

# Dodge Quantis Gear Reducers – Frequently Asked Questions

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Does Quantis have an ATEX rating? (back to top)

ATEX certification is now available for Dodge Quantis reducers, which are manufactured under guidelines of the ATEX directive 94/9/EC. Dodge Quantis ILH, RHB, and MSM reducers size 38-168 are suitable for ATEX Category 3 for all gas and dust environments within ignition temperatures higher than T4 (135 deg C).

Does Quantis offer an anti-rotation device or backstop? (back to top)

Yes, Dodge offers a backstop option on reducers with 3-piece coupled inputs for applications with C-face motors, and with separate inputs for applications with a shaft-in arrangement. Please see pages INTRO-21 to INTRO-23 of the Quantis catalog for more information about backstops.

Does Quantis carry a BISSC (Baking Industry Sanitation Standards Committee) certification? (back to top)

No, Quantis is not yet BISSC certified, however, the company is in the process of achieving certification and will be in the future.

Why does the catalog output torque rating for a Quantis reducer with a given ratio increase as the NEMA motor frame size increases? (back to top)

The modular design concept of Quantis utilizes different size input pinions for different size input motor frames. The shank diameter of the input pinion increases with motor frame size, and therefore the amount of torque capable of transmitting also increases resulting in increased output torque and input motor HP ratings.

For example: On catalog page ILH-37, an ILH 682 with a 30.60:1 ratio has

an output torque rating of 2072 in-lbs with a NEMA 56C input. With a

NEMA 180TC input, the output torque rating increases to 7081 in-lbs. When the rating does not change the frame size, the input pinion is not the most limiting component in the reducer.

Why does the output torque rating for a reducer with a C-face input differ from the rating for the same reducer with an integral motor? (back to top)

Since we don't know what motor HP an end user will attach to a C-face or separate input reducer, we list the torque capacity of the reducer. On reducers with integral motors, we list the actual output torque base on the HP of the attached motor.



For example: On catalog page ILH-123, a 3 HP integral motor on an H\_482GH100J4 with a 16.17 ratio is listed as having 1747 in-lbs of output torque. On catalog page ILH-25, the same reducer with a 100-size input has an output torque rating of 3643 in-lbs.

Can a C-face clutch/brake be used with Quantis? (back to top)

Yes, a clutch/brake can be used with a 3-Piece Coupled c-face reducer input. Clamp collar c-face input reducers are not suitable for C-face clutch/brakes.

What is the difference between the clamp collar C-face input and the 3-piece coupled C-face input? (back to top)

The clamp collar C-face has a hollow reducer input shaft that the motor shaft slides into and is secured with a clamping collar. The 3-piece coupled c-face has a solid reducer input shaft that couples to the motor shaft with a jaw-type coupling. The 3-piece coupled C-face is longer and is recommended for applications with frequent starts, stops, and/or reversing, as it is better in terms of preventing fretting corrosion compared to the clamp collar C-face input.

Does Quantis have C-face inputs? (back to top)

Yes, the Quill and 3-Piece Coupled Quantis reducers are C-face inputs.

If my motor frame size is 213TC, will this fit the Quantis 210TC input? (back to top)

Yes, Quantis C-face input frame sizes are given the generic family frame size which accommodates all NEMA frames that match C-face dimensions. Refer to the following table of NEMA frame designations:

| Quantis input frame size | NEMA motor frame sizes accepted |       |  |
|--------------------------|---------------------------------|-------|--|
| 56C                      | 56C                             | -     |  |
| 140TC                    | 143TC                           | 145TC |  |
| 180TC                    | 182TC                           | 184TC |  |
| 210TC                    | 213TC                           | 215TC |  |
| 250TC                    | 254TC                           | 256TC |  |
| 280TC                    | 284TC                           | 286TC |  |
| 320TC                    | 324TC                           | 326TC |  |
| 360TC                    | 364TC                           | 365TC |  |

What type of input couplings comes with the 3-Piece Coupled Quantis? (back to top)

"L-series" Jaw type couplings





Is it possible to replace the input assembly on a Quantis reducer in the field? (back to top)

It is possible to change or replace the input assembly on a Quantis reducer in the field if the correct parts are ordered. To find out the part numbers required for your reducer call the Renewal Parts group with your Quantis sales order number (or re-order number found on the reducer nameplate).

Do we have disassembly and repair instructions for Quantis? (back to top)

The drawings shown in the Quantis catalog are the only drawings with dimensions. Scaled drawings can be downloaded from our Dodge-PT.com website. Parts lists and assembly layouts can be obtained from the Renewal Parts department.

Are CAD drawings and models available for Quantis? (back to top)

Yes, both 2-D and 3-D CAD drawings and models are available in many formats through our link on the Dodge-PT.com website.

Are certified drawings available for Quantis? (back to top)

Yes, certified drawings will be made after the certified drawing charge has been added to the BUS order. Contact Application Engineering with the order number after the order has been placed.

| Stages of | ILH | RHB | MSM |
|-----------|-----|-----|-----|
| Reduction |     |     |     |
| 1         | 98% | N/A | N/A |
| 2         | 96% | N/A | 96% |
| 3         | 94% | 94% | 94% |
| 4         | 92% | 92% | 92% |
| 5         | 90% | 90% | 90% |

What is the typical efficiency of a Quantis reducer? (back to top)

Quantis has approximately 2% efficiency loss per stage of gearing.

Do the catalog torque ratings for Quantis take efficiency into account? (back to top)

No, the torque values listed are the torque capacity of the reducer at 100% efficiency. The actual output torque of the reducer is directly related to the horsepower of the motor being used, the ratio of the reducer, and the efficiency of the reducer.



How do I calculate the estimated output torque of a motor and reducer, taking into account the efficiency of the reducer? (back to top)

For example, we are going to use a 60 Hz, 1750 RPM (4 pole) motor nameplated at 3 horsepower, going into a RHB reducer with a 25.63 ratio, which runs at a 94% efficiency (used as 0.94 when calculating output torque).

The basic equation for output torque is:

<u>*Motor HP x Reducer Ratio x* 63025 *x eff.* = Output Torque (inch-lbs)</u>

Motor Output RPM

For our example, the numbers are:

 $3 \times 25.63 \times 63025 \times .94 = 2,603$  inch-lbs estimated output torque

1750

(Note: the 63025 value is a constant that converts the output to inch-lbs)

What are the part numbers for the oil plug, breather, and sight glass for Quantis reducers? (back to top)

Quantis oil hole thread size and part numbers for plugs, breathers, and sight glass kit:

| ILH | Thread | Plug   | Breather | Washdown | Washdown | Sight  |
|-----|--------|--------|----------|----------|----------|--------|
| RHB | size   |        |          | Breather | Breather | Glass  |
| MSM |        |        |          | (Old)    | (New)    | Kit    |
| 38  | G3/8   | 083868 | None     | None     | None     | None   |
| 48  | G3/8   | 083868 | 186468   | 094630   | 095333   | 084455 |
| 68  | G3/8   | 083868 | 186468   | 094630   | 095333   | 084455 |
| 88  | G3/8   | 083868 | 186468   | 094630   | 095333   | 084455 |
| 108 | G3/8   | 083868 | 186468   | 094630   | 095333   | 084455 |
| 128 | G3/8   | 083868 | 186468   | 094630   | 095333   | 084455 |
| 148 | G3/4   | 083867 | 085527   | 094972   | 094792   | 086597 |
| 168 | G3/4   | 083867 | 085527   | 094972   | 094792   | 086597 |

What are the thread sizes for the fill and drain plugs? (back to top)

See table above. The "G" indicates metric straight threads which follow British pipe standards. United States NPT pipe threads can be used if pipe sealant is used.



Why aren't there any oil drain holes on the size 38 standard Quantis reducers? (back to top)

The size 38 units have only 1 hole in the housing which is used for the initial factory oil fill. This size reducer runs very cool, so the oil does not get oxidized over the life of the product, and therefore does not require an oil change. There is also no need for a breather size the air inside the reducer does not heat up enough to cause pressure to build up inside the reducer. Ultra Kleen 38 RHBs have an additional plug on the cover plate. This can be used to fill the reducer with oil for A1.

### What is the backlash of a Quantis reducer? (back to top)

Quantis reducers have low backlash, typical of commercial-grade industrial reducers. A backlash value cannot be guaranteed. Special very low backlash reducers are not available.

### What is the High Ratio Quantis? (back to top)

High ratio Quantis is a tandem assembly of a one or two-stage ILH mounted on the input of a three-stage ILH, RHB, or MSM to multiply the ratios and achieve up to 7500:1 in overall ratio. The first ILH gearbox has the second gearbox's pinion pressed into its output shaft, and the second gearbox has a special adapter plate that can mount to the output of the first gearbox.

## How should I size a High Ratio Quantis? (back to top)

High ratio Quantis needs to be sized based on the output torque requirement and not the input hp that will be used in order to achieve an appropriate size. Sizing based on the input hp can create a high ratio selection multiple sizes larger than necessary for the customer application. Therefore, the output torque requirement is the most effective way to size a High Ratio Quantis.

The Motor hp I am using is higher than the High Ratio Quantis hp rating. Will the reducer fail? (back to top)

If the reducer is rated to handle the output torque requirement of the application, the reducer will not fail. The output torque required in the application will produce only the required hp needed to carry the torque. So, you can run a motor that has a higher max hp than the Quantis hp rating if the motor hp that is required to carry the customer's torque is lower than the High Ratio Quantis rating.



What is the difference between Straight Hollow bore and Tapered Hollow bore? (back to top)

Straight hollow bores are available in 1 or 2 bore sizes per gearcase size. The customer shaft can extend out only 1 side of the gearbox and must be machined per dimensions on pages ENG-8, 9 of the Quantis Catalog. Tapered hollow bores are used with twin tapered bushing kits to make multiple bore sizes available per gearcase size. The customer shaft can extend out one or both sides of the gearbox. Twin tapered bore sizes and dimensions for RHB can be found on RHB-199 to RHB-203 and for the MSM on MSM-171 to MSM-175 of the Quantis catalog.

Are straight bore bushings available for Quantis? (back to top)

No, bushings are not available for straight hollow bore Quantis reducers. If the required bore size is not available as a straight hollow bore, please check if it is available with the tapered hollow bore.

Is there a bushing that can be used on 140TC quill inputs to allow the use of 56C motors?

### (back to top)

Dodge previously sold a bushing that would allow this. However, due to challenges customers encountered with the bushing, we no longer have this bushing.

Can a hydraulic motor be used with a Quantis reducer? (back to top)

The Dodge Torque-Arm product line does offer these motor input adapters but the Quantis reducer line does not. If a customer contacts us with a large opportunity that requires hydraulic motor mounts, please have the FSE contact product marketing.

What is the maximum input speed for Quantis? (back to top)

The maximum mechanical input speed for all Quantis reducers is 3600 rpm. Some applications may be thermally limited at 3600 rpm input speed and should be checked against the thermal rating pages in the catalog (especially high input speeds, low ratio selections). The only exception is A4 mounted reducers are NOT recommended running at 3600 rpm due to the gearbox being full of oil, and this speed would cause thermal problems.

What is the minimum input speed for Quantis? (i.e. can I use a VFD to slow down the motor speed /reducer input speed?) (back to top)

There is no minimum input speed for Quantis if the load is within the torque rating of the reducer.



Does Quantis have integral motors or brake motors? (back to top)

Yes, Quantis offers integral motors and integral brake motor motors from 0.25 thru 10 HP. They are all 1750 RPM and at least 6:1 constant torque. Refer to pages ENG-20 to ENG-23 of the Quantis catalog for more information about the motors.

Can a standard key be used with hollow bore reducers? (back to top)

No. Most of our hollow bore reducers use a special rectangular key to accommodate the special depth of the keyway in the hollow output shaft. The customer should machine their shaft keyway per standard keyway dimensions.

What if the reducer is mounted in the field in a position different than the ordered mounting position? (back to top)

Refer to the mounting position charts in the catalog to determine the approximate difference in oil volume. The fill or drain the reducer to the correct oil level hole in the housing per the diagrams shown for each mounting position. Re-locate the breather to the proper location for the mounting position.

### How loud / noisy should a Quantis run? (back to top)

We do not have published data for the sound pressure levels but in normal applications, a Quantis reducer will run relatively quiet. A brand-new installed reducer usually goes through a short "break-in" period that may be slightly noisy but will diminish with operating time.

Are all Quantis reducers shipped with oil? (back to top)

Yes, every Quantis reducer is shipped with the proper oil volume for the mounting position specified on the order. We do, however, offer an option for the reducer to be shipped without oil if the customer prefers to use a type of oil that we do not offer.

What type of oil is in the Quantis reducer? (back to top)

The standard factory fill is Mobilgear 600 XP 220. Synthetic and food-grade lubricants are available. Please see page INTRO-19 of the Quantis catalog for optional lubricant information.

What are the differences between the B14 and B5 output flanges? (back to top)

The B14 flange is the standard flange on all BF and MW housings; it is a drilled and tapped bolt circle around the output shaft which will be on both sides of the BF housing. The B5 flange is an optional flange that bolts onto the B14 machining to provide a larger bolt circle diameter with thru-holes. Refer to page RHB-14 of the Quantis catalog to see a drawing of each flange type.

Can the B5 flange be changed in the field from one side to the other? (back to top)



Yes, the B5 flange can be changed from one side to the other; however, there might be an unpainted surface on the side the flange was initially mounted. If the unit was painted with epoxy paint, there might be an issue fitting the B5 flange onto the painted B14 pilot diameter.

Why can't the B5 output flange be used with Tapered hollow output bore? (back to top)

The B5 output flange can not be used with the tapered hollow output bore and twin tapered bushings because the bushings extend past the mounting surface of the B5 flange. This makes it impossible to reach the bushing bolts for tightening after the B5 flange has been mounted to the mating surface. We recommend using a tie rod kit or torque arm bracket instead of the flange.

What direction will the output shaft rotate if the input shaft is rotated clockwise? (back to top)

| PRODUCT | UNIT    | NUMBER OF | OUTPUT SHAFT      | OUTPUT   | INPUT SHAFT |
|---------|---------|-----------|-------------------|----------|-------------|
|         | SIZE    | REDUCTION | DIRECTION OF      | SHAFT    | ROTATION    |
|         |         | STAGES    | ROTATION LOOKING  | LOCATION | LOOKING AT  |
|         |         |           | AT THE EXPOSED    | SIDE AND | THE EXPOSED |
|         |         |           | END OF THE OUTPUT | VIEW     | END OF THE  |
|         |         |           | SHAFT             |          | INPUT SHAFT |
| ILH     | 38-88   | SINGLE    | CW                | -        | CW          |
| ILH     | 38-88   | SINGLE    | CCW               | -        | CCW         |
| ILH     | 38-168  | DOUBLE    | CW                | -        | CCW         |
| ILH     | 38-168  | DOUBLE    | CCW               | -        | CW          |
| ILH     | 38-168  | TRIPLE    | CW                | -        | CW          |
| ILH     | 38-168  | TRIPLE    | CCW               | -        | CCW         |
| MSM     | 38-168  | DOUBLE    | CW                | А        | CCW         |
| MSM     | 38-168  | DOUBLE    | CCW               | А        | CW          |
| MSM     | 38-168  | TRIPLE    | CW                | А        | CW          |
| MSM     | 38-168  | TRIPLE    | CCW               | А        | CCW         |
| RHB     | 38-88   | TRIPLE    | CW                | А        | CW          |
| RHB     | 38-88   | TRIPLE    | CCW               | А        | CCW         |
| RHB     | 38-88   | TRIPLE    | CW                | B*       | CW          |
| RHB     | 38-88   | TRIPLE    | CCW               | B*       | CCW         |
| RHB     | 108-168 | TRIPLE    | CW                | А        | CCW         |
| RHB     | 108-168 | TRIPLE    | CCW               | А        | CW          |
| RHB     | 108-168 | TRIPLE    | CW                | В        | CW          |
| RHB     | 108-168 | TRIPLE    | CCW               | В        | CCW         |

\*Does not apply to Hollow, Twin Tapered Bushing, or Double Extended shafts

Refer to pages RHB-6 to RHB-15 of the Quantis catalog to see a picture of the output shafts positions A and B.



Can a Quantis RHB output shaft be switched from A side to B side in the field? (back to top)

No, it is not recommended because attempting to switch the output shaft in a helical bevel is extremely difficult to do without damaging critical parts. Because this change is not recommended in the field, there is no instruction manual available for this procedure. It is recommended the gearbox be returned so the shaft can be corrected in the service shop.

Who can help with parts questions and quotes for replacement parts? (back to top)

PTPlace is your best resource for finding information about quotes or you can contact inside sales at (864) 297 – 4800. Technical questions can be answer by Application engineering at (864) 297 – 5700.

What are the differences between the Q-Loc and European shrink disks? (back to top)

European shrink disks only come in one metric bore size per reducer size. Q-Loc offers multiple bore sizes per reducer size. Q-Loc has more flexible mounting arrangement (can change A side to B side in the field). Q-Loc can be used with commercial-grade shafting.

Do we offer special ratios for Quantis reducers that are not listed in the catalog? (back to top)

Quantis already has a very large listing of available ratios and due to the motor slip characteristics and the use of Variable Frequency Drives, ratios between what we offer are normally not needed. However, if a customer has a high enough volume need for special ratios, please have the local Dodge FSE put together the information and pass it on to the Quantis Product Marketing personnel.

Does Quantis offer riser blocks? (back to top)

Quantis does not offer riser blocks.

Is there a Scoop Mount or Top Mount option for Quantis? (back to top)

Yes, Quantis offers scoop mounts for ILH reducer sizes 88, 108, and 128. The Dodge Maxum product line also offers these motor mount options.

A Distributor or Customer wants to know the dimensions of our seals. Can we provide them?

#### (back to top)

Not typically if the seals are in stock. Our seals are made to our specific requirements in terms of greases, materials, and dimensions to optimize the sealing performance in the reducer. Off-the-shelf seals will not likely provide the same performance.

Does Quantis have self-locking gears? (back to top)

No, Quantis is not self-locking. The gears are all helical bevels and are completely backdrivable.



What is a slide base? (back to top)

A slide base is a small support structure used to mount ILH reducers so they can be easily moved during installation. It is normally done to allow adjustment of belt or chain tension when mounted on the input or output shaft. See page ILH-217 of the Quantis catalog for more information.

Why don't we have slide bases for RHB reducers? (back to top)

There has not been a demand for the RHB slide base, so they were not designed. If a customer has a high volume need for slide bases, please have the local Dodge salesperson put together the information and pass it on to Quantis product marketing.

Can Quantis be used as a speed increaser? (i.e. is Quantis back drivable?) (back to top)

Yes, Quantis can be used as a speed-up drive if the high-speed shaft does not exceed 3600 rpm. Since Quantis is made with all helical and bevel gearing it is completely back drivable (i.e. it can be driven from the low-speed shaft).

How hot should a Quantis reducer run? (back to top)

Typical rule of thumb is to expect the Quantis reducer temperature to rise about 50 to 100 deg F above ambient temperature. If skin temperature exceeds 200 deg F please contact Application Engineering.

When should a Tie Rod kit be used? (back to top)

Tie Rod kits should be used with hollow bore reducers.

What are the differences between the Torque Arm Bracket ("K") and the tie rod kit ("KR") options for RHB reducers? (back to top)

The Torque Arm Bracket "K" option includes only a bracket that mounts onto the reducer (refer to Quantis catalog pages ACC-1 and ENG-16). The customer will need to provide the torque arm and mounting bracket to attach the unit to the structure.

The Tie Rod Kit "KR" option provides the complete torque arm assembly including the bracket that attaches to the reducer, the torque arm, the mounting bracket that attaches to the customer's structure, and all required hardware (refer to Quantis catalog pages ACC-2 and ENG-17). The bracket and parts are NOT interchangeable between the two kits.

Why can't the torque arm bracket ("K") or tie rod kit ("KR") be used on BB style housings? (back to top)



The bracket and tie rod kit are designed to mount onto the tapped holes that only exist in the bottom of the BF style housing. The BB style housing foot holes will not match up with the holes in the torque arm bracket or tie rod kit.

What type of Torque-Arm feature is offered for MSM reducers? (back to top)

MSM reducers offer a torque arm bushing ("B") which can be installed into the cast-in lifting hole in the MSM housing. The customer will have to supply their own pin connection and tie rod or angle bracket to constrain the reducer. See page ACC-5 of the Quantis catalog for dimensions.

### Does Quantis offer a washdown package? (back to top)

Yes, Quantis offers the EZ Kleen package for washdown applications. See page INTRO-7 of the Quantis catalog for details of the washdown features. Quantis also offers a stainless-steel reducer for the washdown food and beverage applications. See page INTRO-8 of the Quantis catalog for details.

Why are Quantis E-Z Kleen and Ultra Kleen reducers not available with a Separate input?

### (back to top)

The input seal on Quantis reducers is not available in a Harsh Duty design and the input shaft is not made from a corrosion-resistant material.