

WP0298

Dodge® Quantis gear reducers: special output shafts

Dodge Customer/Order Engineering



The Quantis product line has the ability to provide a multitude of special output shafts from special diameters, special lengths, and various other special requirements. This paper will breakdown what special designs can be done for Quantis output shafts. Special Quantis output shafts will usually have a longer lead time and higher price, so it is always recommended the customer try to use the shafts that Quantis already supplies. However, if a special shaft is required, below are the limits that can be done for special output shafts, and the engineering explanation for it.

Special Shaft Diameters

Below is the maximum diameter that can be done for each Quantis reducer.

Table 1: Max Shaft Diameters

| Reducer | Solid Output Shaft | | Hollow Output Shaft | |
|--------------|---------------------|-----------------------|---------------------|-----------------------|
| | Max Diameter (Inch) | Max Diameter (Metric) | Max Diameter (Inch) | Max Diameter (Metric) |
| ILH 381 | 1.375" | 35mm | / | / |
| ILH 38(2,3) | 1.375" | 35mm | / | / |
| ILH 481 | 1.375" | 35mm | / | / |
| ILH 48(2,3) | 1.75" | 45mm | / | / |
| ILH 681 | 1.75" | 45mm | / | / |
| ILH 68(2,3) | 2.3125" | 60mm | / | / |
| ILH 881 | 2.125" | 55mm | / | / |
| ILH 88(2,3) | 2.75" | 70mm | / | / |
| ILH 108(2,3) | 3.125" | 80mm | / | / |
| ILH 128(2,3) | 3.875" | 100mm | / | / |
| ILH 148(2,3) | 4.3125" | 110mm | / | / |
| ILH 168(2,3) | 5.0625" | 130mm | / | / |
| RHB/MSM 38 | 1.75" | 45mm | 1.375" | 35mm |
| RHB/MSM 48 | 2.125" | 55mm | 1.5" | 40mm |
| RHB/MSM 68 | 2.5" | 65mm | 1.875" | 45mm |
| RHB/MSM 88 | 3.125" | 80mm | 2.375" | 60mm |
| RHB/MSM 108 | 3.6875" | 95mm | 2.6875" | 70mm |
| RHB/MSM 128 | 4.3125" | 110mm | 3.1875" | 80mm |
| RHB/MSM 148 | 4.6875" | 120mm | 3.4375" | 90mm |
| RHB/MSM 168 | 5.875" | 150mm | 4.4375" | 110mm |

The maximum diameters shown in **Table 1** are determined by the shaft seal journal diameter. If the customer shaft diameter is larger than the seal journal diameter, then it is impossible to install the output seal.

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For all special shaft requests that require a shaft diameter smaller than the standard shaft diameter of a particular reducer size, CO engineering will have to determine if ABB can supply the special shaft. The following information will need to be provided to CO engineering to help determine if the special shaft can be done on a particular reducer.

- Required shaft diameter
- Reducer catalog string
- Application info (What is the application, hours of operation per day, is there stops and starts, reversing, shock loading)
- Motor hp that will be used with the reducer.

Further information may be needed depending on the application.

Special hollow diameter minimum and maximum match the minimum and maximum shaft diameter that can be used for the twin tapered bushings on the reducer. It is always recommended that the customer look at using a twin tapered bushing output for any shaft diameters that aren't standard for straight hollow. This avoids longer lead times and higher prices.

Special Shaft Length

Below is the maximum length that can be done for each Quantis reducer.

Table 2. Max Shaft Lengths

| Reducer | Solid Output Shaft | |
|--------------|--------------------|---------------------|
| | Max Length (Inch) | Max Length (Metric) |
| ILH 381 | 2.325" | 75mm |
| ILH 38(2,3) | 3.735" | 95mm |
| ILH 481 | 4.115" | 85mm |
| ILH 48(2,3) | 4.9" | 125mm |
| ILH 681 | 5.12" | 105mm |
| ILH 68(2,3) | 6.2525" | 160mm |
| ILH 881 | 5.275" | 135mm |
| ILH 88(2,3) | 7.47" | 190mm |
| ILH 108(2,3) | 8.635" | 220mm |
| ILH 128(2,3) | 10.565" | 270mm |
| ILH 148(2,3) | 12.5825" | 320mm |
| ILH 168(2,3) | 13.3325" | 340mm |
| RHB/MSM 38 | 4.51" | 115mm |
| RHB/MSM 48 | 5.275" | 135mm |
| RHB/MSM 68 | 6.44" | 165mm |
| RHB/MSM 88 | 8.635" | 220mm |
| RHB/MSM 108 | 10.3775" | 265mm |
| RHB/MSM 128 | 11.0025" | 280mm |
| RHB/MSM 148 | 12.9575" | 330mm |
| RHB/MSM 168 | 14.145" | 360mm |

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The approved standard for customer shaft lengths for Dodge reducers is to go no more than one shaft diameter longer in length. The lengths in **Table 2** take the longest standard solid shaft offered for each reducer, and then the diameter of the same unit in **Table 1** is added to the length. The purpose for only going up to one shaft diameter in extra length is due to overhung load. The longer the shaft, the less the overhung load rating of the gearbox will be. Lengths extending beyond one diameter extra have a significantly lower output overhung load rating, there is no minimum special length for Quantis solid shafts, but the shaft must be long enough to install a coupling, drive, etc. Customer will need to confirm the length required for installation in the field.

Quantis hollow shafts' lengths cannot be changed.

Other Special requests

All other special shaft requests will have to be approved by CO engineering before an order is placed. Other types of special shafts are tapered shafts, stepped shafts, different shaft material, keyless shafts, shafts with a cross drilled hole, and shafts with a different size axial hole on the end.

As much information about the requested reducer and the application that can be supplied will help with determining if it is possible to provide the special shaft.

One particular special hollow shaft that cannot be done on Quantis is splined shafts. The hollow shaft design on Quantis is not capable of making a splined shaft.

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