

Torque-Arm TXT Double Reduction Taper-Bushed and Straight-Bore Speed Reducers Instruction Manual

TXT/HXT 1E
TXT/HXT 2E
TXT/HXT 3E
TXT/HXT 4E

TXT/HXT 5E
TXT/HXT 6E
TXT/HXT 7E

TXT 8E
TXT 9E
TXT 10E
TXT 12E

Includes Char-Lynn 6B Hydroil Reducers

HXT 3E-6B
HXT 4E-6B

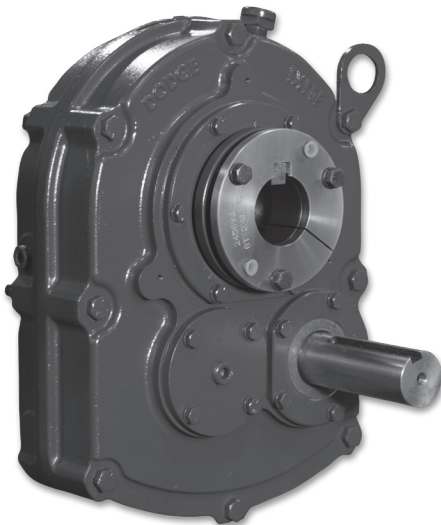
HXT 5E-6B

HXT 6E-6B
HXT 7E-6B

These instructions must be read thoroughly before installation or operation. This instruction manual was accurate at the time of printing. Please see dodgeindustrial.com for updated instruction manuals.

WARNING: To ensure the drive is not unexpectedly started, turn off and lock-out or tag power source before proceeding. Failure to observe these precautions could result in bodily injury.

WARNING: All products over 25 kg (55 lbs) are noted on the shipping package. Proper lifting practices are required for these products.



WARNING: Because of the possible danger to person(s) or property from accidents which may result from the improper use of products, it is important that correct procedures be followed. Products must be used in accordance with the engineering information specified in the catalog. Proper installation, maintenance and operation procedures must be observed. The instructions in the instruction manuals must be followed. Inspections should be made as necessary to assure safe operation under prevailing conditions. Proper guards and other suitable safety devices or procedures as may be desirable or as may be specified in safety codes should be provided, and are neither provided by Dodge® nor are the responsibility of Dodge. This unit and its associated equipment must be installed, adjusted and maintained by qualified personnel who are familiar with the construction and operation of all equipment in the system and the potential hazards involved. When risk to persons or property may be involved, a holding device must be an integral part of the driven equipment beyond the speed reducer output shaft.

INSTALLATION

1. Use lifting bracket where applicable to lift reducer.
2. Determine the running positions of the reducer (see Figure 1). Note that the reducer is supplied with six plugs; four around the sides for horizontal installations and one on each face for vertical installations. These plugs must be arranged relative to the running positions as follows:

Horizontal installations

Install the magnetic drain plug in the hole closest to the bottom of the reducer. Install the filter/ventilation plug in topmost hole. Of the two remaining plugs on the sides of the reducer, the lowest plug is the minimum oil level plug.

Vertical installations

Install the filter/ventilation plug in the hole provided in the upper face of the reducer housing. If space is restricted on the upper face, install the vent in the highest hole on the side of the reducer per Figure 1 using the optional vertical vent kit. Install a plug in the hole in the bottom face of the reducer. Do not use this hole for the magnetic drain plug. Install the magnetic drain plug in the lowest hole on the sides of the reducer. Of the remaining holes on the sides of the reducer, use the plug in the upper housing half for the minimum oil level plug.

NOTE: This reducer is compatible with Dodge sensors, that can be installed in the adapter plug. The plug and sensor can be moved to different locations as required by mounting position.

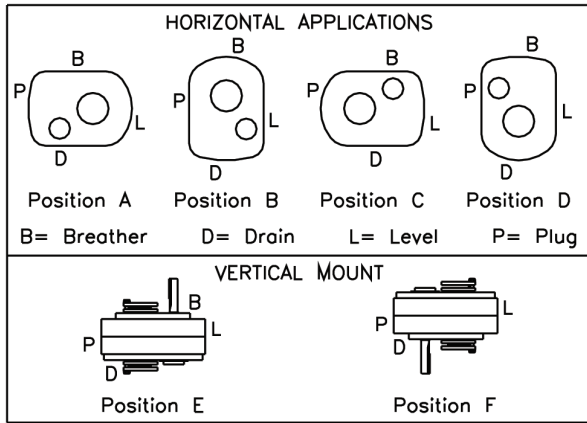


Figure 1 - Mounting Positions

Below 15 rpm output speed, oil level must be adjusted to reach the highest oil level plug. If reducer position is to vary from those shown in Figure 1, either more or less oil may be required. For assistance, contact Dodge Application Engineering at +1 864 284 5700.

The running position of the reducer in a horizontal application is not limited to the four positions shown in Figure 1. However, if running position is over 20 degrees in position B and D or over 5 degrees in position A and C (either way from sketches), the oil level plug cannot be used safely to check the oil level unless during the checking, the torque-arm is disconnected and the reducer is swung to within 20 degrees for position B and D or to within 5 degrees for position A and C of the positions shown in Figure 1.

Because of the many possible positions of the reducer, it may be necessary or desirable to make special adaptations using the lubrication filling holes furnished along with other standard pipe fittings, stand pipes and oil level gauges as required.

For Tapered-Bushed Reducer: Mount the reducer on the driven shaft per instruction sheet for the tapered-bushing kit.

3. Install sheave on input shaft as close to reducer as practical (see Figure 2).
4. If not using a Dodge Torque-Arm motor mount, install motor and V-belt drive so belt will approximately be at right angles to the centerline between driven and input shaft (see Figure 3). This will permit tightening the V-belt with the Torque-Arm.
5. Install Torque-Arm and adapter plates using the long reducer bolts. The adapter plates may be installed in any position around the input end of the reducer.
6. Install Torque-Arm fulcrum on a flat and rigid support so that the torque-arm will be approximately at right angles to the centerline through the driven shaft and the torque arm anchor screw (see Figure 4). Make sure that there is sufficient take-up in the turnbuckle for belt tension adjustment when using V-belt drive.

CAUTION: Unit is shipped without oil. Add proper amount of recommended lubricant before operating. Failure to observe this precaution could result in damage to or destruction of the equipment.

7. Fill gear reducer with the recommended volume of lubricant.

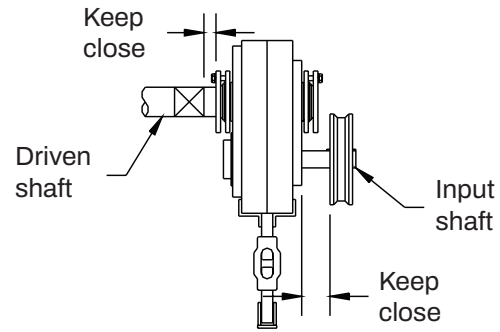


Figure 2 - Reducer and Sheave Installation

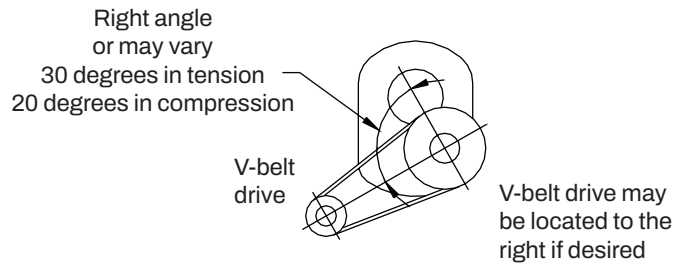


Figure 3 - Angle of V-Belt Drive

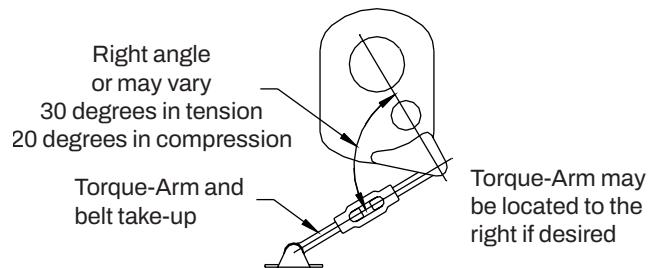


Figure 4 - Angle of Torque-Arm

TXT TAPERED-BUSHING INSTALLATION

CAUTION: DO NOT USE LUBRICANTS OR ANTI-SEIZE WHEN INSTALLING TWIN-TAPERED BUSHINGS. The use of lubricants or anti-seize could result in over tightening of the bushing assembly. This may result in bushing assembly damage or future bushing removal issues.

Tapered-Bore Bushings

1. One bushing assembly is required to mount the reducer on the driven shaft. An assembly consists of two tapered bushings, bushing screws and washers, and necessary shaft keys or key.

The driven shaft must extend through the full length of the reducer. The minimum shaft length, as measured from the end of the shaft to the outer edge of the bushing flange (see Figure 5), is given in Table 1. This dimension does not include dimension "A". Dimension "A" should be added to the minimum shaft length to allow for the removal of the bushings at disassembly.

2. Place one bushing, flange end first, onto the driven shaft and position per dimension A, as shown in Table 1. This will allow the bolts to be threaded into the bushing and for future bushing and reducer removal. If the reducer must be positioned closer to the equipment than dimension A, place the screws, with washers installed, into the unthreaded holes

of the bushing flange prior to placing the bushing on the shaft and position as required.

3. Insert the output key in the shaft and bushing. For ease of installation, rotate the driven shaft so that the shaft keyseat is at the top position.
4. Mount the reducer on the driven shaft and align the shaft key with the reducer hub keyway. Maintain the recommended minimum distance A from the shaft bearing.
5. Insert the screws, with washers installed, in the unthreaded holes in the bushing flange and align with the threaded holes in the bushing backup plate. If necessary, rotate the bushing backup plate to align with the bushing screws. Tighten the screws lightly. If the reducer must be positioned closer than dimension A, place the screws with washers installed, in the unthreaded holes in the bushing before positioning reducer making sure to maintain at least 1/8" between the screw heads and the bearing.
6. Place the second tapered bushing in position on the shaft and align the bushing keyway with the shaft key. Align the unthreaded holes in the bushing with the threaded holes in the bushing backup plate. If necessary, rotate the bushing backup plate to align with the bushing holes. Insert bushing screws, with washers installed in the unthreaded holes in the bushing. Tighten screws lightly.
7. Alternately and evenly tighten the screws in the bushing nearest the equipment to the recommended torque given in Table 1. Repeat procedure on outer bushing.

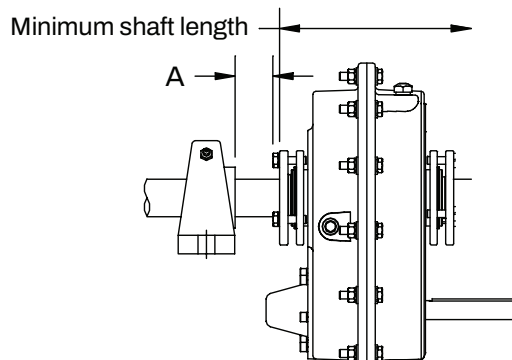


Figure 5 - Minimum Recommend Dimensions

Table 1–Minimum Mounting Dimensions and Bolt Torques

Minimum required shaft length		
Reducer size	Tapered bushing (in)	Straight bushing (in)
TXT/HXT 1E	6-1/2	5-5/8
TXT/HXT 2E	6-3/4	5-13/16
TXT/HXT 3E	8-9/16	7-11/16
TXT/HXT 4E	9-5/16	8-1/4
TXT/HXT 5E	9-3/4	8-11/16
TXT/HXT 6E	10-3/4	9-5/8
TXT/HXT 7E	11-15/16	10-3/4
TXT 8E	13-1/8	11-3/8
TXT 9E	13-0	11-3/8
TXT 10E	14-3/16	12-3/8
TXT 12E	17-3/8	N/A

Bushing screw information and minimum clearance for removal			
Reducer size	Fastener size	Torque (in-lbs)	Dimension A (in)
TXT/HXT 1E	5/16-18	200	1-1/4
TXT/HXT 2E	5/16-18	200	1-1/4
TXT/HXT 3E	3/8-16	200	1-1/2
TXT/HXT 4E	3/8-16	360	1-3/4
TXT/HXT 5E	3/8-16	360	1-13/16
TXT/HXT 6E	1/2-13	360	1-13/16
TXT/HXT 7E	1/2-13	800	2-1/16
TXT 8E	1/2-13	800	2-1/16
TXT 9E	1/2-13	900	2-7/16
TXT 10E	5/8-11	900	2-7/16
TXT 12E	5/8-11	900	2-7/16

Straight-Bore Bushings

1. One bushing assembly is required to mount the reducer on the driven shaft. An assembly consists of one keyed straight bushing, one plain straight bushing, required set screws, and necessary shaft key or keys. The driven shaft must extent through the reducer to operate properly. The minimum shaft length, as measured from the end of the shaft to the outer edge of the retaining collar, is given in Table 1.
2. Install the plain bushing into the reducer output hub on the side toward the equipment or bearing. Remove two short set screws from the retaining collar and install two of the longer set screws supplied with the bushing kit. Line up the bushing holes with the set screws. Thread the set screws in until they locate into the bushing holes. Make sure the set screws are threaded in only enough to locate the bushing in the reducer hub and does not extend thru the bushing.
3. Install the keyed bushing into the opposite end of the reducer hub as the plain bushing. Remove one short set screw from the retaining collar and install the remaining set screw from the bushing kit into the collar. Line up the bushing hole with the set screw. Thread the set screw in until it locates into the bushing hole. Make sure the set screw is threaded in only enough to locate the bushing in the reducer hub and does not extend through the bushing.
4. Mount the reducer on the driven shaft as close to the equipment or bearing as practical.
5. Line up the keyway in the bushing with the keyway in the driven shaft. Insert the key supplied with the bushing kit into the keyway. Gently tap the key into position until the key is flush with the edge of the reducer. Securely tighten all set screws.

Standard Tapered Bushings Removal

1. Remove bushing screws.
2. Place the screws in the threaded holes provided in the bushing flanges. Tighten the screws alternately and evenly until the bushings are free on the shaft. For ease of tightening screws make sure screw threads and threaded holes in the bushing flanges are clean. If the reducer was positioned closer than the recommended minimum distance “A” as shown in Table 1, loosen the inboard bushing screws until they are clear of the bushing flange by 1/8". Locate two (2) wedges at 180 degrees between the bushing flange and the bushing backup plate. Drive the wedges alternately and evenly until the bushing is free on the shaft.
3. Remove the outside bushing, the reducer, key(s), and inboard bushing.,

LUBRICATION

IMPORTANT: Because Torque-Arm reducers are shipped without oil, it is extremely important to add the proper amount of lubricant prior to operating reducer. For most applications, a high-grade petroleum-base rust and oxidation (R&O) inhibited gear oil is suitable. See Table 2 and Table 3 for proper oil volume and viscosity requirements.

TXT-E double-reduction gearboxes have redesigned backstops that allow the usage of extreme pressure (EP) oils.

Follow instructions on reducer warning tags.

Lubrication is very important for satisfactory operation. The proper oil level must be maintained at all times. Frequent inspection, at least monthly, with the unit not running and allowing sufficient time for the oil to cool and the entrapped air to settle out of the oil should be made by removing the level plug and verifying the level is being maintained. If oil level is low, add the proper lubricant until the oil volume is increased to the correct level.

After an initial operation of about two weeks, the oil should be changed. If desired, this oil may be filtered and reused. After the initial break in period, under average industrial operating conditions, the lubricant should be changed every 2,500 hours of operation. At every oil change, drain reducer and flush with kerosene, clean magnetic drain plug and refill to proper level with new lubricant.

Under extreme operating conditions, such as rapid rise and fall of temperature, dust, dirt, chemical particles, chemical fumes, or oil sump temperatures above 200 °F, the oil should be changed every 1 to 3 months, depending on severity of conditions.

CAUTION: Too much oil will cause overheating and too little will result in gear failure. Check oil level regularly. Failure to observe this precaution could result in equipment damage and/or bodily injury.

Heating is a natural characteristic of enclosed gearing. A maximum gear case temperature approaching 200 °F is not uncommon for some units operating in normal ambient temperatures of 80 °F. When operating at the rated capacity with proper lubrication, no damage will result from this temperature. This maximum temperature was taken into consideration during the design of the reducer.

Table 2–Oil Volumes

Reducer		Approximate volume of oil to fill reducer to oil level plug ① ⑤ ⑥											
		② Position A		② Position B		② Position C		② Position D		② Position E		② Position F	
Size	Ratio	③ Qt	④ L	③ Qt	④ L	③ Qt	④ L	③ Qt	④ L	③ Qt	④ L	Qt	L
(H)TXT 1E	9,15,25	1/2	1/2	1/2	1/2	5/8	5/8	3/4	3/4	1	1	1-1/4	1-1/8
(H)TXT 2E	9,15,25	7/8	7/8	1	1	5/8	5/8	1	1	1-5/8	1-1/2	1-3/4	1-5/8
(H)TXT 3E	9,15,25	1-1/2	1-3/8	1-1/2	1-3/8	3/4	3/4	2-1/4	2-1/8	2-5/8	2-1/2	3	2-7/8
(H)TXT 4E	9,15,25	1-7/8	1-3/4	2-1/4	2-1/8	1-1/4	1-1/8	1-3/4	1-5/8	3-3/8	3-1/8	4-1/4	4
(H)TXT 5E	9,15,25	3-1/4	3-1/8	4	3-3/4	3-1/4	3-1/8	4	3-3/4	7	6-5/8	8-5/8	8-1/8
(H)TXT 6E	9,15,25	4-1/4	4	5	4-3/4	4-1/4	4	5	4-3/4	8-5/8	8-1/8	9-1/8	8-5/8
(H)TXT 7E	9,15,25	6-1/2	6-1/8	8	7-1/2	7-1/4	6-7/8	9-1/4	8-3/4	15-3/8	14-1/2	16-3/8	15-1/2
TXT 8E	15,25	8-1/2	8	11	10-3/8	10-1/2	9-7/8	8-1/2	8	19-1/8	18-1/8	19-1/8	18-1/8
TXT 9E	15,26	13	12-1/4	13	12-1/4	12-1/2	11-7/8	14-1/4	13-1/2	25-3/8	24	25-3/8	24
TXT 10E	15,24	23	21-3/4	14	13-1/4	15-3/4	14-7/8	18-3/4	17-3/4	41	38-3/4	41	38-3/4
TXT 12E	15,25	59	55-7/8	38	36	59	55-7/8	36-1/2	34-1/2	100	94-5/8	100	94-5/8

① Oil quantity is approximate. Service with lubricant until oil runs out of oil level hole.

② Refer to Figure 1 for mounting positions

③ US measurement conversions: 1 quart = 32 fluid ounces = 0.94646 liters

④ Conversion from quarts rounded values

⑤ Below 15 rpm output speed, oil level must be adjusted to reach the highest oil level plug. If reducer position is to vary from those shown in Figure 1, either more or less oil may be required. For assistance, consult Dodge Application Engineering at +1 864 284 5700.

⑥ Consult Dodge Application Engineering at +1 864 284 5700 for proper oil level for reducers equipped with backstops and which are mounted in either position C or position D

Table 3–oil recommendations

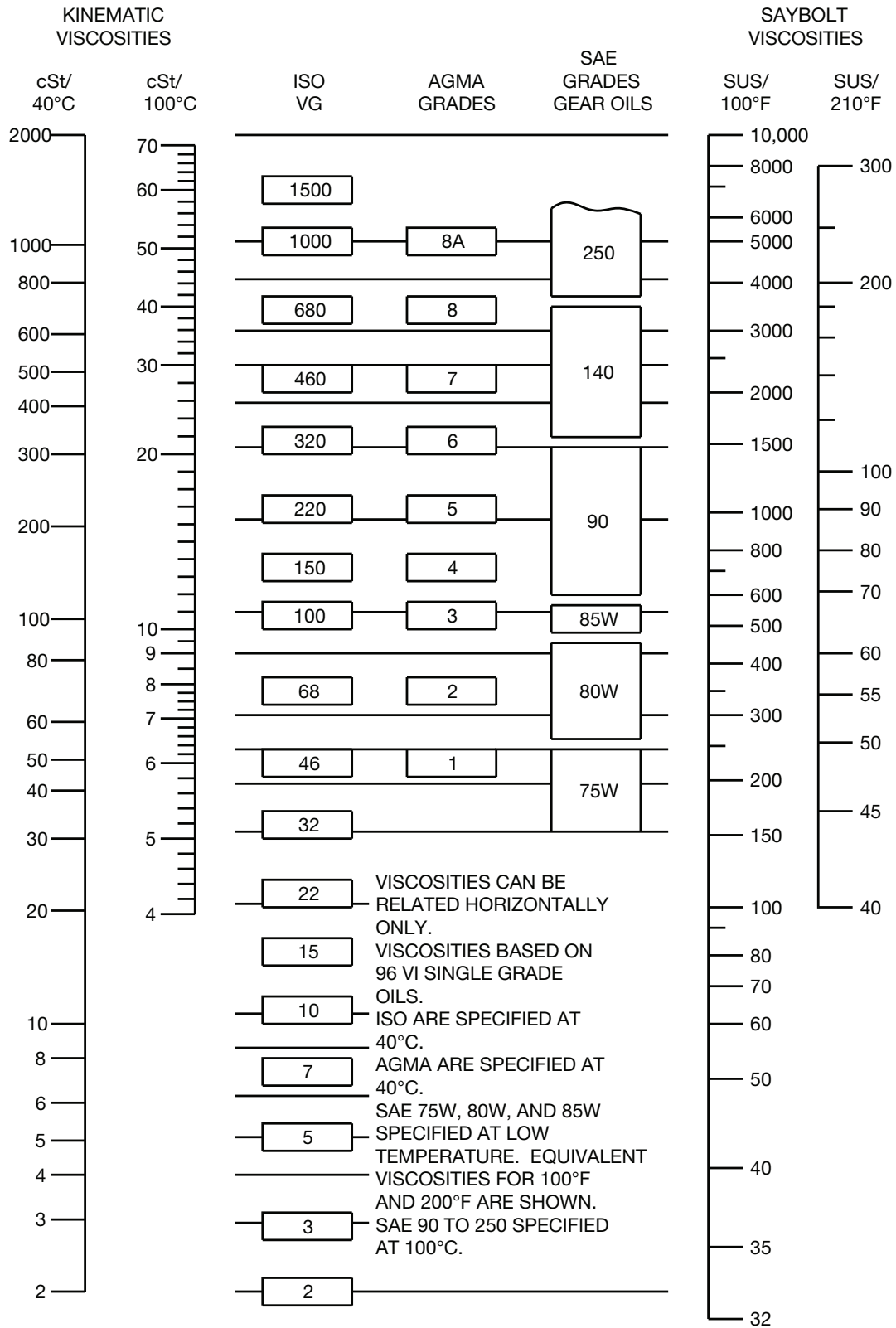
ISO grades for ambient temperatures of 50 °F to 125 °F (refer to notes below)											
Output rpm	Torque-Arm reducer size										
	(H)TXT 1E	(H)TXT 2E	(H)TXT 3E	(H)TXT 4E	(H)TXT 5E	(H)TXT 6E	(H)TXT 7E	TXT 8E	TXT 9E	TXT 10E	TXT 12E
301–400	320	320	220	220	220	220	220	220	220	220	220
201–300	320	320	220	220	220	220	220	220	220	220	220
151–200	320	320	220	220	220	220	220	220	220	220	220
126–150	320	320	320	220	220	220	220	220	220	220	220
101–125	320	320	320	320	220	220	220	220	220	220	220
81–100	320	320	320	320	320	220	220	220	220	220	220
41–80	320	320	320	320	320	220	220	220	220	220	220
11–40	320	320	320	320	320	320	320	320	320	320	220
1–10	320	320	320	320	320	320	320	320	320	320	320

ISO grades for ambient temperatures of 15 °F to 60 °F (refer to notes below)											
Output rpm	Torque-Arm reducer size										
	(H)TXT 1E	(H)TXT 2E	(H)TXT 3E	(H)TXT 4E	(H)TXT 5E	(H)TXT 6E	(H)TXT 7E	TXT 8E	TXT 9E	TXT 10E	TXT 12E
301–400	220	220	150	150	150	150	150	150	150	150	150
201–300	220	220	150	150	150	150	150	150	150	150	150
151–200	220	220	150	150	150	150	150	150	150	150	150
126–150	220	220	220	150	150	150	150	150	150	150	150
101–125	220	220	220	220	150	150	150	150	150	150	150
81–100	220	220	220	220	220	150	150	150	150	150	150
41–80	220	220	220	220	220	150	150	150	150	150	150
11–40	220	220	220	220	220	220	220	220	220	220	150
1–10	220	220	220	220	220	220	220	220	220	220	220

Notes:

1. Assumes auxiliary cooling where recommended in the catalog
2. Pour point of lubricant selected should be at least 10 °F lower than expected minimum ambient starting temperature.
3. EP lubricants are not necessary for average operating conditions. Torque-Arm internal backstops are not suitable for use with EP lubricants.
4. Special lubricants may be required for food and drug industry applications where contact with the product being manufactured may occur. Consult a lubrication manufacturer's representative for his recommendations .
5. For reducers operating in ambient temperatures between -22 °F (-30 °C) and 20 °F (-6.6 °C) use a synthetic hydrocarbon lubricant, 100 ISO grade or AGMA 3 grade (for example, Mobil SHC627) . Above 125 °F (51 °C), consult Dodge Application Engineering +1 864 284 5700 for lubrication recommendations.
6. Mobil SHC630 Series oil is recommended for high ambient temperatures

OIL VISCOCITY EQUIVALENCY CHART



GUIDELINES FOR TXT REDUCER LONG-TERM STORAGE

During periods of long storage, or when waiting for delivery or installation of other equipment, special care should be taken to protect a gear reducer to have it ready to be in the best condition when placed into service.

By taking special precautions, problems such as seal leakage and reducer failure due to lack of lubrication, improper lubrication quantity, or contamination can be avoided. The following precautions will protect gear reducers during periods of extended storage.

Preparation

1. Drain oil from the unit. Add a vapor phase corrosion inhibiting oil (VCI-105 oil by Daubert Chemical Co.) in accordance with Table 4.
2. Seal the unit airtight. Replace the vent plug with a standard pipe plug and wire the vent to the unit.
3. Cover all unpainted exterior parts with a waxy rust preventative compound that will keep oxygen away from the bare metal. (Non-Rust X-110 by Daubert Chemical Co. or equivalent)
4. The instruction manuals and lubrication tags are paper and must be kept dry. Either remove these documents and store them inside, or cover the unit with a durable waterproof cover which can keep moisture away.
5. Protect reducer from dust, moisture, and other contaminants by storing the unit in a dry area.
6. In damp environments, the reducer should be packed inside a moisture-proof container or an envelope of polyethylene containing a desiccant material. If the reducer is to be stored outdoors, cover the entire exterior with a rust preventative.

When Placing the Reducer into Service

1. Fill the unit to the proper oil level using a recommended lubricant. The VCI oil will not affect the new lubricant.
2. Clean the shaft extensions with petroleum solvents.
3. Assemble the vent plug into the proper hole.

Follow the installation instructions provided in this manual.

Table 4—Quantities of VCI #105 Oil

Reducer size	Quantity (oz/mm)
(H)TXT 1E	1/30
(H)TXT 2E	1/30
(H)TXT 3E	1/30
(H)TXT 4E	1/30
(H)TXT 5E	1/30
(H)TXT 6E	2/59
(H)TXT 7E	2/59
TXT 8E	3/89
TXT 9E	4/118
TXT 10E	6/177
TXT 12E	10/296

VCI #105 and #10 are interchangeable
VCI #105 is more readily available

MOTOR MOUNTS

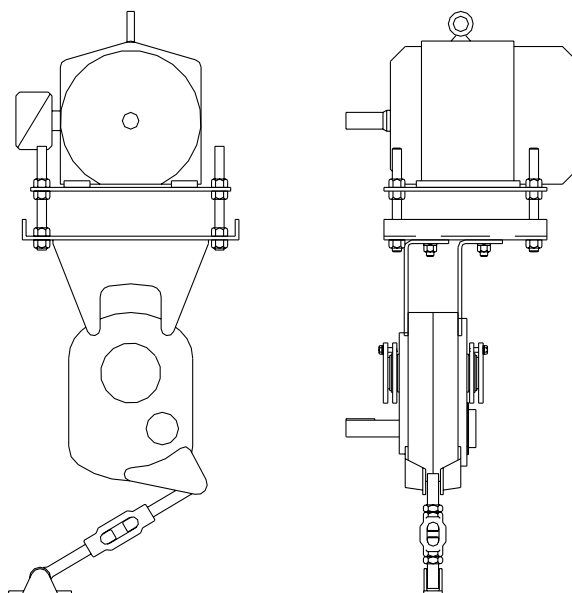


Figure 6 - Motor Mounts

WARNING: Belt guard removed for illustration purposes. Do not operate if belt guard is not in place.

Motor Mount Installation

The Torque-Arm (TA) motor mount is designed to be installed on the output end of the reducer as shown in Figure 6. If bottom mounting is desired, use the optional TAB style.

TA1M through TA7M Motor Mount

1. Remove the required housing bolts on the output end of the reducer. Place the motor mount brackets in position and install the longer housing bolts supplied with the motor mount assembly. Do not fully tighten the housing bolts at this time.
2. Install the bottom plate to the motor mount brackets and tighten with the hardware provided. Next, tighten the housing bolts to the torque values listed in Table 6.
3. Install the four adjusting studs to the bottom plate using the jam nuts provided and securely tighten. These nuts will not require any further adjustment. Add one additional jam nut to each stud and thread approximately to the middle of the stud. Install the top motor plate on top of the jam nuts. Assemble the remaining jam nuts on studs to secure top motor plate. Do not fully tighten these nuts yet.
4. Mount motor, drive and driven sheaves, and V-belts.

NOTE: Mount driven sheave as close to the reducer housing as practical.

5. Adjust V-belts to the proper tension by adjusting the jam nuts and securely tighten.
6. Check all bolts to insure that they are securely tightened.

TA8 through TA10 Motor Mount

1. Remove the required housing bolts on the output end of the reducer. Place the motor mount brackets in position and install the longer housing bolts supplied with the motor mount assembly. Do not fully tighten the housing bolts at this time.
2. Install the four adjusting studs to the top plate as shown using the jam nuts provided and securely tighten. Add one additional jam nut to each stud and thread approximately to the middle of the stud. Install this assembly to the motor mount brackets and install the remaining jam nuts onto the studs to secure the top plate to the brackets. Tighten the housing bolts to the torque values listed in Table 6.
3. Loosely install the front motor rail to the top plate. Measure the distance between the front and rear mounting holes on the motor and position the rear motor rail at this distance and loosely bolt to the top plate.
4. Center the motor on the motor rails and securely bolt the motor to the motor rails.
5. Install the motor sheave and reducer sheave on their shafts. Mount the reducer sheave as close to the housings as practical. Install the V-belts and adjust the motor rails to permit proper alignment of the V-belts to the sheaves. Securely tighten the motor rails to the mounting plate.
6. Adjust the V-belts to the proper tension and securely tighten the adjusting nuts.
7. Check all bolts to see that they are securely tightened.

WARNING: To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Remove all external loads from drive before removing or servicing drive or accessories. Failure to observe these precautions could result in bodily injury.

REPLACEMENT OF PARTS

NOTE: Using tools normally found in a maintenance department, a Dodge Torque-Arm speed reducer can be disassembled and reassembled by careful attention to the following instructions.

Cleanliness is very important to prevent the introduction of dirt into the bearings and other parts of the reducer. A tank of clean solvent, an arbor press, and equipment for heating bearings and gears (for shrinking these parts on shafts) should be available.

The oil seals are designed with a contact lip. Considerable care should be used during disassembly and reassembly to avoid damage to the surface on which the seals rub.

The keyseat in the input shaft, as well as any sharp edges on the output hub should be covered with tape or paper before disassembly or reassembly. Be careful to remove any burrs or nicks on surfaces of the input shaft or output hub before disassembly or reassembly.

Ordering Parts

When ordering parts for a Torque-Arm reducer, specify reducer part number, part name, and quantity required.

When a pinion or gear is replaced, it is strongly recommended that the mating pinion or gear is replaced as well.

If the large gear on the output hub must be replaced, it is recommended that an output hub assembly consisting of a gear assembled on a hub be ordered to ensure undamaged surfaces on the output hub where the output seals rub. However, if it is desired to use the old output hub, press the gear and bearing off and examine the rubbing surface under the oil seal carefully for possible scratching or other damage resulting from the pressing operation. To prevent oil leakage at the shaft oil seals, the smooth surface of the output hub must not be damaged.

If any parts must be pressed from a shaft or from the output hub, this should be done before ordering parts to make sure that none of the bearings or other parts are damaged in removal. Do not press against rollers or cage of any bearing. Because old shaft oil seals may be damaged in disassembly, it is advisable to order replacements for these parts.

Removing Reducer from Shaft

WARNING: To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Remove all external loads from drive before removing or servicing drive or accessories. Failure to observe these precautions could result in bodily injury.

Tapered-Bushed Reducer

1. Disconnect and remove belt guard, V-drive, and motor mount as required. Disconnect torque arm rod from reducer adapter.
2. Remove bushing screws.
3. Place the screws in the threaded holes provided in the bushing flanges. Tighten the screws alternately and evenly until the bushings are free on the shaft. For ease of tightening screws, make sure screw threads and threaded holes in bushing flanges are clean. A tap can be used to clean out the threads. Use caution to use the proper size tap to prevent damage to the threads.
4. Remove the outside bushing, the reducer, and then the inboard bushing.

Straight-Bore Reducer

1. Disconnect and remove belt guard, V-drive, and motor mount as required. Disconnect torque arm rod from reducer adapter.
2. Loosen and remove the set screws in both output hub collars.
3. Remove the collar from the output hub closest to the end of the shaft. This will expose three puller holes in the output hub to permit the use of a three prong puller. In removing the reducer from the shaft, use care not to damage the reducer output hub.

Disassembly

1. Drain all oil from the reducer.
2. Remove all locking collars, retaining rings, and bushing backup plates as required. Position the reducer on its side and remove all housing bolts. Using the three pry slots around the periphery of the flange, gently separate the housing halves and open evenly to prevent damage to the parts inside. Remove the two dowel pins.
3. Lift input shaft, all gear assemblies, and bearing assemblies from housing.
4. Remove seals from housing.
5. Remove bearings from shafts and hubs. Be careful not to scratch or damage any assembly or seal area during bearing removal. The hub assembly can be disassembled for gear replacement but if scratching or grooving occurs on the hub, seal leakage will occur and the hub will need to be replaced.

(H)TXT 1E and (H)TXT 2E Reassembly

1. **Output Hub Assembly:** Heat gear from 325 °F to 350° to shrink onto hub. Heat bearings from 270 °F to 290 °F to shrink onto hub. Any damage to the hub surfaces where the oil seals rub will cause leakage, making it necessary to replace the hub.
2. **Countershaft Assembly:** Heat gear from 325 °F to 350 °F and bearings from 270 °F to 290 °F to shrink onto shaft.
3. **Input Shaft Assembly:** Heat bearings from 270 °F to 290 °F and shrink onto shaft.
4. Drive the two dowel pins into place in the right-hand housing half (backstop side).
5. Make sure both housing halves are clean and free of RTV residue. Place R.H. housing half on blocks to allow for protruding end of output hub.
6. Install and mesh the output hub gear assembly and small countershaft gear assembly in place in the right-hand housing.
7. Install and mesh the input shaft assembly in place.
8. Apply a continuous 1/8" diameter bead of Dow Corning RTV732 sealant on the flange surface of the R.H. housing, making sure RTV is placed around all bolt holes. Set the left-hand housing half in position onto the dowel pins located in the right-hand housing and gently tap with a soft hammer until housing bolts can be used to draw housing halves together. Make sure reducer shafts do not bind when tightening housing bolts.
9. Torque housing bolts per torque values listed in Table 6.
10. Install input and output seals. Lightly coat the seal lips with Mobilith AW2 All-Purpose grease or equivalent. The possibility of damage and consequent oil leakage can be decreased by covering all sharp edges with tape prior to seal installation. Seals should be pressed or tapped with a soft hammer evenly into place in the reducer housing, applying pressure only on the outer edge of the seals.

NOTE: Extreme care should be used when installing seals to avoid damage due to contact with sharp edges on the input shaft or output hub. A slight oil leak at the seals may be evident during initial running but should disappear unless seals have been damaged.

(H)TXT 3E and (H)TXT 4E Reassembly

1. Follow step 1 through step 5 listed under (H)TXT 1E and (H)TXT 2E.
2. Install all bearing cups in the right-hand housing half, making sure they are properly seated.
3. Install and mesh the output hub gear assembly and small countershaft gear assembly together and set in place in housing.
4. Install and mesh the input shaft assembly in-place in the right-hand housing.
5. Install all bearing cups without shims into the left-hand housing half. Set the left-hand housing half in position onto the dowel pins located in the right-hand housing and gently tap with a soft hammer until the housing bolts can be used to draw the housing halves together. Torque housing bolts per Table 6.
6. Rotate the input shaft by hand to seat the bearing cups.
7. Using an indicator and magnetic base, measure record the axial endplay of the input shaft, countershaft assembly, and output hub assembly.
8. Remove all housing bolts and remove the left-hand housing. Remove the bearing cups from the left-hand housing. Based on the recorded readings, shim behind each bearing cup to set the correct endplay per Table 5. Reinstall the bearing

cups into the left-hand housing. Repeat the above procedure and adjust the axial endplay as required per Table 5. Once the endplay is set, remove the left-hand housing and apply a continuous 1/8" diameter bead of Dow Corning RTV732 sealant or equivalent on the flange surface of the R.H. housing (to prevent oil leaks, make sure RTV is placed around all bolt holes).

9. Set the left-hand housing half in position onto the dowel pins located in the right-hand housing and torque housing bolts per Table 6.
10. Install input and output seals. Lightly coat the seal lips with Mobilith AW2 All-Purpose grease or equivalent. The possibility of damage and consequent oil leakage can be decreased by covering all sharp edges with tape prior to seal installation. Seals should be pressed or tapped with a soft hammer evenly into place in the reducer housing, applying pressure only on the outer edge of the seals.

NOTE: Extreme care should be used when installing seals to avoid damage due to contact with sharp edges on the input shaft or output hub. A slight oil leak at the seals may be evident during initial running but should disappear unless seals have been damaged.

(H)TXT 5E through TXT 10E Reassembly

1. Follow step 1 through step 5 listed under (H)TXT 1E and (H)TXT 2E.
2. Install all bearing cups in right-hand housing half, making sure they are properly seated.
3. Install and mesh the output hub gear and smaller countershaft gear together and set in-place in housing. Make sure bearing cones are properly seated in their cups. Install and mesh the input shaft assembly into the right-hand housing. Set bearing cups for left-hand housing half in-place on their respective cones.
4. Make sure both housing halves are clean and free of RTV residue. Apply a continuous 1/8" diameter bead of Dow Corning RTV732 sealant on the flange surface of the right-hand housing (to prevent oil leaks, make sure RTV is placed around all bolt holes). Set the left-hand housing half in position onto the dowel pins and gently tap with a soft hammer until the housing bolts can be used to draw the housing halves together. Make sure reducer shafts do not bind when tightening the housing bolts. Torque housing bolts per torque values listed in Table 6.
5. Install the output seal carrier and draw down with two bolts 180° apart to 50 in-lbs of torque. Loosen both bolts then retighten finger tight only. Measure the clearance between the housing and output seal carrier flange at each bolt and average the two values. Add 0.010" to the average reading and make up shim pack.
6. Install shim pack between the carrier flange and reducer housing. Torque the bolts to the value shown in Table 6. Using a magnetic base and dial indicator, check the axial endplay reading of the output hub and verify the endplay is per Table 5. Adjust if necessary. Once endplay is correct, remove the output seal carrier and apply RTV to the output seal carrier at the inside diameter of the shims.
7. Repeat steps 5 and 6 above for adjusting the countershaft and input bearings. Adjust the axial endplay per table 5.
8. Install input and output seals. Lightly coat the seal lips with Mobilith AW2 All-Purpose grease or equivalent. The possibility of damage and consequent oil leakage can be decreased by covering all sharp edges with tape prior to seal installation. Seals should be pressed or tapped with a soft hammer evenly into place in the reducer housing, applying pressure only on the outer edge of the seals.

NOTE: Extreme care should be used when installing seals to avoid damage due to contact with sharp edges on the input shaft or output hub. A slight oil leak at the seals may be evident during initial running but should disappear unless seals have been damaged.

NOTE: Extreme care should be used when installing seals to avoid damage due to contact with sharp edges on the input shaft or output hub. A slight oil leak at the seals may be evident during initial running but should disappear unless seals have been damaged.

TXT 12E Reassembly

- Follow step 1 through step 5 listed under (H)TXT 1E and (H)TXT 2E.
- Install all bearing cups in right-hand housing half, making sure they are properly seated.
- Install and mesh output hub assembly and countershaft assemblies together in the right-hand housing. Install and mesh the input shaft assembly (input shaft and pinion gear) in position in the right-hand housing. Make sure bearing cones are properly seated in their cups.
- Input pinion and countershaft gears must be timed for proper sharing of loads. With reducer laying flat on table viewing input shaft, lift up the input shell pinion on the input shaft (the pinion should slide freely on the shaft). Notice the countershaft gears should rotate equal amounts in opposite directions. If this occurs, check the shell pinion on the input shaft for being approximately centered between the bearings. Using the larger countershaft gears, rotate the gears in both directions and check for smoothness of rotation. No binding should exist. If the countershaft gears rotate equal amounts in opposite directions and the input shell pinion is approximately centered between the bearings and the gears rotate smoothly, the gears should be timed properly. If all of the above does not occur, the gear timing is not correct. Lift one of the countershaft gear sets out of mesh and rotate one tooth in either direction and re-mesh the gears. Repeat the timing check process. Repeat this procedure until the timing is correct. The timing of the gears is a must for proper operation of the reducer. Consult Dodge engineering if assistance is required.
- Clean housing flange surfaces on both halves, making sure not to nick or scratch flange face. Place a new bead of gasket RTV 732 on flange face and spread evenly over entire flange leaving no bare spots. Place other housing half into position and tap with a soft hammer until housing bolts can be used to draw housing halves together. Torque housing bolts per torque values listed in Table 6.
- Place output seal carrier into position without shims. Install four bolts and torque to 25 lb-ins. Rotate output hub assembly to seat bearings. Torque bolts to 50 lb-ins. Again rotate the output hub to seat bearings (tap down on output hub with rawhide mallet while rotating). Using feeler gage check gap between carrier flange and housing. Remove carrier, add gap measurement plus 0.002 shims, reinstall carrier and torque bolts to values in Table 3. Using dial indicator check axial endplay of hub assembly. Axial endplay value is 0.001 to .003. Add or remove shims to obtain proper setting.
- Repeat process for the countershaft assemblies. End play value is 0.001 to 0.003.
- Repeat the process for the input shaft. End play value is 0.002 to 0.004.

NOTE: Apply 1/8" bead of RTV732 or equivalent inside carriers at I.D. of shims to prevent leaks.

- Install input and output seals. Lightly coat the seal lips with Mobilith AW2 All-Purpose grease or equivalent. The possibility of damage and consequent oil leakage can be decreased by covering all sharp edges with tape prior to seal installation. Seals should be pressed or tapped with a soft hammer evenly into place in the reducer housing, applying pressure only on the outer edge of the seals.

Table 5—Bearing Adjustment Tolerances

Reducer size	Bearing endplay values		
	Input	Countershaft	Ouput
(H)TXT 1E	-	-	-
(H)TXT 2E	-	-	-
(H)TXT 3E	0.002—0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose
(H)TXT 4E	0.002—0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose
(H)TXT 5E	0.002—0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose
(H)TXT 6E	0.002—0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose
(H)TXT 7E	0.002—0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose
TXT 8E	0.002—0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose
TXT 9E	0.002—0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose
TXT 10E	0.002—0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose
TXT 12E	0.002—0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose

Table 6—Recommended Bolt Torque Values

Recommended torque values (ft-lbs)				
Reducer size	Housing bolts	Output seal carrier	C/S bearing cover	Input seal carrier
(H)TXT 1E	30—27	-	-	-
(H)TXT 2E	30—27	-	-	-
(H)TXT 3E	50—45	17—15	17—15	17—15
(H)TXT 4E	50—45	30—27	30—27	30—27
(H)TXT 5E	75—68	30—27	30—27	30—27
(H)TXT 6E	75—68	30—27	30—27	30—27
(H)TXT 7E	150—135	30—27	30—27	30—27
TXT 8E	150—135	30—27	30—27	30—27
TXT 9E	150—135	30—27	30—27	30—27
TXT 10E	150—135	30—27	30—27	30—27
TXT 12E	150—135	30—27	30—27	30—27

Backstop cover bolt recommended torque values

Reducer size	Fastener size	Torque (ft-lbs)
(H)TXT 1E	10 - 24 x 3/8	5—4
(H)TXT 2E	10 - 24 x 3/8	5—4
(H)TXT 3E	10 - 24 x 3/8	5—4
(H)TXT 4E	1/4 - 20 x 1/2	8—7
(H)TXT 5E	1/4 - 20 x 1/2	8—7
(H)TXT 6E	1/4 - 20 x 1/2	8—7
(H)TXT 7E	1/4 - 20 x 1/2	8—7
TXT 8E	1/4 - 20 x 1/2	8—7
TXT 9E	1/4 - 20 x 1/2	8—7
TXT 10E	1/4 - 20 x 1/2	8—7
TXT 12E	3/8 - 16 x 3/4	25—20

REPLACEMENT PART AND KIT NUMBERS

Table 7—Part Numbers for Replacement Bearings, Double-Reduction Reducers

Reducer size	Output hub bearing – LH and RH sides	
	Part number	Mfr part number
(H)TXT 1E	424020	6011NR
(H)TXT 2E	424022	6013NR
(H)TXT 3E	402272/403127	LM814849/LM814810
(H)TXT 4E	402268/403163	498/492A
(H)TXT 5E	402193/403016	42381/42584
(H)TXT 6E	402050/403140	JM822049/JM822010
(H)TXT 7E	402058/403111	48290/48220
TXT 8E	402147/403105	36690/36620
TXT 9E	402160/403110	46790/46720
TXT 10E	402168/403116	67790/67720
TXT 12E	402039/403119	67983/67920

Reducer size	Input shaft bearing – LH input side	
	Part number	Mfr part number
(H)TXT 1E	424112	6205NR
(H)TXT 2E	424019	206NR
(H)TXT 3E	402204 / 403139	LM48548A / LM48510
(H)TXT 4E	402280 / 403027	2788 / 2720
(H)TXT 5E	402144 / 403104	28579 / 28521
(H)TXT 6E	402196 / 403091	395A / 3920
(H)TXT 7E	402150 / 403106	39590 / 39520
TXT 8E	402098 / 403072	566 / 563
TXT 9E	402114 / 403080	745A / 742
TXT 10E	402114 / 403080	745A / 742
TXT 12E	402125 / 403087	6484 / 6420

Reducer size	Countershaft bearing – LH input side	
	Part number	Mfr part number
(H)TXT 1E	424006	6304NR
(H)TXT 2E	424000	305NR
(H)TXT 3E	402273/403094	15102/15245
(H)TXT 4E	402000/403000	M86649/M86610
(H)TXT 5E	402203/403027	2789/2720
(H)TXT 6E	402054/403159	HM807040/HM807010
(H)TXT 7E	402256/403053	JHM807045/ JHM807012
TXT 8E	402057/403143	JH211749/JH211710
TXT 9E	402109/403078	655/652A
TXT 10E	402232/402231	JH415647/JH415610
TXT 12E	402127/403089	6575/6535

Reducer size	Input shaft bearing – RH backstop side	
	Part number	Mfr part number
(H)TXT 1E	424111	6204NR
(H)TXT 2E	424090	6305NR
(H)TXT 3E	402273/403094	15102/15245
(H)TXT 4E	402142/403102	26118/26283
(H)TXT 5E	402266/403073	350A/352
(H)TXT 6E	402197/403091	396/3920
(H)TXT 7E	402088/403047	455/452
TXT 8E	402097/403072	565/563
TXT 9E	402107/403076	639/633
TXT 10E	402112/403080	745S/742
TXT 12E	402125/403087	6484/6420

Note: Bearing part numbers refer to cup/cone combinations, respectively, and apply to all ratios unless otherwise specified. For actual reducer ratios, refer to Table 9.

Reducer size	Countershaft bearing – RH backstop side	
	Part number	Mfr part number
(H)TXT 1E	424006	6304NR
(H)TXT 2E	424000	305NR
(H)TXT 3E	40227/403094	15102/15245
(H)TXT 4E	402000/403000	M86649/M86610
(H)TXT 5E	402203/403027	2789/2720
(H)TXT 6E	402052/403142	HM803149/HM803110
(H)TXT 7E	402256/403053	JHM807045/ JHM807012
TXT 8E	402148/403106	39585/39520
TXT 9E	402109/403078	655/652A
TXT 10E	402232/402231	JH415647/JH415610
TXT 12E	402127/403089	6575/6535

Table 8—Replacement parts kit numbers

Reducer size	Ratio	Seal kit	Output hub assembly		Countershaft assembly	Bearing kit(s)	Complete shim kit
			Tapered hub	Straight hub			
TXT 1E	9:1	392119	390878	390151	392100	389905 All	-
	15:1				392090		
	25:1				392091		
TXT 2E	9:01	392120	392111	392110	392101	389906 All	-
	15:1				392092		
	25:1				392093		
TXT 3E	9:1	389720	389703	389702	389729	392345 All	243800
	15:1				389700		
	25:1				389701		
TXT 4E	9:1	389721	389710	389709	389730	392347 All	244800
	15:1				389707		
	25:1				389708		
TXT 5E	9:1	389722	389717	389716	389731	392350 All	245139
	15:1				389714		
	25:1				389715		
TXT 6E	9:1	246340	390935	390988	392140	335368 All	246166
	15:1				391171		
	25:1				391186		
TXT 7E	9:1	247345	390941	390990	392141	392353 All	247138
	15:1				391196		
	25:1				391197		
TXT 8E	15:1	248340	390944	390993	391184	392355 All	248111
	25:1				391185		
TXT 9E	15:1	249340	390949	390159	390124	392357 All	249139
	26:1				390139		
TXT 10E	15:1	272460	390954	390160	390983	392359 All	272610
	24:1				390998		

Notes:

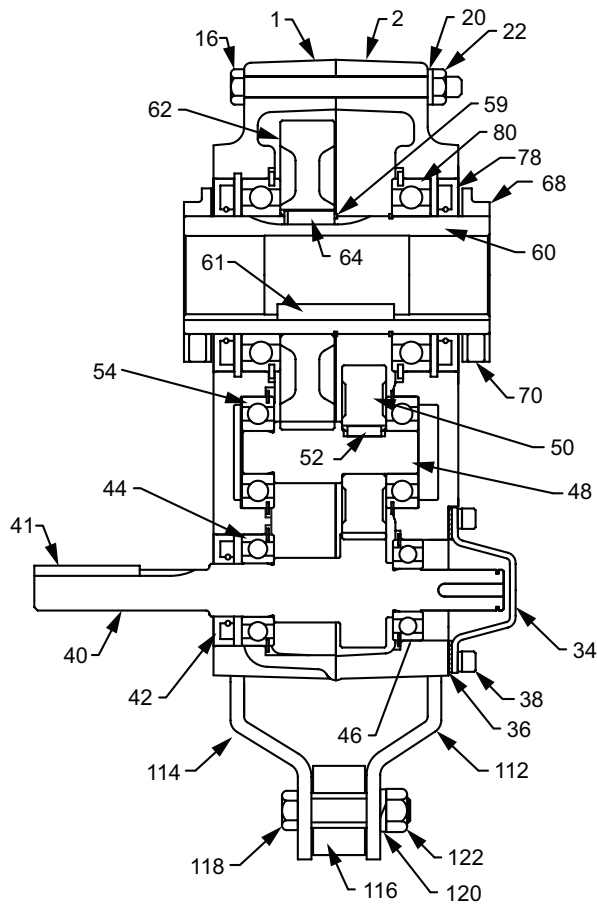
1. Seal Kit consists of Input Seal, Output Seals, Backstop Cover Gasket, and RTV Sealant
2. Output Hub Assembly consists of Output Hub, Output Gear, and Gear Key
3. Countershaft Assembly consists of Countershaft Pinion, Countershaft Gear, and Gear Key
4. Bearing Kit consists of LH and RH Output Bearing Cup/Cone, LH and RH Countershaft Bearing Cup/Cone (double-reduction only), and LH and RH Input Bearing Cup/Cone
5. Complete Shim Kit consists of all input, countershaft, and output bearing shims

Table 9—Actual Ratios

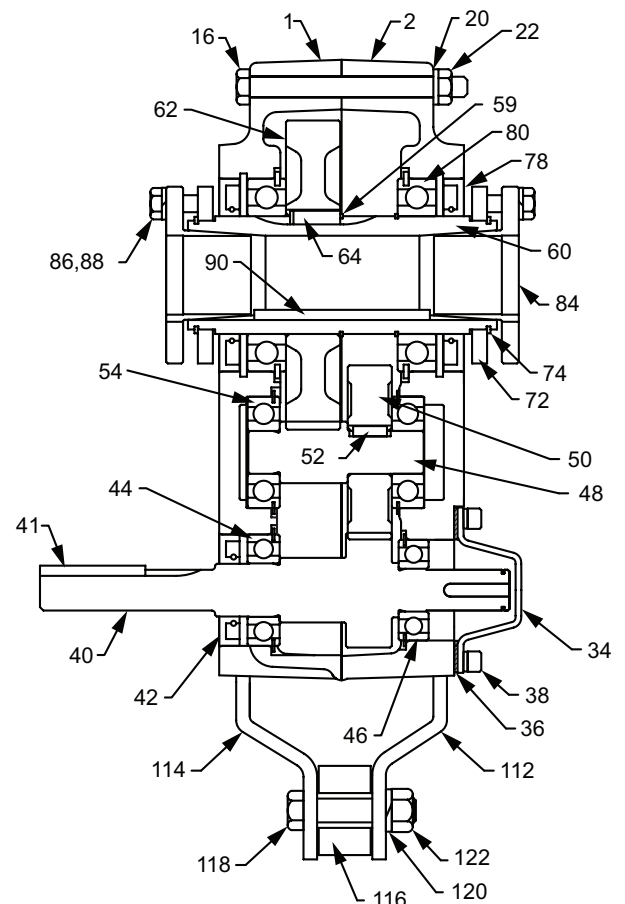
Reducer size	Nominal ratios		
	9:1	15:1	25:1*
(H)TXT 1E	9.44	15.35	25.64
(H)TXT 2E	9.25	14.10	23.46
(H)TXT 3E	8.91	14.88	24.71
(H)TXT 4E	9.67	15.13	24.38
(H)TXT 5E	8.95	15.40	25.56
(H)TXT 6E	9.20	15.33	25.13
(H)TXT 7E	9.61	15.23	24.59
TXT 8E	N/A	15.08	24.62
TXT 9E	N/A	15.12	25.66
TXT 10E	N/A	15.16	24.30
TXT 12E	N/A	14.89	24.65

* TXT 9E is 26:1 Nominal Ratio and TXT 10E is 24:1 Nominal Ratio

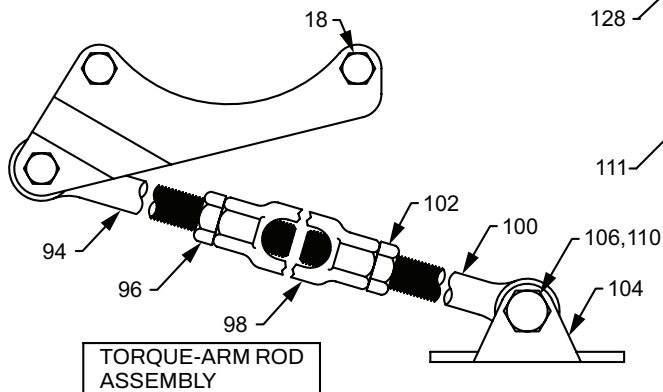
Parts for (H)TXT 1E and (H)TXT 2E Straight- and Tapered-Bushed Double-Reduction Reducers



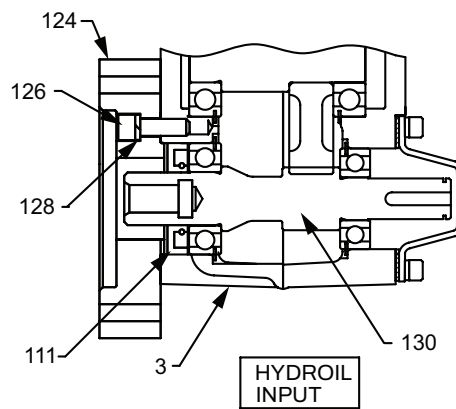
STRAIGHT BORE



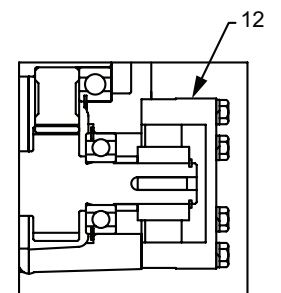
TAPERED BORE



**TORQUE-ARM ROD
ASSEMBLY**

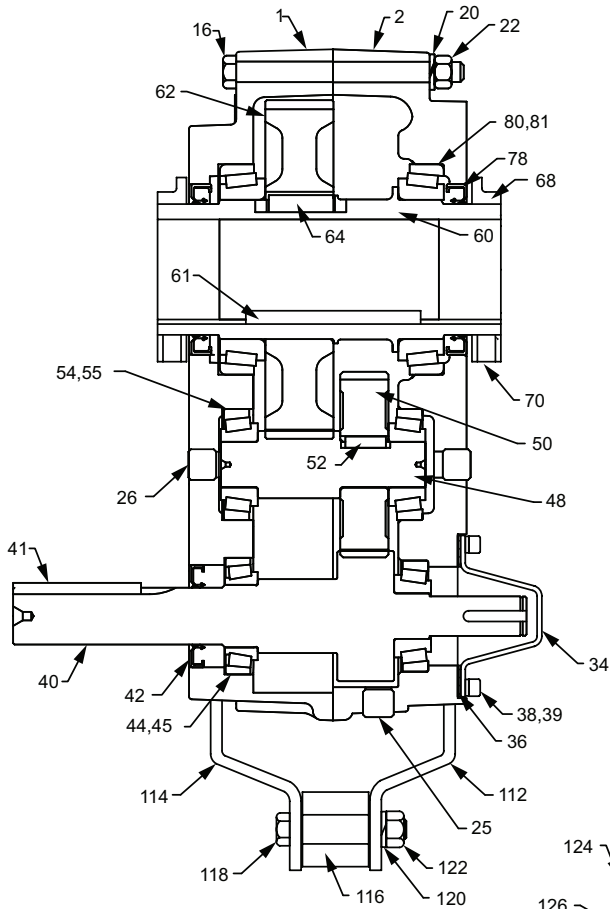


**HYDROIL
INPUT**

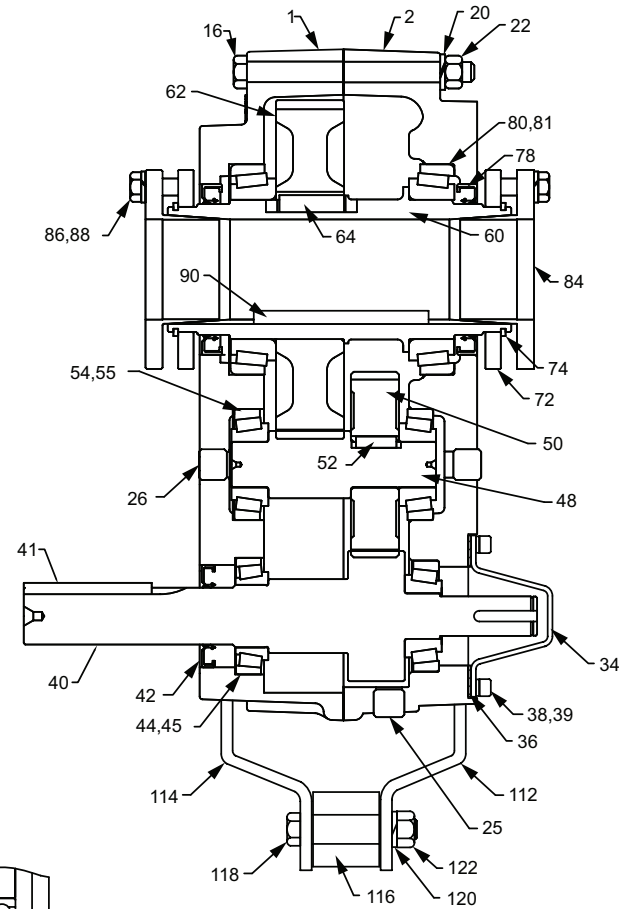


**OPTIONAL BACKSTOP
ASSEMBLY**

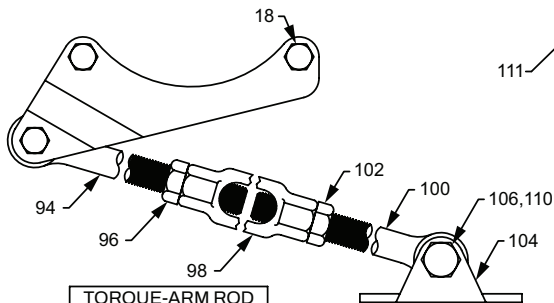
Parts for (H)TXT 3E and (H)TXT 4E Straight- and Tapered-Bushed Double-Reduction Reducers



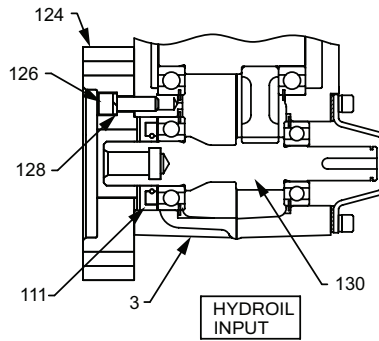
STRAIGHT BORE



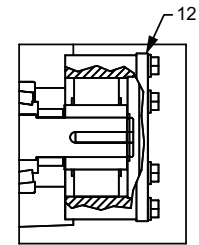
TAPERED BORE



TORQUE-ARM ROD ASSEMBLY



HYDROIL INPUT



OPTIONAL BACKSTOP ASSEMBLY

**Parts for (H)TXT 1E through (H)TXT 4E Straight-
and Tapered-Bushed Double-Reduction Reducers**

Ref.	Description	Qty.	(H)TXT 1E	(H)TXT 2E	Qty.	(H)TXT 3E	(H)TXT 4E
12	Backstop Assembly	1	241737	242709	1	243737	903102
1	Housing LH – TXT	1	241712	242712	1	243712	244712
2	Housing RH – TXT/HXT	1	241713	242713	1	243713	244713
2	Housing RH - Flange	1	241733	242733	1	243715	244715
3	Housing LH,- HXT	1	241741	242734	1	243735	244727
①	RTV Sealant	1	465044	465044	1	465044	465044
①	Air Vent	1	900287	900287	1	900287	900287
16	Housing Bolt	⑤	032018032CR	032018032CR	5	032018040NR	032018044NR
18	Housing Bolt - Adapter and Lifting Lug	3	032018036CR	032018036CR	3	032018044NR	032018048NR
20	Lock-washer	⑥	034017014AF	034017014AF	8	034017015AF	034017015AF
22	Hex Nut	⑥	033102014AM	033102014AM	8	033102015AM	033102015AM
①	Dowel Pin	2	420063	420063	2	420063	420063
25	Magnetic Oil Plug	1	430060	430060	1	430060	430060
26	Oil Plug	3	430031	430031	3	430031	430031
①	Sensor Adapter	1	966905	966905	1	966905	966905
①	Shim Kit	1	-	-	1	243800	244800
34	Input Shaft Cover	1	241738	901279	1	901279	903279
38	Input shaft Cover Screw	6	032130004AF	032130004AF	6	032130004AF	032130004AF
39	Input Shaft Cover Lock-washer	6	034020012AE	034020012AE	6	034020012AE	032020012AE
36	Seal Kit ②						
42	Backstop Cover Gasket ③	1	241739	901280	1	901280	903280
78	Input Oil Seal ③	1	241457	242211	1	A73106	A73108
	Output Hub Oil Seal ③	2	241214	242213	2	902286	A73109
40	Input Pinion						
	9:1 Ratio ④	1	241701	242701	1	243701	244701
	15:1 Ratio ④	1	241702	242702	1	243702	244702
	25:1 Ratio ④	1	241703	242703	1	243703	244703
130	Hydroil Input Pinion						
	9:1 Ratio ④	1	-	-	1	-	243704
	15:1 Ratio ④	1	241705	242705	1	243705	243705
	25:1 Ratio ④	1	241706	242706	1	243706	243706
	9:1 Ratio Hydroil 6-B Pinion ④	1	-	-	1	-	243707
	15:1 Ratio Hydroil 6-B Pinion ④	1	-	-	1	-	243708
	25:1 Ratio Hydroil 6-B Pinion ④	1	-	-	1	243709	243709
41	Input Pinion Key	1	443008	443013	1	443032	443082
44	Input Ball Bearing, Input Side	1	424112	424019		-	-
46	Input Ball Bearing, Backstop Side	1	424111	424090		-	-
54	Countershaft Ball Bearing	2	424006	424000		-	-
80	Output Ball Bearing	2	424020	424022		-	-
44	Input Bearing Cone, Input Side		-	-	1	402204	402280
45	Input Bearing Cup, Input Side		-	-	1	403139	403027
46	Input Bearing Cone Backstop Side		-	-	1	402273	402142
47	Input Bearing Cup Backstop Side		-	-	1	403094	403102
54	Countershaft Bearing Cone		-	-	2	402273	402000
55	Countershaft Bearing Cup		-	-	2	403094	403000
80	Output Bearing Cone		-	-	2	402272	402268
81	Output Hub Bearing Cup		-	-	2	403127	403163
60	Tapered-Bore Output Hub Assembly ②	1	390878	392111	1	389703	389710
	Straight-Bore Output Hub Assembly ②	1	390151	392110	1	389702	389709
	Output Hub						
	Straight-Bore ③	1	241208	242208	1	243557	244589
	Tapered-Bore ③	1	241265	242134	1	243556	244588
62	Output Gear ③	1	241007	242181	1	243570	244188
64	Output Gear Key ③	1	241217	443399	1	243216	354087
59	Output Hub Snap Ring ③	2	421013	421017	2	-	-
61	Straight-Bore Output Hub Key ③	2	241296	242296	1	243250	244250
68	Straight-Bore Output Hub Collar	2	241209	242209	2	243572	244658
70	Straight-Bore Output Hub Collar Screw	4	400062	400094	4	400098	400150
72	Tapered-Bore Bushing Backup Plate	2	241266	242137	2	243308	244099
74	Bushing Backup Plate Retaining Ring	2	421111	421112	2	421109	421108
76	Output Hub Seal Carrier, Input Side		-	-	1	-	-
	Output Hub Bearing Kit ②		-	-	1	389589	389592
80	Output Hub Bearing, Cone ③		-	-	2	402272	402268
81	Output Hub Bearing, Cup ③		-	-	2	403127	403163

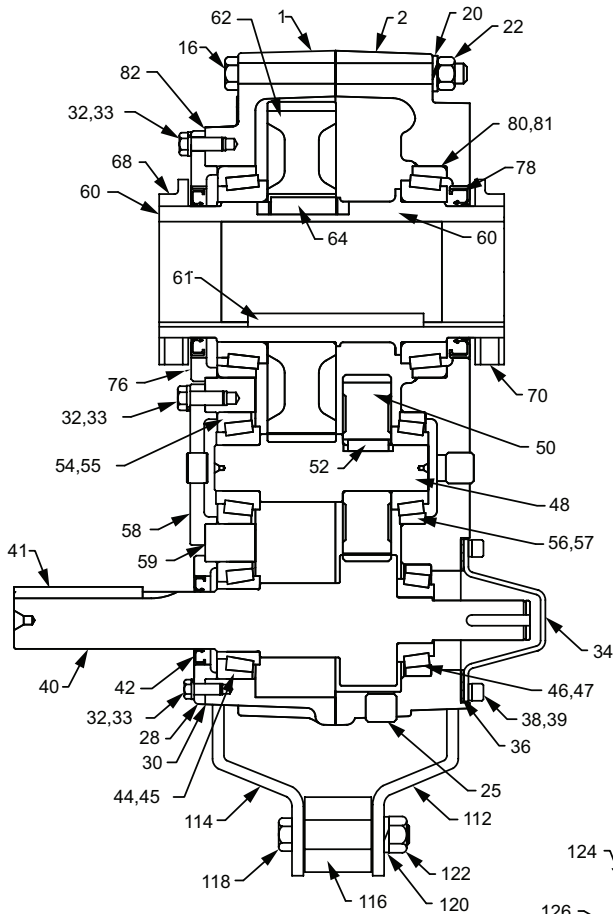
**Parts for (H)TXT 1E through (H)TXT 4E Straight-
and Tapered-Bushed Double-Reduction Reducers**

Ref.	Description	Qty.	(H)TXT 1E	(H)TXT 2E	Qty.	(H)TXT 3E	(H)TXT 4E
84	Tapered-Bore Bushing Assembly ② Bushing ③						
	1" Bore	1	241278	-	1	-	-
	1-1/16" Bore	1	-	-	1	-	-
	1-1/8" Bore	1	241282	242146	1	-	-
	1-3/16" Bore	1	241286	242148	1	-	-
	1-1/4" Bore	1	241288	242150	1	-	-
	1-5/16" Bore	1	241290	242152	1	243282	-
	1-3/8" Bore	1	241294	242154	1	243284	-
	1-7/16" Bore	1	241292	242156	1	243260	244079
	1-1/2" Bore	1	-	242158	1	243262	244081
	1-5/8" Bore	1	-	242162	1	243264	244083
	1-11/16" Bore	1	-	242164	1	243268	244085
	1-3/4" Bore	1	-	242166	1	243266	244087
	1-7/8" Bore	1	-	-	1	243270	244089
	1-15/16" Bore	1	-	242168	1	243272	244093
	2" Bore	1	-	-	1	243274	244095
	2-1/8" Bore	1	-	-	1	-	244109
	2-3/16" Bore	1	-	-	1	243276	244111
	2-1/4" Bore	1	-	-	1	-	244113
	2-7/16" Bore	1	-	-	1	-	244115
86	Bushing Screw ③	6	032018007BR	032018008BR	6	032018008CR	032018010CR
88	Lock Washer ③	6	034017013AF	034017013AF	6	034017014AF	034017014AF
90	Key, Tapered-Bore Bushing to Shaft ③						
	1" Bore	1	443274	-	1	-	-
	1-1/16" Bore	1	-	-	1	-	-
	1-1/8" Bore	1	443271	443281	1	-	-
	1-3/16" Bore	1	241308	443281	1	-	-
	1-1/4" Bore	1	241307	443281	1	-	-
	1-5/16" Bore	1	241306	443264	1	443264	-
	1-3/8" Bore	1	241310	443280	1	443264	-
	1-7/16" Bore	1	241305	443282	1	443265	443254
	1-1/2" Bore	1	-	242282	1	242265	242254
	1-5/8" Bore	1	-	242172	1	443264	443254
	1-11/16" Bore	1	-	242171	1	443266	443254
	1-3/4" Bore	1	-	242170	1	443266	443254
	1-7/8" Bore	1	-	-	1	443267	443255
	1-15/16" Bore	1	-	443283	1	443269	443255
	2" Bore	1	-	-	1	443268	443255
	2-1/8" Bore	1	-	-	1	-	443258
	2-3/16" Bore	1	-	-	1	443270	443259
	2-1/4" Bore	1	-	-	1	-	443260
	2-7/16" Bore	1	-	-	1	-	443261
94	Torque-Arm Assembly ②	1	964263	A73091	1	A73091	964268
96	Torque-Arm Rod End ③	1	A73092	A73087	1	A73087	A73146
98	RH Nut ③	1	033102018AM	407295	1	407295	033102022AB
100	Torque-Arm Turnbuckle ③	1	A73086	A73089	1	A73089	A73147
102	Torque-Arm Extension ③	1	A73085	A73088	1	A73088	A73148
104	LH Nut ③	1	A73261	A73262	1	A73262	A73263
106	Torque-Arm Fulcrum ③	1	241249	243249	1	243249	246249
110	Fulcrum Screw ③	1	032018012DR	032018016ER	1	032018016ER	032018016ER
	Hex Nut ③	1	033102016AM	033102018AM	1	033102018AM	033102018AM
112	Adapter Assembly ②	1	259151	259152	1	259153	259154
114	RH Torque-Arm Adapter Bracket ③	1	241242	242136	1	243242	244244
116	LH Torque-Arm Adapter Bracket ③	1	241241	242135	1	243241	244243
118	Adapter Bushing ③	1	964256	964257	1	964257	964259
120	Adapter Bolt ③	1	032018014CR	032018016NR	1	032018016NR	032018018DR
122	Lock Washer ③	1	034017014AF	034017015AF	1	034017015AF	034017016AF
	Hex Nut ③	1	033102014AM	033102015AM	1	033102015AM	033102016AM
124	Hydraulic (Hydroil) Motor Adapter 15:1 Ratio ④	1	241454	242454	1	243539	244572
	25:1 Ratio ④	1	241454	242454	1	243541	244572
	Hydroil 6B Motor Adapter, 15:1 and 25:1 Ratio ④	1	-	-	1	243467	244573
126	Adapter Screw	6	032130008BF	032130008BF	4	032130008BF	032130010CF
128	Lock-washer	6	034020013AE	034020013AE	4	034020013AE	034020014AE
111	Input Pinion Seal	1	241457	242457	1	A73106	A73108
①	Hydroil Motor to Adapter Screw 15:1 Ratio ④	2	032018010CR	032018012CR	2	032018012DR	032018012DR
①	Hydroil Motor to adapter Screw 25:1 Ratio ④	2	032018010CR	032018012CR	2	032018012CR	032018012DR
	Hydroil Motor to Adapter Lock-washer 15:1 Ratio ④	2	034017014AF	034017014AF	2	034017016AF	034017016AF
	Hydroil Motor to Adapter Lock-washer 25:1 Ratio ④	2	034017014AF	034017014AF	2	034017014AF	034017014AF

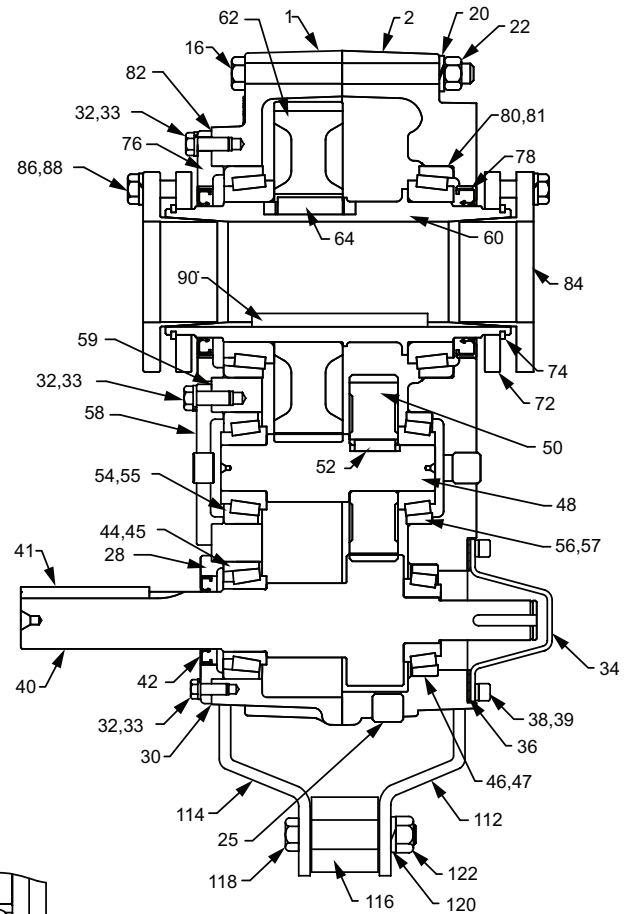
Notes:

- ① Not shown on drawing.
- ② Includes parts listed immediately below
- ③ Makes up assembly under which it is listed.
- ④ See Table 9 for actual ratio.
- ⑤ 3 Required for TXT1E, 4 Required for TXT2E.
- ⑥ 6 Required for TXT1E, 7 required for TXT2E.

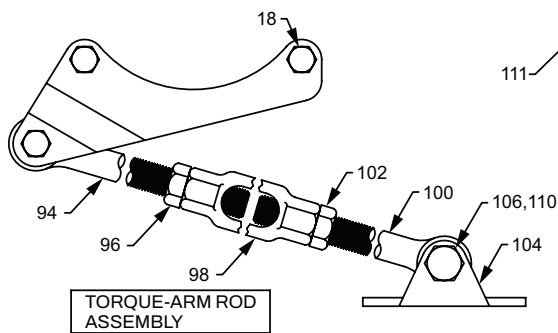
**Parts for TXT 5E Through TXT 10E and HXT 5E Through HXT 7E
Straight- and Tapered-Bushed Double-Reduction Reducers**



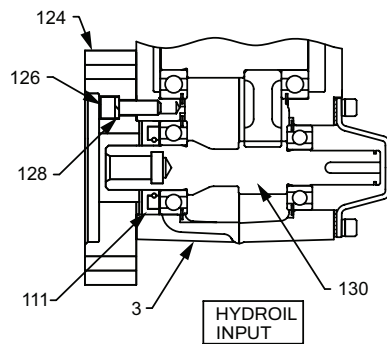
STRAIGHT BORE



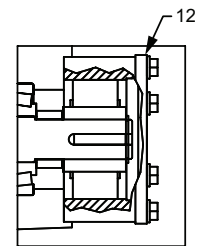
TAPERED BORE



TORQUE-ARM ROD ASSEMBLY



HYDROIL INPUT



OPTIONAL BACKSTOP ASSEMBLY

Parts for (H)TXT 5E thru TXT 10E Straight- and Tapered-Bushed Double-Reduction Reducers

Ref.	Description	Qty.	(H)TXT 5E	(H)TXT 6E	(H)TXT 7E	TXT 8E	TXT 9E	TXT 10E
12	Backstop Assembly	1	905102	246800	247690	907102	907102	272869
1	Housing LH – TXT	1	245671	246789	247670	248711	249712	272862
2	Housing LH - HXT	1	245671	246789	247670	-	-	-
2	Housing RH – TXT	1	245672	246790	247671	248712	249713	272863
2	Housing RH - Flange	1	245674	246792	247672	248713	249715	272865
①	RTV Sealant	1	465044	465044	465044	465044	465044	465044
①	Air Vent	2	904287	904287	904287	904287	904287	904287
16	Housing Bolt	⑤	032018040DR	032018044DR	032018048FR	032018052FR	032018056FR	032018060FR
18	Housing Bolt – Adapter & Lifting Lug	⑥	032018044DR	032018048DR	032018052FR	032018056FR	032018060FR	032018072FR
20	Lock-washer	⑦	034017016AF	034017016AF	032017020AF	034017020AF	034017020AF	034017020AF
22	Hex Nut	⑦	033102016AM	033102016AM	033102020AM	033102020AM	033102020AM	033102020AM
①	Dowel Pin	1	304624	304624	304624	304624	304624	304624
①	Sensor Adapter	1	966906	966906	966907	966907	966907	966907
①	Oil Plug	3	430033	430033	430035	430035	430035	430035
25	Magnetic Oil Plug	1	430062	430062	430064	430064	430064	430064
28	Input Shaft Seal Carrier	1	245655	246184	247320	258023	249211	249211
32	Carrier Bolt	⑧	032018008CR	032018010CR	032080010NR	032018010CR	032018010CR	032018010CR
33	Lock-washer	⑧	034017014AF	034017014AF	034017015AF	034017014AF	034017014AF	034017014AF
34	Backstop Cover	1	905279	906279	906279	907279	907279	910279
38	Backstop Cover Screws	6	032130006BF	032130006BF	032130006BF	032130006CF	032130006CF	032130006CF
39	Backstop Cover Lock-washer	6	034020013AE	034020013AE	034020013AE	034102014AE	034020014AE	034020014AE
36	Seal Kit ②	1	389722	246340	247345	248340	249340	272460
42	Backstop Cover Gasket ③	1	245220	246220	246220	248220	248220	248220
42	Input Pinion Shaft Seal ③	1	355011	242210	242210	248211	248211	248211
78	Output Hub Oil Seal ③	2	245545	246310	247310	258019	249210	250010
40	Input Pinion							
	9:1 Ratio ④	1	245660	246777	247660	-	-	-
	15:1 Ratio ④	1	245661	246778	247661	248701	249702	272852
	25:1 Ratio ④ ⑦	1	245662	246779	247662	248702	249703	272853
130	25:1 Ratio (4) (9)	1	245663	-	-	-	-	-
	9:1 Ratio Hydroil Pinion (4)	1	245664	246780	247663	-	-	-
	15:1 Ratio Hydroil Pinion (4)	1	245665	246781	247664	-	-	-
	25:1 Ratio Hydroil Pinion (4)	1	245666	246802	-	-	-	-
	15:1 Ratio 6B Hydroil Pinion (4)	1	245667	246782	247665	-	-	-
	25:1 Ratio 6B Hydroil Pinion (4)	1	245667	246782	247665	-	-	-
41	Input Pinion Shaft Key	1	443096	443113	443127	443133	443123	443123
44	Input Bearings		389594	-	-	-	-	-
44	Input Shaft Bearing Cone, Input Side	1	402144	402196	402150	402098	402114	402114
45	Input Shaft Bearing Cup, Input Side	1	403104	403091	403106	403072	403080	403080
46	Input Shaft Bearing Cone, Backstop Side	1	402266	402197	402088	402097	402107	402112
47	Input Shaft Bearing Cup, Backstop Side	1	403073	403091	403047	403072	403076	403080
48	Countershaft Pinion Assembly (2)							
	9:1 Ratio (4)	1	389731	392140	392141	-	-	-
	15:1 Ratio (4)	1	389714	391171	391196	391184	390124	390983
	25:1 Ratio (4) (9)	1	389715	391186	391197	391185	390139	390998
50	Countershaft Pinion (3)	1	245596	246294	247002	248002	249006	272249
50	First Reduction Gear (3)							
	9:1 Ratio (4)	1	245482	246482	247478	-	-	-
	15:1 Ratio (4)	1	245214	246492	247008	248213	249008	250031
52	25:1 Ratio (4) (9)	1	245212	246293	247005	248214	249005	250005
	First Reduction Gear Key	1	D8243	245218	247218	248218	248218	248218
54	Countershaft Bearing Kit		389595					
55	C/S Bearing Cone Input Side	1	402203	402054	402256	402057	402109	402232
55	C/S Bearing Cup Input Side	1	403027	403159	403053	403143	403078	402231
56	C/S Bearing Cone Backstop Side	1	402203	402052	402256	402148	402109	402232
57	C/S Bearing Cup Backstop Side	1	403027	403142	403053	403106	403078	402231
58	C/S Bearing Cover Input Side	1	245657	246185	247194	248223	249225	272251
60	Tapered-Bore Output Hub Assembly ②	1	389717	390935	390941	390944	390949	390954
	Straight-Bore Output Hub Assembly ②	1	389716	390988	390990	390993	390159	390160
	Straight-Bore Hub ③	1	245591	246338	247338	248332	250090	250008
	Tapered-Bore Hub ③	1	245590	246269	272137	272036	249140	272241
62	Output Gear ③ ⑤	1	245186	246295	247215	248215	021764	250007
64	Output Gear Key ③ ⑤	2	355064	245217	245217	248217	443413	250017
68	Output Hub Collar, Straight-Bore	2	245598	246309	247309	248209	249209	250009
70	Output Hub Collar Screw	4	400154	400154	400190	400190	400194	400194
72	Bushing Backup Plate, Tapered-Bore	2	245114	246270	272138	272037	272082	272242
74	Output Hub Retaining Ring	2	421107	421055	421099	421098	421097	421069
76	Output Hub Seal Carrier, Input Side	1	245592	246187	247315	258021	249221	250011
80	Output Hub Bearing Kit 1	1	389596					
	Output Hub Bearing, Cone	2	402193	402050	402058	402147	402160	402168
81	Output Hub Bearing, Cup	2	403016	403140	403111	403105	403110	403116

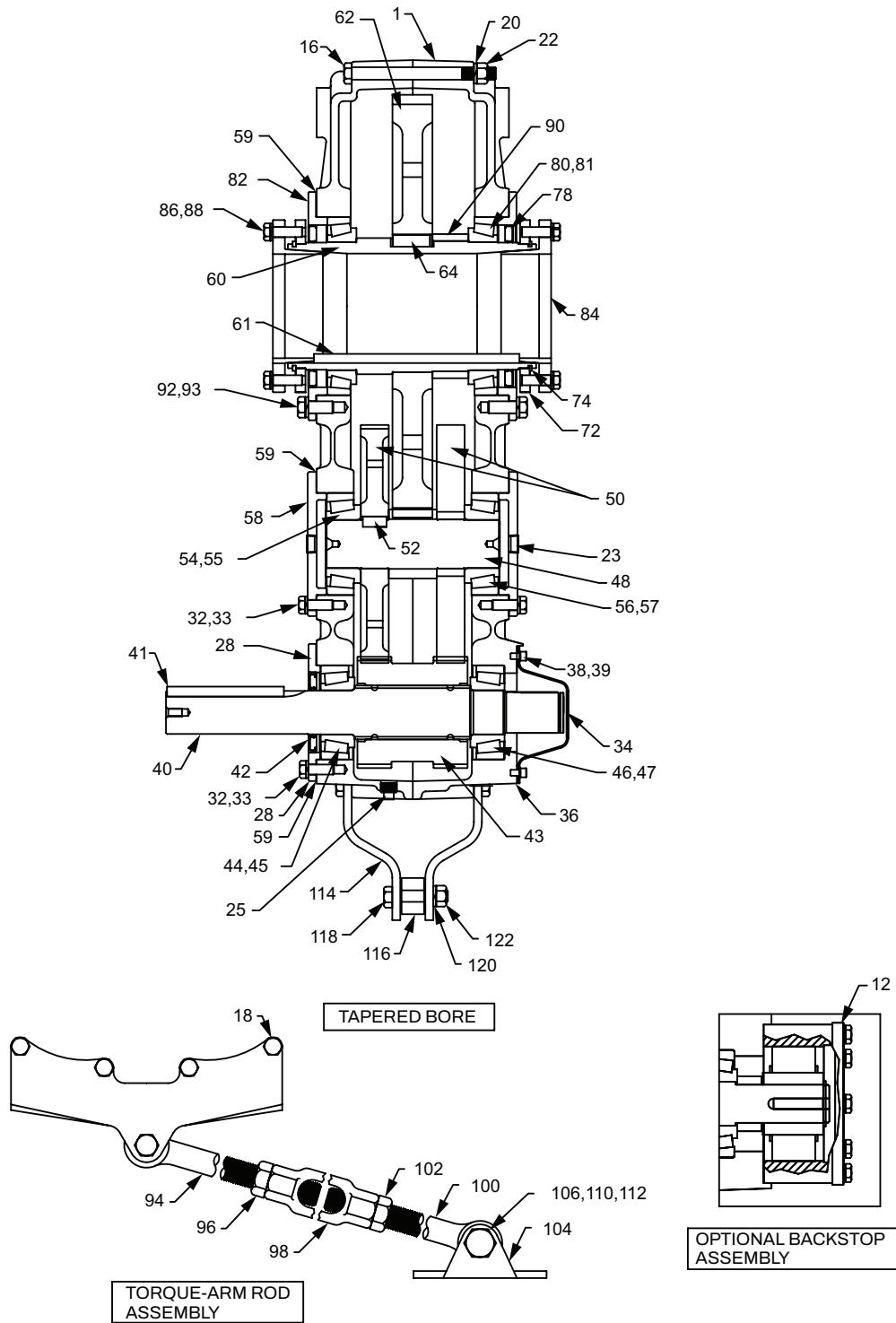
Parts for (H)TXT 5E thru TXT 10E Straight- and Tapered-Bushed Double-Reduction Reducers

Ref.	Description	Qty.	(H)TXT 5E	(H)TXT 6E	(H)TXT 7E	TXT 8E	TXT 9E	TXT 10E
84	Tapered-Bore Bushing Assembly ②							
	1-15/16" Bore	1	245086	-	-	-	-	-
	2" Bore	1	245088	-	-	-	-	-
	2-3/16" Bore	1	245090	246261	-	-	-	-
	2-1/4" Bore	1	245092	246262	-	-	-	-
	2-7/16" Bore	1	245094	246263	272125	-	-	-
	2-1/2" Bore	1	245099	246264	-	-	-	-
	2-11/16" Bore	1	245110	246265	272147	-	-	-
	2-13/16" Bore	1	-	-	-	-	-	-
	2-7/8" Bore	1	-	246266	-	-	-	-
	2-15/16" Bore	1	245112	246267	272132	272048	-	-
	3" Bore	1	-	246283	272133	-	-	-
	3-3/16" Bore	1	-	-	272134	-	-	-
	3-7/16" Bore	1	-	246268	272135	272032	272056	-
	3-15/16" Bore	1	-	-	272136	272033	272077	272214
	4-3/16" Bore	1	-	-	-	272034	-	-
	4-7/16" Bore	1	-	-	-	272035	272079	272238
	4-15/16" Bore	1	-	-	-	-	272080	272239
	5-7/16" Bore	1	-	-	-	-	-	272240
86	Tapered-Bushing Screw ③	6	032018012NR	032018010CR	032018012DR	032018014DR	032018016ER	032018016ER
88	Tapered-Bushing Lock-washer ③	6	034017015AF	034017014AF	034017016AF	034017016AF	034017018AF	034017018AF
90	Key, Bushing to Shaft ③							
	1-15/16" Bore	1	443251	-	-	-	-	-
	2" Bore	1	443251	-	-	-	-	-
	2-3/16" Bore	1	443251	443211	-	-	-	-
	2-1/4" Bore	1	443251	443211	-	-	-	-
	2-7/16" Bore	1	443243	443214	443248	-	-	-
	2-1/2" Bore	1	443244	443214	-	-	-	-
	2-11/16" Bore	1	443245	443238	443248	-	-	-
	2-13/16" Bore	1	-	-	-	-	-	-
	2-7/8" Bore	1	-	443236	-	-	-	-
	2-15/16" Bore	1	443250	443237	443199	443247	-	-
	3" Bore	1	-	443252	443216	-	-	-
	3-3/16" Bore	1	-	-	443235	-	-	-
	3-7/16" Bore	1	-	443213	443217	443171	443249	-
	3-15/16" Bore	1	-	-	443218	443173	443119	443192
	4-3/16" Bore	1	-	-	-	443174	-	-
	4-7/16" Bore	1	-	-	-	443196	272086	443193
	4-15/16" Bore	1	-	-	-	-	443161	443194
	5-7/16" Bore	1	-	-	-	-	-	443195
①	Key, Bushing to Output Hub ③							
	1-15/16" thru 2-1/4" Bore	1	443202	-	-	-	-	-
	2-3/16" thru 2-1/2" Bore	1	-	443212	-	-	-	-
	2-7/16" thru 3" Bore	1	-	-	443198	-	-	-
	2-3/16" thru 2-15/16" Bore	1	-	-	-	-	-	-
	2-15/16 thru 3-7/16" Bore	1	-	-	-	443162	443121	-
	3-7/16" Bore	1	-	-	-	443162	443121	-
	3-15/16" thru 4-7/16" Bore	1	-	-	-	-	-	443191
94	Torque-Arm Rod Kit ②	1	964268	964268	964269	964275	964275	964275
	Torque-Arm Rod End ③	1	A73146	A73146	A73269	A73101	A73101	A73101
96	RH Nut ③	1	033102022AM	033102022AM	033102024AM	033102028AM	033102028AM	033102028AM
98	Torque-Arm Turnbuckle ③	1	A73147	A73147	A73267	A73102	A73102	A73102
100	Torque-Arm Extension ③	1	A73148	A73148	A73265	963479	963479	963479
102	LH Nut ③	1	A73263	A73263	A73266	A73270	A73270	A73270
104	Fulcrum ③	1	246249	246249	247248	271054	271054	271054
106	Fulcrum Screw ③	1	032018016ER	032018016ER	032018028ER	032018040HR	032018040HR	032018040HR
108	Lockwasher ③	1	034017018AF	034017018AF	034017018AF	034017024AF	034017024AF	034017024AF
110	Hex Nut ③	1	033102018AM	033102018AM	033102018AM	033102024AM	033102024AM	033102024AM
112	Adapter Assembly ②	1	259155	259156	259157	248110	249110	250110
	RH Adapter Plate ③	1	245242	246242	247242	272053	249241	250041
114	LH Adapter Plate ③	1	245241	246241	247241	272053	249241	250041
116	Adapter Bushing ③	1	964259	964259	964260	964262	964262	964262
118	Adapter Bolt ③	1	032018018DR	032018018DR	032018028ER	032018026HR	032018028HR	032018028HR
120	Lockwasher ③	1	034017016AF	034017016AF	034017018AF	034017024AF	034017024AF	034017024AF
122	Hex Nut ③	1	033102016AM	033102016AM	033102018AM	033102024AM	033102024AM	033102024AM
124	Hydroil Motor Adapter – 9:1 and 15:1	1	245606	246465	247464	-	-	-
	Hydroil Motor Adapter – 25:1	1	245607	246465	247464	-	-	-
126	Hydroil Motor Adapter – 6B	1	245643	246522	247522	-	-	-
128	Adapter To Reducer Screw	6	032130010CF	032130010CF	032130010ZF	-	-	-
①	Adapter To Reducer Lock-washer	6	034020014AE	034020014AF	034017015AF	-	-	-
	Motor To Adapter Screw	2	032018012DR	032018012DR	032018012DR	-	-	-
①	Motor To Adapter Lock-washer	2	032017016AF	032017016AF	032017016AF	-	-	-

Notes:

- ① Not shown on drawing.
- ② Includes parts listed immediately below.
- ③ Makes up assembly under which it is listed.
- ④ See Table 9 for actual ratio.
- ⑤ 3 Required on (H)TXT 5E, 4 Required on (H)TXT 6E and (H)TXT 7E, 7 required on TXT 8E and TXT 9E, and 9 Required on TXT 10E.
- ⑥ 3 required on (H)TXT 5E, 4 Required on (H)TXT 6E, (H)TXT 7E, TXT 8E, TXT 9E, and TXT 10E.
- ⑦ 6 Required on (H)TXT 5E, 8 Required on (H)TXT 6E and (H)TXT 7E, 11 required on TXT 8E and TXT 9E, and 13 Required on TXT 10E.
- ⑧ 15 Required on (H)TXT 5E, 18 Required on (H)TXT 6E and (H)TXT 7E, 24 required on TXT 8E, TXT 9E, and TXT 10E.
- ⑨ Nominal Ratio on (H)TXT 5E, (H)TXT 6E, (H)TXT 7E, and TXT 8E is 25:1, Nominal Ratio on TXT 9E is 26:1, and Nominal Ratio on TXT 10E is 24:1.

Parts for TXT 12E Tapered-Bushed Double-Reduction Reducers



Parts for TXT 12E Tapered-Bushed Double-Reduction Reducers

Ref.	Description	Quantity	TXT 12E
12	Backstop Assembly	1	272889
1	Housing Assembly	1	272881
①	RTV Sealant	1	465044
①	Air Vent Assembly	1	271040
16	Housing Bolt	12	032018072FR
18	Housing Bolt - Adapter	4	032018080FR
20	Lock-washer	14	034017020AF
21	Plain Washer	4	034000020AJ
22	Hex Nut	16	033102020AM
①	Dowel Pin	2	420133
①	Sensor Adapter	1	966907
23	Oil Plug	7	430035
25	Magnetic Oil Plug	1	430064
28	Input Seal Carrier	1	272019
32	Carrier Bolt	40	032018014ER
33	Lock-washer	40	034017018AF
34	Backstop Cover	1	912279
38	Backstop Cover Screws	12	032130006CF
39	Backstop Cover Lock-washer	12	034020014AE
36	Backstop Cover Gasket	1	912280
42	Input Pinion Shaft Seal	1	272211
78	Output Hub Oil Seal	2	272010
40	Input Shaft	1	272872
43	Input Pinion 15:1 Ratio ②	1	272212
	Input Pinion 25:1 Ratio ②	1	272003
41	Input Pionon Shaft Key	1	443122
44	Input Shaft Bearing Cone Input Side	1	402125
45	Input Bearing Cup Input Side	1	403087
46	Input Bearing Cone Backstop Side	1	402125
47	Input Bearing Cup Backstop Side	1	403087
48	Countershaft Pinion	2	272006
50	LH First Reduction Gear 15:1 Ratio (2)	1	272026
	RH First Reduction Gear 15:1 Ratio (2)	1	272028
	LH First Reduction Gear 25:1 Ratio (2)	1	272005
	RH First Reduction Gear 25:1 Ratio (2)	1	272011
52	First Reduction Gear Key	4	301491
59	Shim Kit – Complete Set	2	272611
54	Countershaft Bearing Cone	4	402127
55	Countershaft Bearing Cup	4	403089
56	Countershaft Bearing Spacer	2	272017
57	Countershaft Bearing Cover	4	272016
58	Countershaft Cover Oil Plug	4	430035
60	Tapered-Bore Output Hub	1	272220
62	Output Gear	1	272007
64	Output Gear Key	3	272027
72	Bushing Back-up Plate	2	272221
74	Retaining Ring	2	421053
84	Bushing Assembly		
	5-7/16" Bore	1	272215
	5-15/16" Bore	1	272216
	6" Bore	1	272217
	6-7/16" Bore	1	272218
	6-1/2" Bore	1	272219
61	Key – Bushing to Shaft		
	5-7/16" Bore	1	272223
	5-15/16" Bore	1	272225
	6" Bore	1	272227
	6-7/16" Bore	1	272229
	6-1/2" Bore	1	272231
86	Bushing Screw	8	032018016ER
88	Bushing Screw Lock-washer	8	034017018AF
78	Output Hub Seal	2	272010
82	Output Seal Carrier	2	272014
32	Seal Carrier Screw	16	032018014FR
33	Seal Carrier Lock-washer	16	034017020AF
80	Output Hub Bearing Cone	2	402039
81	Output Hub Bearing Cup	2	403119
90	Output Hub Bearing Spacer	1	272012
92	Output Carrier Bolt	16	032018014FR
93	Lock-washer	16	034017020AF

Parts for TXT 12E Tapered-Bushed Double-Reduction Reducers

Ref.	Description	Quantity	TXT 12E
94	Rod End	1	964278
96	RH Hex Nut	1	033102032AM
98	Turnbuckle	1	964279
100	Rod Extension	1	964280
102	LH Hex Nut	1	965051
104	Fulcrum	1	272054
106	Fulcrum Screw	1	032018048JR
110	Fulcrum Hex Nut	1	033102028AM
112	Fulcrum Lock-washer	1	034017028AF
114	Adapter Bracket	2	272049
116	Rod End Adapter Bushing	1	272046
118	Adapter Screw	1	032018032JR
120	Adapter Lock-washer	1	034017028AF
122	Adapter Hex Nut	1	033102028AM

Notes:

① Not shown on drawing

② See Table 9 for actual ratio

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