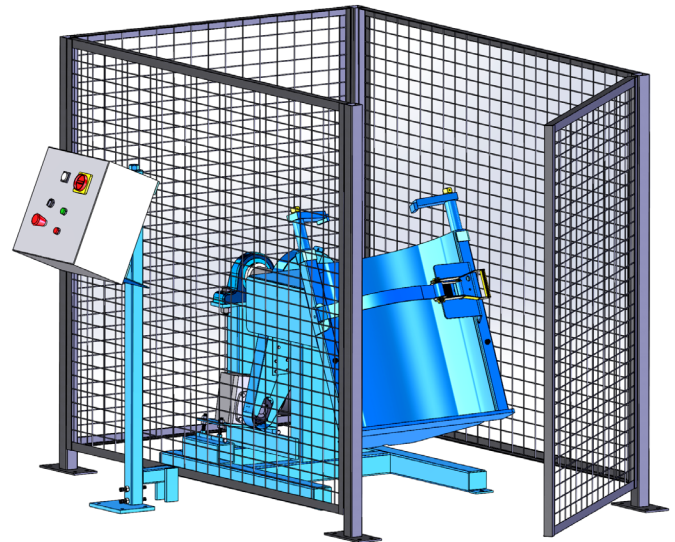


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**Operator’s Manual**  
**for Morse CE Marked Drum Tumblers**  
**309-CE Series**

Serial Number 315601 to \_\_\_\_\_



**Receiving Procedures**

Every Morse drum handler is inspected prior to shipping. However, damage may be incurred during transit.

- Check for visible damage. If you choose to accept damaged freight, always sign noting the damage on the **Bill of Lading**.
- Document the damage and have the truck driver sign. We recommend keeping a digital camera at your receiving dock for this purpose.
- Open packages expeditiously to check the condition of the goods. There is only a 24 hour window to notify the carrier of any concealed damage.
- Immediately **report all damage to the shipping company!** Then you may contact Morse for assistance with your freight claim.
- Morse Manufacturing will not be held responsible for any damaged freight that is not signed for as damaged.

**Limited 2 Year Warranty**

Morse drum handling equipment is guaranteed against defects in workmanship or materials for two years when used properly within its rated capacity. Warranty does not cover wear from normal use or damage from accident or abuse. Motors and other purchased parts carry the warranties of their manufacturers.

For warranty claims, contact your Morse Dealer to obtain a return authorization number, and for return freight advice. Return freight must be prepaid.

In all instances, liability is limited to the purchase price paid or to repairing or replacing the product. Customer assumes liability for any modifications, unauthorized repairs or parts substitution.

**Safety Information**

While Morse Manufacturing Co. drum handling equipment is engineered for safety and efficiency, a high degree of responsibility must be placed upon the machine operator to follow safe practices, based primarily on common sense, upon which true safety depends.

Failure to follow the safety precautions in this manual can result in personal injury or property damage. Observe the same precautions as with similar machinery where carelessness in operating or maintenance is hazardous to personnel. Carefully read the safety precautions below and throughout this manual.

Review the Material Safety Data Sheet(s) for the material(s) in the drum(s) and take all necessary precautions. Safety shoes, work gloves, hard hat and other personal protective devices are recommended.

Prior to initial use, inspect all moving parts and test rotation of drum holder. Inspect drum holder for proper operation. Perform necessary inspections, operator training, etc.



[morsedrum.com](http://morsedrum.com)



[service@morsedrum.com](mailto:service@morsedrum.com)






(315) 437-8475



103 Kuhn Rd.  
Syracuse, NY, 13208 U.S.A.

**Operator's Manual for Morse 309-CE Series CE Marked Drum Tumblers**  
**Serial Number 315601 and up**

**Safety Information** (continued)

	<b>DANGER</b> - Indicates a situation which, if not avoided, will result in serious injury or death. This signal word is limited to the most extreme situations.
	<b>WARNING</b> - Indicates a situation which, if not avoided, could result in serious injury or death.
	<b>CAUTION</b> - Indicates a situation which, if not avoided, can result in damage to the machine.



**DANGER** - Watch Out for Pinch Points. Stay clear of moving parts. Do Not Stand Near any Part of a Rotating Drum or Drum Holder. Operator should remain directly in front of the control station while operating the rotator (see figure on page 3). Morse CE Marked Drum Tumblers comply with OSHA subpart O, 1910.212 - "General requirements for all machines." "Revolving drums, barrels, and containers shall be guarded by an enclosure which is interlocked with the drive mechanism, so that the barrel, drum, or container cannot revolve unless the guard enclosure is in place." (A safety enclosure is included with each CE Marked MORSE drum rotator.)



**WARNING** - The 309-CE Series is designed to rotate a steel, plastic or fiber drum weighing up to 800 Lb. (363 kg), ranging from 45.7 to 59.7 cm (18" to 23.5") in diameter and from 73.7 to 94 cm (29" to 37") in height. DO NOT attempt to handle any other type of drum or object. DO NOT exceed the weight capacity of 363 kg (800 Lb.).



**WARNING** - Level Floors Only. For operation only on clean, level floors of suitable bearing capacity. Do not use on sloped surfaces, ramps, irregular or debris strewn floors.



**WARNING** - Properly Mount to Floor. Do Not put into service without proper floor mounting and leveling. Use the four mounting holes in each corner of the base to anchor to floor.



**WARNING** - Do Not Modify the Unit. Under no circumstances should any modifications be made to the Morse machinery without factory authorization. Any modifications may void the warranty. This machine was designed to perform a specific job and alterations may result in injury to operator or machine.



**WARNING** - No Loose Fitting Clothing. Wear close-fitting clothing and safety equipment appropriate to the job. Loose fitting clothing may become caught on the machinery and cause severe personal injury.



**CAUTION** - Wear safety shoes with non-slip soles and hard toe protection.



**CAUTION:** DO NOT allow drum to impact on floor.



**WARNING:** This product can expose you to chemicals including barium sulfate, cobalt, titanium dioxide, and 2-methylimidazole, which are known to the State of California to cause cancer, and bisphenol-A, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

**Operator’s Manual for Morse 309-CE Series CE Marked Drum Tumblers**  
**Serial Number 315601 and up**

**Machine Description**

The Morse 309 Series Drum Tumblers are designed to receive an upright steel, plastic or fiber drum and rotate the drum “corner-over-corner” at 12 RPM, based on a 50Hz, 1500 RPM AC motor. The maximum full drum capacity is 363 kg (800 Lb.). Capacity is derated to 181 kg (400 Lb.) for a half-full drum. Half-full capacity is an indication of the capacity for tilting a bottom-heavy drum. A partially full drum with an unbalanced and shifting load is harder to tilt than a full drum.

**MORSE**  
Mfg. Co., Inc.  
E. Syracuse, NY

The Specialist In Drum Handling Equipment

**800 Lb. Max. Capacity**  
( 363 kg )

Made in U.S.A.

**Drum Holder**

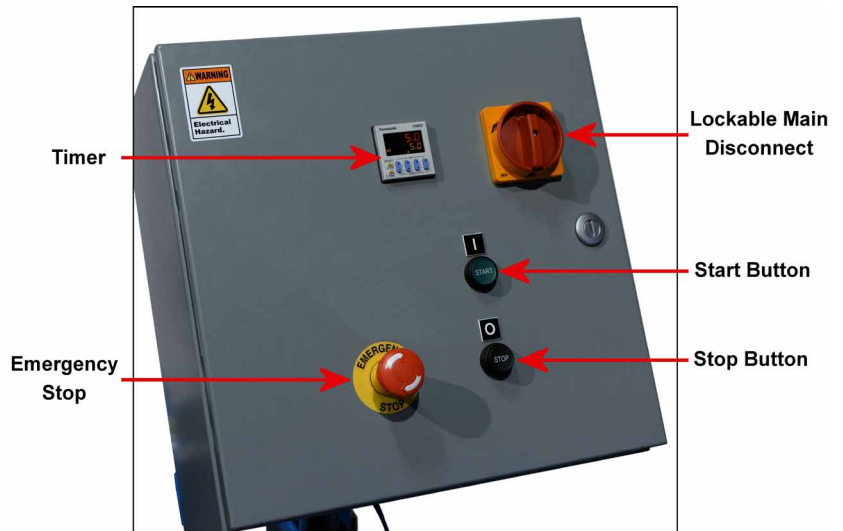
The drum holder is the component on the Drum Tumbler that securely holds the drum for rotating. The drum holder features the web strap and ratchet mechanism for tightening the drum at the middle and two top clamps for holding the drum end-to-end.

**Installation**

Install all Morse Drum Tumblers in accordance with CE requirements for enclosure and safety interlock, etc. Drum Tumbler must automatically turn off when enclosure door is opened.

**Control Station**

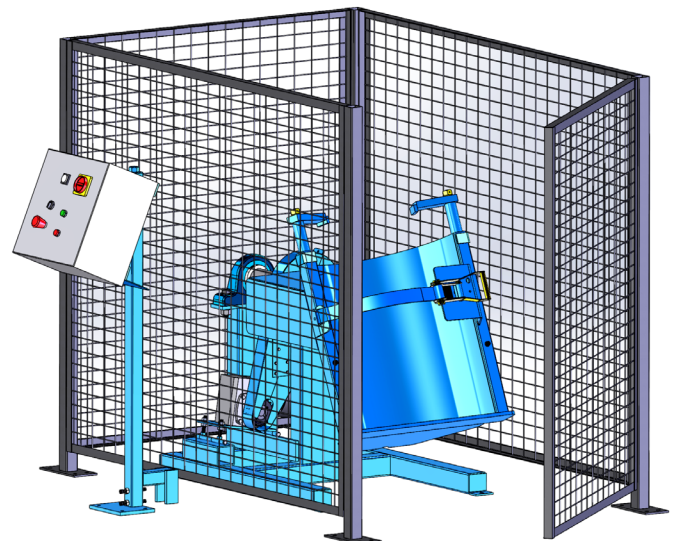
**Making Connections:** Install all Morse Rotators in accordance with local requirements for enclosure and safety interlock, etc. One way to accomplish this is with a Morse enclosure with safety interlock, so the rotator automatically turns off when enclosure door is opened. Power connections and motor controls must also comply with applicable local codes.



Control Packages		
PART #	DESCRIPTION	WITH TUMBLER MODEL
CP-456-1-220-50	CONTROL PKG, 456, 1PH/220V	309-1-50-CE
CP-456-3-400-50	CONTROL PKG, 456, 3PH/400V	309-3-50-CE

**Important**

1. Review the Safety Data Sheet(s) for the material(s) in the drum(s) and take all necessary precautions. Safety shoes, work gloves, hard hat and other personal protective devices are recommended.
2. Please read all instructions thoroughly before attempting to operate your new Morse drum tumbler.
3. When loading, unloading, operating, or maintaining your MORSE drum tumbler, always use care and good judgment. Maintain secure footing and a firm hold. Keep hands and loose clothing away from all moving parts. Never allow anyone to be below any part of a raised drum handler or drum. Read operating instructions and review the pictures in the sales brochure before operation.



**Operator's Manual for Morse 309-CE Series CE Marked Drum Tumblers  
Serial Number 315601 and up**

**Machine Unpacking**

Carefully remove the top and sides of the crate covering the machine so as not to damage painted surfaces, electrical or hydraulic components. Inspect the machine for visible damage. If damage is noted, follow receiving procedure on page 1. Remove the (4) lag screws connecting the machine base to the pallet. Remove machine from pallet by lifting 7.62 cm (3") diameter drum holder shaft. Attach a strap to an overhead crane and raise slowly, as the machine will have a tendency to tilt.

**Installation / Assembly Instructions**

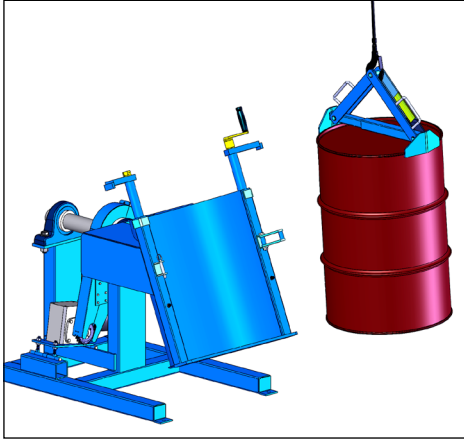
- The base has four holes spaced 68.6 cm wide x 113.7cm long (27" x 44.75"). Morse recommends the rotator be secured to the floor using 1.58 x 7.62 cm (5/8" x 3") lag bolts (not included).
- Install enclosure and safety interlock around drum rotator (see enclosure instructions). Drum rotator must automatically turn off when enclosure door is opened.
- Control Station - Making Connections:
  - Drum rotator is shipped with the motor wired to the control box. An electrician needs to install power supply to the control box according to local codes.
  - Jog the motor to check rotation. Motor fan must turn clockwise.
  - To reverse rotation if necessary
  - For 3 phase motors: interchange any two input leads.
  - For 1 phase motors: interchange wires 5 and 8 in junction box.

**Important**

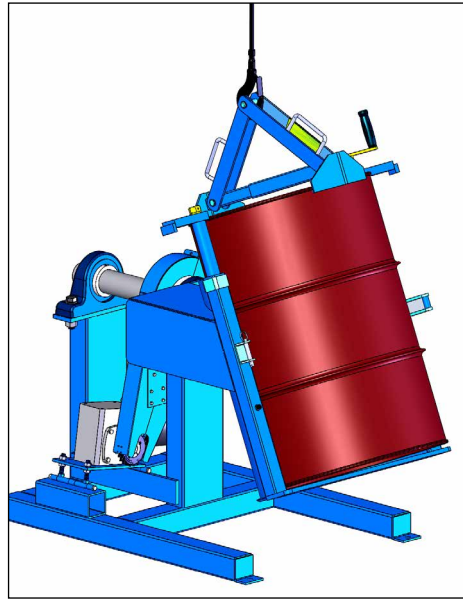
When loading, unloading, operating, or maintaining your MORSE drum handler, always use care and good judgment. Maintain secure footing and a firm hold. Keep hands and loose clothing away from all moving parts. Never allow anyone to be below any part of a raised drum handler or drum. Read operating instructions and review the pictures in the sales brochure before operation.



**Operator's Manual for Morse 309-CE Series CE Marked Drum Tumblers**  
**Serial Number 315601 and up**



Load drum with hoist using appropriate drum lifting equipment, such as model [92 Below-Hook Drum Lifter](#).



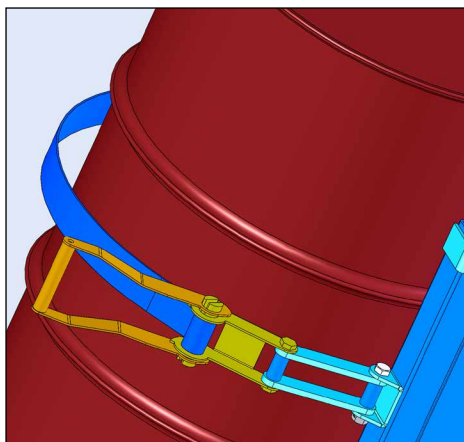
Guide the drum so that it tilts back and seats into the drum mixer as it is lowered.



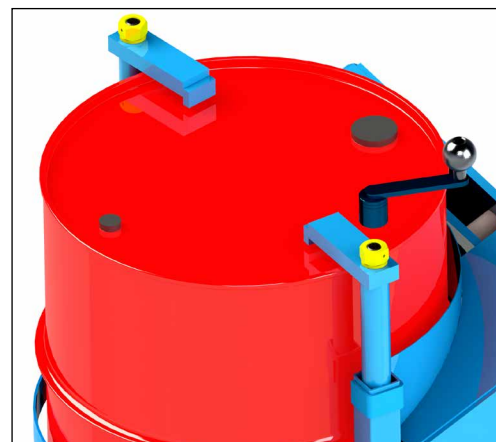
You may also load drum with forklift, using appropriate drum lifting equipment, such as Morse [model 284 Fork Hook](#) and model [92 Below-Hook Drum Lifter](#).

**Loading a Drum**

1. Swing the ratchet clear of the drum opening. Loosen the top clamps to the full open position.
2. A variety of drum handling methods can be used to set the drum into the drum holder. Ensure that the drum is fully seated against the back of the drum holder.



Tighten web strap around drum



Tighten top clamps

3. Drape the web strap across the face of the drum, thread strap through slot in ratchet. Operate ratchet to tighten strap around drum.
4. Turn the top clamps until they tighten against top of drum.

**Operator's Manual for Morse 309-CE Series CE Marked Drum Tumblers**  
**Serial Number 315601 and up**

## Rotating a Drum

After ensuring that the drum is securely fastened into the drum holder, turn the motor on.

## Unloading a Drum

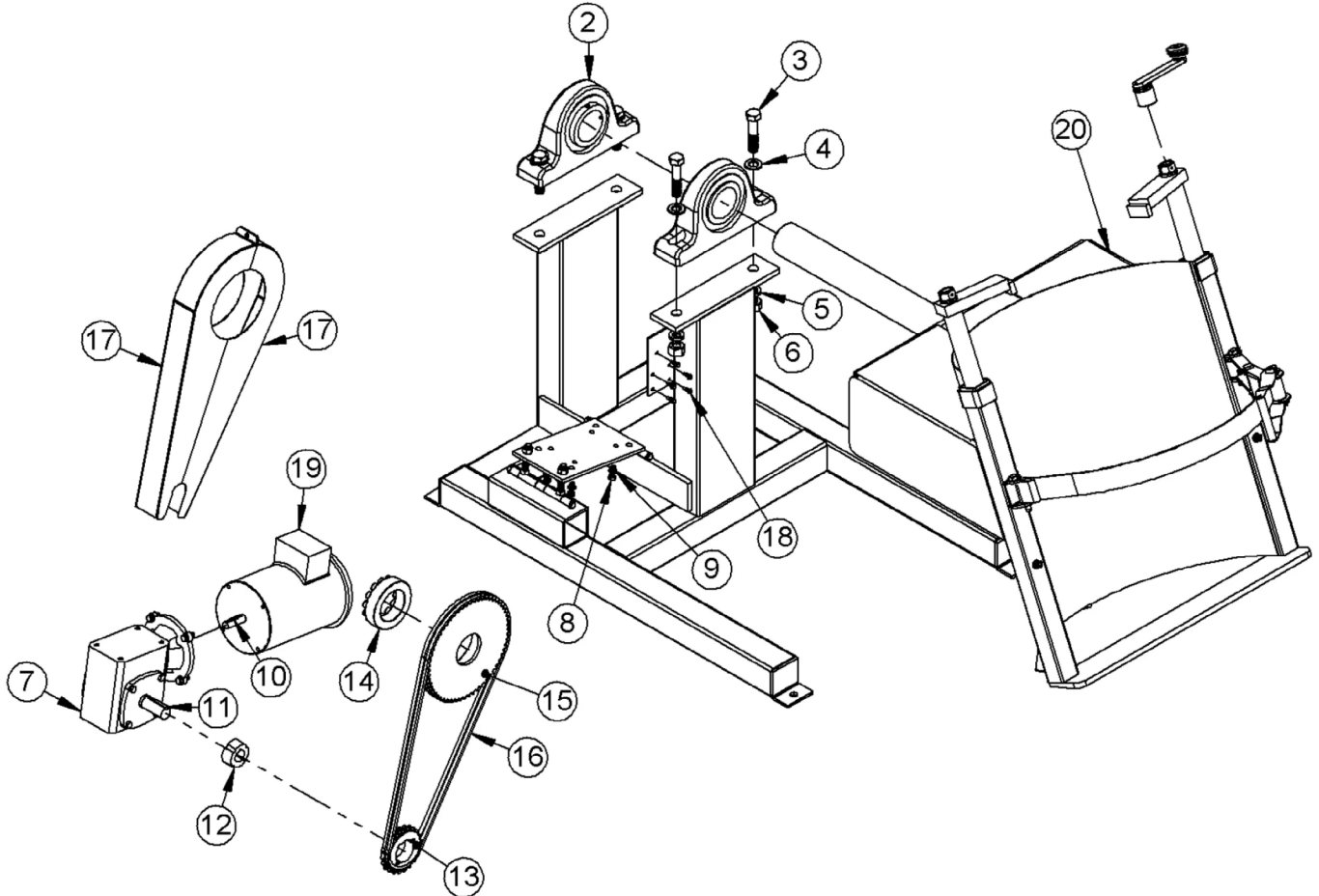
1. Ensure the drum is in upright position to unload.
2. Squeeze the ratchet release lever and open all the way to unlock, then release the tension on the strap. Allow enough slack in the strap in order to remove from ratchet.
3. Loosen top clamps and swing clear of drum.
4. Remove drum with appropriate drum handling equipment.

## Preventative Maintenance

Periodic inspection for the general condition of structural and mechanical components is imperative for safe and efficient operation.

1. Replace any parts that show signs of wear.
2. Inspect oil level in gear box / speed reducer and fill with high quality, synthetic lubricant for gears if necessary. Use Klubersynth UH1 6-460 (#096060) shown at: [https://morsedrum.com/ops/SDS\\_Klubersynth\\_UH1-SYNTHETIC-OIL\\_Jan-2015.pdf](https://morsedrum.com/ops/SDS_Klubersynth_UH1-SYNTHETIC-OIL_Jan-2015.pdf) or equivalent.  
  
The speed reducer has been filled and tested prior to shipment. After operating a new machine for 1500 hours, the housing should be thoroughly flushed out and new oil added to fill the housing to the oil level plug. The oil should be changed every 5000 operating hours thereafter or more often if operating conditions cause condensation of moisture resulting in sludge formation inside housing. See Gear Box Operator Manual at: <https://morsedrum.com/ops/boston-speed-reducers.pdf> for more oil information.
3. Lubricate all moving parts including: bearings, ratchet, and threaded rod.
  - Pillow Block Bearings: Grease every 6-12 months in ordinary environment, grease monthly in dirty conditions. See Bearing Lubrication Sheet for grease types and fill amounts.
  - Drive chain: Grease every 6-12 months with multiservice lubricant (i.e. Whitmore's Surtac® 2000 HD shown at: [https://morsedrum.com/ops/MSDS\\_Surtac\\_2000.pdf](https://morsedrum.com/ops/MSDS_Surtac_2000.pdf) )
  - Clamp Screws: Grease every 6-12 months with multiservice lubricant (i.e. Whitmore's Surtac® 2000 HD shown at: [https://morsedrum.com/ops/MSDS\\_Surtac\\_2000.pdf](https://morsedrum.com/ops/MSDS_Surtac_2000.pdf) )
4. Periodically inspect all moving parts, framework, and floor mounting fasteners for signs of wear, fatigue, or loosening.
5. The web strap should be removed from service and replaced if any of the following are visible:
  - Acid or caustic damage
  - Melting or charring of any part of the strap
  - Holes, tears, cuts, snags or embedded articles
  - Broken or worn stitching in load bearing splices
  - Excessive abrasive wear

### Operator's Manual for Morse 309-CE Series CE Marked Drum Tumblers Serial Number 315601 and up



ITEM	PART #	DESCRIPTION	QTY.
2*	2654-P	BEARING, 2-15/16" PILLOW BLOCK	2
3	3318-P	HHCS, 3/4-10 X 3-1/2 GR5	4
4	55-P	WASHER, 3/4 SAE FL 1-1/2 OD	4
5	3319-P	WASHER, 3/4 SPLIT LOCK	4
6	2452-P	NUT, FIN, 3/4-10 HEX	4
7	4549-P	SPEED REDUCER, 1-300, 40:1	1
8	1572-P	HHCS, 3/8-16 X 1 GR2	8
9	1474-P	WASHER, 3/8 SPLIT LOCK	8
10	1638-P	KEY, SQUARE, 3/16 X 1-3/8"	1
11	1646-P	KEY, SQUARE, 1/4 X 1-1/2"	1
12*	4548-P	BUSHING, 1-1/8" TAPER LOCK	1
13*	3127-P	SPROCKET, #40D, 20T, TAPER 310	1

ITEM	PART #	DESCRIPTION	QTY.
14*	3124-P	HUB, 2-15/16" KEYLESS, 310	1
15*	3117-P	SPROCKET, #40D, 60T, 310	1
16*	3132-P	ROLLER CHAIN, #40D 29 PITCHES	1
17	5382-P	CHAIN COVER PIECE, LC309	2
18	193-P	SCREW, 12-14 X 3/4 3 PT TEK	5
19		<b>** SEE BELOW **</b>	1
20	5801-P	SADDLE ASM, 309, 310, 311	1

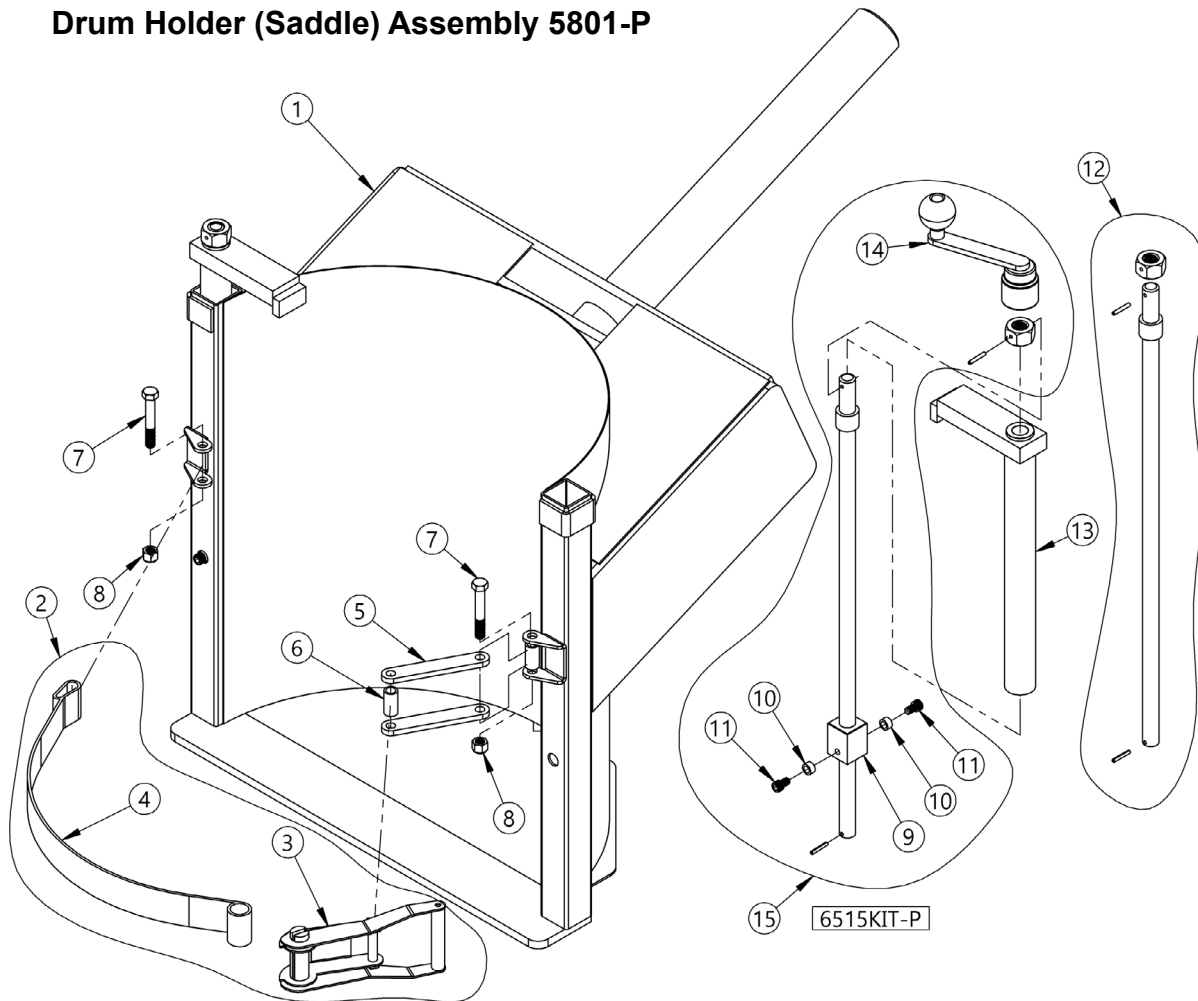
#### ITEM 19 - MOTOR

MODEL #	PART #	DESCRIPTION
309-1-50-CE	290-1-50-2P	MOTOR, 1HP, 1PH, 56C, 50HZ
309-3-50-CE	290-3-50-2P	MOTOR, 1HP, 3PH, 56C, 50HZ

\* Recommended spare parts

**Operator's Manual for Morse 309-CE Series CE Marked Drum Tumblers**  
**Serial Number 315601 and up**

**Drum Holder (Saddle) Assembly 5801-P**



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	5802-P	SADDLE WELD, 309, 310, 311	1
2	4449-P	STRAP ASM W/ RATCHET	1
3	5498-P	RATCHET ONLY, 4449-P	1
4 *	5497-P	WEB STRAP ONLY, 4449-P	1
5	5790-P	LINK, CONNECTOR, RATCHET	2
6	5792-P	SPACER, CONNECTOR, RATCHET	2
7	6272-P	HHCS, 1/2-13 X 3-1/4"	2
8	6266-P	NUT, 1/2-13 NYLON LOCK	3
9	6517-P	CLAMP NUT BLOCK, ACME 310	1
10	3271-P	CLAMP NUT BLOCK SPACER, 310	2
11	22-P	SHCS, 3/8-24 X 5/8	2
12	6515-P	CLAMP SCREW WELD, ACME, 310	1
13	4553-P	CLAMP PIPE W/ BEARING WELD 310	1
14	6525-P	HAND CRANK, SOCKET, ACME, 310	1
15 *	6515KIT-P	KIT, SCREW ASM REPLACE, ACME	1

\* Recommended spare parts



## Operator's Manual for Morse 309-CE Series CE Marked Drum Tumblers

### Serial Number 315601 and up

#### B400 INSTALLATION AND REMOVAL INSTRUCTIONS FOR B-LOC® KEYLESS BUSHING SERIES B400

**B-LOC®** Keyless Bushings provide a high capacity, zero-backlash shaft/hub or coupling connection by means of a mechanical interference fit. Please follow these INSTALLATION AND REMOVAL INSTRUCTIONS carefully to ensure proper performance of this **B-LOC®** unit.

#### ⓘ WARNING ⓘ

When installing or removing **B-LOC®** products, always adhere to the following safety standards:

1. Be sure that the system is de-energized using proper lockout/tagout procedures.
2. Wear proper personal protective equipment.

#### INSTALLATION

(Refer to Figure 1)

**B-LOC®** Keyless Bushings are supplied lightly oiled and ready for installation. The frictional torque capacity of these devices is based on a coefficient of friction of 0.12 for lightly oiled screw, taper, shaft and bore contact areas.

Therefore, it is important not to use Molybdenum Disulfide (e.g., Molykote, Never-Seeze or similar lubricants) in any Keyless Bushing installation.

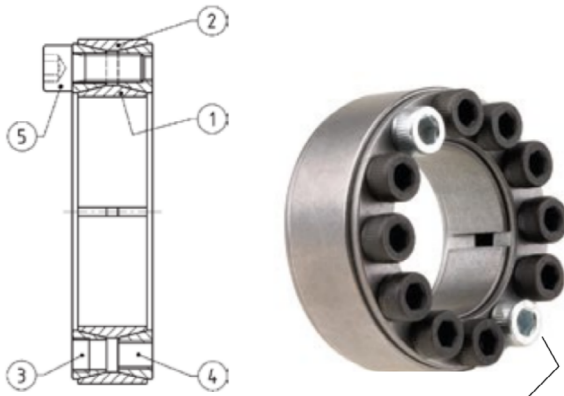


Figure 1

1. Make sure that locking screw, taper, shaft and bore contact areas are clean and lightly oiled with a light machine oil.
2. Insert Keyless Bushing into hub counterbore prior to shaft installation.
3. After confirming correct hub position, hand-tighten three (3) or four (4) equally spaced locking screws until initial contact with shaft and hub bore is established.
4. Use torque wrench and set it approximately 5% higher than specified tightening torque ( $M_a$ ). Tighten locking screws in either a clockwise or counterclockwise sequence (it is not necessary to tighten in a diametrically opposite pattern), using only 1/4 (i.e., 90°) turns for several passes until 1/4 turns can no longer be achieved.
5. Continue to apply overtorque for 1 to 2 more passes. This is required to compensate for a system-related relaxation of locking screws since tightening of a given screw will always relax adjacent screws. Without overtorquing, an infinite number of passes would be needed to reach specified tightening torque.
6. Reset torque wrench to specified torque ( $M_a$ ) and check all locking screws. No screw should turn at this point, otherwise repeat Steps 5 and 6.

**NOTE:** 1. It is not necessary to re-check tightening torque after equipment has been in operation.

2. In applications subject to extreme corrosion, the slits in all collars can be sealed with a suitable caulking compound or equivalent.

#### INSTALLATION OF B-LOC® KEYLESS BUSHING OVER SHAFT KEYWAYS

The Keyless Bushing should be positioned so that slits in Keyless Bushing collars that contact the shaft are located approximately opposite the keyway. In addition, a locking screw should be centered directly over the keyway.

When tightening locking screws, it is important to follow the installation procedure outlined above, which specifies equal 1/4 turns of each locking screw. Failure to follow these instructions could result in excessive tightening of the screw over the keyway, possibly causing permanent deformation of the Keyless Bushing collars.

#### REMOVAL

(Refer to Figure 2)

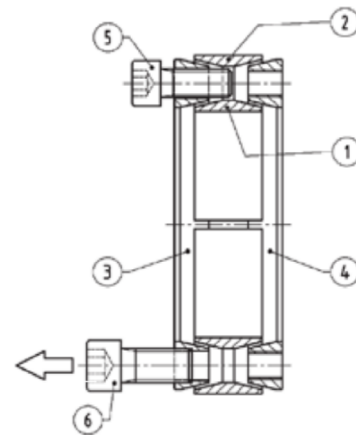


Figure 2

**Prior to initiating the following removal procedure, check to ensure that no torque or thrust loads are acting on the Keyless Bushing, shaft or any mounted components.**

1. Loosen locking screws in several stages by using approx. 1/4 turns, following either a clockwise or counterclockwise sequence.

**NOTE:** **B-LOC®** Series B400 Keyless Bushings feature self-releasing tapers, meaning collars should release during Step 1. However, if for some reason the thrust collars jam, a light tap on three (3) equally spaced heads of loosened locking screws will positively release the connection.

2. Hub and Keyless Bushing are normally removed together. Removal of Keyless Bushing only from deep counterbores is accomplished by inserting pull-off screws (not provided) into threads located under plated locking screws. These threads are NOT to be used for high pulling forces, as thrust collar is only partially threaded.

#### LOCKING SCREW SIZES AND SPECIFIED TIGHTENING TORQUE $M_a$ B400 KEYLESS BUSHINGS

Metric Series	Inch Series	Tightening Torque $M_a$ (ft lb)	Screw Size	Hex Key Size (mm)	Pull-off Thread dB
20 x 47 to 40 x 65	3/4 to 1-1/2	11	M6	5	M8
42 x 75 to 65 x 95	1-5/8 to 2-9/16	26	M8	6	M10
70 x 110 to 95 x 135	2-5/8 to 3-3/4	51	M10	8	M12
100 x 145 to 160 x 210	3-7/8 to 6	91	M12	10	M14
170 x 225 to 200 x 260	6-7/16 to 8	138	M14	12	M16
220 x 285 to 260 x 325		214	M16	14	M20
280 x 355 to 300 x 375		293	M18	14	M22
320 x 405 to 340 x 425		420	M20	17	M24
360 x 455 to 420 x 515		565	M22	17	M27
440 x 545 to 1000 x 1110		725	M24	19	M30

dB = pull-off thread, located only under cadmium plated screws of front thrust collar

**Operator's Manual for Morse 309-CE Series CE Marked Drum Tumblers**  
**Serial Number 315601 and up**

<b>309 SPECIFICATION SHEET (CE Marked)</b>	
<b>Capacity:</b> Full Drum 1/2-Full Drum	363 kg (800 Lb.) 182 kg (400 Lb.)
<b>Drum Holder Specs:</b> Drum Diameter Drum Height	45.72 cm to 59.69 cm (18" to 23.5") 73.66 cm to 93.98 cm (29" to 37")
<b>Drum RPM:</b>	12
<b>Machine Height:</b>	131.45 cm (51.75")
<b>Machine Floor Space:</b>	154.94 cm x 119.38 cm (61" Long x 47" Wide)
<b>Enclosure Height:</b>	160.66 cm (63.25")
<b>Enclosure Floor Space:</b>	192.04 cm x 132.08 cm (76" Long x 52" Wide)
<b>Shipping Weight:</b>	
<b>AC Motor Specs for Model 309-1-50-CE</b> 1HP 1PH 1500 RPM 50HZ 56C TEFC	<b>VOLTS (AMP DRAW)</b> 220V (6.5 Amps)
<b>AC Motor Specs for Model 309-3-50-CE</b> 1HP 3PH 1500 RPM 50HZ 56C TEFC	<b>VOLTS (AMP DRAW)</b> 400V (1.8 Amps)

**Operator's Manual for Morse 309-CE Series CE Marked Drum Tumblers**  
**Serial Number 315601 and up**

**Declaration of Conformity**

RF Solutions, LLC has tested the product to the current appropriate standards and finds that the product is in compliance with those requirements.

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**EMC Directive:** **2014/30/EU**  
Generic Emissions Standard: EN 61000-6-4:2007  
Product Specific Emissions: EN 55011 Class A  
Generic Immunity Standard: EN 61000-6-2: 2005  
Immunity: EN 61000-4-2 Electrostatic Discharge  
EN 61000-4-6 Conducted Susceptibility

**Low Voltage Directive:** **2014/35/EU**  
Standard: EN 60204-1 Safety of Machinery

**Machinery Directive:** **2006/42/EC**  
Standard: EN 60204 Safety of Machinery

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**Manufacturer's Name:** **MORSE Mfg. Co., Inc.**  
Manufacturer's Address: 103 Kuhn Rd.  
Syracuse, NY 13208  
Product: Drum Tumbler  
Model: 309 Series  
Serial Number: 273420 and up  
-----

This Certificate of Compliance issued November 19, 2014 is valid for the test sample of the product specified above and that it conforms to the Directive(s) and Standard(s).

Signature: 

Nathan Andrews  
President  
Morse Manufacturing Company, Inc.  
103 Kuhn Rd.  
Syracuse, New York, USA 13208  
Phone: (315)-437-8475  
Fax: (315)-437-1029