



TORQUE-ARM II Shaft Mount Speed Reducers

EASY SELECTION METHOD (FOR ELECTRIC MOTORS) FOR TORQUE-ARM II REDUCER AND SCREW CONVEYOR DRIVE REDUCER APPLICATIONS

When to Use Easy Selection

The Easy Selection tables for TA II Shaft Mount reducers are for electric motor selections up to 400 horsepower with output speeds up to 400 RPM, using AGMA recommended application class numbers. For extreme shock or high energy loads which must be absorbed, as when stalling; for a power source other than an electric motor; or for extreme ambient temperatures or oversized equipment, consult DODGE Application Engineering, 864-288-9050.

How to Select

Step 1: Determine Class of Service - See Table 1 to determine Load Classification for applications under normal conditions. Find the type application and duty cycle that most closely matches your specific application.

Class 1 - Steady load not exceeding Motor HP rating and light shock loads during 10 hours a day. Moderate shock loads are allowable if operation is intermittent.

For Class 1 applications, the maximum value of starting and momentary peak loads should not exceed 2 x Motor HP rating. If it exceeds this amount it should be divided by 2 and the result used in the selection table instead of the Motor HP rating.

Class 2 - Steady load not exceeding Motor HP rating for over 10 hours a day. Moderate shock loads are allowable during 10 hours a day.

For Class 2 applications, the maximum value of starting and momentary peakloads should not exceed 2.8 x Motor HP rating. If it exceeds this amount it should be divided by 2.8 and the result used in the selection table instead of the Motor HP rating.

Class 3 - Moderate shock loads for over 10 hours a day. Heavy shock loads are allowable during 10 hours a day.

For Class 3 applications, the maximum value of starting and momentary peak loads should not exceed 4 x Motor HP rating. If it exceeds this amount it should be divided by 4 and the result used in the selection table instead of the Motor HP rating.

Step 2: Determine Reducer Size - See the Easy Selection Tables, pages G1-12- G1-34. From Class I, II or III

Table, find the reducer size for the application horsepower and output speed.

Note: For applications where fan cooling is unacceptable, use the Easy Selection tables with an increased Class of Service number. Where more than one reducer selection is listed, the most economical ratio is generally listed first. See Engineering/Technical pages for maximum input speed, output speed, and thrust capacity ratings for TA II reducers.

Step 3: Compare Hollow Shaft Bore with the size of the driven shaft. All DODGE TA II Taper Bushed reducers require bushings to mount reducer to driven shaft. Refer to reducer pages for available bushings. If the driven shaft is larger than the bore of the selected reducers, the shaft must be machined to the proper size, or select a larger reducer. Check driven shaft and key for strength.

Step 4: Check Dimensions - See Selection/Dimension pages for reducer dimensions, weights, part numbers and Torque-Arm rod mounting positions. See Engineering/ Technical pages for reducer mounting positions.

Step 5: Select a Belt Drive Arrangement - From the Sheave ratio information, pages G1-125 thru G1-126, select a sheave ratio for the belt drive. The reducer sheave P.D., Pitch Diameter, should not be smaller than the minimum sheave diameter shown in the selection tables. Note: Mount the sheave as close as possible to the reducer to minimize the effect of overhung load on the reducer.

See DODGE Drives Components catalog to select sheaves, bushings and belts for the appropriate belt drive.

Step- 6: Select Accessories - See Selection/Dimensions pages for description, dimensions, weights and part numbers for accessories for the TA II reducer selected:

- Rod Assembly Bushing Kit Motor Mount**
- Cooling Fan Backstop Assembly Belt Guard**
- Screw Conveyor Adapter Filter Breather**
- Drive Shaft Adjustable Packing Kit**
- Vertical Breather Kit**

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EASY SELECTIONS

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Note: IMPORTANT INFORMATION

TA II reducers are stocked without a Torque-Arm Rod Assembly. Order a TA Rod Assembly as a separate item.

TA II reducers are shipped without oil. They must be lubricated at time of installation.

TA II reducers are suitable, from stock, for vertical or incline mounting and flange mounting; no reducer modification is required. See accessories for vertical breather kit.

TA II Backstop - For best life, select reducer gear ratios which exceed input shaft speeds required for backstop sprag lift-off. See page G1-129 for Backstop Lift-off speeds.

WARNING: Backstops are not recommended for applications involving energy absorption and shock or torque loads in excess of reducer ratings or on applications such as chair lift, amusement rides, etc., where the safety of persons or property is dependent on their function. On such applications, other safety devices should be provided.

Note: The TA II reducer has built-in auxiliary sealing which gives extra seal protection for all environments, at no additional cost to the user. See the Feature/Benefits pages for details.

Example: Easy Selection method for TORQUE-ARM II Reducers - Shaft Mount and Screw Conveyor Drive

Shaft Mount Reducer Application:

A 10 HP 1750 RPM motor is used to drive a belt conveyor moving sand at 70 RPM. The conveyor is uniformly loaded and operates 16 hours per day. The head pulley shaft diameter is 2-3/16". The user specifications call for a means of holding the conveyor from moving backwards.

Step 1: Determine Class of Service - From Table 1 on page G1-12 locate the appropriate application, "belt conveyors, uniformly loaded or fed" for over 10 hours per day. This load is classified as a Class II application.

Step 2: Determine Reducer Size - From Class II Selection, page G1-22, find the column for 10 HP and read down to 70 RPM. A reducer size TA3203H25 or TA3203H15 reducer is the correct selection. See Engineering/Technical pages to compare input and output speed and overhung load application requirements with reducer ratings.

Step 3: Compare Hollow Shaft Bore of a size TA3203H25 or TA3203H15 with the head pulley shaft diameter. Per page G1-60, 2-3/16" is the maximum bore available for this size of reducer. It will work in this application. Be sure to check the driven shaft and key for strength.

Step 4: Check Dimensions and Weights - See Selection/Dimension pages for reducer dimensions, weights, part numbers and other pertinent drive dimensions, as well as information on TORQUE-ARM rod mounting positions. See Engineering/Technical pages for information on reducer mounting positions.

Step 5: Select a Belt Drive - From the Sheave Ratio information, pages G1-125 thru G1-126, select a belt drive ratio for the conveyor speed of 70 RPM. Then select a belt drive, from the DODGE Drive components catalog, that meets the customer's needs (service factor, minimum number of belts) and preferences (belt style, bushing mounting style, etc.) The sheave diameters must not be smaller than the minimum diameters shown in the selection tables.

Step 6: Select Accessories - See Selection/Dimensions pages to pick out accessories for this application:

TA3203BS Backstop Assembly, to hold the conveyor from moving backwards

TA3203MM Motor Mount Assembly, for top mounting the motor to the reducer.

TA3203BG - Pos. B Belt Guard, to cover and protect the rotating belt drive.

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EASY SELECTION METHOD (FOR ELECTRIC MOTORS) FOR TORQUE-ARM II REDUCER AND SCREW CONVEYOR DRIVE REDUCER APPLICATIONS

Example: Easy Selection method for TORQUE-ARM II Reducers - Shaft Mount and Screw Conveyor Drive

Screw Conveyor Drive Reducer Application:

A 5 HP 1750 RPM motor is used to drive a heavy duty screw conveyor moving at 72 RPM. The conveyor runs 10 hours per day in a local feed mill conveying grain. The user needs a reducer drive compatible with a CEMA 12" diameter screw and a 2-7/16" diameter drive shaft.

Step 1: Determine Class of Service - From Table 1 on page G1-12 locate the appropriate application, "conveyors, general purpose; screw conveyor - heavy duty, not uniformly loaded" for 3 to 10 hours per day. This load is classified as a Class II application.

Step 2: Determine Reducer Size - From Class II Selection Table, page G1-22, find the column for 5 HP and read down to 72 RPM. A TA1107H25 reducer is the correct selection. See Engineering/Technical pages to compare input and output speed and overhung load application requirements with reducer ratings.

Step 3: Check Dimensions - See Selection/Dimensions pages for reducer dimensions, weights, part numbers and other pertinent drive dimensions. See Engineering/Technical pages for information on reducer mounting positions.

Step 4: Select Drive Shaft to fit screw diameter. See Selection/Dimension page G1-40. Here we verify that a 2-7/16" diameter drive shaft is compatible with a 12" diameter screw.

Step 5: Select a Belt Drive - From the Sheave Ratio information, pages G1-125 thru G1-126, select a belt drive ratio for the screw conveyor speed of 72 RPM. Then select a belt drive, from the DODGE Drive Components catalog, that meets the customer's needs (service factor, minimum number of belts) and preferences (belt style, bushing mounting style, etc.) The sheave diameters must not be smaller than the minimum diameters shown in the selection tables.

Step 6: Select Accessories - See Selection/Dimensions pages to pick out screw conveyor accessories for this application:

TA1107SCA Adapter & Hardware Kit, to mount reducer to trough end of screw conveyor.

TA1107SCP Adjustable Packing Kit, to add additional sealing protection to reducer drive.

TA1107MM Motor Mount Assembly, for top mounting of motor to the reducer.

TA1107BG-Pos. C Belt Guard, to cover and protect the rotating belt drive.

TA1107SCS X 2-7/16" Drive Shaft, to connect the reducer to the screw conveyor.

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