Torque-Arm II™

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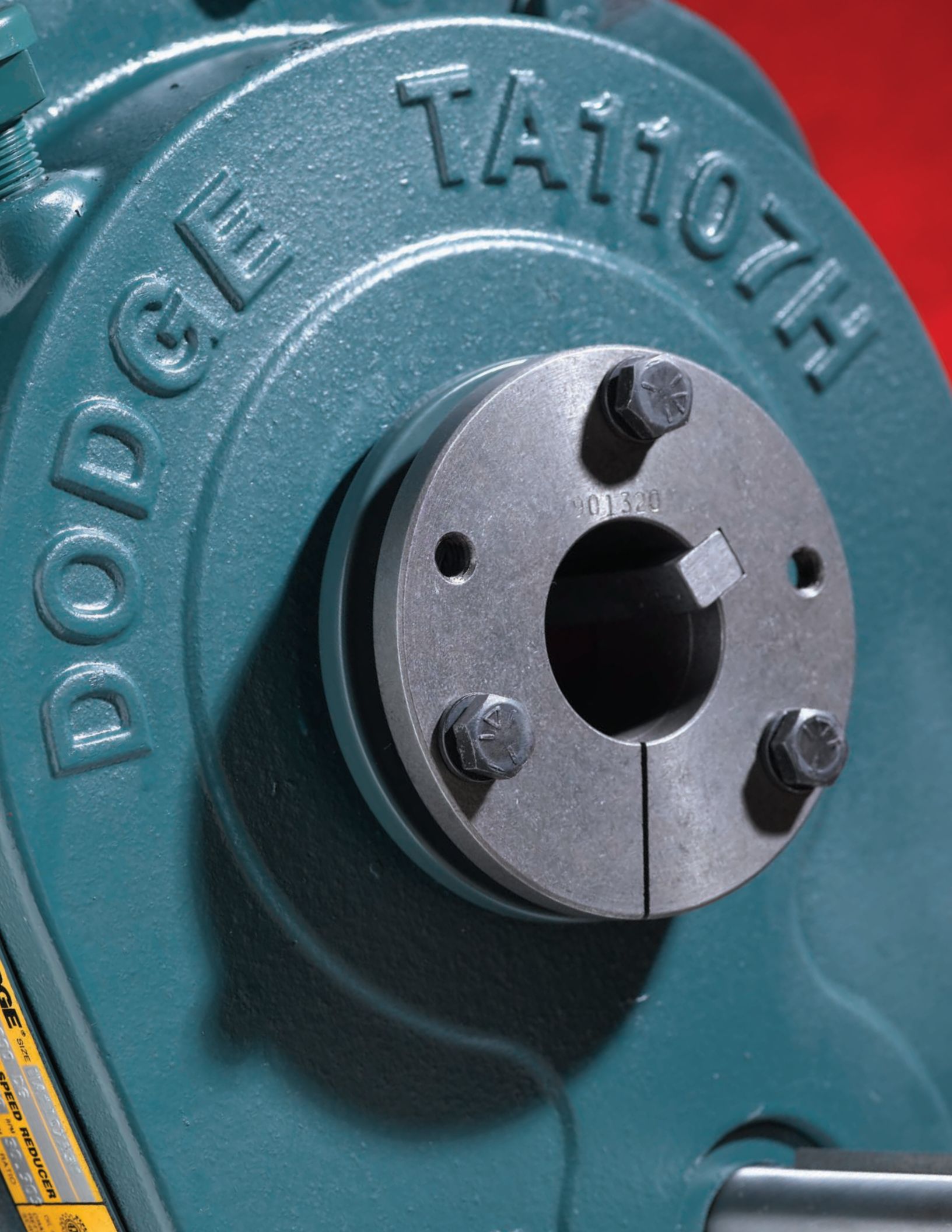
DODGE
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SPEED REDUCER

Dodge® Torque-Arm II™

The Legacy Continues

The Dodge Torque-Arm II surpasses all other reducers on the market because of its industry proven design and patented features.

This powerful line of shaft mounted speed reducers –in 12 case sizes through 400 horsepower (HP)—offers unparalleled torque ratings and is quickly becoming the new industry standard. Improved features include: an all-new backstop concept, a patented sealing system, a steel motor mount system, a state-of-the-art, totally modular design with an expanded ratio range to 40:1 and a patented twin tapered bushing system.

The increased ratings on the Torque-Arm II line are comparable to the next larger sized TXT reducer and are the result of the extended gear centers, wider gear faces and optimized tooth geometry. The new backstop design features centrifugal lift-off sprags for extended life and can be used with lubricants containing EP additives.

In addition, the Torque-Arm II line has a patented, premium sealing system that uses a harsh duty oil seal protected by a metal excluder seal with rubbing lip. This harsh duty sealing system makes this reducer series a perfect fit for today's harsh duty industries such as aggregates, mining, cement, asphault, mixing & milling and ethanol.

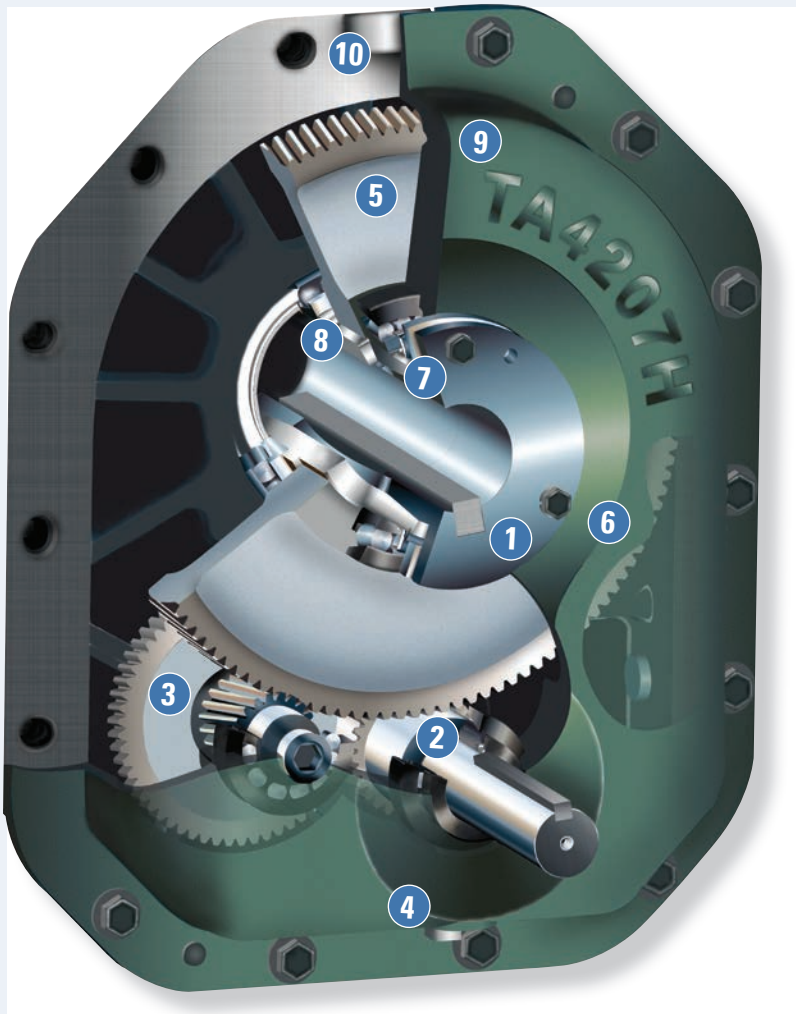
The new steel motor mount adjusts to multiple center distances and mounts in shaft mount and screw conveyor positions.Its patented twin tapered bushing system –in standard length, short shaft, and metric versions– offers all the features of our standard twin tapered Torque-Arm bushing design which are unique to Dodge. The patented insertable tapered wedge enables the optional extended tapered bushing kit to be applied for shorter shaft lengths; allowing the replacement of straight bore or single bushed reducers.

DODGE®

Dodge Torque-Arm II™, Gear-Reducers for

Product Capabilities

- Twelve reducer sizes with modular accessories
- All reducers can be shaft mounted, screw conveyor, vertical and flange mounted.
- HP through 400, and torque ratings through 500,000 lb in.
- Standard 5, 9, 15, 25 and up to 40: 1 gear ratios.
- Nearly 300: 1 speed reduction with V belt drives.
- Bushing bores 1 inch through 7 inch.
- All highly efficient helical gearing design.
- Meets or exceeds AGMA standards including class 1 5,000 hour L-10 bearing life, 25,000 average life.
- Smooth, rugged class 30 cast iron housings with pry slots.
- 36 month - 18 month warranty protection.
- TA II products are in conformance with ATEX directive 94//9/EC guidelines
- Premium harsh duty oil sealing system and filter breather



Design/Construction Features and Benefits

1) Dodge Torque-Arm II offers two types of twin tapered bushing systems
a. Standard Twin Tapered bushings for concentric grip and easy installation and removal on regular shafts.
b. Short Shaft Twin Tapered bushings for concentric grip and easy installation and removal on shorter than normal shafts.

2) Torque-Arm II utilizes heavy duty tapered roller bearings throughout the gearbox where competitive designs use normal duty ball bearings.

3) Torque-Arm II is designed to the AGMA standard and provides a minimum average bearing life (L-50) of 25,000 hours at a 1.0 service factor even in the most severe load conditions. This is usually twice the bearing life found in competitive reducers that do not adhere to the AGMA design standard.

4) Extended gear centers and increased gear tooth contact provide dramatically increased torque and power ratings. Standard TAII gear ratios are 5, 9, 15, 25 and 40:1.

5) Proven, case-carburized gear design ensures high efficiency and a 200% overload starting capacity at a 1.0 service factor.

6) Modular construction enables the user to adapt a single reducer for use in shaft mount, screw conveyor, vertical and flange mounted applications.

7) A unique, dual protection sealing system on all shafts consists of a metal reinforced, double-lip, spring loaded oil seal that is protected by an external metal shield and excluder lip auxiliary seal.

8) Primary oil seal lips use a premium material that has an operating temperature range of -40°C to +150°C. The TAII seals provide 5-6 times the wear resistance of industry standard nitrile seals and have excellent compatibility with both mineral and synthetic lubricants.

9) The 100% cast iron housing is equipped with 3 pry slots for easy access during repairs. The housing design maximizes surface area for greater heat dissipation.

10) A magnetic drain plug and a unique, filtered air breather are standard.

Dodge Torque-Arm II gear reducers are in conformance with the European ATEX Directive 94/9/EC (ATEX 100a) - Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres and are certified Dodge Torque Arm II, Sizes TA0107 through TA12608, Equipment Group I, Category M2 c/ Equipment Group II Category 2 GD c T4 TAMB -30° C to +50° C

All of Your Industry Needs

Testing and Development

It's what makes the Torque-Arm II different and even better than the original Torque-Arm and all competition.

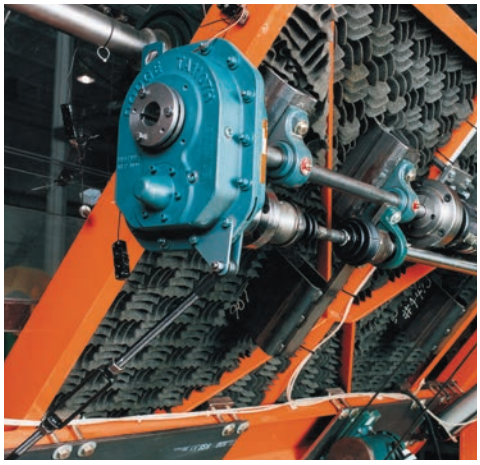
Using QFD techniques, Dodge began product development by asking our customers to tell us what they liked and/or disliked about our original Torque-Arm and other speed reducers on the market. From these comments, our engineering team developed specifications, which became the blueprint for the Torque-Arm II reducer's state of the art design.

First and second generation prototypes were built in production quantities and tested in our own lab under full load conditions. All designs used for the prototypes were developed using our proprietary in-house development programs for gearing design, bearing selection, and shaft design. In addition, all reducers were modeled using Pro-ETM modeling software and analyzed using FEM techniques.

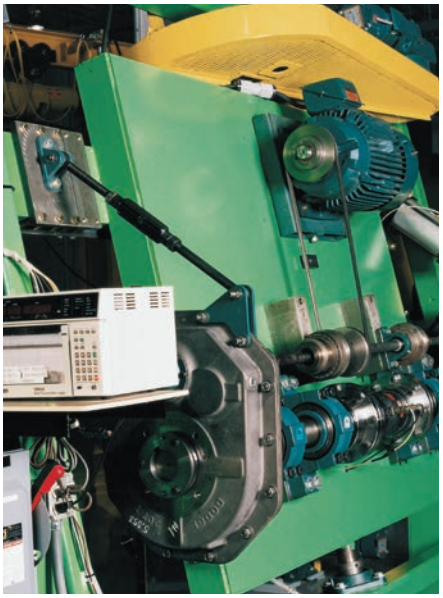
Each size and ratio for each generation prototype was subjected to rigorous mechanical, structural, and thermal testing, and all models were evaluated for design optimization, structural strength, and stress and deflection. The prototypes were also used to perform manufacturing capability studies to verify that the design tolerances could be maintained under manufacturing conditions.

It was the knowledge gained from these tests that influenced our final design specifications. To ensure optimum performance, each size and ratio of the final design was also put through the same thorough, stringent design analysis and testing as the prototypes.

Since its launch in 2000, TA II has become the reducer of choice for equipment manufacturers nationwide.



TORQUE-ARM II™
The Legacy Continues . . .



Modular Concepts

Shaft mounted reducer with twin tapered bushing and motor mount

Screw conveyor drive with adapter, drive shaft and motor mount

Motorized Torque-Arm II

- Motorized Torque-Arm II
- Heavy Duty AGMA rated design
- Ratings from 3hp to 100hp
- Tapered roller bearings on all helical shafts
- Premium harsh duty oil seals
- Standard and short shaft twin-tapered bushings
- Industry leading backstop design, EP lube compatible
- Standard Screw Conveyor Adapter and drive shaft
- Stock TA II torque arm rod kits
- EZ Class I & II selection tables
- Rugged, high efficiency, case carburized helical/bevel gearing
- Reduced assembly time
- Reduced guarding costs
- Reduced maintenance requirements
- Optional bushing end covers
- Reducer mounts in multiple positions
- Three piece coupled design utilizes standard Baldor Electric NEMA c-face motors in two motor speeds and multiple gear ratios to provide a wide spectrum of output speeds

Motorized Torque-Arm is ATEX certified

Motorized Torque-Arm has been found to comply with the Essential Health and Safety Requirements that relate to the design of Category 2 and M2 equipment, which is intended for use in potentially explosive atmospheres. These Essential Health and Safety Requirements are given in Annex II to European Union Directive 94/9/EC of 23 March 1994.

Modular Accessories

- **Standard Twin-Tapered Bushing System:** an easy on, easy off, no-wobble bushing system featuring a fully split, ductile iron 8° taper and reliable twin support. Available in inch and metric bores. increased bore capability in many sizes.

- **Short-shaft twin tapered bushing kits:** (Patent numbers 5,667,333 and 5,951,198) eliminate the need for full-length shafts. Constructed with ductile iron, it has all the features of our standard bushing system. Available in both inch and metric bores.

- **Modular Motor Mount:** attached and supported by two angle iron brackets with equally spaced holes, which align with the spacing of the cast slots of the gear case. This way, the motor mount can be adjusted up or down depending on the customer's requirements. It can also be mounted on the side of the reducer for screw conveyor applications.

- **Backstop Option:** helps prevent reverse rotation in high stop-start loads, and results in less wear and longer life. Its centrifugal throw-out design eliminates sprag sliding and reduces wear. It operates with standard and EP lubricants and requires no external lubrication.

- **TA rod kit includes:** standard brackets functions as a belt-tensioning device, and offers universal mounting options.

- **CEMA bolt-on adapter:** features double-lip seals on both surfaces. the adapter center is open for contaminate drop out for optimized sealing.

- **Adjustable packaging adapter kit:** bolts to the standard adapter and provides a proven sealing option for hostile environments. Packing can be retightened.

- **Screw conveyor drive shafts:** made from high alloy steel and engineered to CEMA dimensions. They are three-bolt drilled and their tapered fit ensures simple installation. The rugged locking plate (patent pending) also provides a mechanical shaft removal feature.

- **Bolt-on belt guard package:** requires no drilling or straps. It allows multiple height adjustments, features a lift-off cover construction, and has an open metal inspection feature.

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