

# SELECTION



## TORQUE-ARM Shaft Mount Speed Reducers EASY SELECTION METHOD (FOR HYDRAULIC MOTORS)

### When to Use Easy Selection

The Easy Selection tables for HXT Shaft Mount reducers are for hydraulic motor selections up to approximately horsepower with output speeds up to 400 RPM, using AGMA recommended application class numbers. For extreme repetitive shock loads, consult DODGE Application Engineering, (864) 288-9050.

### How to Select

**Step 1: Determine Class of Service**-See Table 1, G2-15 to determine Load Classification for applications under normal conditions. Find the type application and duty cycle that most closely matches your specific application.

**Class I** 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 I 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 II** 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 II applications, the maximum value of starting and momentary peak loads 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 III** Moderate shock loads for over 10 hours a day. Heavy shock loads are allowable during 10 hours a day.

For Class III 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 G2-128 thru.G2-142. From Selection Table I, II or III read the reducer size for the application horsepower and output speed. Also compare the reducer/motor running and starting torque, running pressure and flow rate with that required for the application. See Table 18, page G2-143 for maximum hydraulic motor starting pressure for HYDROIL Vane Motors.

**Step 3: Compare Hollow Shaft Bore** with the size of the driven shaft. All DODGE TORQUE-ARM Taper Bushed reducers require bushings. Refer to TXT reducer pages for available bushings. If the driven shaft is larger than the bore of the selected reducer, 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/Dimensions sections, pages G2-144 thruG2-147 for reducer dimensions, weights and part numbers. See Engineering/Technical section, pages G2-199 and G2-213 for reducer and torque-arm rod mounting positions.

**Step 5: Select a Hydroil Vane Motor**-See Selection/Dimensions pages for listing of HYDROIL Vane Motors required to drive each size and ratio of HXT reducer. See page G2-151 for dimensions and part numbers. **Note: 100 RPM is minimum speed for Hydroil Vane Motors.**

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## TORQUE-ARM Shaft Mount Speed Reducers

**Note:** A Torque-Arm rod assembly is furnished with all HXT reducers, unless otherwise specified. Torque-Arm reducers are shipped without oil.

Ratings and selections are the same for both taper bushed and straight bore HXT reducers.

### EXAMPLE: EASY SELECTION METHOD-HXT TORQUE-ARM REDUCER

A 3HP motor is used to drive the head shaft on a heavily loaded bucket elevator at 30 RPM, 16 hours per day. Head shaft diameter is 2-3/16". User wants to use a hydraulic motor as prime mover since drive is not in an easily accessible location.

**Step 1: Determine Class of Service**-From Table 1, page G2-15 locate "bucket elevators, heavily loaded" for over 10 hours per day. This load will be classified as a Class II application.

**Step 2: Determine Reducer Size**-From Table 13 -Class II Application, page G2-128, find the 30 RPM output column at the top of the table. Read down to the HP rating of 3HP or greater. At 3.6HP, trace to the far left column to find that the basic reducer size for the application is an HXT3. Either an HXT315 or an HXT325 may be used, depending on the starting torque requirements.

**Step 3: Compare Hollow Shaft Bore** of an HXT315/325 with the application driven shaft diameter. Per page

G2-144, 2-3/16" is the maximum bore available for this size reducer, so it will work in this application. Select reducer bushing from part numbers listed with TXT reducers on page G2-28. Be sure to check driven shaft and key for strength.

**Step 4: Check Dimensions and Weights**-See Selection/Dimensions section, page, for reducer dimensions, weights, part numbers and other pertinent drive dimensions. See Engineering/Technical section, pages G2-199 and G2-213 for information on reducer and torque-arm rod mounting positions.

**Step 5: Select a Hydroil Vane Motor**-See Selection/Dimension pages. Trace from Reducer size HXT315 right to column labeled Hydroil Motor. It must be driven by a size B30 Hydroil Vane Motor. Likewise a reducer size HXT325 is designed to be driven by an A20 Hydroil Vane Motor. See page G2-151 for the motor part numbers and dimensions.

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