

# Drying Tumblers

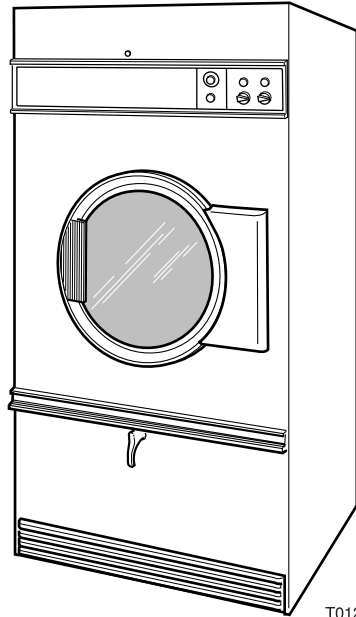
50 Pound Capacity

75 Pound Capacity

Refer to Page 4 for Model Identification

— Installation —

**NOTA:** El manual en español aparece después del manual en inglés.



T012C

**Keep These Instructions for Future Reference.**

(If this machine changes ownership, this manual must accompany machine.)

  
**Alliance**  
Laundry Systems

[www.comlaundry.com](http://www.comlaundry.com)

Part No. 70256801R1  
August 2007





Installation must conform with local codes or, in the absence of local codes, with:

In the U.S.A., installation must conform to the latest edition of the American National Standard Z223.1/ NFPA 54 “National Fuel Gas Code” and Standard ANSI/NFPA 70 “National Electric Code.”

In Canada, installation must comply with Standards CSA-B149.1 or Natural Gas and Propane Installation Code and CSA C22.1, latest edition, Canadian Electric Code, Part I.

In Australia, installation must comply with the Australian Gas Association Installation Code for Gas Burning Appliances and Equipment.

	<b>WARNING</b>
<p><b>FOR YOUR SAFETY</b>, the information in this manual must be followed to minimize the risk of fire or explosion or to prevent property damage, personal injury or death. <span style="float: right;">W033</span></p> <ul style="list-style-type: none"><li>• Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.</li><li>• <b>WHAT TO DO IF YOU SMELL GAS:</b><ul style="list-style-type: none"><li>– Do not try to light any appliance.</li><li>– Do not touch any electrical switch; do not use any phone in your building.</li><li>– Clear the room, building or area of all occupants.</li><li>– Immediately call your gas supplier from a neighbor’s phone. Follow the gas supplier’s instructions.</li><li>– If you cannot reach your gas supplier, call the fire department.</li></ul></li><li>• Installation and service must be performed by a qualified installer, service agency or the gas supplier. <span style="float: right;">W052</span></li></ul>	
<p><b>FOR YOUR SAFETY</b></p> <p>Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance. <span style="float: right;">W053</span></p>	

	<b>MISE EN GARDE</b>
<p><b>POUR VOTRE SÉCURITÉ</b>, les informations de ce guide doivent être respectées afin de réduire les risques d’incendie, d’explosion ou d’éviter les dommages matériels, personnels ou blessures mortelles. <span style="float: right;">W033R3QU</span></p> <ul style="list-style-type: none"><li>• Ne pas entreposer ou utiliser d’essence ou toutes autres vapeurs et liquides inflammables à proximité de cette machine ou de tout autre appareil.</li><li>• <b>QUE FAIRE EN CAS D’ODEUR DE GAZ :</b><ul style="list-style-type: none"><li>– Ne pas mettre d’appareil en marche.</li><li>– Ne pas toucher aux interrupteurs électriques ; ne pas utiliser le téléphone des lieux.</li><li>– Évacuer la pièce, le bâtiment ou la zone de tous les occupants.</li><li>– Appeler immédiatement le fournisseur de gaz de la maison d’un voisin. Respecter les instructions communiquées par le fournisseur.</li><li>– Si vous ne pouvez pas joindre le fournisseur de gaz, appeler le service d’incendie.</li></ul></li><li>• L’installation et l’entretien doivent être effectués par un installateur, service d’entretien qualifiés ou par le fournisseur de gaz. <span style="float: right;">W052R5QU</span></li></ul>	
<p><b>POUR VOTRE SÉCURITÉ</b></p> <p>Ne pas entreposer ou utiliser d’essence ou toutes autres vapeurs et liquides inflammables à proximité de cette unité ou de tout autre appareil. <span style="float: right;">W053R2QU</span></p>	

**IMPORTANT:** Information must be obtained from a local gas supplier on instructions to be followed if the user smells gas. These instructions must be posted in a prominent location. Step-by-step instructions of the above safety information must be posted in a prominent location near the tumbler for customer use.

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# Introduction

## Model Identification

Information in this manual is applicable to these models:

	Gas	Steam/Thermal Oil	Electric
<b>50 Pound</b>	ATB50CG	ATB50CSH	DCB50CE
	DTB50CG	DCB50CSH	DTB50CE
	DTB50EG	DCB50CSL	JC50CE
	JC50CG	DTB50CSH	JT50CE
	JC50EG	DTB50CSL	JCB50CE
	JCB50CG	JCB50CSH	JTB50CE
	JCB50EG	JT50CSH	SC50CE
	JT50CG	JT50CSL	SCB50AT
	JT50EG	JTB50CSH	SCB50CE
	JTB50CG	JTB50CSL	STB50CE
	JTB50EG	SCB50CSH	TKD50CEMT
	SC50CG	SCB50CSL	
	SC50EG	STB50CSH	
	SCB50CG	STB50CSL	
	SCB50EG		
	STB50CG		
	STB50EG		
	TKD50CGMT		
<b>75 Pound</b>	ATB75CG	ATB75CSH	DCB75CE
	DTB634	DCB75CSH	DTB75CE
	DTB75CG	DCB75CSL	JC75CE
	DTB75EG	DTB75CSH	JCB75CE
	JC75EG	DTB75CSL	JT75CE
	JCB75CG	JC75CSH	JTB75CE
	JT75CG	JCB75CSH	SC75CE
	JT75EG	JT75CSH	SCB75CE
	JTB75CG	JT75CSL	STB75CE
	JTB75EG	JTB75CSH	
	SC75CG	JTB75CSL	
	SCB75CG	SC75CSH	
	STB634	SCB75CSH	
	STB75CG	STB75CSH	
	STB75EG	STB75CSL	

## Customer Service

If literature or replacement parts are required, contact the source from which the machine was purchased or contact Alliance Laundry Systems at (920) 748-3950 for the name and address of the nearest authorized parts distributor.

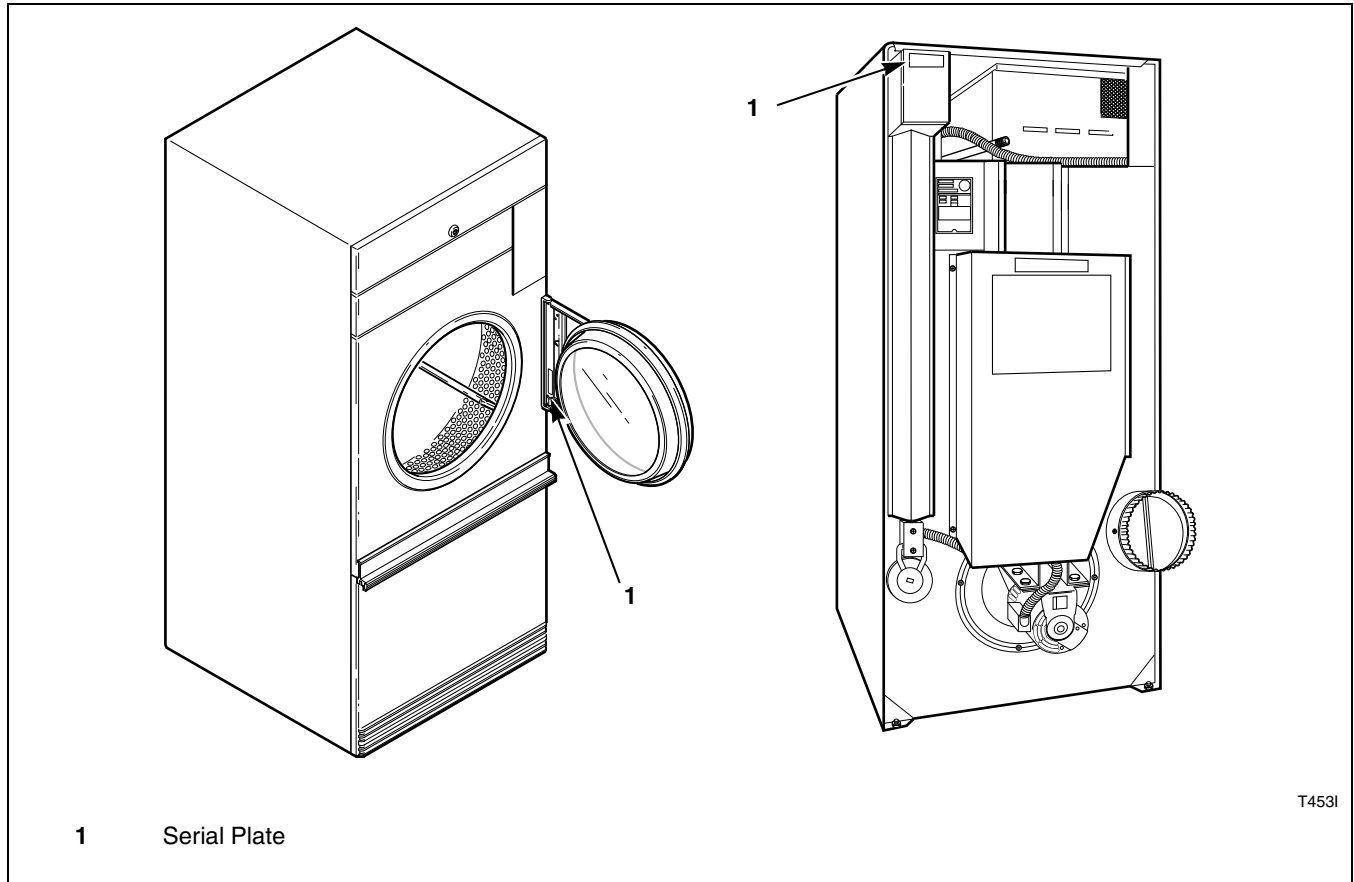
For technical assistance, call (920) 748-3121.

## Wiring Diagram

The wiring diagram is located in the literature packet supplied with all non-CE Marked models. On CE Marked models, it is located in the junction box.

## Serial Plate Location

When calling or writing for information about your product, be sure to mention model and serial numbers. Model and serial numbers are located on the serial plate as shown.





Conversion Table


Multiply	By	To Obtain	Multiply	By	To Obtain
Btu	.252	kCal	Pounds/sq. inch	.06895	Bars
Btu	1055	Joules	Pounds/sq. inch	.070	kg/sq. cm
Inch	25.4	Millimeters	Pounds (lbs.)	.454	Kilograms
Inches W.C.	.036	Pounds/sq. inch	Boiler Horsepower	34479	Btu/hr.
Inches W.C.	.249	kPa	Boiler Horsepower	34.5	lbs. Steam/hr.
lbf/inch <sup>2</sup> (psi)	.0369	kPa	CFM	.471	liters/second
ft <sup>3</sup>	28.32	Liters	kW	3414	Btu/hr.

# Safety Information

Precautionary statements (“DANGER,” “WARNING,” and “CAUTION”), followed by specific instructions, are found in this manual and on machine decals. These precautions are intended for the personal safety of the operator, user, servicer, and those maintaining the machine.

	<b>DANGER</b>
<b>DANGER</b> indicates the presence of a hazard that will cause severe personal injury, death, or substantial property damage if the danger is ignored.	


	<b>WARNING</b>
<b>WARNING</b> indicates the presence of a hazard that can cause severe personal injury, death, or substantial property damage if the warning is ignored.	

	<b>CAUTION</b>
<b>CAUTION</b> indicates the presence of a hazard that will or can cause minor personal injury or property damage if the caution is ignored.	

Additional precautionary statements (“IMPORTANT” and “NOTE”) are followed by specific instructions.

**IMPORTANT:** The word “IMPORTANT” is used to inform the reader of specific procedures where minor machine damage will occur if the procedure is not followed.

**NOTE:** The word “NOTE” is used to communicate installation, operation, maintenance or servicing information that is important but not hazard related.

	<b>WARNING</b>
<b>Failure to install, maintain, and/or operate this machine according to manufacturer’s instructions may result in conditions which can produce serious injury, death and/or property damage.</b>	
<small>W051R1</small>	


**NOTE:** The **WARNING** and **IMPORTANT** instructions appearing in this manual are not meant to cover all possible conditions and situations that may occur. It must be understood that common sense, caution and carefulness are factors which **CANNOT** be built into this tumbler. These factors **MUST BE** supplied by the person(s) installing, maintaining or operating the tumbler.

Always contact your dealer, distributor, service agent or the manufacturer on any problems or conditions you do not understand.



## Save These Instructions


### Important Safety Instructions

	<b>WARNING</b>
<p><b>Hazardous Voltage. Can cause shock, burn or cause death. Allow machine power to remain off for two minutes prior to working in and around AC inverter drive.</b></p>	
W359	

1. Read all instructions before using the tumbler.
2. Refer to the *Grounding Instructions* for the proper grounding of the tumbler.
3. Do not dry articles that have been previously cleaned in, washed in, soaked in, or spotted with gasoline, dry-cleaning solvents, other flammable or explosive substances as they give off vapors that could ignite or explode.
4. Do not allow children to play on or in the tumbler. Close supervision of children is necessary when the tumbler is used near children. This is a safety rule for all appliances.
5. Before the tumbler is removed from service or discarded, remove the door to the drying compartment and the door to the lint compartment.
6. Do not reach into the tumbler if the cylinder is revolving.
7. Do not install or store the tumbler where it will be exposed to water and/or weather.
8. Do not tamper with the controls.
9. Do not repair or replace any part of the tumbler, or attempt any servicing unless specifically recommended in the user-maintenance instructions or in published user-repair instructions that you understand and have the skills to carry out.
10. Do not use fabric softeners or products to eliminate static unless recommended by the manufacturer of the fabric softener or product.
11. To reduce the risk of fire, **DO NOT DRY** plastics or articles containing foam rubber or similarly textured rubberlike materials.
12. Always clean the lint filter daily.
13. Keep area around the exhaust opening and adjacent surrounding area free from the accumulation of lint, dust and dirt.
14. The interior of the tumbler and the exhaust duct should be cleaned periodically by qualified service personnel.
15. If not installed, operated and maintained in accordance with the manufacturer's instructions or if there is damage to or mishandling of this product's components, use of this product could expose you to substances in the fuel or from fuel combustion which can cause death or serious illness and which are known to the State of California to cause cancer, birth defects or other reproductive harm.
16. Tumbler will not operate with the loading door open. **DO NOT** bypass the door safety switch to permit the tumbler to operate with the door open. The cylinder will stop rotating when the door is opened. Do not use the tumbler if the cylinder does not stop rotating when the door is opened or starts rotating without pressing or turning the START mechanism. Remove the tumbler from use and call for service.
17. Do not put articles soiled with vegetable or cooking oil in the tumbler, as these oils may not be removed during washing. Due to the remaining oil, the fabric may catch on fire by itself.
18. To reduce the risk of fire, **DO NOT** put clothes which have traces of any flammable substances such as machine oil, flammable chemicals, thinner, etc. or anything containing wax or chemicals such as in mops and cleaning cloths, or anything dry-cleaned at home with dry-cleaning solvent in the tumbler.
19. Use the tumbler only for its intended purpose, drying fabrics.
20. **ALWAYS** disconnect and lockout the electrical power to the tumbler before servicing. Disconnect power by shutting off appropriate breaker or fuse.
21. Install this tumbler according to the manual. All connections for electrical power, grounding, and gas supply must comply with local codes and be made by licensed personnel when required.

## Safety Information

22. Remove laundry immediately after tumbler stops.
23. Always read and follow manufacturer's instructions on packages of laundry and cleaning aids. Heed all warnings or precautions. To reduce the risk of poisoning or chemical burns, keep them out of reach of children at all times (preferably in a locked cabinet).
24. Do not tumble fiberglass curtains and draperies unless the label says it can be done. If they are dried, wipe out the cylinder with a damp cloth to remove particles of fiberglass.
25. Always follow the fabric care instructions supplied by the garment manufacturer.
26. Never operate the tumbler with any guards and/or panels removed.
27. **DO NOT** operate the tumbler with missing or broken parts.
28. **DO NOT** bypass any safety devices.
29. Solvent vapors from dry-cleaning machines create acids when drawn through the heater of the drying unit. These acids are corrosive to the tumbler as well as to the laundry load being dried. Be sure make-up air is free of solvent vapors.
30. Failure to install, maintain, and/or operate this machine according to the manufacturer's instructions may result in conditions which can produce bodily injury and/or property damage.

	<b>WARNING</b>
<b>To reduce the risk of serious injury, install lockable door(s) to prevent public access to rear of tumblers.</b>	
<small>W055</small>	

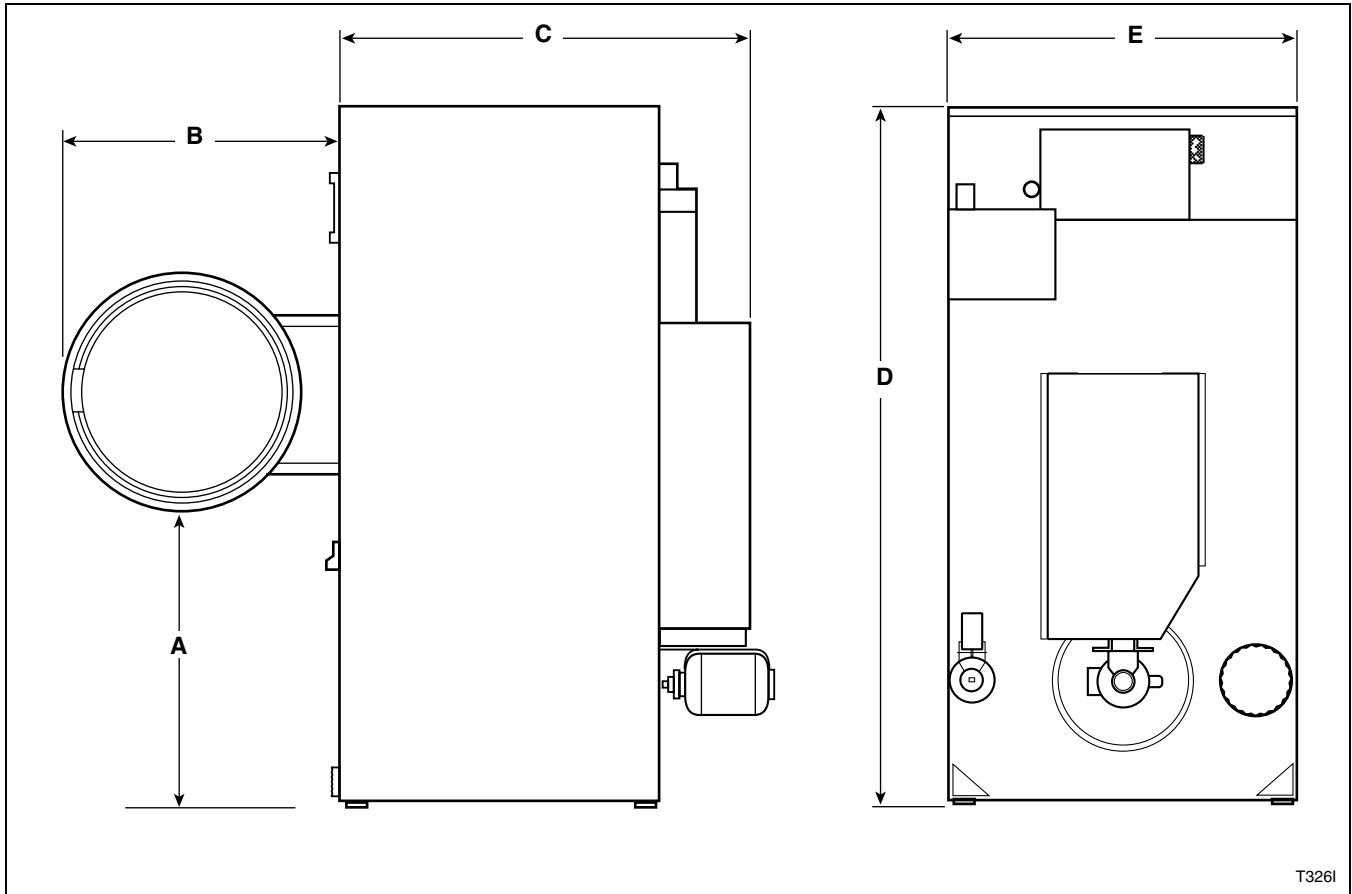
**This machine is intended for commercial use.**

# Specifications and Dimensions

Specifications		50 Pound	75 Pound	634
<b>Net Weight: Pounds (kg)</b>		545 (247)	615 (279)	710 (322)
<b>Cylinder Size: Inches (mm)</b>		37 x 30 (940 x 762)	37 x 36 (940 x 914)	37 x 36 (940 x 914)
<b>Cylinder Capacity (Dry Weight): Pounds (kg)</b>		50 (22.7)	75 (34)	75 (34)
<b>Air Outlet Diameter: Inches (mm)</b>		8 (203)	8 (203)	10 (254)
<b>Maximum Static Back Pressure: W.C.I. (mbar)</b>		0.5 (1.3)	0.5 (1.3)	0.5 (1.3)
<b>Maximum Airflow: C.F.M. (l/sec.)</b>	All Models Except EG	750 (354)	750 (354) CG: 920 (434)	1100 (518)
	EG Models	390 (184)	500 (236)	Not Applicable
<b>Gas Models</b>				
<b>Gas Connection</b>		1/2 in. NPT	1/2 in. NPT	3/4 in. NPT
<b>Gas Consumption: Btu/hr (Mj/hr)</b>	CG Models	120,000 (126.6)	165,000 (174.1)	215,000 (227)
	EG Models	95,000 (100.2)	140,000 (147.7)	
<b>Electric Models</b>				
<b>Heating Elements: Watts</b>		21,000 (240 V/50 Hertz) 30,000 (other voltages)	30,000	Not Applicable
<b>Steam Models</b>				
<b>Steam Connection</b>		3/4 in. NPT	3/4 in. NPT	Not Applicable
<b>Steam Consumption: Boiler Horsepower (Btu)</b>	6 coil (SH Models)	4.6 (154,000)	4.6 (154,000)	Not Applicable
	4 coil (SL Models)	3.0 (100,400)	4.0 (133,900)	
<b>Motor Horsepower</b>				
		<b>50 Pound</b>	<b>75 Pound</b>	<b>634</b>
<b>Nonreversing</b>		1/2	3/4	Not Applicable
<b>Reversing</b>	Fan	1/3	1/3	1
	Cylinder	1/3	1/3	1/3

## Specifications and Dimensions

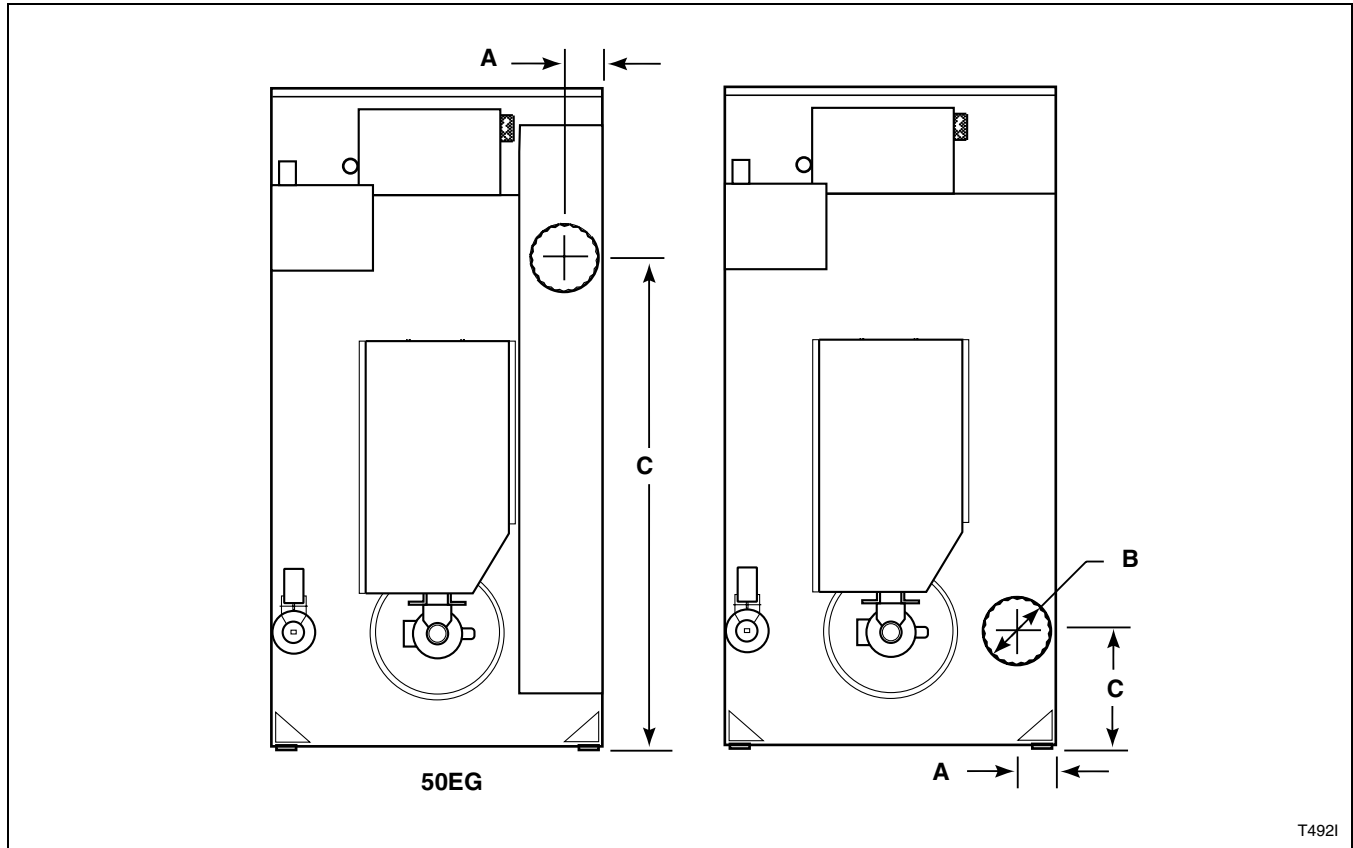
### Cabinet Dimensions



T326I

Models	A	B	C	D	E
50CG 50EG 50CE	30.75 in. (781 mm)	28.25 in. (717 mm)	47 in. (1194 mm)	76.625 in. (1946 mm)	38.625 in. (981 mm)
50CSH 50CSL	30.75 in. (781 mm)	28.25 in. (717 mm)	47 in. (1194 mm)	80 in. (2032 mm)	38.625 in. (981 mm)
75CG 75EG 75CE	30.75 in. (781 mm)	28.25 in. (717 mm)	53 in. (1346 mm)	76.625 in. (1946 mm)	38.625 in. (981mm)
75CSH 75CSL	30.75 in. (781 mm)	28.25 in. (717 mm)	53 in. (1346 mm)	80 in. (2032 mm)	38.625 in. (981 mm)
DTB634 STB634	30.75 in. (781 mm)	28.25 in. (717 mm)	53 in. (1346 mm)	76.625 in. (1946 mm)	38.625 in. (981 mm)

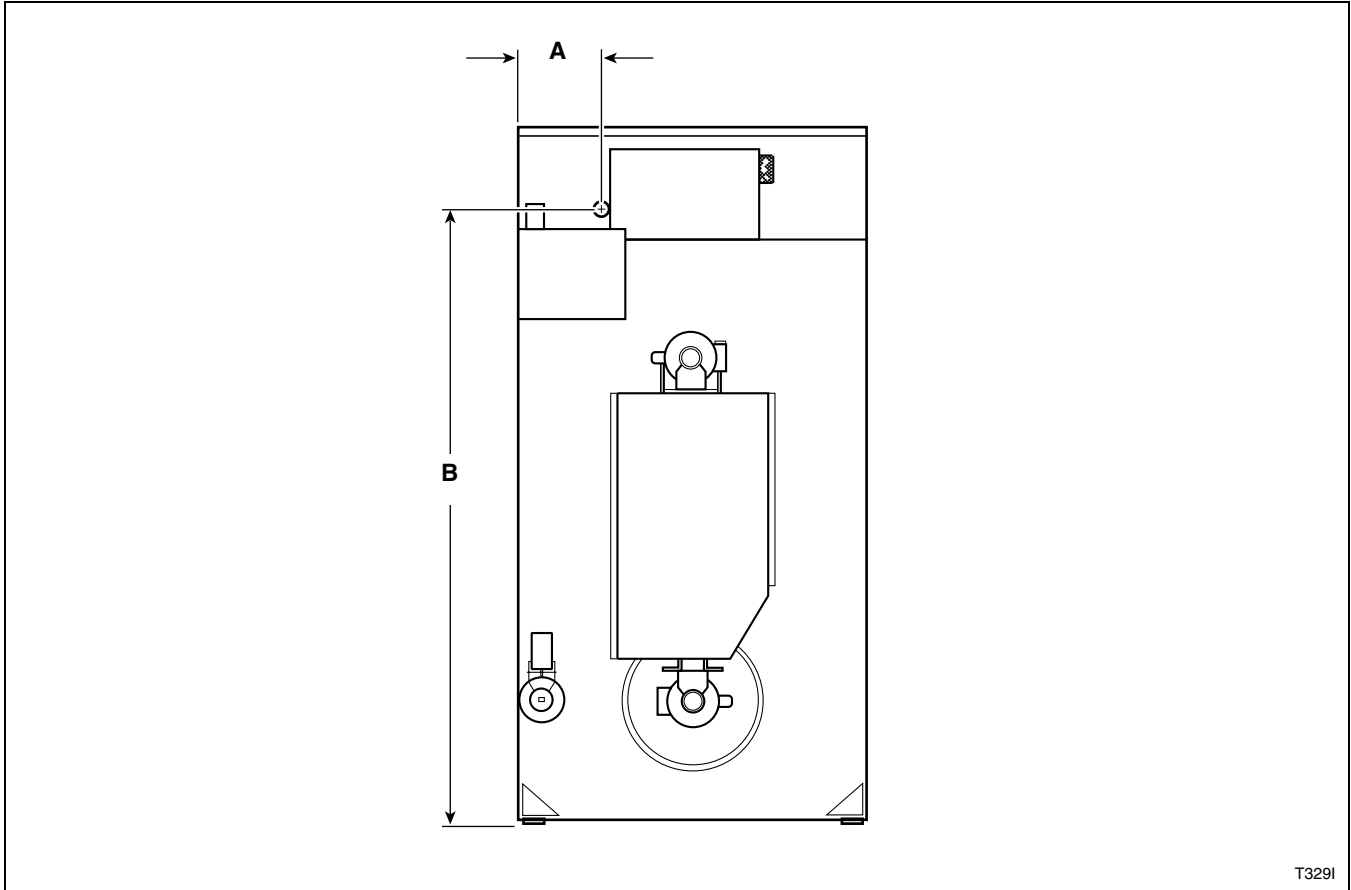
### Exhaust Outlet Locations



	<b>Models</b>	<b>A</b>	<b>B</b>	<b>C</b>
<b>Horizontal Exhaust</b>	50CG 50CE 50CSL 50CSH	5.375 in. (137 mm)	8 in. (203 mm)	13.375 in. (340 mm)
	75CG 75CE 75CSH 75CSL	5.375 in. (137 mm)	8 in. (203 mm)	13.375 in. (340 mm)
	DTB634 STB634	6.5 in. (165 mm)	10 in. (254 mm)	6.5 in. (165 mm)
<b>Vertical Exhaust</b>	75EG	5.625 in. (143 mm)	8 in. (203 mm)	5 in. (127 mm)
	50EG	5.625 in. (143 mm)	8 in. (203 mm)	

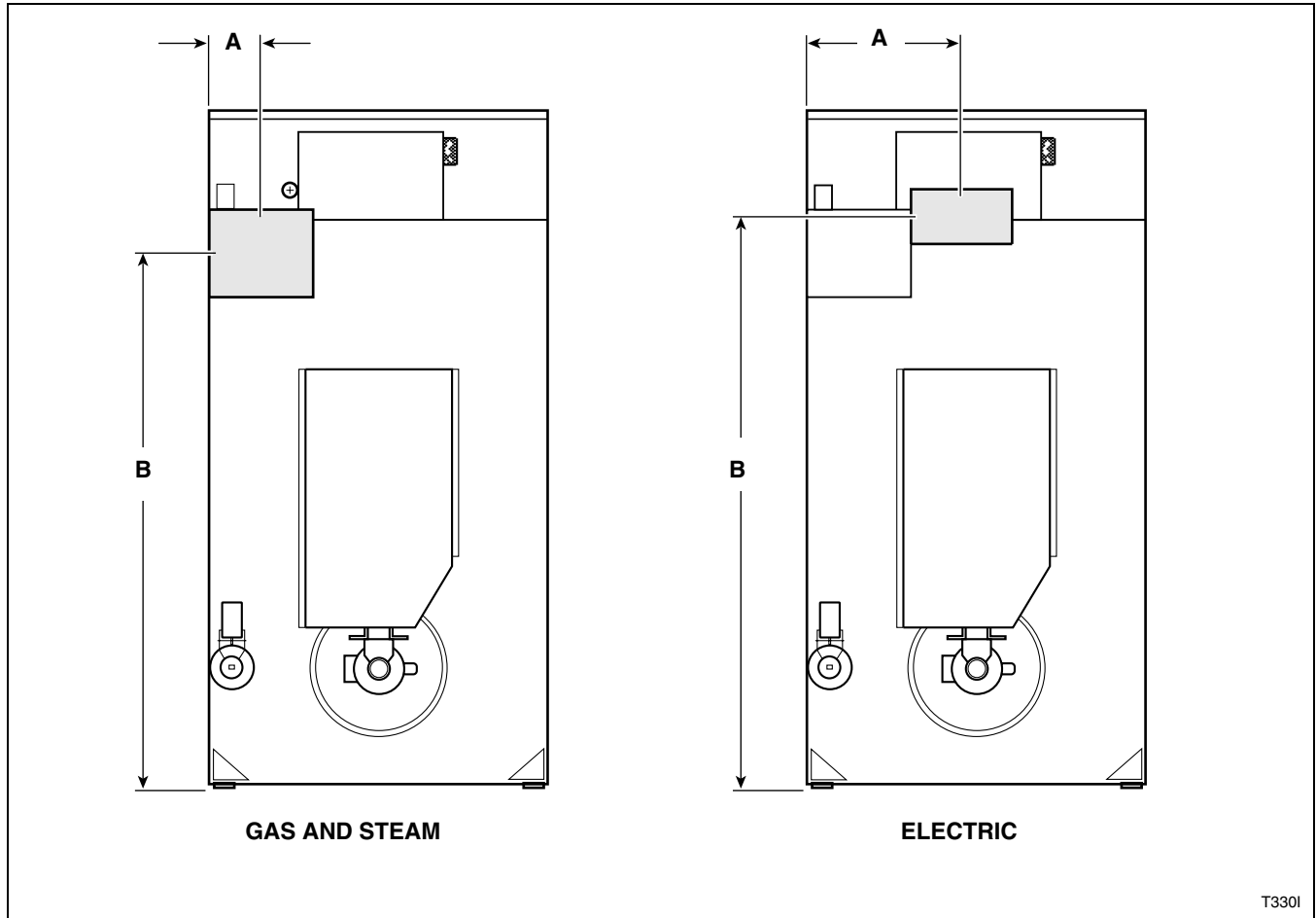
Specifications and Dimensions

Gas Connection Locations



Models	Diameter	A	B
50CG 50EG	1/2 in. NPT	15.5 in. (394 mm)	65.75 in. (1670 mm)
75CG 75EG	1/2 in. NPT	15.75 in. (400 mm)	65.75 in. (1670 mm)
DTB634 STB634	3/4 in. NPT	15.75 in. (400 mm)	65.75 in. (1670 mm)

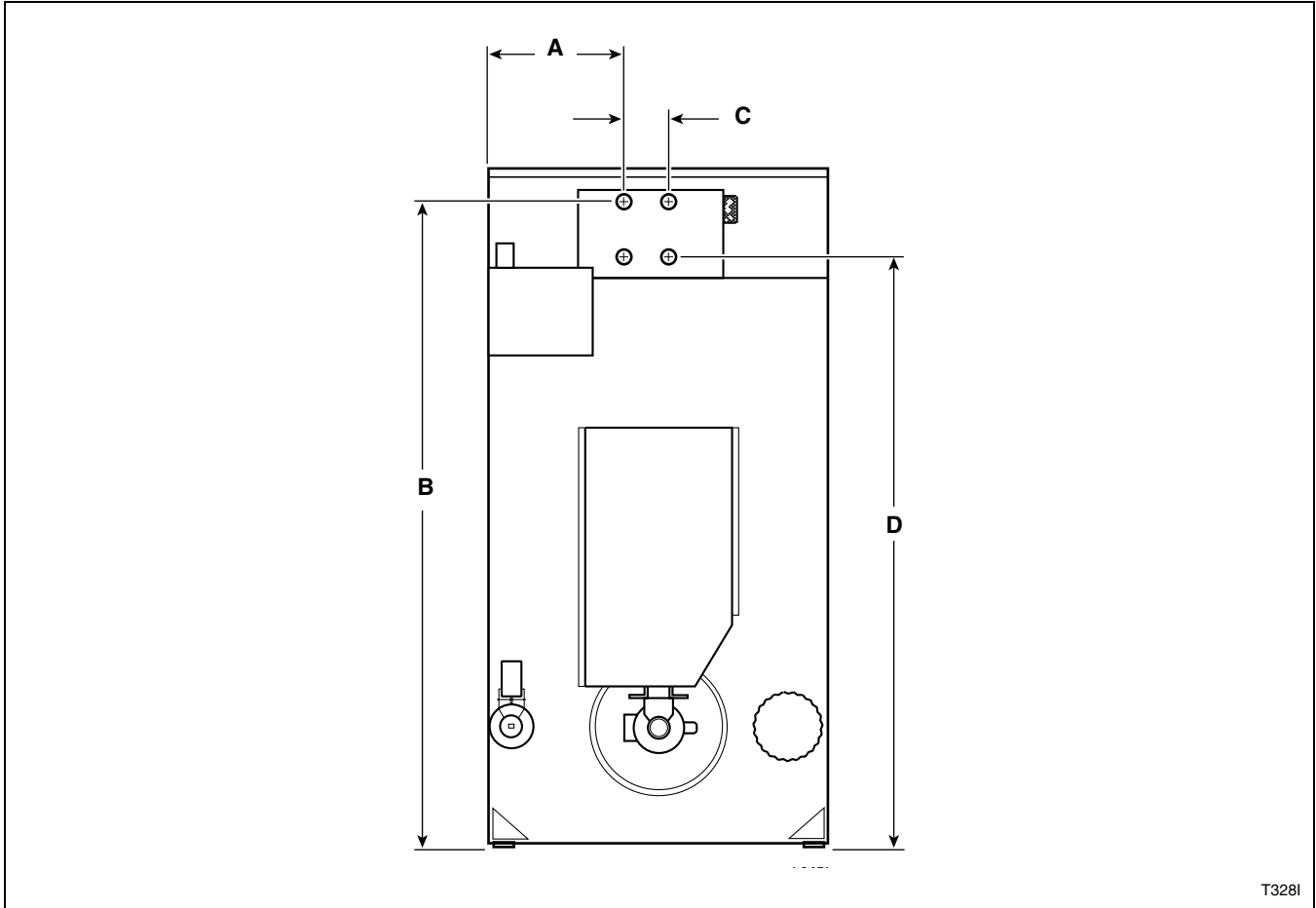
### Electrical Connection Locations



Models	A	B
50CG/50EG 50CSH/50CSL 75CG/75EG 75CSH/75CSL DTB634/STB634	(MT/CD) 3 in. (76.2 mm) (OM) 9.5 in. (241 mm)	(MT/CD) 72 in. (1067 mm) (OM) 63.5 in. (1613 mm)
50CE/75CE	19 in. (483 mm)	64 in. (1626 mm)

**NOTE: These figures are approximate dimensions only.**

### Steam Connection Locations



Models	Diameter	A	B	C	D
50CSH 50CSL	3/4 in. NPT	15.25 in. (387 mm)	72.75 in. (1848 mm)	7.5 in. (190 mm)	64.75 in. (1645 mm)
75CSH 75CSL	3/4 in. NPT	15.25 in. (387 mm)	72.75 in. (1848 mm)	7.5 in. (190 mm)	64.75 in. (1645 mm)



# Installation

## Pre-Installation Inspection

Upon delivery, visually inspect the packaging and portions of the product visible through the packaging for shipping damage. If the package or product is damaged, or if signs of possible damage are evident, have the carrier note the condition on the shipping papers before the shipping receipt is signed, or advise the carrier of the condition as soon as it is discovered.

Remove the packaging as soon as possible and check the items listed on the packing list. Advise the carrier of any damaged or missing articles as soon as possible. A written claim should be filed with the carrier immediately if articles are damaged or missing.

**IMPORTANT: Remove the shipping tape from the two backdraft dampers located in the exhaust outlet.**

**IMPORTANT: Warranty is void unless tumbler is installed according to instructions in this manual. Installation should comply with minimum specifications and requirements detailed in this manual and with applicable local gas fitting regulations, municipal building codes, water supply regulations, electrical wiring regulations, and any other relevant statutory regulations. Due to varied requirements, applicable local codes should be thoroughly understood and all pre-installation work arranged for accordingly.**

Materials Required (Obtain Locally)	
<b>All Models</b>	One fused disconnect switch or circuit breaker.
<b>Gas Models</b>	One gas shut-off valve for gas service line to each tumbler.
<b>Steam Models</b>	<p>One steam shut-off valve for steam service line to be connected upstream of solenoid steam valve.</p> <p>Two steam shut-off valves for each condensate return line.</p> <p>Flexible steam hoses with a 125 psig (pounds per square inch gauge) (8.79 kg/sq. cm) working pressure for connecting steam coils. Refer to <i>Figure 15</i> for sizing and connection configurations.</p> <p>Two steam traps for steam coil outlet to condensate return line.</p> <p>Two vacuum breakers for condensate return lines.</p>

**IMPORTANT: Keep tumbler area clear and free from combustible materials, gasoline and other flammable vapors and liquids.**

## Installation

### Location Requirements


The tumbler must be installed on a level floor. Floor covering materials such as carpeting or tile must be removed.

To assure compliance, consult local building code requirements.

The tumbler **MUST NOT** be installed or stored in an area where it will be exposed to water and/or weather.

**IMPORTANT: DO NOT block the airflow at the rear of the tumbler with laundry or other articles. Doing so would prevent adequate air supply to the combustion chamber of the tumbler.**

A typical tumbler enclosure is shown in *Figure 1*. Note that the enclosure touches the tumbler top and side panels. Also, note the minimum and maximum dimensions. There may be local codes and ordinances which must be complied with.




### WARNING

**To reduce the risk of serious injury, install lockable door(s) to prevent public access to rear of tumblers.**

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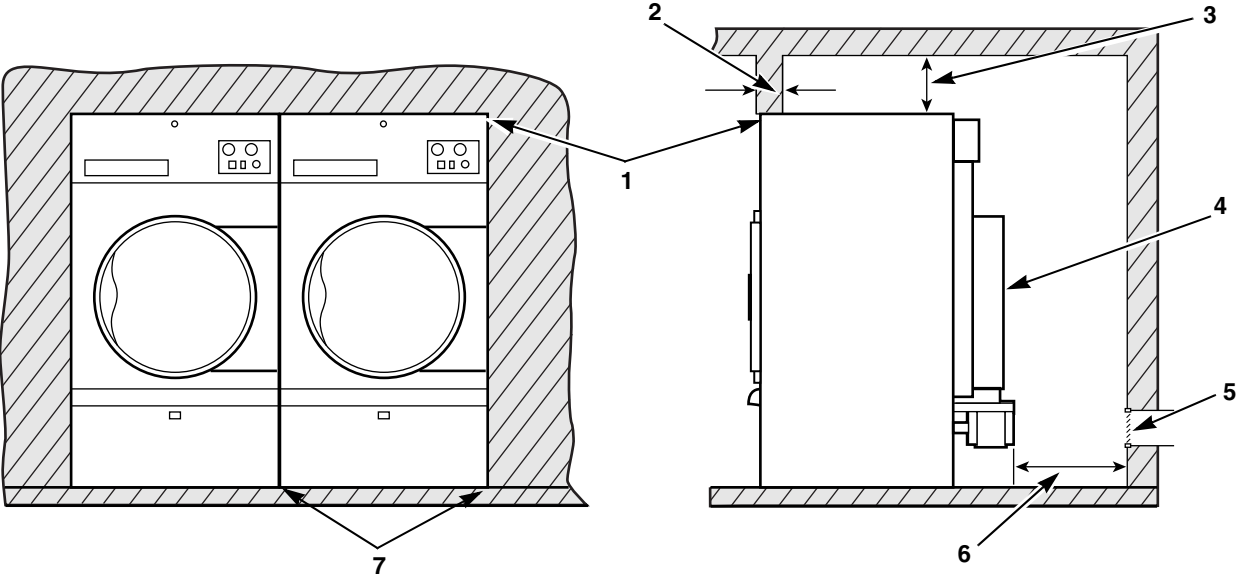
**IMPORTANT: Install tumblers with sufficient clearance for servicing and operation. Refer to *Figure 1*.**



### WARNING

**To reduce the risk of severe injury, clearance of tumbler cabinet from combustible construction must conform to the minimum clearances.**

W056



TMB815N

**NOTE: Shaded areas indicate adjacent structure.**

<b>1</b>	Zero Clearance Permitted for First 4 in. (102 mm)
<b>2</b>	4 in. (102 mm) Maximum Header Thickness
<b>3</b>	12 in. (305 mm) Minimum Clearance Permitted for Remainder
<b>4</b>	Guard
<b>5</b>	Provision for Make-Up Air
<b>6</b>	24 in. (610 mm) Minimum – 36 in. (914 mm) Recommended for Maintenance Purposes
<b>7</b>	Zero Clearance

Figure 1

## Position and Level the Tumbler

Remove lint panel door, and unscrew the four shipping bolts (one at each corner). Remove tumbler from skid.

**NOTE: Do not throw bolts away – they are the leveling legs.**

Remove four nuts from the literature packet and screw one fully onto each leveling leg.

Screw the four leveling legs (bolts) back into the level adjusting fittings from the bottom.

Slide tumbler to its permanent location. Adjust the leveling legs until the unit is level within 1/8 inch (32 mm). Tumbler must not rock. Lock leveling legs with nuts previously installed.

**IMPORTANT: Keep tumbler as close to floor as possible. The unit must rest firmly on floor so weight of tumbler is evenly distributed.**

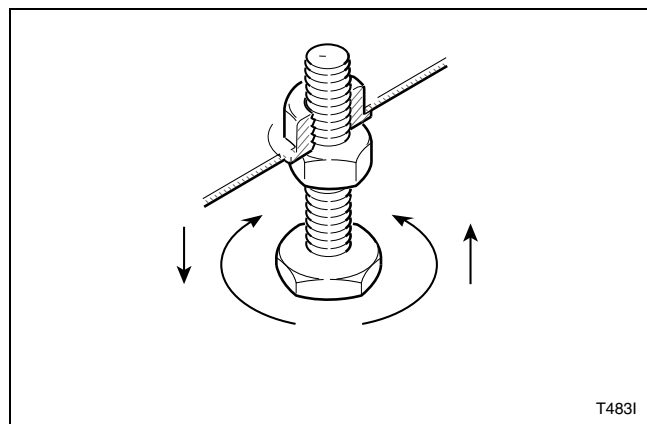


Figure 2

## Installing Accessory Timing Cam

### Metered Models

Coin drop tumblers have eight accessory cams in the literature packet. These allow you to change your vending times. Refer to *Table 1*. Timer motor RPM is printed on the timer motor.

Cam Pins	1/30 RPM Timer Motor	1/60 RPM Timer Motor
2	15	30
3	10	20
4	7.5	15
5	6	12
6	5	10
8	3.75	7.5
10	3	6
12	2.5	5

Table 1

## Installation

### Removal of Existing Timing Cam

1. Rotate cam by hand until “V” notch lines up beneath the ratchet tooth. Refer to *Figure 3*.
2. Insert narrow screwdriver under nylon cam, close to the clock shaft. Lift gently off shaft. Make sure that pressure is directed upward and that the “V” notch clears the ratchet tooth.

### Installation of New Timing Cam

1. Insert drive fork into timing cam with wide prong in wide hole of cam.
2. Position timing cam and drive fork over the timer shaft, aligning the timer flat with the drive fork and the “V” notch with one of the ratchet teeth.
3. Press timing cam down firmly to seat timing cam onto the motor shaft.

4. Remove all accumulated time by turning cam counterclockwise until switch shuts off. Apply moderate clockwise pressure to fully seated timing cam and drive against the timing motor shaft. Meter must be advanced electrically for one cycle before an accurate measure of time can be made.

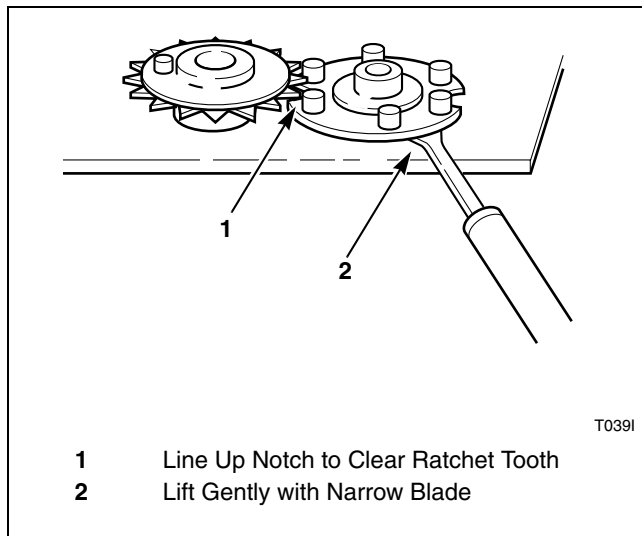


Figure 3

## Before Placing Tumbler into Service

1. Remove or open all panels and check accessible bolts, nuts, screws, terminals and fittings for tightness.
2. Check belt tension and adjust if necessary. Refer to *Adjustments* Section.
3. Replace all panels and guards.
4. Turn on electrical supply to tumbler.
5. Open the supply valve for gas or steam heated tumblers.
6. After performing the previous checks, start the tumbler by pressing START. (Refer to the *Operating Manual* for detailed instructions.) Release the start button and open the loading door. The cylinder should stop rotating within seven seconds after the door is opened.
7. **Gas models:** Start the tumbler and check the burner flame. Adjust the air inlet shutter as required. Refer to *Adjustments* Section.

**IMPORTANT:** Refer to *Table 2*. The electronic ignition system will attempt to light the gas by sparking for the “trial for ignition” period. If gas does ignite within this period, the ignition control will go into a safety lockout and the valve will no longer open until the control is reset. It may be necessary to reset several times to bleed air out of gas lines. To restart open and close loading door and restart unit.

Location	Prepurge Time (seconds)	Trial for Ignition (seconds)	Reset Lockout Condition By:
Australia	18	5	Open loading door
CE Marked	18	10	Press reset button behind front access panel
All Others (MT/CD)	1	15	Open loading door
All Others (OM)	1-3	10	Open loading door

Table 2

If lockout condition persists, check that the manual gas shut-off valve is in the ON position and that the gas service is properly connected. If condition still persists, remove tumbler from service.

8. Load the cylinder with a full load of clean rags and run to remove oil or dirt from cylinder.
9. Check the airflow switch operation by opening the lint panel. The heating systems should shut off when the lint panel is opened a maximum of 1-1/2 inches (38 mm).

The airflow switch operation may be affected by shipping tape still in place, lack of make-up air, or an obstruction in the exhaust duct. These should be checked and the required corrective action taken before attempting to adjust the airflow switch. To adjust the airflow switch refer to *Adjustments* Section.

	<b>WARNING</b>
<p><b>The tumbler must not be operated if the airflow switch does not operate properly. Faulty airflow switch operation may cause an explosive gas mixture to collect in the tumbler.</b></p>	
W072	

10. Wipe out the cylinder using an all-purpose cleaner or detergent and water solution. Refer to *Figure 4*.

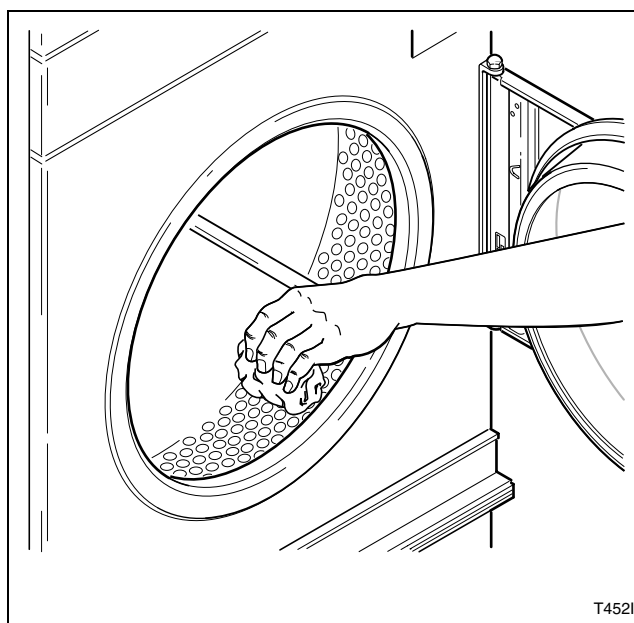


Figure 4

If the tumbler does not meet ANY of the above requirements, remove tumbler from use. Refer to *Removing Tumbler from Service* Section.


## Installation

### **Required for CE Marked (European) Models Only**

Once machine is installed, please be sure to complete the following items:

- Review and verify machine operation with customer.
- Leave all literature and a signed Declaration of Conformity with customer.
- Review machine warranty information with customer.
- Apply warning sticker on front panel of machine, in language appropriate to country of sale (included in literature packet).

## Installing Gas Drying Tumblers in the European Union (EU)

	<b>WARNING</b>
<p><b>To reduce the risk of electric shock, fire, explosion, serious injury or death:</b></p> <ul style="list-style-type: none"> <li>• <b>Disconnect electric power to the tumbler before servicing.</b></li> <li>• <b>Close gas shut-off valve to gas tumbler before servicing.</b></li> <li>• <b>Close steam valve to steam tumbler before servicing.</b></li> <li>• <b>Never start the tumbler with any guards/panels removed.</b></li> <li>• <b>Whenever ground wires are removed during servicing, these ground wires must be reconnected to ensure that the tumbler is properly grounded.</b></li> </ul> <p style="text-align: right;">W002</p>	

### General Information

This information is to be used when installing gas tumblers in countries and/or on gases different than the machine's factory configuration. Tumblers are supplied from the factory for operation on Natural Gas or L.P. Gas in the countries of GB/IE/PT/ES/IT. To install machines in any other country or on any other gas requires some level of modification.

Models are built in three different configurations:

- **Regulated Natural Gas** – Injector is sized for Natural Gas, second family, group H (E) at 20 mbar inlet pressure. Regulator/governor is operational. Gas valve CAN be field-converted to a non-regulating type.
- **Unregulated Natural Gas** – Injector is sized for Natural Gas, second family, group E+ at 20.25 mbar inlet pressure. Regulator/governor is blocked open. Gas valve CAN be field-converted to a regulating type.
- **Unregulated L.P. (Liquified Petroleum) Gas** – Injector is sized for L.P. Gas, third family, group 3+ at 28.37 mbar inlet pressure. Regulator/governor is blocked open. Gas valve CAN be field-converted to a regulating type.

Serial plates supplied from the factory are configured for one of the three gases for the countries of GB/IE/PT/ES/IT. This information pertains to situations when the country of use or gas supply is different than that on the serial plate.

*Table 3, Table 4 and Table 5* describe the different gases that are available in different EU countries, and how the machines need to be configured to operate with those gases. In the EU, there are Natural Gases that do not allow for machine regulation, and L.P. Gases that must be regulated. For L.P. Gas, third family B/P at 50 mbar, order Regulated Natural Gas machines and convert according to tables.


## Installation

### Basic Configuration

1. Determine the necessary conversion operations to convert from the factory-supplied configuration to the desired configuration.
2. Perform the conversions required so the machine is properly configured for the desired country and gas (refer to *Specific Conversion Procedures* Section):
  - How to Convert Gas Valve from Regulated to Unregulated

**NOTE: Conversion from regulated to unregulated is only needed when regulated tumblers were ordered, but unregulated tumblers were needed.**

- How to Change Injector (Orifice) Size
- How to Adjust Gas Valve Governor/Regulator
3. If applicable, peel off the appropriate country sticker from Part No. 503382 (included with machine) and apply it to the serial plate over the existing country information. Refer to *Figure 9*.
4. If applicable, peel off the appropriate conversion sticker from Part No. M413800 (included with machine) and apply it to the serial plate over the "ADJUSTED FOR \_\_\_\_\_ GAS: \_\_\_\_\_" information. Refer to *Figure 9*.

	<b>WARNING</b>
<p><b>When converting the tumbler to a different gas or pressure, first verify that the supply inlet pressure is equipped with a pressure regulator (located ahead of the tumbler) that will maintain the gas supply at the inlet pressure specified.</b></p>	
<small>W430</small>	

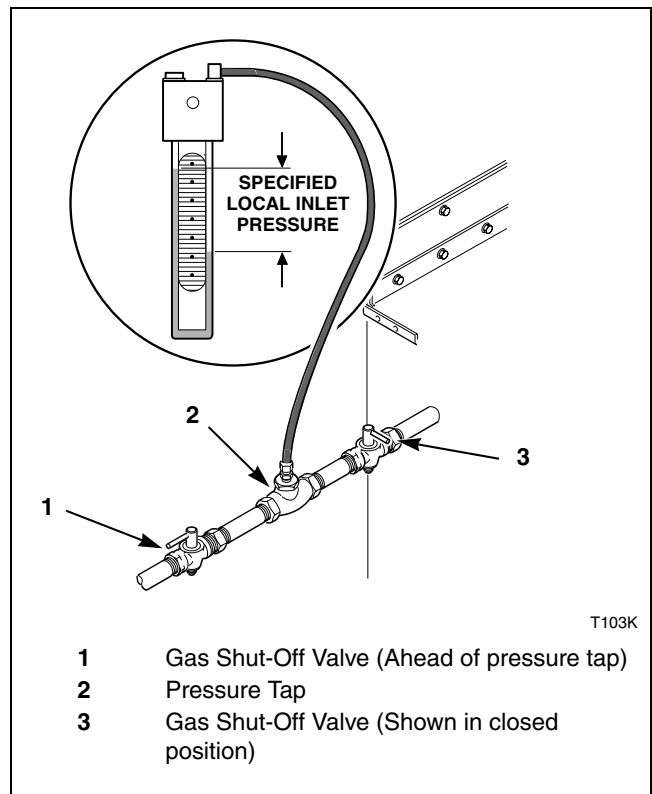


Figure 5

### Specific Conversion Procedures

*How to Convert Gas Valve from Regulated to Unregulated*

**NOTE: Conversion from regulated to unregulated is only needed when regulated tumblers were ordered, but unregulated tumblers were needed.**

Johnson G96 Gas Valve:

- a. Disconnect electrical power from tumbler. Close gas shut-off valve to tumbler. Refer to *Figure 5*.
- b. Follow instructions in Conversion Kit, Part No. M400763 (Johnson Part No. Y71AA-5C).

**NOTE: This kit does not contain any orifices.**

- c. Change injector size as required by the appropriate table according to *How to Change Injector (Orifice) Size*.
- d. Commission tumbler for use.



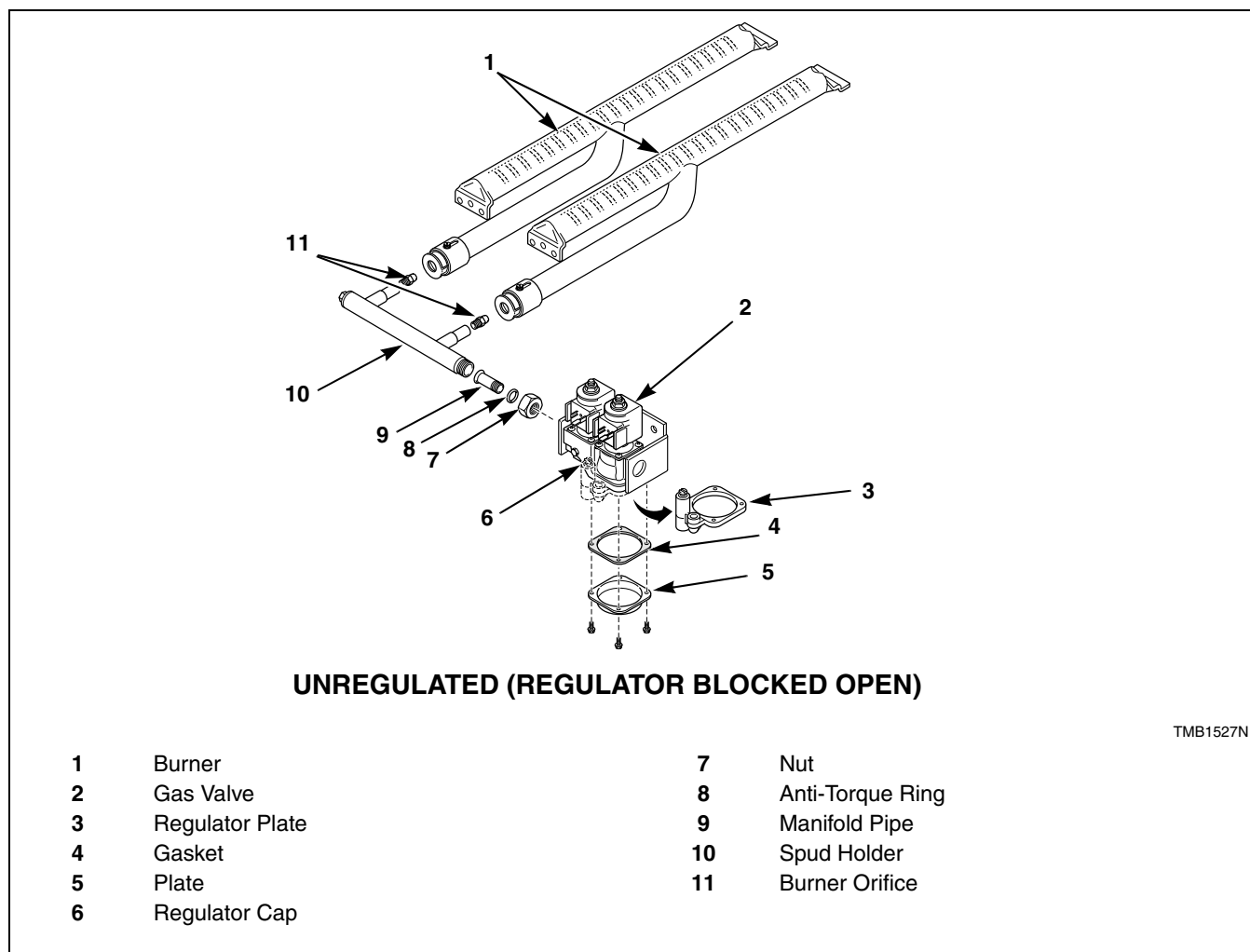


Figure 6

**How to Change Injector (Orifice) Size**

1. Disconnect electrical power from tumbler. Close gas shut-off valve to tumbler. Refer to *Figure 5*.
2. Remove gas valve.

**Johnson G96 Gas Valve** – Unscrew spud holder nut near gas valve. Refer to *Figure 7*. Remove the burner orifice(s) from spud holder. Refer to *Figure 6*.

3. Install the new, correct injector(s) (orifices). Refer to *Figure 8*. Torque each to 9-10 Nm.
4. Reinstall spud holder assembly to gas valve, making certain orifice(s) are in line with burner tube opening. Refer to *Figure 6*.
5. Commission tumbler for use.

**NOTE: Blank injectors (orifices) are Part No. M400995.**

## Installation

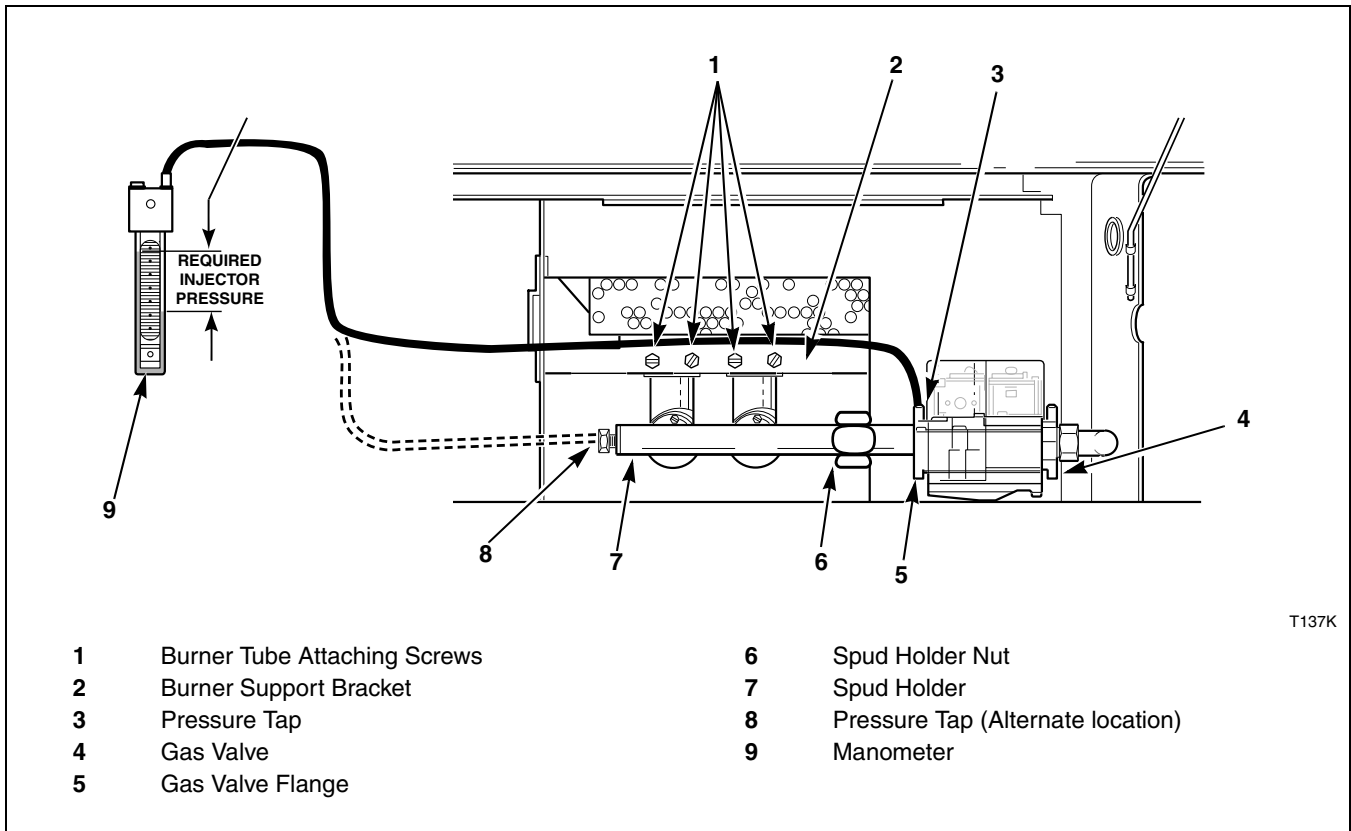


Figure 7

### How to Adjust Gas Valve Governor/Regulator

1. Check gas injector (manifold) pressure as follows. Refer to *Figure 7*.
2. Remove screw plug from inside pressure tap.
3. Connect a “U”-tube manometer (or similar pressure gauge) to the injector (manifold) pressure tap.
4. Start tumbler and note pressure once flame is burning. Remove regulator cap and adjust regulator screw until the injector pressure per applicable table is achieved. Replace regulator cap. Refer to *Figure 6*.

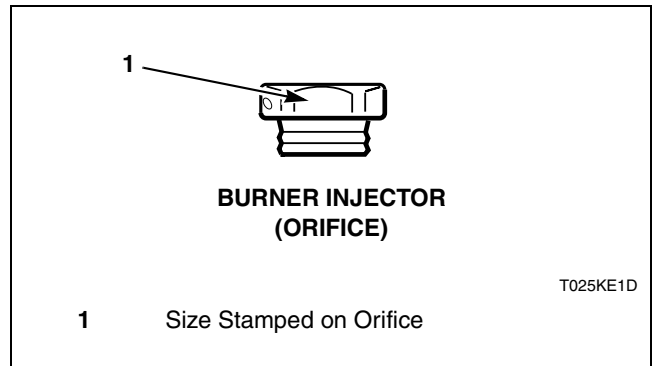


Figure 8

Model 50CG

Gas Type	GB	IE	PT	ES	IT	DK	NO	SE	FI	DE	NL	BE	FR	AT	Gas Family & Group	Inject. 0	Inject. Qty & Part. No.	Inlet Press.	Gvnr./Regltr.	Inject. Press.
Nat. Gas	1	1	1	1	1	2	2	2	2	2				2	2nd family Group H (E)	3.7 mm	2 M401000	20 mbar	Yes	8.9 mbar
											3				2nd family Group L (LL)	3.7 mm	2 M401000	25 mbar	Yes	12.6 mbar
												4	4		2nd family Group E+	3.0 mm	2 M401017	20.25 mbar	No	Unreg.
L.P. Gas						5	5	5	5	5	5				3rd family Group B/P	2.1 mm	2 M401003	30 mbar	No	Unreg.
										6				6	3rd family Group B/P	2.1 mm	2 M401003	50 mbar	Yes	28.5 mbar
	7	7	7	7	7							8	8		3rd family Group 3+	2.1 mm	2 M401033	28.37 mbar	No	Unreg.

Table 3

**NOTE: Follow all instructions including verification and adjustment of injector pressure.**

**1** – Order as Regulated Natural Gas. No modification needed.

**2** – Order as Regulated Natural Gas. Apply appropriate country sticker.

**3** – Order as Regulated Natural Gas. Apply appropriate country and gas stickers.

**4** – Order as Unregulated Natural Gas. Apply appropriate country sticker.

**5** – Order as Unregulated L.P. Gas. Apply appropriate country sticker.

**6** – Order as Regulated Natural Gas. Convert with regulator spring kit Part No. M411334 and (2) 2.1 mm injectors Part No. M401003. Apply appropriate country and gas stickers.

**7** – Order as Unregulated L.P. Gas. No modification needed.

**8** – Order as Unregulated L.P. Gas. Apply appropriate country sticker.

**OPEN** – No Approval available.

**Special Cases** – Regulated Gas Valve may be converted to Unregulated with block-open kit Part No. M400763.

**Installation**

**Model 50EG**

**Input: 27.8 kW**

Gas Type	GB	IE	PT	ES	IT	DK	NO	SE	FI	DE	NL	BE	FR	AT	Gas Family & Group	Inject. 0	Inject. Qty & Part. No.	Inlet Press.	Gvnr./Regitr.	Inject. Press.
Nat. Gas															2nd family Group H (E)					
															2nd family Group L (LL)					
															2nd family Group E+					
L.P. Gas						5	5	5	5	5	5				3rd family Group B/P	1.8 mm	2 M401018	30 mbar	No	Unreg.
															3rd family Group B/P					
	7	7	7	7	7							8	8		3rd family Group 3+	1.8 mm	2 M401018	28.37 mbar	No	Unreg.

Table 4

**NOTE: Follow all instructions including verification and adjustment of injector pressure.**

**5** – Order as Unregulated L.P. Gas. Apply appropriate country sticker.

**7** – Order as Unregulated L.P. Gas. No modification needed.

**8** – Order as Unregulated L.P. Gas. Apply appropriate country sticker.

**OPEN** – No Approval available.

**Special Cases** – Natural Gas not available as a factory order.

Model 75CG

Input: 48.3 kW

Gas Type	GB	IE	PT	ES	IT	DK	NO	SE	FI	DE	NL	BE	FR	AT	Gas Family & Group	Inject. 0	Inject. Qty & Part. No.	Inlet Press.	Gvnr./Regitr.	Inject. Press.
Nat. Gas	1	1	1	1	1	2	2	2	2	2				2	2nd family Group H (E)	3.6 mm	2 M401014	20 mbar	Yes	8.9 mbar
											3				2nd family Group L (LL)	3.6 mm	2 M401014	25 mbar	Yes	12.6 mbar
												4	4		2nd family Group E+	2.9 mm	2 M402444	20.25 mbar	No	Unreg.
L.P. Gas						5	5	5	5	5	5				3rd family Group B/P	2.0 mm	2 M400999	30 mbar	No	Unreg.
										6				6	3rd family Group B/P	2.0 mm	2 M400999	50 mbar	Yes	28.5 mbar
	7	7	7	7	7							8	8		3rd family Group 3+	2.0 mm	2 M400999	28.37 mbar	No	Unreg.

Table 5

**NOTE: Follow all instructions including verification and adjustment of injector pressure.**

**1** – Order as Regulated Natural Gas. No modification needed.

**2** – Order as Regulated Natural Gas. Apply appropriate country sticker.

**3** – Order as Regulated Natural Gas. Apply appropriate country and gas stickers.

**4** – Order as Unregulated Natural Gas. Apply appropriate country sticker.

**5** – Order as Unregulated L.P. Gas. Apply appropriate country sticker.

**6** – Order as Regulated Natural Gas. Convert with regulator spring kit Part No. M411334 and (3) 2.0 mm injectors Part No. M400999. Apply appropriate country and gas stickers.

**7** – Order as Unregulated L.P. Gas. No modification needed.


**8** – Order as Unregulated L.P. Gas. Apply appropriate country sticker.

**OPEN** – No Approval available.

**Special Cases** – Regulated Gas Valve may be converted to Unregulated with block-open kit Part No. M400763.



# Exhaust Requirements

	<b>WARNING</b>
<p><b>A drying tumbler produces combustible lint. To reduce the risk of fire, the tumbler must be exhausted to the outdoors.</b></p> <p style="text-align: right;">W057</p>	
<p><b>To reduce the risk of fire and accumulation of combustible gases, DO NOT exhaust tumbler air into a window well, gas vent, chimney or enclosed, unventilated area such as an attic wall, ceiling, crawl space under a building, or concealed space of a building.</b></p> <p style="text-align: right;">W059</p>	

## Layout

Whenever possible, install tumblers along an outside wall where duct length can be kept to a minimum, and make-up air can be easily accessed. Construction must not block the airflow at the rear of the tumbler. Doing so would prevent adequate air supply to the tumbler combustion chamber.

## Make-Up Air

A tumbler is forced air exhausted and requires provisions for make-up air to replace air exhausted by tumbler. Refer to *Table 6*.

**IMPORTANT: Do not obstruct flow of combustion and ventilation air.**

<b>Required Make-Up Air Opening (to the outside) for Each Tumbler</b>	
<b>Model</b>	<b>Opening</b>
50 Pound	144 in <sup>2</sup> (928 cm <sup>2</sup> )
75 Pound	195 in <sup>2</sup> (1258 cm <sup>2</sup> )
634	250 in <sup>2</sup> (1613 cm <sup>2</sup> )

Table 6

Make-up air openings with louvers will restrict airflow. The opening must be increased to compensate for area taken up by louvers.

Make-up air openings in rooms containing tumbler(s) and/or gas fired hot water heater or other gravity vented appliances must be increased sufficiently to prevent downdrafts in any of the vents when all tumblers are in operation. Do not locate gravity vented appliances between tumbler(s) and make-up air openings. If it is necessary to duct make-up air to tumbler(s), increase area of ductwork by 25% to compensate for restrictions in airflow.

## Venting

For maximum efficiency and minimum lint accumulation, tumbler air must be exhausted to the outdoors by the shortest possible route.

Proper sized exhaust ducts are essential for proper operation. All elbows should be sweep type. Exhaust ducts must be assembled so the interior surfaces are smooth, so the joints do not permit the accumulation of lint. **DO NOT** use plastic or thin foil flexible ducts. Use exhaust ducts made of sheet metal or other noncombustible material. Use duct tape on all joints.

Verify that old ducts are thoroughly cleaned out before installing new tumbler.

Improperly sized or assembled ductwork causes excess back pressure which results in slow drying, lint collecting in the duct, lint blowing into the room, and increased fire hazard.

**Exhaust ducts shall be constructed of sheet metal or other noncombustible material. Such ducts must be equivalent in strength and corrosion resistance to ducts made of galvanized sheet steel not less than 0.0195 inches (0.495 mm) thick.**

Where the exhaust duct pierces a combustible wall, ceiling, floor or partition an opening having a diameter of 4 inches (102 mm) larger than the diameter of the exhaust duct shall be provided, with the duct centered in the opening. The space around the duct may be sealed with noncombustible material. Refer to *Figure 10*.

**IMPORTANT: For best performance provide an individual exhaust duct for each tumbler. Do not install a hot water heater in a room containing tumblers. It is better to have the water heater in a separate room with a separate air inlet.**

## Exhaust Requirements

### Individual Venting

For maximum efficiency and performance, it is preferred to exhaust tumbler(s) individually to the outdoors.

**IMPORTANT: At no point may the cross sectional area of installed venting be less than the cross sectional area of the exhaust outlet of the tumbler.**

The exhaust duct must be designed so the static back pressure measured 12 inches (305 mm) from the exhaust outlet does not exceed the maximum allowable pressure specified on the installation sticker on the rear of the tumbler. Static back pressure must be measured with the tumbler running (both pockets on stacked models).

The maximum allowable length of venting of the same diameter as the exhaust thimble is 14 feet (4.3 m) and two 90° elbows or equivalent. If the equivalent length of a duct required for an installation exceeds the maximum allowable equivalent length, the diameter of a round duct must be increased by 10% for each additional 20 feet (6.1 meters). Cross section area of a rectangular duct must be increased by 20% for each additional 20 feet (6.1 meters). Refer to *Table 7* to determine equivalent venting.

Duct Diameter	Equivalent Length of Straight Duct
8 in. (203 mm)	One 90° elbow = 9.3 ft. (2.83 m)
10 in. (254.0 mm)	One 90° elbow = 11.6 ft. (3.5 m)
12 in. (304.8 mm)	One 90° elbow = 14 ft. (4.3 m)
14 in. (355.6 mm)	One 90° elbow = 16 ft. (4.9 m)
16 in. (406.4 mm)	One 90° elbow = 18.7 ft. (5.7 m)
18 in. (457.2 mm)	One 90° elbow = 21 ft. (6.4 m)
Equivalent Length (feet) = 1.17 x Duct Diameter (inches)	

Table 7

**Example: A 12 inch diameter duct's equivalent length of 14 feet of duct and two 90° elbows is:**

**Equivalent Length = 14 ft. + (2) 90° elbows  
= 14 ft. + 14 ft. + 14 ft.  
= 42 ft. (12.8 m)**

With the tumbler in operation, airflow at any point in the duct should be at least 1200 feet per minute (366 meters per minute) to ensure that lint remains airborne. If 1200 feet per minute cannot be maintained, schedule a regular inspection and cleaning of the ductwork.

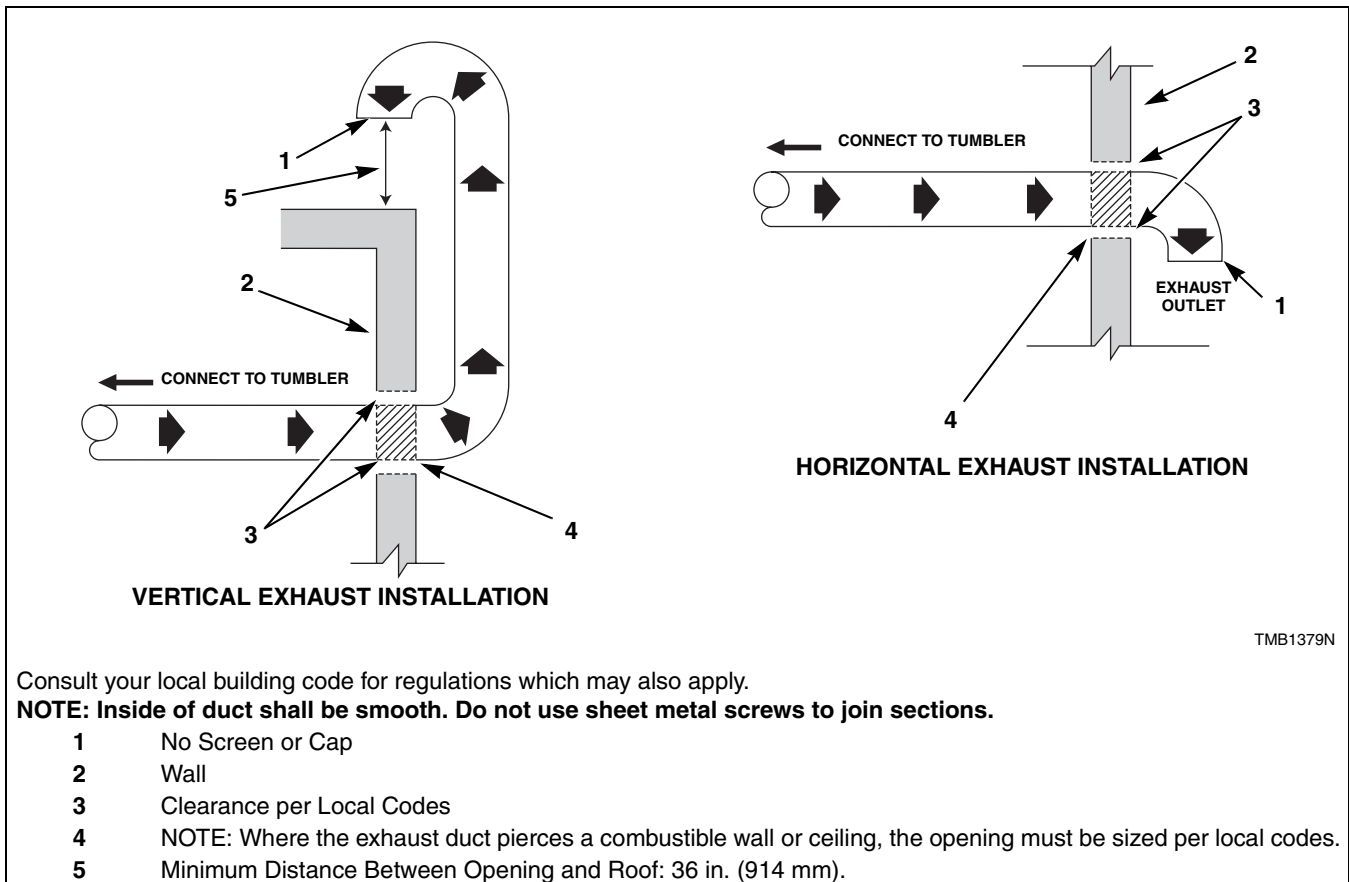


Figure 10



### Manifold Venting

While it is preferable to exhaust tumblers individually to the outdoors, a main collector duct may be used if it is sized according to *Figure 12*. This illustration indicates minimum diameters, and should be increased if the collector length exceeds 14 feet (4.2 meters) and two 90° elbows. The diameter of a round duct must be increased by 10% for each additional 20 feet (6.1 meters). Cross sectional area of a rectangular or square duct must be increased 20% for each additional 20 feet (6.1 meters). Refer to *Table 8* to determine equivalent ducting sizing. The collector duct may be rectangular or square in cross section, as long as the area is not reduced. Provisions **MUST** be made for lint removal and cleaning of the collector duct.

The vent collector system must be designed so the static back pressure measured 12 inches (305 mm) from the exhaust outlet does not exceed the maximum allowable pressure specified on the installation sticker on the rear of tumbler. Static back pressure must be measured with all tumblers vented into the collector operating.

**Never connect a tumbler duct at a 90° angle to the collector duct. Refer to *Figure 11*. Doing so will cause excessive back pressure, resulting in poor performance. Never connect two tumbler exhaust ducts directly across from each other at the point of entry to the collector duct.**

With the tumbler in operation, airflow at any point in the duct should be at least 1200 feet per minute (366 meters per minute) to ensure that lint remains airborne. If 1200 feet per minute cannot be maintained, schedule a regular inspection and cleaning of the ductwork.

The collector system must be designed so the static back pressure measured 12 inches (305 mm) from the exhaust outlet does not exceed the maximum allowable pressure specified on the installation sticker on the rear of tumbler. This must be measured with all tumblers vented into the collector operating.

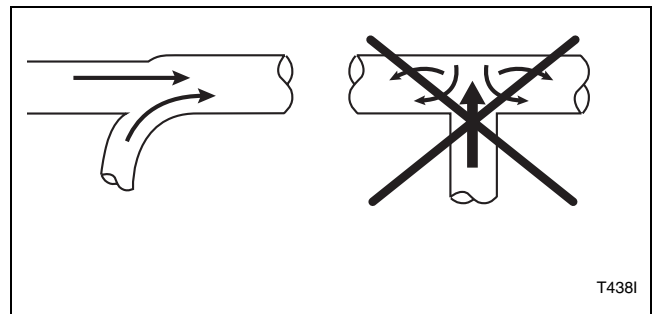


Figure 11

## Exhaust Requirements

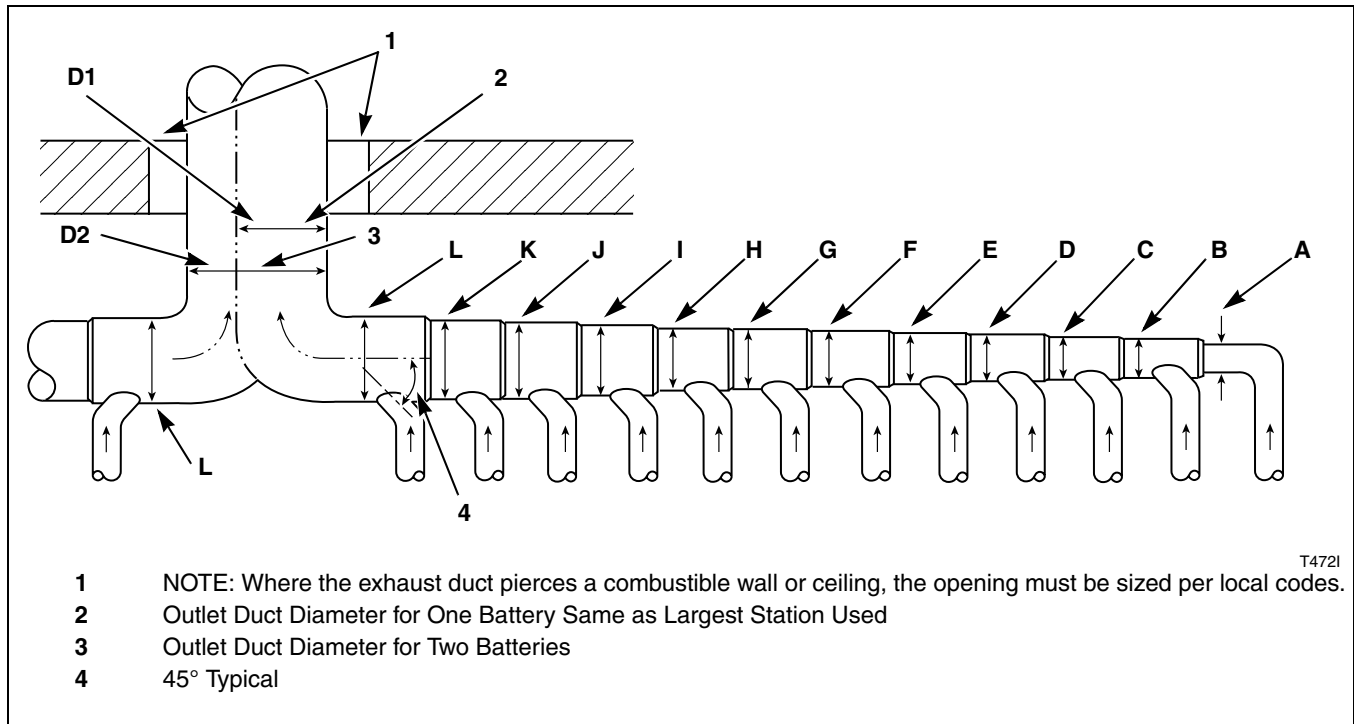



Figure 12

Duct Station	8 Inch Duct		10 Inch Duct	
	50, 75 Pound		634	
	D1	D2	D1	D2
A	10 in. (254 mm)	13 in. (330 mm)	10 in. (254 mm)	15 in. (381 mm)
B	12 in. (305 mm)	17 in. (432 mm)	15 in. (381 mm)	22 in. (559 mm)
C	15 in. (381 mm)	18 in. (457 mm)	18 in. (457 mm)	26 in. (660 mm)
D	17 in. (432 mm)	24 in. (610 mm)	21 in. (533 mm)	30 in. (762 mm)
E	19 in. (483 mm)	27 in. (686 mm)	24 in. (610 mm)	34 in. (864 mm)
F	21 in. (533 mm)	30 in. (762 mm)	26 in. (660 mm)	37 in. (940 mm)
G	23 in. (584 mm)	33 in. (838 mm)	28 in. (711 mm)	40 in. (1016 mm)
H	25 in. (635 mm)	34 in. (864 mm)	30 in. (762 mm)	43 in. (1092 mm)
I	26 in. (660 mm)	37 in. (940 mm)	32 in. (813 mm)	46 in. (1168 mm)
J	27 in. (686 mm)	39 in. (991 mm)	33 in. (838 mm)	47 in. (1194 mm)
K	29 in. (737 mm)	40 in. (1016 mm)	35 in. (889 mm)	50 in. (1270 mm)
L	30 in. (762 mm)	42 in. (1067 mm)	36 in. (914 mm)	51 in. (1295 mm)

Table 8

# Gas Requirements

	<b>WARNING</b>
<p><b>To reduce the risk of fire or explosion, DO NOT CONNECT THE GAS LINE TO THE TUMBLER IF THE GAS SERVICE IS NOT THE SAME AS THAT SPECIFIED ON THE TUMBLER SERIAL PLATE! It will first be necessary to convert the gas burner orifice and gas valve. Appropriate conversion kits are available.</b></p>	
<small>W060</small>	

**IMPORTANT:** Any product revisions or conversions must be made by the Manufacturer's Authorized Dealers, Distributors or local service personnel.

**IMPORTANT:** The tumbler must be isolated from the gas supply piping system by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system at test pressure equal to or less than 1/2 psig (3.45 kPa, 34.5 mbar).

**IMPORTANT:** The tumbler and its manually operated appliance gas valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi (3.45 kPa, 34.5 mbar).

**IMPORTANT:** The installation must comply with local codes or, in the absence of local codes:


- with the latest edition of the "National Fuel Gas Code," ANSI Z223.1/NFPA 54 in the U.S.A.,
- with CSA-B149.1 or Natural Gas and Propane Installation Code in Canada,
- and Australian Gas Association/Australian L.P. Gas Association requirements in Australia.

Obtain specific gas service pipe size from the gas supplier. Refer to *Table 9* for general pipe size.

A dirt and water vapor pipe trap must be furnished and installed. Refer to *Figure 13*.

Install a 1 inch (25.4 mm) pipe gas loop to maintain equal pressure at all gas connections. Refer to *Figure 14*.

An in-line pressure regulator may be required on Natural Gas models if the line pressure exceeds 8 water column inches (2.00 kPa) pressure with all gas appliances firing.

	<b>WARNING</b>
<p><b>To reduce the risk of fire or explosion, if the tumbler is to be connected to Liquefied Petroleum (L.P.) gas, a vent to the outdoors must be provided in the room where the tumbler is installed.</b></p>	
<small>W062</small>	

NATURAL GAS service must be supplied at  $7.0 \pm 1.5$  inch water column pressure ( $1.74 \pm 0.37$  kPa).


L.P. (Liquefied Petroleum) GAS service must be supplied at  $11 \pm 0.3$  inch water column pressure ( $2.74 \pm 0.07$  kPa).

EUROPEAN GASES – The above data for Natural and L.P. Gas does not apply in the EU. Refer to *Installing Gas Drying Tumblers in the European Union*.

Pressure checks can be made at the shut-off valve. Refer to *Figure 13*.

## Gas Requirements

Turn on gas and check all pipe connections (internal and external) for gas leaks with a non-corrosive leak detection fluid. Purge air in gas service line by operating the tumblers in the drying mode. If burner does not light and unit goes into lockout, open and close the door and restart. Repeat these steps until burner ignites. **Use pipe compound, resistant to actions of L.P. Gas, on all pipe threads.**

	<b>WARNING</b>
<b>Do not use an open flame to check for gas leaks! To reduce the risk of explosion or fire check all pipe connections, internal and external, for gas leaks using a non-corrosive leak detection fluid. Check gas connections annually for leakage.</b>	
<small>W408</small>	

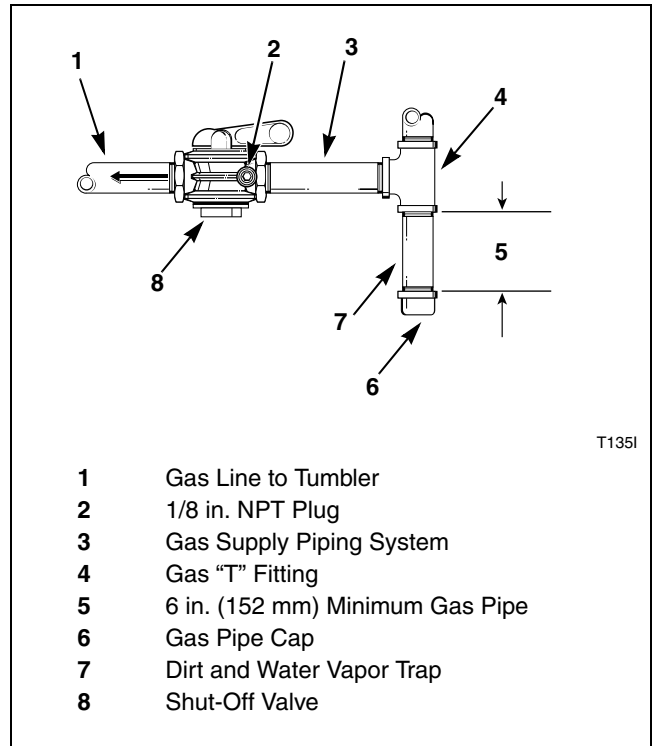
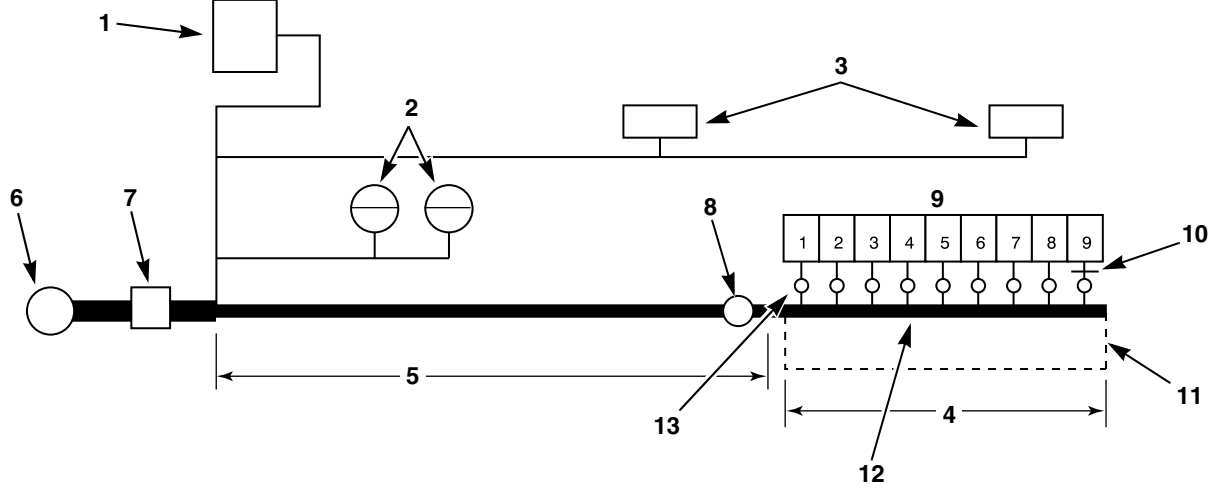


Figure 13

## Gas Supply Pipe Looping and Sizing



T4941

- 1 Gas Furnace (120,000 Btu/hr)
- 2 Gas Water Heaters (400,000 Btu/hr each)
- 3 Gas Space Heaters (70,000 Btu/hr each)
- 4 19 ft. (5.8 m)
- 5 25 ft. (7.6 m)
- 6 Main Regulator
- 7 Gas Meter
- 8 Pressure Regulator (If required)
- 9 Gas Tumblers (120,000 Btu/hr each)
- 10 Gas Line Pressure Tap
- 11 1 in. (25.4 mm) Gas Pipe Loop
- 12 NOTE: Minimum Pipe Size is 1/2 in. (12.7 mm)
- 13 Shut-Off Valves

### SAMPLE CALCULATIONS:

Equivalent length = Total length of main gas supply pipe to the far end of the tumblers.  
 = 25 ft. + 19 ft. (7.6 m + 5.8 m) gas supply pipe  
 = 44 ft. (13.4 m) Total Gas Line

Total Btu/hr = The sum of the Btu/hr of all tumblers being fed by the main gas supply pipe.  
 = 9 x 120,000  
 = 1,080,000 Btu/hr

Using *Table 9*, the main supply pipe diameter should be 2 in. (51 mm).

**IMPORTANT: Gas loop piping must be installed as illustrated to equalize gas pressure for all tumblers connected to single gas service. Other gas using appliances should be connected upstream from loop.**

Figure 14

**Gas Requirements**

Gas Pipe Size Required for 1000 Btu Natural Gas — 0.64 Specific Gravity at 7 ± 1.5 inch (1.62 ± .37 kPa) Water Column Pressure						
Gas Appliances Total Btu/hr.	Equivalent Length					
	25 feet (7.63 m)	50 feet (15.25 m)	75 feet (22.88 m)	100 feet (30.50 m)	125 feet (38.13 m)	150 feet (45.75 m)
	Based on 0.3 in. Water Column Pressure Drop for Length Given Sizes shown are in inches (mm)					
100,000	.75 (19.05)	.75 (19.05)	1 (25.40)	1 (25.40)	1 (25.40)	1 (25.40)
120,000	.75 (19.05)	1 (25.40)	1 (25.40)	1 (25.40)	1 (25.40)	1 (25.40)
140,000	.75 (19.05)	1 (25.40)	1 (25.40)	1 (25.40)	1 (25.40)	1.25 (31.75)
160,000	.75 (19.05)	1 (25.40)	1 (25.40)	1.25 (31.75)	1.25 (31.75)	1.25 (31.75)
180,000	1 (25.40)	1 (25.40)	1 (25.40)	1.25 (31.75)	1.25 (31.75)	1.25 (31.75)
200,000	1 (25.40)	1 (25.40)	1.25 (31.75)	1.25 (31.75)	1.25 (31.75)	1.5 (38.10)
300,000	1 (25.40)	1.25 (31.75)	1.25 (31.75)	1.5 (38.10)	1.5 (38.10)	1.5 (38.10)
400,000	1.25 (31.75)	1.25 (31.75)	1.5 (38.10)	1.5 (38.10)	1.5 (38.10)	2 (50.80)
500,000	1.25 (31.75)	1.5 (38.10)	1.5 (38.10)	2 (50.80)	2 (50.80)	2 (50.80)
600,000	1.5 (38.10)	1.5 (38.10)	2 (50.80)	2 (50.80)	2 (50.80)	2 (50.80)
700,000	1.5 (38.10)	2 (50.80)	2 (50.80)	2 (50.80)	2 (50.80)	2.5 (63.50)
800,000	1.5 (38.10)	2 (50.80)	2 (50.80)	2 (50.80)	2.5 (63.50)	2.5 (63.50)
900,000	2 (50.80)	2 (50.80)	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)
1,000,000	2 (50.80)	2 (50.80)	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)
1,100,000	2 (50.80)	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)
1,200,000	2 (50.80)	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)
1,300,000	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)	3 (76.20)
1,400,000	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)
1,500,000	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)
1,600,000	2 (50.80)	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)
1,700,000	2 (50.80)	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)
1,800,000	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)	3 (76.20)
1,900,000	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)	3 (76.20)
2,000,000	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)	3.5 (88.90)
2,200,000	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)	3.5 (88.90)	3.5 (88.90)
2,400,000	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)	3.5 (88.90)	3.5 (88.90)
2,600,000	2.5 (63.50)	3 (76.20)	3 (76.20)	3.5 (88.90)	3.5 (88.90)	3.5 (88.90)
2,800,000	2.5 (63.50)	3 (76.20)	3 (76.20)	3.5 (88.90)	3.5 (88.90)	3.5 (88.90)
3,000,000	2.5 (63.50)	3 (76.20)	3.5 (88.90)	3.5 (88.90)	3.5 (88.90)	4 (101.60)

**IMPORTANT: For L.P. Gas, correct the total Btu/hr by multiplying it by 0.6. The answer is the equivalent Btu on the above chart.**

**IMPORTANT: The installation must conform with local codes or, in the absence of local codes:**

- with the latest edition of the “National Fuel Gas Code,” ANSI Z223.1/NFPA 54 in the U.S.A.,
- with CSA-B149.1 or Natural Gas and Propane Installation Code in Canada,
- and Australian Gas Association/Australian L.P. Gas Association requirements in Australia.

Table 9

## High Altitude Orifice Sizing

For proper operation at altitudes above 2000 feet (610 meters), the gas orifice size must be reduced to ensure complete combustion. Refer to *Table 10* for non-CE Marked models. (For CE Marked models, consult local gas supplier.)

Model	Gas	Altitude		Orifice				New Rate (Btu/hr)*	
		feet	meters	No.	inches	mm	Quantity		Part Number
50EG	Natural Gas	2001-4000	610-1830	30	0.1285	3.3	2	M401021	87,400
		4001-6000	1831-2440	31	0.1200	3.0		M401017	72,200
		6001-10,000	2441-3050	32	0.1160	2.9		M402444	64,600
	L.P. Gas	2001-4000	610-1220	47	0.0785	2.0		M400999	87,400
		4001-6000	1221-1830	48	0.0760	1.9		M401001	79,800
		6001-8000	1831-2440	49	0.0730	1.8		M401018	72,200
8001-10,000	2441-3050	50	0.0700	1.8	M401016	64,600			
50CG	Natural Gas	2001-4000	610-1830	28	0.1405	3.6	2	M401014	110,400
		4001-6000	1831-2440	29	0.1360	3.4		M400997	100,800
		6001-10,000	2441-3050	30	0.1285	3.3		M401021	91,200
	L.P. Gas	2001-4000	610-1220	44	0.0860	2.2		M401011	110,400
		4001-6000	1221-1830	45	0.0820	2.1		M401027	100,800
		6001-8000	1831-2440	46	0.0810	2.1		M401003	91,200
8001-10,000	2441-3050	47	0.0785	2.0	M400999	81,600			
75CG	Natural Gas	2001-4000	610-1830	29	0.1360	3.4	3	M400997	151,800
		4001-6000	1831-2440	30	0.1285	3.3		M401021	138,600
		6001-10,000	2441-3050	31	0.1200	3.0		M401017	125,400
	L.P. Gas	2001-4000	610-1220	45	0.0820	2.1		M401027	151,800
		4001-6000	1221-1830	46	0.0810	2.1		M401003	138,600
		6001-8000	1831-2440	47	0.0785	2.0		M400999	125,400
8001-10,000	2441-3050	48	0.0760	1.9	M401001	112,200			
634	Natural Gas	2001-4000	610-1220	23	0.1540	3.9	3	M401020	197,800
		4001-6000	1221-1830	25	0.1495	3.8		M402997	180,600
		6001-8000	1831-2440	27	0.1440	3.7		M400998	163,400
		8001-10,000	2441-3050	29	0.1360	3.4		M400997	146,200
	L.P. Gas	2001-4000	610-1220	42	0.0935	2.4		M403017	197,800
		4001-6000	1221-1830	43	0.0890	2.3		M406184	180,600
		6001-8000	1831-2440	44	0.0860	2.2		M401011	163,400
		8001-10,000	2441-3050	45	0.0820	2.1		M401027	146,200

\* Btu/hr derate of 4% per 1000 feet (305 meters) of altitude.

Table 10

# Steam Requirements

Obtain specific steam service pipe sizes from steam system supplier or a qualified steam fitter.


- Refer to *Figure 15* for proper steam pipe configurations.
- To prevent condensate draining from headers to tumbler, piping should have a minimum 12 inch (305 mm) rise above respective header. **Do not** make steam connection to header with a horizontal or downward facing tee or elbow.
- Whenever possible, horizontal runs of steam lines must drain, by gravity, to respective steam header. Water pockets, or an improperly drained steam header will provide wet steam, causing improper operation of tumbler. If pockets or improper drainage cannot be eliminated, install a bypass trap to drain condensate from the low point in the steam header to the return.
- In both steam supply and steam return line, it is recommended that each have a pipe union and globe valve. This will enable you to disconnect the steam connections and service the tumbler while your laundry facility is in operation.
- Before connecting trap and check valve to tumbler, open shut-off valve in steam supply line and allow steam to flow through tumbler to flush out any dirt and scale from tumbler. This will assure proper operation of trap when connected.
- After flushing system, install vacuum breaker, inverted bucket trap (with built-in strainer) and check valve. For successful operation of tumbler, install trap 18 inches (457 mm) below coil and as near to the tumbler as possible. Inspect trap carefully for inlet and outlet markings and install according to trap manufacturer's instructions. If steam is gravity returned to boiler, omit trap but install vacuum breaker and check valve in return line near tumbler. Gravity return requires entire return plumbing be below steam coil outlets.
- Install union and shut-off valve in return line and make final pipe connections to return header.

**NOTE: To prevent water hammering, route return lines below outlets of steam coils.**

## Piping Recommendations

- Trap each steam coil individually. Always keep the trap clean and in good working condition.
- When tumbler is on the end of a line of equipment, extend header at least 4 feet (1.2 meters) beyond tumbler. Install shut-off valve, union, check valve and bypass trap at end of line. If gravity return to boiler, omit trap.
- Insulate steam supply and return lines for safety of operator and safety while servicing tumbler.
- Keep tumbler in good working condition. Repair or replace any worn or defective parts.

Machines require a (constant) 80 to 100 psig (pounds per square inch gauge) (5.62 to 7.03 kg/sq. cm) steam service for optimum operation.

	<b>WARNING</b>
<p><b>All system components must have a 125 psig (10 bar) working pressure. Shut-off gate valves must be installed upstream of the steam solenoid valve and downstream of each steam trap so components can be isolated for maintenance or emergency purposes.</b></p> <p><b>All components (solenoid valve, traps) must be supported to minimize loads on the tumbler steam coil connections.</b></p>	
<small>W427</small>	



## Installing Steam Trap and Making Condensate Return Connections

The steam trap must be installed and the coil outlet connections must be connected to the condensate return lines. The following steps outline the procedure for installing the steam trap and connecting the condensate return lines. Refer to *Figure 15* for typical installations.

1. Connect a flexible hose to each steam coil outlet.
2. Install a strainer to the ends of each flexible hose.
3. Install a steam trap to each strainer.

**IMPORTANT: Steam trap must be installed a minimum of 18 inches (457 mm) below the steam coil outlet connections.**

4. Install a globe shut-off valve to each steam trap.
5. Connect to the condensate return lines.



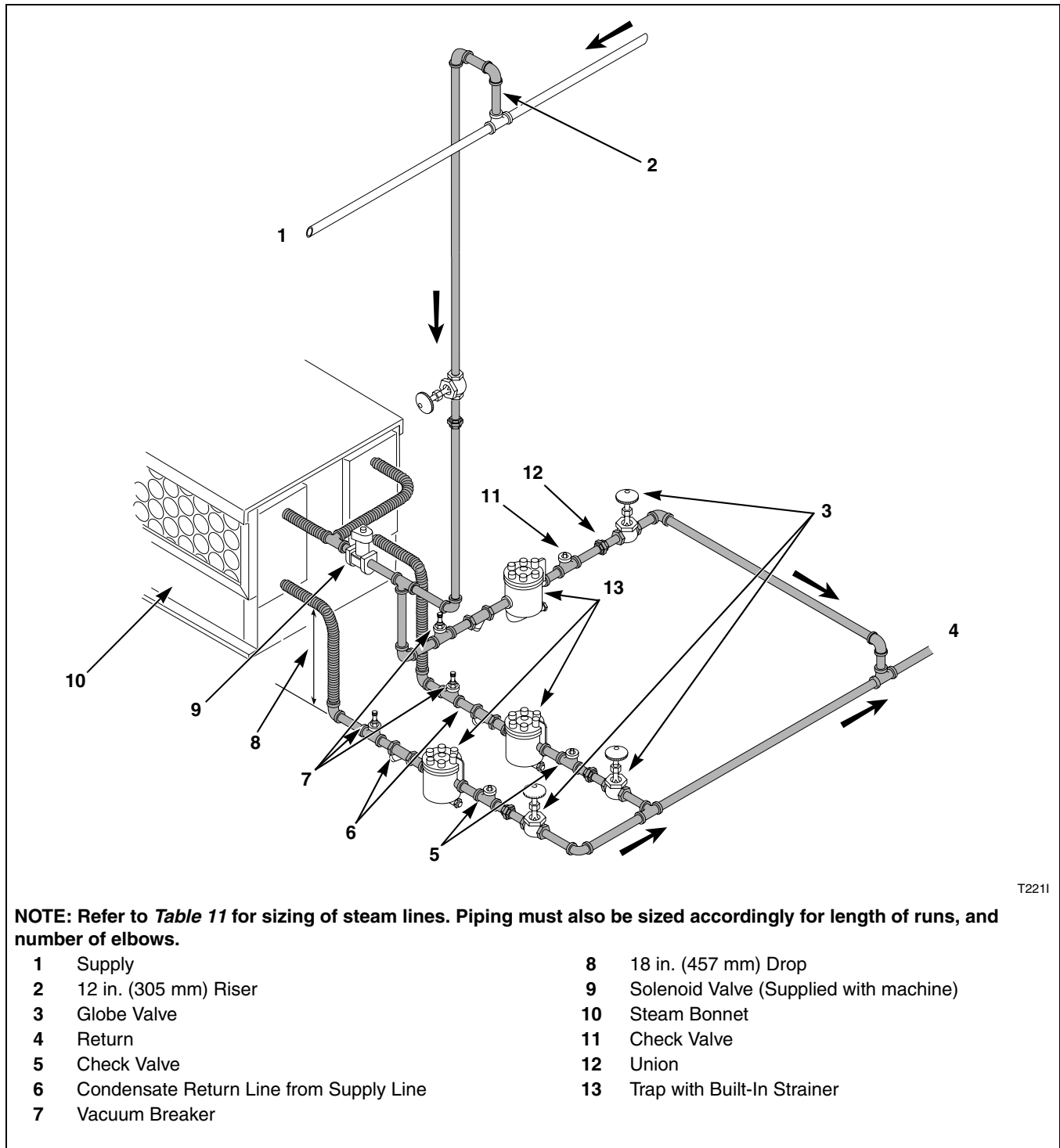
### WARNING

**The flexible steam hoses connecting the coil outlet connections and steam traps must have a minimum of 125 psig (pounds per square inch gauge) (8.79 kg/sq. cm.) working pressure. A shut-off valve must be installed downstream from each steam trap so the condensate return line can be isolated in event a steam trap requires maintenance.**

**Each steam trap must be supported so minimum load is exerted on the coil outlet connection.**

W066

## Steam Requirements




T2211

Figure 15

Model	Steam Pressure (psi)	Minimum Pipe Diameter	Steam Trap Size (Pounds Condensate/ Hour)
CSL	7-15	3/4 in. (19 mm)	140
CSH	80-100	3/4 in. (19 mm)	160

Table 11

# Electrical Requirements


	<b>WARNING</b>
<p>To reduce the risk of electric shock, fire, explosion, serious injury or death:</p> <ul style="list-style-type: none"><li>• Disconnect electric power to the tumbler before servicing.</li><li>• Close gas shut-off valve to gas tumbler before servicing.</li><li>• Close steam valve to steam tumbler before servicing.</li><li>• Never start the tumbler with any guards/panels removed.</li><li>• Whenever ground wires are removed during servicing, these ground wires must be reconnected to ensure that the tumbler is properly grounded.</li></ul> <p style="text-align: right;">W002</p>	
<p>To reduce the risk of fire and electric shock, check with a qualified serviceman for proper grounding procedures. Improper connection of the equipment grounding conductor may result in a risk of electric shock.</p> <p style="text-align: right;">W068</p>	
<p>To reduce the risk of fire and electric shock, if electrical supply is coming from a three phase service, DO NOT connect a “High Leg” or “Stinger Leg” to a single phase machine. On a three phase machine, if there is a “High Leg” or “Stinger Leg” it should be connected to L3.</p> <p style="text-align: right;">W069</p>	


## Grounding Instructions

**NOTE:** To ensure protection against shock, this tumbler **MUST** be electrically grounded in accordance with the local codes or, in the absence of local codes, with the latest edition of the National Electrical Code ANSI/NFPA No. 70. In Canada the electrical connections are to be made in accordance with CSA C22.1 latest edition Canadian Electrical Code or local codes. Electrical work should be done by a qualified electrician.

This tumbler must be grounded. In the event of malfunction or breakdown, grounding will reduce the risk of electric shock by providing a path of least resistance for electric current. This tumbler must be connected to a grounded metal, permanent wiring system; or an equipment grounding conductor must be run with the circuit conductors and connected to the appropriate ground location.

- Metal conduit and/or BX cable is not considered ground.
- Connecting the Neutral from the electrical service box to the tumbler ground screw does not constitute a ground.
- A dedicated ground conduit (wire) must be connected between the electrical service box ground bar and tumbler ground screw.

	<b>WARNING</b>
<p>To reduce the risk of electrical shock, de-energize the electrical circuit being connected to the tumbler before making any electrical connections. All electrical connections should be made by a qualified electrician. Never attempt to connect a live circuit.</p> <p style="text-align: right;">W409</p>	

	<b>CAUTION</b>
<p>Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.</p> <p style="text-align: right;">W071</p>	

### For CE Marked Models Only:

All OPL (non-vend) models are factory-equipped with an emergency stop button on the front panel.

**NOTE:** Activation of the emergency stop button stops all machine control circuit functions, but **DOES NOT** remove all electrical power from machine.

## Electrical Requirements

The following steps outline the procedure for connecting the electrical service to the tumbler.

**NOTE: The wiring diagram is supplied in literature packet in cylinder.**

1. Install a circuit breaker as close to the tumbler as possible. If more than one tumbler is being installed, a disconnect switch or circuit breaker should be provided for each. This will make it possible to disconnect each tumbler for maintenance purposes.
2. Connect the conduit-encased leads to the disconnect switch, or circuit breaker. Connect the wire leads to the appropriate labeled terminal on the terminal block. The ground wire must be connected to the ground connection as shown in *Figure 16*.

3. Check the electrical service phase sequence (three phase only) as follows:
  - a. Energize the electrical service (on reversing tumblers, ensure nonreversing is selected) and momentarily start the tumbler. Check the direction of the cylinder rotation. If the cylinder rotates clockwise (viewed from the front), the phase sequence is correct. If the cylinder rotates counterclockwise, proceed with step b.

**NOTE: On reversing tumblers, the fan motor should also rotate clockwise (viewed from the front) on all models except the F75 models which rotate counterclockwise (viewed from the front).**

- b. Disconnect and reverse any two service leads on the terminal block.

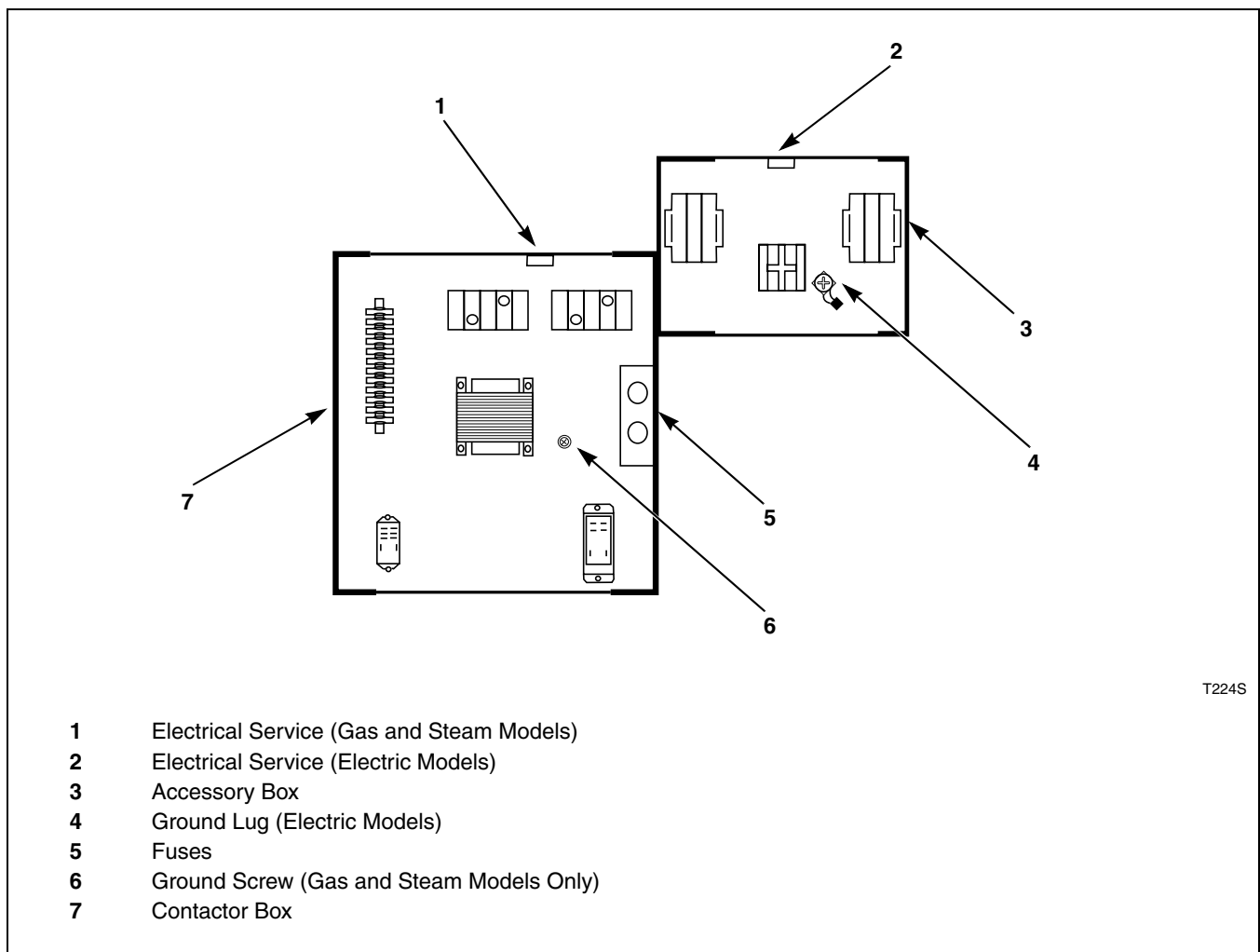


Figure 16

T224S

## Jumper Configuration Instructions

### OPL Micro Control Models Only

Changing the transformer configuration jumper is required if any of the following apply:

- You have 208 Volt service and are connecting a gas or steam model rated for 208 or 240 Volt.
- You have 415 Volt service and are connecting a gas or steam model rated for 380 or 415 Volt.

To configure your 208 or 240 Volt tumbler for 208 Volt operation, you must remove the 240 Volt configuration jumper located in the contactor box and replace it with the 208 Volt jumper supplied with the information packet. This must be done prior to supplying power to the machine. Failure to install proper configuration jumper may result in damage to sensitive electronic controls and may void warranty.

To configure your 380 or 415 Volt tumbler for 415 Volt operation, you must remove the 380 Volt configuration jumper located in the contractor box and replace it with the 415 Volt jumper supplied with the information packet. This must be done prior to supplying power to machine. Failure to install proper configuration jumper may result in damage to sensitive electronic controls and may void warranty.

## Ferrite Ring Installation

### Gas and Steam OPL Micro Control Models Only

The ferrite ring provided in the literature packet must be installed over the power leads during connection of electrical service. The ferrite protects the sensitive electronic controls from destructive electrical disturbances which may be present on power lines to the machine. Failure to properly install the ferrite ring may result in damage to the electronic controls and will void control warranty.

To install:

1. Immediately after connection of power leads and before applying power to machine, locate each of the incoming service leads including ground.
2. Snap the ferrite ring closed over all the service leads inside of the contactor box as shown. It is important that the ferrite ring be installed inside the contactor box as shown. Do not install the ferrite outside of the box or other area. Make sure that service leads are in the center of the ferrite before closing the ring so as not to pinch or damage leads.

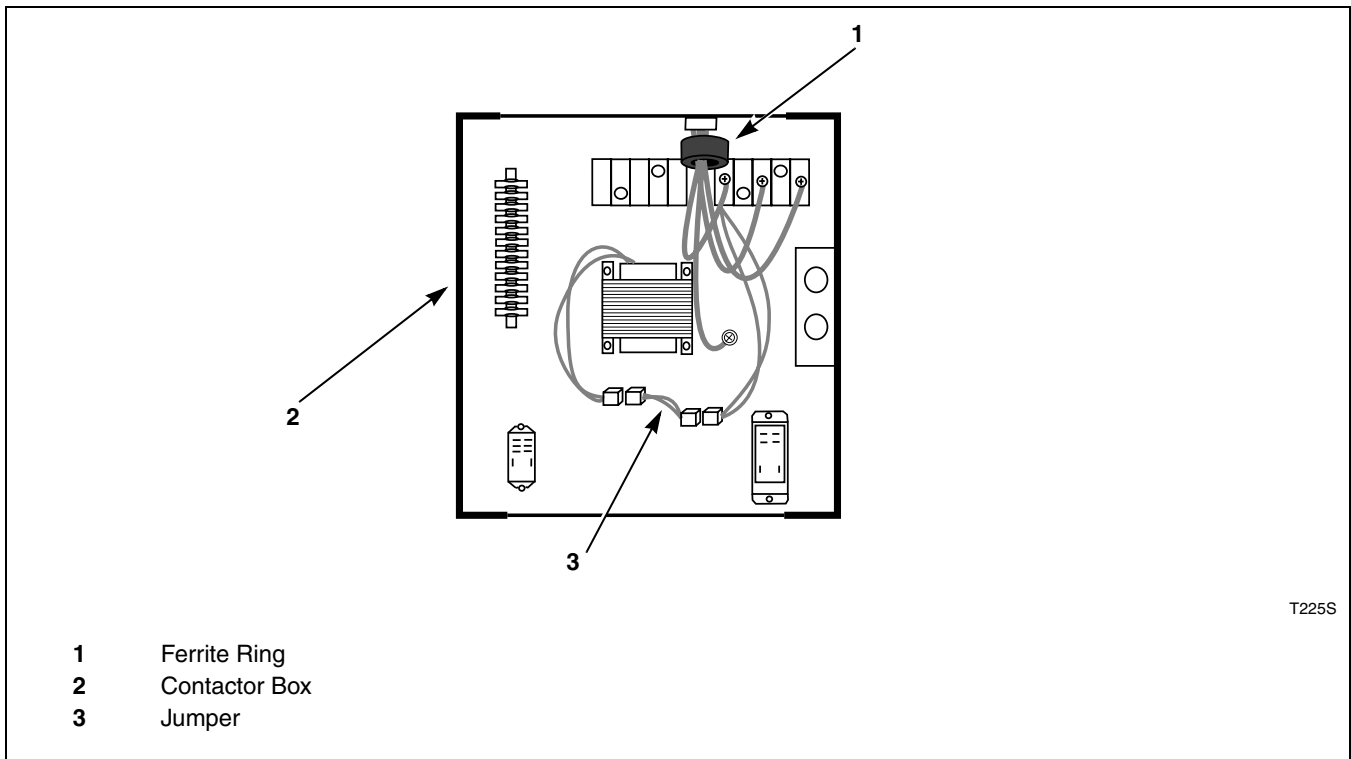


Figure 17

## Electrical Requirements

### 50 Pound Tumbler Electrical Requirements

NOTE: Use copper conductors only.

NOTE: Connect to individual branch circuit.

Refer to *Table 12*.

**NOTE: Minimum wire sizes are obtained from the Canadian Electrical Code and are intended for use as a guideline only. Electrical connections should be made only by a qualified electrical contractor in accordance with all applicable local and national requirements.**

Heat Source	Serial Plate Voltage	Terminal Block Connections Required	Rated Current	Breaker Rating	Breaker Poles	Recommended Wire Size
Gas and Steam	120 Volt/60 Hertz/ 1 Phase	L1, Neutral and ground	*	20 Amps	1	12 AWG (3.9 mm <sup>2</sup> )
Gas and Steam	208 or 240 Volt/ 60 Hertz/1 Phase	L1, L2, Neutral and ground	*	15 Amps	2	14 AWG (2.6 mm <sup>2</sup> )
Gas and Steam	230-240 Volt/50 Hertz/ 1 Phase	L1, Neutral and ground†	*	15 Amps	1	14 AWG (2.6 mm <sup>2</sup> )
Gas and Steam	208 or 240 Volt/ 60 Hertz/3 Phase	L1, L2, L3, and ground†	*	15 Amps	3	14 AWG (2.6 mm <sup>2</sup> )
Gas and Steam	380 or 415 Volt/ 50 Hertz/3 Phase	L1, L2, L3 and ground	*	15 Amps	3	14 AWG (2.6 mm <sup>2</sup> )
Gas and Steam	460-480 Volt/60 Hertz/ 3 Phase	L1, L2, L3 and ground	*	15 Amps	3	14 AWG (2.6 mm <sup>2</sup> )
Electric	240 Volt/50 Hertz/ 1 Phase	L1, Neutral and ground	91 Amps	100 Amps	1	2 AWG (43 mm <sup>2</sup> )
Electric	208 Volt/60 Hertz/ 3 Phase	L1, L2, L3 and ground	88 Amps	100 Amps	3	2 AWG (43 mm <sup>2</sup> )
Electric	240 Volt/60 Hertz/ 3 Phase	L1, L2, L3 and ground	78 Amps	90 Amps	3	2 AWG (43 mm <sup>2</sup> )
Electric	240 Volt/50 Hertz/ 3 Phase	L1, L2, L3 and ground	78 Amps	90 Amps	3	2 AWG (27 mm <sup>2</sup> )
Electric	380 Volt/50 Hertz/ 3 Phase	L1, L2, L3 and ground†	50 Amps	60 Amps	3	4 AWG (27 mm <sup>2</sup> )
Electric	415 Volt/60 Hertz/ 3 Phase	L1, L2, L3, and ground†	46 Amps	60 Amps	3	4 AWG (27 mm <sup>2</sup> )
Electric	480 Volt/60 Hertz/ 3 Phase	L1, L2, L3, and ground	38 Amps	50 Amps	3	6 AWG (17 mm <sup>2</sup> )

\*Current Ratings vary slightly depending on model; refer to serial plate.  
†MT (manual timer)/CD (rotary coin drop) Models may require a Neutral conductor. Consult wiring diagram.

Table 12

## 75 Pound Tumbler Electrical Requirements

NOTE: Use copper conductors only.

NOTE: Connect to individual branch circuit.

Refer to *Table 13*.

**NOTE: Minimum wire sizes are obtained from the Canadian Electrical Code and are intended for use as a guideline only. Electrical connections should be made only by a qualified electrical contractor in accordance with all applicable local and national requirements.**

Heat Source	Serial Plate Voltage	Terminal Block Connections Required	Rated Current	Breaker Rating	Breaker Poles	Recommended Wire Size
Gas and Steam	120 Volt/60 Hertz/ 1 Phase	L1, Neutral and ground	*	20 Amps	1	12 AWG (3.9 mm <sup>2</sup> )
Gas and Steam	208 or 240 Volt/ 60 Hertz/1 Phase	L1, L2, Neutral and ground	*	15 Amps	2	14 AWG (2.6 mm <sup>2</sup> )
Gas and Steam	230-240 Volt/50 Hertz/ 1 Phase	L1, Neutral and ground†	*	15 Amps	1	14 AWG (2.6 mm <sup>2</sup> )
Gas and Steam	208 or 240 Volt/ 60 Hertz/3 Phase	L1, L2, L3, and ground†	*	15 Amps	3	14 AWG (2.6 mm <sup>2</sup> )
Gas and Steam	380 or 415 Volt/ 50 Hertz/3 Phase	L1, L2, L3 and ground	*	15 Amps	3	14 AWG (2.6 mm <sup>2</sup> )
Gas and Steam	460-480 Volt/60 Hertz/ 3 Phase	L1, L2, L3 and ground	*	15 Amps	3	14 AWG (2.6 mm <sup>2</sup> )
Electric	208 Volt/60 Hertz/ 3 Phase	L1, L2, L3 and ground	88 Amps	100 Amps	3	2 AWG (43 mm <sup>2</sup> )
Electric	240 Volt/60 Hertz/ 3 Phase	L1, L2, L3 and ground	78 Amps	90 Amps	3	2 AWG (43 mm <sup>2</sup> )
Electric	240 Volt/50 Hertz/ 3 Phase	L1, L2, L3 and ground	78 Amps	90 Amps	3	2 AWG (27 mm <sup>2</sup> )
Electric	380 Volt/50 Hertz/ 3 Phase	L1, L2, L3 and ground†	50 Amps	60 Amps	3	4 AWG (27 mm <sup>2</sup> )
Electric	415 Volt/60 Hertz/ 3 Phase	L1, L2, L3, and ground†	46 Amps	60 Amps	3	4 AWG (27 mm <sup>2</sup> )
Electric	480 Volt/60 Hertz/ 3 Phase	L1, L2, L3, and ground	38 Amps	50 Amps	3	6 AWG (17 mm <sup>2</sup> )

\*Current Ratings vary slightly depending on model; refer to serial plate.

†MT (manual timer)/CD (rotary coin drop) Models may require a Neutral conductor. Consult wiring diagram.

Table 13

# Adjustments

## Gas Burner Air Shutter

**NOTE: Air inlet shutters on the burner must be adjusted so sufficient air is metered into the system for proper combustion and maximum efficiency. Before adjusting the inlet shutters be sure that all lint is removed from lint compartments and lint screen.**

Air shutter adjustments will vary from location to location and will depend on the vent system, number of units installed, make-up air and line gas pressure. Opening the shutter increases the amount of primary air supplied to the burner while closing the shutter decreases the primary air supply. Adjust air shutter as follows:

Refer to *Figure 18*.

1. Open the access panel.
2. Start the tumbler and check the flame pattern. If the flame pattern is straight up, insufficient air is flowing through the tumbler and air flow switch is improperly set. A flame pattern that flares to the right and left indicates no air is flowing through the tumbler.
3. Correct air and gas mixture is indicated if the flame pattern is primarily blue, with small yellow tips, and bends to the right of the heater section. Too little air is indicated if the flame is yellow, lazy and smokey.
4. To adjust the air shutter, loosen air inlet shutter adjusting screw.
5. Open or close air shutter as necessary to obtain proper flame intensity.
6. After air shutter is adjusted for proper flame, tighten air shutter adjusting screw securely.

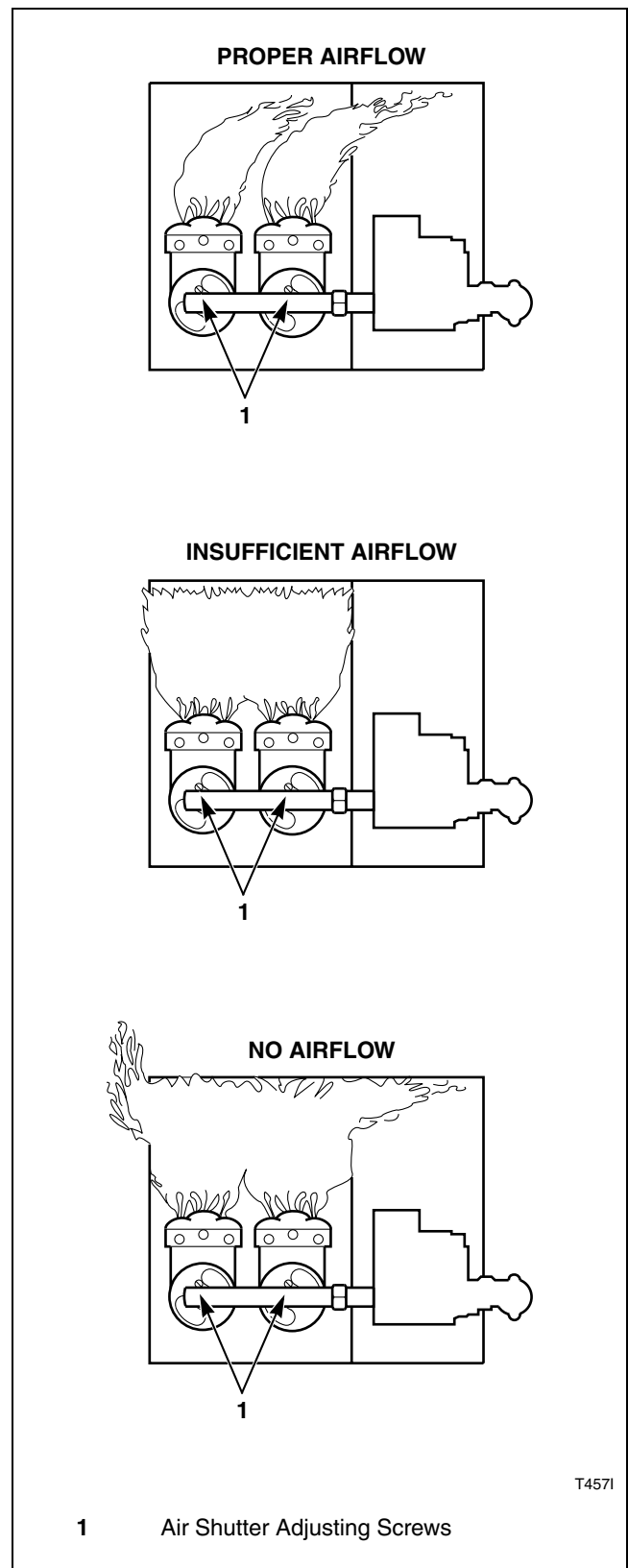



Figure 18



## Airflow Switch

### Gas and Electric Tumblers

	<b>WARNING</b>
<p><b>To reduce the risk of fire, airflow switch operation may be affected by a clogged lint screen, lack of make-up air, obstructions in the vertical recirculation stack or in the customer installed main or collector ducts. These conditions must be checked and necessary corrections made before adjusting airflow switch. Always adjust airflow at installation.</b></p>	
<small>W073</small>	

The airflow switch (located on the rear of tumbler, *Figure 19*) is set at the factory for proper operation. However, if there is a problem with the switch, it should be adjusted as follows:

**NOTE: Steam models do not have an airflow switch.**

**NOTE: Control panel must be in place and access door closed before attempting to adjust airflow switch.**

**IMPORTANT: Airflow switch disc must remain closed during operation. If it opens and closes during the drying cycle, this indicates insufficient airflow through the tumbler. If switch remains open, or pops open and closed during the cycle, the heating system will shut off. The cylinder and fan will continue to operate even though the airflow switch is opened.**

The airflow switch operation is controlled by the counterweight position in the shaft. Moving the counterweight either increases or decreases airflow switch sensitivity. The counterweight should be adjusted so the disc moves away from the cabinet when the lint panel is opened 1.5 inches (38.1 mm) with a full load. Adjust the airflow switch as follows:

1. Load the tumbler. This adjustment is much faster to make with one person opening lint panel in front and another adjusting the counterweight in the rear of tumbler.
2. Start the tumbler. Open the lint panel 1.5 inches (38.1 mm). The airflow disc should move away from the cabinet, opening the switch contacts and shutting off the heat system. This indicates proper operation and proper adjustment.
3. If switch is not opening as described in step 2, it should be adjusted so it is MORE sensitive. Depress the spring clip and move counterweight toward disc. Retest by opening lint panel and continue moving counterweight toward disc until switch operates as described in step 2.
4. If switch opens BEFORE lint panel is opened the proper distance, step 2, it should be adjusted so it is LESS sensitive. Depress the spring clip and move counterweight away from the disc. Retest by opening lint panel and continue moving counterweight away from disc until switch operates as described in step 2.

## Adjustments

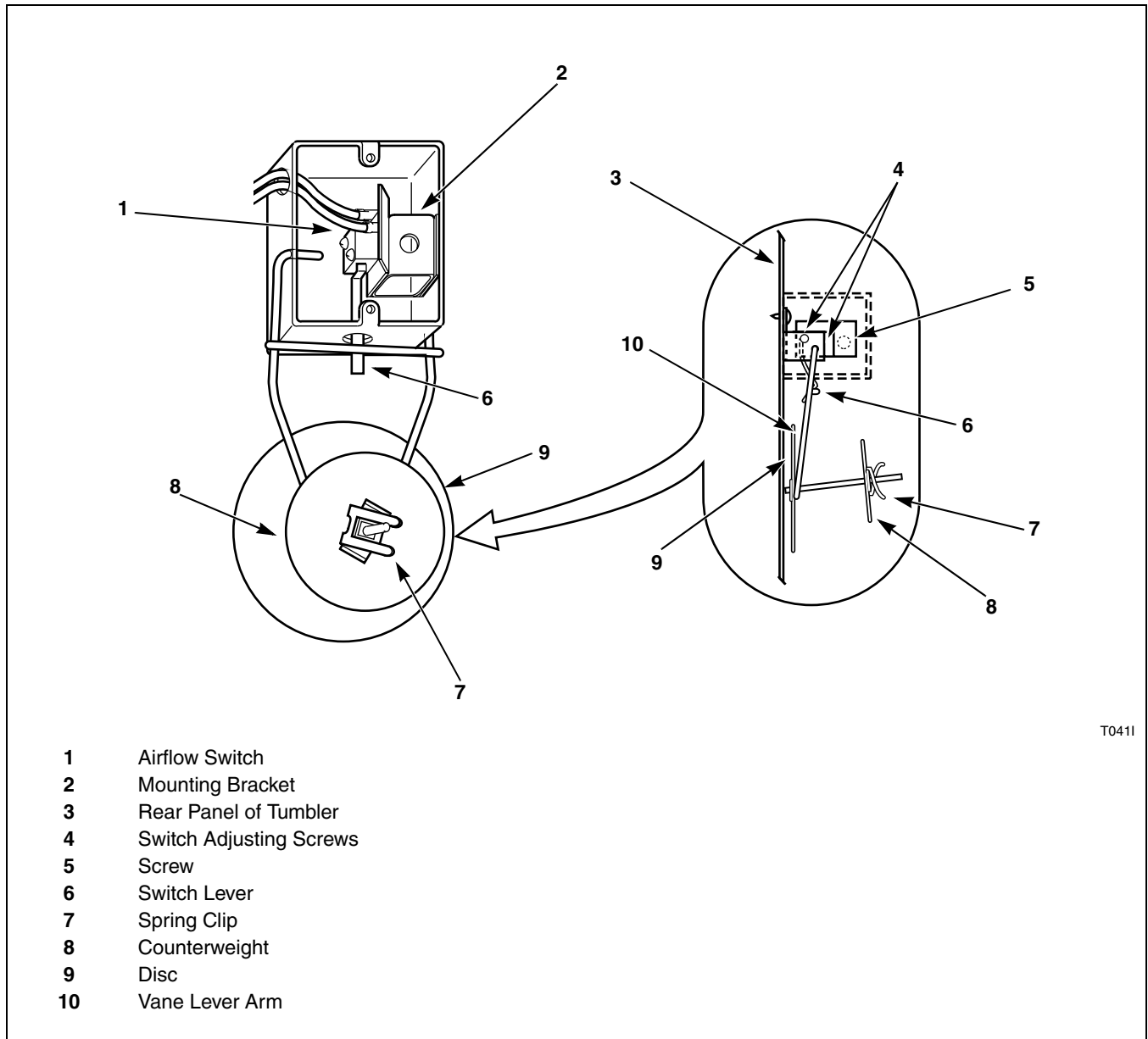


Figure 19

## Loading Door Switch

### Non CE Marked Models

The door switch should be adjusted so the cylinder stops when door is opened 2 inches (51 mm), plus or minus 1/4 inch (6 mm). This switch is a normally open switch and is closed by the interlock rod when the door is closed. If adjustment is required, refer to *Figure 20* and proceed as follows:

1. Close door and start tumbler, slowly open loading door. Cylinder and heat system should shut off when door is open 2 inches (51 mm) plus or minus 1/4 inch (6 mm).
2. Slowly close loading door. When door is 2 inches from being fully closed, the tab should contact the interlock rod and depress it enough to operate the switch arm closing the switch with an audible "click."
3. If interlock rod does not depress enough to operate the switch, bend tab on loading door OUTWARD 1/8 inch (3 mm) and repeat steps 1 and 2. Bend tab outward an additional 1/8 inch (3 mm) if required to obtain proper rod movement and switch operation.
4. If proper operation is not obtained by procedure outlined in step 3, unlock and open access panel and remove control panel. Loosen the two adjusting screws holding the switch to the bracket and move switch 1/8 inch (3 mm) toward the front of the switch bracket and retighten the screws. Repeat steps 1 and 2. If switch and rod still do not have sufficient movement, move switch forward an additional 1/8 inch (3 mm).

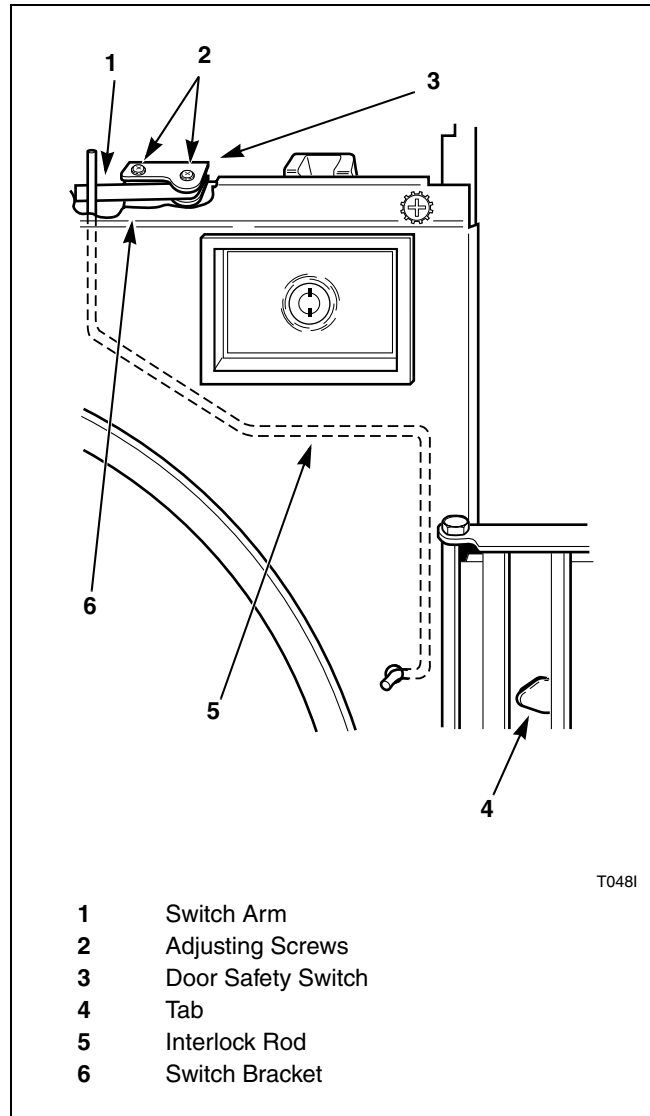


Figure 20

## Adjustments

### CE Marked Models

Loading door switch is factory adjusted to turn off when the door is opened a maximum of 3 inches (76 mm). If adjustment is needed, refer to *Figure 21* and follow these steps:

1. Start tumbler, following the operating instructions which accompanied it.
2. Slowly open loading door. Cylinder and heating system should stop when door is open 3 inches (76 mm) maximum.
3. Slowly close loading door while depressing start switch or pad. Tumbler should start before loading door is 0.5 inch (13 mm) from fully closed.
4. If opening the loading door 3 inches (76 mm) maximum does not stop tumbler, adjust switch.
5. Loose lower screw on switch coupler (use 2 mm hex wrench).
6. Align screw slot with alignment marks on switch top (switch should be closed, or on).
7. Start tumbler.
8. Prop door open 2.5 inches (63 mm).
9. Slowly rotate switch coupler counterclockwise (viewed from above switch) until tumbler stops.
10. Tighten lower screw on switch coupler.
11. Return to step 1 to verify loading door switch operation.

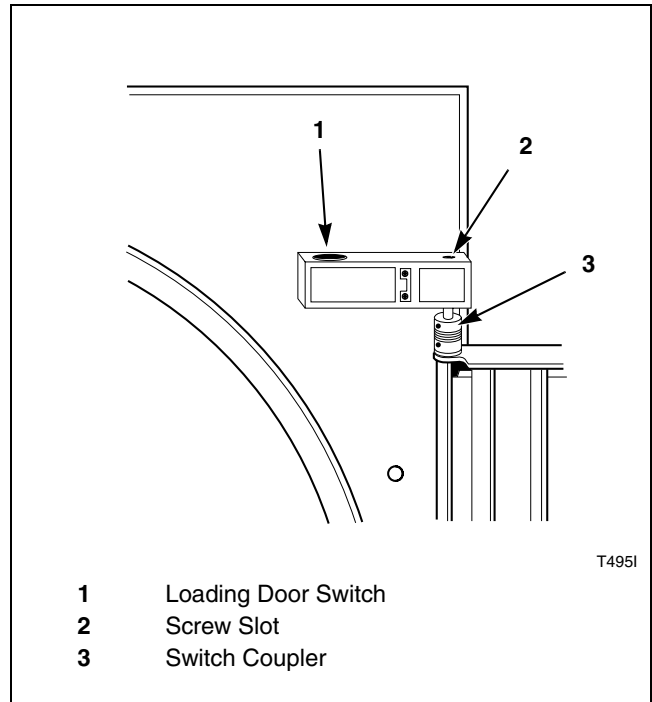


Figure 21

## Loading Door Strike

The door strike must be adjusted to have sufficient tension to hold loading door closed against force of load tumbling against it. There is proper adjustment when 8 to 15 pounds (35.6-66.7 N) pull is required to open door.

If adjustment is required, refer to *Figure 22* and proceeds as follows:

To adjust, open door, loosen acorn nut and turn door strike screw in or out as required. Tighten acorn nut.

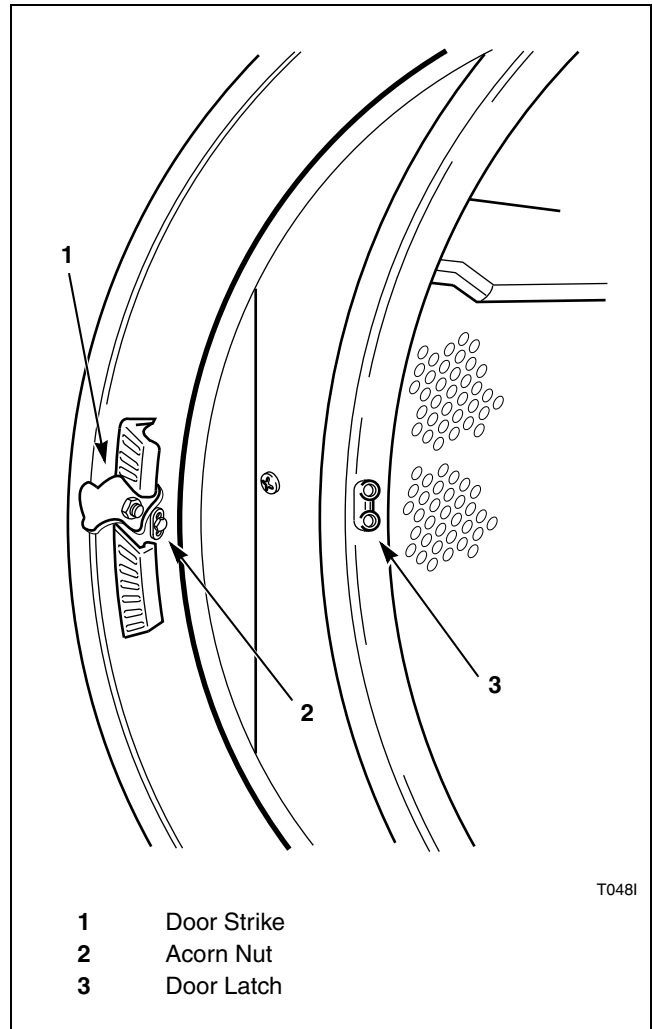



Figure 22

	<h3>WARNING</h3>
<p><b>To reduce the risk of electric shock, fire, explosion, serious injury or death:</b></p> <ul style="list-style-type: none"><li>• <b>Disconnect electric power to the tumbler before servicing.</b></li><li>• <b>Close gas shut-off valve to gas tumbler before servicing.</b></li><li>• <b>Close steam valve to steam tumbler before servicing.</b></li><li>• <b>Never start the tumbler with any guards/panels removed.</b></li><li>• <b>Whenever ground wires are removed during servicing, these ground wires must be reconnected to ensure that the tumbler is properly grounded.</b></li></ul>	
<small>W002</small>	

### Chain Drive

There is proper tension when the chain can be depressed approximately 1/2 inch (13 mm) by applying light thumb pressure at a point midway between the cylinder and drive sprocket.

**IMPORTANT:** After a tumbler has been in operation over an extended period of time, a “High Point” will develop on the cylinder drive sprocket through use and wear. Turn the sprocket manually with drive chain in place until this “high point” is at the top center. The “high point” can be found by noticing increased chain tension while slowly rotating the cylinder sprocket manually.

### Nonreversing Models

Refer to *Figure 23*.

1. Remove guard from rear of tumbler.
2. Adjust belt first.
3. To adjust chain tension, loosen jam nut holding idler sprocket to housing.
4. Move idler sprocket left or right until proper chain tension is reached, then retighten the jam nut.
5. Replace the guard on rear of tumbler.

### Reversing Models

Refer to *Figure 24*.

1. Remove drive guard.
2. To adjust chain tension, loosen nut on idler housing attaching bolt. Move entire idler housing assembly up or down in the guide rails to change tension.
3. When chain tension is correct, tighten idler housing attaching bolt. Hold idler housing firmly in position while tightening nut on attaching bolt.
4. Check chain tension after tightening nut on idler housing attaching bolt.

## Belt Drive

### Nonreversing Models

Refer to *Figure 25*. There is proper tension when the drive V-belt can be depressed approximately 1/2 inch (13 mm) by applying light thumb pressure at a point midway between the sheave and motor pulley.

1. Remove guard from rear of tumbler.
2. To adjust belt tension, loosen idler housing bolts holding idler housing assembly to the guide rails.
3. Position housing assembly by turning adjusting bolt until proper belt tension is reached, then retighten idler housing bolts.
4. Replace the guard on rear of tumbler.

### Reversing Models

Refer to *Figure 26*. There is proper tension when the drive belt can be depressed approximately 1/2 inch (13 mm) by applying light thumb pressure (approximately 5 pounds [2.2 kg]) at a point midway between the sheave and motor pulley.

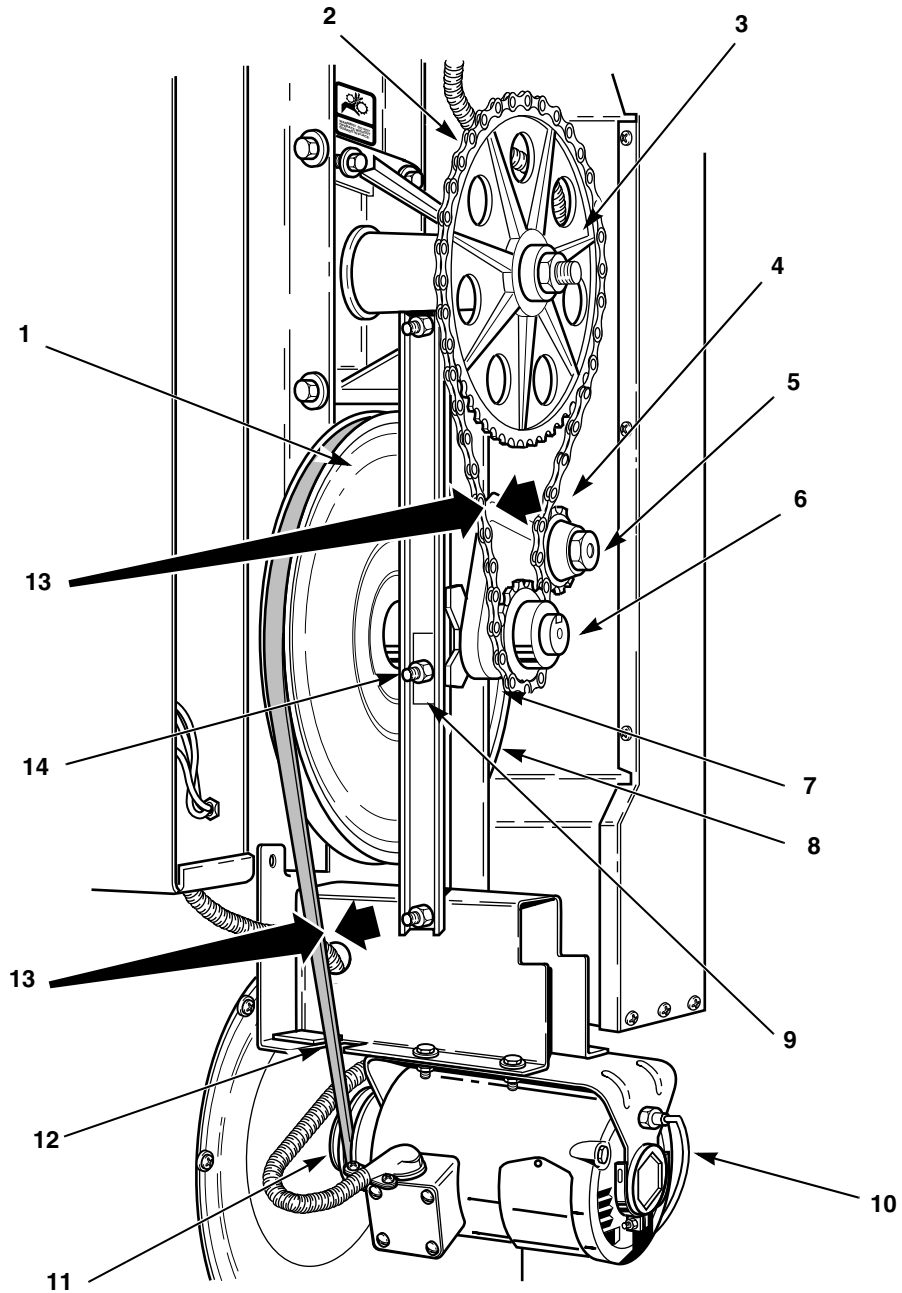
There is proper tension when each cylinder belt can be depressed approximately 3/16 inch (5 mm) by applying light thumb pressure (approximately 5 pounds) at a point midway between the sheave and the idler.

1. Remove guard from rear of tumbler.
2. To adjust cylinder belt tension, loosen idler housing bolts holding idler housing assembly to the guide rails.
3. Position housing assembly by turning adjusting bolt until proper belt tension is reached, then retighten idler housing bolts.

**NOTE: Adjusting the cylinder belt tension will change the drive tension. Drive belt tension must also be adjusted.**

4. Loosen the locking bolt.
5. Loosen the adjusting nut and use the adjusting screw to move the motor up or down.
6. Once proper belt tension is reached, retighten the adjusting nut and locking bolt.
7. Replace the guard on rear of tumbler.

## Adjustments



**NONREVERSING CHAIN DRIVE MODELS**

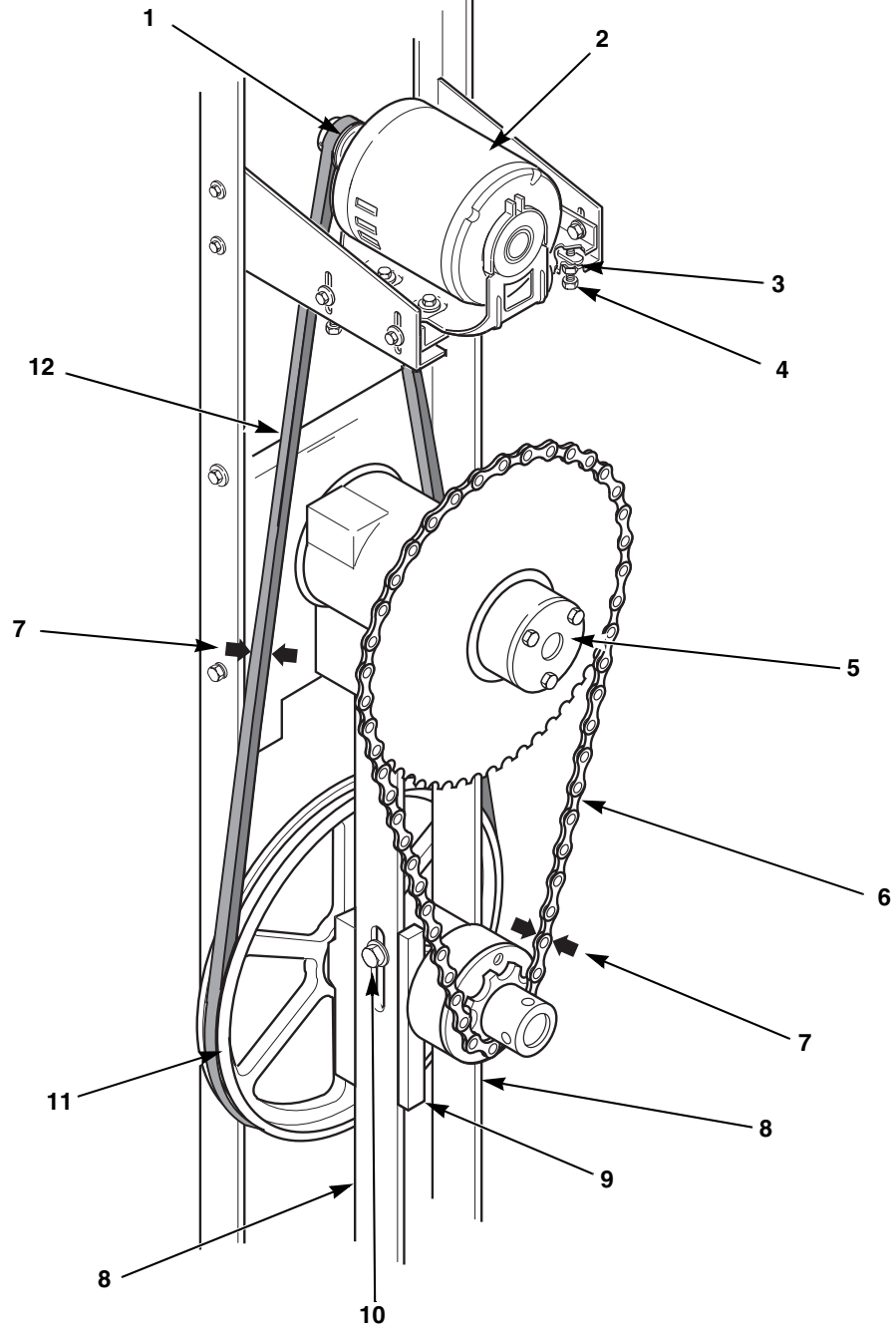
T229I

**NOTE: Tumbler is shown with all guards removed for installation purposes only. Never operate tumbler with the guards removed.**

1	Sheave	8	Guide Rail
2	Cylinder Drive Chain	9	Guide Rail Washer
3	Cylinder Sprocket	10	Ground Wire (Green)
4	Idler Sprocket	11	Motor Pulley
5	Jam Nut	12	V-Belt
6	Drive Sprocket	13	1/2 in. (13 mm) Deflection
7	Idler Housing	14	Belt Adjusting Bolt and Nut

Figure 23





**BELT/CHAIN REVERSING**

TMB2208N

**NOTE: Tumbler is shown with all guards removed for installation purposes only. Never operate tumbler with the guards removed.**

- |   |  |
|---|--|
| <p><b>1</b> Motor Pulley</p> <p><b>2</b> Cylinder Motor</p> <p><b>3</b> Locknut</p> <p><b>4</b> Adjusting Bolt</p> <p><b>5</b> Cylinder Sprocket</p> <p><b>6</b> Cylinder Drive Chain</p> | <p><b>7</b> 1/2 in. (13 mm) Deflection</p> <p><b>8</b> Guide Rail</p> <p><b>9</b> Idler Housing</p> <p><b>10</b> Idler Housing Attaching Bolt and Nut</p> <p><b>11</b> Sheave</p> <p><b>12</b> Poly V-Belt</p> |
|---|--|

Figure 24

## Adjustments

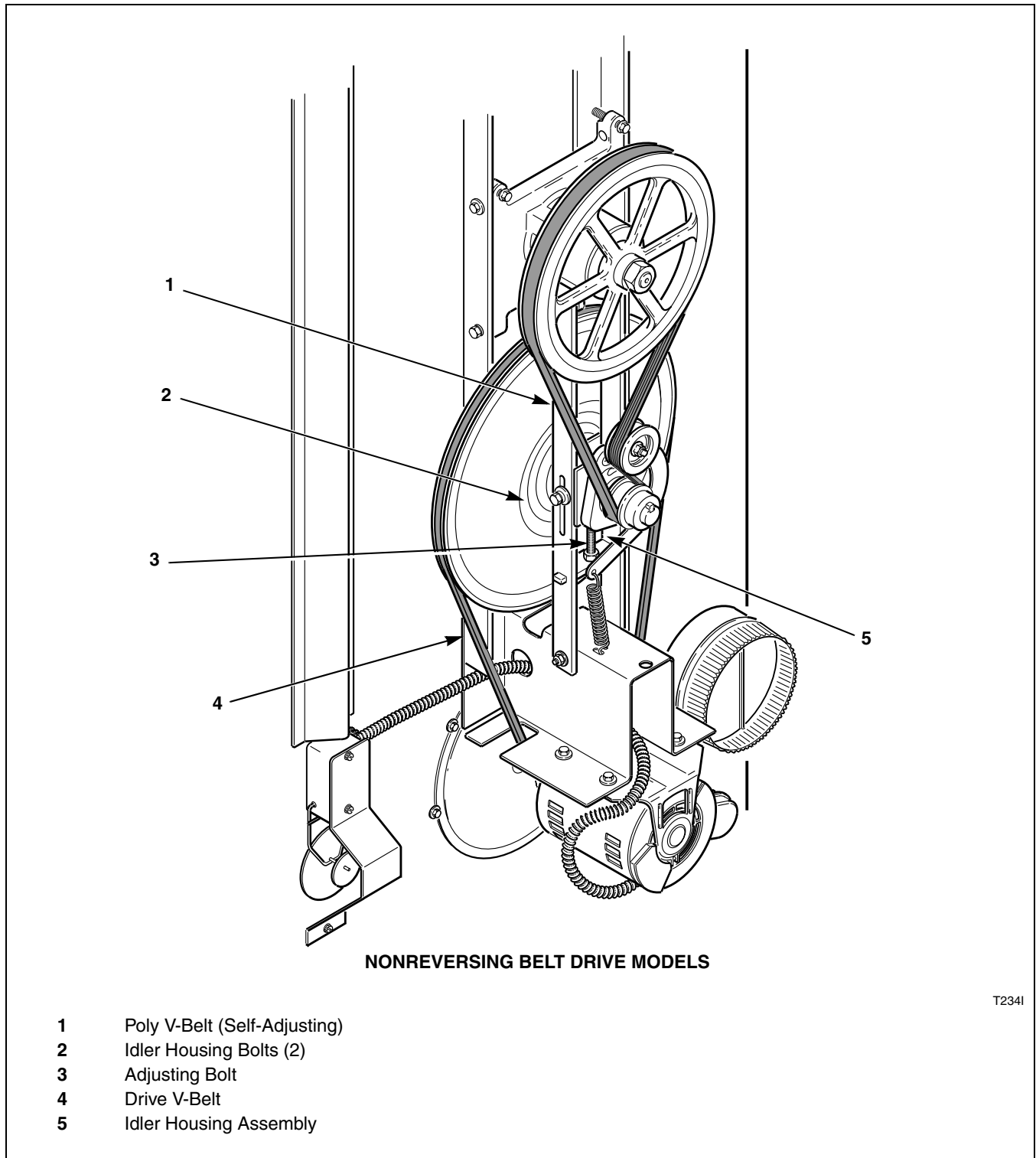
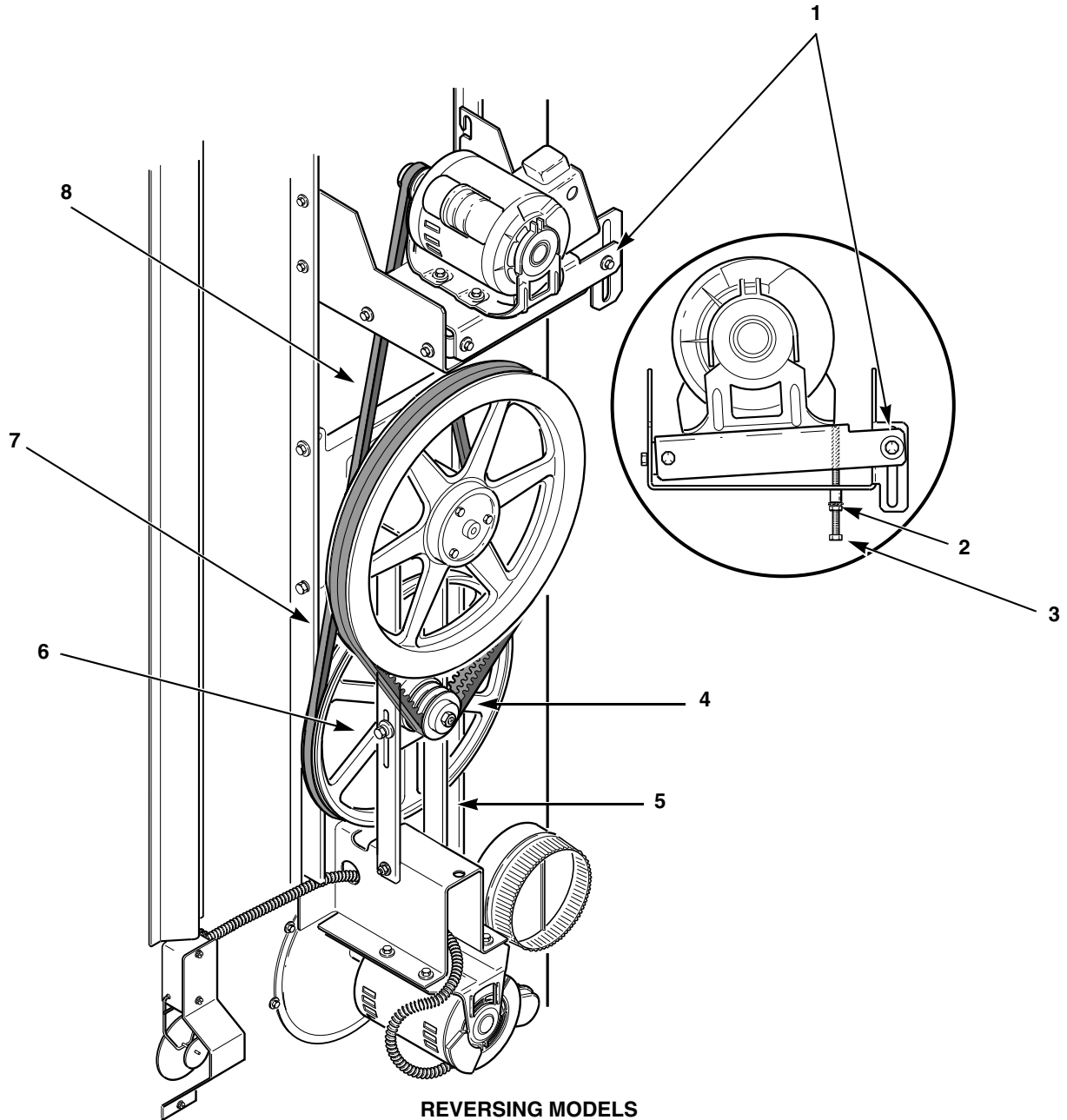


Figure 25

T2341



**REVERSING MODELS**

- 1 Locking Bolt
- 2 Adjusting Nut
- 3 Adjusting Screw
- 4 Cylinder Belts
- 5 Guide Rail
- 6 Idler Housing Bolts (2)
- 7 Adjusting Bolt (Not shown)
- 8 Drive Belt

T322I

Figure 26

# Removing Tumbler from Service

If the tumbler is to be removed from service, perform the following steps where applicable:

- Turn off electrical supply external to machine.
- Turn off electrical disconnect on machine.
- Turn off gas supply external to machine.
- Turn off manual gas shut-off valve on machine.
- Turn off steam supply external to machine.
- Remove all electric, gas and steam connections.