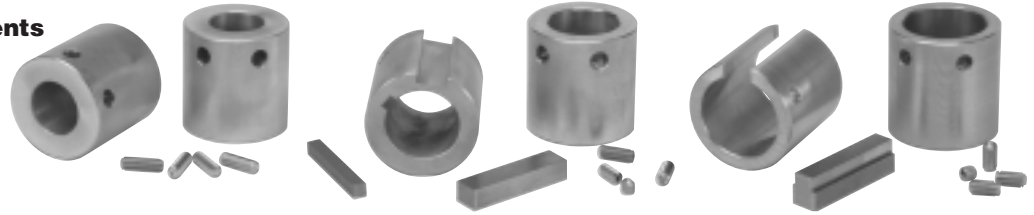


SE Encore Speed Reducers

SE Encore Output Bushing Kit Installation

SE Encore Bushing Kit Contents

- (1) drive key
- (1) plain bushing
- (1) keyed or slotted bushing
- (4) set-screws
- (1) tube of thread locker



Installation Procedures

- 1 Determine the driven end of the hollow shaft.
- 2 Slide the keyed or slotted bushing into the driven end of the shaft.
- 3 Align the slot or keyway with that of the hollow shaft until the set screws in the shaft line up with the bushing clearance holes. Note that a slotted type bushing may need to be squeezed slightly to get started in the bore.
- 4 For keyed type bushings, insert the key that fits between the bushing and hollow shaft. Install the set screw and secure the key.
- 5 For slotted type bushings, install the set screw and turn it into the clearance hole but not past the inside diameter. This will hold the bushing in place while assembling it to the driven shaft.
- 6 If the driven shaft does not significantly extend beyond the keyed bushing, the plain bushing will not be needed. However, if the installation requires that the driven shaft extend through the hollow shaft and be supported on the opposite end, then the plain bushing must be installed.
 - a. Install the plain bushing by sliding it into the bore and aligning the clearance holes with the set screws in the output shaft.

**Cast Bore Bushing Kit
TYPE (C)**
(2) Cast Bore Bushings

**Keyed Bushing Kit
TYPE (K)**
(1) Keyed Bushing
(1) Plain Bushing
(2) Drive Keys

**Slotted Bushing Kit
TYPE (S)**
(1) Slotted Bushing
(1) Plain Bushing
(1) Drive Key

- b. Install the set screws and turn one into the clearance hole but not past the inside diameter. This will hold the bushing in place while assembling to the driven shaft.

Installing the key in the driven shaft keyway

- 7 For slotted type bushings, this will be a plain bushing rectangular or stepped key that engages directly with the output shaft keyway.
- 8 Align the keyways and assemble the gear drive and driven shaft being careful not to bend the shaft.
- 9 Reposition the bushings as necessary to be approximately flush with the end of the shaft.
- 10 Reposition the key as necessary to extend fully into the bushing for maximum engagement.
- 11 Remove all set screws, apply thread locker, reinstall and tighten.

SIZE	BUSHING I.D.	DRIVEN SHAFT O.D.	BUSHING LENGTH	DRIVEN SHAFT KEYWAY	KIT TYPE	KIT#
E17	0.625	5/8	1.50	3/16 X 3/32	S*	WKE850578
	0.750	3/4		3/16 X 3/32	S*	WKE850579
1.000 STANDARD BORE - NO BUSHING REQUIRED**						
E20	0.630*		1.75	*	C	WKE850483
	0.750	3/4		3/16 X 3/32	K	WKE850638
	0.875	7/8		3/16 X 3/32	K	WKE850659
	1.000	1		1/4 X 1/8	K	WKE850468
	1.125	1-1/8		1/4 X 1/8	S*	WKE850660
	1.188	1-3/16		1/4 X 1/8	S*	WKE850625
	1.250	1-1/4		1/4 X 1/8	S*	WKE850469
1.438 STANDARD BORE - NO BUSHING REQUIRED**						
E24	0.750*		1.75	*	C	WKE850484
	1.000	1		1/4 X 1/8	S*	WKE850653
	1.125	1-1/8		1/4 X 1/8	S*	WKE850661
	1.188	1-3/16		1/4 X 1/8	S*	WKE850662
	1.250	1-1/4		1/4 X 1/8	S*	WKE850470
	1.375	1-3/8		5/16 X 5/32	S*	WKE850663
	1.438	1-7/16		3/8 X 3/16	S	WKE850471
1.500 STANDARD BORE - NO BUSHING REQUIRED**						
E26	0.880*		1.75	*	C	WKE850485
	1.000	1		1/4 X 1/8	K	WKE850627
	1.125	1-1/8		1/4 X 1/8	K	WKE877792
	1.188	1-3/16		1/4 X 1/8	S*	WKE850634
	1.438	1-7/16		3/8 X 3/16	S	WKE850472
	1.250	1-1/4		1/4 X 1/8	S*	WKE850479
	1.375	1-3/8		5/16 X 5/32	S*	WKE850664
	1.500	1-1/2		3/8 X 3/16	S	WKE850473
	1.688 STANDARD BORE - NO BUSHING REQUIRED**					

SIZE	BUSHING I.D.	DRIVEN SHAFT O.D.	BUSHING LENGTH	DRIVEN SHAFT KEYWAY	KIT TYPE	KIT#
E30	1.000*		2.00	*	C	WKE850486
	1.250	1-1/4		1/4 X 1/8	K	WKE850481
	1.375	1-3/8		5/16 X 5/32	S*	WKE850665
	1.438	1-7/16		3/8 X 3/16	S	WKE850474
	1.500	1-1/2		3/8 X 3/16	S*	WKE850637
	1.688	1-11/16		3/8 X 3/16	S*	WKE850475
	1.750	1-3/4		3/8 X 3/16	S*	WKE850666
1.938 STANDARD BORE - NO BUSHING REQUIRED**						
E35	1.000*		2.19	*	C	WKE850487
	1.250	1-1/4		1/4 X 1/8	K	WKE850582
	1.438	1-7/16		3/8 X 3/16	S*	WKE850482
	1.500	1-1/2		3/8 X 3/16	S*	WKE850639
	1.750	1-3/4		3/8 X 3/16	S*	WKE850656
	1.938	1-15/16		1/2 X 1/4	S	WKE850476
2.000	2	1/2 X 1/4	S	WKE850477		
2.188 STANDARD BORE - NO BUSHING REQUIRED**						
E43	1.500*		2.75	*	C	WKE850562
	1.500	1-1/2		3/8 X 3/16	K	WKE850654
	1.750	1-3/4		3/8 X 3/16	S*	WKE850667
	1.875	1-7/8		1/2 X 1/4	S*	WKE850668
	1.938	1-15/16		1/2 X 1/4	S	WKE878017
	2.000	2		5/8 X 5/16	K	WKE850593
	2.188	2-3/16		1/2 X 1/4	S*	WKE850560
	2.250	2-1/4		1/2 X 1/4	S*	WKE850669
	2.438	2-7/16		5/8 X 5/16	S	WKE850561
	2.500	2-1/2		5/8 X 5/16	S	WKE878080
2.750 STANDARD BORE - NO BUSHING REQUIRED**						

S* = Bushing uses a step key

* Rough bore size, bushing to be customer bored and keyed

** Bore tolerances +.000 +.002



Warnings And Cautions



WARNING

Warnings

Winsmith products, and associated equipment and machinery, are intended for selection and use by trained and skilled persons capable of determining their suitability for the specific application or use. Proper selection, installation, operation and maintenance, including implementation of adequate safety precautions, are the responsibility of the purchaser or user. The following safety precautions, as well as additional safety precautions that may be required for the specific application or use, are the responsibility of the purchaser or user. **FAILURE TO OBSERVE REQUIRED SAFETY PRECAUTIONS COULD RESULT IN SERIOUS INJURY TO PERSONS OR PROPERTY OR OTHER LOSS.**

Lock-out/Tag-out

It is **EXTREMELY IMPORTANT** that equipment or machinery does not unexpectedly start. To prevent this possibility, all electrical or other input power sources must be turned off, and properly locked out. Tag out procedures must be followed before working on or near the reducer or any associated equipment. Loads on the input and output shafts should be disconnected prior to working on any reducer. Failure to observe these precautions may result in serious bodily injury and/or property damage.

Grounding

Be sure the reducer and associated equipment are properly grounded and otherwise installed in accordance with all electrical code requirements.

Protective Guarding / Loose Clothing, etc.

Always insure there is proper protective guarding over all rotating or moving parts. Never allow loose clothing, hair, jewelry and the like to be worn in the vicinity of rotating or moving parts or machinery. The purchaser or user is responsible for complying with all applicable safety codes. Failure to do so may result in serious bodily injury and/or damage to property or other loss.

Selection & Installation

This speed reducer and associated equipment must be selected, installed, adjusted and maintained by qualified personnel who are knowledgeable regarding all equipment in the system and the potential hazards involved.

Consult Catalog Ratings

Load, torque and other requirements must not exceed the published ratings in the current catalog and/or on the speed reducer nameplate. The reducer selected must be consistent with all service factors for the application. See Winsmith catalogs and www.WINSMITH.com.

Brake Torque Loads

Whenever a brake or any other stopping force is involved in an application, braking torque loads imposed on the speed reducer must not exceed the allowable load ratings.

Not a Brake

Speed reducers should never be used to provide the function of a fail safe brake or an assured self locking device. Speed reducers must never be used to replace a brake or a critical braking application function.

Excess Overhung Loads

Excessive overhung loads on the input or output shafts of a speed reducer may cause premature fatigue failures of the bearings and/or shafts. Mount gears, pulleys and sprockets as close to the housing as possible to minimize such loads. Do not exceed catalog ratings.

Excess Thrust Loads

Excessive thrust loads on the input or output shafts of a gear reducer may cause premature failure of bearings. Do not exceed catalog ratings.

Alignment

Properly align any input and output power transfer elements connected to the speed reducer. Even slight misalignments in a rigid mounting system may cause binding, large vibration forces or excessive overhung loads, leading to premature bearing, shaft, or speed reducer failure. Use of flexible couplings that allow the reducer and connected transfer elements to self-align during operation will compensate for minor misalignments.

Not a Support Structure

A speed reducer must never be used as an integral component of a machine superstructure or support frame that would subject it to additional loads other than properly rated loads transmitted through the shafts.

Mounting Position

The speed reducer should be mounted in one of the mounting positions shown in the catalog. Different mounting positions should not be used without contacting Winsmith as this may result in improper lubrication.

Overhead Mounting

Mounting of a speed reducer in overhead positions may be hazardous. Use of external support rails or structure is strongly recommended for any overhead mounting.

Lifting Eyebolts

Any lifting supports or eyebolts provided on the speed reducer are supplied with the purpose of vertically lifting only the speed reducer, without any other attachments or motors. Inspect such supports and bolts before each use.

Properly Secure Mounting Bolts

Proper mounting bolts and proper torques must be applied and maintained to insure the speed reducer is securely mounted to the desired machinery. Inspect regularly as machine vibration may loosen fasteners.

Thread Locking Compound

Proper thread locking compound should be appropriately applied to the cleaned threads of all mounting bolts connecting or securing the speed reducer to equipment and any drive, accessories, or brake components attached to the speed reducer. If, at any time after installation a factory supplied assembly or construction bolt is removed, care must be taken to thoroughly clean off the old thread locking compound and a new appropriate thread locking compound must be applied. Failure to properly apply new thread locking compound on all mounting or reducer construction bolts may result in serious injury or death from falling mechanical components.

Reducer Surface Is Hot

Operating speed reducers generate heat. Surface temperatures may become hot enough to cause severe burns. Proper personal protective equipment should be used.

Noise

Operating speed reducers may generate high noise levels. Use appropriate hearing protection and avoid extended exposure to high noise levels.

Lubricants Hot and Under Pressure

The temperature of lubricants inside a speed reducer may be very high. The reducer should be allowed to cool to ambient temperature before removal of any vent, drain, level, or fill plugs, and before removing seals or bearing covers. Speed reducers without a pressure vent may also be under great internal pressure. Slowly loosen the lubricant fill plug above the lubricant level to vent any internal pressure before further disassembling.

Lubricant Contact

Contact with lubricants can present safety concerns. Proper personal protective equipment should be used whenever handling speed reducer lubricants. Consult the lubricant MSDS sheet which is often available on the lubrication manufacturer's website.

FDA, USDA, and NSF Applications

Factory supplied lubricants may not be suitable or safe for applications involving food, drugs and similar products. This includes applications subject to FDA, USDA, NSF or other regulatory jurisdiction. Consult the lubricant supplier or Winsmith for acceptable lubricants.

Inspection and Lubrication

Ensure proper operation by regularly inspecting the speed reducer and following all maintenance, operation and lubrication guidelines.



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