSTABLE ON SHAFT.
6. TOTAL MIXER WEIGHT - 7 LBS.
7. BEFORE CONNECTING THE AIR SUPPLY ENSURE THAT THE CONTROL VALVE KNOB IS TURNED FULLY CLOCKWISE TO REACH THE CLOSED POSITION.
8. EXTERNAL CONNECTING HOSE AND FITTINGS (NOT SUPPLIED) MUST BE 1/8 NPT AND RATED TO AT LEAST 100 PSIG.
9. NOISE LEVEL OF THE SYSTEM IS OVER 85dB.
10. OBSERVE WARNING LABEL (INDICATING PINCH POINT HAZARD).



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LIGHTNING®
MIXERS AND AERATORS

OUTLINE DIMENSIONS ARE IN INCHES

**MODEL G6 SERIES
LABORATORY MIXER
WITH AIR MOTOR**

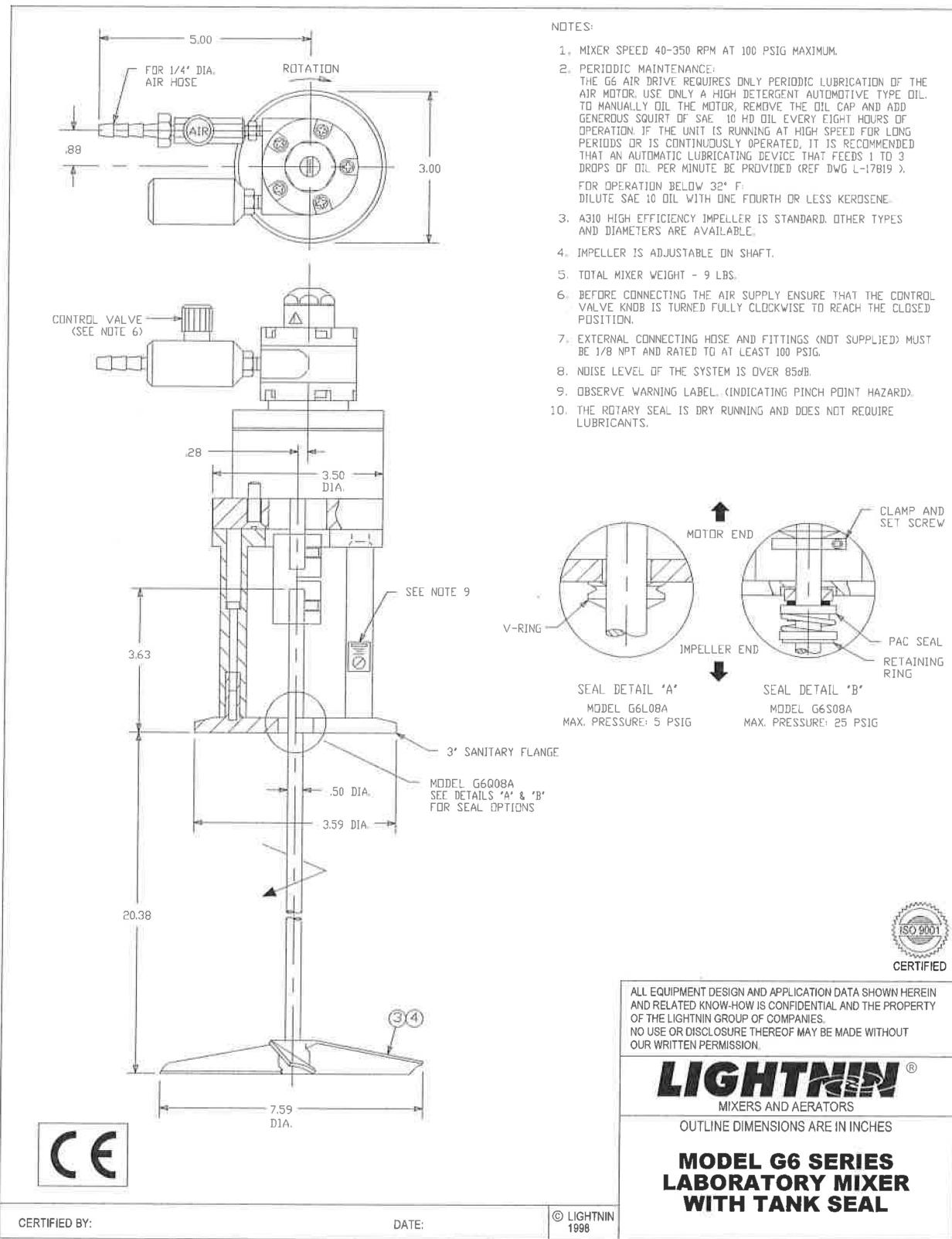


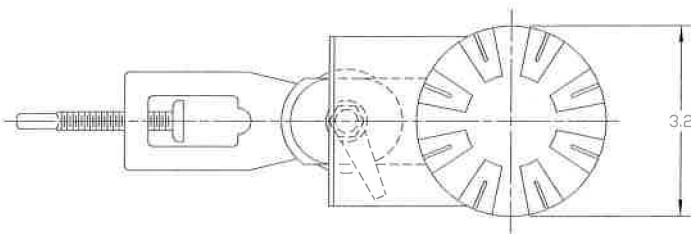
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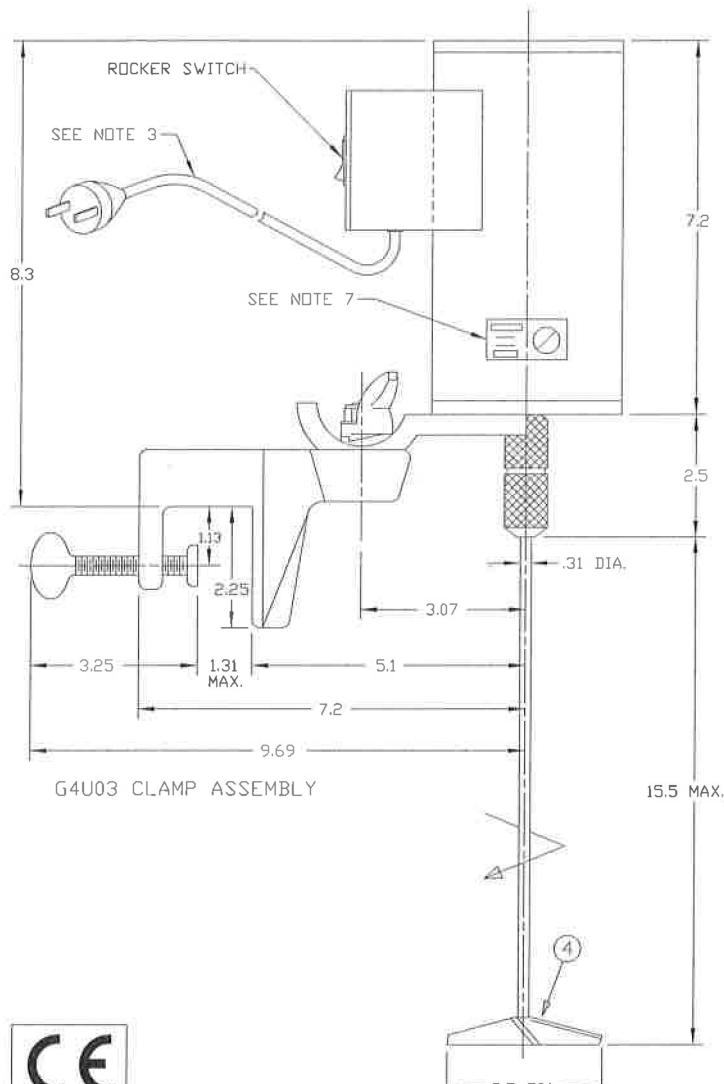
DRAWING NO. DS-P-141 (BOOK)





NOTES:

1. MIXER SPEED: 1450 RPM.
2. ELECTRIC SUPPLY: 230V/50Hz/1PH.
3. SIX FOOT CORD SUITABLE FOR DESTINATION COUNTRY.
4. A310 HIGH EFFICIENCY IMPELLER IS STANDARD. OTHER TYPES AND DIAMETERS OF IMPELLERS ARE AVAILABLE. IMPELLERS ARE ADJUSTABLE ON THE MIXER SHAFT.
5. TOTAL MIXER WEIGHT - 11.2 LBS.
6. BEFORE CONNECTING TO THE POWER SUPPLY, ENSURE THAT THE POWER SWITCH IS IN THE OFF POSITION.
7. OBSERVE WARNING LABEL (INDICATING PINCH POINT HAZARD).



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**MODEL G4U03
GENERAL PURPOSE
LABORATORY MIXER**

DRAWING NO. DS-P-184 (BOOK)

GENERAL PURPOSE MIXER ORDERING INFORMATION

MODEL & OUTPUT RPM	HORSE POWER	POWER REQ.	SHAFT SPECS DIA. X LGTH	STANDARD TURBINES	MOUNTING	CATALOG NUMBER
G1U03 1800	1/30	TENV 115/60/1 110/50/1	5/16" X 18" 316SS	2.5" A310	UNIVERSAL CLAMP	830162PSP
G2U05D 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	3.4" A310	UNIVERSAL CLAMP	836292PSP
G2U05R 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	3.4" A310	UNIVERSAL CLAMP	832042PSP
G3U05D 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	2.5" A310	UNIVERSAL CLAMP	836297PSP
G3U05R 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	2.5" A310	UNIVERSAL CLAMP	869001PSP
G1Y03 1800	1/30	TENV 115/60/1 110/50/1	5/16" X 18" 316SS	2.5" A310	ROD MOUNT	809408PSP
G2Y05D 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	3.4" A310	ROD MOUNT	836293PSP
G2Y05R 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	3.4" A310	ROD MOUNT	832039PSP
G3Y05D 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	2.5" A310	ROD MOUNT	836298PSP
G3Y05R 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	2.5" A310	ROD MOUNT	869000PSP
G2Q05D 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	3.4" A310	3" TRI-CLOVER NO SEAL	836290PSP
G2Q05R 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	3.4" A310	3" TRI-CLOVER NO SEAL	869434PSP

GENERAL PURPOSE MIXER ORDERING INFORMATION CONT'D

G3Q05D 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER NO SEAL	836295PSP
G3Q05R 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER NO SEAL	869436PSP
G2L05D 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	3.4" A310	3" TRI-CLOVER V-RING SEAL	836289PSP
G2L05R 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	3.4" A310	3" TRI-CLOVER V-RING LIP SEAL	869362PSP
G3L05D 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER V-RING LIP SEAL	836294PSP
G3L05R 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER V-RING LIP SEAL	869437PSP
G2S05D 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	3.4" A310	3" TRI-CLOVER MECH. SEAL	836291PSP
G2S05R 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	3.4" A310	3" TRI-CLOVER MECH. SEAL	869435PSP
G3S05D 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER MECH. SEAL	836296PSP
G3S05R 0-1800	1/10	TENV 115/60/1 110/50/1	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER MECH. SEAL	869438PSP
G4U03 1450	1/30	TENV 230/60/1 220/50/1	5/16" X 18" 316SS	2.5" A310	UNIVERSAL CLAMP	835230PSP
G8U05D 0-1800	1/10	TENV 230/60/1 220/50/1	3/8" X 24" 316SS	2.5" A310	UNIVERSAL CLAMP	836302PSP

GENERAL PURPOSE MIXER ORDERING INFORMATION CONT'D

G8U05R 0-1800	1/10	TENV 230/60/1 220/50/1	3/8" X 24" 316SS	2.5" A310	UNIVERSAL CLAMP	835237PSP
G8Y05D 0-1800	1/10	TENV 230/60/1 220/50/1	3/8" X 24" 316SS	2.5" A310	ROD MOUNT	836303PSP
G8Y05R 0-1800	1/10	TENV 230/60/1 220/50/1	3/8" X 24" 316SS	2.5" A310	ROD MOUNT	835238PSP
G8Q05D 0-1800	1/10	TENV 230/60/1 220/50/1	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER NO SEAL	836300PSP
G8Q05R 0-1800	1/10	TENV 230/60/1 220/50/1	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER NO SEAL	835239PSP
G8L05D 0-1800	1/10	TENV 230/60/1 220/50/1	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER V-RING LIP SEAL	836299PSP
G8L05R 0-1800	1/10	TENV 230/60/1 220/50/1	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER V-RING LIP SEAL	835240PSP
G8S05D 0-1800	1/10	TENV 230/60/1 220/50/1	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER MECH. SEAL	836301PSP
G8S05R 0-1800	1/10	TENV 230/60/1 220/50/1	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER MECH. SEAL	835241PSP
G1U05A 500-1800	1/15	AIR 60-90 PSI	3/8" X 24" 316SS	3.4" A310	UNIVERSAL CLAMP	869440PSP
G6U08A 40-350	1/10	AIR 60-90 PSI	1/2" X 24" 316SS	7.6" A310	UNIVERSAL CLAMP	835232PSP
G1Y05A 500-1800	1/15	AIR 60-90 PSI	3/8" X 24" 316SS	3.4" A310	ROD MOUNT	869439PSP

GENERAL PURPOSE MIXER ORDERING INFORMATION CONT'D

G1Q05A 500-1800	1/15	AIR 60-90 PSI	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER NO SEAL	869441PSP
G6Q08A 40-350	1/10	AIR 60-90 PSI	1/2" X 24" 316SS	7.6" A310	3" TRI-CLOVER NO SEAL	835234PSP
G1L05A 500-1800	1/15	AIR 60-90 PSI	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER V-RING LIP SEAL	869442PSP
G6L08A 40-350	1/10	AIR 60-90 PSI	1/2" X 24" 316SS	7.6" A310	3" TRI-CLOVER V-RING LIP SEAL	835235PSP
G1S05A 500-1800	1/15	AIR 60-90 PSI	3/8" X 24" 316SS	2.5" A310	3" TRI-CLOVER MECH. SEAL	869443PSP
G6S08A 40-350	1/10	AIR 60-90 PSI	1/2" X 24" 316SS	7.6" A310	3" TRI-CLOVER MECH. SEAL	835236PSP

NOTE: Actual MAX. Speed will vary depending upon Impeller and Fluid Viscosity.

NOTE: All TRI-CLOVER mountings available with 2" ANSI flange.

The open tank models are suitable for use in enclosed environments such as vapor hoods, with variable speed control positioned conveniently on the outside.

- Fixed or Remote Variable Speed Control.
- Direct Drive 75 or 25 Watts (1/10 or 1/30 HP).
- Quick Disconnect Hand Chuck.
- Thru-Shaft Design for infinitely variable turbine position.
- Fuse Protection.
- Universal Clamp or Rod Mounting.
- High efficiency A310 Impeller.
- On/Off Indicator Light.
- CW/CCW Rotation Switch.
- Also available with air motor.

The closed tank Lab Stirrers, prevent vapor loss, excellent for sanitary applications.

- 3" TRI-CLOVER Flange.

- Viton V-RING Seal for Atmospheric Pressure, but can handle up to 4 PSIG. Optional Mechanical Seal for pressures up to 25 PSIG.
- Thru-Shaft Design for infinitely variable turbine position.
- Variable Speed Controller offers speeds up to 1800 RPM.
- Also available with air motor.
- High efficiency A310 Impeller is standard.

ACCESSORIES

316 Stainless Steel Shafts

Model Series	Shaft Dia. ♦	Shaft Length	Catalog Number
G2, G3, G8	.38"	24"	143727
G1, G4	.31"	18"	143264
G6 Series	.50"	24"	172023

♦ .38" diameter shaft turned down to .31" diameter at impeller end.

Heavy Duty Ring Stand

.63" dia. Rod, 24" high Heavy Base Cat. #829543

Ring Stand Clamp

Heavy duty, recommended for all LabMaster models. Cat. #809413

IMPELLERS



The A310 impeller is standard on LabMaster mixers. The high efficiency design develops 50% more mixing action than ordinary props. The A310 design also provides geometric similarity for accurate scale-up to larger *LIGHTNING* mixers.



The **A311** Folding Impeller is perfect for mixing in vessels with small, narrow ports. It opens for full axial mixing action.



The R100 impeller provides high shear and moderate pumping action.



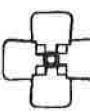
The A100 propeller provides moderate pumping action.



The R500 impeller creates a cutting, tearing action to disperse solids and shred fibrous materials.



The A320 impeller is efficient at blending high viscosity materials.



The A315 impeller is an excellent choice for gas dispersion with solids suspension.

Impeller Ordering Information

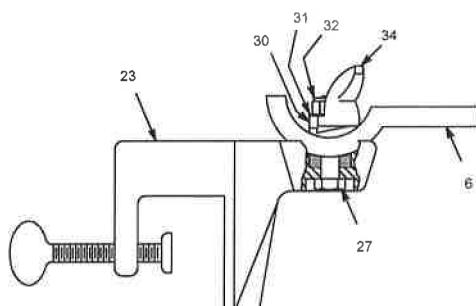
Style	Bore Dia.	Impeller Dia.	Catalog Number	Style	Bore Dia.	Impeller Dia.	Catalog Number
A310	.31"	2.5"	808955	A200	.31"	2.0"	829448
A310	.31"	2.5" Ring Guard	808999	R500	.31"	2.0"	869579
A310	.31"	3.4"	809410	R500	.31"	3.0"	869580
A310	.31"	3.8"	809411	A311	.31"	2.0"	800578
A310	.31"	4.5"	809412	A315	.31"	3.0"	869468
R100	.31"	1.5"	809414	A315	.31"	4.0"	869470
R100	.31"	2.0"	809415	A315	.31"	5.0"	869472
A100	.31"	1.0"	800570	A320	.31"	3.0"	869513
A100	.31"	1.5"	800569	A320	.31"	4.0"	869515
A100	.31"	2.0"	800568	A320	.31"	5.0"	869381
A100	.31"	2.0" Ring Guard	800580	PADDLE	.31"	2.0"	800579
A100	.31"	2.7"	809417	A410	.38"	3.9"	218837
A100	.31"	3.1"	809418	A310	.50"	7.6"	871608

CLAMP ASSEMBLY ORDERING INFORMATION

Item	Part Name	Qty.	Part No.	Mat'l
6	Clamp Plate - G2U & G3U	1	171444	ALM
	Clamp Plate - All Others	1	171443	ALM
①	Clamp Assembly	1	800319	PSP
23	Clamp Body ②	1	210412	PSP
27	Hex Head Cap Screw	1	100206	CPS
30	Radial Washer	1	112522	BRZ
31	Plainwasher	1	112003	CPS
32	Lock Nut	1	107416	CPS
34	Clamp Lever	1	171182	BRZ

① Complete Clamp Assembly includes Items 23 thru 32.

② Clamp Body includes Thumbscrew Assembly.



CLAMP ASSEMBLY

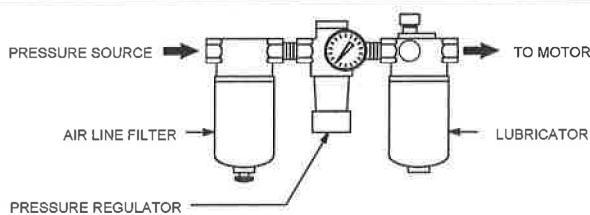
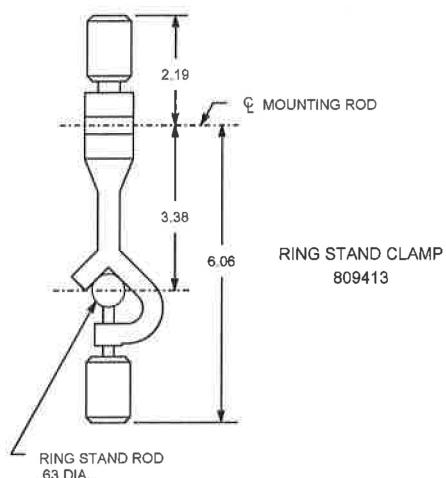
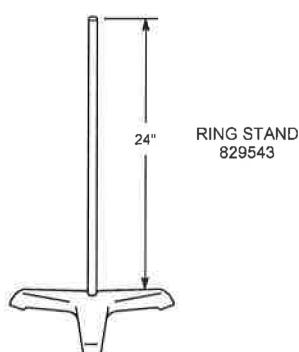
ASSEMBLING CLAMP:

Insert hex head cap screw (27) thru clamp (23) and clamp plate (6).

Place radial washer (30), clamp lever (34), plainwasher (31) and lock nut (32) on hex head cap screw (27).

ADJUSTING CLAMP:

Tighten lock nut (32) until manipulation of the clamp lever (34) both secures the housing socket to clamp connection and releases the connection for adjusting mixer position.



OPTIONAL AIR LINE LUBRICATION SYSTEM

Available from the factory at extra cost.
Specify Part Number 151030PSP