Metric Tigear®-2 Right Angle Three-Piece Coupled C-Face Speed Reducers

Instruction Manual
Sizes 17–26

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.

APPLICATION INFORMATION

Thoroughly review the selection section of the Tigear-2 catalog to ensure the reducer has been properly selected prior to putting the product into service.

The Metric Tigear-2 reducer is designed to operate within the following temperature limits: Oil sump -23°C to +93°C (-10°F to +200°F) with factory-supplied standard lubricant.

The oil sump temperature can be approximated by taking measurements on the gear case halfway between the output shaft centerline and the bottom of the reducer.

Where ambient temperatures exceed 38°C (100°F), care should be taken not to exceed 98°C (200°F) sump temperature during unit operation. Contact Dodge Engineering for application assistance in extreme hot or cold ambient conditions. The use of non-ventilated motors will increase the reducer temperature. TEFC motors are recommended.

The continuous rated input horsepower (mechanical) shown on the reducer nameplate is for service factor of 1.0 at an input speed of 1450 RPM. Before placing the reducer into service, check the nameplate to confirm that its horsepower rating is consistent with the motor horsepower and the desired service factor. Service factor information can be found in your Dodge product catalogs.

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.

INITIAL START-UP

WARNING: To ensure that driven equipment is not unexpectedly started, turn off, lock-out, and tag power source before working near the equipment. Failure to observe these precautions could result in bodily injury or property damage.

NOTE: Operating Metric Tigear-2 reducers in altitudes above sea level will increase the reducer's internal pressure. Dodge recommends the reducer's internal pressure be equalized before operating in altitudes greater than 1,860 meters (6,100 feet) above sea level. To equalize the reducer's internal pressure, remove the oil-fill plug located on the reducer's top face. Allow the pressure to equalize and reinstall oil plug. Tighten oil plug to: 20 Nm (15 ft-lb).

The Metric Tigear-2 reducer will require a break-in period before reaching maximum operating efficiency and may run hot during the initial operation of the reducer. This is normal. It is also possible for a few drops of oil to be purged from the lip seals during the break-in period. The user can recognize this start-up seepage by its small volume and short duration. New reducers should be checked periodically during the first few days of use for any signs of severe overheating, continuous lubricant leakage or unusual noises.

CHECKLIST

1. Visually inspect the contents of the shipping container for any damage that may have been caused during shipping. Check contents for missing hardware and accessories.
2. Metric Tigear-2 reducers are shipped from the factory with the following:
   a. Input coupling hub assembly
   b. Motor to reducer gasket
   c. Output key taped to output (slow speed) shaft
   d. With hollow output reducers, the output key is supplied along with six set screws that have been preinstalled in the ouput (slow speed) hub
3. The input coupling hub assembly consists of the following:
   a. Reducer coupling hub with set screw(s), which is factory-mounted to the reducer input shaft
   b. Motor coupling hub with set screw(s)
   c. Elastomeric element

MAINTENANCE

Metric Tigear-2 reducers require no periodic maintenance. However, an occasional visual inspection to check for hardware tightness, leakage, and the general overall condition of the reducer is good practice. Metric Tigear-2 reducers are designed to operate successfully without breather vents. Since the reducer is shipped with lubricant and breather plugs are not required, the user is able to eliminate the lengthy preparation normally required to place a reducer into service.

LUBRICATION - OIL FILL LEVELS

The Metric Tigear-2 reducer is factory-filled with a synthetic lubricant, which eliminates costly preparation time normally required to put a reducer into service. The lubricant supplied is a high-performance, H1 food-grade lubricant and is suitable for all approved mounting positions. Do not add or remove any oil during installation or after the break-in period. When reducer selections are properly service factored to account for the thermal limitations of the reducer, the standard lubricant covers an operating ambient temperature range of -17°C to 49°C (0°F to 120°F). No other lubricant available on the market provides the outstanding wear protection and thermal abilities of the factory-filled lubricant.

Other lubricants, including Mobil SHC series lubricant, must not be mixed with the factory-supplied lubricant. The use of another lubricant may compromise the performance of the reducer and void the warranty. Replacement lubricant is available through Renewal Parts, +1 864 297 4160. Standard temperature range replacement lubricant is available in quarts, part number 334863, and gallons, part number 334862. For operating ambient temperature range from -29°C to 27°C (-20°F to 80°F), replace the factory-supplied lubricant with low temperature lubricant. Low temperature lubricant is available in quarts, part number 334861, and gallons, part number 334860.

Table 1–Approximate Lubrication Quantities

Configuration	Reducer Sizes			
	17	20	23	26
Three-Piece Coupled Input Hollow Output Shaft	302 ml (10.2 oz)	417 ml (14.1 oz)	621 ml (21 oz)	828 ml (28 oz)
Three-Piece Coupled Input Solid Output Shaft	355 ml (12 oz)	450 ml (15.2 oz)	680 ml (23 oz)	946 ml (32 oz)

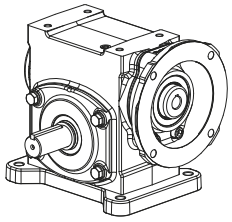
THE METRIC TIGEAR-2 SEALING SYSTEM

Metric Tigear-2 reducers are kept completely sealed from the environment. No breather vents are required for any approved mounting position. The unique design of the gear sets and the high-performance synthetic lubricant enable the reducer to operate in a highly efficient manner. The internal temperature rise is minimized, which, in turn, minimizes internal pressure build-up. Metric Tigear-2 oil seals employ durable lip material and fit, and are designed to ensure long, leak-free operation when subjected to the small amounts of pressure that may develop within the speed reducer.

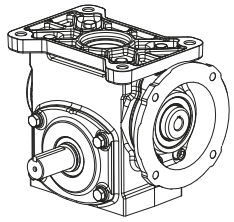
WARNING: The gearcase may be under pressure when the oil sump temperature is higher than the ambient temperature. Allow the reducer to cool down to room temperature before removing seals or bearing covers. Slightly loosen oil-fill plug on top of gear case to vent any internal pressure. Failure to observe this precaution could result in personal injury or damage to the equipment.

MOUNTING POSITIONS

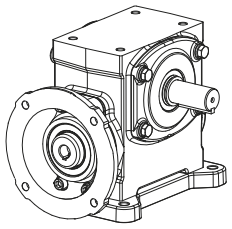
Metric Tigear-2 reducers are supplied with a high-performance lubricant, factory-filled to a level suitable for all approved mounting positions. Contact Dodge Application Engineering for positions not shown.



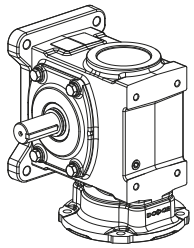
Floor Mounted, Motor Adapter or Input Shaft above Output Shaft



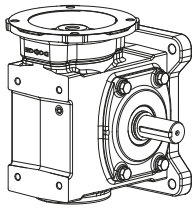
Ceiling Mounted, Motor Adapter or Input Shaft above Output Shaft



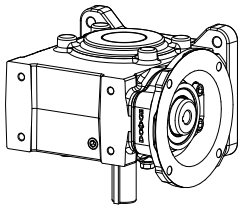
Floor or Ceiling Mounted, Motor Adapter or Input Shaft below Output Shaft
See Note 1



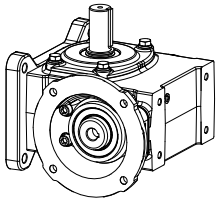
Wall Mounted, Motor Adapter or Input Shaft Facing Down
See Note 2



Wall Mounted, Motor Adapter or Input Shaft Facing Up



Wall Mounted, Output Shaft Facing Down



Wall Mounted, Output Shaft Facing Up

Notes:
1. *Not recommended due to flooded input seal.*
2. *Not recommended due to flooded input seal. The configuration does not allow the upper bearing to get sufficient lubrication.*

Figure 1 - Mounting Positions

Table 2–Motor Mounting Bolt Torque

Reducer Sizes	C-Face	Bolt or Capscrew Sizes	Torque Nm (in-lbs) Non-Lubricated
17-20	IEC71	M6	12 Nm (106 in-lb)
17-23	IEC80	M6	12 Nm (106 in-lb)
17-26	IEC90	M8	22 Nm (195 in-lb)
23-26	IEC100	M8	22 Nm (195 in-lb)

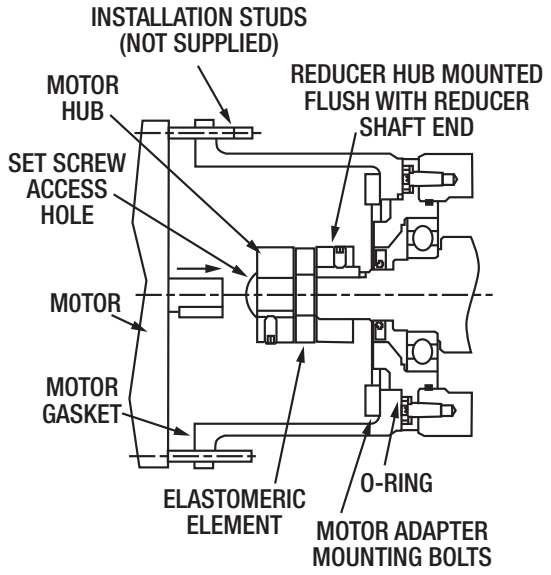


Figure 2 - Motor Mounting Elastomeric Element

MOTOR MOUNTING INSTRUCTIONS

Metric Tigear-2 Reducer
Three-Piece Coupling Assembly

This configuration of Metric Tigear-2 uses a standard IEC C-Face motor with a three-piece flexible coupling. The three-piece couplings are sourced from two manufacturers. Metric Tigear-2 reducers may contain either manufacturer's coupling. Both manufacturers' three-piece jaw coupling designs meet or exceed Dodge's torque and dimensional requirements.

Assembling the Couplings

The Metric Tigear-2 reducer is shipped from the factory with the coupling hub on the reducer side preinstalled. Follow the instructions below for coupling replacement and for installing the coupling hub onto the IEC motor.

1. Securely position the reducer vertically with the input shaft facing up. Install reducer half of the coupling with key so that the main body of the hub is flush with the end of the reducer input shaft and tighten the set screw(s). Coupling hubs may contain one or two set screws. Rotate coupling hub one revolution to verify the number of set screws. Torque all set screws per Table 3.
2. Install the elastomeric center element of the coupling.
3. Place the motor half of the coupling onto the elastomeric element mounted on the reducer shaft.
4. Install the key into the motor shaft. Stake in place with a punch.
5. Install the gasket between the motor and motor adapter flange. To help prevent pinching the gasket, place and align the gasket onto the motor face. A small amount of grease or other suitable product can be placed on the gasket in three locations to temporarily hold gasket in place.
6. Align the coupling keyway and motor key, then slide the motor shaft into the coupling assembly until the motor stops against the flange.
7. Install and tighten the motor bolts. Torque motor bolts per Table 2.
8. Looking through the access hole, verify that the coupling faces are in full contact with the coupling elastomeric element—without any preload.
9. Insert a .25mm (.010") to .76mm (.030") shim between the elastomeric element and motor half of the coupling and tighten the set screw(s) on the motor half of the coupling. Coupling hubs may contain one or two set screws. Rotate coupling one revolution to verify the number of set screws. Torque all set screws per Table 3.

NOTE: The factory-supplied coupling set screws contain a thread-locking patch. Additional thread locker is not required. The set screws should be replaced after 15 tightening/loosening cycles with new factory set screws containing the thread-locking patch.

Inspect the motor/adapter gasket each time the motor is removed and installed. If the gasket is damaged, replace the gasket.

Contact the Tigear-2 Application Engineering group at +1 864 284 5700 with any questions.

Table 3–Three-Piece Coupling Motor-Side Coupling Set Screw Torque

Reducer Sizes	C-Face	Coupling Sizes	Set Screw Sizes	Tightening Torque
17-20	IEC71	L075	M6	12 Nm (106 in-lb)
	IEC80			
	IEC90			
23	IEC80	L075	M6	12 Nm (106 in-lb)
	IEC90	L090	M6	12 Nm (106 in-lb)
	IEC100	L090	M8	22 Nm (195 in-lb)
26	IEC90	L090	M6	12 Nm (106 in-lb)
	IEC100	L090	M8	22 Nm (195 in-lb)

Three-Piece Coupling Reducer-Side Coupling Set Screw Torque

Reducer Sizes	C-Face	Coupling Sizes	Set Screw Sizes	Tightening Torque
17-20	IEC71	L075	1/4-20	10 Nm (89 in-lb)
	IEC80			
	IEC90			
23	IEC80	L075	1/4-20	10 Nm (89 in-lb)
	IEC90	L090	1/4-20	10 Nm (89 in-lb)
	IEC100			
26	IEC90	L090	1/4-20	10 Nm (89 in-lb)
	IEC100			

LIMITED WARRANTY

The Metric Tigear-2 reducer is warrantied under the Standard Terms and Conditions of Sale against defects in material and workmanship. Warranty claims must be submitted to the company within one year from the date of installation or three years from the date of manufacture, whichever occurs first. The warranty is valid providing the product is properly applied, installed, operated, and maintained in accordance with the instruction manual. This warranty covers product replacement or repair only and excludes labor, equipment, and/or downtime for removal and installation. This warranty shall not apply where equipment is operated above rated load capacity or is subject to accident, alteration, misuse, or abuse. This warranty described in the Standard Terms and Conditions of Sale is in lieu of and excludes all other expressed or implied warranties.

NOTE: Service and repair under warranty should be performed only by a Dodge-authorized service shop. Contant Dodge Warranty Administration at +1 864 284 5777 for the nearest location and to register warranty claims.

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