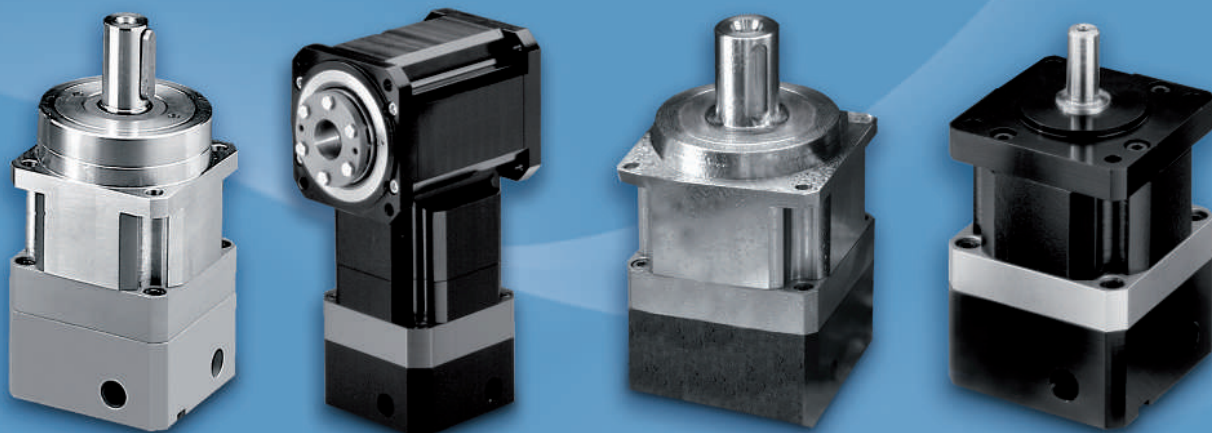




MICRON

TRUE Planetary™ Gearheads



Helping you build a better machine, faster.



*Helping you build a better machine, **faster.***

Danaher Motion - Helping you build a better machine, faster

Danaher Corporation combined over 30 industry-leading brands such as Kollmorgen, Thomson, Dover, Pacific Scientific, Portescap, Neff, Seidel and Bautz to establish a customer-focused motion control manufacturing company called Danaher Motion. We offer this powerful set of integrated motion control technologies under the Danaher Motion and Thomson brand names. We are a \$1B+ global motion control leader, unique in our ability to marshal decades of application experience and technical innovation to help you build better machines, faster.

Danaher Motion defines high standards of quality, innovation and technology. We enable improved machine performance and reliability while controlling costs. Our global manufacturing footprint, rapid customization and prototyping capabilities drive quick lead times. Unmatched application experience and design expertise empowers you to commission machines faster.

Consider your options in today's market for a motion control partner. Select Danaher Motion and join a team with 6100 employees, over 60 years of application experience and 2000+ distributor locations around the globe. Danaher Motion serves industries as diverse as semiconductor, aerospace and defense, electric vehicle systems, packaging, printing, medical and robotics. We offer an unparalleled depth and breadth of motion control product solutions through a worldwide service and support infrastructure, field service engineers and support teams available when and where you need them.

The Danaher Business System - Building sustainable competitive advantage into your business

The Danaher Business System (DBS) was established to increase the value we bring to customers. It is a mature and successful set of tools we use daily to continually improve manufacturing operations and product development processes. DBS is based on the principles of Kaizen which continuously and aggressively eliminate waste in every aspect of our business. DBS focuses the entire organization on achieving breakthrough results that create competitive advantages in quality, delivery and performance – advantages that are passed on to you. Through these advantages Danaher Motion is able to provide you faster times to market as well as unsurpassed product selection, service, reliability and productivity.

Local Support Around the Globe



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Micron True Planetary™ Gearheads
shipped within 24 hours!



Need it fast? Go to the back cover
of the catalog for details.

XTRUE™

Features

- Precision: 13 arc-minutes
- Frame Sizes: 40, 60, 80, 120 and 160mm
- Torque Capacity: up to 876 Nm

- Ratio Availability: 3:1 thru 100:1
- Radial Load Capacity: up to 2300 N
- Mounting System: RediMount™



NemaTRUE™

Features

- Precision: 13 arc-minutes
- Frame Sizes: 60, 90 and 115mm
- Torque Capacity: up to 180 Nm

- Ratio Availability: 3:1 thru 100:1
- Radial Load Capacity: up to 3730 N
- Mounting System: RediMount™



NemaTRUE 90™ Right Angle

Features

- Precision: 13 arc-minutes
- Frame Sizes: 23, 34 and 42mm
- Torque Capacity: up to 255 Nm

- Ratio Availability: 1:1 thru 500:1
- Radial Load Capacity: up to 2900 N
- Mounting System: RediMount™



DuraTRUE™

Features

- Precision: 8 arc-minutes
- Frame Sizes: 60, 90, 115 and 142mm
- Torque Capacity: up to 834 Nm

- Ratio Availability: 3:1 thru 100:1
- Radial Load Capacity: up to 11150 N
- Mounting System: RediMount™



DuraTRUE 90™ Right Angle

Features

- Precision: 8 arc-minutes
- Frame Sizes: 60, 90, 115 and 142mm
- Torque Capacity: up to 842 Nm

- Ratio Availability: 1:1 thru 500:1
- Radial Load Capacity: up to 11150 N
- Mounting System: RediMount™



DuraTRUE 90™ Hollow Shaft

Features

- Precision: 8 arc-minutes
- Frame Sizes: 90, 115 and 142mm
- Torque Capacity: up to 865 Nm

- Ratio Availability: 1:1 thru 500:1
- Radial Load Capacity: up to 11150 N
- Mounting System: RediMount™



DuraTRUE 90™ Dual Shaft

Features

- Precision: 8 arc-minutes
- Frame Sizes: 60, 90, 115 and 142mm
- Torque Capacity: up to 865 Nm

- Ratio Availability: 1:1 thru 500:1
- Radial Load Capacity: up to 11150 N
- Mounting System: RediMount™



ValueTRUE™**Features**

- Precision: 4 arc-minutes
- Frame Sizes: 60, 75, 90, 100, 115, 140, 180 and 220mm
- Torque Capacity: up to 2969 Nm

- Ratio Availability: 4:1 thru 100:1
- Radial Load Capacity: up to 37910N
- Mounting System: RediMount™

**ValueTRUE 90™**
Right Angle**Features**

- Precision: 4 arc-minutes
- Frame Sizes: 60, 75, 90, 100, 115, 140 and 180mm
- Torque Capacity: up to 2800 Nm

- Ratio Availability: 1:1 thru 50:1
- Radial Load Capacity: up to 37910N
- Mounting System: RediMount™

**UltraTRUE™****Features**

- Precision: 4 arc-minutes
- Frame Sizes: 60, 75, 90, 100, 115, 140, 180 and 220mm
- Torque Capacity: up to 3,300 Nm

- Ratio Availability: 4:1 thru 100:1
- Radial Load Capacity: up to 37910N
- Mounting System: RediMount™

**UltraTRUE 90™**
Right Angle**Features**

- Precision: 4 arc-minutes
- Frame Sizes: 60, 75, 90, 100, 115, 140 and 180mm
- Torque Capacity: up to 3,111 Nm

- Ratio Availability: 1:1 thru 50:1
- Radial Load Capacity: up to 37910N
- Mounting System: RediMount™

**EverTRUE™**
Continuous
Duty**Features**

- Precision: 4 arc-minutes
- Frame Sizes: 100, 140 and 180mm
- Torque Capacity: up to 1,010 Nm

- Ratio Availability: 4:1 thru 100:1
- Radial Load Capacity: up to 44600N
- Mounting System: RediMount™

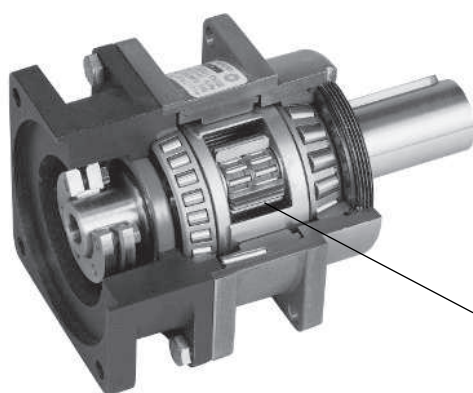


True Planetary™ Gearheads offer...

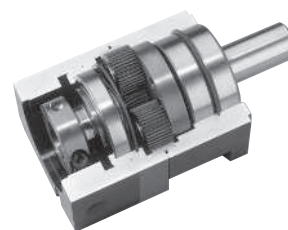
- High Torque to Size Ratio - allows compact design
- Low Backlash - eliminates positioning errors due to lost motion
- Inertia Matching - keeps servo system stable and in control
- High Rigidity - optimizes system response
- Self Re-lubrication - eliminates costly maintenance and downtime
- High Radial Load Capacity - mount pulleys and pinions directly on the output shaft



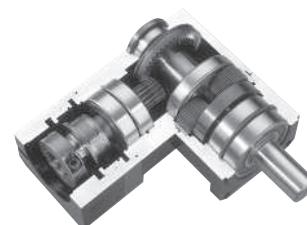
UltraTRUE™ output cage assembly



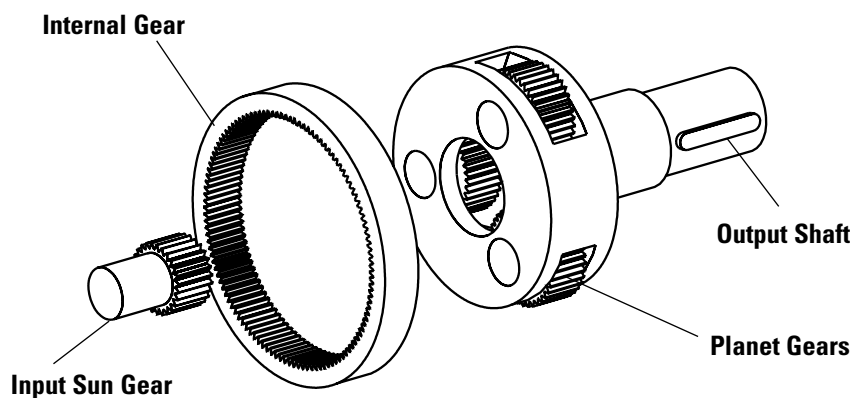
Planetary Gearing



DuraTRUE™ in-line planetary gearhead



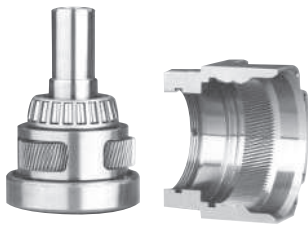
DuraTRUE 90™ right angle planetary gearhead



Gearhead	True Planetary gearing
XTRUE™	•
NemaTRUE™	•
NemaTRUE 90™	•
DuraTRUE™	•
DuraTRUE 90™	•
UltraTRUE™	•
UltraTRUE 90™	•
ValueTRUE™	•
ValueTRUE 90™	•
EverTRUE™	•

Helical Crowned True Planetary™ Gearing offers...

- High Torque Capacity
- Low Backlash
- Smooth Operation
- Greater Load Sharing
- Whisper Quiet



Output housing and helical internal gear are machined from a single piece of high strength steel



UltraTRUE™ in-line planetary gearhead



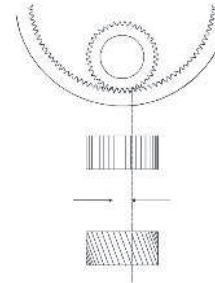
UltraTRUE 90™ right angle planetary gearhead

Helical gears are known for their quiet and smooth operation along with their ability to transmit higher loads than spur gears. Both of these features of helical gearing result from the improved contact ratio (effective teeth in mesh) over spur gears. Crowning is a modification to the gear tooth profile which optimizes gear mesh alignment. It also enhances distribution of loading on the tooth flank, thereby reducing high stress regions which can result in surface pitting.

Planetary gearheads are often selected for high precision motion control applications which require a high torque to volume ratio, high torsional stiffness and low backlash. Until now, these attributes have been sufficient to meet the requirements of the market. Danaher Motion has designed a high torque, whisper quiet helical gearhead to meet the recent improvements in servo motor technology.

Danaher Motion engineers accomplished this by combining the positive attributes of gear crowning and helical gearing with the planetary construction to create the smoothest operating gearhead on the market.

Spur vs. Helical Gearing

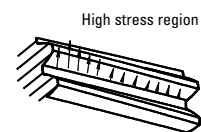


Typical contact ratio is 1.5 for spur gearing.

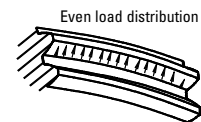
Contact ratio for equivalent helical gear is 3.3...more than double the contact ratio.

The Contact ratio is defined as the number of teeth in mesh at any given time. The higher the contact ratio, the higher the torque rating of the gearing. **Helical gearing has more than 2X the contact ratio of spur gearing.**

Crowned vs. Non-crowned



Non-Crowned



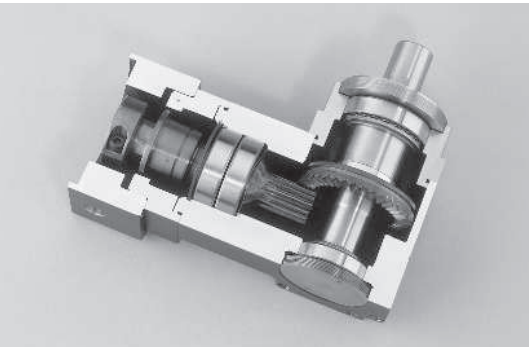
Crowned

Crowning optimizes the gear mesh alignment within a gear train to increase the torque capacity and reduce noise. It also enhances load distribution on the tooth flank to reduce high stress regions.

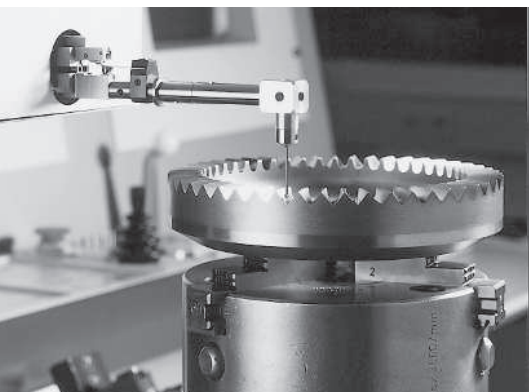
Gearhead	Helical Crowned True Planetary gearing
XTRUE™	
NemaTRUE™	
NemaTRUE 90™	
DuraTRUE™	
DuraTRUE 90™	
UltraTRUE™	•
UltraTRUE 90™	•
ValueTRUE™	•
ValueTRUE 90™	•
EverTRUE™	

PowerTRUE™ Right Angle Gearheads offer...

- Lower backlash accomplished through single axis mesh adjustment
- A compact right angle design utilizing a high-tech face gear
- Whisper quiet operation due to high contact ratio
- Mesh ratios from 1:1 to 5:1
- 98% efficiency



PowerTRUE™ Gear



Computerized mapping of gear tooth profile



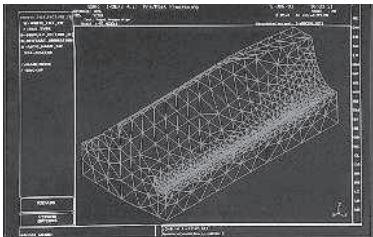
CNC Machining of a PowerTRUE™ right angle gear

PowerTRUE™ right angle gearset



Right angle gear meshes are typically limited to ratios from 1:1 to 3:1 when using standard bevel gears. Compared to these designs, the PowerTRUE 90 gear increases the ratio range to 5:1.

The key to higher torque density is a unique tooth design, created by complex machining made practical with advanced CNC equipment and software. In the design, multiple teeth in the face gear simultaneously mesh with a standard involute pinion. The continuous tooth engagement yields a high contact ratio between the gear and the pinion, boosting torques to new levels and efficiency to 98%.



Advanced software enables stress analysis of PowerTRUE tooth profile

Gearhead	PowerTRUE gearing
XTRUE™	
NemaTRUE™	
NemaTRUE 90™	•
DuraTRUE™	
DuraTRUE 90™	•
UltraTRUE™	
UltraTRUE 90™	•
ValueTRUE™	
ValueTRUE 90™	•
EverTRUE™	

RediMount™ Motor Mounting System

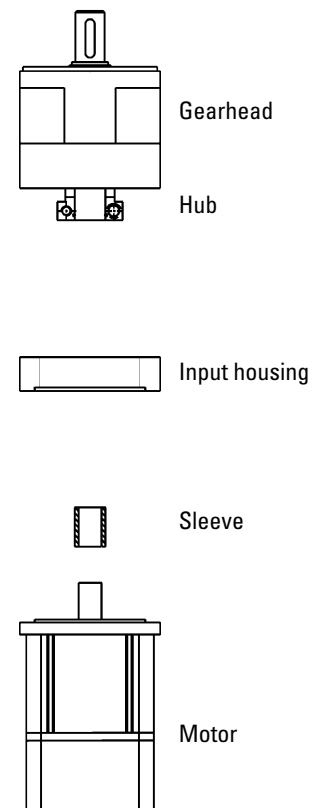
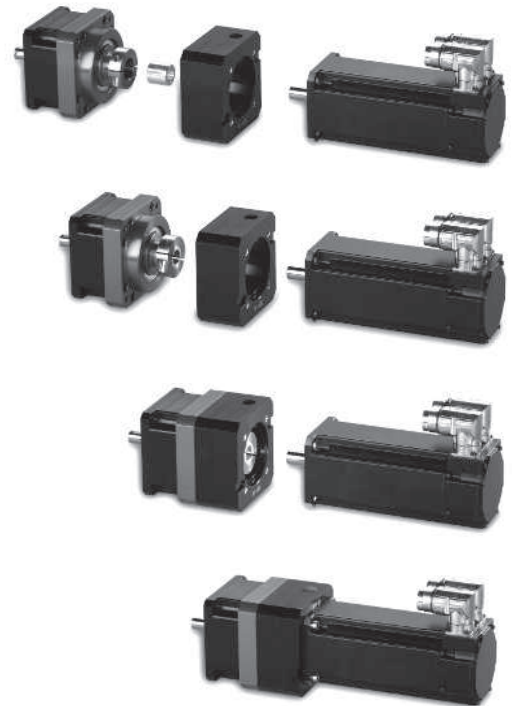
Mounting Instructions

1. Slide the provided sleeve into the hub and align the slot in the bushing with the slot in the hub.
2. Set the motor on a work surface or hold fixture with the output shaft facing straight up. If there is a key on the motor, remove it and align the keyway with the slot in the hub. Slide the gearhead down onto the motor shaft.
3. Rotate the hub to align the input housing access holes with the hub clamping bolts.
4. Using a torque wrench tighten the hub bolts to the pre-torque value indicated in the table.
5. Bolt the motor to the gearhead with the bolts provided.
6. Gradually tighten the hub bolts in three steps, increasing the torque each time until reaching the final tightening torque in the table.

Hub Bolt Tightening Torques

Gearhead Model	Gearhead Frame Size	Pre-Tightening Torque		Final Tightening Torque	
		in-lb	[Nm]	in-lb	[Nm]
XTRUE™	40	0.5	0,05	9.6	1,09
	60	2	0,2	39	4,4
	80	4	0,4	76	8,5
	120	16	1,8	316	36,0
	160	32	3,6	636	72,0
NemaTRUE™ NemaTRUE 90™	23/60	2	0,2	39	4,4
	34/90	4	0,4	76	8,5
	42/115	16	1,8	316	36,0
DuraTRUE™ DuraTRUE 90™	60	2	0,2	39	4,4
	90	4	0,4	76	8,5
	115	16	1,8	316	36,0
	142	32	3,6	636	72,0
UltraTRUE™ UltraTRUE 90™ ValueTRUE™ ValueTRUE90™ EverTRUE™	60	2	0,2	39	4,4
	75/90	4	0,4	76	8,5
	100/115	16	1,8	316	36,0
	140	32	3,6	636	72,0
	180	55	6,3	1104	125,0

Gearhead must be mounted in vertical orientation.

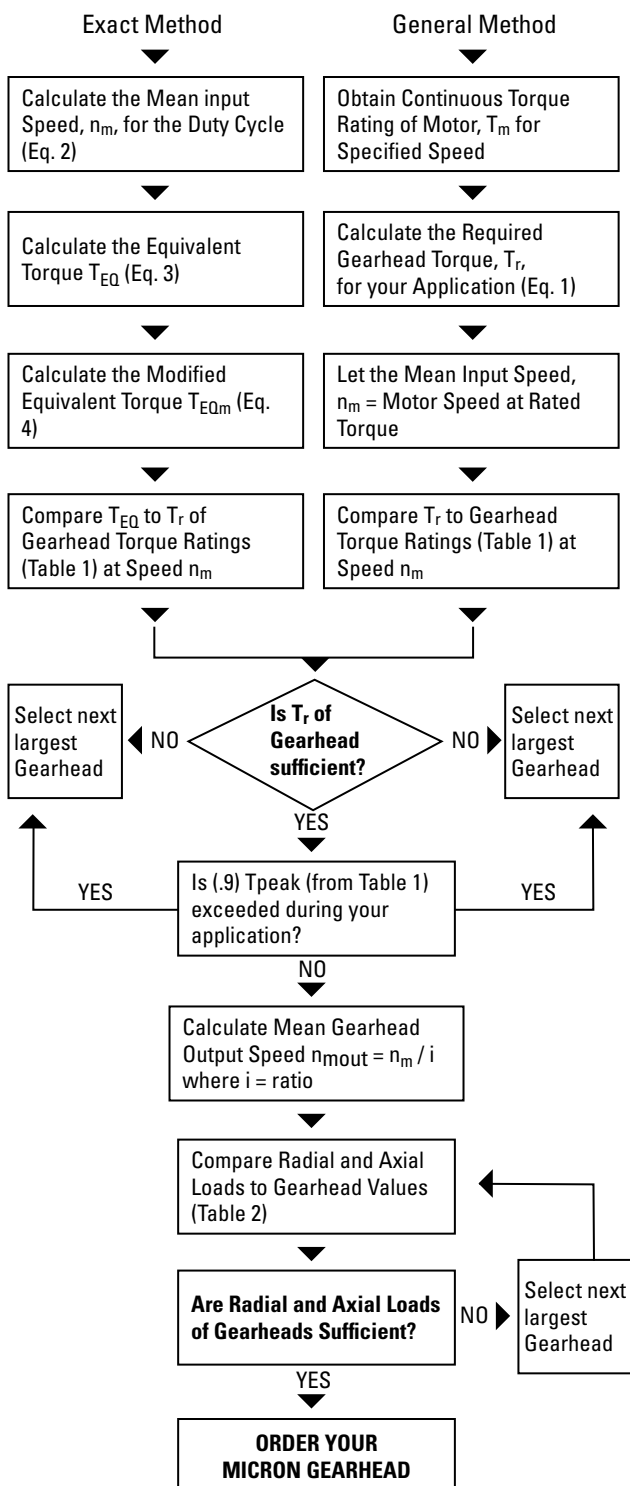


Gearhead Selection

Step 1: Select the required precision class and gearhead configuration (in-line or right angle).

Step 2: Select the proper gearhead using exact or general method.

For continuous duty applications, please contact Applications Engineering.



General Method:

Required Gearhead Torque(T_r)

$$(1) T_r = T_M * i * e$$

where:

T_M = continuous torque of motor

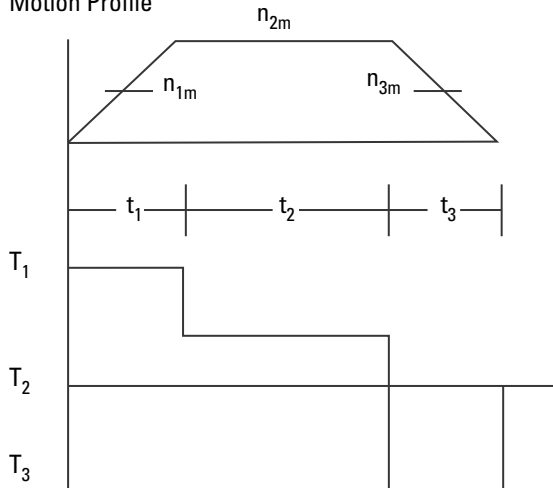
i = Gearhead ratio

e = efficiency of Gearhead

* Since many motors are capable of exceeding their continuous torque rating for extended lengths of time, the value for T_M will only provide a starting point for Gearhead selection. Only use the general method if the continuous motor rating is not exceeded in the application.

Exact Method

Motion Profile



t_n = time period n

n_{nm} = mean speed during time period t_n

T_n = torque during time period t_n

Mean input speed (n_m)

$$(2) n_m = \frac{n_{1m}t_1 + n_{2m}t_2 + n_{3m}t_3 + \dots + n_{nm}t_n}{t_t}$$

where $t_t = t_1 + t_2 + t_3 + \dots + t_n$

Equivalent torque (T_{EQ})

$$(3) T_{EQ} = \sqrt[8.7]{\frac{T_1^{8.7} n_{1m} t_1}{n_m t_t} + \frac{T_2^{8.7} n_{2m} t_2}{n_m t_t} + \frac{T_3^{8.7} n_{3m} t_3}{n_m t_t} + \dots + \frac{T_n^{8.7} n_{nm} t_n}{n_m t_t}}$$

Modified equivalent torque (T_{EQm})

$$(4) T_{EQm} = (T_{EQ})/Q$$

where Q is:

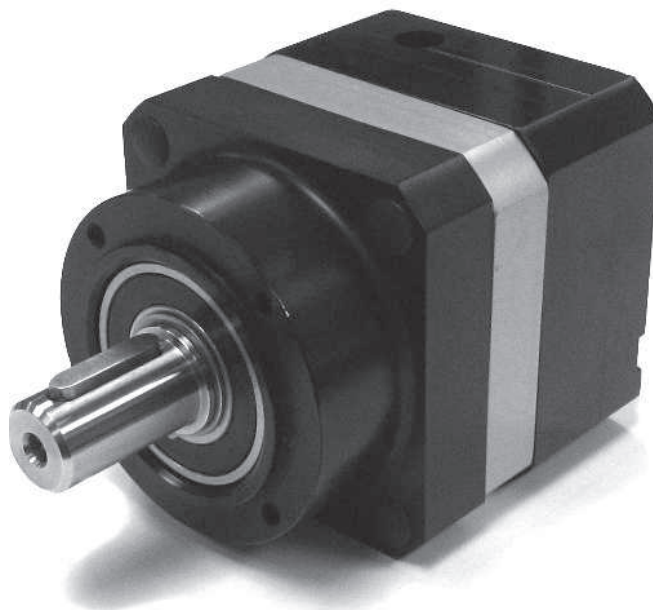
Q	# of cycles/hr
1,0	>0
0,9	>1000
0,7	>2500
0,5	>5000

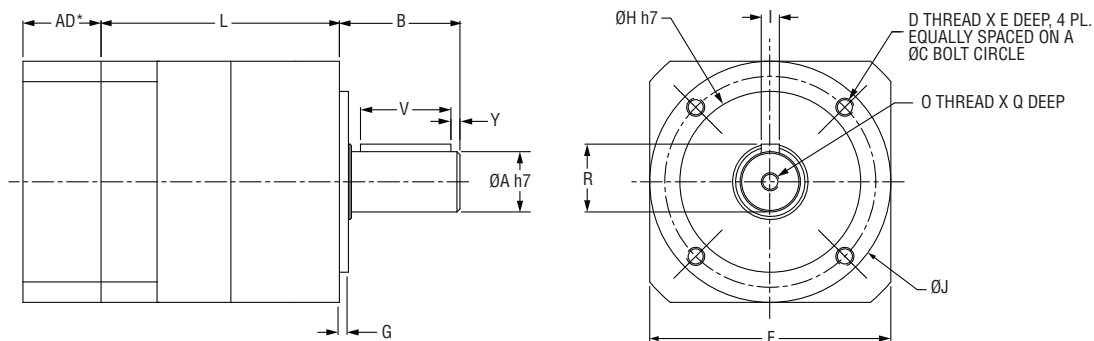
For > 10,000 cycles/hr please contact application engineering.

XTRUE™**True Planetary™ Gearheads**

Ready for Immediate Delivery	
Precision	13 arc-minutes
Frame Sizes	40mm, 60mm, 80mm, 120mm and 160mm
Torque Capacity	up to 876 Nm
Ratio Availability	3:1 thru 100:1
Radial load capacity	up to 2300 N
Mounting System	RediMount™

- True planetary gearing for improved load capacity, lower backlash and quieter operation.
- Flexible mounting system: RediMount™ system mounts to any motor in 3 easy steps; align, mount and tighten.
- Tapped face output interface
- Cost effective, reliable gear reduction
- Assembly and all components meet EU Directive 2002/95/EC (RoHS)





*AD = Adapter Length
Adapter Length will vary depending on motor. Consult customer service for details.

Dimensions

Part Number	A Output Shaft Diameter mm [in]	B Output Shaft Length mm [in]	Y Shaft End Distance mm [in]	V Key Length mm [in]	R Key Height mm [in]	I Key Width mm [in]	H Pilot Diameter mm [in]	J Body Diameter mm [in]	G Pilot Length mm [in]
XT040	10 [0.39]	26 [1.02]	2.5 [0.10]	18 [0.71]	11.2 [0.44]	3 [0.12]	26 [1.02]	40 [1.57]	2 [0.08]
XT060	14 [0.55]	35 [1.37]	2.5 [0.10]	25 [0.98]	16 [0.63]	5 [0.20]	40 [1.57]	60 [2.36]	3 [0.12]
XT080	20 [0.79]	40 [1.57]	4.0 [0.16]	28 [1.10]	22.5 [0.89]	6 [0.24]	60 [2.36]	80 [3.15]	3 [0.12]
XT120	25 [0.98]	55 [2.16]	5.0 [0.20]	40 [1.57]	28 [1.10]	8 [0.31]	80 [3.15]	115 [4.53]	4 [0.16]
XT160	40 [1.57]	87 [3.42]	8.0 [0.32]	65 [2.55]	43 [1.69]	12 [0.47]	130 [5.12]	160 [6.30]	5 [0.20]

Dimensions

Part Number	D Thread	E Thread Depth mm [in]	O Output Shaft Thread	Q Thread Depth mm [in]	F Flange Square mm [in]	L Length mm [in]		C Bolt Circle mm [in]
						3:1 - 10:1	15:1 - 100:1	
XT040	M4	6 [0.24]	M3	9 [0.35]	42 [1.65]	36.5 [1.43]	49.5 [1.94]	34 [1.34]
XT060	M5	8 [0.31]	M5	12 [0.47]	61 [2.40]	51 [2.00]	68 [2.67]	52 [2.05]
XT080	M6	10 [0.39]	M6	16 [0.63]	90 [3.54]	67 [2.64]	90 [3.54]	70 [2.76]
XT120	M10	16 [0.63]	M10	22 [0.87]	119 [4.53]	87.3 [3.44]	179 [4.67]	100 [3.94]
XT160	M12	20 [0.79]	M16	36 [1.42]	142 [5.59]	119.6 [4.71]	168.9 [6.65]	145 [5.71]

Specifications

Part Number	Stages	Backlash (arc-min)	Efficiency	Weight		Ratio Availability
				kg	[lbs]	
XT040	1	13	93%	0.45	[1.0]	3:1, 5:1, 10:1 15:1; 25:1, 30:1, 50:1, 100:1
	2	15	88%	0.5	[1.1]	
XT060	1	13	93%	1.0	[2.2]	3:1, 4:1, 5:1, 7:1; 10:1 15:1, 20:1, 25:1, 30:1, 40:1, 50:1; 70:1; 100:1
	2	15	88%	1.2	[2.6]	
XT080	1	13	93%	3.0	[6.6]	3:1, 4:1, 5:1, 7:1; 8:1; 10:1 15:1, 20:1, 25:1, 30:1, 40:1, 50:1; 70:1; 80:1; 100:1
	2	15	88%	3.7	[8.1]	
XT120	1	13	93%	5.7	[12.5]	3:1, 4:1, 5:1, 7:1; 10:1 15:1, 20:1, 25:1, 30:1, 40:1, 50:1; 70:1; 100:1
	2	15	88%	7.3	[16.1]	
XT160	1	13	93%	12.8	[28.2]	3:1, 4:1, 5:1, 7:1; 10:1 15:1, 20:1, 25:1, 30:1, 40:1, 50:1; 70:1; 100:1
	2	15	88%	17.2	[37.8]	

¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

XTRUETM**True Planetary™ Gearheads****Performance Specifications**

	Part Number	Ratio	20,000 Hour Life				T _{peak} Nm [in-lb]	J kg-cm ² [in-lb-sec ² *10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
			T _r (1000 rpm) Nm [in-lb]	T _r (2000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (4000 rpm) Nm [in-lb]			
XT040	XT040-003	3:1	5.2 [46]	4.2 [37]	3.7 [33]	3.4 [30]	15.6 [138]	0.013 [0.12]	0.7 [6.2]
	XT040-005	5:1	6.1 [54]	5.3 [47]	3.6 [32]	4.3 [38]	18.3 [162]	0.005 [0.04]	0.7 [6.2]
	XT040-010	10:1	5.8 [51]	4.6 [41]	4.1 [36]	3.7 [33]	17.2 [152]	0.003 [0.03]	0.7 [6.2]
	XT040-015	15:1	8.4 [74]	6.8 [60]	6.0 [53]	5.5 [49]	25.2 [223]	0.004 [0.04]	0.7 [6.2]
	XT040-025	25:1	9.3 [82]	7.6 [67]	6.7 [59]	6.1 [54]	27.8 [246]	0.004 [0.04]	0.7 [6.2]
	XT040-030	30:1	9.5 [84]	8.4 [74]	7.5 [66]	6.8 [60]	28.6 [253]	0.003 [0.03]	0.7 [6.2]
	XT040-050	50:1	11.3 [100]	9.3 [82]	8.2 [73]	7.6 [67]	33.8 [299]	0.003 [0.03]	0.7 [6.2]
XT060	XT040-100	100:1	8.1 [72]	7.5 [66]	7.1 [63]	6.9 [61]	24.4 [216]	0.003 [0.03]	0.7 [6.2]
	XT060-003	3:1	16 [139]	13 [112]	12 [102]	11 [93]	55 [483]	0.52 [4.6]	1.8 [15.9]
	XT060-004	4:1	20 [177]	17 [149]	15 [130]	14 [121]	46 [409]	0.46 [4.1]	1.8 [15.9]
	XT060-005	5:1	18 [158]	15 [130]	13 [112]	12 [102]	48 [427]	0.46 [4.1]	1.8 [15.9]
	XT060-007	7:1	17 [149]	14 [121]	12 [102]	11 [93]	43 [381]	0.46 [4.1]	1.8 [15.9]
	XT060-010	10:1	16 [139]	15 [130]	14 [121]	13 [112]	47 [418]	0.44 [3.9]	1.8 [15.9]
	XT060-015	15:1	26 [232]	21 [186]	19 [167]	17 [149]	55 [483]	0.46 [4.1]	1.8 [15.9]
	XT060-020	20:1	27 [242]	25 [223]	22 [195]	21 [186]	48 [427]	0.46 [4.1]	1.8 [15.9]
	XT060-025	25:1	25 [223]	23 [204]	20 [177]	19 [167]	55 [483]	0.46 [4.1]	1.8 [15.9]
	XT060-030	30:1	29 [260]	26 [232]	23 [204]	21 [186]	55 [483]	0.46 [4.1]	1.8 [15.9]
	XT060-040	40:1	28 [251]	27 [242]	27 [242]	25 [223]	48 [427]	0.44 [3.9]	1.8 [15.9]
	XT060-050	50:1	26 [232]	25 [223]	25 [223]	23 [204]	55 [483]	0.44 [3.9]	1.8 [15.9]
	XT060-070	70:1	25 [223]	24 [214]	24 [214]	22 [195]	48 [427]	0.44 [3.9]	1.8 [15.9]
	XT060-100	100:1	21 [186]	20 [177]	19 [167]	18 [158]	43 [381]	0.44 [3.9]	1.8 [15.9]
XT080	XT080-003	3:1	59 [520]	48 [427]	43 [381]	39 [344]	165 [1459]	2.2 [19.5]	5.4 [47.8]
	XT080-004	4:1	70 [623]	58 [511]	53 [465]	48 [427]	165 [1459]	1.8 [15.9]	5.4 [47.8]
	XT080-005	5:1	65 [576]	53 [465]	47 [418]	43 [381]	165 [1459]	1.8 [15.9]	5.4 [47.8]
	XT080-007	7:1	63 [558]	50 [446]	45 [400]	40 [353]	165 [1459]	1.7 [15.0]	5.4 [47.8]
	XT080-008	8:1	62 [549]	49 [434]	45 [398]	42 [372]	165 [1460]	1.6 [14.2]	5.4 [47.8]
	XT080-010	10:1	54 [474]	48 [427]	45 [400]	43 [381]	165 [1459]	1.8 [15.9]	5.4 [47.8]
	XT080-015	15:1	90 [799]	78 [688]	69 [613]	63 [558]	175 [1552]	1.8 [15.9]	5.4 [47.8]
	XT080-020	20:1	92 [818]	88 [781]	81 [716]	75 [660]	175 [1552]	1.5 [13.3]	5.4 [47.8]
	XT080-025	25:1	87 [771]	83 [734]	76 [669]	69 [613]	175 [1552]	1.7 [15.0]	5.4 [47.8]
	XT080-030	30:1	100 [883]	90 [799]	85 [753]	78 [688]	175 [1552]	1.7 [15.0]	5.4 [47.8]
	XT080-040	40:1	96 [846]	92 [818]	90 [799]	88 [781]	175 [1552]	1.6 [14.2]	5.4 [47.8]
	XT080-050	50:1	90 [799]	87 [771]	85 [753]	83 [734]	175 [1552]	1.6 [14.2]	5.4 [47.8]
	XT080-070	70:1	88 [781]	85 [753]	83 [734]	82 [725]	175 [1552]	1.6 [14.2]	5.4 [47.8]
	XT080-080	80:1	84 [743]	80 [708]	78 [690]	74 [655]	175 [1549]	1.6 [14.2]	5.4 [47.8]
	XT080-100	100:1	72 [641]	67 [595]	63 [558]	61 [539]	175 [1552]	1.6 [14.2]	5.4 [47.8]

¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

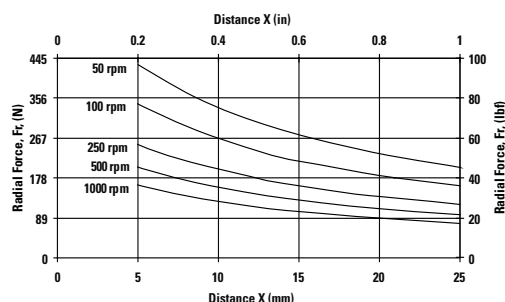
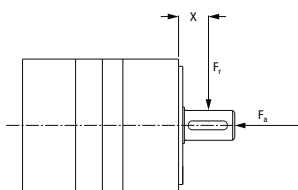
Performance Specifications									
Part Number		Ratio	20,000 Hour Life				Tpeak Nm [in-lb]	J kg-cm ² [in-lb-sec ² *10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
			T _r (1000 rpm) Nm [in-lb]	T _r (2000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (4000 rpm) Nm [in-lb]			
XT120	XT120-003	3:1	90 [799]	74 [650]	65 [576]	59 [520]	298 [2639]	4.4 [39]	17.4 [154.0]
	XT120-004	4:1	107 [948]	89 [790]	79 [697]	74 [650]	298 [2639]	3 [27]	17.4 [154.0]
	XT120-005	5:1	99 [873]	81 [716]	71 [632]	65 [576]	298 [2639]	2.9 [26]	17.4 [154.0]
	XT120-007	7:1	97 [855]	79 [697]	68 [604]	63 [558]	298 [2639]	2.8 [25]	17.4 [154.0]
	XT120-010	10:1	87 [771]	79 [697]	74 [650]	69 [613]	298 [2639]	2.5 [22]	17.4 [154.0]
	XT120-015	15:1	146 [1292]	119 [1050]	105 [929]	96 [846]	298 [2639]	2.9 [26]	17.4 [154.0]
	XT120-020	20:1	169 [1496]	139 [1227]	124 [1097]	114 [1013]	298 [2639]	2.9 [26]	17.4 [154.0]
	XT120-025	25:1	161 [1422]	130 [1152]	116 [1022]	106 [939]	298 [2639]	2.9 [26]	17.4 [154.0]
	XT120-030	30:1	180 [1589]	146 [1292]	129 [1143]	119 [1050]	298 [2639]	2.5 [22]	17.4 [154.0]
	XT120-040	40:1	187 [1654]	169 [1496]	150 [1329]	139 [1227]	298 [2639]	2.5 [22]	17.4 [154.0]
	XT120-050	50:1	179 [1580]	161 [1422]	142 [1254]	130 [1152]	298 [2639]	2.5 [22]	17.4 [154.0]
	XT120-070	70:1	176 [1561]	159 [1403]	140 [1236]	128 [1134]	298 [2639]	2.5 [22]	17.4 [154.0]
XT120-100	100:1	120 [1059]	109 [966]	104 [920]	100 [883]	298 [2639]	2.5 [22]	17.4 [154.0]	
XT160	XT160-003	3:1	317 [2806]	257 [2277]	228 [2016]	209 [1849]	876 [7750]	23 [204]	50.5 [446.9]
	XT160-004	4:1	371 [3280]	305 [2695]	272 [2407]	251 [2221]	876 [7750]	15 [133]	50.5 [446.9]
	XT160-005	5:1	350 [3094]	284 [2509]	251 [2221]	230 [2035]	876 [7750]	14 [124]	50.5 [446.9]
	XT160-007	7:1	344 [3048]	278 [2463]	246 [2174]	225 [1989]	876 [7750]	15 [133]	50.5 [446.9]
	XT160-010	10:1	222 [1961]	198 [1756]	185 [1635]	175 [1552]	876 [7750]	12 [106]	50.5 [446.9]
	XT160-015	15:1	508 [4498]	417 [3689]	370 [3271]	339 [3001]	876 [7750]	15 [133]	50.5 [446.9]
	XT160-020	20:1	513 [4544]	481 [4256]	428 [3791]	395 [3494]	876 [7750]	15 [133]	50.5 [446.9]
	XT160-025	25:1	492 [4358]	460 [4070]	407 [3605]	374 [3308]	876 [7750]	15 [133]	50.5 [446.9]
	XT160-030	30:1	562 [4971]	508 [4498]	455 [4024]	417 [3689]	876 [7750]	12 [106]	50.5 [446.9]
	XT160-040	40:1	536 [4739]	513 [4544]	500 [4423]	481 [4256]	876 [7750]	13 [115]	50.5 [446.9]
	XT160-050	50:1	515 [4553]	492 [4358]	479 [4237]	460 [4070]	876 [7750]	12 [106]	50.5 [446.9]
	XT160-070	70:1	509 [4507]	487 [4312]	474 [4191]	455 [4024]	876 [7750]	12 [106]	50.5 [446.9]
XT160-100	100:1	306 [2704]	279 [2472]	265 [2342]	254 [2249]	876 [7750]	12 [106]	50.5 [446.9]	

¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

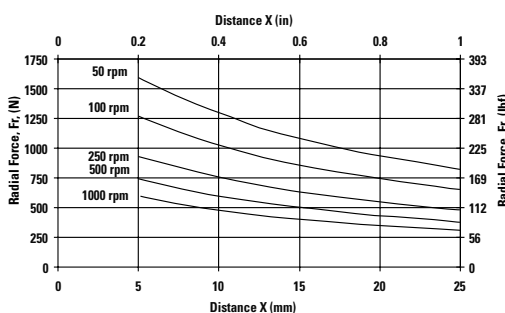
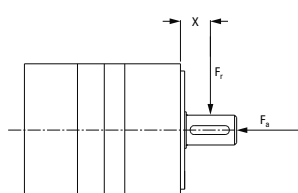
Radial and Axial Load Ratings

XT040



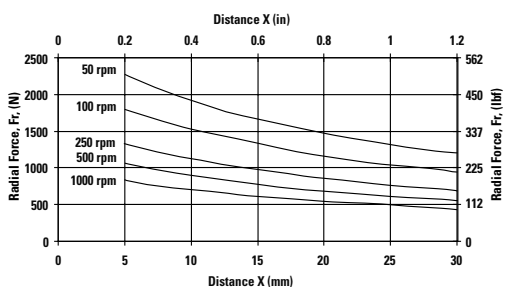
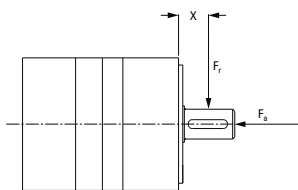
Speed rpm	Axial Load, F_a N [lbf]
50	737 [166]
100	585 [132]
250	431 [97]
500	342 [77]
1000	272 [61]

XT060



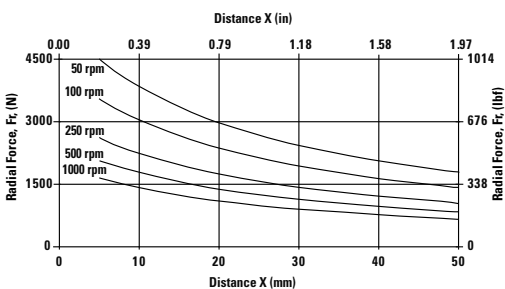
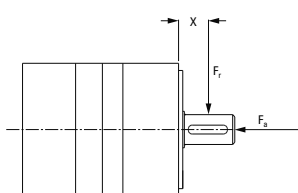
Speed rpm	Axial Load, F_a N [lbf]
50	2542 [571]
100	2017 [454]
250	1486 [334]
500	1180 [265]
1000	936 [211]

XT080



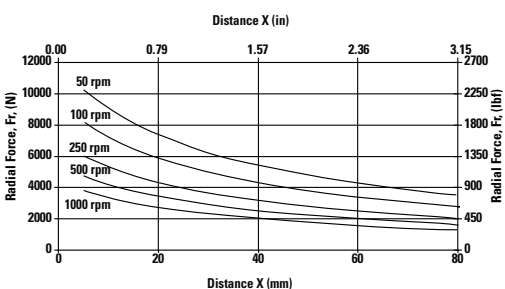
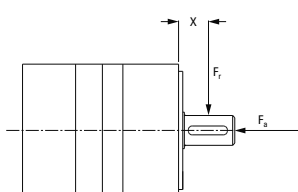
Speed rpm	Axial Load, F_a N [lbf]
50	3780 [850]
100	3000 [675]
250	2211 [497]
500	1755 [394]
1000	1393 [313]

XT120



Speed rpm	Axial Load, F_a N [lbf]
50	6894 [1550]
100	5471 [1230]
250	4034 [907]
500	3203 [720]
1000	2540 [571]

XT160



Speed rpm	Axial Load, F_a N [lbf]
50	14,122 [3175]
100	11,209 [2520]
250	8260 [1857]
500	6556 [1474]
1000	5204 [1170]

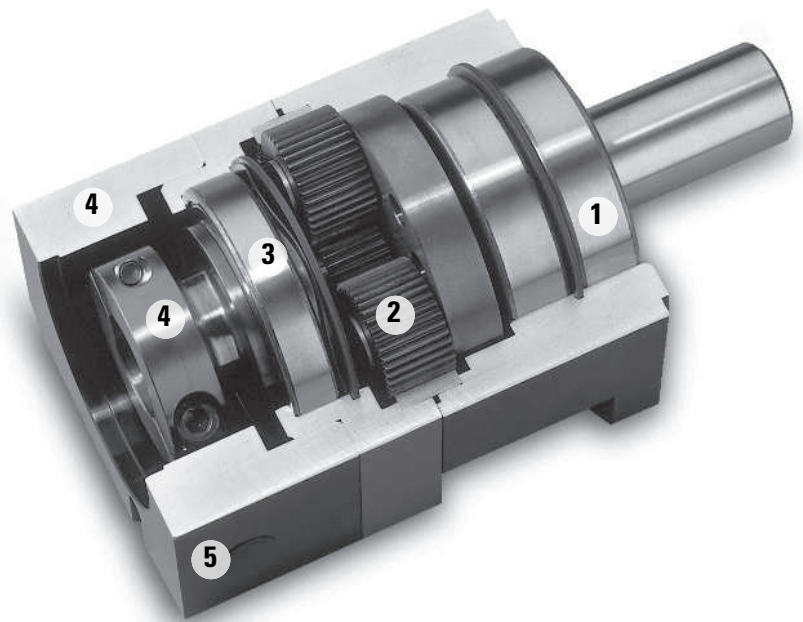
These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 20,000 hours for the mean output speed n_{mout} , as described on page 10,



NemaTRUE™**True Planetary™ Gearheads**

Ready for Immediate Delivery	
Precision	13 arc-minutes
Frame Sizes	17, 23/60mm, 34/90mm and 42/115mm
Torque Capacity	up to 180 Nm
Ratio Availability	3:1 thru 100:1
Radial load capacity	up to 3730 N
Mounting System	RediMount™

- ① **Sealed deep groove ball bearings**
provide high radial load carrying capability
- ② **HRC 55-60 steel gears**
provide superior wear resistance
and increased backlash integrity
- ③ **Sealed deep groove ball bearing**
provides precision alignment of sun gear
- ④ **RediMount™ system**
provides error-free motor installation
- ⑤ **Anodized aluminum housing**
reduces weight and prevents corrosion



**Micron True Planetary™ Gearheads
shipped within 24 hours!**

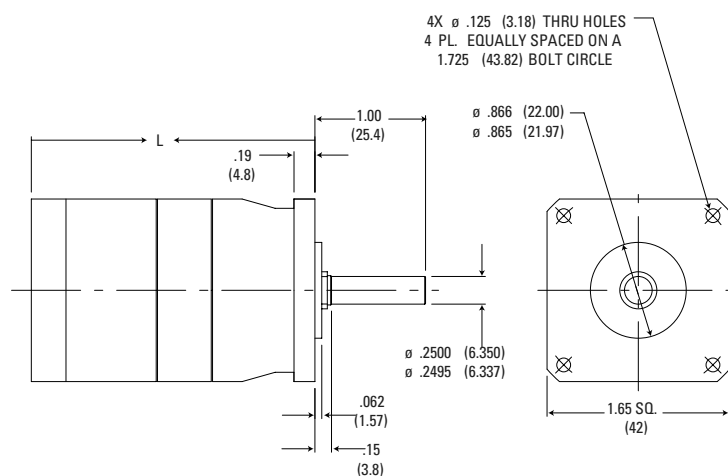


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of the catalog for details.**

NemaTRUE™ Size 17

True Planetary™ Gearheads

English



Ratio ¹	Dimension 'L' in [mm]	Backlash [arc-min]	Weight lb [kg]	Efficiency
3:1 to 10:1	2.28 [58]	13 max	.75 [0,34]	93%
15:1 to 100:1	2.77 [71]	15 max	.95 [0,43]	88%

Dimensions are inch (mm)

Efficiency is calculated at 100% of the rated torque.

Total length may change depending on motor being used.

Performance Specifications

Part Number	Ratio ¹	20000 Hour Life				T _{peak} in-lb [Nm]	J in-lb-sec ² x10 ⁻⁴ [kg-cm ²]	Torsional Stiffness in-lb/arc-min [Nm/arc-min]
		T _r (1000 rpm) in-lb [Nm]	T _r (2000 rpm) in-lb [Nm]	T _r (3000 rpm) in-lb [Nm]	T _r (4000 rpm) in-lb [Nm]			
NT17-003	3:1	41 [4,7]	34 [3,8]	29 [3,3]	27 [3,1]	170 [19,2]	0.115 [0,013]	2.36 [0,268]
NT17-005	5:1	44 [5,0]	37 [4,2]	33 [3,7]	30 [3,4]	170 [19,2]	0.040 [0,005]	2.36 [0,268]
NT17-010	10:1	30 [3,4]	28 [3,1]	25 [2,8]	23 [2,6]	170 [19,2]	0.030 [0,003]	2.36 [0,268]
NT17-015	15:1	47 [5,3]	47 [5,3]	47 [5,3]	42 [4,7]	170 [19,2]	0.037 [0,004]	2.36 [0,268]
NT17-025	25:1	78 [8,8]	58 [6,6]	53 [6,0]	48 [5,5]	170 [19,2]	0.037 [0,004]	2.36 [0,268]
NT17-030	30:1	57 [6,4]	52 [5,9]	48 [5,4]	46 [5,2]	170 [19,2]	0.026 [0,003]	2.36 [0,268]
NT17-050	50:1	91 [10,3]	78 [8,8]	65 [7,4]	60 [6,7]	170 [19,2]	0.026 [0,003]	2.36 [0,268]
NT17-100	100:1	40 [4,5]	38 [4,3]	35 [4,0]	33 [3,8]	170 [19,2]	0.026 [0,003]	2.36 [0,268]

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

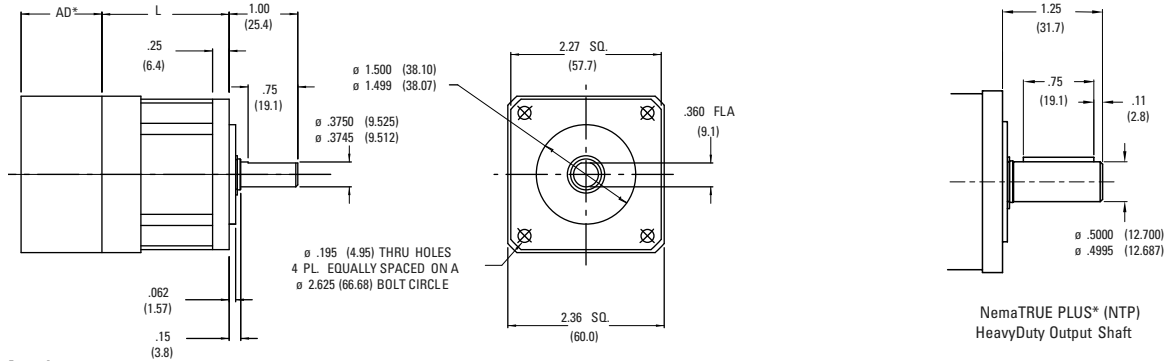
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

NemaTRUE™ Size 23/60

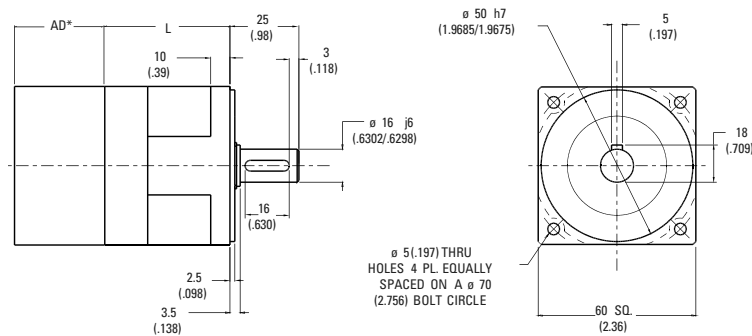
True Planetary™ Gearheads

English

English - Dimensions are in (mm)



Metric - Dimensions are mm (in)



Ratio ¹	NT23 Dimension 'L' in [mm]	NT60 Dimension 'L' in [mm]	Backlash [arc-min]		Weight lb [kg]	Efficiency
			Precision	High Precision		
3:1 to 10:1	1.92 [48,8]	2.07 [52,6]	13 max	8 max	1.5 [0,7]	93%
15:1 to 100:1	2.61 [66,3]	2.76 [70,1]	15 max	9 max	1.9 [0,9]	88%

AD** = Adapter length
Adapter length will vary depending on motor.
Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number		Ratio ¹	20000 Hour Life				T _{peak} in-lb [Nm]	J in-lb-sec ² x 10 ⁻⁴ [kg-cm ²]	Torsional Stiffness in-lb/arc-min [Nm/arc-min]	
English	Metric		T _r (1000 rpm) in-lb [Nm]	T _r (2000 rpm) in-lb [Nm]	T _r (3000 rpm) in-lb [Nm]	T _r (4000 rpm) in-lb [Nm]			NT	NTP
NT23-003	NT60-003	3:1	98 [11,1]	80 [9,0]	70 [7,9]	65 [7,3]	150 [16,9]	0.67 [0,076]	6.3 [0,71]	15.8 [1,8]
NT23-004	NT60-004	4:1	107 [12,1]	90 [10,2]	80 [9,0]	73 [8,2]	250 [28,3]	0.22 [0,024]	6.3 [0,71]	15.8 [1,8]
NT23-005	NT60-005	5:1	105 [11,9]	88 [9,9]	78 [8,8]	71 [8,0]	250 [28,2]	0.22 [0,025]	6.3 [0,71]	15.8 [1,8]
NT23-007	NT60-007	7:1	100 [11,3]	83 [9,4]	74 [8,4]	66 [7,5]	250 [28,3]	0.22 [0,024]	6.3 [0,71]	15.8 [1,8]
NT23-010	NT60-010	10:1	63 [7,1]	58 [6,6]	54 [6,1]	52 [5,9]	250 [28,2]	0.14 [0,016]	6.3 [0,71]	15.8 [1,8]
NT23-015	NT60-015	15:1	124 [14,0]	110 [12,4]	105 [11,9]	100 [11,3]	250 [28,3]	0.21 [0,024]	6.3 [0,71]	15.8 [1,8]
NT23-020	NT60-020	20:1	180 [20,3]	147 [16,6]	130 [14,7]	120 [13,6]	275 [31,1]	0.21 [0,024]	6.3 [0,71]	15.8 [1,8]
NT23-025	NT60-025	25:1	175 [19,8]	142 [16,0]	125 [14,1]	115 [13,0]	250 [28,3]	0.21 [0,024]	6.3 [0,71]	15.8 [1,8]
NT23-030	NT60-030	30:1	207 [23,4]	182 [20,6]	157 [17,7]	147 [16,6]	275 [31,1]	0.13 [0,015]	6.3 [0,71]	15.8 [1,8]
NT23-040	NT60-040	40:1	207 [23,4]	182 [20,6]	157 [17,7]	147 [16,6]	275 [31,1]	0.13 [0,015]	6.3 [0,71]	15.8 [1,8]
NT23-050	NT60-050	50:1	202 [22,8]	175 [19,8]	152 [17,2]	142 [16,0]	275 [31,1]	0.13 [0,015]	6.3 [0,71]	15.8 [1,8]
NT23-070	NT60-070	70:1	197 [22,3]	172 [19,4]	147 [16,6]	137 [15,5]	275 [31,1]	0.13 [0,015]	6.3 [0,71]	15.8 [1,8]
NT23-100	NT60-100	100:1	85 [9,6]	79 [8,9]	74 [8,4]	73 [8,2]	275 [31,1]	0.13 [0,015]	6.3 [0,71]	15.8 [1,8]

Available with 24 hour delivery through the Gearhead Express Program.

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.

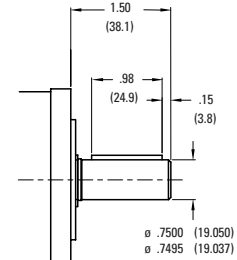
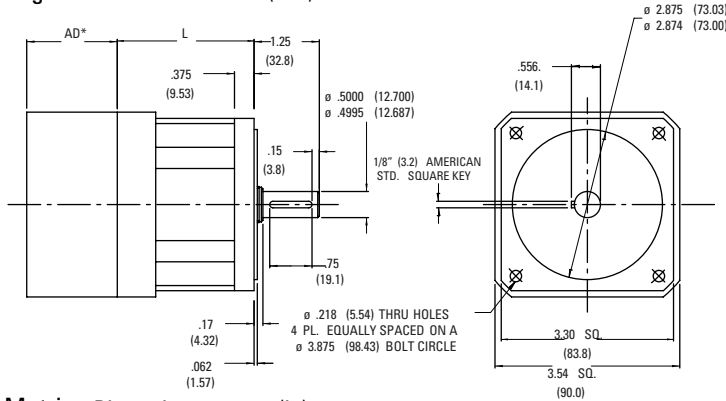
T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

NemaTRUE™ Size 34/90

True Planetary™ Gearheads

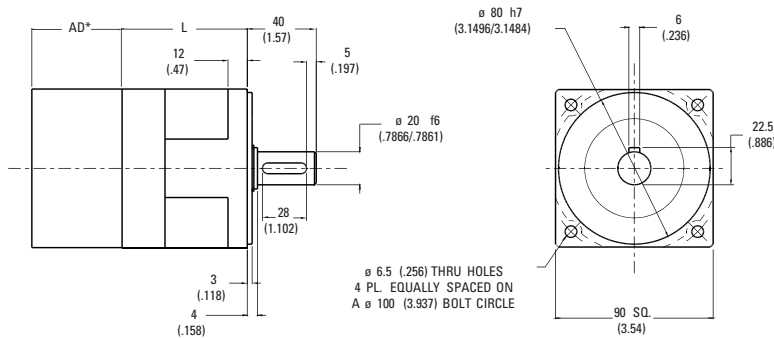
English

English - Dimensions are in (mm)



NemaTRUE PLUS* (NTP)
HeavyDuty Output Shaft

Metric - Dimensions are mm (in)



Ratio ¹	NT34	NT90	Backlash		Weight lb [kg]	Efficiency
	Dimension 'L' in [mm]	Dimension 'L' in [mm]	Precision	High Precision		
3:1 to 10:1	2.68 [68,0]	2.63 [66,8]	13 max	8 max	4.2 [1,9]	93%
15:1 to 100:1	3.53 [89,6]	3.53 [89,7]	15 max	9 max	5.6 [2,5]	88%

AD** = Adapter length
Adapter length will vary depending on motor.
Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number		Ratio ¹	20000 Hour Life				T _{peak} in-lb [Nm]	J in-lb-sec ² x10 ⁻⁴ [kg-cm ²]	Torsional Stiffness	
English	Metric		T _r (1000 rpm) in-lb [Nm]	T _r (2000 rpm) in-lb [Nm]	T _r (3000 rpm) in-lb [Nm]	T _r (4000 rpm) in-lb [Nm]			NT	NTP
NT34-003	NT90-003	3:1	360 [40,7]	320 [36,2]	295 [33,3]	270 [30,5]	510 [57,6]	3.9 [0,44]	16.8 [1,9]	48 [5,4]
NT34-004	NT90-004	4:1	515 [58,2]	425 [48,0]	380 [42,9]	350 [39,6]	700 [79,1]	1.20 [0,140]	16.8 [1,9]	48 [5,4]
NT34-005	NT90-005	5:1	490 [55,4]	400 [45,2]	355 [40,1]	325 [36,7]	700 [79,1]	1.20 [0,140]	16.8 [1,9]	48 [5,4]
NT34-007	NT90-007	7:1	470 [53,1]	380 [42,9]	335 [37,9]	305 [34,5]	700 [79,1]	1.20 [0,140]	16.8 [1,9]	48 [5,4]
NT34-010	NT90-010	10:1	238 [26,9]	212 [24,0]	200 [22,6]	192 [21,7]	700 [79,1]	0.66 [0,075]	16.8 [1,9]	48 [5,4]
NT34-015	NT90-015	15:1	454 [51,3]	416 [47,0]	391 [44,2]	373 [42,1]	850 [96,0]	1.20 [0,140]	16.8 [1,9]	48 [5,4]
NT34-020	NT90-020	20:1	677 [76,5]	620 [70,1]	587 [66,3]	551 [62,3]	850 [96,1]	1.20 [0,140]	16.8 [1,9]	48 [5,4]
NT34-025	NT90-025	25:1	652 [73,7]	595 [67,2]	562 [63,5]	526 [59,4]	850 [96,0]	1.20 [0,140]	16.8 [1,9]	48 [5,4]
NT34-030	NT90-030	30:1	500 [56,5]	454 [51,3]	432 [48,8]	416 [47,0]	850 [96,0]	0.66 [0,075]	16.8 [1,9]	48 [5,4]
NT34-040	NT90-040	40:1	770 [87,0]	702 [79,3]	668 [75,5]	620 [70,1]	850 [96,1]	0.65 [0,074]	16.8 [1,9]	48 [5,4]
NT34-050	NT90-050	50:1	720 [81,4]	652 [73,7]	618 [69,8]	595 [67,2]	850 [96,0]	0.65 [0,074]	16.8 [1,9]	48 [5,4]
NT34-070	NT90-070	70:1	770 [87,0]	702 [79,3]	668 [75,5]	620 [70,1]	850 [96,1]	0.65 [0,074]	16.8 [1,9]	48 [5,4]
NT34-100	NT90-100	100:1	325 [36,7]	295 [33,3]	280 [31,6]	270 [30,5]	700 [79,1]	0.65 [0,074]	16.8 [1,9]	48 [5,4]

Available with 24 hour delivery through the Gearhead Express Program.

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.

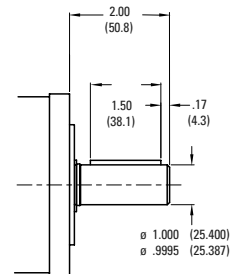
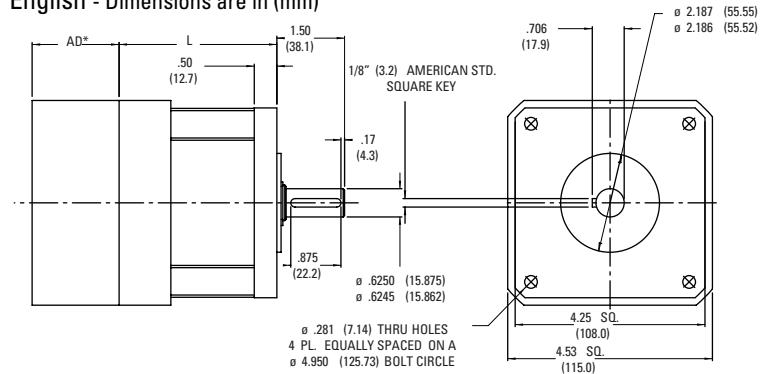
T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

NemaTRUE™ Size 42/115

True Planetary™ Gearheads

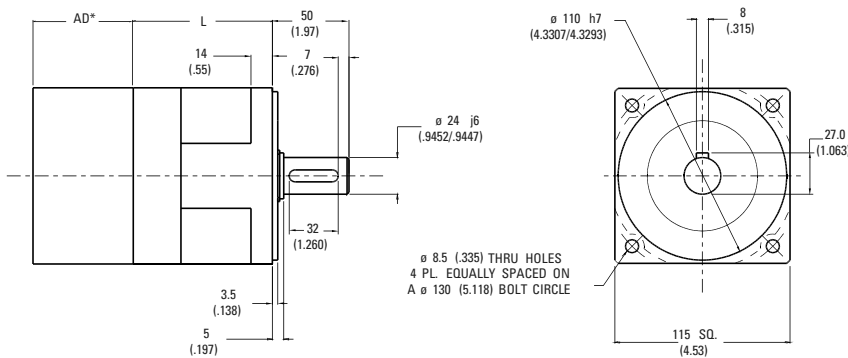
English

English - Dimensions are in (mm)



NemaTRUE PLUS* (NTP)
Heavy Duty Output Shaft

Metric - Dimensions are mm (in)



Ratio¹	NT42	NT115	Backlash		Weight	Efficiency
	Dimension 'L' in [mm]	Dimension 'L' in [mm]	[arc-min]			
			Precision	High Precision	lb [kg]	
3:1 to 10:1	3.49 [88,6]	3.46 [87,9]	13 max	8 max	8.9 [4.0]	93%
15:1 to 100:1	4.72 [119,9]	4.69 [119,1]	15 max	9 max	11.7 [5.3]	88%

AD** = Adapter length
Adapter length will vary depending on motor.
Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number		Ratio ¹	20000 Hour Life				T _{peak} in-lb [Nm]	J in-lb-sec ² x10 ⁻⁴ [kg-cm ²]	Torsional Stiffness		
English	Metric		T _r (1000 rpm) in-lb [Nm]	T _r (2000 rpm) in-lb [Nm]	T _r (3000 rpm) in-lb [Nm]	T _r (4000 rpm) in-lb [Nm]			in-lb/arc-min [Nm/arc-min]	NT	NTP
NT42-003	NT115-003	3:1	690 [78.0]	594 [67.1]	530 [59.9]	485 [54.8]	1000 [113.0]	14 [1.6]	31 [3.5]	154 [17.4]	
NT42-004	NT115-004	4:1	850 [96.1]	698 [78.9]	622 [70.3]	570 [64.4]	1000 [113.0]	3.80 [0.43]	31 [3.5]	154 [17.4]	
NT42-005	NT115-005	5:1	810 [91.5]	658 [74.4]	582 [65.8]	530 [59.9]	1000 [113.0]	3.80 [0.43]	31 [3.5]	154 [17.4]	
NT42-007	NT115-007	7:1	790 [89.3]	638 [72.1]	562 [63.5]	510 [57.6]	1000 [113.0]	3.80 [0.43]	31 [3.5]	154 [17.4]	
NT42-010	NT115-010	10:1	460 [52.0]	412 [46.6]	388 [43.8]	370 [41.8]	1000 [113.0]	1.9 [0.21]	31 [3.5]	154 [17.4]	
NT42-015	NT115-015	15:1	878 [99.2]	805 [91.0]	756 [85.4]	715 [80.8]	1600 [180.8]	3.9 [0.44]	31 [3.5]	154 [17.4]	
NT42-020	NT115-020	20:1	1290 [145.8]	1090 [123.2]	985 [111.3]	905 [102.3]	1600 [180.8]	3.70 [0.42]	31 [3.5]	154 [17.4]	
NT42-025	NT115-025	25:1	1250 [141.2]	1050 [118.6]	945 [106.8]	865 [97.7]	1600 [180.8]	3.70 [0.42]	31 [3.5]	154 [17.4]	
NT42-030	NT115-030	30:1	972 [109.8]	878 [99.2]	842 [95.1]	805 [91.0]	1600 [180.8]	1.9 [0.21]	31 [3.5]	154 [17.4]	
NT42-040	NT115-040	40:1	1435 [162.2]	1290 [145.8]	1190 [134.5]	1090 [123.2]	1600 [180.8]	1.80 [0.20]	31 [3.5]	154 [17.4]	
NT42-050	NT115-050	50:1	1395 [157.6]	1250 [141.2]	1150 [130]	1050 [118.6]	1600 [180.8]	1.80 [0.20]	31 [3.5]	154 [17.4]	
NT42-070	NT115-070	70:1	1375 [155.4]	1230 [139.0]	1130 [127.7]	1030 [116.4]	1600 [180.8]	1.80 [0.20]	31 [3.5]	154 [17.4]	
NT42-100	NT115-100	100:1	630 [71.2]	575 [65.0]	540 [61.0]	522 [59.0]	1200 [135.6]	1.80 [0.20]	31 [3.5]	154 [17.4]	

Available with 24 hour delivery through the Gearhead Express Program.

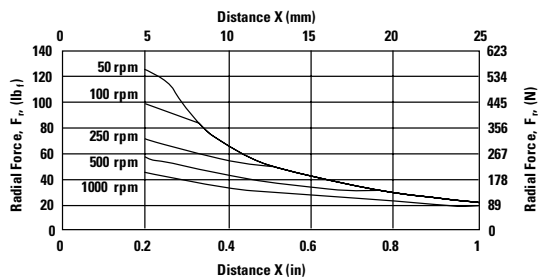
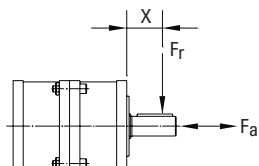
¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

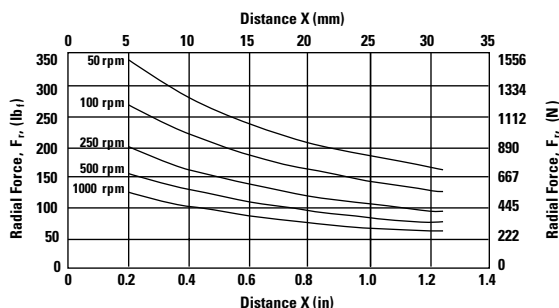
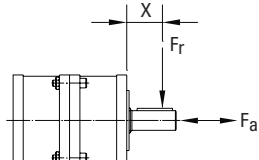
Radial and Axial Load Ratings

NT17



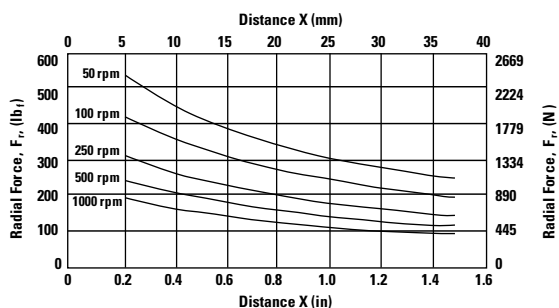
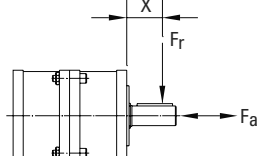
Speed rpm	Axial Load, F_a lb, [N]
250	138 [614]

NT23, NTP23, NT60



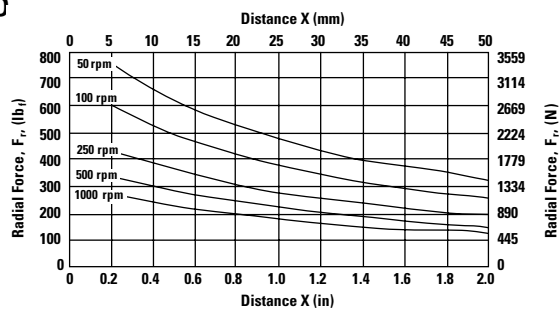
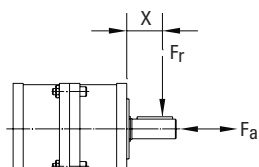
Speed rpm	Axial Load, F_a lb, [N]
250	310 [1379]

NT34, NTP34, NT90



Speed rpm	Axial Load, F_a lb, [N]
250	510 [2269]

NT42, NTP42, NT115



Speed rpm	Axial Load, F_a lb, [N]
250	760 [3380]

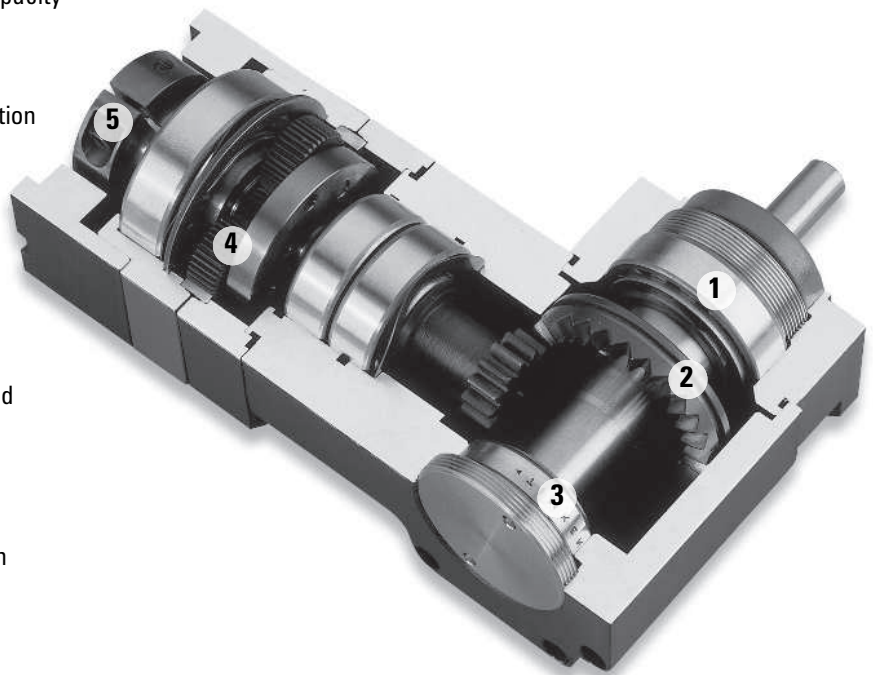
These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{mount} , as described on page 10,

NemaTRUE™ 90

Right Angle Gearheads

Ready for Immediate Delivery	
Precision	13 arc-minutes
Frame Sizes	NEMA 23, 34, 42
Torque Capacity	up to 255 Nm
Ratio Availability	1:1 thru 500:1
Radial load capacity	up to 2900 N
Mounting System	RediMount™

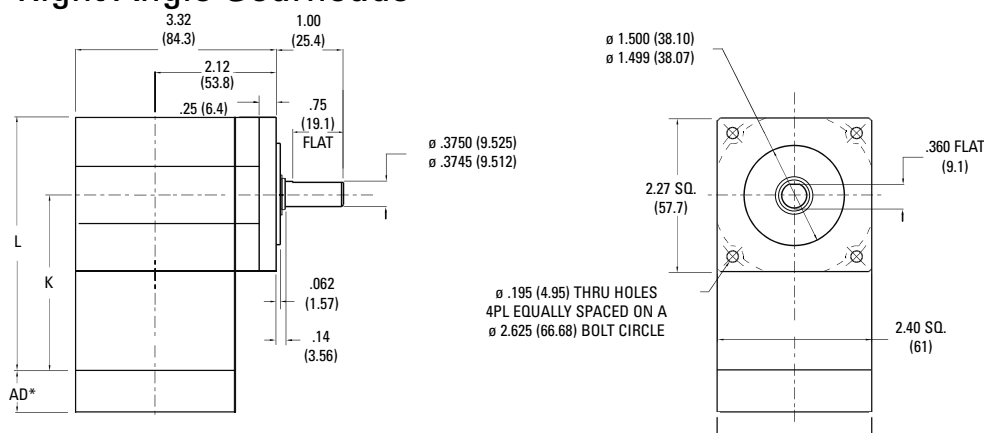
- ① **Tapered Roller bearings**
provide high radial and axial load capacity
- ② **Innovative PowerTRUE* gearing**
delivers smooth, quiet geared reduction
- ③ **Tapered roller bearings**
provide high axial load carrying capabilities
- ④ **HRC 55-60 steel gears**
provide superior wear resistance and increased backlash integrity
- ⑤ **RediMount system**
provides error-free motor installation



NemaTRUE™ 90 Size 23

Right Angle Gearheads

English



Ratio ¹	Dimension 'K' in [mm]	Dimension 'L' in [mm]	Backlash [arc-min]	Weight lb [kg]	Efficiency
1:1 to 5:1P	3.11 [79]	4.31 [109,5]	13 max	3.0 [1,4]	98%
5:1T to 50:1	3.79 [96]	4.99 [127]	15 max	3.4 [1,5]	93%
60:1 to 500:1	4.48 [114]	5.68 [144]	15 max	3.8 [1,6]	88%

Dimensions are inch (mm)

AD** = Adapter length

Adapter length will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10000 Hour Life			T _{peak} in-lb [Nm]	20000 Hour Life			J in-lb-sec ² x10 ⁻⁴ [kg-cm ²]	Torsional Stiffness in-lb/arc-min [Nm/arc-min]
		T _r (1000 rpm) in-lb [Nm]	T _r (3000 rpm) in-lb [Nm]	T _r (5000 rpm) in-lb [Nm]		T _r (1000 rpm) in-lb [Nm]	T _r (3000 rpm) in-lb [Nm]	T _r (5000 rpm) in-lb [Nm]		
NTR23-001	1:1	59 [7]	54 [6]	49 [6]	195 [22]	54 [6]	50 [6]	45 [5]	7.01 [0,79]	5.6 [0,6]
NTR23-002	2:1	130 [15]	118 [13]	107 [12]	360 [41]	120 [14]	109 [12]	99 [11]	3.59 [0,41]	8.5 [1,0]
NTR23-003	3:1	83 [9]	75 [9]	68 [8]	270 [31]	76 [9]	70 [8]	63 [7]	3.09 [0,35]	9.6 [1,1]
NTR23-004	4:1	61 [7]	56 [6]	50 [6]	238 [27]	56 [6]	51 [6]	46 [5]	2.87 [0,32]	10.1 [1,1]
NTR23-005P	5:1P	50 [6]	46 [5]	41 [5]	180 [20]	46 [5]	42 [5]	38 [4]	2.81 [0,32]	10.3 [1,2]
NTR23-005T	5:1T	179 [20]	153 [17]	138 [16]	366 [41]	175 [20]	132 [15]	112 [13]	3.69 [0,42]	10.3 [1,2]
NTR23-006	6:1	153 [17]	130 [15]	126 [14]	366 [41]	149 [17]	120 [14]	116 [13]	3.67 [0,41]	6.7 [0,8]
NTR23-009	9:1	97 [11]	83 [9]	80 [9]	289 [33]	95 [11]	76 [9]	74 [8]	3.08 [0,35]	8.5 [1,0]
NTR23-010	10:1	157 [18]	144 [16]	130 [15]	366 [41]	155 [18]	138 [16]	120 [14]	3.48 [0,39]	6.6 [0,7]
NTR23-012	12:1	72 [8]	61 [7]	59 [7]	252 [28]	70 [8]	56 [6]	55 [6]	2.95 [0,33]	9.3 [1,1]
NTR23-015	15:1	100 [11]	91 [10]	83 [9]	297 [34]	99 [11]	88 [10]	76 [9]	2.89 [0,33]	9.8 [1,1]
NTR23-020	20:1	74 [8]	67 [8]	61 [7]	366 [41]	73 [8]	64 [7]	56 [6]	2.76 [0,31]	9.3 [1,0]
NTR23-025	25:1	60 [7]	55 [6]	50 [6]	198 [22]	60 [7]	53 [6]	46 [5]	2.71 [0,31]	9.8 [1,1]
NTR23-030	30:1	102 [12]	98 [11]	94 [11]	305 [34]	102 [11]	96 [11]	90 [10]	2.83 [0,32]	8.0 [0,9]
NTR23-040	40:1	75 [9]	72 [8]	69 [8]	263 [30]	75 [8]	71 [8]	67 [8]	2.69 [0,30]	9.0 [1,0]
NTR23-050	50:1	62 [7]	59 [7]	57 [6]	203 [23]	61 [7]	58 [7]	55 [6]	2.64 [0,30]	9.6 [1,1]
NTR23-060	60:1	163 [18]	161 [18]	158 [18]	366 [41]	163 [18]	160 [18]	157 [18]	3.68 [0,42]	6.5 [0,7]
NTR23-075	75:1	104 [12]	102 [12]	100 [11]	311 [35]	103 [12]	101 [11]	99 [11]	2.95 [0,33]	8.4 [0,9]
NTR23-090	90:1	104 [12]	102 [12]	101 [11]	313 [35]	103 [12]	102 [11]	100 [11]	3.09 [0,35]	8.3 [0,9]
NTR23-100	100:1	163 [18]	162 [18]	161 [18]	366 [41]	163 [18]	161 [18]	160 [18]	3.50 [0,40]	6.5 [0,7]
NTR23-120	120:1	76 [9]	75 [9]	74 [8]	270 [31]	76 [9]	75 [8]	73 [8]	2.96 [0,33]	9.2 [1,0]
NTR23-125	125:1	63 [7]	62 [7]	60 [7]	207 [23]	62 [7]	61 [7]	60 [7]	2.76 [0,31]	9.7 [1,1]
NTR23-150	150:1	104 [12]	103 [12]	102 [12]	316 [36]	104 [12]	103 [12]	102 [11]	2.91 [0,33]	8.4 [0,9]
NTR23-200	200:1	164 [19]	163 [18]	162 [18]	366 [41]	164 [18]	163 [18]	162 [18]	3.43 [0,39]	6.1 [0,7]
NTR23-250	250:1	63 [7]	62 [7]	62 [7]	207 [23]	63 [7]	62 [7]	61 [7]	2.72 [0,31]	9.7 [1,1]
NTR23-300	300:1	104 [12]	104 [12]	103 [12]	319 [36]	104 [12]	104 [12]	103 [12]	2.84 [0,32]	8.0 [0,9]
NTR23-400	400:1	77 [9]	76 [9]	76 [9]	274 [31]	77 [9]	76 [9]	76 [9]	2.71 [0,31]	9.0 [1,0]
NTR23-500	500:1	63 [7]	63 [7]	62 [7]	207 [23]	63 [7]	63 [7]	62 [7]	2.66 [0,30]	9.6 [1,1]

Ratio 5P is designed using only PowerTRUE face gearing technology.

Ratio 5T adds a True Planetary gearing stage for increased torque capacity.

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.

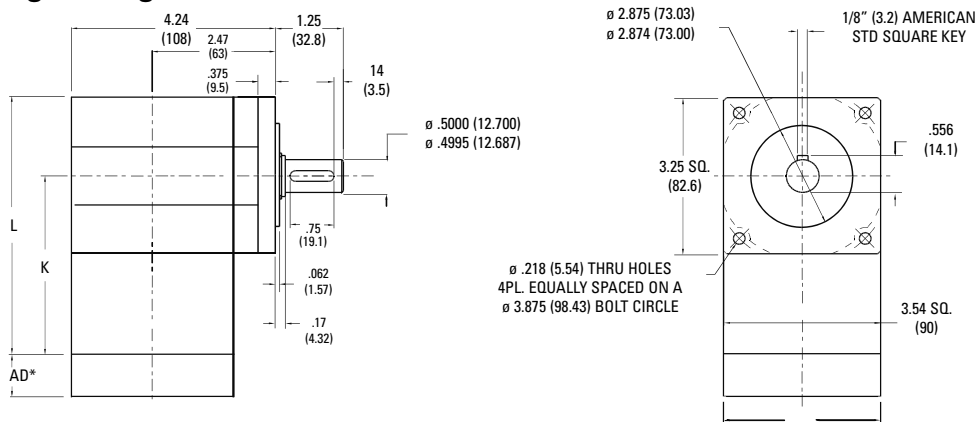
J = Mass moment of inertia reflected to the input shaft (including pinion assembly)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

NemaTRUE™ 90 Size 34

Right Angle Gearheads

English



Ratio ¹	Dimension 'K' in [mm]	Dimension 'L' in [mm]	Backlash [arc-min]	Weight lb [kg]	Efficiency
1:1 to 5:1P	3.99 [101]	5.76 [146]	13 max	6.0 [2,7]	98%
5:1T to 50:1	4.89 [124]	6.66 [169]	15 max	7.4 [3,4]	93%
60:1 to 500:1	5.79 [147]	7.56 [192]	15 max	8.8 [4,0]	88%

Dimensions are inch (mm)

AD** = Adapter length

Adapter length will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10000 Hour Life			T _{peak} in-lb [Nm]	20000 Hour Life			J in-lb-sec ² x 10 ⁻⁴ [kg-cm ²]	Torsional Stiffness in-lb/arc-min [Nm/arc-min]
		T _r (1000 rpm) in-lb [Nm]	T _r (3000 rpm) in-lb [Nm]	T _r (5000 rpm) in-lb [Nm]		T _r (1000 rpm) in-lb [Nm]	T _r (3000 rpm) in-lb [Nm]	T _r (5000 rpm) in-lb [Nm]		
NTR34-001	1:1	168 [19]	153 [17]	139 [16]	493 [56]	155 [18]	142 [16]	128 [14]	27.5 [3,11]	12.6 [1,4]
NTR34-002	2:1	381 [43]	348 [39]	315 [36]	1113 [126]	352 [40]	321 [36]	291 [33]	14.1 [1,59]	19.1 [2,2]
NTR34-003	3:1	251 [28]	229 [26]	207 [23]	905 [102]	232 [26]	212 [24]	192 [22]	12.1 [1,37]	21.5 [2,4]
NTR34-004	4:1	192 [22]	176 [20]	159 [18]	695 [79]	178 [20]	162 [18]	147 [17]	11.2 [1,27]	22.6 [2,5]
NTR34-005P	5:1P	142 [16]	129 [15]	117 [13]	581 [66]	131 [15]	119 [13]	108 [12]	11.0 [1,25]	23.1 [2,6]
NTR34-005T	5:1T	508 [57]	432 [49]	420 [47]	1113 [126]	497 [56]	399 [45]	387 [44]	14.5 [1,64]	23.1 [2,6]
NTR34-006	6:1	448 [51]	381 [43]	370 [42]	1113 [126]	439 [50]	352 [40]	342 [39]	14.4 [1,63]	15.0 [1,7]
NTR34-009	9:1	296 [33]	251 [28]	244 [28]	986 [111]	289 [33]	232 [26]	225 [25]	12.1 [1,37]	19.0 [2,1]
NTR34-010	10:1	462 [52]	422 [48]	381 [43]	1113 [126]	456 [52]	404 [46]	352 [40]	13.7 [1,54]	14.8 [1,7]
NTR34-012	12:1	226 [26]	192 [22]	187 [21]	752 [85]	221 [25]	178 [20]	173 [19]	11.6 [1,31]	20.9 [2,4]
NTR34-015	15:1	305 [34]	278 [31]	251 [28]	1018 [115]	301 [34]	266 [30]	232 [26]	11.3 [1,28]	21.9 [2,5]
NTR34-020	20:1	233 [26]	213 [24]	192 [22]	1113 [126]	230 [26]	204 [23]	178 [20]	10.8 [1,22]	20.8 [2,4]
NTR34-025	25:1	172 [19]	157 [18]	142 [16]	635 [72]	169 [19]	150 [17]	131 [15]	10.6 [1,20]	21.9 [2,5]
NTR34-030	30:1	311 [35]	298 [34]	285 [32]	1045 [118]	309 [35]	292 [33]	275 [31]	11.1 [1,25]	17.9 [2,0]
NTR34-040	40:1	238 [27]	228 [26]	218 [25]	792 [89]	237 [27]	224 [25]	210 [24]	10.6 [1,19]	20.2 [2,3]
NTR34-050	50:1	175 [20]	168 [19]	160 [18]	653 [74]	174 [20]	165 [19]	155 [18]	10.4 [1,17]	21.4 [2,4]
NTR34-060	60:1	479 [54]	472 [53]	465 [53]	1113 [126]	478 [54]	469 [53]	460 [52]	14.4 [1,63]	14.5 [1,6]
NTR34-075	75:1	315 [36]	310 [35]	305 [34]	1080 [122]	314 [36]	308 [35]	301 [34]	11.6 [1,31]	18.7 [2,1]
NTR34-090	90:1	316 [36]	311 [35]	307 [35]	1085 [123]	315 [36]	309 [35]	304 [34]	12.1 [1,37]	18.6 [2,1]
NTR34-100	100:1	480 [54]	476 [54]	472 [53]	1113 [126]	479 [54]	474 [54]	469 [53]	13.7 [1,55]	14.6 [1,7]
NTR34-120	120:1	242 [27]	238 [27]	235 [27]	817 [92]	241 [27]	237 [27]	232 [26]	11.6 [1,31]	20.7 [2,3]
NTR34-125	125:1	178 [20]	175 [20]	172 [19]	666 [75]	177 [20]	173 [20]	169 [19]	10.8 [1,23]	21.8 [2,5]
NTR34-150	150:1	317 [36]	314 [35]	311 [35]	1096 [124]	316 [36]	313 [35]	309 [35]	11.4 [1,29]	18.7 [2,1]
NTR34-200	200:1	481 [54]	479 [54]	477 [54]	1113 [126]	481 [54]	478 [54]	475 [54]	13.5 [1,52]	13.6 [1,5]
NTR34-250	250:1	178 [20]	177 [20]	175 [20]	675 [76]	178 [20]	176 [20]	174 [20]	10.7 [1,21]	21.8 [2,5]
NTR34-300	300:1	317 [36]	316 [36]	315 [36]	1107 [125]	317 [36]	315 [36]	314 [35]	11.1 [1,26]	17.9 [2,0]
NTR34-400	400:1	243 [27]	242 [27]	241 [27]	832 [94]	243 [27]	241 [27]	240 [27]	10.6 [1,20]	20.2 [2,3]
NTR34-500	500:1	179 [20]	178 [20]	177 [20]	680 [77]	179 [20]	178 [20]	177 [20]	10.4 [1,18]	21.4 [2,4]

Ratio 5P is designed using only PowerTRUE face gearing technology.

Ratio 5T adds a True Planetary gearing stage for increased torque capacity.

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.T_r = Rated output torque at rated speed for specific hours of life.

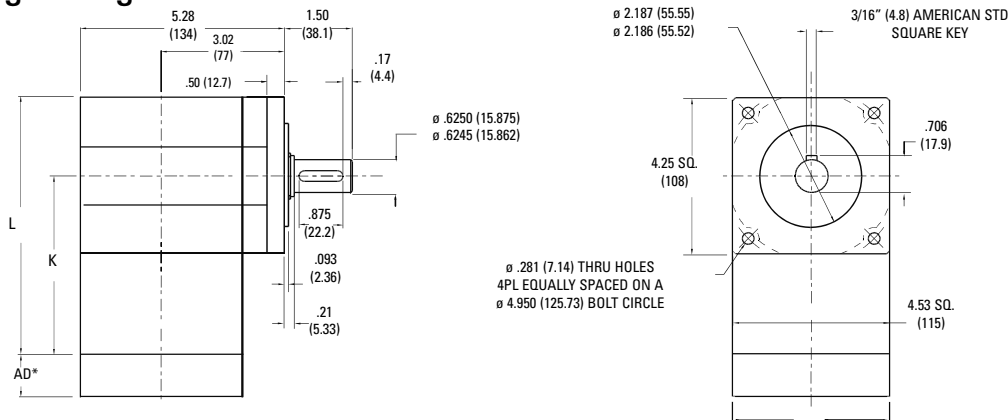
J = Mass moment of inertia reflected to the input shaft (including pinion assembly)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

NemaTRUE™ 90 Size 42

Right Angle Gearheads

English



Ratio¹	Dimension 'K' in [mm]	Dimension 'L' in [mm]	Backlash [arc-min]	Weight lb [kg]	Efficiency
1:1 to 5:1P	5.40 [137]	7.67 [195]	13 max	12 [5,4]	98%
5:1T to 50:1	6.63 [168,4]	8.90 [226]	15 max	14.8 [6,7]	93%
60:1 to 500:1	7.87 [200]	10.13 [257]	15 max	17.6 [8,0]	88%

Dimensions are inch (mm)

AD** = Adapter length

Adapter length will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio¹	10000 Hour Life			T _{peak} in-lb [Nm]	20000 Hour Life			J in-lb-sec²x10⁻⁴ [kg-cm²]	Torsional Stiffness in-lb/arc-min [Nm/arc-min]
		T _r (1000 rpm) in-lb [Nm]	T _r (3000 rpm) in-lb [Nm]	T _r (5000 rpm) in-lb [Nm]		T _r (1000 rpm) in-lb [Nm]	T _r (3000 rpm) in-lb [Nm]	T _r (5000 rpm) in-lb [Nm]		
NTR42-001	1:1	496 [56]	452 [51]	409 [46]	1620 [183]	458 [52]	418 [47]	378 [43]	46.7 [5,28]	15.0 [1,7]
NTR42-002	2:1	885 [100]	808 [91]	730 [83]	2255 [255]	817 [92]	746 [84]	674 [76]	23.9 [2,71]	24.7 [2,8]
NTR42-003	3:1	687 [78]	627 [71]	567 [64]	2039 [230]	635 [72]	579 [65]	524 [59]	20.6 [2,33]	28.0 [3,2]
NTR42-004	4:1	458 [52]	418 [47]	378 [43]	1584 [179]	423 [48]	386 [44]	349 [39]	19.1 [2,16]	29.4 [3,3]
NTR42-005P	5:1P	343 [39]	313 [35]	283 [32]	1305 [147]	317 [36]	289 [33]	261 [30]	18.8 [2,12]	30.0 [3,4]
NTR42-005T	5:1T	1346 [152]	1117 [126]	958 [108]	2255 [255]	1262 [143]	907 [102]	778 [88]	24.6 [2,78]	30.0 [3,4]
NTR42-006	6:1	1041 [118]	885 [100]	859 [97]	2255 [255]	1018 [115]	817 [92]	794 [90]	24.5 [2,77]	20.1 [2,3]
NTR42-009	9:1	808 [91]	687 [78]	667 [75]	2241 [253]	791 [89]	635 [72]	616 [70]	20.5 [2,32]	25.1 [2,8]
NTR42-010	10:1	1072 [121]	979 [111]	885 [100]	2255 [255]	1059 [120]	938 [106]	817 [92]	23.2 [2,63]	20.1 [2,3]
NTR42-012	12:1	538 [61]	458 [52]	444 [50]	1728 [195]	526 [59]	423 [48]	410 [46]	19.6 [2,22]	27.5 [3,1]
NTR42-015	15:1	832 [94]	760 [86]	687 [78]	2255 [255]	822 [93]	728 [82]	635 [72]	19.3 [2,18]	28.8 [3,3]
NTR42-020	20:1	554 [63]	506 [57]	458 [52]	2255 [255]	547 [62]	485 [55]	423 [48]	18.4 [2,08]	27.5 [3,1]
NTR42-025	25:1	416 [47]	379 [43]	343 [39]	1458 [165]	410 [46]	364 [41]	317 [36]	18.0 [2,04]	28.8 [3,2]
NTR42-030	30:1	851 [96]	814 [92]	778 [88]	2255 [255]	845 [96]	798 [90]	752 [85]	18.9 [2,13]	24.6 [2,8]
NTR42-040	40:1	566 [64]	542 [61]	518 [59]	1836 [207]	563 [64]	532 [60]	500 [57]	18.0 [2,03]	27.2 [3,1]
NTR42-050	50:1	425 [48]	407 [46]	388 [44]	1499 [169]	422 [48]	399 [45]	375 [42]	17.6 [1,99]	28.5 [3,2]
NTR42-060	60:1	1111 [126]	1095 [124]	1080 [122]	2255 [255]	1109 [125]	1089 [123]	1069 [121]	24.6 [2,78]	19.7 [2,2]
NTR42-075	75:1	861 [97]	847 [96]	832 [94]	2255 [255]	859 [97]	841 [95]	822 [93]	19.7 [2,22]	25.0 [2,8]
NTR42-090	90:1	863 [97]	851 [96]	838 [95]	2255 [255]	861 [97]	845 [96]	830 [94]	20.6 [2,33]	24.8 [2,8]
NTR42-100	100:1	1114 [126]	1105 [125]	1095 [124]	2255 [255]	1113 [126]	1101 [124]	1089 [123]	23.3 [2,64]	19.9 [2,2]
NTR42-120	120:1	574 [65]	566 [64]	558 [63]	1897 [214]	573 [65]	563 [64]	552 [62]	19.7 [2,23]	27.3 [3,1]
NTR42-125	125:1	430 [49]	423 [48]	416 [47]	1539 [174]	429 [48]	420 [47]	410 [46]	18.4 [2,08]	28.7 [3,2]
NTR42-150	150:1	865 [98]	858 [97]	851 [96]	2255 [255]	864 [98]	855 [97]	845 [96]	19.4 [2,19]	25.0 [2,8]
NTR42-200	200:1	1116 [126]	1112 [126]	1107 [125]	2255 [255]	1116 [126]	1110 [125]	1104 [125]	22.9 [2,59]	19.4 [2,2]
NTR42-250	250:1	432 [49]	428 [48]	425 [48]	1562 [176]	431 [49]	427 [48]	422 [48]	18.1 [2,05]	28.7 [3,2]
NTR42-300	300:1	867 [98]	863 [98]	860 [97]	2255 [255]	866 [98]	862 [97]	857 [97]	18.9 [2,14]	24.6 [2,8]
NTR42-400	400:1	577 [65]	575 [65]	572 [65]	1944 [220]	577 [65]	574 [65]	571 [64]	18.1 [2,04]	27.1 [3,1]
NTR42-500	500:1	433 [49]	431 [49]	429 [48]	1580 [178]	433 [49]	430 [49]	428 [48]	17.7 [2,00]	28.5 [3,2]

Ratio 5P is designed using only PowerTRUE face gearing technology.

Ratio 5T adds a True Planetary gearing stage for increased torque capacity.

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

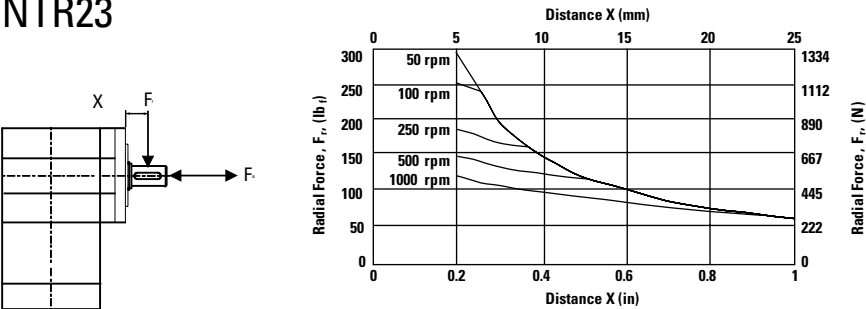
T_r = Rated output torque at rated speed for specific hours of life.

J = Mass moment of inertia reflected to the input shaft (including pinion assembly)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

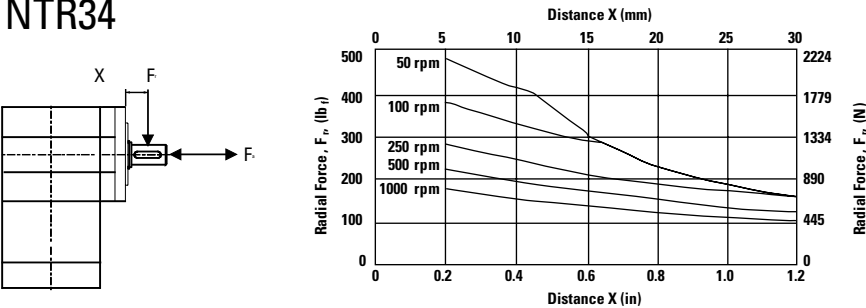
Radial and Axial Load Ratings

NTR23



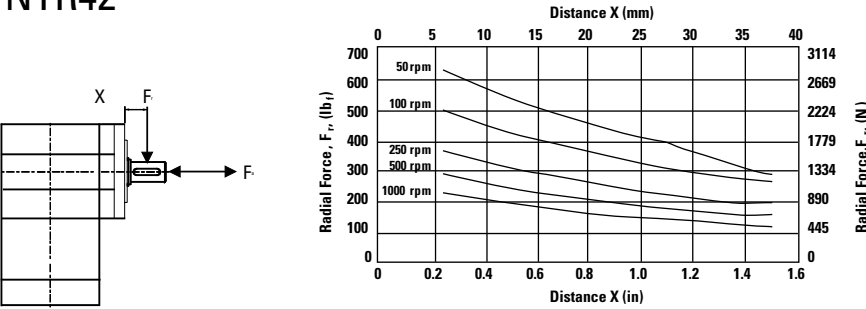
Speed rpm	Axial Load, F_a lb _f [N]
50	250 [1110]
100	200 [890]
250	150 [670]
500	120 [530]
1000	90 [400]

NTR34



Speed rpm	Axial Load, F_a lb _f [N]
50	340 [1510]
100	270 [1200]
250	200 [890]
500	160 [710]
1000	130 [580]

NTR42



Speed rpm	Axial Load, F_a lb _f [N]
50	460 [2050]
100	370 [1650]
250	270 [1200]
500	210 [930]
1000	170 [760]

These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{mount} , as described on page 10,

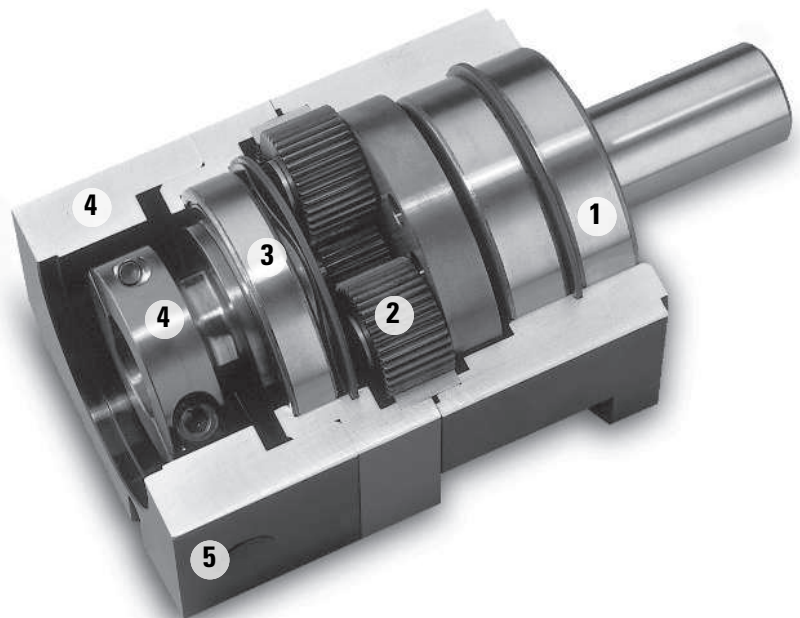


DuraTRUE™

True Planetary™ Gearheads

Ready for Immediate Delivery	
Precision	8 arc-minutes
Frame Sizes	60mm, 90mm, 115mm and 142mm
Torque Capacity	up to 834 Nm
Ratio Availability	3:1 thru 100:1
Radial load capacity	up to 11150 N
Mounting System	RediMount™

- ① **Sealed deep groove ball bearings**
provide high radial load carrying capability
- ② **HRC 55-60 steel gears**
provide superior wear resistance
and increased backlash integrity
- ③ **Sealed deep groove ball bearing**
provides precision alignment of sun gear
- ④ **RediMount™ system**
provides error-free motor installation
- ⑤ **Anodized aluminum housing**
reduces weight and prevents corrosion



**Micron True Planetary™ Gearheads
shipped within 24 hours!**

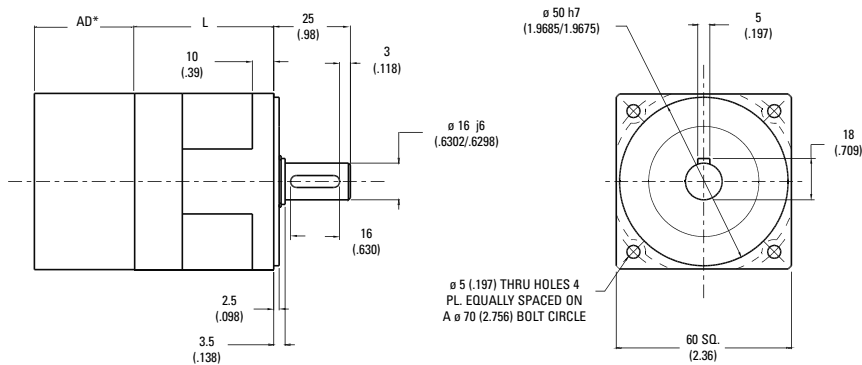


**Need it fast? Go to the back cover
of the catalog for details.**

DuraTRUE™ Size 60

True Planetary™ Gearheads

Metric



Ratio ¹	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
3:1 to 10:1	53 [2.07]	8 max	1,0 [2.2]	93%
15:1 to 100:1	70 [2.76]	9 max	1,2 [2.7]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10000 Hour Life				T _{peak} Nm [in-lb]	20000 Hour Life				J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (2000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (4000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (2000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (4000 rpm) Nm [in-lb]		
DT60-003	3:1	15 [134]	12 [109]	11 [97]	10 [89]	52 [460]	12 [109]	10 [89]	9 [79]	8 [72]	0,52 [4.6]	0,9 [8.1]
DT60-004	4:1	19 [168]	16 [142]	14 [124]	13 [115]	44 [385]	16 [142]	13 [115]	12 [106]	11 [97]	0,46 [4.1]	0,9 [7.9]
DT60-005	5:1	17 [148]	14 [120]	12 [106]	11 [98]	46 [410]	14 [120]	11 [98]	10 [86]	9 [79]	0,46 [4.1]	0,9 [7.9]
DT60-007	7:1	16 [142]	13 [115]	11 [97]	10 [89]	41 [363]	13 [115]	10 [89]	9 [80]	8 [71]	0,46 [4.1]	0,9 [7.9]
DT60-010	10:1	15 [134]	14 [121]	13 [114]	12 [108]	45 [400]	14 [124]	13 [112]	11 [100]	10 [92]	0,44 [3.9]	0,8 [6.8]
DT60-015	15:1	25 [218]	20 [177]	18 [157]	16 [144]	52 [460]	20 [177]	16 [144]	14 [127]	13 [117]	0,46 [4.1]	0,9 [8.2]
DT60-020	20:1	26 [230]	24 [212]	21 [186]	20 [177]	46 [407]	24 [212]	20 [177]	18 [159]	17 [150]	0,46 [4.1]	0,9 [7.9]
DT60-025	25:1	24 [214]	22 [195]	19 [172]	18 [158]	52 [456]	22 [195]	18 [158]	16 [140]	15 [128]	0,46 [4.1]	0,9 [8.3]
DT60-030	30:1	28 [246]	25 [218]	22 [193]	20 [177]	52 [460]	25 [218]	20 [177]	18 [157]	16 [144]	0,44 [3.9]	1,0 [8.7]
DT60-040	40:1	27 [239]	26 [230]	26 [230]	24 [212]	46 [407]	27 [239]	24 [212]	21 [186]	20 [177]	0,44 [3.9]	0,9 [8.3]
DT60-050	50:1	25 [222]	24 [214]	24 [209]	22 [195]	52 [460]	25 [217]	22 [195]	19 [172]	18 [158]	0,44 [3.9]	0,9 [8.2]
DT60-070	70:1	24 [212]	23 [204]	23 [204]	21 [186]	46 [407]	24 [212]	21 [186]	18 [159]	17 [150]	0,44 [3.9]	0,9 [8.3]
DT60-100	100:1	20 [180]	19 [165]	18 [157]	17 [151]	51 [447]	19 [167]	17 [153]	16 [145]	16 [140]	0,44 [3.9]	0,9 [7.8]

Available with 24 hour delivery through the Gearhead Express Program.

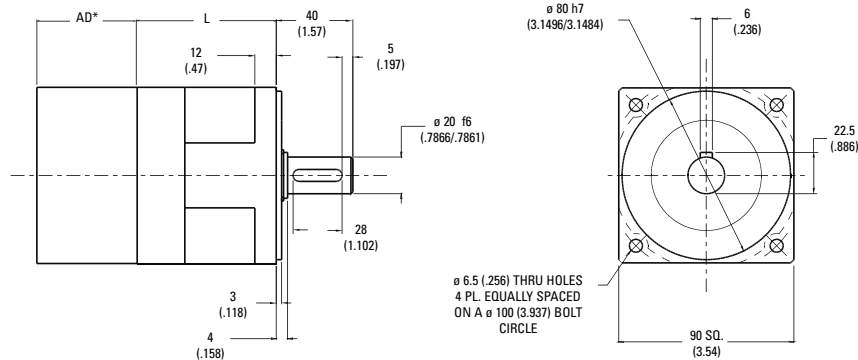
¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

DuraTRUE™ Size 90

True Planetary™ Gearheads

Metric

Ratio ¹	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
3:1 to 10:1	67 [2.63]	8 max	3,0 [6.6]	93%
15:1 to 100:1	90 [3.53]	9 max	3,7 [8.1]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10000 Hour Life				T _{peak} Nm [in-lb]	20000 Hour Life				J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (2000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (4000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (2000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (4000 rpm) Nm [in-lb]		
DT90-003	3:1	69 [614]	56 [499]	50 [442]	46 [405]	167 [1479]	56 [499]	46 [405]	41 [359]	37 [329]	2,22 [1.97]	4,9 [43.3]
DT90-004	4:1	80 [708]	67 [593]	60 [531]	55 [487]	157 [1389]	67 [593]	55 [487]	50 [443]	46 [407]	1,84 [1.60]	4,8 [42.4]
DT90-005	5:1	75 [664]	62 [549]	55 [486]	50 [446]	157 [1385]	62 [549]	50 [446]	45 [395]	41 [362]	1,76 [1.56]	4,8 [42.9]
DT90-007	7:1	73 [646]	60 [531]	53 [469]	48 [425]	157 [1389]	60 [531]	48 [425]	43 [381]	38 [336]	1,72 [1.50]	4,8 [42.4]
DT90-010	10:1	55 [488]	50 [439]	46 [411]	44 [392]	157 [1390]	51 [452]	46 [407]	43 [381]	41 [363]	1,63 [1.44]	4,0 [35.6]
DT90-015	15:1	93 [826]	84 [747]	79 [702]	74 [657]	167 [1479]	86 [764]	74 [657]	66 [582]	60 [534]	1,78 [1.58]	4,9 [43.7]
DT90-020	20:1	89 [788]	86 [761]	84 [743]	82 [726]	167 [1478]	88 [779]	84 [743]	77 [681]	71 [628]	1,77 [1.60]	4,8 [42.4]
DT90-025	25:1	84 [747]	81 [714]	78 [693]	77 [677]	167 [1479]	83 [730]	79 [698]	72 [640]	66 [587]	1,77 [1.56]	5,0 [44.5]
DT90-030	30:1	103 [908]	93 [826]	88 [780]	84 [747]	167 [1479]	95 [840]	86 [764]	81 [716]	74 [657]	1,64 [1.45]	4,9 [43.4]
DT90-040	40:1	93 [823]	89 [788]	87 [770]	86 [761]	167 [1478]	91 [805]	88 [779]	86 [761]	84 [743]	1,64 [1.40]	5,0 [44.2]
DT90-050	50:1	88 [776]	84 [747]	82 [728]	81 [714]	167 [1479]	86 [759]	83 [730]	81 [712]	79 [698]	1,63 [1.45]	5,0 [44.2]
DT90-070	70:1	86 [761]	82 [726]	80 [708]	79 [699]	167 [1478]	84 [743]	81 [717]	79 [699]	78 [690]	1,63 [1.40]	5,0 [44.2]
DT90-100	100:1	75 [663]	69 [608]	65 [576]	63 [555]	167 [1479]	69 [613]	64 [562]	60 [533]	58 [513]	1,63 [1.45]	4,4 [38.5]

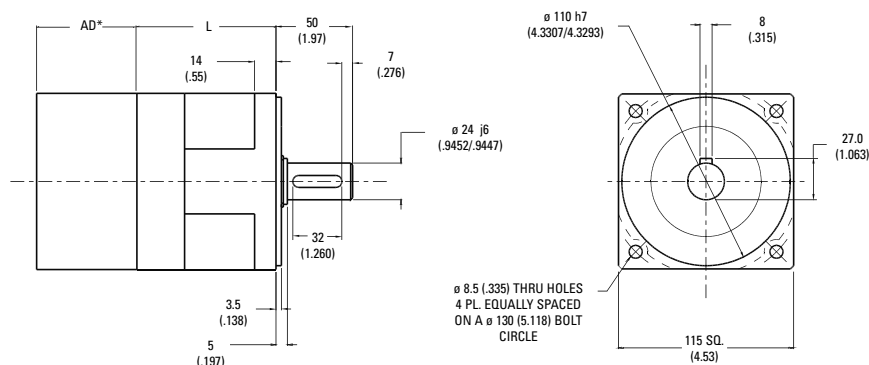
Available with 24 hour delivery through the Gearhead Express Program.

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.T_r = Rated output torque at rated speed for specific hours of life.T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

DuraTRUE™ Size 115

True Planetary™ Gearheads

Metric



Ratio ¹	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
3:1 to 10:1	88 [3.46]	8 max	5,7 [12.7]	93%
15:1 to 100:1	119 [4.69]	9 max	7,3 [16.2]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

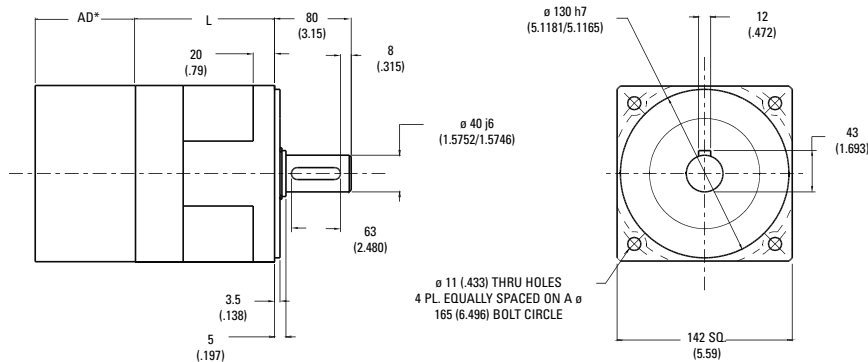
Part Number	Ratio ¹	10000 Hour Life				T _{peak} Nm [in-lb]	20000 Hour Life				J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (2000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (4000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (2000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (4000 rpm) Nm [in-lb]		
DT115-003	3:1	105 [932]	86 [757]	76 [670]	70 [615]	284 [2511]	86 [757]	70 [615]	62 [544]	56 [499]	4,39 [3.88]	13,9 [123.4]
DT115-004	4:1	123 [1089]	98 [867]	91 [805]	85 [752]	284 [2513]	102 [903]	85 [752]	75 [664]	70 [620]	3,1 [2.7]	13,9 [122.7]
DT115-005	5:1	116 [1025]	91 [803]	83 [738]	77 [677]	284 [2511]	94 [833]	77 [677]	68 [599]	62 [550]	2,88 [2.55]	11,6 [102.4]
DT115-007	7:1	113 [1000]	88 [779]	81 [717]	75 [664]	284 [2513]	92 [814]	75 [664]	65 [575]	60 [531]	2,81 [2.5]	13,9 [122.7]
DT115-010	10:1	90 [796]	81 [715]	76 [668]	72 [635]	284 [2511]	83 [737]	75 [661]	70 [618]	66 [588]	2,47 [2.18]	11,6 [102.4]
DT115-015	15:1	171 [1510]	139 [1226]	123 [1086]	113 [996]	284 [2511]	139 [1226]	113 [996]	100 [882]	91 [809]	2,95 [2.61]	12,9 [114.1]
DT115-020	20:1	175 [1549]	161 [1425]	143 [1266]	132 [1168]	284 [2513]	161 [1425]	132 [1168]	118 [1044]	109 [965]	2,95 [2.6]	13,9 [122.7]
DT115-025	25:1	167 [1474]	153 [1350]	135 [1195]	124 [1096]	284 [2511]	153 [1350]	124 [1096]	110 [971]	101 [891]	2,90 [2.57]	14,1 [125.0]
DT115-030	30:1	203 [1794]	171 [218]	151 [1337]	139 [1226]	284 [2513]	171 [1510]	139 [1226]	123 [1086]	113 [996]	2,48 [2.20]	14,1 [124.4]
DT115-040	40:1	181 [1602]	175 [1549]	190 [1682]	161 [1425]	284 [2513]	178 [1575]	161 [1425]	143 [1266]	132 [1168]	2,47 [2.2]	14,1 [124.4]
DT115-050	50:1	173 [1535]	167 [1474]	162 [1435]	153 [1350]	284 [2511]	170 [1510]	153 [1350]	135 [1195]	124 [1096]	2,47 [2.19]	14,1 [125.0]
DT115-070	70:1	171 [1513]	165 [1460]	180 [1593]	151 [1336]	284 [2513]	168 [1487]	151 [1336]	133 [1177]	122 [1080]	2,47 [2.2]	14,1 [124.4]
DT115-100	100:1	123 [1087]	112 [995]	107 [943]	103 [907]	284 [2511]	114 [1006]	104 [921]	99 [873]	95 [840]	2,47 [2.19]	11,4 [100.6]

Available with 24 hour delivery through the Gearhead Express Program.

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

DuraTRUE™ Size 142**True Planetary™ Gearheads****Metric**

Ratio ¹	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
3:1 to 10:1	121 [4.77]	8 max	12,8 [28.3]	93%
15:1 to 100:1	170 [6.71]	9 max	17,2 [38.0]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10000 Hour Life				T _{peak} Nm [in-lb]	20000 Hour Life				J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (2000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (4000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (2000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (4000 rpm) Nm [in-lb]		
DT142-003	3:1	372 [3289]	302 [2671]	267 [2365]	245 [2170]	834 [7377]	302 [2671]	245 [2170]	217 [1921]	199 [1762]	23,2 [2.05]	51,8 [458.7]
DT142-004	4:1	430 [3806]	353 [3124]	315 [2788]	290 [2567]	834 [7381]	353 [3124]	290 [2567]	259 [2292]	239 [2115]	15,1 [1.3]	52,9 [467.1]
DT142-005	5:1	410 [3625]	333 [2944]	295 [2607]	270 [2391]	834 [7377]	333 [2944]	270 [2391]	239 [2118]	219 [1942]	14,7 [1.30]	52,6 [465.1]
DT142-007	7:1	405 [3584]	328 [2903]	290 [2597]	265 [2345]	834 [7381]	328 [2903]	265 [2345]	234 [2071]	214 [1894]	14,5 [1.3]	50,5 [445.9]
DT142-010	10:1	229 [2022]	204 [1808]	190 [1685]	181 [1598]	834 [7377]	211 [1871]	189 [1673]	176 [1559]	167 [1479]	12,1 [1.07]	41,3 [365.1]
DT142-015	15:1	524 [4634]	471 [4167]	433 [3833]	397 [3516]	834 [7377]	484 [4287]	397 [3516]	352 [3114]	323 [2856]	15,1 [1.34]	59,6 [527.6]
DT142-020	20:1	500 [4425]	476 [4213]	461 [4080]	450 [3983]	834 [7381]	489 [4328]	458 [4053]	408 [3611]	376 [3328]	14,8 [1.3]	58,5 [516.6]
DT142-025	25:1	480 [4248]	456 [4038]	441 [3903]	430 [3801]	834 [7377]	469 [4154]	438 [3876]	388 [3432]	356 [3148]	14,8 [1.31]	57,7 [510.6]
DT142-030	30:1	578 [5113]	524 [4634]	493 [4359]	471 [4167]	834 [7377]	535 [4731]	484 [4287]	433 [3833]	397 [3516]	12,2 [1.08]	59,9 [529.9]
DT142-040	40:1	521 [4611]	500 [4425]	486 [4301]	476 [4213]	834 [7381]	510 [4514]	489 [4328]	476 [4213]	458 [4053]	12,9 [1.1]	57,5 [507.7]
DT142-050	50:1	501 [4435]	480 [4248]	466 [4128]	456 [4038]	834 [7377]	490 [4336]	469 [4154]	456 [4037]	438 [3876]	12,1 [1.07]	57,8 [511.1]
DT142-070	70:1	496 [4390]	475 [4204]	461 [4080]	451 [3991]	834 [7381]	485 [4292]	464 [4106]	451 [3991]	433 [3882]	12,1 [1.1]	54,4 [480.4]
DT142-100	100:1	314 [2782]	287 [2543]	272 [2408]	262 [2314]	834 [7377]	291 [2574]	266 [2353]	252 [2228]	242 [2141]	12,1 [1.07]	42,9 [379.5]

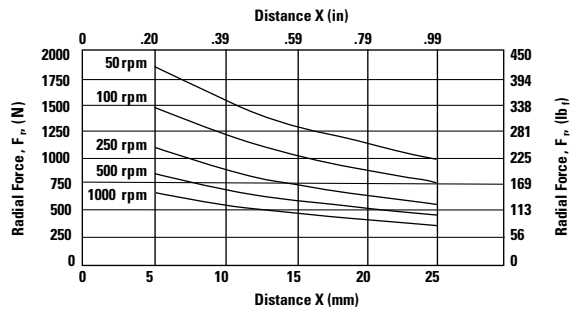
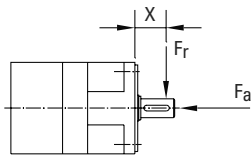
Available with 24 hour delivery through the Gearhead Express Program.

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.T_r = Rated output torque at rated speed for specific hours of life.T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

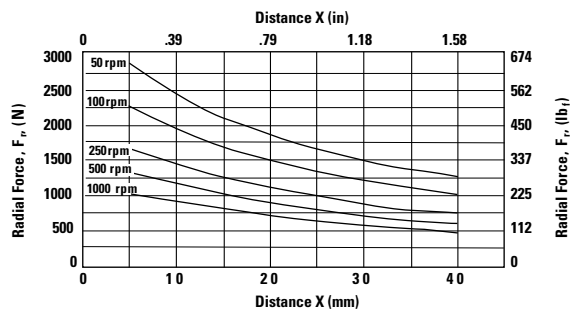
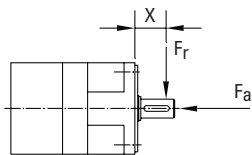
Radial and Axial Load Ratings

DT60



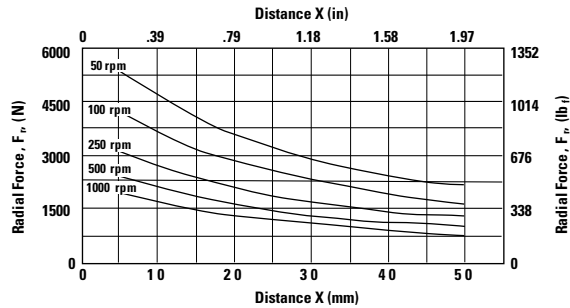
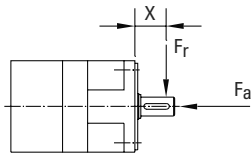
Speed rpm	Axial Load, F_a N [lb.]
50	3075 [692]
100	2441 [549]
250	1798 [405]
500	1427 [321]
1000	1133 [255]

DT90



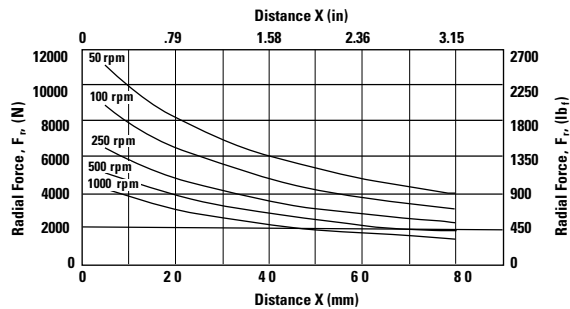
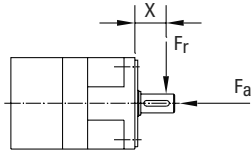
Speed rpm	Axial Load, F_a N [lb.]
50	4506 [1014]
100	3576 [805]
250	2635 [593]
500	2091 [471]
1000	1660 [373]

DT115



Speed rpm	Axial Load, F_a N [lb.]
50	8196 [1844]
100	6505 [1464]
250	4793 [1078]
500	3804 [856]
1000	3019 [679]

DT142



Speed rpm	Axial Load, F_a N [lb.]
50	17023 [3830]
100	13511 [3040]
250	9956 [2240]
500	7902 [1778]
1000	6271 [1411]

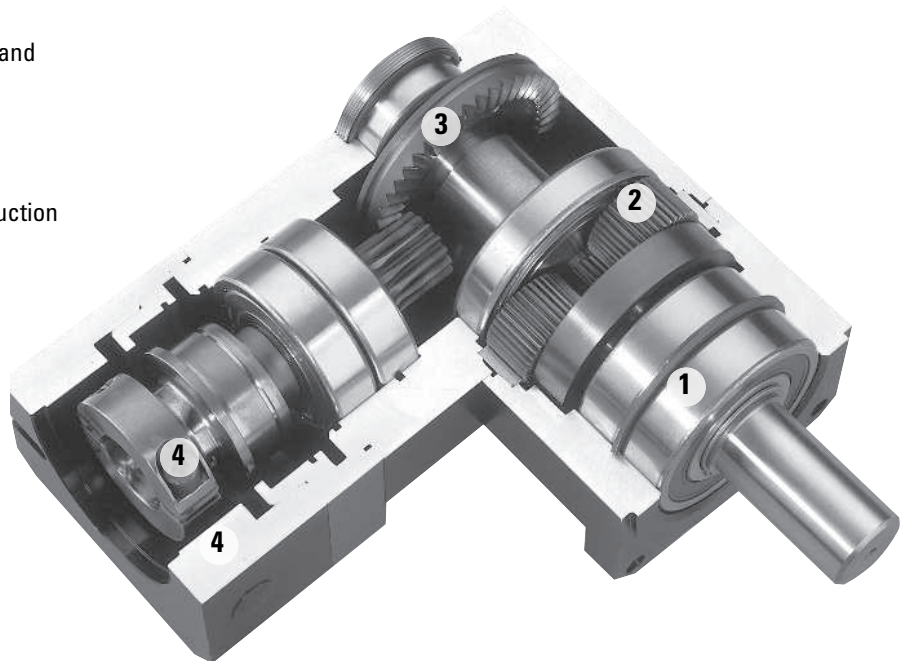
These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{mount} , as described on page 10,

DuraTRUE 90™

Right Angle Gearheads

Ready for Immediate Delivery	
Precision	8 arc-minutes
Frame Sizes	60mm, 90mm, 115mm and 142mm
Torque Capacity	up to 842 Nm
Ratio Availability	1:1 thru 500:1
Radial load capacity	up to 11150 N
Mounting System	RediMount™

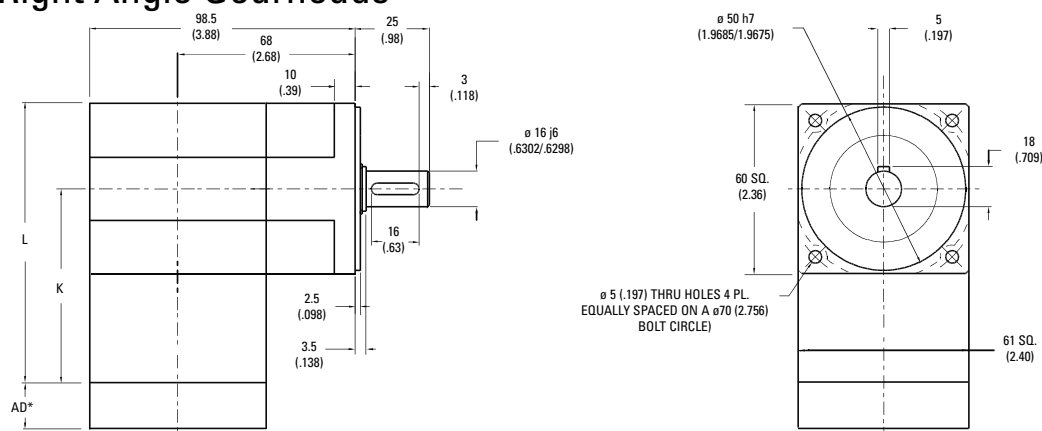
- ① **Deep Groove Ball bearings**
provide high radial load carrying capabilities
- ② **HRC 55-60 steel gears**
provide superior wear resistance and increased backlash integrity
- ③ **Innovative PowerTRUE™ gearing**
delivers smooth, quiet geared reduction
- ④ **RediMount™ system**
provides error-free installation



DuraTRUE 90™ Size 60

Right Angle Gearheads

Metric



Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
5:1 to 50:1	79 [3.11]	109,5 [4.31]	9 max	2,5 [5.5]	93%
60:1 to 500:1	96 [3.79]	127 [4.99]	9 max	2,7 [6]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10000 Hour Life			T _{peak} Nm [in-lb]	20000 Hour Life			J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR60-005	5:1	18 [157]	13 [113]	11 [97]	52 [460]	14 [127]	10 [92]	9 [79]	0,42 [3.7]	2,3 [20.1]
DTR60-006	6:1	19 [166]	13 [119]	12 [102]	52 [460]	15 [134]	11 [97]	9 [83]	0,42 [3.7]	2,3 [20.3]
DTR60-009	9:1	21 [187]	15 [134]	13 [115]	52 [460]	17 [152]	12 [109]	11 [94]	0,36 [3.1]	2,3 [20.2]
DTR60-010	10:1	21 [182]	15 [131]	13 [112]	49 [435]	17 [148]	12 [106]	10 [91]	0,41 [3.5]	2,3 [20.2]
DTR60-012	12:1	18 [161]	17 [147]	14 [126]	45 [402]	18 [161]	13 [119]	12 [102]	0,33 [3.0]	2,3 [20.4]
DTR60-015	15:1	23 [206]	17 [148]	14 [127]	50 [445]	19 [167]	14 [120]	12 [103]	0,32 [2.9]	2,3 [20.4]
DTR60-020	20:1	24 [211]	18 [161]	16 [138]	51 [450]	21 [182]	15 [131]	13 [112]	0,33 [2.8]	2,3 [20.3]
DTR60-025	25:1	24 [214]	19 [172]	17 [148]	51 [455]	22 [195]	16 [140]	14 [120]	0,32 [2.7]	2,3 [20.3]
DTR60-030	30:1	18 [155]	15 [134]	14 [124]	49 [430]	16 [143]	14 [124]	13 [115]	0,35 [2.8]	1,7 [14.8]
DTR60-040	40:1	18 [161]	16 [139]	15 [130]	49 [430]	17 [149]	15 [129]	14 [120]	0,33 [2.7]	1,7 [14.8]
DTR60-050	50:1	19 [165]	16 [143]	15 [134]	49 [430]	17 [153]	15 [133]	14 [124]	0,32 [2.6]	1,7 [14.8]
DTR60-060	60:1	28 [244]	18 [155]	15 [133]	52 [460]	20 [175]	14 [126]	12 [108]	0,42 [3.7]	2,3 [20.2]
DTR60-075	75:1	28 [248]	20 [178]	17 [153]	50 [445]	23 [201]	16 [144]	14 [124]	0,35 [3.0]	2,3 [20.2]
DTR60-090	90:1	28 [244]	20 [175]	17 [150]	52 [460]	22 [198]	16 [142]	14 [122]	0,36 [3.1]	2,3 [20.0]
DTR60-100	100:1	27 [237]	19 [171]	16 [146]	49 [435]	22 [193]	16 [138]	13 [119]	0,41 [3.5]	2,2 [19.9]
DTR60-120	120:1	24 [210]	22 [192]	19 [164]	45 [402]	24 [210]	18 [155]	15 [133]	0,33 [3.0]	2,3 [20.2]
DTR60-125	125:1	29 [257]	23 [207]	20 [178]	51 [455]	27 [235]	19 [168]	16 [144]	0,32 [2.8]	2,4 [21.5]
DTR60-150	150:1	30 [268]	22 [193]	19 [165]	50 [445]	22 [198]	18 [156]	15 [134]	0,35 [2.9]	2,3 [20.1]
DTR60-200	200:1	31 [275]	24 [210]	20 [180]	51 [450]	27 [237]	19 [171]	16 [146]	0,41 [3.4]	2,3 [20.2]
DTR60-250	250:1	32 [279]	25 [224]	22 [193]	51 [455]	29 [254]	21 [182]	18 [156]	0,32 [2.7]	2,4 [21.5]
DTR60-300	300:1	23 [202]	20 [175]	18 [162]	49 [430]	21 [186]	18 [162]	17 [150]	0,35 [2.8]	1,7 [14.8]
DTR60-400	400:1	24 [210]	20 [181]	19 [169]	49 [430]	22 [194]	19 [168]	18 [156]	0,33 [2.7]	1,7 [14.8]
DTR60-500	500:1	24 [215]	21 [186]	20 [175]	49 [430]	23 [199]	20 [173]	18 [162]	0,30 [2.7]	1,7 [14.8]

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

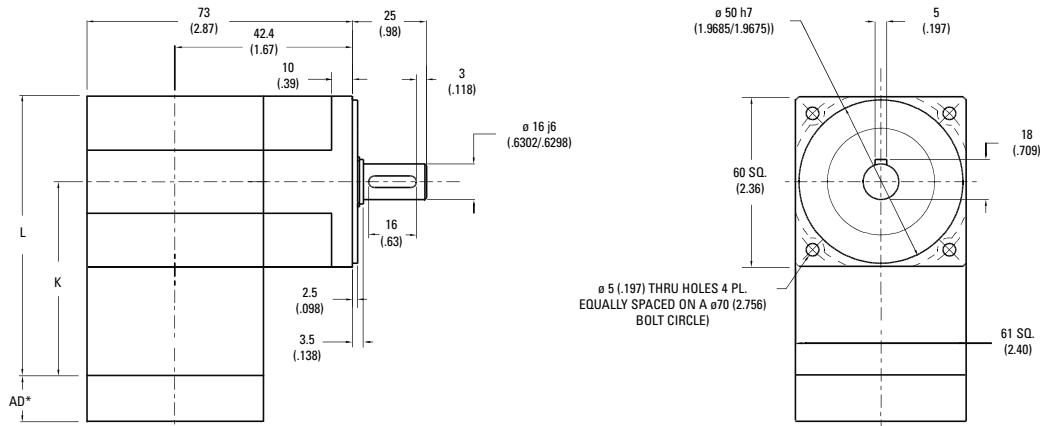
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

DuraTRUE 90™ Size 60S (Slim Line)

Right Angle Gearheads

Metric



Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1P	79 [3.11]	109,5 [4.31]	8 max	2,3 [5]	98%
5:1T to 50:1	96 [3.79]	127 [4.99]	9 max	2,5 [5.5]	93%
60:1 to 500:1	114 [4.48]	144 [5.68]	9 max	2,7 [6]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10000 Hour Life			T _{peak} Nm [in-lb]	20000 Hour Life			J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR60S-001	1:1	7 [66]	7 [60]	6 [54]	25 [217]	7 [61]	6 [56]	6 [50]	0,79 [7.0]	1,8 [15.8]
DTR60S-002	2:1	16 [145]	15 [132]	14 [120]	45 [400]	15 [134]	14 [122]	12 [111]	0,41 [3.6]	2,7 [23.8]
DTR60S-003	3:1	10 [92]	10 [84]	9 [76]	34 [300]	10 [85]	9 [78]	8 [70]	0,35 [3.1]	3,0 [26.9]
DTR60S-004	4:1	8 [68]	7 [62]	6 [56]	30 [264]	7 [63]	6 [57]	6 [52]	0,32 [2.9]	3,2 [28.2]
DTR60S-005P	5:1P	6 [56]	6 [51]	5 [46]	23 [200]	6 [52]	5 [47]	5 [43]	0,32 [2.8]	3,3 [28.8]
DTR60S-005T	5:1T	23 [200]	18 [162]	16 [138]	46 [407]	21 [182]	15 [132]	13 [112]	0,42 [3.7]	3,3 [28.8]
DTR60S-006	6:1	19 [171]	16 [145]	16 [141]	46 [407]	19 [167]	15 [134]	15 [130]	0,41 [3.7]	2,1 [18.8]
DTR60S-009	9:1	12 [109]	10 [92]	10 [90]	36 [321]	12 [106]	10 [85]	9 [83]	0,35 [3.1]	2,7 [23.7]
DTR60S-010	10:1	20 [176]	18 [160]	16 [145]	46 [407]	20 [174]	17 [154]	15 [134]	0,39 [3.5]	2,1 [18.5]
DTR60S-012	12:1	9 [80]	8 [68]	7 [66]	32 [280]	9 [78]	7 [63]	7 [61]	0,33 [3.0]	3,0 [26.1]
DTR60S-015	15:1	13 [112]	12 [102]	10 [92]	37 [330]	12 [110]	11 [98]	10 [85]	0,33 [2.9]	3,1 [27.4]
DTR60S-020	20:1	9 [82]	8 [75]	8 [68]	46 [407]	9 [81]	8 [72]	7 [63]	0,31 [2.8]	2,9 [26.0]
DTR60S-025	25:1	8 [68]	7 [62]	6 [56]	25 [220]	8 [67]	7 [59]	6 [52]	0,31 [2.7]	3,1 [27.3]
DTR60S-030	30:1	13 [114]	12 [109]	12 [105]	38 [339]	13 [114]	12 [107]	11 [101]	0,32 [2.8]	2,5 [22.4]
DTR60S-040	40:1	10 [84]	9 [81]	9 [77]	33 [292]	9 [84]	9 [79]	8 [74]	0,30 [2.7]	2,8 [25.2]
DTR60S-050	50:1	8 [69]	7 [66]	7 [63]	25 [225]	8 [69]	7 [65]	7 [61]	0,30 [2.6]	3,0 [26.8]
DTR60S-060	60:1	21 [182]	20 [180]	20 [177]	46 [407]	21 [182]	20 [178]	20 [175]	0,42 [3.7]	2,0 [18.1]
DTR60S-075	75:1	13 [116]	13 [114]	13 [112]	39 [345]	13 [115]	13 [113]	12 [110]	0,33 [3.0]	2,6 [23.4]
DTR60S-090	90:1	13 [116]	13 [114]	13 [113]	39 [348]	13 [116]	13 [114]	13 [111]	0,35 [3.1]	2,6 [23.3]
DTR60S-100	100:1	21 [183]	20 [181]	20 [180]	46 [407]	21 [182]	20 [180]	20 [178]	0,40 [3.5]	2,1 [18.3]
DTR60S-120	120:1	10 [85]	10 [84]	9 [83]	34 [300]	10 [85]	9 [84]	9 [82]	0,33 [3.0]	2,9 [25.8]
DTR60S-125	125:1	8 [70]	8 [69]	8 [68]	26 [230]	8 [70]	8 [68]	8 [67]	0,31 [2.8]	3,1 [27.3]
DTR60S-150	150:1	13 [116]	13 [115]	13 [114]	40 [351]	13 [116]	13 [115]	13 [114]	0,33 [2.9]	2,6 [23.4]
DTR60S-200	200:1	21 [183]	21 [182]	21 [181]	46 [407]	21 [183]	21 [182]	20 [181]	0,39 [3.4]	1,9 [17.0]
DTR60S-250	250:1	8 [70]	8 [70]	8 [69]	26 [230]	8 [70]	8 [69]	8 [69]	0,31 [2.7]	3,1 [27.3]
DTR60S-300	300:1	13 [116]	13 [116]	13 [115]	40 [354]	13 [116]	13 [116]	13 [115]	0,32 [2.8]	2,5 [22.4]
DTR60S-400	400:1	10 [86]	10 [85]	10 [85]	34 [304]	10 [86]	10 [85]	10 [85]	0,31 [2.7]	2,8 [25.2]
DTR60S-500	500:1	8 [70]	8 [70]	8 [70]	26 [230]	8 [70]	8 [70]	8 [70]	0,30 [2.7]	3,0 [26.8]

Ratio 5P is designed using only PowerTRUE face gearing technology.

Ratio 5T adds a True Planetary gearing stage for increased torque capacity.

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.

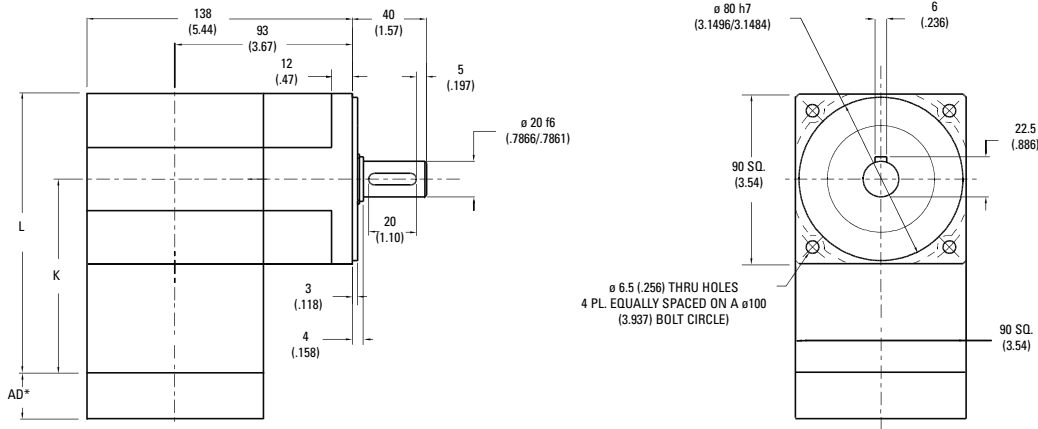
J = Mass moment of inertia reflected to the input shaft (including pinion assembly)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

DuraTRUE 90™ Size 90

Right Angle Gearheads

Metric



Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
5:1 to 50:1	101 [3.99]	146 [5.76]	9 max	4,8 [10]	93%
60:1 to 500:1	124 [4.89]	169 [6.66]	9 max	5,5 [12]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10000 Hour Life			T _{peak} Nm [in-lb]	20000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR90-005	5:1	79 [702]	58 [515]	50 [442]	167 [1479]	66 [582]	47 [418]	41 [359]	1,64 [14.5]	7,8 [69.2]
DTR90-006	6:1	82 [722]	61 [544]	53 [467]	167 [1479]	69 [614]	50 [442]	43 [379]	1,63 [14.4]	5,5 [48.2]
DTR90-009	9:1	75 [665]	69 [614]	60 [527]	167 [1479]	75 [665]	56 [499]	48 [428]	1,39 [12.3]	5,5 [48.8]
DTR90-010	10:1	79 [703]	68 [599]	58 [514]	167 [1479]	76 [676]	55 [486]	47 [417]	1,62 [14.3]	5,5 [48.4]
DTR90-012	12:1	57 [509]	57 [509]	57 [509]	144 [1272]	57 [509]	57 [509]	53 [467]	1,29 [11.4]	5,5 [49.0]
DTR90-015	15:1	82 [723]	75 [664]	66 [580]	167 [1479]	80 [707]	62 [549]	53 [471]	1,26 [11.1]	5,5 [49.0]
DTR90-020	20:1	83 [737]	77 [681]	72 [633]	167 [1479]	81 [720]	68 [599]	58 [514]	1,28 [11.3]	5,5 [48.7]
DTR90-025	25:1	71 [624]	71 [624]	71 [624]	167 [1479]	71 [624]	71 [624]	62 [549]	1,26 [11.1]	5,5 [48.7]
DTR90-030	30:1	64 [568]	55 [488]	51 [452]	167 [1479]	59 [526]	51 [452]	47 [418]	1,38 [12.2]	4,0 [35.6]
DTR90-040	40:1	67 [590]	58 [509]	53 [472]	167 [1479]	62 [546]	53 [471]	49 [437]	1,28 [11.3]	4,0 [35.6]
DTR90-050	50:1	69 [608]	59 [525]	55 [488]	167 [1479]	63 [562]	55 [486]	51 [452]	1,25 [11.1]	4,0 [35.6]
DTR90-060	60:1	106 [941]	80 [709]	69 [608]	167 [1479]	90 [800]	65 [576]	56 [494]	1,63 [14.4]	5,5 [48.6]
DTR90-075	75:1	98 [870]	90 [799]	79 [698]	167 [1479]	96 [851]	75 [661]	64 [567]	1,39 [12.3]	5,5 [48.4]
DTR90-090	90:1	98 [866]	90 [800]	78 [687]	167 [1479]	98 [866]	73 [650]	63 [558]	1,39 [12.3]	5,4 [48.0]
DTR90-100	100:1	103 [916]	88 [780]	76 [670]	167 [1479]	100 [881]	72 [633]	61 [543]	1,62 [14.3]	5,4 [47.8]
DTR90-120	120:1	75 [663]	75 [663]	75 [663]	144 [1272]	75 [663]	75 [663]	69 [608]	1,29 [11.4]	5,5 [48.5]
DTR90-125	125:1	85 [751]	85 [751]	85 [751]	167 [1479]	85 [751]	85 [751]	75 [661]	1,26 [11.1]	5,8 [51.6]
DTR90-150	150:1	106 [942]	98 [865]	85 [756]	167 [1479]	98 [866]	81 [715]	69 [614]	1,39 [12.3]	5,5 [48.3]
DTR90-200	200:1	109 [960]	100 [887]	93 [825]	167 [1479]	108 [938]	88 [780]	76 [670]	1,61 [14.2]	5,5 [48.5]
DTR90-250	250:1	92 [813]	92 [813]	92 [813]	167 [1479]	92 [813]	92 [813]	81 [715]	1,26 [11.1]	5,8 [51.5]
DTR90-300	300:1	84 [740]	72 [636]	67 [589]	167 [1479]	77 [685]	67 [589]	62 [545]	1,38 [12.2]	4,0 [35.5]
DTR90-400	400:1	87 [769]	75 [663]	69 [615]	167 [1479]	80 [711]	69 [614]	64 [569]	1,28 [11.3]	4,0 [35.5]
DTR90-500	500:1	90 [792]	77 [684]	72 [636]	167 [1479]	83 [732]	72 [633]	67 [589]	1,20 [10.6]	4,0 [35.6]

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

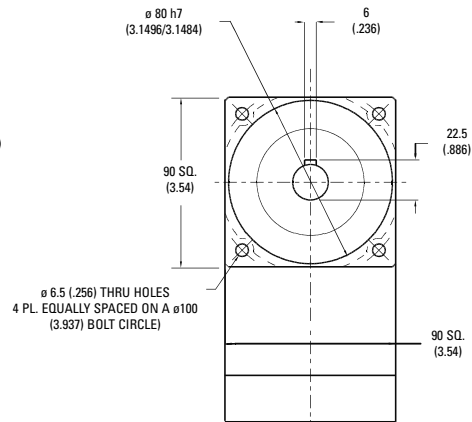
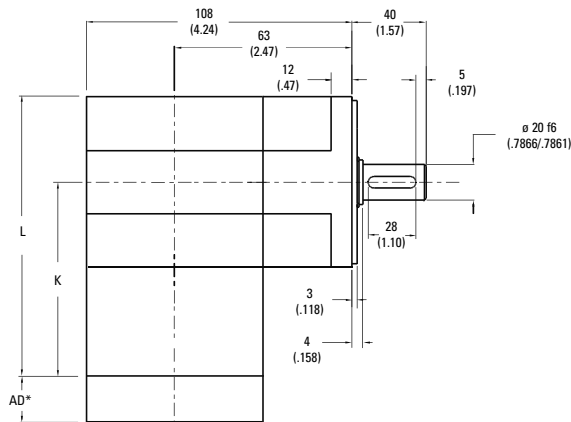
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

DuraTRUE 90™ Size 90S (Slim Line)

Right Angle Gearheads

Metric



Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1P	101 [3.99]	146 [5.76]	8 max	4,1 [9]	98%
5:1T to 50:1	124 [4.89]	169 [6.66]	9 max	4,8 [10]	93%
60:1 to 500:1	114 [5.79]	192 [7.56]	9 max	5,5 [12]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10000 Hour Life			T _{peak} Nm [in-lb]	20000 Hour Life			J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR90S-001	1:1	21 [188]	19 [171]	17 [155]	62 [548]	20 [173]	18 [158]	16 [143]	3,11 [27.5]	4,3 [37.9]
DTR90S-002	2:1	48 [426]	44 [389]	40 [352]	140 [1237]	44 [394]	41 [359]	37 [325]	1,59 [14.1]	6,5 [57.2]
DTR90S-003	3:1	32 [281]	29 [256]	26 [232]	114 [1005]	29 [260]	27 [237]	24 [214]	1,37 [12.1]	7,3 [64.6]
DTR90S-004	4:1	24 [215]	22 [196]	20 [177]	87 [772]	22 [199]	20 [181]	19 [164]	1,27 [11.2]	7,6 [67.7]
DTR90S-005P	5:1P	18 [158]	16 [144]	15 [131]	73 [645]	17 [146]	15 [133]	14 [121]	1,25 [11.0]	7,8 [69.2]
DTR90S-005T	5:1T	64 [568]	55 [483]	53 [469]	140 [1237]	63 [556]	50 [446]	49 [433]	1,64 [14.5]	5,1 [45.1]
DTR90S-006	6:1	57 [501]	48 [426]	47 [414]	140 [1237]	55 [490]	44 [394]	43 [382]	1,63 [14.4]	5,1 [45.1]
DTR90S-009	9:1	37 [331]	32 [281]	31 [273]	124 [1095]	37 [323]	29 [260]	28 [252]	1,37 [12.1]	6,4 [56.9]
DTR90S-010	10:1	58 [516]	53 [471]	48 [426]	140 [1237]	58 [510]	51 [452]	44 [394]	1,54 [13.7]	5,0 [44.5]
DTR90S-012	12:1	29 [253]	24 [215]	24 [209]	94 [836]	28 [247]	22 [199]	22 [193]	1,31 [11.6]	7,1 [62.7]
DTR90S-015	15:1	38 [340]	35 [311]	32 [281]	128 [1131]	38 [336]	34 [298]	29 [260]	1,28 [11.3]	7,4 [65.8]
DTR90S-020	20:1	29 [261]	27 [238]	24 [215]	140 [1237]	29 [257]	26 [228]	22 [199]	1,22 [10.8]	7,1 [62.4]
DTR90S-025	25:1	22 [192]	20 [175]	18 [158]	80 [705]	21 [189]	19 [168]	17 [146]	1,20 [10.6]	7,4 [65.6]
DTR90S-030	30:1	39 [348]	38 [333]	36 [318]	131 [1161]	39 [346]	37 [327]	35 [307]	1,25 [11.1]	6,1 [53.8]
DTR90S-040	40:1	30 [266]	29 [255]	28 [243]	99 [880]	30 [265]	28 [250]	27 [235]	1,19 [10.6]	6,8 [60.5]
DTR90S-050	50:1	22 [196]	21 [188]	20 [179]	82 [725]	22 [195]	21 [184]	20 [173]	1,17 [10.4]	7,3 [64.2]
DTR90S-060	60:1	60 [535]	60 [527]	59 [520]	140 [1237]	60 [534]	59 [524]	58 [514]	1,63 [14.4]	4,9 [43.5]
DTR90S-075	75:1	40 [352]	39 [346]	38 [340]	136 [1200]	40 [351]	39 [344]	38 [336]	1,31 [11.6]	6,4 [56.2]
DTR90S-090	90:1	40 [353]	39 [348]	39 [343]	136 [1206]	40 [352]	39 [346]	38 [339]	1,37 [12.1]	6,3 [55.8]
DTR90S-100	100:1	61 [536]	60 [532]	60 [527]	140 [1237]	61 [536]	60 [530]	59 [524]	1,55 [13.7]	5,0 [43.9]
DTR90S-120	120:1	31 [270]	30 [266]	30 [262]	103 [908]	30 [269]	30 [265]	29 [260]	1,31 [11.6]	7,0 [62.0]
DTR90S-125	125:1	22 [198]	22 [195]	22 [192]	84 [740]	22 [198]	22 [194]	21 [189]	1,23 [10.8]	7,4 [65.5]
DTR90S-150	150:1	40 [354]	40 [351]	39 [348]	138 [1218]	40 [353]	39 [350]	39 [346]	1,29 [11.4]	6,3 [56.1]
DTR90S-200	200:1	61 [538]	60 [535]	60 [533]	140 [1237]	61 [537]	60 [534]	60 [531]	1,52 [13.5]	4,6 [40.7]
DTR90S-250	250:1	23 [199]	22 [198]	22 [196]	85 [750]	22 [199]	22 [197]	22 [195]	1,21 [10.7]	7,4 [65.4]
DTR90S-300	300:1	40 [355]	40 [353]	40 [352]	139 [1230]	40 [354]	40 [352]	40 [350]	1,26 [11.1]	6,1 [53.7]
DTR90S-400	400:1	31 [271]	31 [270]	30 [269]	104 [924]	31 [271]	30 [270]	30 [268]	1,20 [10.6]	6,8 [60.5]
DTR90S-500	500:1	23 [200]	22 [199]	22 [198]	85 [755]	23 [200]	22 [198]	22 [197]	1,18 [10.4]	7,3 [64.2]

Ratio 5P is designed using only PowerTRUE face gearing technology.

Ratio 5T adds a True Planetary gearing stage for increased torque capacity.

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

Tr = Rated output torque at rated speed for specific hours of life.

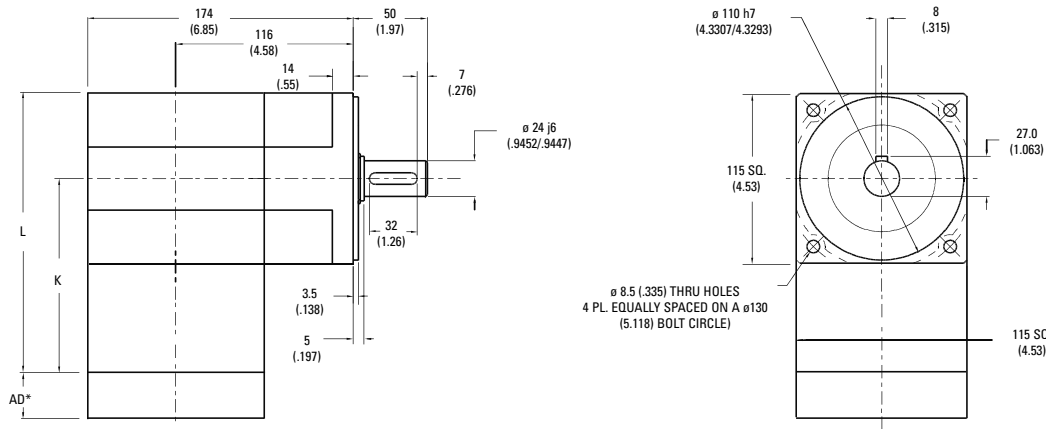
J = Mass moment of inertia reflected to the input shaft (including pinion assembly)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

DuraTRUE 90™ Size 115

Right Angle Gearheads

Metric



Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
5:1 to 50:1	137 [5.40]	195 [7.67]	8 max	11 [24]	93%
60:1 to 500:1	168,4 [6.63]	226 [8.90]	9 max	12 [27]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor. Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10000 Hour Life			T _{peak} Nm [in-lb]	20000 Hour Life			J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR115-005	5:1	123 [1086]	88 [781]	76 [670]	284 [2511]	100 [882]	72 [634]	61 [544]	2,79 [24.7]	15,3 [135]
DTR115-006	6:1	130 [1147]	93 [825]	80 [708]	284 [2511]	105 [932]	76 [670]	65 [575]	2,77 [24.5]	12,5 [110]
DTR115-009	9:1	146 [1295]	105 [932]	90 [799]	284 [2511]	119 [1052]	86 [757]	73 [649]	2,37 [21.0]	12,6 [112]
DTR115-010	10:1	143 [1262]	103 [908]	88 [779]	284 [2511]	116 [1025]	83 [738]	72 [633]	2,75 [24.3]	13,1 [116]
DTR115-012	12:1	137 [1210]	115 [1016]	98 [871]	284 [2511]	130 [1147]	93 [825]	80 [708]	2,19 [19.4]	12,7 [112]
DTR115-015	15:1	161 [1425]	116 [1025]	99 [880]	284 [2511]	131 [1158]	94 [833]	81 [715]	2,14 [18.9]	12,7 [112]
DTR115-020	20:1	164 [1453]	126 [1118]	108 [959]	284 [2511]	143 [1262]	103 [908]	88 [779]	2,18 [19.3]	13,2 [117]
DTR115-025	25:1	167 [1474]	135 [1195]	116 [1025]	284 [2511]	153 [1350]	110 [971]	94 [833]	2,14 [18.9]	13,2 [117]
DTR115-030	30:1	105 [930]	90 [796]	83 [736]	284 [2511]	97 [861]	83 [737]	77 [681]	2,34 [20.7]	11,5 [102]
DTR115-040	40:1	109 [967]	94 [831]	87 [770]	284 [2511]	101 [894]	87 [769]	80 [712]	2,17 [19.2]	11,5 [102]
DTR115-050	50:1	112 [995]	97 [858]	90 [796]	284 [2511]	104 [921]	90 [794]	83 [737]	2,13 [18.8]	11,5 [102]
DTR115-060	60:1	169 [1495]	121 [1075]	104 [923]	284 [2511]	137 [1214]	99 [873]	85 [749]	2,77 [24.5]	13,2 [117]
DTR115-075	75:1	194 [1715]	139 [1233]	120 [1059]	284 [2511]	139 [1233]	113 [1002]	97 [860]	2,35 [20.8]	13,1 [116]
DTR115-090	90:1	191 [1687]	137 [1214]	118 [1041]	284 [2511]	155 [1371]	111 [986]	96 [846]	2,37 [21.0]	12,5 [110]
DTR115-100	100:1	186 [1644]	134 [1183]	115 [1015]	284 [2511]	151 [1336]	109 [962]	93 [825]	2,75 [24.3]	13,0 [115]
DTR115-120	120:1	178 [1577]	150 [1324]	128 [1135]	284 [2511]	169 [1495]	121 [1075]	104 [923]	2,19 [19.4]	12,6 [111]
DTR115-125	125:1	200 [1774]	162 [1438]	139 [1233]	284 [2511]	184 [1624]	132 [1168]	113 [1002]	2,14 [18.9]	13,2 [117]
DTR115-150	150:1	210 [1857]	151 [1336]	130 [1147]	284 [2511]	170 [1509]	123 [1085]	105 [932]	2,35 [20.8]	13,1 [116]
DTR115-200	200:1	214 [1893]	165 [1457]	141 [1250]	284 [2511]	186 [1644]	134 [1183]	115 [1015]	2,73 [24.2]	13,2 [116]
DTR115-250	250:1	217 [1921]	176 [1557]	151 [1336]	284 [2511]	199 [1759]	143 [1265]	123 [1085]	2,14 [18.9]	13,2 [117]
DTR115-300	300:1	137 [1212]	117 [1037]	108 [959]	284 [2511]	127 [1122]	109 [960]	100 [887]	2,34 [20.7]	11,5 [102]
DTR115-400	400:1	142 [1260]	122 [1083]	113 [1003]	284 [2511]	132 [1165]	113 [1002]	105 [928]	2,17 [19.2]	11,5 [102]
DTR115-500	500:1	146 [1296]	126 [1118]	117 [1037]	284 [2511]	136 [1200]	117 [1035]	109 [960]	2,03 [18.0]	11,5 [102]

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.

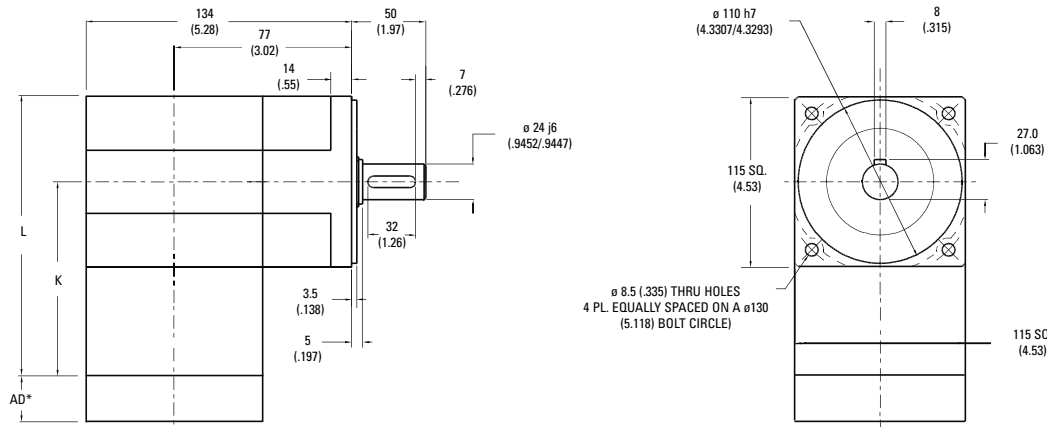
T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

DuraTRUE 90™ Size 115S (Slim Line)

Right Angle Gearheads

Metric



Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1P	137 [5.40]	195 [7.67]	8 max	9 [20]	98%
5:1T to 50:1	168,4 [6.63]	226 [8.90]	9 max	11 [24]	93%
60:1 to 500:1	200 [7.87]	257 [10.13]	9 max	12 [27]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor. Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10000 Hour Life			T _{peak} Nm [in-lb]	20000 Hour Life			J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR115S-001	1:1	63 [554]	57 [506]	52 [457]	203 [1800]	58 [512]	53 [467]	48 [422]	5,28 [46.7]	7,6 [67.6]
DTR115S-002	2:1	112 [989]	102 [903]	92 [816]	283 [2505]	103 [913]	94 [834]	85 [754]	2,71 [23.9]	12,5 [111]
DTR115S-003	3:1	87 [768]	79 [701]	72 [634]	256 [2265]	80 [709]	73 [647]	66 [585]	2,33 [20.6]	14,2 [126]
DTR115S-004	4:1	58 [511]	53 [467]	48 [422]	199 [1760]	53 [472]	49 [431]	44 [390]	2,16 [19.1]	14,9 [132]
DTR115S-005P	5:1P	43 [384]	40 [350]	36 [316]	164 [1450]	40 [354]	37 [323]	33 [292]	2,12 [18.8]	15,3 [135]
DTR115S-005T	5:1T	170 [1505]	126 [1117]	108 [958]	283 [2505]	143 [1262]	102 [907]	88 [778]	2,78 [24.6]	15,3 [135]
DTR115S-006	6:1	131 [1163]	112 [989]	109 [960]	283 [2505]	129 [1138]	103 [913]	100 [887]	2,77 [24.5]	10,2 [90.7]
DTR115S-009	9:1	102 [903]	87 [768]	84 [746]	281 [2490]	100 [884]	80 [709]	78 [689]	2,32 [20.5]	12,8 [113]
DTR115S-010	10:1	135 [1198]	124 [1094]	112 [989]	283 [2505]	134 [1183]	118 [1048]	103 [913]	2,63 [23.2]	10,2 [90.3]
DTR115S-012	12:1	68 [601]	58 [511]	56 [496]	217 [1920]	66 [588]	53 [472]	52 [458]	2,22 [19.6]	14,0 [124]
DTR115S-015	15:1	105 [930]	96 [849]	87 [768]	283 [2505]	104 [919]	92 [814]	80 [709]	2,18 [19.3]	14,6 [130]
DTR115S-020	20:1	70 [619]	64 [565]	58 [511]	283 [2505]	69 [612]	61 [542]	53 [472]	2,08 [18.4]	14,0 [124]
DTR115S-025	25:1	52 [465]	48 [424]	43 [384]	183 [1620]	52 [459]	46 [406]	40 [354]	2,04 [18.0]	14,6 [129]
DTR115S-030	30:1	107 [951]	103 [910]	98 [869]	283 [2505]	107 [945]	101 [892]	95 [840]	2,13 [18.9]	12,5 [111]
DTR115S-040	40:1	72 [633]	68 [606]	65 [579]	231 [2040]	71 [629]	67 [594]	63 [559]	2,03 [18.0]	13,8 [122]
DTR115S-050	50:1	54 [475]	51 [454]	49 [434]	188 [1665]	53 [472]	50 [446]	47 [419]	1,99 [17.6]	14,5 [128]
DTR115S-060	60:1	140 [1242]	138 [1224]	136 [1207]	283 [2505]	140 [1239]	137 [1217]	135 [1194]	2,78 [24.6]	10,0 [88.5]
DTR115S-075	75:1	109 [963]	107 [947]	105 [930]	283 [2505]	109 [960]	106 [939]	104 [919]	2,22 [19.7]	12,7 [112]
DTR115S-090	90:1	109 [964]	107 [951]	106 [937]	283 [2505]	109 [962]	107 [945]	105 [927]	2,33 [20.6]	12,6 [112]
DTR115S-100	100:1	141 [1245]	140 [1235]	138 [1224]	283 [2505]	141 [1244]	139 [1230]	137 [1217]	2,64 [23.3]	10,1 [89.5]
DTR115S-120	120:1	73 [642]	72 [633]	70 [624]	238 [2108]	72 [641]	71 [629]	70 [617]	2,23 [19.7]	13,9 [123]
DTR115S-125	125:1	54 [481]	53 [473]	52 [465]	193 [1710]	54 [480]	53 [469]	52 [459]	2,08 [18.4]	14,6 [129]
DTR115S-150	150:1	109 [967]	108 [959]	107 [951]	283 [2505]	109 [966]	108 [955]	107 [945]	2,19 [19.4]	12,7 [112]
DTR115S-200	200:1	141 [1248]	140 [1243]	140 [1237]	283 [2505]	141 [1247]	140 [1240]	139 [1234]	2,59 [22.9]	9,8 [87.1]
DTR115S-250	250:1	55 [483]	54 [479]	54 [475]	196 [1735]	54 [482]	54 [477]	53 [472]	2,05 [18.1]	14,6 [129]
DTR115S-300	300:1	109 [969]	109 [965]	109 [961]	283 [2505]	109 [968]	109 [963]	108 [958]	2,14 [18.9]	12,5 [111]
DTR115S-400	400:1	73 [645]	73 [642]	72 [640]	244 [2160]	73 [645]	72 [641]	72 [638]	2,04 [18.1]	13,8 [122]
DTR115S-500	500:1	55 [484]	54 [482]	54 [480]	198 [1755]	55 [483]	54 [481]	54 [478]	2,00 [17.7]	14,5 [128]

Ratio 5P is designed using only PowerTRUE face gearing technology.

Ratio 5T adds a True Planetary gearing stage for increased torque capacity.

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

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Tr = Rated output torque at rated speed for specific hours of life.

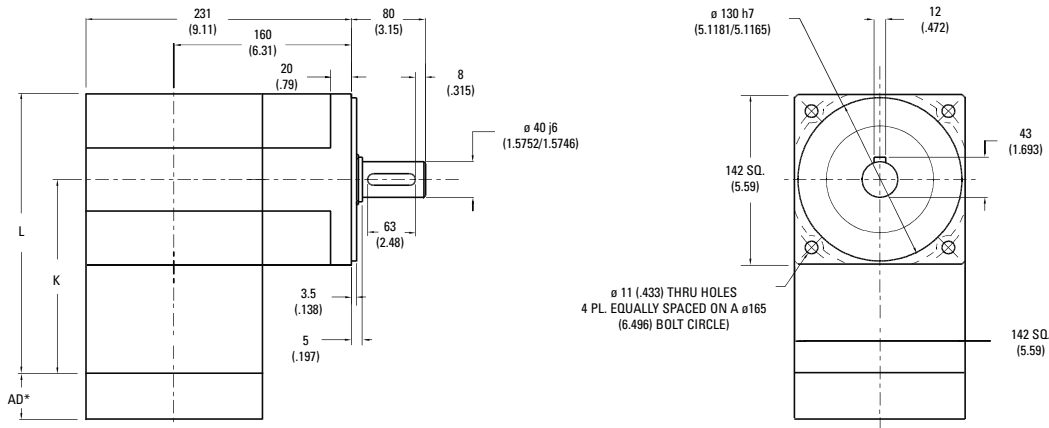
J = Mass moment of inertia reflected to the input shaft (including pinion assembly)

Tpeak = Allowable momentary peak torque for emergency stop or heavy shock loading.

DuraTRUE 90™ Size 142

Right Angle Gearheads

Metric



Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
5:1 to 50:1	160 [6.29]	231 [9.09]	9 max	24 [53]	93%
60:1 to 500:1	209 [8.23]	280 [11.03]	9 max	28 [62]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor. Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10000 Hour Life			T _{peak} Nm [in-lb]	20000 Hour Life			J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR142-005	5:1	433 [3833]	311 [2757]	267 [2365]	833 [7377]	352 [3114]	253 [2239]	217 [1921]	13,9 [123]	47,4 [419]
DTR142-006	6:1	454 [4020]	329 [2912]	282 [2498]	833 [7377]	372 [3289]	267 [2365]	229 [2029]	13,8 [122]	38,6 [342]
DTR142-009	9:1	444 [3934]	372 [3289]	319 [2821]	833 [7377]	420 [3714]	302 [2671]	259 [2292]	11,8 [104]	39,1 [346]
DTR142-010	10:1	448 [3965]	363 [3210]	311 [2754]	833 [7377]	410 [3625]	295 [2607]	253 [2237]	13,7 [121]	40,6 [360]
DTR142-012	12:1	319 [2825]	319 [2825]	319 [2825]	798 [7062]	319 [2825]	319 [2825]	282 [2498]	10,9 [96.3]	39,3 [348]
DTR142-015	15:1	463 [4096]	410 [3625]	351 [3110]	833 [7377]	453 [4005]	333 [2944]	285 [2526]	10,7 [94.2]	39,4 [349]
DTR142-020	20:1	473 [4183]	432 [3824]	383 [3390]	833 [7377]	462 [4090]	363 [3210]	311 [2754]	10,8 [95.9]	40,9 [362]
DTR142-025	25:1	399 [3532]	399 [3532]	399 [3532]	833 [7377]	399 [3532]	388 [3432]	333 [2944]	10,6 [94.0]	40,9 [362]
DTR142-030	30:1	268 [2373]	228 [2022]	134 [1185]	833 [7377]	248 [2196]	211 [1871]	195 [1724]	11,7 [103]	35,6 [315]
DTR142-040	40:1	279 [2468]	240 [2122]	221 [1952]	833 [7377]	258 [2284]	221 [1955]	204 [1807]	10,8 [95.5]	35,6 [315]
DTR142-050	50:1	287 [2543]	247 [2183]	228 [2022]	833 [7377]	266 [2353]	228 [2020]	211 [1871]	10,6 [93.7]	35,6 [315]
DTR142-060	60:1	592 [5238]	429 [3794]	368 [3255]	833 [7377]	486 [4297]	348 [3082]	299 [2644]	13,8 [122]	40,8 [361]
DTR142-075	75:1	557 [4928]	493 [4362]	423 [3742]	833 [7377]	544 [4819]	400 [3542]	343 [3039]	11,7 [104]	40,6 [360]
DTR142-090	90:1	579 [5126]	484 [4286]	415 [3676]	833 [7377]	547 [4839]	393 [3480]	337 [2986]	11,8 [104]	38,6 [342]
DTR142-100	100:1	584 [5166]	473 [4183]	405 [3588]	833 [7377]	534 [4723]	384 [3397]	329 [2915]	13,7 [121]	40,2 [356]
DTR142-120	120:1	416 [3681]	416 [3681]	416 [3681]	798 [7062]	416 [3681]	416 [3681]	368 [3255]	10,9 [96.3]	39,0 [345]
DTR142-125	125:1	480 [4250]	480 [4250]	480 [4250]	833 [7377]	480 [4250]	467 [4129]	400 [3542]	10,6 [94.0]	40,9 [362]
DTR142-150	150:1	603 [5337]	534 [4723]	458 [4052]	833 [7377]	590 [5218]	433 [3836]	372 [3291]	11,7 [104]	40,6 [360]
DTR142-200	200:1	616 [5450]	563 [4983]	499 [4417]	833 [7377]	602 [5329]	473 [4183]	405 [3588]	13,6 [120]	40,8 [361]
DTR142-250	250:1	520 [4602]	520 [4602]	520 [4602]	833 [7377]	520 [4602]	505 [4472]	433 [3836]	10,6 [94.0]	40,9 [362]
DTR142-300	300:1	349 [3092]	298 [2635]	174 [1544]	833 [7377]	323 [2861]	275 [2438]	254 [2246]	11,7 [103]	35,6 [315]
DTR142-400	400:1	363 [3216]	312 [2765]	287 [2543]	833 [7377]	336 [2976]	288 [2547]	266 [2355]	10,8 [95.5]	35,6 [315]
DTR142-500	500:1	374 [3314]	321 [2844]	298 [2635]	833 [7377]	346 [3066]	297 [2632]	275 [2438]	10,1 [89.4]	35,6 [315]

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

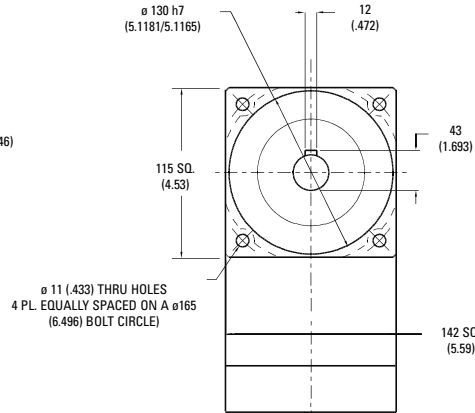
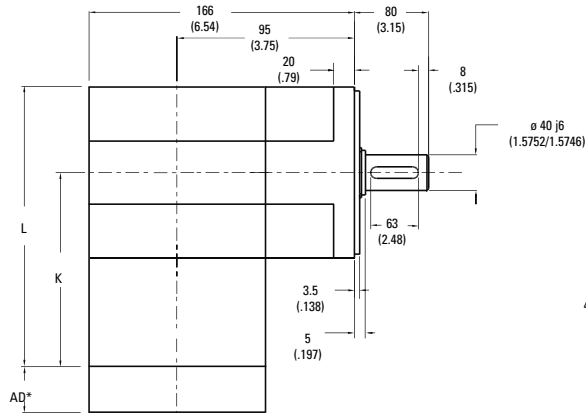
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

DuraTRUE 90™ Size 142S (Slim Line)

Right Angle Gearheads

Metric



Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1P	160 [6.29]	231 [9.09]	8 max	19 [43]	98%
5:1T to 50:1	209 [8.23]	280 [11.03]	9 max	24 [53]	93%
60:1 to 500:1	259 [10.18]	329 [12.97]	9 max	28 [62]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10000 Hour Life			T _{peak} Nm [in-lb]	20000 Hour Life			J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR142S-001	1:1	135 [1194]	123 [1090]	111 [985]	333 [2950]	125 [1103]	114 [1006]	103 [910]	26,3 [232]	23,7 [210]
DTR142S-002	2:1	279 [2474]	255 [2257]	231 [2041]	621 [5500]	258 [2284]	236 [2084]	213 [1885]	13,5 [119]	38,9 [344]
DTR142S-003	3:1	188 [1663]	171 [1518]	155 [1372]	478 [4230]	174 [1536]	158 [1401]	143 [1267]	11,6 [102]	44,1 [390]
DTR142S-004	4:1	135 [1194]	123 [1090]	111 [985]	414 [3660]	125 [1103]	114 [1006]	103 [910]	10,8 [95.1]	46,3 [410]
DTR142S-005P	5:1P	101 [896]	92 [818]	84 [739]	347 [3075]	93 [827]	85 [755]	77 [683]	10,6 [93.3]	47,4 [419]
DTR142S-005T	5:1T	340 [3009]	289 [2559]	281 [2484]	782 [6917]	333 [2944]	267 [2363]	259 [2294]	13,8 [122]	47,4 [419]
DTR142S-006	6:1	329 [2909]	279 [2474]	271 [2402]	678 [6000]	322 [2846]	258 [2284]	251 [2218]	13,8 [122]	31,8 [281]
DTR142S-009	9:1	221 [1956]	188 [1663]	182 [1614]	532 [4710]	216 [1913]	174 [1536]	168 [1491]	11,6 [102]	39,6 [351]
DTR142S-010	10:1	339 [2996]	309 [2735]	279 [2474]	734 [6500]	334 [2958]	296 [2621]	258 [2284]	13,1 [116]	31,6 [280]
DTR142S-012	12:1	159 [1404]	135 [1194]	131 [1159]	454 [4020]	155 [1374]	125 [1103]	121 [1071]	11,1 [97.7]	43,4 [384]
DTR142S-015	15:1	228 [2014]	208 [1839]	188 [1663]	551 [4875]	225 [1989]	199 [1762]	174 [1536]	10,9 [95.9]	45,4 [402]
DTR142S-020	20:1	163 [1446]	149 [1320]	135 [1194]	768 [6800]	161 [1428]	143 [1265]	125 [1103]	10,4 [91.5]	43,3 [383]
DTR142S-025	25:1	123 [1085]	112 [991]	101 [896]	391 [3460]	121 [1071]	107 [949]	93 [827]	10,2 [89.8]	45,3 [401]
DTR142S-030	30:1	233 [2058]	223 [1970]	213 [1882]	573 [5070]	231 [2045]	218 [1932]	205 [1819]	10,6 [93.8]	38,8 [343]
DTR142S-040	40:1	167 [1478]	160 [1415]	153 [1352]	486 [4300]	166 [1469]	157 [1387]	148 [1306]	10,1 [89.4]	42,8 [379]
DTR142S-050	50:1	125 [1109]	120 [1061]	115 [1014]	404 [3575]	125 [1102]	118 [1041]	111 [980]	9,91 [87.6]	45,0 [398]
DTR142S-060	60:1	351 [3105]	346 [3061]	341 [3018]	814 [7200]	350 [3099]	344 [3042]	337 [2986]	13,8 [122]	31,0 [274]
DTR142S-075	75:1	236 [2084]	232 [2049]	228 [2014]	593 [5250]	235 [2079]	230 [2034]	225 [1989]	11,1 [97.9]	39,4 [348]
DTR142S-090	90:1	236 [2087]	233 [2058]	229 [2029]	597 [5280]	235 [2083]	231 [2045]	227 [2008]	11,6 [103]	39,1 [346]
DTR142S-100	100:1	352 [3114]	349 [3088]	346 [3061]	825 [7300]	351 [3110]	348 [3076]	344 [3042]	13,1 [116]	31,3 [278]
DTR142S-120	120:1	169 [1499]	167 [1478]	165 [1457]	506 [4480]	169 [1496]	166 [1469]	163 [1442]	11,1 [98.2]	43,0 [380]
DTR142S-125	125:1	127 [1123]	125 [1104]	123 [1085]	415 [3675]	127 [1120]	124 [1096]	121 [1071]	10,4 [91.7]	45,3 [401]
DTR142S-150	150:1	237 [2093]	235 [2076]	233 [2058]	607 [5370]	236 [2091]	234 [2068]	231 [2045]	10,9 [96.4]	39,3 [348]
DTR142S-200	200:1	353 [3120]	351 [3107]	350 [3094]	842 [7450]	352 [3118]	350 [3101]	349 [3085]	12,9 [114]	30,5 [270]
DTR142S-250	250:1	127 [1128]	126 [1118]	125 [1109]	421 [3725]	127 [1126]	126 [1114]	125 [1102]	10,2 [90.3]	45,2 [400]
DTR142S-300	300:1	237 [2098]	236 [2089]	235 [2080]	614 [5430]	237 [2096]	236 [2085]	234 [2074]	10,7 [94.3]	38,8 [343]
DTR142S-400	400:1	170 [1506]	169 [1500]	169 [1494]	518 [4580]	170 [1505]	169 [1497]	168 [1489]	10,2 [89.8]	42,8 [379]
DTR142S-500	500:1	128 [1130]	127 [1125]	127 [1121]	427 [3775]	128 [1129]	127 [1123]	126 [1117]	9,96 [88.1]	45,0 [398]

Ratio 5P is designed using only PowerTRUE face gearing technology.

Ratio 5T adds a True Planetary gearing stage for increased torque capacity.

¹ Ratios are exact, higher ratios and other custom options are also available, consult factory.

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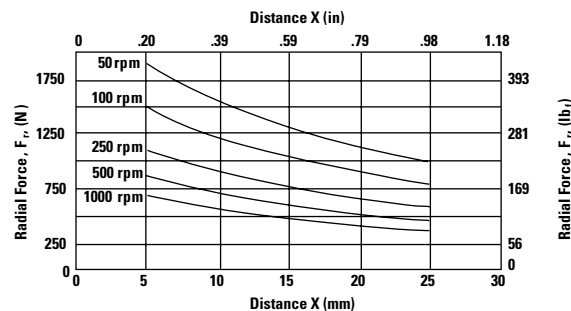
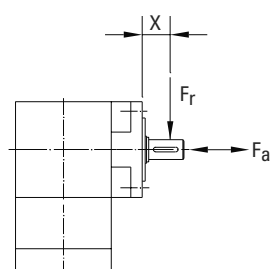
T_r = Rated output torque at rated speed for specific hours of life.

J = Mass moment of inertia reflected to the input shaft (including pinion assembly)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

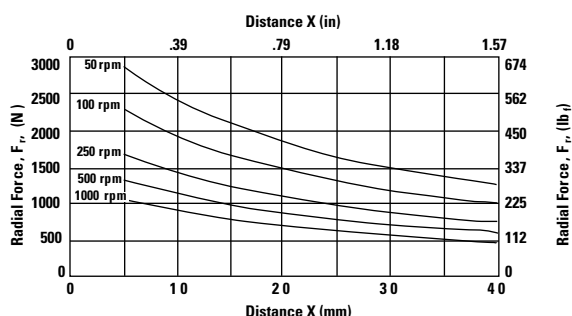
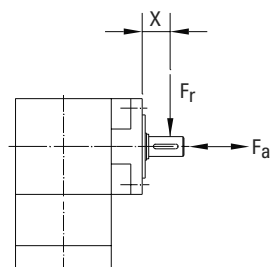
Radial and Axial Load Ratings

DTR60



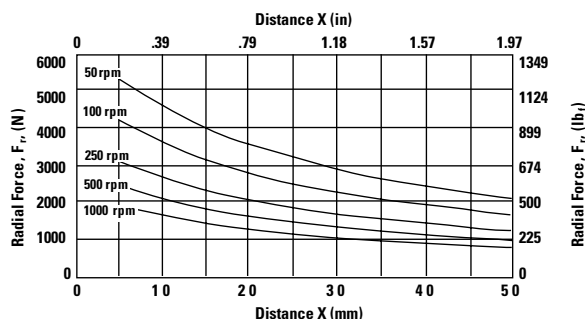
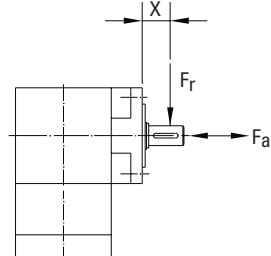
Speed rpm	Axial Load, F_a N [lb _f]
50	3075 [692]
100	2441 [549]
250	1798 [405]
500	1427 [321]
1000	1133 [255]

DTR90



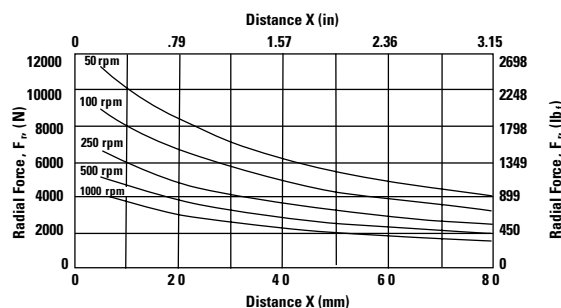
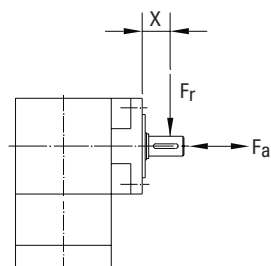
Speed rpm	Axial Load, F_a N [lb _f]
50	4506 [1014]
100	3576 [805]
250	2635 [593]
500	2091 [471]
1000	1660 [373]

DTR115



Speed rpm	Axial Load, F_a N [lb _f]
50	8196 [1844]
100	6505 [1464]
250	4793 [1078]
500	3804 [856]
1000	3019 [679]

DTR142

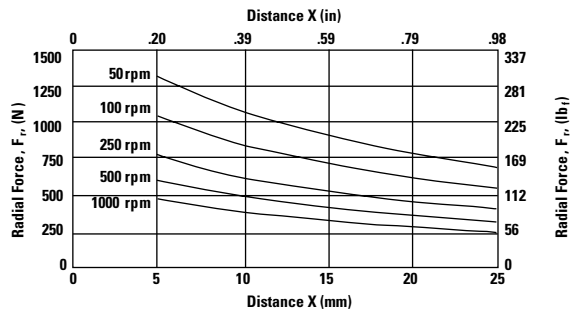
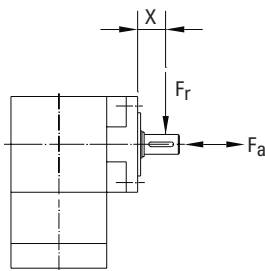


Speed rpm	Axial Load, F_a N [lb _f]
50	17023 [3830]
100	13511 [3040]
250	9956 [2240]
500	7902 [1778]
1000	6271 [1411]

These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{mout} , as described on page 10,

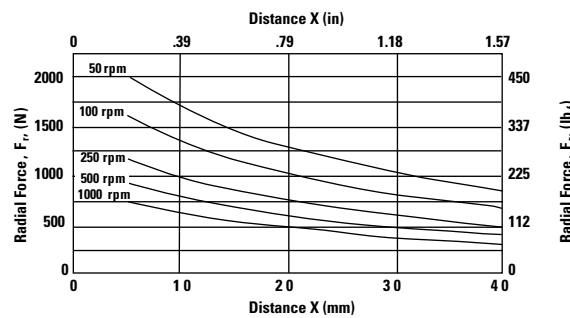
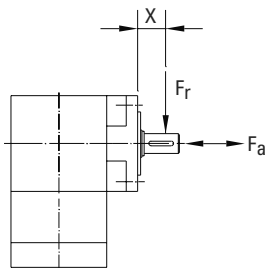
Radial and Axial Load Ratings

DTR60S



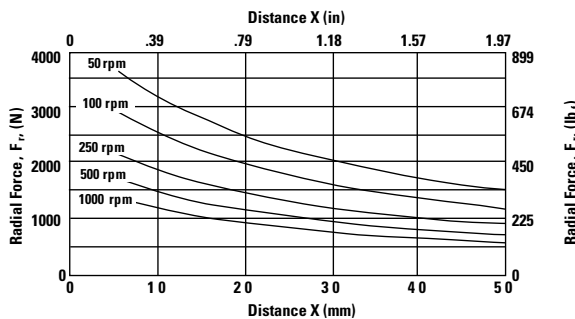
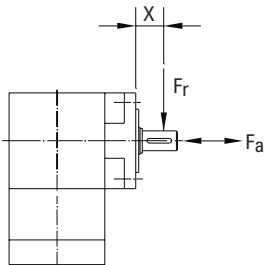
Speed rpm	Axial Load, F_a N [lb _f]
50	2155 [484]
100	1710 [384]
250	1260 [283]
500	1000 [225]
1000	794 [178]

DTR90S



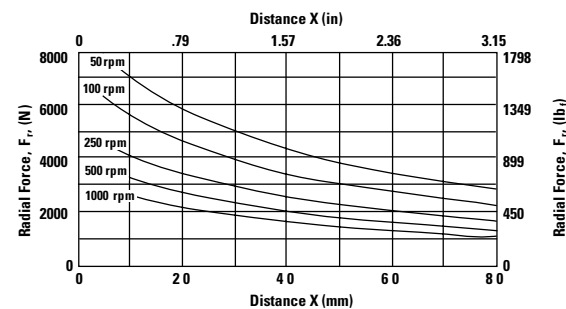
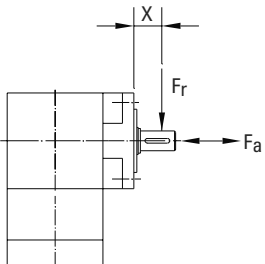
Speed rpm	Axial Load, F_a N [lb _f]
50	3157 [710]
100	2506 [563]
250	1846 [415]
500	1465 [329]
1000	1163 [261]

DTR115S



Speed rpm	Axial Load, F_a N [lb _f]
50	5742 [1291]
100	4558 [1025]
250	3358 [755]
500	2665 [599]
1000	2115 [476]

DTR142S



Speed rpm	Axial Load, F_a N [lb _f]
50	11925 [2681]
100	9465 [2128]
250	6974 [1568]
500	5535 [1244]
1000	4393 [988]

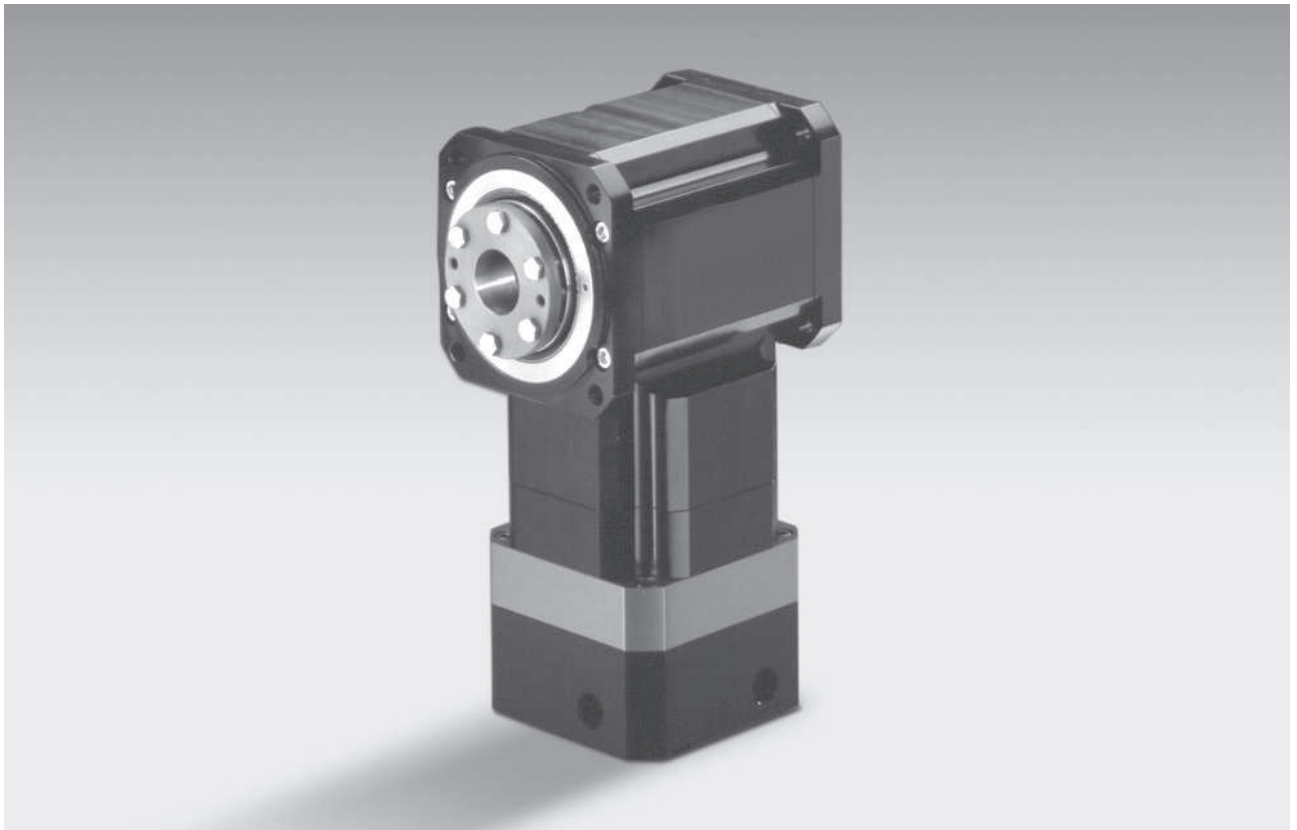
These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{out} , as described on page 10,



DuraTRUE 90™ Hollow Shaft

Right Angle Gearheads

Ready for Immediate Delivery	
Precision	8 arc-minutes
Frame Sizes	90mm, 115mm and 142mm
Torque Capacity	up to 865 Nm
Ratio Availability	1:1 thru 500:1
Radial load capacity	up to 11150 N
Mounting System	RediMount™

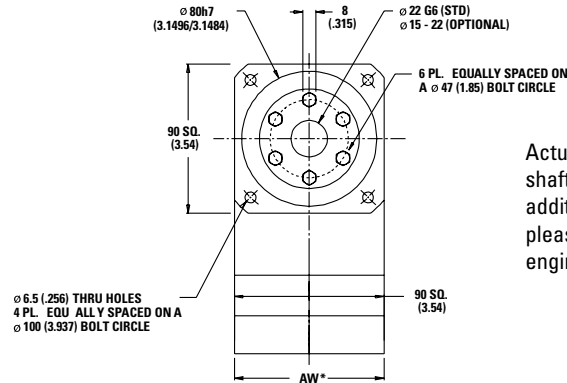
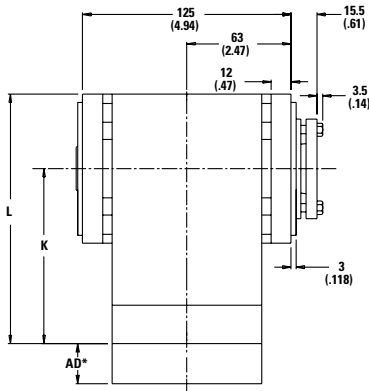


DuraTRUE 90™
Hollow & Dual

DuraTRUE 90™ Size 90H (Hollow Shaft)

Right Angle Gearheads

Metric



Actual thru bore of output shaft is larger than shown. For additional thru bore information, please contact application engineering.

Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1P	101 [3.99]	146 [5.76]	8 max	4.1 [9]	98%
5:1T to 50:1	124 [4.89]	169 [6.66]	9 max	4.8 [10]	93%
60:1 to 500:1	147 [5.79]	192 [7.56]	9 max	5.5 [12]	88%

All dimensions are: mm (inch)

AW* = Adapter width

AD* = Adapter length

Both will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T peak Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR90H-001	1:1	21 [188]	19 [171]	17 [155]	140 [1237]	20 [173]	18 [158]	16 [143]	3,11 [27.5]	4,3 [37.9]
DTR90H-002	2:1	48 [426]	44 [389]	40 [352]	140 [1237]	44 [394]	41 [359]	37 [325]	1,59 [14.1]	6,5 [57.2]
DTR90H-003	3:1	32 [281]	29 [256]	26 [232]	140 [1237]	29 [260]	27 [237]	24 [214]	1,37 [12.1]	7,3 [64.6]
DTR90H-004	4:1	24 [215]	22 [196]	20 [177]	140 [1237]	22 [199]	20 [181]	19 [164]	1,27 [11.2]	7,6 [67.7]
DTR90H-005P	5:1P	18 [158]	16 [144]	15 [131]	140 [1237]	17 [146]	15 [133]	14 [121]	1,25 [11.0]	7,8 [69.2]
DTR90H-005T	5:1T	64 [568]	55 [483]	53 [469]	140 [1237]	63 [556]	50 [446]	49 [433]	1,64 [14.5]	5,1 [45.1]
DTR90H-006	6:1	57 [501]	48 [426]	47 [414]	140 [1237]	55 [490]	44 [394]	43 [382]	1,63 [14.4]	5,1 [45.1]
DTR90H-009	9:1	37 [331]	32 [281]	31 [273]	140 [1237]	37 [323]	29 [260]	28 [252]	1,37 [12.1]	6,4 [56.9]
DTR90H-010	10:1	58 [516]	53 [471]	48 [426]	140 [1237]	58 [510]	51 [452]	44 [394]	1,54 [13.7]	5,0 [44.5]
DTR90H-012	12:1	29 [253]	24 [215]	24 [209]	140 [1237]	28 [247]	22 [199]	22 [193]	1,31 [11.6]	7,1 [62.7]
DTR90H-015	15:1	38 [340]	35 [311]	32 [281]	140 [1237]	38 [336]	34 [298]	29 [260]	1,28 [11.3]	7,4 [65.8]
DTR90H-020	20:1	29 [261]	27 [238]	24 [215]	140 [1237]	29 [257]	26 [228]	22 [199]	1,22 [10.8]	7,1 [62.4]
DTR90H-025	25:1	22 [192]	20 [175]	18 [158]	140 [1237]	21 [189]	19 [168]	17 [146]	1,20 [10.6]	7,4 [65.6]
DTR90H-030	30:1	39 [348]	38 [333]	36 [318]	140 [1237]	39 [346]	37 [327]	35 [307]	1,25 [11.1]	6,1 [53.8]
DTR90H-040	40:1	30 [266]	29 [255]	28 [243]	140 [1237]	30 [265]	28 [250]	27 [235]	1,19 [10.6]	6,8 [60.5]
DTR90H-050	50:1	22 [196]	21 [188]	20 [179]	140 [1237]	22 [195]	21 [184]	20 [173]	1,17 [10.4]	7,3 [64.2]
DTR90H-060	60:1	60 [535]	60 [527]	59 [520]	140 [1237]	60 [534]	59 [524]	58 [514]	1,63 [14.4]	4,9 [43.5]
DTR90H-075	75:1	40 [352]	39 [346]	38 [340]	140 [1237]	40 [351]	39 [344]	38 [336]	1,31 [11.6]	6,4 [56.2]
DTR90H-090	90:1	40 [353]	39 [348]	39 [343]	140 [1237]	40 [352]	39 [346]	38 [339]	1,37 [12.1]	6,3 [55.8]
DTR90H-100	100:1	61 [536]	60 [532]	60 [527]	140 [1237]	61 [536]	60 [530]	59 [524]	1,55 [13.7]	5,0 [43.9]
DTR90H-120	120:1	31 [270]	30 [266]	30 [262]	140 [1237]	30 [269]	30 [265]	29 [260]	1,31 [11.6]	7,0 [62.0]
DTR90H-125	125:1	22 [198]	22 [195]	22 [192]	140 [1237]	22 [198]	22 [194]	21 [189]	1,23 [10.8]	7,4 [65.5]
DTR90H-150	150:1	40 [354]	40 [351]	39 [348]	140 [1237]	40 [353]	39 [350]	39 [346]	1,29 [11.4]	6,3 [56.1]
DTR90H-200	200:1	61 [538]	60 [535]	60 [533]	140 [1237]	61 [537]	60 [534]	60 [531]	1,52 [13.5]	4,6 [40.7]
DTR90H-250	250:1	23 [199]	22 [198]	22 [196]	140 [1237]	22 [199]	22 [197]	22 [195]	1,21 [10.7]	7,4 [65.4]
DTR90H-300	300:1	40 [355]	40 [353]	40 [352]	140 [1237]	40 [354]	40 [352]	40 [350]	1,26 [11.1]	6,1 [53.7]
DTR90H-400	400:1	31 [271]	31 [270]	30 [269]	140 [1237]	31 [271]	30 [270]	30 [268]	1,20 [10.6]	6,8 [60.5]
DTR90H-500	500:1	23 [200]	22 [199]	22 [198]	140 [1237]	23 [200]	22 [198]	22 [197]	1,18 [10.4]	7,3 [64.2]

Ratio 5P is designed using only PowerTRUE face gearing technology.

Ratio 5T adds a True Planetary gearing stage for increased torque capacity.

¹ Ratios are exact, higher ratios are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.

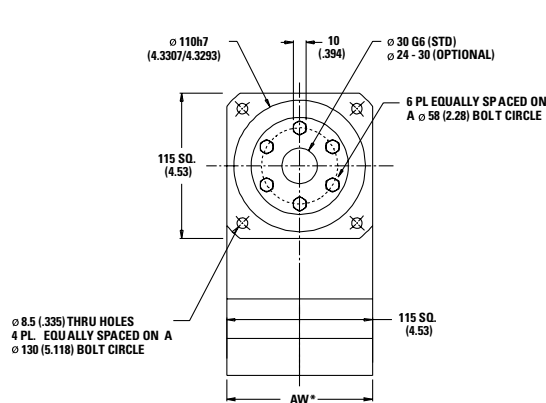
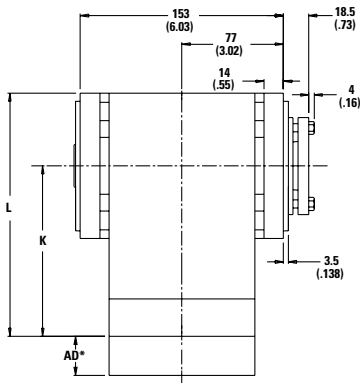
J = Mass moment of inertia reflected to the input shaft (including pinion assembly)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

DuraTRUE 90™ Size 115H (Hollow Shaft)

Right Angle Gearheads

Metric



Actual thru bore of output shaft is larger than shown. For additional thru bore information, please contact application engineering.

Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1P	137 [5.41]	195 [7.67]	8 max	9 [20]	98%
5:1T to 50:1	169 [6.64]	226 [8.90]	9 max	11 [24]	93%
60:1 to 500:1	200 [7.87]	257 [10.13]	9 max	12 [27]	88%

All dimensions are: mm (inch)

AW* = Adapter width

AD* = Adapter length

Both will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T peak Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR115H-001	1:1	63 [554]	57 [506]	52 [457]	283 [2505]	58 [512]	53 [467]	48 [422]	5,28 [46.7]	7,6 [67.6]
DTR115H-002	2:1	112 [989]	102 [903]	92 [816]	283 [2505]	103 [913]	94 [834]	85 [754]	2,71 [23.9]	12,5 [111]
DTR115H-003	3:1	87 [768]	79 [701]	72 [634]	283 [2505]	80 [709]	73 [647]	66 [585]	2,33 [20.6]	14,2 [126]
DTR115H-004	4:1	58 [511]	53 [467]	48 [422]	283 [2505]	53 [472]	49 [431]	44 [390]	2,16 [19.1]	14,9 [132]
DTR115H-005P	5:1P	43 [384]	40 [350]	36 [316]	283 [2505]	40 [354]	37 [323]	33 [292]	2,12 [18.8]	15,3 [135]
DTR115H-005T	5:1T	170 [1505]	126 [1117]	108 [958]	283 [2505]	143 [1262]	102 [907]	88 [778]	2,78 [24.6]	15,3 [135]
DTR115H-006	6:1	131 [1163]	112 [989]	109 [960]	283 [2505]	129 [1138]	103 [913]	100 [887]	2,77 [24.5]	10,2 [90.7]
DTR115H-009	9:1	102 [903]	87 [768]	84 [746]	283 [2505]	100 [884]	80 [709]	78 [689]	2,32 [20.5]	12,8 [113]
DTR115H-010	10:1	135 [1198]	124 [1094]	112 [989]	283 [2505]	134 [1183]	118 [1048]	103 [913]	2,63 [23.2]	10,2 [90.3]
DTR115H-012	12:1	68 [601]	58 [511]	56 [496]	283 [2505]	66 [588]	53 [472]	52 [458]	2,22 [19.6]	14,0 [124]
DTR115H-015	15:1	105 [930]	96 [849]	87 [768]	283 [2505]	104 [919]	92 [814]	80 [709]	2,18 [19.3]	14,6 [130]
DTR115H-020	20:1	70 [619]	64 [565]	58 [511]	283 [2505]	69 [612]	61 [542]	53 [472]	2,08 [18.4]	14,0 [124]
DTR115H-025	25:1	52 [465]	48 [424]	43 [384]	283 [2505]	52 [459]	46 [406]	40 [354]	2,04 [18.0]	14,6 [129]
DTR115H-030	30:1	107 [951]	103 [910]	98 [869]	283 [2505]	107 [945]	101 [892]	95 [840]	2,13 [18.9]	12,5 [111]
DTR115H-040	40:1	72 [633]	68 [606]	65 [579]	283 [2505]	71 [629]	67 [594]	63 [559]	2,03 [18.0]	13,8 [122]
DTR115H-050	50:1	54 [475]	51 [454]	49 [434]	283 [2505]	53 [472]	50 [446]	47 [419]	1,99 [17.6]	14,5 [128]
DTR115H-060	60:1	140 [1242]	138 [1224]	136 [1207]	283 [2505]	140 [1239]	137 [1217]	135 [1194]	2,78 [24.6]	10,0 [88.5]
DTR115H-075	75:1	109 [963]	107 [947]	105 [930]	283 [2505]	109 [960]	106 [939]	104 [919]	2,22 [19.7]	12,7 [112]
DTR115H-090	90:1	109 [964]	107 [951]	106 [937]	283 [2505]	109 [962]	107 [945]	105 [927]	2,33 [20.6]	12,6 [112]
DTR115H-100	100:1	141 [1245]	140 [1235]	138 [1224]	283 [2505]	141 [1244]	137 [1230]	137 [1217]	2,64 [23.3]	10,1 [89.5]
DTR115H-120	120:1	73 [642]	72 [633]	70 [624]	283 [2505]	72 [641]	70 [629]	70 [617]	2,23 [19.7]	13,9 [123]
DTR115H-125	125:1	54 [481]	53 [473]	52 [465]	283 [2505]	54 [480]	52 [469]	52 [459]	2,08 [18.4]	14,6 [129]
DTR115H-150	150:1	109 [967]	108 [959]	107 [951]	283 [2505]	109 [966]	107 [955]	107 [945]	2,19 [19.4]	12,7 [112]
DTR115H-200	200:1	141 [1248]	140 [1243]	140 [1237]	283 [2505]	141 [1247]	139 [1240]	138 [1234]	2,59 [22.9]	9,8 [87.1]
DTR115H-250	250:1	55 [483]	54 [479]	54 [475]	283 [2505]	54 [482]	53 [477]	53 [472]	2,05 [18.1]	14,6 [129]
DTR115H-300	300:1	109 [969]	109 [965]	109 [961]	283 [2505]	109 [968]	108 [963]	108 [958]	2,14 [18.9]	12,5 [111]
DTR115H-400	400:1	73 [645]	73 [642]	72 [640]	283 [2505]	73 [645]	72 [641]	72 [638]	2,04 [18.1]	13,8 [122]
DTR115H-500	500:1	55 [484]	54 [482]	54 [480]	283 [2505]	55 [483]	54 [481]	54 [478]	2,00 [17.7]	14,5 [128]

Ratio 5P is designed using only PowerTRUE face gearing technology.

Ratio 5T adds a True Planetary gearing stage for increased torque capacity.

¹ Ratios are exact, higher ratios are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.

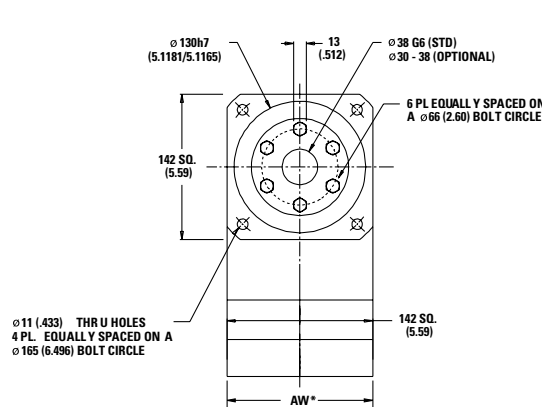
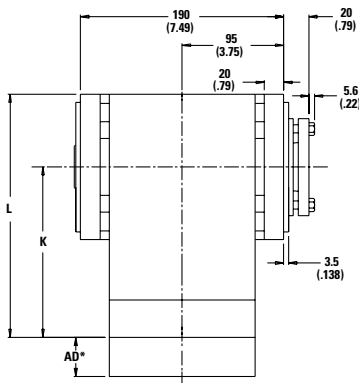
J = Mass moment of inertia reflected to the input shaft (including pinion assembly)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

DuraTRUE 90™ Size 142H (Hollow Shaft)

Right Angle Gearheads

Metric



Actual thru bore of output shaft is larger than shown. For additional thru bore information, please contact application engineering.

Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1P	163 [6.43]	234 [9.22]	8 max	19 [43]	98%
5:1T to 50:1	233 [9.17]	304 [11.96]	9 max	24 [53]	93%
60:1 to 500:1	262 [10.3]	332 [13.10]	9 max	28 [62]	88%

All dimensions are: mm (inch)
 AW* = Adapter width
 AD* = Adapter length
 Both will vary depending on motor.
 Efficiency is calculated at 100% of the rated torque.

Performance Specifications

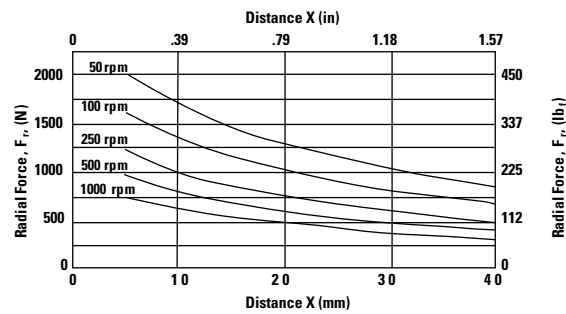
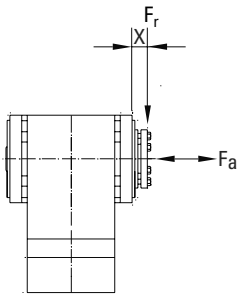
Part Number	Ratio ¹	10,000 Hour Life			T peak Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR142H-001	1:1	135 [1194]	123 [1090]	111 [985]	865 [7659]	125 [1103]	114 [1006]	103 [910]	26.3 [232]	23.7 [210]
DTR142H-002	2:1	279 [2474]	255 [2257]	231 [2041]	865 [7659]	258 [2284]	236 [2084]	213 [1885]	13.5 [119]	38.9 [344]
DTR142H-003	3:1	188 [1663]	171 [1518]	155 [1372]	865 [7659]	174 [1536]	158 [1401]	143 [1267]	11.6 [102]	44.1 [390]
DTR142H-004	4:1	135 [1194]	123 [1090]	111 [985]	865 [7659]	125 [1103]	114 [1006]	103 [910]	10.8 [95.1]	46.3 [410]
DTR142H-005P	5:1P	101 [896]	92 [818]	84 [739]	865 [7659]	93 [827]	85 [755]	77 [683]	10.6 [93.3]	47.4 [419]
DTR142H-005T	5:1T	340 [3009]	289 [2559]	281 [2484]	865 [7659]	333 [2944]	267 [2363]	259 [2294]	13.8 [122]	47.4 [419]
DTR142H-006	6:1	329 [2909]	279 [2474]	271 [2402]	865 [7659]	322 [2846]	258 [2284]	251 [2218]	13.8 [122]	31.8 [281]
DTR142H-009	9:1	221 [1956]	188 [1663]	182 [1614]	865 [7659]	216 [1913]	174 [1536]	168 [1491]	11.6 [102]	39.6 [351]
DTR142H-010	10:1	339 [2996]	309 [2735]	279 [2474]	865 [7659]	334 [2958]	296 [2621]	258 [2284]	13.1 [116]	31.6 [280]
DTR142H-012	12:1	159 [1404]	135 [1194]	131 [1159]	865 [7659]	155 [1374]	125 [1103]	121 [1071]	11.1 [97.7]	43.4 [384]
DTR142H-015	15:1	228 [2014]	208 [1839]	188 [1663]	865 [7659]	225 [1989]	199 [1762]	174 [1536]	10.9 [95.9]	45.4 [402]
DTR142H-020	20:1	163 [1446]	149 [1320]	135 [1194]	865 [7659]	161 [1428]	143 [1265]	125 [1103]	10.4 [91.5]	43.3 [383]
DTR142H-025	25:1	123 [1085]	112 [991]	101 [896]	865 [7659]	121 [1071]	107 [949]	93 [827]	10.2 [89.8]	45.3 [401]
DTR142H-030	30:1	233 [2058]	223 [1970]	213 [1882]	865 [7659]	231 [2045]	218 [1932]	205 [1819]	10.6 [93.8]	38.8 [343]
DTR142H-040	40:1	167 [1478]	160 [1415]	153 [1352]	865 [7659]	166 [1469]	157 [1387]	148 [1306]	10.1 [89.4]	42.8 [379]
DTR142H-050	50:1	125 [1109]	120 [1061]	115 [1014]	865 [7659]	125 [1102]	118 [1041]	111 [980]	9.91 [87.6]	45.0 [398]
DTR142H-060	60:1	351 [3105]	346 [3061]	341 [3018]	865 [7659]	350 [3099]	344 [3042]	337 [2986]	13.8 [122]	31.0 [274]
DTR142H-075	75:1	236 [2084]	232 [2049]	228 [2014]	865 [7659]	235 [2079]	230 [2034]	225 [1989]	11.1 [97.9]	39.4 [348]
DTR142H-090	90:1	236 [2087]	233 [2058]	229 [2029]	865 [7659]	235 [2083]	231 [2045]	227 [2008]	11.6 [103]	39.1 [346]
DTR142H-100	100:1	352 [3114]	349 [3088]	346 [3061]	865 [7659]	351 [3110]	348 [3076]	344 [3042]	13.1 [116]	31.3 [278]
DTR142H-120	120:1	169 [1499]	167 [1478]	165 [1457]	865 [7659]	169 [1496]	166 [1469]	163 [1442]	11.1 [98.2]	43.0 [380]
DTR142H-125	125:1	127 [1123]	125 [1104]	123 [1085]	865 [7659]	127 [1120]	124 [1096]	121 [1071]	10.4 [91.7]	45.3 [401]
DTR142H-150	150:1	237 [2093]	235 [2076]	233 [2058]	865 [7659]	236 [2091]	234 [2068]	231 [2045]	10.9 [96.4]	39.3 [348]
DTR142H-200	200:1	353 [3120]	351 [3107]	350 [3094]	865 [7659]	352 [3118]	350 [3101]	349 [3085]	12.9 [114]	30.5 [270]
DTR142H-250	250:1	127 [1128]	126 [1118]	125 [1109]	865 [7659]	127 [1126]	126 [1114]	125 [1102]	10.2 [90.3]	45.2 [400]
DTR142H-300	300:1	237 [2098]	236 [2089]	235 [2080]	865 [7659]	237 [2096]	236 [2085]	234 [2074]	10.7 [94.3]	38.8 [343]
DTR142H-400	400:1	170 [1506]	169 [1500]	169 [1494]	865 [7659]	170 [1505]	169 [1497]	168 [1489]	10.2 [89.8]	42.8 [379]
DTR142H-500	500:1	128 [1130]	127 [1125]	127 [1121]	865 [7659]	128 [1129]	127 [1123]	126 [1117]	9.96 [88.1]	45.0 [398]

Ratio 5P is designed using only PowerTRUE face gearing technology.
 Ratio 5T adds a True Planetary gearing stage for increased torque capacity.
¹ Ratios are exact, higher ratios are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.
 J = Mass moment of inertia reflected to the input shaft (including pinion assembly)
 T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

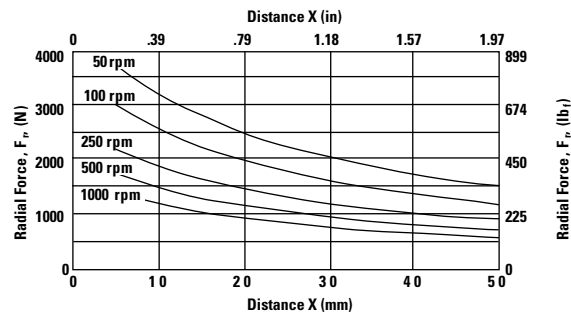
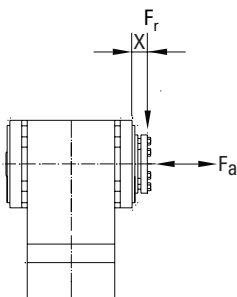
Radial and Axial Load Ratings

DTR90H



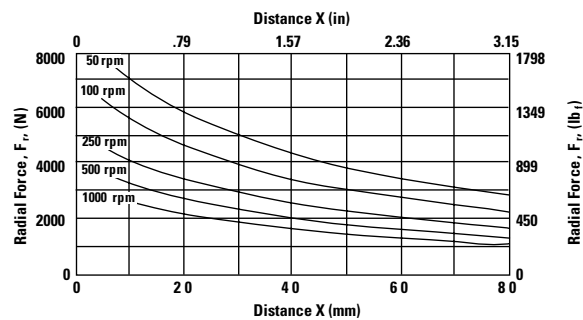
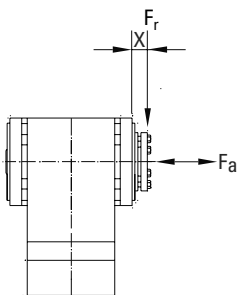
Speed rpm	Axial Load, F_a N [lb _f]
50	3157 [710]
100	2506 [563]
250	1846 [415]
500	1465 [329]
1000	1163 [261]

DTR115H



Speed rpm	Axial Load, F_a N [lb _f]
50	5742 [1291]
100	4558 [1025]
250	3358 [755]
500	2665 [599]
1000	2115 [476]

DTR142H



Speed rpm	Axial Load, F_a N [lb _f]
50	11925 [2681]
100	9465 [2128]
250	6974 [1568]
500	5535 [1244]
1000	4393 [988]

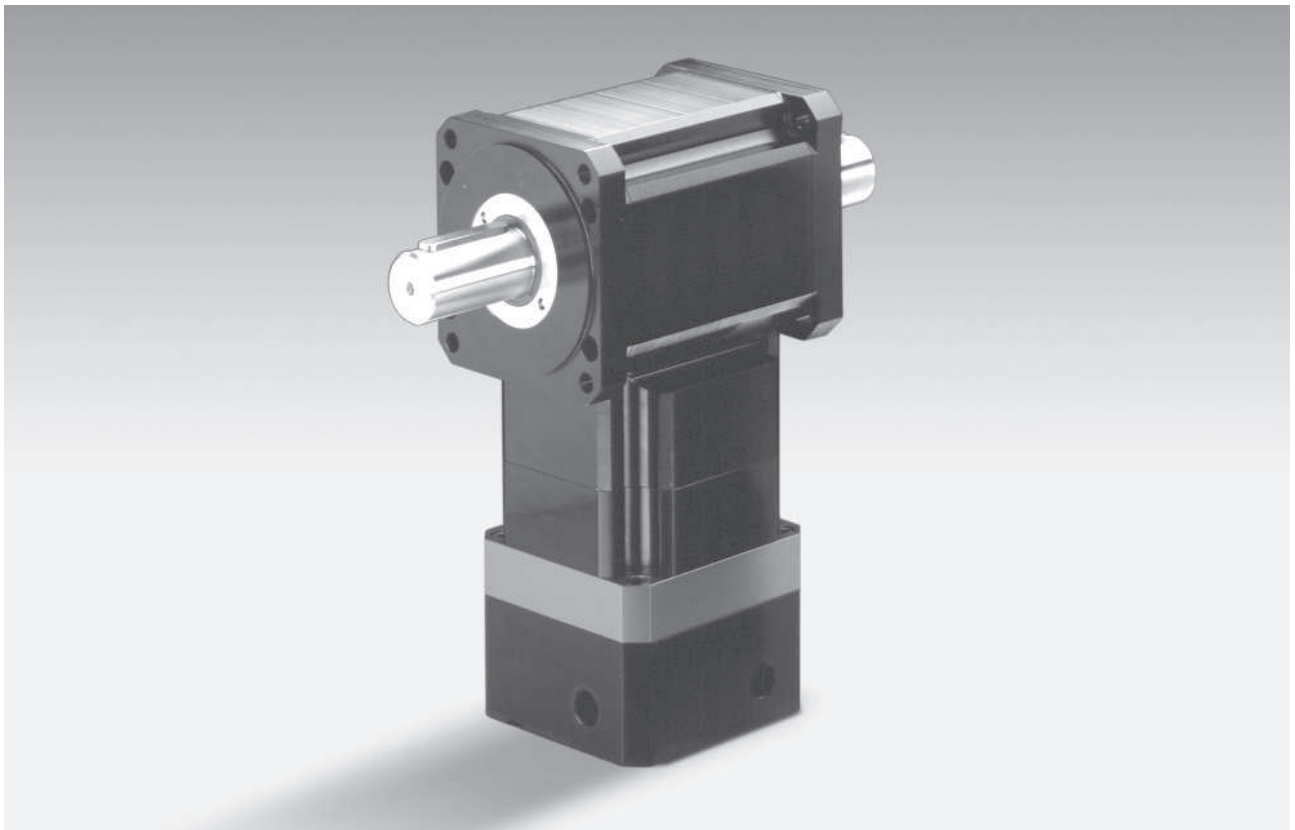
These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{mout} , as described on page 10.



DuraTRUE 90™ Dual Shaft

Right Angle Gearheads

Ready for Immediate Delivery	
Precision	8 arc-minutes
Frame Sizes	60mm, 90mm, 115mm and 142mm
Torque Capacity	up to 865 Nm
Ratio Availability	1:1 thru 500:1
Radial load capacity	up to 11150 N
Mounting System	RediMount™

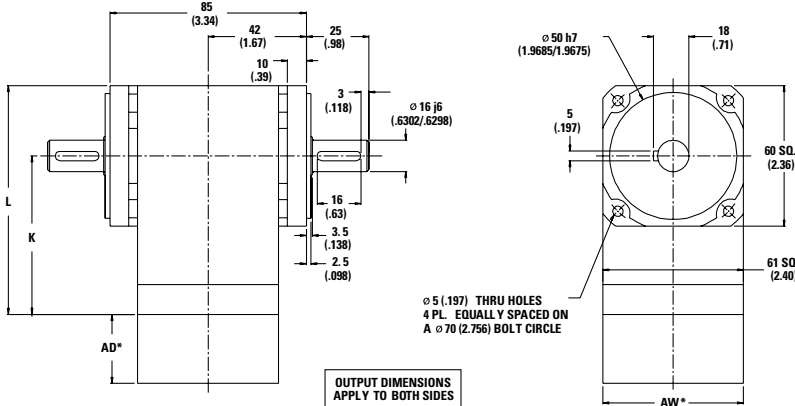


DuraTRUE 90™
Hollow & Dual

DuraTRUE 90™ Size 60D (Dual Shaft)

Right Angle Gearheads

Metric



Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1P	80 [3.15]	110 [4.33]	8 max	2,3 [5]	98%
5:1T to 50:1	97 [3.83]	127 [5.01]	9 max	2,5 [5.5]	93%
60:1 to 500:1	115 [4.52]	145 [5.70]	9 max	2,7 [6]	88%

All dimensions are: mm (inch)

AW* = Adapter width

AD* = Adapter length

Both will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T peak Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR60D-001	1:1	7 [66]	7 [60]	6 [54]	46 [407]	7 [61]	6 [56]	6 [50]	,79 [7.0]	1,8 [15.8]
DTR60D-002	2:1	16 [145]	15 [132]	14 [120]	46 [407]	15 [134]	14 [122]	12 [111]	,41 [3.6]	2,7 [23.8]
DTR60D-003	3:1	10 [92]	10 [84]	9 [76]	46 [407]	10 [85]	9 [78]	8 [70]	,35 [3.1]	3,0 [26.9]
DTR60D-004	4:1	8 [68]	7 [62]	6 [56]	46 [407]	7 [63]	6 [57]	6 [52]	,32 [2.9]	3,2 [28.2]
DTR60D-005P	5:1P	6 [56]	6 [51]	5 [46]	46 [407]	6 [52]	5 [47]	5 [43]	,32 [2.8]	3,3 [28.8]
DTR60D-005T	5:1T	23 [200]	18 [162]	16 [138]	46 [407]	21 [182]	15 [132]	13 [112]	,42 [3.7]	3,3 [28.8]
DTR60D-006	6:1	19 [171]	16 [145]	16 [141]	46 [407]	19 [167]	15 [134]	15 [130]	,41 [3.7]	2,1 [18.8]
DTR60D-009	9:1	12 [109]	10 [92]	10 [90]	46 [407]	12 [106]	10 [85]	9 [83]	,35 [3.1]	2,7 [23.7]
DTR60D-010	10:1	20 [176]	18 [160]	16 [145]	46 [407]	20 [174]	17 [154]	15 [134]	,39 [3.5]	2,1 [18.5]
DTR60D-012	12:1	9 [80]	8 [68]	7 [66]	46 [407]	9 [78]	7 [63]	7 [61]	,33 [3.0]	3,0 [26.1]
DTR60D-015	15:1	13 [112]	12 [102]	10 [92]	46 [407]	12 [110]	11 [98]	10 [85]	,33 [2.9]	3,1 [27.4]
DTR60D-020	20:1	9 [82]	8 [75]	8 [68]	46 [407]	9 [81]	8 [72]	7 [63]	,31 [2.8]	2,9 [26.0]
DTR60D-025	25:1	8 [68]	7 [62]	6 [56]	46 [407]	8 [67]	7 [59]	6 [52]	,31 [2.7]	3,1 [27.3]
DTR60D-030	30:1	13 [114]	12 [109]	12 [105]	46 [407]	13 [114]	12 [107]	11 [101]	,32 [2.8]	2,5 [22.4]
DTR60D-040	40:1	10 [84]	9 [81]	9 [77]	46 [407]	9 [84]	9 [79]	8 [74]	,30 [2.7]	2,8 [25.2]
DTR60D-050	50:1	8 [69]	7 [66]	7 [63]	46 [407]	8 [69]	7 [65]	7 [61]	,30 [2.6]	3,0 [26.8]
DTR60D-060	60:1	21 [182]	20 [180]	20 [177]	46 [407]	21 [182]	20 [178]	20 [175]	,42 [3.7]	2,0 [18.1]
DTR60D-075	75:1	13 [116]	13 [114]	13 [112]	46 [407]	13 [115]	13 [113]	12 [110]	,33 [3.0]	2,6 [23.4]
DTR60D-090	90:1	13 [116]	13 [114]	13 [113]	46 [407]	13 [116]	13 [114]	13 [111]	,35 [3.1]	2,6 [23.3]
DTR60D-100	100:1	21 [183]	20 [181]	20 [180]	46 [407]	21 [182]	20 [180]	20 [178]	,40 [3.5]	2,1 [18.3]
DTR60D-120	120:1	10 [85]	10 [84]	9 [83]	46 [407]	10 [85]	9 [84]	9 [82]	,33 [3.0]	2,9 [25.8]
DTR60D-125	125:1	8 [70]	8 [69]	8 [68]	46 [407]	8 [70]	8 [68]	8 [67]	,31 [2.8]	3,1 [27.3]
DTR60D-150	150:1	13 [116]	13 [115]	13 [114]	46 [407]	13 [116]	13 [115]	13 [114]	,33 [2.9]	2,6 [23.4]
DTR60D-200	200:1	21 [183]	21 [182]	21 [181]	46 [407]	21 [183]	21 [182]	20 [181]	,39 [3.4]	1,9 [17.0]
DTR60D-250	250:1	8 [70]	8 [70]	8 [69]	46 [407]	8 [70]	8 [69]	8 [69]	,31 [2.7]	3,1 [27.3]
DTR60D-300	300:1	13 [116]	13 [116]	13 [115]	46 [407]	13 [116]	13 [116]	13 [115]	,32 [2.8]	2,5 [22.4]
DTR60D-400	400:1	10 [86]	10 [85]	10 [85]	46 [407]	10 [86]	10 [85]	10 [85]	,31 [2.7]	2,8 [25.2]
DTR60D-500	500:1	8 [70]	8 [70]	8 [70]	46 [407]	8 [70]	8 [70]	8 [70]	,30 [2.7]	3,0 [26.8]

Ratio 5P is designed using only PowerTRUE face gearing technology.

Ratio 5T adds a True Planetary gearing stage for increased torque capacity.

¹ Ratios are exact, higher ratios are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.

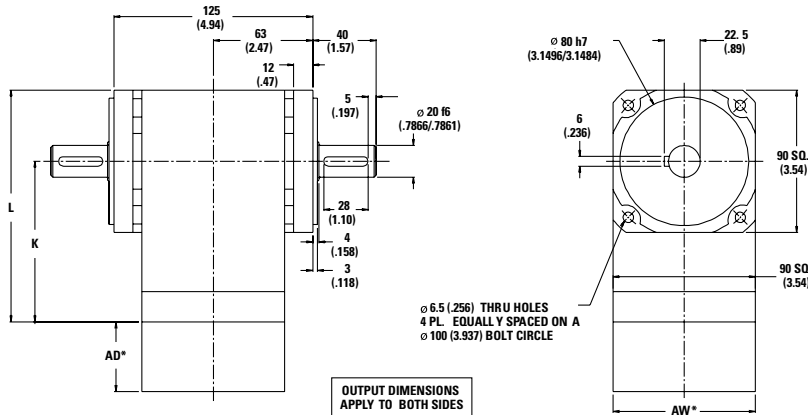
J = Mass moment of inertia reflected to the input shaft (including pinion assembly)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

DuraTRUE 90™ Size 90D (Dual Shaft)

Right Angle Gearheads

Metric



Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1P	101 [3.99]	146 [5.76]	8 max	4,1 [9]	98%
5:1T to 50:1	124 [4.89]	169 [6.66]	9 max	4,8 [10]	93%
60:1 to 500:1	147 [5.79]	192 [7.56]	9 max	5,5 [12]	88%

All dimensions are: mm (inch)

AW* = Adapter width

AD* = Adapter length

Both will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T peak Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR90D-001	1:1	21 [188]	19 [171]	17 [155]	140 [1237]	20 [173]	18 [158]	16 [143]	3,11 [27.5]	4,3 [37.9]
DTR90D-002	2:1	48 [426]	44 [389]	40 [352]	140 [1237]	44 [394]	41 [359]	37 [325]	1,59 [14.1]	6,5 [57.2]
DTR90D-003	3:1	32 [281]	29 [256]	26 [232]	140 [1237]	29 [260]	27 [237]	24 [214]	1,37 [12.1]	7,3 [64.6]
DTR90D-004	4:1	24 [215]	22 [196]	20 [177]	140 [1237]	22 [199]	20 [181]	19 [164]	1,27 [11.2]	7,6 [67.7]
DTR90D-005P	5:1P	18 [158]	16 [144]	15 [131]	140 [1237]	17 [146]	15 [133]	14 [121]	1,25 [11.0]	7,8 [69.2]
DTR90D-005T	5:1T	64 [568]	55 [483]	53 [469]	140 [1237]	63 [556]	50 [446]	49 [433]	1,64 [14.5]	5,1 [45.1]
DTR90D-006	6:1	57 [501]	48 [426]	47 [414]	140 [1237]	55 [490]	44 [394]	43 [382]	1,63 [14.4]	5,1 [45.1]
DTR90D-009	9:1	37 [331]	32 [281]	31 [273]	140 [1237]	37 [323]	29 [260]	28 [252]	1,37 [12.1]	6,4 [56.9]
DTR90D-010	10:1	58 [516]	53 [471]	48 [426]	140 [1237]	58 [510]	51 [452]	44 [394]	1,54 [13.7]	5,0 [44.5]
DTR90D-012	12:1	29 [253]	24 [215]	24 [209]	140 [1237]	28 [247]	22 [199]	22 [193]	1,31 [11.6]	7,1 [62.7]
DTR90D-015	15:1	38 [340]	35 [311]	32 [281]	140 [1237]	38 [336]	34 [298]	29 [260]	1,28 [11.3]	7,4 [65.8]
DTR90D-020	20:1	29 [261]	27 [238]	24 [215]	140 [1237]	29 [257]	26 [228]	22 [199]	1,22 [10.8]	7,1 [62.4]
DTR90D-025	25:1	22 [192]	20 [175]	18 [158]	140 [1237]	21 [189]	19 [168]	17 [146]	1,20 [10.6]	7,4 [65.6]
DTR90D-030	30:1	39 [348]	38 [333]	36 [318]	140 [1237]	39 [346]	37 [327]	35 [307]	1,25 [11.1]	6,1 [53.8]
DTR90D-040	40:1	30 [266]	29 [255]	28 [243]	140 [1237]	30 [265]	28 [250]	27 [235]	1,19 [10.6]	6,8 [60.5]
DTR90D-050	50:1	22 [196]	21 [188]	20 [179]	140 [1237]	22 [195]	21 [184]	20 [173]	1,17 [10.4]	7,3 [64.2]
DTR90D-060	60:1	60 [535]	60 [527]	59 [520]	140 [1237]	60 [534]	59 [524]	58 [514]	1,63 [14.4]	4,9 [43.5]
DTR90D-075	75:1	40 [352]	39 [346]	38 [340]	140 [1237]	40 [351]	39 [344]	38 [336]	1,31 [11.6]	6,4 [56.2]
DTR90D-090	90:1	40 [353]	39 [348]	39 [343]	140 [1237]	40 [352]	39 [346]	38 [339]	1,37 [12.1]	6,3 [55.8]
DTR90D-100	100:1	61 [536]	60 [532]	60 [527]	140 [1237]	61 [536]	60 [530]	59 [524]	1,55 [13.7]	5,0 [43.9]
DTR90D-120	120:1	31 [270]	30 [266]	30 [262]	140 [1237]	30 [269]	30 [265]	29 [260]	1,31 [11.6]	7,0 [62.0]
DTR90D-125	125:1	22 [198]	22 [195]	22 [192]	140 [1237]	22 [198]	22 [194]	21 [189]	1,23 [10.8]	7,4 [65.5]
DTR90D-150	150:1	40 [354]	40 [351]	39 [348]	140 [1237]	40 [353]	39 [350]	39 [346]	1,29 [11.4]	6,3 [56.1]
DTR90D-200	200:1	61 [538]	60 [535]	60 [533]	140 [1237]	61 [537]	60 [534]	60 [531]	1,52 [13.5]	4,6 [40.7]
DTR90D-250	250:1	23 [199]	22 [198]	22 [196]	140 [1237]	22 [199]	22 [197]	22 [195]	1,21 [10.7]	7,4 [65.4]
DTR90D-300	300:1	40 [355]	40 [353]	40 [352]	140 [1237]	40 [354]	40 [352]	40 [350]	1,26 [11.1]	6,1 [53.7]
DTR90D-400	400:1	31 [271]	31 [270]	30 [269]	140 [1237]	31 [271]	30 [270]	30 [268]	1,20 [10.6]	6,8 [60.5]
DTR90D-500	500:1	23 [200]	22 [199]	22 [198]	140 [1237]	23 [200]	22 [198]	22 [197]	1,18 [10.4]	7,3 [64.2]

Ratio 5P is designed using only PowerTRUE face gearing technology.

Ratio 5T adds a True Planetary gearing stage for increased torque capacity.

¹ Ratios are exact, higher ratios are also available, consult factory.T_r = Rated output torque at rated speed for specific hours of life.

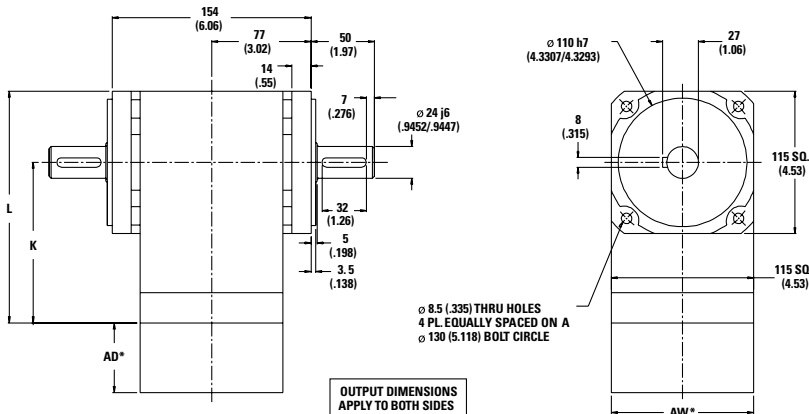
J = Mass moment of inertia reflected to the input shaft (including pinion assembly)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

DuraTRUE 90™ Size 115D (Dual Shaft)

Right Angle Gearheads

Metric



Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1P	137 (5.41)	195 (7.76)	8 max	9 [20]	98%
5:1T to 50:1	169 (6.64)	226 (8.90)	9 max	11 [24]	93%
60:1 to 500:1	200 (7.87)	257 (10.13)	9 max	12 [27]	88%

All dimensions are: mm (inch)

AW* = Adapter width

AD* = Adapter length

Both will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T peak Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR115D-001	1:1	63 [554]	57 [506]	52 [457]	283 [2505]	58 [512]	53 [467]	48 [422]	5,28 [46.7]	7,6 [67.6]
DTR115D-002	2:1	112 [989]	102 [903]	92 [816]	283 [2505]	103 [913]	94 [834]	85 [754]	2,71 [23.9]	12,5 [111]
DTR115D-003	3:1	87 [768]	79 [701]	72 [634]	283 [2505]	80 [709]	73 [647]	66 [585]	2,33 [20.6]	14,2 [126]
DTR115D-004	4:1	58 [511]	53 [467]	48 [422]	283 [2505]	53 [472]	49 [431]	44 [390]	2,16 [19.1]	14,9 [132]
DTR115D-005P	5:1P	43 [384]	40 [350]	36 [316]	283 [2505]	40 [354]	37 [323]	33 [292]	2,12 [18.8]	15,3 [135]
DTR115D-005T	5:1T	170 [1505]	126 [1117]	108 [958]	283 [2505]	143 [1262]	102 [907]	88 [778]	2,78 [24.6]	15,3 [135]
DTR115D-006	6:1	131 [1163]	112 [989]	109 [960]	283 [2505]	129 [1138]	103 [913]	100 [887]	2,77 [24.5]	10,2 [90.7]
DTR115D-009	9:1	102 [903]	87 [768]	84 [746]	283 [2505]	100 [884]	80 [709]	78 [689]	2,32 [20.5]	12,8 [113]
DTR115D-010	10:1	135 [1198]	124 [1094]	112 [989]	283 [2505]	134 [1183]	118 [1048]	103 [913]	2,63 [23.2]	10,2 [90.3]
DTR115D-012	12:1	68 [601]	58 [511]	56 [496]	283 [2505]	66 [588]	53 [472]	52 [458]	2,22 [19.6]	14,0 [124]
DTR115D-015	15:1	105 [930]	96 [849]	87 [768]	283 [2505]	104 [919]	92 [814]	80 [709]	2,18 [19.3]	14,6 [130]
DTR115D-020	20:1	70 [619]	64 [565]	58 [511]	283 [2505]	69 [612]	61 [542]	53 [472]	2,08 [18.4]	14,0 [124]
DTR115D-025	25:1	52 [465]	48 [424]	43 [384]	283 [2505]	52 [459]	46 [406]	40 [354]	2,04 [18.0]	14,6 [129]
DTR115D-030	30:1	107 [951]	103 [910]	98 [869]	283 [2505]	107 [945]	101 [892]	95 [840]	2,13 [18.9]	12,5 [111]
DTR115D-040	40:1	72 [633]	68 [606]	65 [579]	283 [2505]	71 [629]	67 [594]	63 [559]	2,03 [18.0]	13,8 [122]
DTR115D-050	50:1	54 [475]	51 [454]	49 [434]	283 [2505]	53 [472]	50 [446]	47 [419]	1,99 [17.6]	14,5 [128]
DTR115D-060	60:1	140 [1242]	138 [1224]	136 [1207]	283 [2505]	140 [1239]	137 [1217]	135 [1194]	2,78 [24.6]	10,0 [88.5]
DTR115D-075	75:1	109 [963]	107 [947]	105 [930]	283 [2505]	109 [960]	106 [939]	104 [919]	2,22 [19.7]	12,7 [112]
DTR115D-090	90:1	109 [964]	107 [951]	106 [937]	283 [2505]	109 [962]	107 [945]	105 [927]	2,33 [20.6]	12,6 [112]
DTR115D-100	100:1	141 [1245]	140 [1235]	138 [1224]	283 [2505]	141 [1244]	139 [1230]	137 [1217]	2,64 [23.3]	10,1 [89.5]
DTR115D-120	120:1	73 [642]	72 [633]	70 [624]	283 [2505]	72 [641]	71 [629]	70 [617]	2,23 [19.7]	13,9 [123]
DTR115D-125	125:1	54 [481]	53 [473]	52 [465]	283 [2505]	54 [480]	53 [469]	52 [459]	2,08 [18.4]	14,6 [129]
DTR115D-150	150:1	109 [967]	108 [959]	107 [951]	283 [2505]	109 [966]	108 [955]	107 [945]	2,19 [19.4]	12,7 [112]
DTR115D-200	200:1	141 [1248]	140 [1243]	140 [1237]	283 [2505]	141 [1247]	140 [1240]	139 [1234]	2,59 [22.9]	9,8 [87.1]
DTR115D-250	250:1	55 [483]	54 [479]	54 [475]	283 [2505]	54 [482]	54 [477]	53 [472]	2,05 [18.1]	14,6 [129]
DTR115D-300	300:1	109 [969]	109 [965]	109 [961]	283 [2505]	109 [968]	109 [963]	108 [958]	2,14 [18.9]	12,5 [111]
DTR115D-400	400:1	73 [645]	73 [642]	73 [640]	283 [2505]	73 [645]	72 [641]	72 [638]	2,04 [18.1]	13,8 [122]
DTR115D-500	500:1	55 [484]	54 [482]	54 [480]	283 [2505]	55 [483]	54 [481]	54 [478]	2,00 [17.7]	14,5 [128]

Ratio 5P is designed using only PowerTRUE face gearing technology.

Ratio 5T adds a True Planetary gearing stage for increased torque capacity.

¹ Ratios are exact, higher ratios are also available, consult factory.

T_r = Rated output torque at rated speed for specific hours of life.

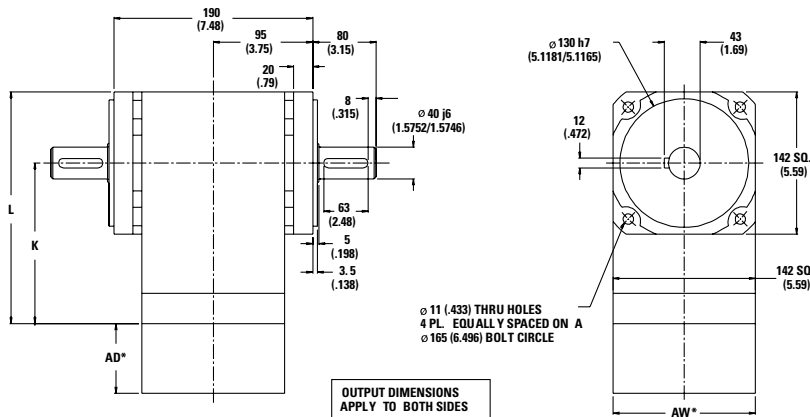
J = Mass moment of inertia reflected to the input shaft (including pinion assembly)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

DuraTRUE 90™ Size 142D (Dual Shaft)

Right Angle Gearheads

Metric



Ratio ¹	Dimension 'K' mm [in]	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1P	163 [6.43]	234 [9.22]	8 max	19 [43]	98%
5:1T to 50:1	233 [9.17]	304 [11.96]	9 max	24 [53]	93%
60:1 to 500:1	262 [10.3]	332 [13.10]	9 max	28 [62]	88%

All dimensions are: mm (inch)

AW* = Adapter width

AD* = Adapter length

Both will vary depending on motor.

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T peak Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
DTR142D-001	1:1	135 [1194]	123 [1090]	111 [985]	865 [7659]	125 [1103]	114 [1006]	103 [910]	26,3 [232]	23,7 [210]
DTR142D-002	2:1	279 [2474]	255 [2257]	231 [2041]	865 [7659]	258 [2284]	236 [2084]	213 [1885]	13,5 [119]	38,9 [344]
DTR142D-003	3:1	188 [1663]	171 [1518]	155 [1372]	865 [7659]	174 [1536]	158 [1401]	143 [1267]	11,6 [102]	44,1 [390]
DTR142D-004	4:1	135 [1194]	123 [1090]	111 [985]	865 [7659]	125 [1103]	114 [1006]	103 [910]	10,8 [95.1]	46,3 [410]
DTR142D-005P	5:1P	101 [896]	92 [818]	84 [739]	865 [7659]	93 [827]	85 [755]	77 [683]	10,6 [93.3]	47,4 [419]
DTR142D-005T	5:1T	340 [3009]	289 [2559]	281 [2484]	865 [7659]	333 [2944]	267 [2363]	259 [2294]	13,8 [122]	47,4 [419]
DTR142D-006	6:1	329 [2909]	279 [2474]	271 [2402]	865 [7659]	322 [2846]	258 [2284]	251 [2218]	13,8 [122]	31,8 [281]
DTR142D-009	9:1	221 [1956]	188 [1663]	182 [1614]	865 [7659]	216 [1913]	174 [1536]	168 [1491]	11,6 [102]	39,6 [351]
DTR142D-010	10:1	339 [2996]	309 [2735]	279 [2474]	865 [7659]	334 [2958]	296 [2621]	258 [2284]	13,1 [116]	31,6 [280]
DTR142D-012	12:1	159 [1404]	135 [1194]	131 [1159]	865 [7659]	155 [1374]	125 [1103]	121 [1071]	11,1 [97.7]	43,4 [384]
DTR142D-015	15:1	228 [2014]	208 [1839]	188 [1663]	865 [7659]	225 [1989]	199 [1762]	174 [1536]	10,9 [95.9]	45,4 [402]
DTR142D-020	20:1	163 [1446]	149 [1320]	135 [1194]	865 [7659]	161 [1428]	143 [1265]	125 [1103]	10,4 [91.5]	43,3 [383]
DTR142D-025	25:1	123 [1085]	112 [991]	101 [896]	865 [7659]	121 [1071]	107 [949]	93 [827]	10,2 [89.8]	45,3 [401]
DTR142D-030	30:1	233 [2058]	223 [1970]	213 [1882]	865 [7659]	231 [2045]	218 [1932]	205 [1819]	10,6 [93.8]	38,8 [343]
DTR142D-040	40:1	167 [1478]	160 [1415]	153 [1352]	865 [7659]	166 [1469]	157 [1387]	148 [1306]	10,1 [89.4]	42,8 [379]
DTR142D-050	50:1	125 [1109]	120 [1061]	115 [1014]	865 [7659]	125 [1102]	118 [1041]	111 [980]	9,91 [87.6]	45,0 [398]
DTR142D-060	60:1	351 [3105]	346 [3061]	341 [3018]	865 [7659]	350 [3099]	344 [3042]	337 [2986]	13,8 [122]	31,0 [274]
DTR142D-075	75:1	236 [2084]	232 [2049]	228 [2014]	865 [7659]	235 [2079]	230 [2034]	225 [1989]	11,1 [97.9]	39,4 [348]
DTR142D-090	90:1	236 [2087]	233 [2058]	229 [2029]	865 [7659]	235 [2083]	231 [2045]	227 [2008]	11,6 [103]	39,1 [346]
DTR142D-100	100:1	352 [3114]	349 [3088]	346 [3061]	865 [7659]	351 [3110]	348 [3076]	344 [3042]	13,1 [116]	31,3 [278]
DTR142D-120	120:1	169 [1499]	167 [1478]	165 [1457]	865 [7659]	169 [1496]	166 [1469]	163 [1442]	11,1 [98.2]	43,0 [380]
DTR142D-125	125:1	127 [1123]	125 [1104]	123 [1085]	865 [7659]	127 [1120]	124 [1096]	121 [1071]	10,4 [91.7]	45,3 [401]
DTR142D-150	150:1	237 [2093]	235 [2076]	233 [2058]	865 [7659]	236 [2091]	234 [2068]	231 [2045]	10,9 [96.4]	39,3 [348]
DTR142D-200	200:1	353 [3120]	351 [3107]	350 [3094]	865 [7659]	352 [3118]	350 [3101]	349 [3085]	12,9 [114]	30,5 [270]
DTR142D-250	250:1	127 [1128]	126 [1118]	125 [1109]	865 [7659]	127 [1126]	126 [1114]	125 [1102]	10,2 [90.3]	45,2 [400]
DTR142D-300	300:1	237 [2098]	236 [2089]	235 [2080]	865 [7659]	237 [2096]	236 [2085]	234 [2074]	10,7 [94.3]	38,8 [343]
DTR142D-400	400:1	170 [1506]	169 [1500]	169 [1494]	865 [7659]	170 [1505]	169 [1497]	168 [1489]	10,2 [89.8]	42,8 [379]
DTR142D-500	500:1	128 [1130]	127 [1125]	127 [1121]	865 [7659]	128 [1129]	127 [1123]	126 [1117]	9,96 [88.1]	45,0 [398]

Ratio 5P is designed using only PowerTRUE face gearing technology.

Ratio 5T adds a True Planetary gearing stage for increased torque capacity.

¹ Ratios are exact, higher ratios are also available, consult factory.

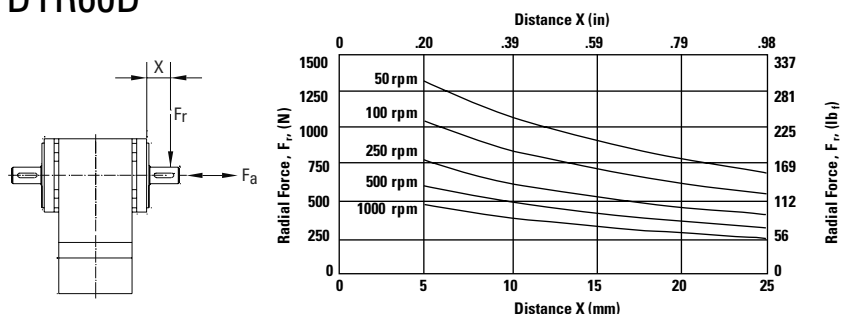
T_r = Rated output torque at rated speed for specific hours of life.

J = Mass moment of inertia reflected to the input shaft (including pinion assembly)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.

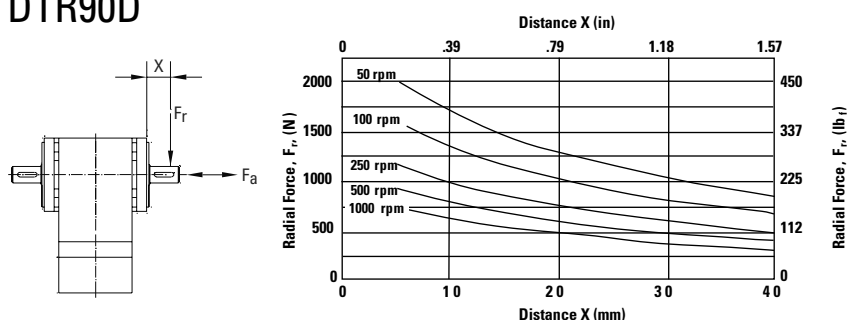
Radial and Axial Load Ratings

DTR60D



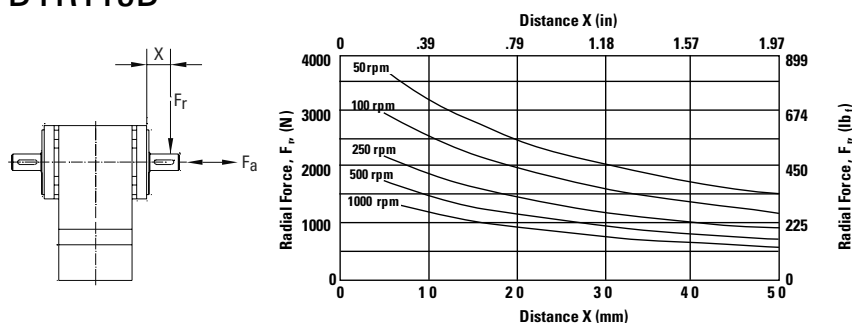
Speed rpm	Axial Load, F_a N [lb _f]
50	2155 [484]
100	1710 [384]
250	1260 [283]
500	1000 [225]
1000	794 [178]

DTR90D



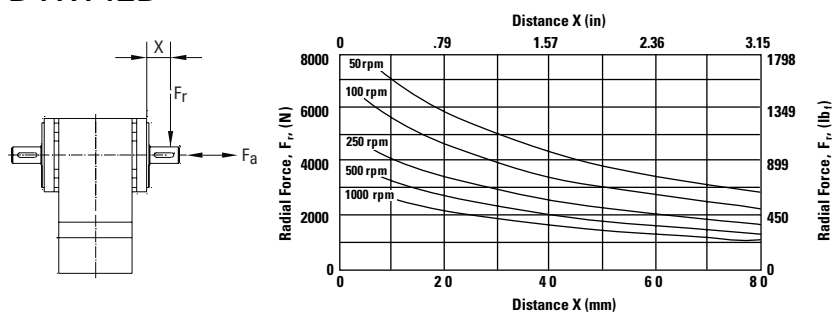
Speed rpm	Axial Load, F_a N [lb _f]
50	3157 [710]
100	2506 [563]
250	1846 [415]
500	1465 [329]
1000	1163 [261]

DTR115D



Speed rpm	Axial Load, F_a N [lb _f]
50	5742 [1291]
100	4558 [1025]
250	3358 [755]
500	2665 [599]
1000	2115 [476]

DTR142D



Speed rpm	Axial Load, F_a N [lb _f]
50	11925 [2681]
100	9465 [2128]
250	6974 [1568]
500	5535 [1244]
1000	4393 [988]

These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{mout} , as described on page 10.

ValueTRUE™

Helical True Planetary Gearheads

Ready for Immediate Delivery	
Precision	4 arc-minutes
Frame Sizes	60mm, 75mm, 90mm, 100mm, 115mm, 140mm, 180mm and 220mm
Torque Capacity	up to 2970 Nm
Ratio Availability	4:1 thru 100:1
Mounting System	RediMount™
Both in-line and right angles available	

- ValueTRUE is a new high performance price competitive Gearhead line of Micron True Planetary Gearheads
- Low Cost– 30% less than typical market pricing
- Helical Crowned True Planetary Gearing improved load capacity, lower backlash and smoother & quieter operation compared to non-helical gearheads
- Ultra Precision – 4 arc-mins of backlash
- Drop-In, low cost replacement for most common helical gearheads
- Stainless Steel Output Housing provides rock solid durability, suitable for environmentally sensitive applications



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Helical True Planetary™ Gearheads

Part Number	Stages	Backlash (arc-min)	Efficiency	Weight kg [lbs]	Ratio Availability
VT006	1	4	95%	2 [4.4]	4:1, 5:1, 7:1, 10:1
	2	5	90%	2.5 [5.5]	16:1, 20:1, 25:1, 28:1, 35:1, 40:1, 50:1, 70:1, 100:1
VT075	1	4	95%	2.5 [5.5]	4:1, 5:1, 7:1, 10:1
	2	5	90%	3.0 [6.6]	16:1, 20:1, 25:1, 28:1, 35:1, 40:1, 50:1, 70:1, 100:1
VT090	1	4	95%	2.5 [5.5]	4:1, 5:1, 7:1, 10:1
	2	5	90%	3.0 [6.6]	16:1, 20:1, 25:1, 28:1, 35:1, 40:1, 50:1, 70:1, 100:1
VT010	1	4	95%	6 [13]	4:1, 5:1, 7:1, 10:1
	2	5	90%	8 [18]	16:1, 20:1, 25:1, 28:1, 35:1, 40:1, 50:1, 70:1, 100:1
VT115	1	4	95%	6 [13]	4:1, 5:1, 7:1, 10:1
	2	5	90%	8 [18]	16:1, 20:1, 25:1, 28:1, 35:1, 40:1, 50:1, 70:1, 100:1
VT014	1	4	95%	14 [31]	4:1, 5:1, 7:1, 10:1
	2	5	90%	18 [40]	16:1, 20:1, 25:1, 28:1, 35:1, 40:1, 50:1, 70:1, 100:1
VT018	1	4	95%	40 [88]	4:1, 5:1, 7:1, 10:1
	2	5	90%	45 [99]	16:1, 20:1, 25:1, 28:1, 35:1, 40:1, 50:1, 70:1, 100:1
VT022	1	4	95%	74 [162]	4:1, 5:1, 7:1, 10:1
	2	5	90%	95 [209]	16:1, 20:1, 25:1, 28:1, 35:1, 40:1, 50:1, 70:1, 100:1
VTR006	1	5	93%	3 [6.6]	8:1, 10:1, 12:1, 14:1, 15:1, 16:1, 20:1, 25:1, 28:1, 30:1, 35:1, 40:1, 50:1
VTR075	1	5	93%	5.3 [11.1]	8:1, 10:1, 12:1, 14:1, 15:1, 16:1, 20:1, 25:1, 28:1, 30:1, 35:1, 40:1, 50:1
VTR090	1	5	93%	5.3 [11.1]	8:1, 10:1, 12:1, 14:1, 15:1, 16:1, 20:1, 25:1, 28:1, 30:1, 35:1, 40:1, 50:1
VTR010	1	5	93%	12 [26.2]	4:1, 5:1, 8:1, 10:1, 12:1, 14:1, 15:1, 16:1, 20:1, 25:1, 28:1, 30:1, 35:1, 40:1, 50:1
VTR115	1	5	93%	12 [26.2]	4:1, 5:1, 8:1, 10:1, 12:1, 14:1, 15:1, 16:1, 20:1, 25:1, 28:1, 30:1, 35:1, 40:1, 50:1
VTR014	1	5	93%	29 [64]	4:1, 5:1, 8:1, 10:1, 12:1, 14:1, 15:1, 16:1, 20:1, 25:1, 28:1, 30:1, 35:1, 40:1, 50:1
VTR018	1	5	93%	48 [106]	4:1, 5:1, 8:1, 10:1, 12:1, 14:1, 15:1, 16:1, 20:1, 25:1, 28:1, 30:1, 35:1, 40:1, 50:1

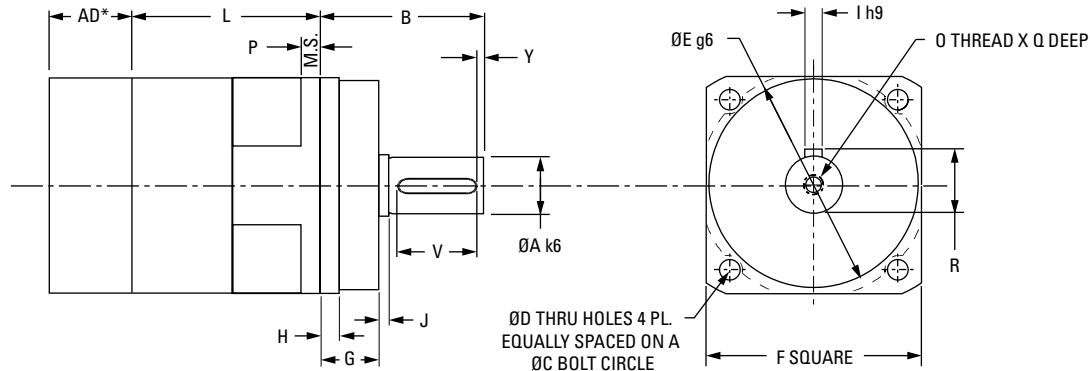
* Efficiency measured at 100% rated torque

* Backlash is maximum for the life of the gearhead

* For other ratios, please contact factory

ValueTRUE™

Helical True Planetary™ Gearheads



Inline Dimensions

Part Number	F Flange Square mm [in]	A Output Shaft Diameter mm [in]	B Output Shaft Length mm [in]	Y Shaft End Distance mm [in]	V Key Length mm [in]	R Key Height mm [in]	I Key Width mm [in]	J Shoulder Length mm [in]	E Pilot Diameter mm [in]
VT006	61 [2.40]	16 [0.63]	48 [1.89]	1 [0.04]	25 [0.98]	18 [0.71]	5 [0.20]	1 [0.04]	60 [2.36]
VT075	75 [2.95]	22 [0.86]	56 [2.20]	1,5 [0.06]	32 [1.26]	24,5 [0.97]	6 [0.24]	1 [0.04]	70 [2.75]
VT090	90 [3.54]	22 [0.86]	48 [1.89]	1,5 [0.06]	32 [1.26]	24,5 [0.97]	6 [0.24]	1 [0.04]	80 [1.48]
VT010	101 [3.98]	32 [1.26]	88 [3.46]	3 [0.12]	50 [1.97]	35 [1.38]	10 [0.39]	2 [0.08]	90 [3.54]
VT115*	115 [4.53]	32 [1.26]	72 [2.83]	3 [0.12]	50 [1.97]	35 [1.38]	10 [0.39]	2 [0.08]	110 [4.33]
VT014	141 [5.55]	40 [1.57]	112 [4.41]	5 [0.20]	70 [2.76]	43 [1.69]	12 [0.47]	3 [0.12]	130 [5.11]
VT018	182 [7.17]	55 [2.17]	112 [4.41]	6 [0.24]	70 [2.76]	59 [2.32]	16 [0.63]	3 [0.12]	180 [6.29]
VT022	220 [8.66]	75 [2.95]	143 [5.63]	7 [0.28]	90 [3.54]	79,5 [0.71]	20 [0.78]	3 [0.12]	180 [6.29]

Inline Dimensions (continued)

Part Number	G Pilot Length mm [in]	P Flange Thickness mm [in]	H Effective Pilot Length mm [in]	L Length mm [in]		C Bolt Circle mm [in]	D Bolt Hole mm [in]	O Output Shaft Thread mm [in]	Q Thread Depth mm [in]
				4:1 - 10:1	16:1 - 100:1				
VT006	18 [0.71]	7 [0.28]	7 [0.28]	57 [2.24]	105,4 [4.15]	68 [2.68]	5,6 [0.22]	M5	19 [0.75]
VT075	20 [0.79]	8 [0.31]	7 [0.28]	60 [2.36]	117 [4.60]	85 [3.35]	7 [0.28]	M8	19 [0.75]
VT090	12 [0.47]	10 [0.39]	12 [0.47]	68 [2.67]	125 [4.92]	100 [3.94]	6,6 [0.26]	M8	19 [0.75]
VT010	28 [1.10]	10 [0.39]	12 [0.47]	78 [3.07]	146 [5.74]	120 [4.72]	9 [0.35]	M12	20 [0.80]
VT115*	12 [0.94]	12 [0.47]	12 [0.47]	94 [3.70]	162 [6.37]	130 [5.118]	9 [0.35]	M12	20 [0.80]
VT014	27 [1.06]	13 [0.51]	14 [0.55]	110,5 [4.35]	195 [7.67]	165 [6.50]	11 [0.43]	M12	20 [0.80]
VT018	27 [1.06]	15 [0.59]	13 [0.51]	136 [5.35]	244 [9.60]	215 [8.46]	13,5 [0.53]	M20	42 [1.65]
VT022	35 [1.38]	17 [0.67]	18 [0.71]	131 [5.15]	232 [9.13]	250 [9.84]	17 [0.67]	M20	42 [1.65]

¹ Ratios are exact, higher ratios are also available, consult factory.

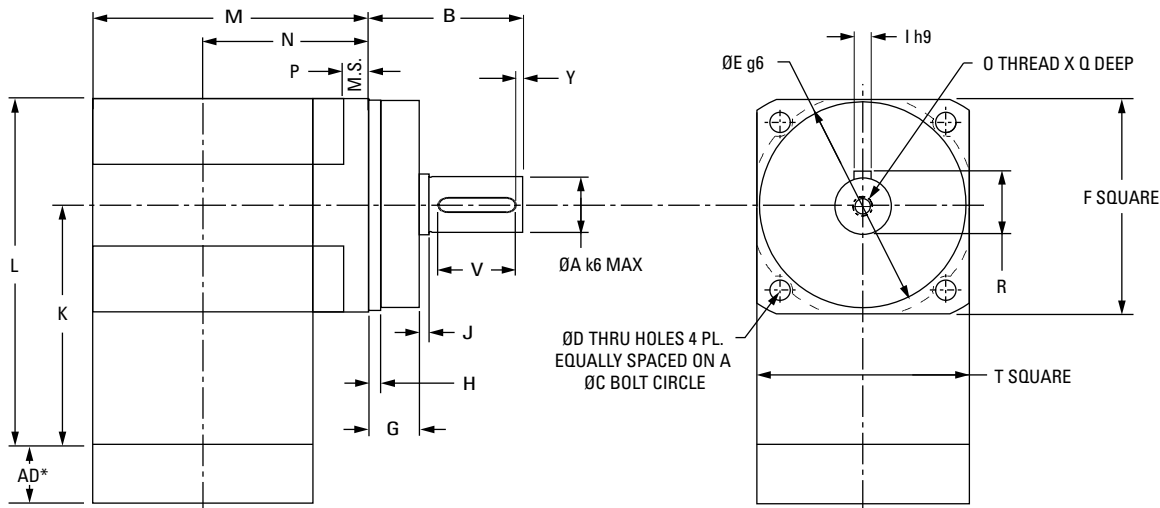
T_r = Rated output torque at rated speed for specific hours of life.

* Drawing not exactly as shown for VT115

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

ValueTRUE 90™

Helical Right Angle Gearheads



Right Angle Dimensions

Part Number	F Output Flange Square mm [in]	A Output Shaft Diameter mm [in]	B Output Shaft Length mm [in]	Y Shaft End Distance mm [in]	V Key Length mm [in]	R Key Height mm [in]	I Key Width mm [in]	J Shoulder Length mm [in]	O Output Shaft Thread mm [in]	Q Thread Depth mm [in]	E Pilot Diameter mm [in]	G Pilot Length mm [in]
VTR006	61 [2.40]	16 [0.63]	48 [1.89]	1 [0.04]	25 [0.98]	18 [0.71]	5 [0.20]	1 [0.04]	M5	19 [0.75]	60 [2.36]	18 [0.71]
VTR075	75 [2.95]	22 [0.86]	56 [2.20]	1,5 [0.06]	32 [1.26]	24,5 [0.97]	6 [0.24]	1 [0.04]	M8	19 [0.75]	70 [2.75]	20 [0.79]
VTR090	90 [3.54]	22 [0.86]	48 [1.89]	1,5 [0.06]	32 [1.26]	24,5 [0.97]	6 [0.24]	1 [0.04]	M8	19 [0.75]	80 [1.48]	12 [0.47]
VTR010	101 [3.98]	32 [1.26]	88 [3.46]	3 [0.12]	50 [1.97]	35 [1.38]	10 [0.39]	2 [0.08]	M12	20 [0.80]	90 [3.54]	28 [1.10]
VTR115*	115 [4.53]	32 [1.26]	72 [2.83]	3 [0.12]	50 [1.97]	35 [1.38]	10 [0.39]	2 [0.08]	M12	20 [0.80]	110 [4.33]	24 [0.94]
VTR014	141 [5.55]	40 [1.57]	112 [4.41]	5 [0.20]	70 [2.76]	43 [1.69]	12 [0.47]	3 [0.12]	M12	20 [0.80]	130 [5.11]	27 [1.06]
VTR018	182 [7.17]	55 [2.17]	112 [4.41]	6 [0.24]	70 [2.76]	59 [2.32]	16 [0.63]	3 [0.12]	M20	42 [1.65]	180 [6.29]	27 [1.06]

Right Angle Dimensions (continued)

Part Number	P Flange Thickness mm [in]	H Effective Pilot Length mm [in]	L Length mm [in]	K Distance to Output CL mm [in]	C Bolt Circle mm [in]	D Bolt Hole mm [in]	M Housing Width mm [in]		N Distance to Input CL mm [in]		T Input Flange Square mm [in]
							All other ratios	4:1 & 5:1 only	All other ratios	4:1 & 5:1 only	
VTR006	7 [0.28]	7 [0.28]	109 [4.30]	78,5 [3.10]	68 [2.68]	5,6 [0.22]	95 [3.75]	95 [3.75]	65 [2.55]	65 [2.55]	61 [2.40]
VTR075	8 [0.31]	7 [0.28]	140,5 [5.54]	103,5 [4.07]	85 [3.35]	7 [0.28]	114,5 [4.51]	114,5 [4.51]	77 [3.04]	77 [3.04]	75 [2.95]
VTR090	10 [0.39]	12 [0.47]	140,5 [5.54]	103,5 [4.07]	100 [3.94]	6,6 [0.26]	122,5 [4.82]	122,5 [4.82]	85 [3.35]	85 [3.35]	75 [2.95]
VTR010	10 [0.39]	12 [0.47]	193 [7.60]	142,5 [5.61]	120 [4.72]	9 [0.35]	149 [5.88]	158 [6.19]	99 [3.89]	107 [4.20]	101 [3.98]
VTR115*	12 [0.47]	12 [0.47]	193 [7.60]	142,5 [5.61]	130 [5.118]	9 [0.35]	165 [6.51]	174 [6.82]	114,8 [4.52]	123 [4.83]	101 [3.98]
VTR014	13 [0.51]	14 [0.55]	232,5 [9.145]	161,5 [6.35]	165 [6.50]	11 [0.43]	222 [8.74]	222 [8.74]	151 [5.95]	151 [5.95]	142 [5.59]
VTR018	15 [0.59]	13 [0.51]	295,5 [11.63]	204,5 [8.05]	215 [8.46]	13,5 [0.53]	277 [10.91]	301 [11.83]	186 [7.33]	210 [8.25]	182 [7.17]

* Drawing not exactly as shown for VTR115

ValueTRUE™ Helical True Planetary Gearheads

Inline Torque: VT006 - VT010

Performance Specifications

Part Number		Ratio	20000 Hour Life			Tpeak Nm [in-lb]	J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
			T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]			
VT006	VT006-004	4:1	42 [375]	32 [290]	28 [248]	91 [802]	0.20 [1.80]	2.36 [20.9]
	VT006-005	5:1	41 [364]	34 [302]	30 [259]	88 [779]	0.13 [1.16]	2.30 [20.4]
	VT006-007	7:1	40 [347]	36 [319]	32 [276]	84 [743]	0.11 [0.96]	2.18 [19.4]
	VT006-010	10:1	22 [194]	19 [167]	17 [156]	79 [703]	0.10 [0.85]	1.74 [15.4]
	VT006-016	16:1	47 [410]	43 [383]	41 [369]	99 [878]	0.16 [1.44]	2.40 [21.3]
	VT006-020	20:1	47 [416]	44 [42]	42 [375]	100 [887]	0.16 [1.44]	2.36 [20.9]
	VT006-025	25:1	45 [401]	42 [376]	41 [364]	96 [853]	0.16 [1.44]	2.32 [20.5]
	VT006-028	28:1	48 [423]	45 [398]	43 [384]	102 [899]	0.16 [1.44]	2.21 [19.6]
	VT006-035	35:1	46 [408]	43 [384]	42 [127]	97 [864]	0.10 [0.85]	2.29 [20.3]
	VT006-040	40:1	49 [430]	46 [406]	44 [394]	103 [910]	0.10 [0.85]	2.40 [21.3]
	VT006-050	50:1	47 [415]	44 [392]	43 [381]	99 [874]	0.10 [0.85]	2.36 [20.9]
VT006-070	70:1	44 [662]	42 [373]	41 [362]	93 [822]	0.10 [0.85]	2.21 [19.6]	
VT006-100	100:1	29 [256]	25 [224]	23 [211]	86 [766]	0.10 [0.85]	1.83 [16.1]	
VT075	VT075-004	4:1	76 [671]	67 [587]	57 [503]	161 [1423]	0.46 [4.10]	6.30 [55.7]
	VT075-005	5:1	74 [651]	67 [591]	59 [525]	157 [1383]	0.38 [3.40]	6.17 [54.6]
	VT075-007	7:1	70 [621]	64 [569]	61 [541]	149 [1322]	0.31 [2.80]	5.46 [48.3]
	VT075-010	10:1	40 [348]	34 [300]	32 [279]	141 [1254]	0.27 [2.40]	4.01 [35.6]
	VT075-016	16:1	84 [738]	77 [686]	75 [659]	177 [1569]	0.31 [2.80]	6.62 [58.6]
	VT075-020	20:1	85 [747]	79 [698]	76 [671]	179 [1586]	0.31 [2.80]	6.48 [57.3]
	VT075-025	25:1	82 [721]	77 [675]	74 [651]	173 [1528]	0.31 [2.80]	6.36 [56.3]
	VT075-028	28:1	86 [761]	81 [714]	77 [689]	182 [1610]	0.28 [2.50]	5.81 [51.4]
	VT075-035	35:1	83 [734]	78 [690]	76 [667]	175 [1549]	0.16 [1.40]	6.01 [53.2]
	VT075-040	40:1	87 [775]	83 [730]	80 [707]	185 [1632]	0.16 [1.40]	6.63 [58.7]
	VT075-050	50:1	85 [747]	80 [706]	77 [683]	177 [1569]	0.16 [1.40]	6.50 [57.5]
VT075-070	70:1	80 [706]	76 [669]	74 [650]	167 [1475]	0.16 [1.40]	5.83 [51.6]	
VT075-100	100:1	52 [462]	46 [405]	43 [380]	156 [1376]	0.15 [1.30]	4.05 [35.8]	
VT090	VT090-004	4:1	76 [671]	67 [587]	57 [503]	161 [1423]	0.46 [4.10]	6.30 [55.7]
	VT090-005	5:1	74 [651]	67 [591]	59 [525]	157 [1383]	0.38 [3.40]	6.17 [54.6]
	VT090-007	7:1	70 [621]	64 [569]	61 [541]	149 [1322]	0.31 [2.80]	5.46 [48.3]
	VT090-010	10:1	40 [348]	34 [300]	32 [279]	141 [1254]	0.27 [2.40]	4.01 [35.6]
	VT090-016	16:1	84 [738]	77 [686]	75 [659]	177 [1569]	0.31 [2.80]	6.62 [58.6]
	VT090-020	20:1	85 [747]	79 [698]	76 [671]	179 [1586]	0.31 [2.80]	6.48 [57.3]
	VT090-025	25:1	82 [721]	77 [675]	74 [651]	173 [1528]	0.31 [2.80]	6.36 [56.3]
	VT090-028	28:1	86 [761]	81 [714]	77 [689]	182 [1610]	0.28 [2.50]	5.81 [51.4]
	VT090-035	35:1	83 [734]	78 [690]	76 [667]	175 [1549]	0.16 [1.40]	6.01 [53.2]
	VT090-040	40:1	87 [775]	83 [730]	80 [707]	185 [1632]	0.16 [1.40]	6.63 [58.7]
	VT090-050	50:1	85 [747]	80 [706]	77 [683]	177 [1569]	0.16 [1.40]	6.50 [57.5]
VT090-070	70:1	80 [706]	76 [669]	74 [650]	167 [1475]	0.16 [1.40]	5.83 [51.6]	
VT090-100	100:1	52 [462]	46 [405]	43 [380]	156 [1376]	0.15 [1.30]	4.05 [35.8]	
VT010	VT010-004	4:1	221 [1954]	158 [1405]	136 [1206]	463 [4093]	1.58 [14.00]	23.1 [204]
	VT010-005	5:1	216 [1908]	166 [1465]	142 [1257]	451 [3991]	1.36 [12.00]	20.5 [182]
	VT010-007	7:1	206 [1825]	176 [1562]	151 [1340]	433 [3830]	0.97 [8.60]	19.0 [168]
	VT010-010	10:1	115 [1016]	99 [872]	92 [808]	411 [3640]	0.90 [8.00]	13.0 [115]
	VT010-016	16:1	246 [2174]	227 [2010]	206 [1827]	518 [4577]	1.10 [9.70]	24.6 [218]
	VT010-020	20:1	249 [2205]	231 [2046]	221 [1954]	524 [4637]	1.10 [9.70]	21.9 [194]
	VT010-025	25:1	241 [2131]	224 [1985]	216 [1908]	506 [4477]	1.10 [9.70]	21.9 [194]
	VT010-028	28:1	254 [2248]	237 [2098]	228 [2018]	533 [4718]	0.94 [8.30]	19.0 [168]
	VT010-035	35:1	246 [2172]	230 [2033]	221 [1959]	514 [4549]	0.79 [7.00]	18.8 [167]
	VT010-040	40:1	259 [2291]	243 [2149]	234 [2075]	542 [4794]	0.79 [7.00]	24.7 [219]
	VT010-050	50:1	250 [2212]	235 [2081]	228 [2012]	521 [4615]	0.78 [6.90]	21.7 [192]
VT010-070	70:1	237 [2094]	223 [1977]	217 [1916]	491 [4349]	0.78 [6.90]	19.0 [168]	
VT010-100	100:1	153 [1354]	134 [1185]	126 [1112]	459 [4059]	0.78 [6.90]	15.5 [137]	

¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

ValueTRUE™ Helical True Planetary Gearheads

Inline Torque: VT115 - VT022

Performance Specifications

Part Number		Ratio	20000 Hour Life			Tpeak Nm [in-lb]	J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
			T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]			
VT115	VT115-004	4:1	221 [1954]	158 [1405]	136 [1206]	463 [4093]	1.58 [14.00]	23.1 [204]
	VT115-005	5:1	216 [1908]	166 [1465]	142 [1257]	451 [3991]	1.36 [12.00]	20.5 [182]
	VT115-007	7:1	206 [1825]	176 [1562]	151 [1340]	433 [3830]	0.97 [8.60]	19.0 [168]
	VT115-010	10:1	115 [1016]	99 [872]	92 [808]	411 [3640]	0.90 [8.00]	13.0 [115]
	VT115-016	16:1	246 [2174]	227 [2010]	206 [1827]	518 [4577]	1.10 [9.70]	24.6 [218]
	VT115-020	20:1	249 [2205]	231 [2046]	221 [1954]	524 [4637]	1.10 [9.70]	21.9 [194]
	VT115-025	25:1	241 [2131]	224 [1985]	216 [1908]	506 [4477]	1.10 [9.70]	21.9 [194]
	VT115-028	28:1	254 [2248]	237 [2098]	228 [2018]	533 [4718]	0.94 [8.30]	19.0 [168]
	VT115-035	35:1	246 [2172]	230 [2033]	221 [1959]	514 [4549]	0.79 [7.00]	18.8 [167]
	VT115-040	40:1	259 [2291]	243 [2149]	234 [2075]	542 [4794]	0.79 [7.00]	24.7 [219]
	VT115-050	50:1	250 [2212]	235 [2081]	228 [2012]	521 [4615]	0.78 [6.90]	21.7 [192]
VT115-070	70:1	237 [2094]	223 [1977]	217 [1916]	491 [4349]	0.78 [6.90]	19.0 [168]	
VT115-100	100:1	153 [1354]	134 [1185]	126 [1112]	459 [4059]	0.78 [6.90]	15.5 [137]	
VT014	VT014-004	4:1	518 [4583]	387 [3427]	332 [2940]	1066 [9431]	6.51 [57.60]	49.5 [438]
	VT014-005	5:1	504 [4459]	403 [3571]	347 [3064]	1040 [9206]	5.02 [44.40]	45.9 [407]
	VT014-007	7:1	483 [4274]	430 [3809]	369 [3268]	1002 [8866]	3.80 [33.60]	42.3 [378]
	VT014-010	10:1	275 [2426]	235 [2075]	217 [1919]	956 [8459]	3.39 [30.00]	31.5 [280]
	VT014-016	16:1	579 [5119]	532 [4704]	503 [4456]	1206 [10674]	4.21 [37.20]	52.2 [463]
	VT014-020	20:1	587 [5195]	542 [4795]	518 [4583]	1224 [10832]	4.07 [36.00]	48.6 [431]
	VT014-025	25:1	567 [5021]	526 [4654]	504 [4459]	1183 [10463]	4.07 [36.00]	48.6 [431]
	VT014-028	28:1	599 [5303]	556 [4926]	534 [4725]	1248 [11047]	3.53 [31.20]	42.3 [375]
	VT014-035	35:1	579 [5122]	539 [4774]	518 [4589]	1204 [10653]	2.99 [26.40]	39.6 [352]
	VT014-040	40:1	612 [5413]	572 [5055]	550 [4867]	1271 [11248]	2.99 [26.40]	52.2 [461]
	VT014-050	50:1	509 [5223]	553 [4893]	534 [4720]	1224 [10831]	2.85 [25.20]	48.6 [431]
VT014-070	70:1	559 [4949]	527 [4657]	509 [4504]	1155 [10223]	2.85 [25.20]	44.1 [392]	
VT014-100	100:1	367 [3246]	320 [2838]	301 [2659]	1081 [9564]	2.85 [25.20]	31.5 [281]	
VT018	VT018-004	4:1	1203 [10649]	866 [7658]	743 [6570]	2242 [21609]	25.90 [229.00]	137.7 [1222]
	VT018-005	5:1	1174 [10385]	902 [7981]	774 [6847]	2389 [21143]	20.00 [177.00]	135 [1197]
	VT018-007	7:1	1128 [9878]	962 [8512]	825 [7303]	2309 [20429]	14.60 [129.00]	120.6 [1067]
	VT018-010	10:1	645 [5710]	550 [4864]	507 [4486]	2210 [19561]	13.00 [115.00]	90.9 [804]
	VT018-016	16:1	1356 [12005]	1238 [10963]	1125 [9959]	2800 [24779]	16.10 [142.00]	144.9 [1286]
	VT018-020	20:1	1378 [12194]	1265 [11191]	1203 [10649]	2846 [25187]	15.60 [138.00]	140.4 [1244]
	VT018-025	25:1	1333 [11799]	1229 [10877]	1174 [10385]	2754 [24370]	15.60 [138.00]	117.9 [1044]
	VT018-028	28:1	1409 [12466]	1301 [11518]	1245 [11013]	2910 [25751]	13.50 [119.00]	124.2 [1103]
	VT018-035	35:1	1362 [120490]	1263 [11178]	1211 [10714]	2810 [24870]	11.40 [101.00]	111.6 [988]
	VT018-040	40:1	1439 [12739]	1338 [11846]	1285 [11371]	2970 [2611]	11.40 [101.00]	144.9 [1286]
	VT018-050	50:1	1390 [12301]	1297 [11479]	1247 [11042]	2863 [25338]	10.90 [96.00]	140.4 [1244]
VT018-070	70:1	1319 [11667]	1236 [10339]	1193 [10555]	2707 [23959]	10.90 [96.00]	124.2 [1103]	
VT018-100	100:1	868 [7676]	757 [6698]	708 [6269]	2537 [22454]	10.90 [96.00]	92.7 [817]	
VT022	VT022-004	4:1	1815 [16065]	1306 [11554]	1121 [9913]	4180 [36986]	87.00 [7.70]	386 [3414]
	VT022-005	5:1	1892 [16740]	1360 [12038]	1167 [10328]	4093 [36225]	73.40 [6.50]	372 [3295]
	VT022-007	7:1	1838 [16268]	1452 [12844]	1245 [11019]	3933 [34804]	62.60 [5.55]	326 [2891]
	VT022-010	10:1	1050 [9293]	893 [8097]	823 [7277]	3871 [34254]	56.90 [5.04]	227 [2012]
	VT022-016	16:1	2218 [19625]	1979 [17513]	1697 [15025]	4722 [41793]	87.30 [7.73]	392 [3472]
	VT022-020	20:1	2254 [19948]	2062 [18246]	1815 [16065]	4791 [42396]	73.60 [6.52]	392 [3470]
	VT022-025	25:1	2184 [19332]	2009 [17781]	1892 [16745]	4636 [41025]	73.10 [6.47]	376 [3329]
	VT022-028	28:1	2304 [20394]	2125 [18803]	2008 [17528]	4884 [43224]	62.70 [5.55]	391 [3469]
	VT022-035	35:1	2233 [19765]	2067 [18294]	1976 [17494]	4719 [41757]	62.50 [5.53]	376 [3328]
	VT022-040	40:1	2357 [20864]	2188 [19359]	2095 [18542]	4972 [43999]	57.20 [5.06]	391 [3466]
	VT022-050	50:1	2282 [20199]	2125 [18808]	2040 [18056]	4795 [42440]	57.10 [5.05]	376 [3326]
VT022-070	70:1	2165 [19159]	2026 [17930]	1951 [17270]	4523 [40023]	57.00 [5.04]	329 [2903]	
VT022-100	100:1	1414 [12512]	1232 [10904]	1155 [10220]	4367 [38647]	56.90 [5.04]	228 [2014]	

¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

ValueTRUE™ Helical Right Angle Gearheads

Right Angle Torque: VTR006 - VTR075

Performance Specifications

Part Number		Ratio	20000 Hour Life			Tpeak Nm [in-lb]	J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
			T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]			
VTR006	VTR006-008	8:1	44 [390]	41 [358]	34 [303]	95 [844]	0.50 [4.43]	1.89 [16.7]
	VTR006-010	10:1	43 [382]	40 [350]	36 [319]	92 [812]	0.49 [4.34]	1.62 [14.3]
	VTR006-012	12:1	41 [358]	37 [327]	33 [295]	98 [868]	0.39 [3.45]	1.80 [15.9]
	VTR006-014	14:1	41 [358]	38 [335]	37 [327]	87 [773]	0.49 [4.34]	2.16 [19.1]
	VTR006-015	15:1	44 [390]	41 [366]	40 [350]	95 [836]	0.39 [3.45]	2.16 [19.1]
	VTR006-016	16:1	30 [263]	27 [239]	24 [215]	99 [876]	0.39 [3.45]	2.16 [19.1]
	VTR006-020	20:1	37 [327]	34 [303]	31 [271]	95 [844]	0.39 [3.45]	2.16 [19.1]
	VTR006-025	25:1	31 [271]	28 [247]	25 [223]	96 [852]	0.38 [3.36]	2.07 [18.3]
	VTR006-028	28:1	42 [374]	40 [350]	39 [342]	90 [797]	0.39 [3.45]	1.98 [18.3]
	VTR006-030	30:1	25 [223]	22 [191]	21 [183]	84 [741]	0.42 [3.72]	2.07 [18.3]
	VTR006-035	35:1	43 [382]	40 [350]	35 [311]	91 [804]	0.38 [3.36]	2.07 [18.3]
	VTR006-040	40:1	26 [231]	23 [199]	22 [191]	85 [749]	0.39 [3.45]	2.16 [19.1]
	VTR006-050	50:1	27 [239]	23 [207]	22 [191]	85 [749]	0.38 [3.36]	2.16 [19.1]
VTR075	VTR075-008	8:1	80 [709]	73 [645]	70 [621]	170 [1505]	1.90 [16.81]	4.23 [37.4]
	VTR075-010	10:1	77 [685]	71 [629]	68 [605]	165 [1458]	1.90 [16.81]	3.69 [32.7]
	VTR075-012	12:1	82 [725]	76 [669]	73 [645]	175 [1545]	1.50 [13.28]	4.14 [36.6]
	VTR075-014	14:1	74 [653]	68 [605]	66 [581]	157 [1386]	1.90 [16.81]	5.94 [52.6]
	VTR075-015	15:1	79 [701]	74 [653]	70 [621]	168 [1489]	1.50 [13.28]	6.03 [53.4]
	VTR075-016	16:1	84 [741]	77 [685]	75 [661]	177 [1569]	1.50 [13.28]	6.03 [53.4]
	VTR075-020	20:1	80 [709]	75 [661]	72 [637]	171 [1513]	1.50 [13.28]	5.85 [51.8]
	VTR075-025	25:1	82 [725]	77 [677]	72 [637]	173 [1529]	1.50 [13.28]	5.76 [51.0]
	VTR075-028	28:1	77 [677]	72 [637]	69 [613]	161 [1426]	1.50 [13.28]	5.31 [47.0]
	VTR075-030	30:1	45 [398]	40 [350]	37 [327]	149 [1322]	1.60 [14.16]	5.67 [47.0]
	VTR075-035	35:1	77 [685]	73 [645]	70 [621]	163 [1442]	1.50 [13.28]	5.67 [50.2]
	VTR075-040	40:1	47 [414]	41 [358]	38 [335]	151 [1338]	1.50 [13.28]	6.03 [53.4]
	VTR075-050	50:1	48 [422]	42 [374]	40 [350]	153 [1354]	1.50 [13.28]	5.94 [52.6]

¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

ValueTRUE™ Helical Right Angle Gearheads

Right Angle Torque: VTR090 - VTR010

Performance Specifications

Part Number		Ratio	20000 Hour Life			Tpeak Nm [in-lb]	J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
			T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]			
VTR090	VTR090-008	8:1	80 [709]	73 [345]	70 [621]	170 [1505]	1.90 [16.81]	4.23 [37.4]
	VTR090-010	10:1	77 [685]	71 [629]	68 [605]	165 [1458]	1.90 [16.81]	3.69 [32.7]
	VTR090-012	12:1	82 [725]	76 [669]	73 [645]	175 [1545]	1.50 [13.28]	4.14 [36.6]
	VTR090-014	14:1	74 [653]	68 [605]	66 [581]	157 [1386]	1.90 [16.81]	5.94 [52.6]
	VTR090-015	15:1	79 [701]	74 [653]	70 [621]	168 [1489]	1.50 [13.28]	6.03 [53.4]
	VTR090-016	16:1	84 [741]	77 [685]	75 [661]	177 [1569]	1.50 [13.28]	6.03 [53.4]
	VTR090-020	20:1	80 [709]	75 [661]	72 [637]	171 [1513]	1.50 [13.28]	5.85 [51.8]
	VTR090-025	25:1	82 [725]	77 [677]	72 [637]	173 [1529]	1.50 [13.28]	5.76 [51.0]
	VTR090-028	28:1	77 [677]	72 [637]	69 [613]	161 [1426]	1.50 [13.28]	5.31 [47.0]
	VTR090-030	30:1	45 [398]	40 [350]	37 [327]	149 [1322]	1.60 [14.16]	5.67 [50.2]
	VTR090-035	35:1	77 [685]	73 [645]	70 [621]	163 [1442]	1.50 [13.28]	5.67 [50.2]
VTR090-040	40:1	47 [414]	41 [358]	38 [335]	151 [1338]	1.50 [13.28]	6.03 [53.4]	
VTR090-050	50:1	48 [422]	42 [374]	40 [350]	153 [1354]	1.50 [13.28]	5.94 [52.6]	
VTR010	VTR010-004	4:1	234 [2071]	195 [1728]	167 [1673]	492 [4357]	3.30 [29.20]	14.94 [132.2]
	VTR010-005	5:1	228 [2015]	203 [1800]	175 [1649]	478 [4229]	3.30 [29.20]	11.79 [104.3]
	VTR010-008	8:1	234 [2071]	195 [1728]	167 [1673]	492 [4357]	3.30 [29.20]	14.94 [132.2]
	VTR010-010	10:1	228 [2015]	203 [1800]	175 [1649]	478 [4229]	3.30 [29.20]	11.79 [104.3]
	VTR010-012	12:1	243 [2151]	221 [1951]	189 [1744]	508 [4492]	2.60 [23.01]	16.92 [149.7]
	VTR010-014	14:1	217 [1920]	200 [1768]	186 [1649]	455 [4030]	3.30 [29.20]	20.79 [184.0]
	VTR010-015	15:1	233 [2063]	216 [1912]	197 [1744]	491 [4349]	2.50 [22.12]	21.87 [193.5]
	VTR010-016	16:1	225 [1991]	205 [1816]	185 [1641]	518 [4580]	2.60 [23.01]	22.32 [197.5]
	VTR010-020	20:1	238 [2103]	221 [1951]	212 [1872]	500 [4421]	2.60 [23.01]	19.89 [176.0]
	VTR010-025	25:1	211 [1864]	193 [1705]	174 [1532]	506 [4476]	2.50 [22.12]	19.89 [176.0]
	VTR010-028	28:1	226 [1999]	211 [1854]	203 [1792]	473 [4190]	2.60 [23.01]	17.28 [152.9]
	VTR010-030	30:1	132 [1171]	115 [1020]	107 [948]	439 [3887]	2.80 [24.78]	17.19 [152.9]
	VTR010-035	35:1	229 [2023]	214 [1896]	206 [1824]	479 [4237]	2.50 [22.12]	17.10 [152.1]
	VTR010-040	40:1	137 [1211]	119 [1051]	112 [988]	445 [3935]	2.60 [23.01]	22.41 [198.3]
	VTR010-050	50:1	140 [1243]	122 [1083]	115 [1020]	448 [3967]	2.50 [22.12]	19.71 [174.4]

¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

ValueTRUE™ Helical Right Angle Gearheads

Right Angle Torque: VTR115, VTR014, VTR018

Performance Specifications

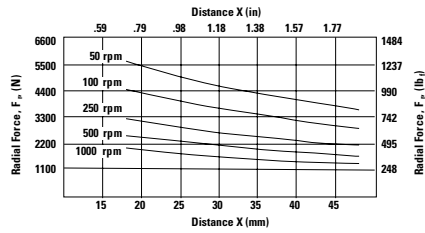
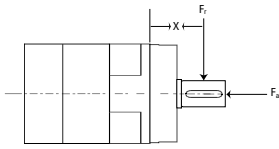
Part Number		Ratio	20000 Hour Life			Tpeak Nm [in-lb]	J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
			T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]			
VTR115	VTR115-004	4:1	234 [2071]	195 [1728]	167 [1481]	492 [4357]	3.30 [29.20]	14.94 [132.2]
	VTR115-005	5:1	228 [2015]	203 [1800]	175 [1545]	478 [4229]	3.30 [29.20]	11.79 [104.3]
	VTR115-008	8:1	234 [2071]	195 [1728]	167 [1481]	492 [4357]	3.30 [29.20]	14.94 [132.2]
	VTR115-010	10:1	228 [2015]	203 [1800]	175 [1545]	478 [4229]	3.30 [29.20]	11.79 [104.3]
	VTR115-012	12:1	243 [2151]	221 [1951]	189 [1673]	508 [4492]	2.60 [23.01]	16.92 [149.7]
	VTR115-014	14:1	217 [1920]	200 [1768]	186 [1649]	455 [4030]	3.30 [29.20]	20.79 [184.0]
	VTR115-015	15:1	233 [2063]	216 [1912]	197 [1744]	491 [4349]	2.50 [22.12]	21.87 [193.5]
	VTR115-016	16:1	225 [1991]	205 [1816]	185 [1641]	518 [4580]	2.60 [23.01]	22.32 [197.3]
	VTR115-020	20:1	238 [2103]	221 [1951]	212 [1872]	500 [4421]	2.60 [23.01]	19.89 [176.0]
	VTR115-025	25:1	211 [1864]	193 [1705]	174 [1537]	506 [4476]	2.50 [22.12]	19.89 [176.0]
	VTR115-028	28:1	226 [1999]	211 [1864]	203 [1792]	473 [4190]	2.60 [23.01]	17.28 [152.9]
	VTR115-030	30:1	132 [1171]	115 [1020]	107 [948]	439 [3887]	2.80 [24.78]	17.19 [152.1]
	VTR115-035	35:1	229 [2023]	214 [1896]	203 [1824]	479 [4237]	2.50 [22.12]	17.10 [151.3]
	VTR115-040	40:1	137 [1211]	119 [1051]	112 [988]	445 [3935]	2.60 [23.01]	22.41 [198.3]
	VTR115-050	50:1	140 [1243]	122 [1083]	115 [1020]	448 [3967]	2.50 [22.12]	19.71 [174.4]
VTR014	VTR014-004	4:1	550 [4867]	477 [4221]	409 [3616]	1142 [10108]	16.00 [141.60]	33.03 [292.0]
	VTR014-005	5:1	534 [4723]	485 [4293]	427 [3775]	1110 [9821]	16.00 [141.60]	28.71 [254.0]
	VTR014-008	8:1	550 [4867]	477 [4221]	409 [3616]	1142 [10108]	16.00 [141.60]	33.03 [292.0]
	VTR014-010	10:1	534 [4723]	485 [4293]	427 [3775]	1110 [9821]	16.00 [141.60]	28.71 [254.0]
	VTR014-012	12:1	567 [5018]	518 [4580]	462 [4086]	1182 [10458]	13.00 [115.05]	19.89 [176.0]
	VTR014-014	14:1	509 [4500]	466 [4126]	444 [3927]	1061 [9391]	16.00 [141.60]	46.44 [411.0]
	VTR014-015	15:1	549 [4859]	504 [4460]	480 [4245]	1145 [10131]	12.00 [106.20]	46.53 [412.0]
	VTR014-016	16:1	525 [4644]	479 [4237]	433 [3831]	1206 [10673]	13.00 [115.05]	47.52 [421.0]
	VTR014-020	20:1	560 [4954]	517 [4572]	493 [4365]	1166 [10323]	13.00 [115.05]	44.28 [392.0]
	VTR014-025	25:1	532 [4707]	494 [4373]	474 [4198]	1183 [10466]	13.00 [115.05]	38.52 [341.0]
	VTR014-028	28:1	532 [4707]	494 [4373]	474 [4198]	1108 [9805]	13.00 [115.05]	38.52 [341.0]
	VTR014-030	30:1	317 [2804]	275 [2429]	256 [2262]	1029 [9104]	14.00 [123.90]	40.23 [356.0]
	VTR014-035	35:1	539 [4771]	502 [4444]	483 [4277]	1121 [9924]	12.00 [106.20]	36.18 [320.0]
	VTR014-040	40:1	328 [2899]	285 [2525]	266 [2350]	1043 [9231]	13.00 [115.05]	47.34 [419.0]
	VTR014-050	50:1	338 [2987]	293 [2597]	275 [2429]	1054 [9327]	12.00 [106.20]	44.28 [392.0]
VTR018	VTR018-004	4:1	1285 [11374]	1066 [9431]	914 [8092]	2636 [23329]	45 [398]	102 [900]
	VTR018-005	5:1	1247 [11039]	1111 [9829]	952 [8427]	2566 [22708]	45 [398]	83 [733]
	VTR018-008	8:1	1285 [11374]	1066 [9431]	914 [8092]	2636 [23329]	45 [398]	102 [900]
	VTR018-010	10:1	1247 [11039]	1111 [9829]	952 [8427]	2566 [22708]	45 [398]	83 [733]
	VTR018-012	12:1	1328 [11748]	1203 [10649]	1032 [9136]	2736 [24214]	36 [319]	57 [502]
	VTR018-014	14:1	1193 [10554]	1085 [9606]	1016 [8992]	2460 [21768]	45 [398]	100 [884]
	VTR018-015	15:1	1287 [11390]	1174 [10386]	1076 [9518]	2655 [23497]	35 [310]	130 [1147]
	VTR018-016	16:1	1199 [10609]	1094 [9685]	989 [8754]	2800 [24779]	36 [319]	132 [1171]
	VTR018-020	20:1	1314 [11629]	1205 [10665]	1148 [10155]	2713 [24007]	36 [319]	128 [1131]
	VTR018-025	25:1	1054 [9327]	962 [8515]	870 [7702]	2754 [24373]	35 [310]	107 [948]
	VTR018-028	28:1	1251 [11071]	1156 [10227]	1105 [9781]	2583 [22860]	36 [319]	113 [1004]
	VTR018-030	30:1	747 [6611]	645 [5711]	600 [5313]	2399 [21227]	38 [336]	102 [900]
	VTR018-035	35:1	1268 [11223]	1176 [10410]	1128 [9980]	2617 [23162]	35 [310]	102 [900]
	VTR018-040	40:1	775 [6858]	671 [5942]	626 [5536]	2437 [21569]	36 [319]	132 [1171]
	VTR018-050	50:1	338 [2987]	691 [6117]	645 [5711]	2465 [21816]	35 [310]	128 [1131]

¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

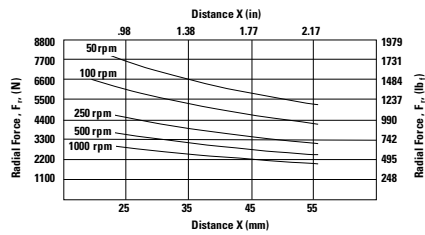
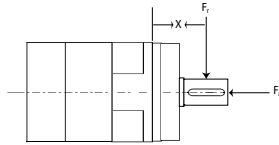
Radial and Axial Load Ratings

VT006



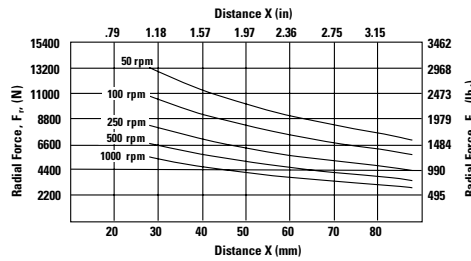
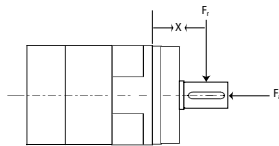
Speed rpm	Axial Load, F_a N [lb _f]
50	7198 [1618]
100	5710 [1284]
250	4208 [946]
500	3342 [751]
1000	2652 [596]

VT075 and VT090



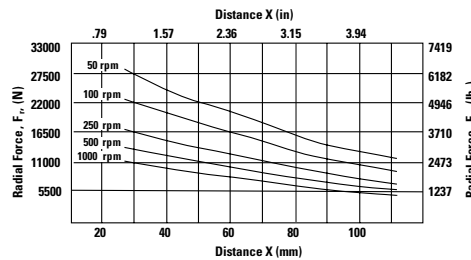
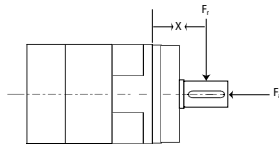
Speed rpm	Axial Load, F_a N [lb _f]
50	9903 [2227]
100	7863 [1768]
250	5793 [1303]
500	4599 [1034]
1000	3650 [821]

VT010 and VT115



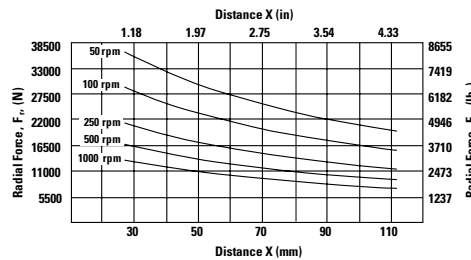
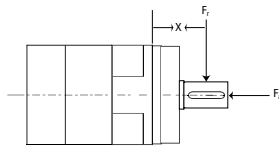
Speed rpm	Axial Load, F_a N [lb _f]
50	13,675 [3075]
100	11,107 [2497]
250	8435 [1897]
500	6855 [1542]
1000	5568 [1252]

VT014



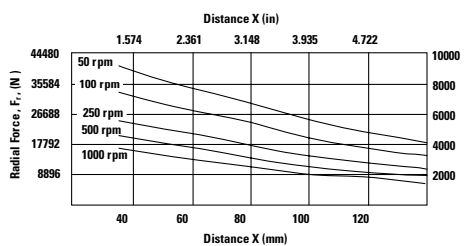
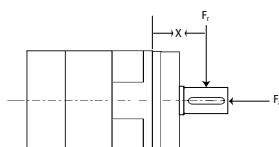
Speed rpm	Axial Load, F_a N [lb _f]
50	25,374 [5705]
100	20,609 [4633]
250	15,657 [3520]
500	12,716 [2859]
1000	10,329 [2322]

VT018



Speed rpm	Axial Load, F_a N [lb _f]
50	34,538 [7765]
100	27,414 [6163]
250	20,197 [4541]
500	16,034 [3605]
1000	12,726 [2861]

VT022

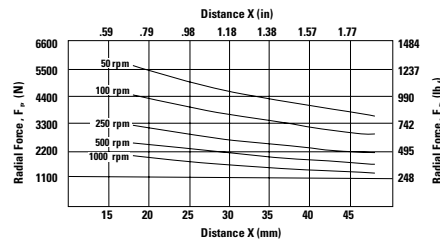
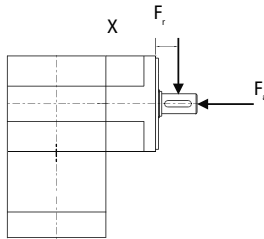


Speed rpm	Axial Load, F_a N [lb _f]
50	32,351 [3655]
100	26,277 [2969]
250	19,962 [2256]
500	16,214 [1832]

These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{mount} , as described on page 10,

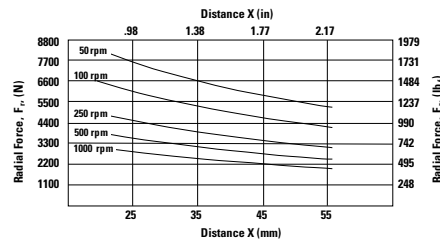
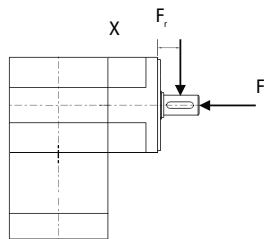
Radial and Axial Load Ratings

VTR006



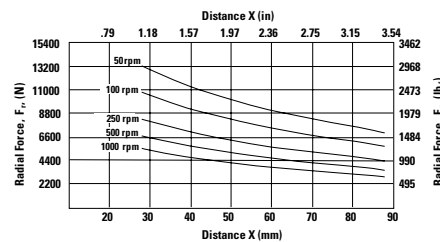
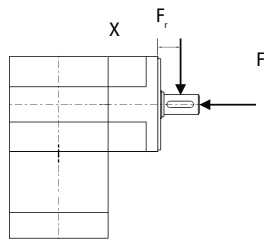
Speed rpm	Axial Load, F_a N [lb _f]
50	7198 [1618]
100	5710 [1284]
250	4208 [946]
500	3342 [751]
1000	2652 [596]

VTR075 and VTR090



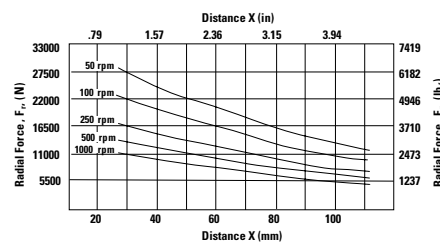
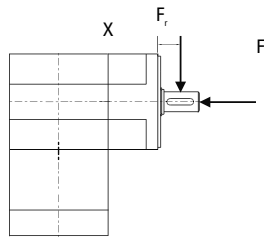
Speed rpm	Axial Load, F_a N [lb _f]
50	9903 [2227]
100	7863 [1768]
250	5793 [1303]
500	4599 [1034]
1000	3650 [821]

VTR010 and VTR115



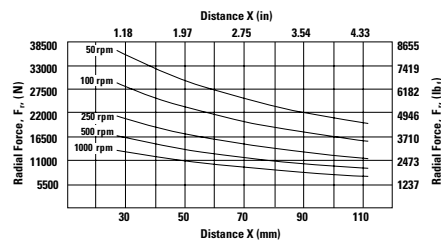
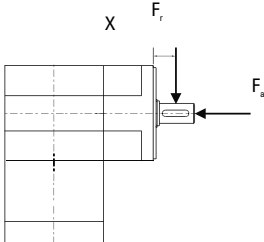
Speed rpm	Axial Load, F_a N [lb _f]
50	13,675 [3075]
100	11,107 [2497]
250	8435 [1897]
500	6855 [1542]
1000	5568 [1252]

VTR014



Speed rpm	Axial Load, F_a N [lb _f]
50	25,374 [5705]
100	20,609 [4633]
250	15,657 [3520]
500	12,716 [2859]
1000	10,329 [2322]

VTR018



Speed rpm	Axial Load, F_a N [lb _f]
50	34,538 [7765]
100	27,414 [6163]
250	20,197 [4541]
500	16,034 [3605]
1000	12,726 [2861]

These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{mout} , as described on page 10,

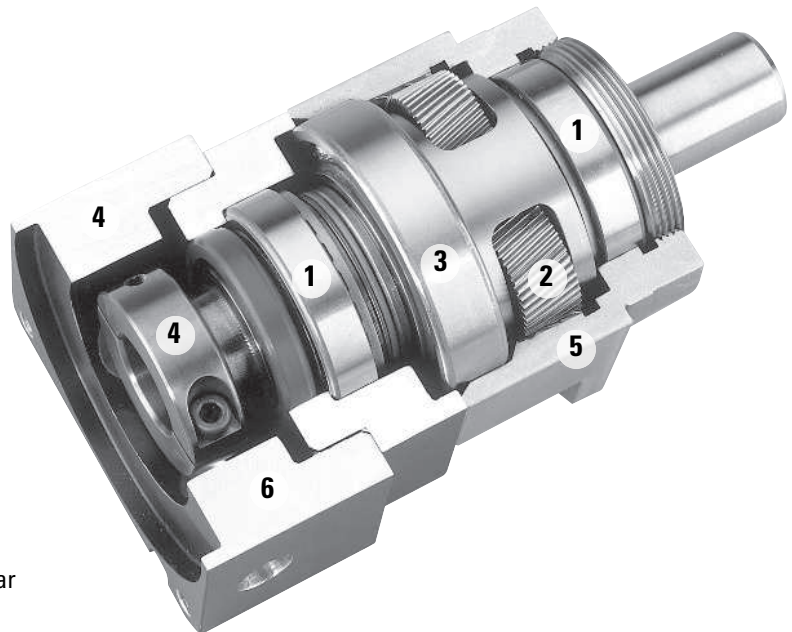


UltraTRUE™

Helical True Planetary™ Gearheads

Ready for Immediate Delivery	
Precision	4 arc-minutes
Frame Sizes	60mm, 75mm, 90mm, 100mm, 115mm, 140mm, 180mm and 220mm
Torque Capacity	up to 3300 Nm
Ratio Availability	4:1 thru 100:1
Radial load capacity	up to 37910 N
Mounting System	RediMount™

- 1 Tapered roller bearings**
 provide high axial and radial load carrying capacity
- 2 Helical crowned**
 HRC 55-60 steel gears
 provide higher torque capacity and smoother operation
- 3 Sealed deep groove ball bearing**
 provides high radial load carrying capability
- 4 RediMount™ system**
 provides error-free motor installation
- 5 Single piece output**
 integrated output housing and internal gear
- 6 Anodized aluminum housing**
 reduces weight and prevents corrosion



**Micron True Planetary™ Gearheads
shipped within 24 hours!**

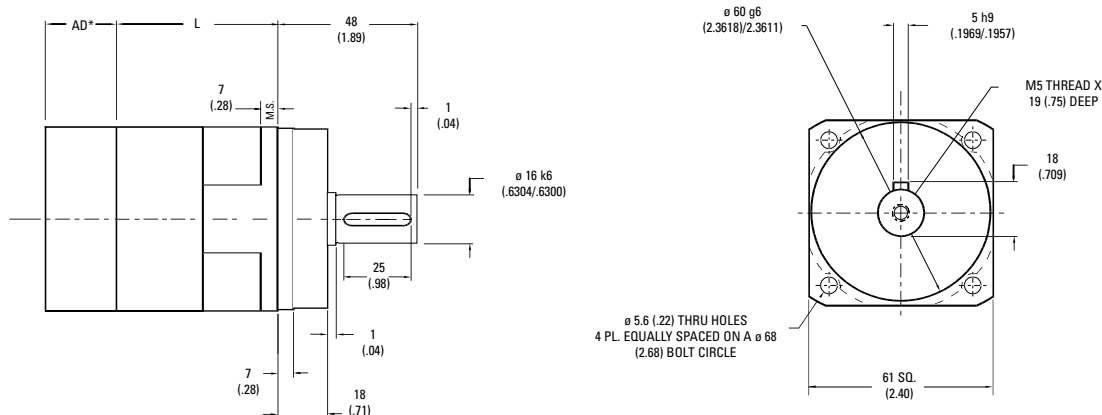


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of the catalog for details.**

UltraTRUE™ Size 60

Helical True Planetary™ Gearheads

Metric



Ratio ¹	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
4:1 to 10:1	57 [2.25]	4 max	2 [4.4]	95%
16:1 to 100:1	105,4 [4.15]	5 max	2.5 [5.5]	90%

All dimensions are: mm (inch)
 AD** = Adapter length
 Adapter length will vary depending on motor.
 M.S.= Mounting Surface
 Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T _{peak} Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UT006-004	4:1	48 [426]	44 [387]	38 [340]	101 [891]	47 [417]	36 [322]	31 [276]	.20 [1.80]	2.62 [23.2]
UT006-005	5:1	47 [413]	43 [377]	40 [355]	98 [865]	46 [404]	38 [336]	33 [288]	.13 [1.16]	2.56 [22.7]
UT006-007	7:1	45 [394]	41 [362]	39 [345]	93 [825]	44 [385]	40 [354]	35 [307]	.11 [.96]	2.42 [21.5]
UT006-010	10:1	26 [232]	23 [200]	21 [186]	88 [781]	24 [215]	21 [185]	19 [173]	.10 [.85]	1.93 [17.1]
UT006-016	16:1	53 [467]	49 [435]	47 [419]	110 [975]	52 [456]	48 [426]	46 [410]	.16 [1.44]	2.67 [23.7]
UT006-020	20:1	53 [472]	50 [442]	48 [426]	111 [985]	52 [462]	49 [432]	47 [417]	.16 [1.44]	2.62 [23.2]
UT006-025	25:1	51 [456]	48 [428]	47 [413]	107 [948]	50 [446]	47 [418]	46 [404]	.16 [1.44]	2.58 [22.8]
UT006-028	28:1	54 [481]	51 [452]	49 [437]	113 [999]	53 [470]	50 [442]	48 [427]	.16 [1.44]	2.46 [21.8]
UT006-035	35:1	52 [463]	49 [437]	48 [423]	108 [960]	51 [453]	48 [427]	47 [414]	.10 [.85]	2.54 [22.5]
UT006-040	40:1	55 [489]	52 [462]	51 [447]	114 [1011]	54 [478]	51 [451]	49 [438]	.10 [.85]	2.67 [23.7]
UT006-050	50:1	53 [471]	50 [446]	49 [433]	110 [971]	52 [461]	49 [436]	48 [423]	.10 [.85]	2.62 [23.2]
UT006-070	70:1	50 [445]	48 [423]	46 [411]	103 [913]	49 [435]	47 [414]	45 [402]	.10 [.85]	2.46 [21.8]
UT006-100	100:1	35 [307]	30 [269]	29 [253]	96 [851]	32 [284]	28 [249]	26 [234]	.10 [.85]	2.03 [17.9]

Available with 24 hour delivery through the Gearhead Express Program.

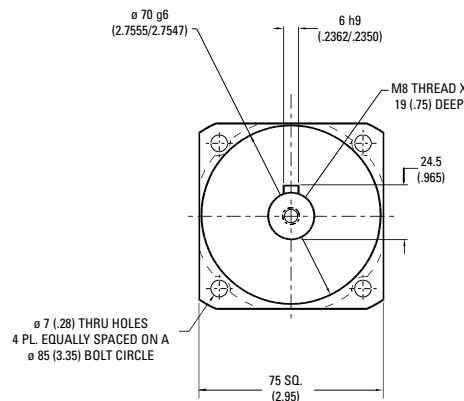
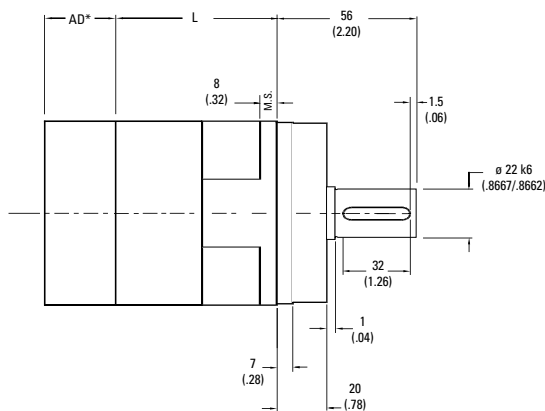
¹ Ratios are exact, higher ratios are also available, consult factory.
 T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
 J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

UltraTRUE™ Size 75

Helical True Planetary™ Gearheads

Metric



Ratio ¹	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
4:1 to 10:1	60 [2.35]	4 max	2.5 [5.5]	95%
16:1 to 100:1	117 [4.60]	5 max	3.0 [6.6]	90%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor.

M.S.= Mounting Surface

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T _{peak} Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UT075-004	4:1	86 [762]	78 [689]	73 [649]	179 [1581]	84 [746]	74 [652]	63 [559]	,46 [4.1]	7,00 [61.9]
UT075-005	5:1	84 [740]	76 [672]	72 [636]	174 [1537]	82 [723]	74 [657]	66 [583]	,38 [3.4]	6,86 [60.7]
UT075-007	7:1	80 [706]	73 [646]	69 [615]	166 [1469]	78 [690]	71 [632]	68 [601]	,31 [2.8]	6,07 [53.7]
UT075-010	10:1	47 [418]	41 [360]	38 [335]	157 [1393]	44 [387]	38 [333]	35 [310]	,27 [2.4]	4,46 [39.5]
UT075-016	16:1	95 [838]	88 [780]	85 [749]	197 [1743]	93 [820]	86 [762]	83 [732]	,31 [2.8]	7,36 [65.1]
UT075-020	20:1	96 [849]	90 [792]	86 [762]	199 [1762]	94 [830]	88 [775]	84 [746]	,31 [2.8]	7,20 [63.7]
UT075-025	25:1	93 [820]	87 [767]	84 [740]	192 [1698]	91 [801]	85 [750]	82 [723]	,31 [2.8]	7,07 [62.6]
UT075-028	28:1	98 [864]	92 [811]	88 [782]	202 [1789]	96 [845]	90 [793]	86 [765]	,28 [2.5]	6,45 [57.1]
UT075-035	35:1	94 [834]	89 [784]	86 [758]	194 [1721]	92 [815]	87 [767]	84 [741]	,16 [1.4]	6,68 [59.1]
UT075-040	40:1	99 [880]	94 [829]	91 [802]	205 [1813]	97 [861]	92 [811]	89 [785]	,16 [1.4]	7,37 [65.2]
UT075-050	50:1	96 [849]	91 [801]	88 [777]	197 [1743]	94 [830]	89 [784]	86 [759]	,16 [1.4]	7,22 [63.9]
UT075-070	70:1	91 [802]	86 [760]	83 [738]	185 [1639]	89 [784]	84 [743]	82 [722]	,16 [1.4]	6,48 [57.3]
UT075-100	100:1	63 [554]	55 [486]	52 [456]	173 [1529]	58 [513]	51 [450]	48 [422]	,15 [1.3]	4,50 [39.8]

Available with 24 hour delivery through the Gearhead Express Program.

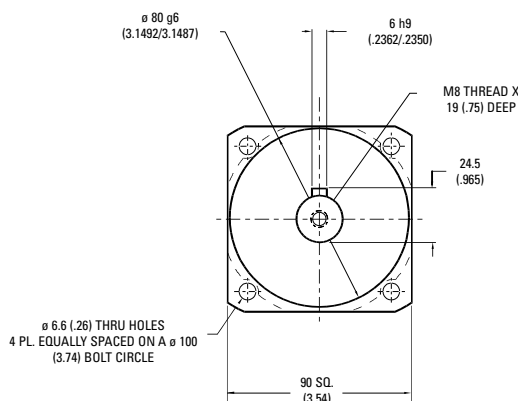
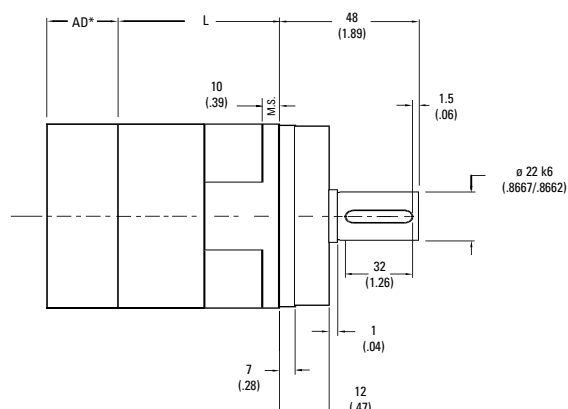
¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

UltraTRUE™ Size 90

Helical True Planetary™ Gearheads

Metric



Ratio ¹	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
4:1 to 10:1	68 [2.66]	4 max	2,5 [5.5]	95%
16:1 to 100:1	125 [4.91]	5 max	3,0 [6.6]	90%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length and width will vary depending on motor.

M.S.= Mounting Surface

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T _{peak} Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UT090-004	4:1	86 [762]	78 [689]	73 [649]	179 [1581]	84 [746]	74 [652]	63 [559]	,46 [4.1]	7,00 [61.9]
UT090-005	5:1	84 [740]	76 [672]	72 [636]	174 [1537]	82 [723]	74 [657]	66 [583]	,38 [3.4]	6,86 [60.7]
UT090-007	7:1	80 [706]	73 [646]	69 [615]	166 [1469]	78 [690]	71 [632]	68 [601]	,31 [2.8]	6,07 [53.7]
UT090-010	10:1	47 [418]	41 [360]	38 [335]	157 [1393]	44 [387]	38 [333]	35 [310]	,27 [2.4]	4,46 [39.5]
UT090-016	16:1	95 [838]	88 [780]	85 [749]	197 [1743]	93 [820]	86 [762]	83 [732]	,31 [2.8]	7,36 [65.1]
UT090-020	20:1	96 [849]	90 [792]	86 [762]	199 [1762]	94 [830]	88 [775]	84 [746]	,31 [2.8]	7,20 [63.7]
UT090-025	25:1	93 [820]	87 [767]	84 [740]	192 [1698]	91 [801]	85 [750]	82 [723]	,31 [2.8]	7,07 [62.6]
UT090-028	28:1	98 [864]	92 [811]	88 [782]	202 [1789]	96 [845]	90 [793]	86 [765]	,28 [2.5]	6,45 [57.1]
UT090-035	35:1	94 [834]	89 [784]	86 [758]	194 [1721]	92 [815]	87 [767]	84 [741]	,16 [1.4]	6,68 [59.1]
UT090-040	40:1	99 [880]	94 [829]	91 [802]	205 [1813]	97 [861]	92 [811]	89 [785]	,16 [1.4]	7,37 [65.2]
UT090-050	50:1	96 [849]	91 [801]	88 [777]	197 [1743]	94 [830]	89 [784]	86 [759]	,16 [1.4]	7,22 [63.9]
UT090-070	70:1	91 [802]	86 [760]	83 [738]	185 [1639]	89 [784]	84 [743]	82 [722]	,16 [1.4]	6,48 [57.3]
UT090-100	100:1	63 [554]	55 [486]	52 [456]	173 [1529]	58 [513]	51 [450]	48 [422]	,15 [1.3]	4,50 [39.8]

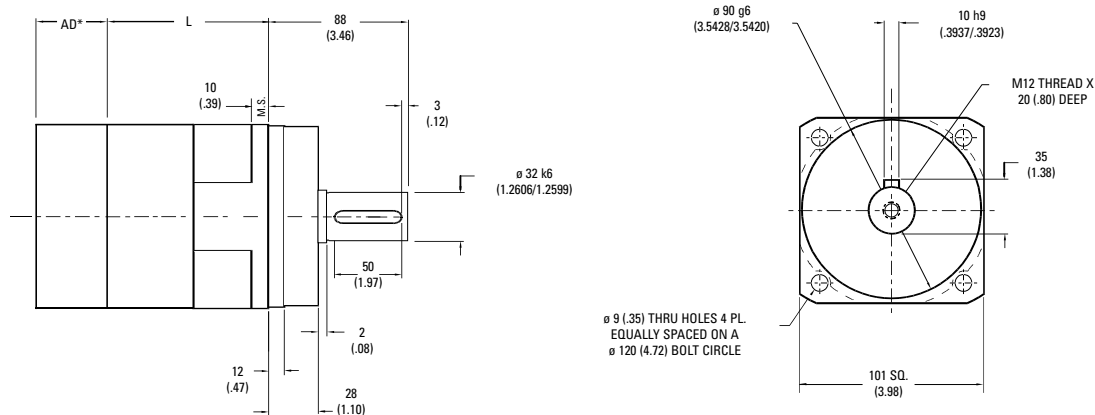
¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

UltraTRUE™ Size 10

Helical True Planetary™ Gearheads

Metric



Ratio ¹	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
4:1 to 10:1	78 [3.07]	4 max	6 [13]	95%
16:1 to 100:1	146 [5.75]	5 max	8 [18]	90%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length and width will vary depending on motor.

M.S. = Mounting Surface

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T peak Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm)	T _r (3000 rpm)	T _r (5000 rpm)		T _r (1000 rpm)	T _r (3000 rpm)	T _r (5000 rpm)		
		Nm [in-lb]	Nm [in-lb]	Nm [in-lb]		Nm [in-lb]	Nm [in-lb]	Nm [in-lb]		
UT010-004	4:1	252 [2229]	217 [1922]	186 [1649]	514 [4548]	245 [2171]	176 [1561]	151 [1340]	1,58 [14.0]	25,7 [227]
UT010-005	5:1	245 [2168]	220 [1950]	194 [1720]	501 [4434]	240 [2120]	184 [1628]	158 [1397]	1,36 [12.0]	22,8 [202]
UT010-007	7:1	234 [2074]	213 [1882]	201 [1780]	481 [4256]	229 [2028]	196 [1736]	168 [1489]	,97 [8.6]	21,1 [187]
UT010-010	10:1	138 [1220]	118 [1048]	110 [971]	457 [4044]	128 [1129]	110 [969]	102 [898]	,90 [8.0]	14,4 [128]
UT010-016	16:1	279 [2471]	258 [2284]	247 [2184]	575 [5085]	273 [2416]	252 [2233]	229 [2030]	1,10 [9.7]	27,3 [242]
UT010-020	20:1	283 [2505]	263 [2325]	252 [2229]	582 [5152]	277 [2450]	257 [2273]	245 [2171]	1,10 [9.7]	24,3 [215]
UT010-025	25:1	274 [2422]	255 [2256]	245 [2168]	562 [4974]	268 [2368]	249 [2206]	240 [2120]	1,10 [9.7]	24,3 [215]
UT010-028	28:1	289 [2554]	269 [2384]	259 [2293]	592 [5242]	282 [2498]	263 [2331]	253 [2242]	,94 [8.3]	21,1 [187]
UT010-035	35:1	279 [2468]	261 [2310]	252 [2227]	571 [5054]	273 [2413]	255 [2259]	246 [2177]	,79 [7.0]	20,9 [185]
UT010-040	40:1	294 [2604]	276 [2442]	266 [2357]	602 [5327]	288 [2546]	270 [2388]	260 [2305]	,79 [7.0]	27,4 [243]
UT010-050	50:1	284 [2514]	267 [2364]	258 [2286]	579 [5128]	278 [2458]	261 [2312]	253 [2235]	,78 [6.9]	24,1 [213]
UT010-070	70:1	269 [2380]	254 [2246]	246 [2177]	546 [4832]	263 [2327]	248 [2197]	241 [2129]	,78 [6.9]	21,1 [187]
UT010-100	100:1	184 [1626]	161 [1423]	151 [1335]	510 [4510]	170 [1504]	149 [1317]	140 [1235]	,78 [6.9]	17,2 [152]

Available with 24 hour delivery through the Gearhead Express Program.

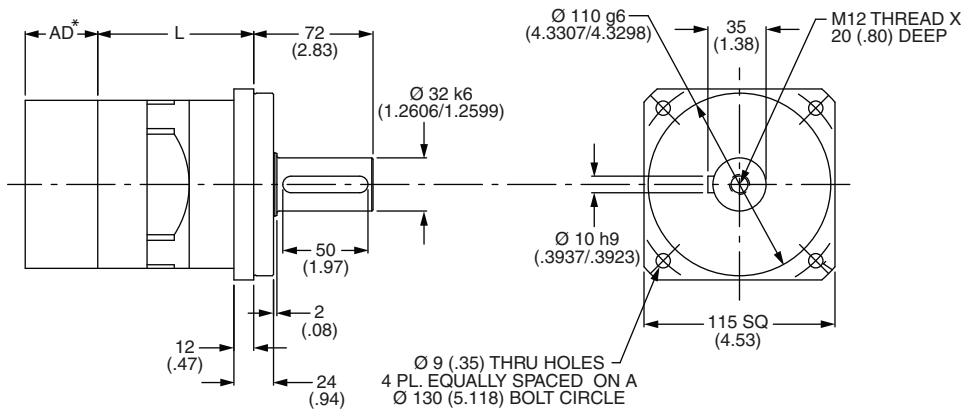
¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

UltraTRUE™ Size 115

Helical True Planetary™ Gearheads

Metric



Ratio ¹	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
4:1 to 10:1	94 [3.70]	4 max	6 [13]	95%
16:1 to 100:1	162 [6.38]	5 max	6 [18]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length and width will vary depending on motor.

M.S.= Mounting Surface

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T _{peak} Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UT115-004	4:1	252 [2229]	217 [1922]	186 [1649]	514 [4548]	245 [2171]	176 [1561]	151 [1340]	1,58 [14.0]	25,7 [227]
UT115-005	5:1	245 [2168]	220 [1950]	194 [1720]	501 [4434]	240 [2120]	184 [1628]	158 [1397]	1,36 [12.0]	22,8 [202]
UT115-007	7:1	234 [2074]	213 [1882]	201 [1780]	481 [4256]	229 [2028]	196 [1736]	168 [1489]	,97 [8.6]	21,1 [187]
UT115-010	10:1	138 [1220]	118 [1048]	110 [971]	457 [4044]	128 [1129]	110 [969]	102 [898]	,90 [8.0]	14,4 [128]
UT115-016	16:1	279 [2471]	258 [2284]	247 [2184]	575 [5085]	273 [2416]	252 [2233]	229 [2030]	1,10 [9.7]	27,3 [242]
UT115-020	20:1	283 [2505]	263 [2325]	252 [2229]	582 [5152]	277 [2450]	257 [2273]	245 [2171]	1,10 [9.7]	24,3 [215]
UT115-025	25:1	274 [2422]	255 [2256]	245 [2168]	562 [4974]	268 [2368]	249 [2206]	240 [2120]	1,10 [9.7]	24,3 [215]
UT115-028	28:1	289 [2554]	269 [2384]	259 [2293]	592 [5242]	282 [2498]	263 [2331]	253 [2242]	,94 [8.3]	21,1 [187]
UT115-035	35:1	279 [2468]	261 [2310]	252 [2227]	571 [5054]	273 [2413]	255 [2259]	246 [2177]	,79 [7.0]	20,9 [185]
UT115-040	40:1	294 [2604]	276 [2442]	266 [2357]	602 [5327]	288 [2546]	270 [2388]	260 [2305]	,79 [7.0]	27,4 [243]
UT115-050	50:1	284 [2514]	267 [2364]	258 [2286]	579 [5128]	278 [2458]	261 [2312]	253 [2235]	,78 [6.9]	24,1 [213]
UT115-070	70:1	269 [2380]	254 [2246]	246 [2177]	546 [4832]	263 [2327]	248 [2197]	241 [2129]	,78 [6.9]	21,1 [187]
UT115-100	100:1	184 [1626]	161 [1423]	151 [1335]	510 [4510]	170 [1504]	149 [1317]	140 [1235]	,78 [6.9]	17,2 [152]

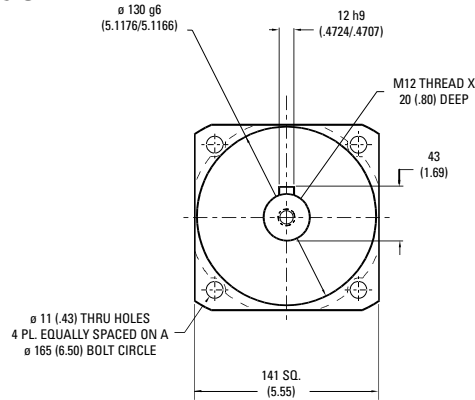
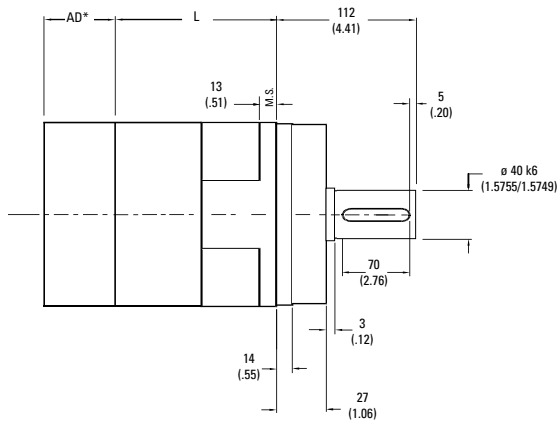
¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

UltraTRUE™ Size 14

Helical True Planetary™ Gearheads

Metric



Ratio ¹	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
4:1 to 10:1	110,5 [4.35]	4 max	14 [31]	95%
16:1 to 100:1	195 [7.69]	5 max	18 [40]	90%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length and width will vary depending on motor.

M.S.= Mounting Surface

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T _{peak} Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UT014-004	4:1	588 [5207]	521 [4613]	454 [4022]	1184 [10,479]	575 [5092]	430 [3808]	369 [3267]	6,51 [57.6]	55 [487]
UT014-005	5:1	572 [5066]	511 [4519]	474 [4191]	1156 [10,229]	560 [4954]	448 [3968]	385 [3404]	5,02 [44.4]	51 [452]
UT014-007	7:1	549 [4857]	494 [4375]	466 [4120]	1113 [9851]	537 [4749]	478 [4232]	410 [3631]	3,80 [33.6]	47 [420]
UT014-010	10:1	329 [2913]	282 [2492]	260 [2304]	1062 [9399]	305 [2696]	261 [2306]	241 [2132]	3,39 [30.0]	35 [311]
UT014-016	16:1	657 [5817]	604 [5346]	576 [5095]	1340 [11,860]	643 [5688]	591 [5227]	559 [4951]	4,21 [37.2]	58 [514]
UT014-020	20:1	667 [5902]	616 [5449]	588 [5207]	1360 [12,035]	652 [5772]	602 [5328]	575 [5092]	4,07 [36.0]	54 [479]
UT014-025	25:1	645 [5706]	598 [5288]	572 [5066]	1314 [11,625]	630 [5579]	584 [5171]	560 [4954]	4,07 [36.0]	54 [479]
UT014-028	28:1	681 [6026]	632 [5597]	607 [5369]	1387 [12,274]	666 [5892]	618 [5473]	593 [5250]	3,53 [31.2]	47 [417]
UT014-035	35:1	658 [5820]	613 [5424]	589 [5215]	1338 [11,837]	643 [5691]	599 [5304]	576 [5099]	2,99 [26.4]	44 [391]
UT014-040	40:1	695 [6150]	649 [5745]	625 [5530]	1412 [12,498]	680 [6014]	635 [5617]	611 [5408]	2,99 [26.4]	58 [512]
UT014-050	50:1	671 [5935]	628 [5560]	606 [5363]	1360 [12,034]	656 [5803]	614 [5437]	593 [5244]	2,85 [25.2]	54 [479]
UT014-070	70:1	635 [5623]	598 [5291]	578 [5118]	1283 [11,359]	621 [5499]	585 [5174]	565 [5004]	2,85 [25.2]	49 [435]
UT014-100	100:1	441 [3898]	385 [3407]	361 [3193]	1201 [10,627]	408 [3607]	356 [3153]	334 [2954]	2,85 [25.2]	35 [312]

Available with 24 hour delivery through the Gearhead Express Program.

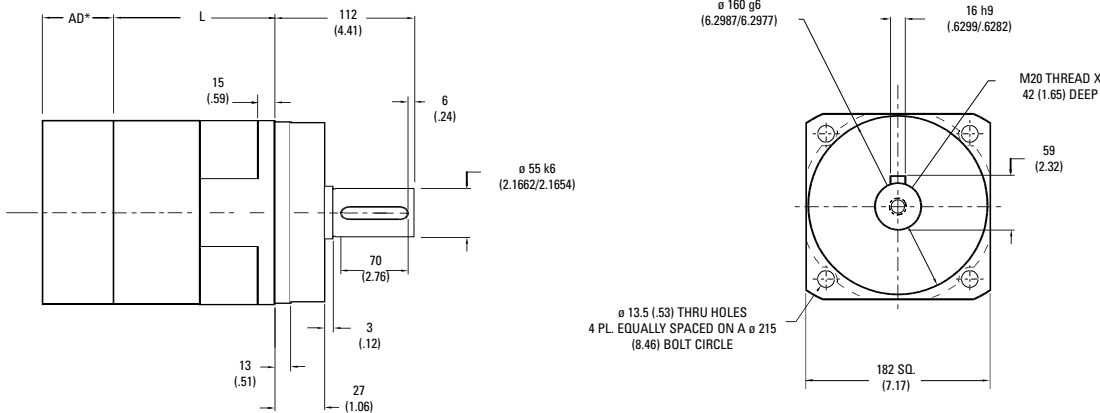
¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

UltraTRUE™ Size 18

Helical True Planetary™ Gearheads

Metric



Ratio ¹	Dimension 'L' in [mm]	Backlash [arc-min]	Weight lb [kg]	Efficiency
4:1 to 10:1	136 [5.35]	4 max	40 [88]	95%
16:1 to 100:1	244 [9.59]	5 max	45 [99]	90%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length and width will vary depending on motor.

M.S.= Mounting Surface

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T peak Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UT018-004	4:1	1368 [12108]	1184 [10476]	1016 [8988]	2713 [24010]	1337 [11832]	962 [8509]	825 [7300]	25,9 [229]	153 [1358]
UT018-005	5:1	1333 [11800]	1179 [10430]	1058 [9366]	2654 [23492]	1304 [11539]	1002 [8868]	860 [7608]	20,0 [177]	150 [1330]
UT018-007	7:1	1281 [11338]	1144 [10128]	1073 [9494]	2565 [22699]	1253 [11087]	1069 [9458]	917 [8114]	14,6 [129]	134 [1185]
UT018-010	10:1	775 [6856]	660 [5841]	609 [5387]	2456 [21734]	717 [6344]	611 [5404]	563 [4984]	13,0 [115]	101 [893]
UT018-016	16:1	1541 [13641]	1408 [12457]	1336 [11827]	3111 [27532]	1507 [13339]	1376 [12181]	1250 [11065]	16,1 [142]	161 [1429]
UT018-020	20:1	1566 [13855]	1437 [12716]	1368 [12108]	3162 [27986]	1531 [13549]	1405 [12434]	1337 [11832]	15,6 [138]	156 [1382]
UT018-025	25:1	1515 [13407]	1396 [12359]	1333 [11800]	3060 [27078]	1481 [13110]	1366 [12085]	1304 [11539]	15,6 [138]	131 [1160]
UT018-028	28:1	1600 [14164]	1479 [13088]	1414 [12515]	3233 [28612]	1565 [13851]	1446 [12798]	1383 [12237]	13,5 [119]	138 [1225]
UT018-035	35:1	1547 [13691]	1435 [12701]	1376 [12174]	3122 [27633]	1513 [13388]	1403 [12420]	1345 [11904]	11,4 [101]	124 [1098]
UT018-040	40:1	1636 [14475]	1521 [13460]	1460 [12920]	3300 [29201]	1599 [14154]	1487 [13162]	1428 [12634]	11,4 [101]	161 [1429]
UT018-050	50:1	1579 [13978]	1474 [13042]	1418 [12547]	3181 [28153]	1544 [13668]	1441 [12754]	1386 [12269]	10,9 [96]	156 [1382]
UT018-070	70:1	1498 [13256]	1404 [12429]	1355 [11993]	3008 [26621]	1465 [12963]	1373 [12154]	1325 [11728]	10,9 [96]	138 [1225]
UT018-100	100:1	1042 [9218]	909 [8043]	851 [7528]	2819 [24949]	964 [8529]	841 [7442]	787 [6966]	10,9 [96]	103 [908]

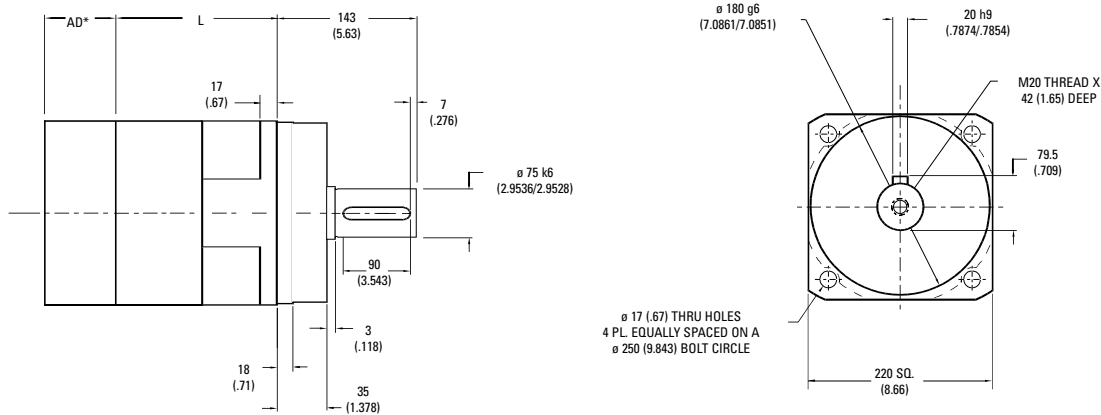
¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

UltraTRUE™ Size 22

Helical True Planetary™ Gearheads

Metric



Ratio ¹	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
4:1 to 10:1	131 [5.15]	4 max	74 [162]	93%
16:1 to 100:1	232 [9.13]	5 max	95 [209]	88%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor.

M.S. = Mounting Surface

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

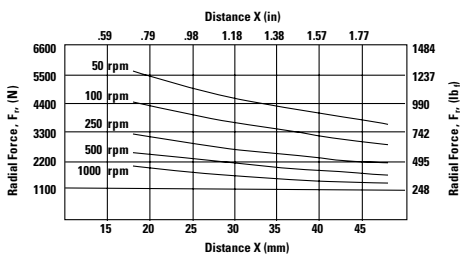
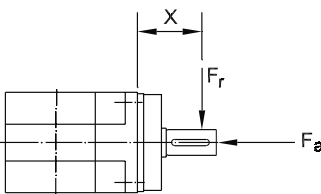
Part Number	Ratio ¹	10,000 Hour Life			T peak Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UT022-004	4:1	2256 [19694]	1786 [15806]	1532 [13560]	4644 [41096]	2017 [17850]	1451 [12838]	1245 [11014]	87,0 [7.70]	429 [3793]
UT022-005	5:1	2181 [19300]	1862 [16475]	1596 [14125]	4548 [40250]	2102 [18600]	1511 [13375]	1297 [11475]	73,4 [6.50]	414 [3661]
UT022-007	7:1	2090 [18496]	1857 [16432]	1703 [15073]	4370 [38671]	2042 [18075]	1613 [14271]	1383 [12243]	62,6 [5.55]	363 [3212]
UT022-010	10:1	1263 [11178]	1072 [9488]	987 [8737]	4301 [38060]	1167 [10325]	992 [8779]	914 [8085]	56,9 [5.04]	253 [2235]
UT022-016	16:1	2521 [20292]	2293 [20292]	2170 [19202]	5247 [46437]	2464 [21805]	2199 [19459]	1886 [16694]	87,3 [7.73]	436 [3858]
UT022-020	20:1	2561 [20732]	2343 [20732]	2224 [19683]	5323 [47107]	2504 [22164]	2291 [20273]	2017 [17850]	73,6 [6.52]	436 [3856]
UT022-025	25:1	2484 [20205]	2283 [20205]	2174 [19239]	5151 [45583]	2427 [21480]	2232 [19757]	2102 [18605]	73,1 [6.47]	418 [3699]
UT022-028	28:1	2620 [21365]	2414 [21365]	2302 [20375]	5427 [48027]	2560 [22660]	2361 [20892]	2231 [19476]	62,7 [5.55]	435 [3854]
UT022-035	35:1	2541 [20788]	2349 [20788]	2246 [19878]	5243 [46397]	2481 [21961]	2297 [20327]	2196 [19438]	62,5 [5.53]	418 [3698]
UT022-040	40:1	2680 [21998]	2486 [21998]	2381 [21069]	5524 [48888]	2619 [23182]	2431 [21510]	2328 [20602]	57,2 [5.06]	435 [3851]
UT022-050	50:1	2595 [21371]	2415 [21371]	2318 [20516]	5328 [47156]	2536 [22443]	2361 [20898]	2267 [20062]	57,1 [5.05]	418 [3696]
UT022-070	70:1	2461 [20373]	2302 [20373]	2217 [19623]	5025 [44470]	2405 [21288]	2251 [19922]	2168 [19189]	57,0 [5.04]	366 [3226]
UT022-100	100:1	1666 [13121]	1483 [13121]	1387 [12273]	4852 [42941]	1571 [13902]	1369 [12116]	1283 [11356]	56,9 [5.04]	253 [2238]

¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

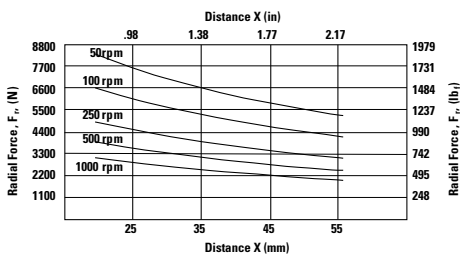
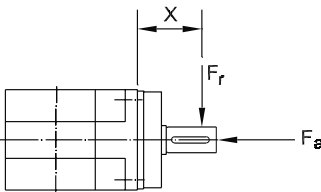
Radial and Axial Load Ratings

UT006



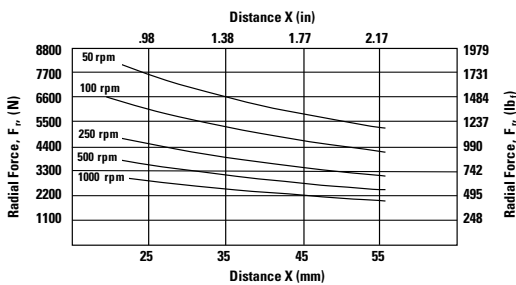
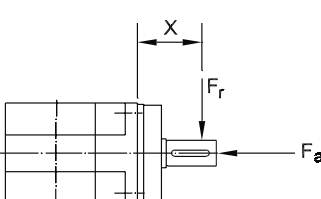
Speed rpm	Axial Load, F_a N [lb _f]
50	7198 [1618]
100	5710 [1284]
250	4208 [946]
500	3342 [751]
1000	2652 [596]

UT075



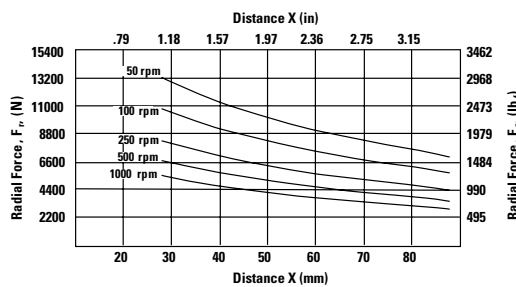
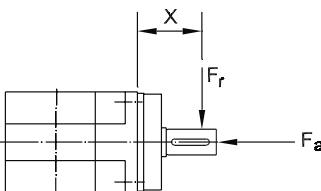
Speed rpm	Axial Load, F_a N [lb _f]
50	9903 [2227]
100	7863 [1768]
250	5793 [1303]
500	4599 [1034]
1000	3650 [821]

UT090



Speed rpm	Axial Load, F_a N [lb _f]
50	9903 [2227]
100	7863 [1768]
250	5793 [1303]
500	4599 [1034]
1000	3650 [821]

UT010

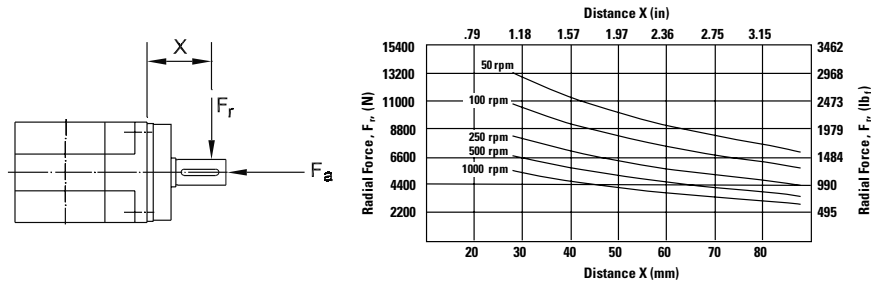


Speed rpm	Axial Load, F_a N [lb _f]
50	13,675 [3075]
100	11,107 [2497]
250	8435 [1897]
500	6855 [1542]
1000	5568 [1252]

These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{mout} , as described on page 10.

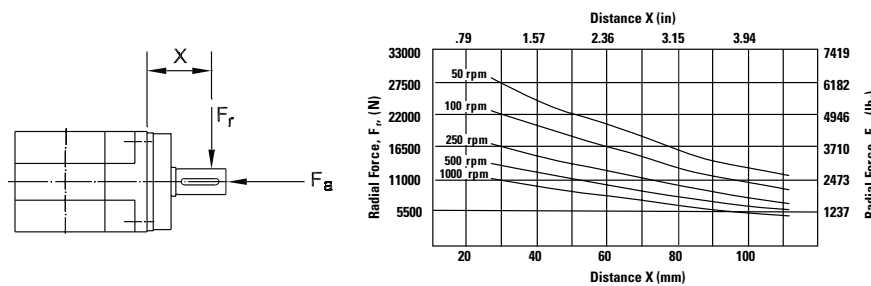
Radial and Axial Load Ratings

UT115



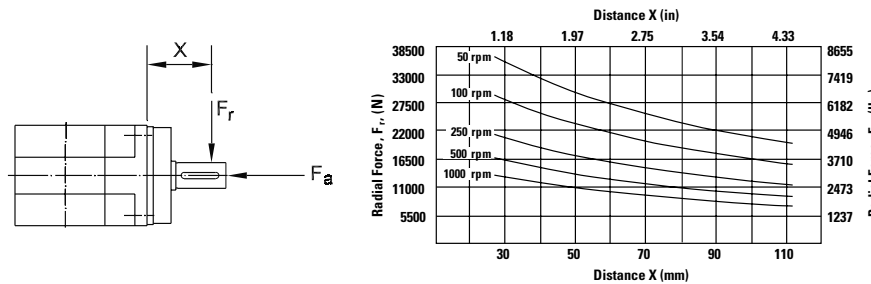
Speed rpm	Axial Load, F_a N [lb _f]
50	13,675 [3075]
100	11,107 [2497]
250	8435 [1897]
500	6855 [1542]
1000	5568 [1252]

UT014



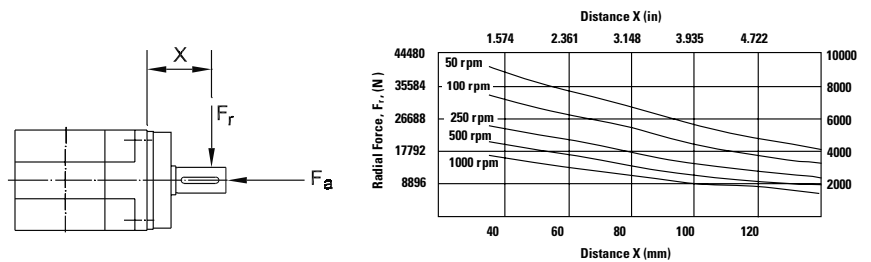
Speed rpm	Axial Load, F_a N [lb _f]
50	25,374 [5705]
100	20,609 [4633]
250	15,657 [3520]
500	12,716 [2859]
1000	10,329 [2322]

UT018



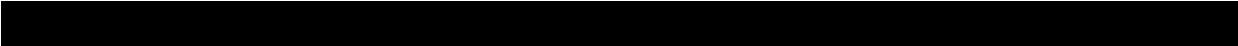
Speed rpm	Axial Load, F_a N [lb _f]
50	34,538 [7765]
100	27,414 [6163]
250	20,197 [4541]
500	16,034 [3605]
1000	12,726 [2861]

UT022



Speed rpm	Axial Load, F_a N [lb _f]
50	32,351 [7273]
100	26,277 [5907]
250	19,962 [4487]
500	16,214 [3645]

These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{mout} , as described on page 10.

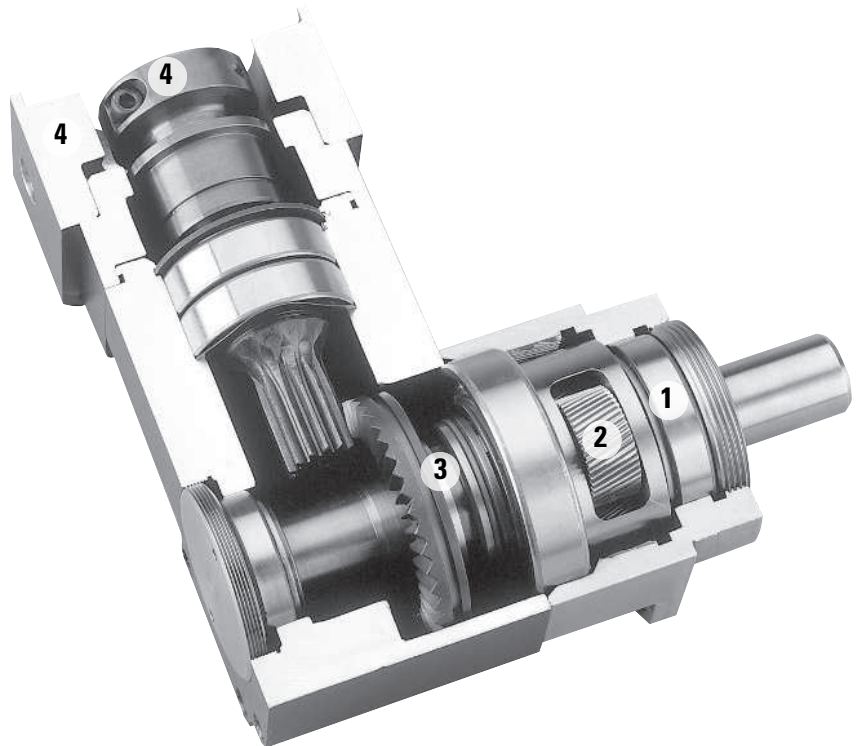


UltraTRUE 90™

Helical Right Angle Gearheads

Ready for Immediate Delivery	
Precision	4 arc-minutes
Frame Sizes	60mm, 75mm, 90mm, 100mm, 115mm, 142mm and 180mm
Torque Capacity	up to 3111 Nm
Ratio Availability	1:1 thru 50:1
Radial load capacity	up to 37910 N
Mounting System	RediMount™

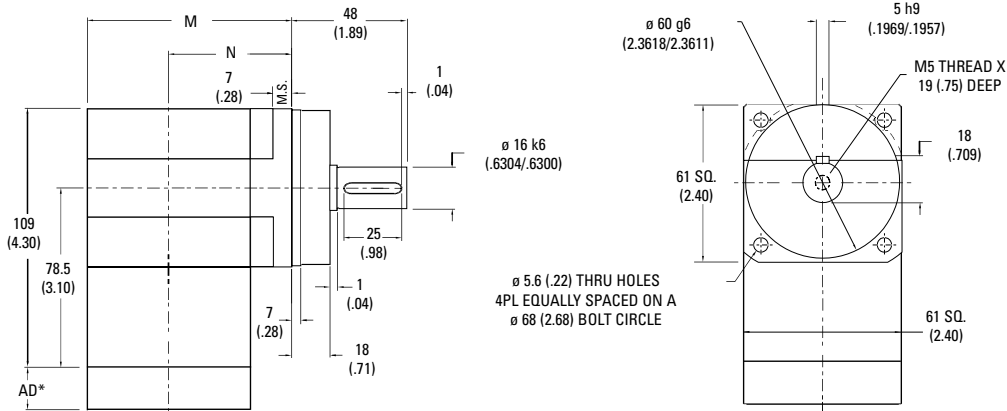
- ① **Tapered roller bearings**
provide high axial and radial load carrying capacity
- ② **Helical crowned**
HRC 55-60 steel gears
provide higher torque capacity and smoother operation
- ③ **PowerTRUE™ gear technology**
provides high torque capacity in a compact package
- ④ **RediMount™ system**
provides error-free motor installation



UltraTRUE 90™ Size 60

Helical Right Angle Gearheads

Metric



Ratio ¹	Dimension 'M' mm [in]	Dimension 'N' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1	86 [3.38]	55 [2.18]	4 max	2,5 [5.5]	98%
8:1 to 50:1	95 [3.75]	65 [2.55]	5 max	3 [6.6]	93%

All dimensions are: mm (inch)
 AD** = Adapter length
 Adapter length will vary depending on motor.
 M.S.= Mounting Surface
 Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T peak Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UTR006-001	1:1	9 [77]	8 [70]	7 [64]	28 [247]	8 [71]	7 [65]	7 [59]	,97 [8.4]	2,1 [19]
UTR006-002	2:1	19 [170]	17 [155]	16 [140]	52 [456]	18 [157]	16 [143]	15 [129]	,50 [4.3]	3,2 [29]
UTR006-003	3:1	12 [108]	11 [99]	10 [89]	39 [342]	11 [100]	10 [91]	9 [82]	,43 [3.7]	3,6 [32]
UTR006-004	4:1	9 [80]	8 [73]	7 [66]	34 [301]	8 [73]	8 [67]	7 [61]	,40 [3.4]	3,8 [34]
UTR006-005	5:1	7 [65]	7 [60]	6 [54]	26 [228]	7 [60]	6 [55]	6 [50]	,39 [3.4]	3,9 [35]
UTR006-008	8:1	51 [447]	47 [413]	45 [394]	106 [938]	49 [438]	45 [397]	38 [340]	,50 [4.4]	2,1 [18]
UTR006-010	10:1	49 [433]	45 [401]	43 [384]	102 [906]	48 [423]	44 [392]	40 [355]	,49 [4.4]	1,8 [16]
UTR006-012	12:1	49 [432]	45 [394]	40 [356]	109 [961]	45 [399]	41 [364]	37 [329]	,39 [3.5]	2,0 [18]
UTR006-014	14:1	46 [411]	43 [383]	42 [368]	97 [860]	45 [402]	42 [374]	41 [360]	,49 [4.4]	2,4 [22]
UTR006-015	15:1	50 [443]	47 [413]	45 [397]	105 [927]	49 [433]	46 [404]	44 [388]	,39 [3.4]	2,4 [21]
UTR006-016	16:1	36 [318]	33 [290]	30 [262]	110 [975]	33 [294]	30 [268]	27 [242]	,39 [3.5]	2,4 [22]
UTR006-020	20:1	45 [398]	41 [363]	37 [328]	106 [939]	41 [367]	38 [335]	34 [303]	,39 [3.5]	2,4 [21]
UTR006-025	25:1	37 [326]	34 [298]	30 [269]	107 [948]	34 [301]	31 [275]	28 [249]	,38 [3.4]	2,3 [21]
UTR006-028	28:1	48 [427]	45 [401]	44 [388]	100 [887]	47 [417]	44 [392]	43 [379]	,39 [3.5]	2,2 [20]
UTR006-030	30:1	30 [266]	26 [232]	25 [217]	93 [822]	28 [246]	24 [215]	23 [201]	,42 [3.7]	2,3 [20]
UTR006-035	35:1	49 [432]	46 [407]	43 [377]	101 [894]	48 [422]	44 [385]	39 [348]	,38 [3.4]	2,3 [20]
UTR006-040	40:1	31 [275]	27 [240]	25 [225]	94 [830]	29 [255]	25 [223]	24 [208]	,39 [3.5]	2,4 [22]
UTR006-050	50:1	32 [283]	28 [247]	26 [232]	94 [836]	30 [262]	26 [229]	24 [215]	,38 [3.4]	2,4 [21]

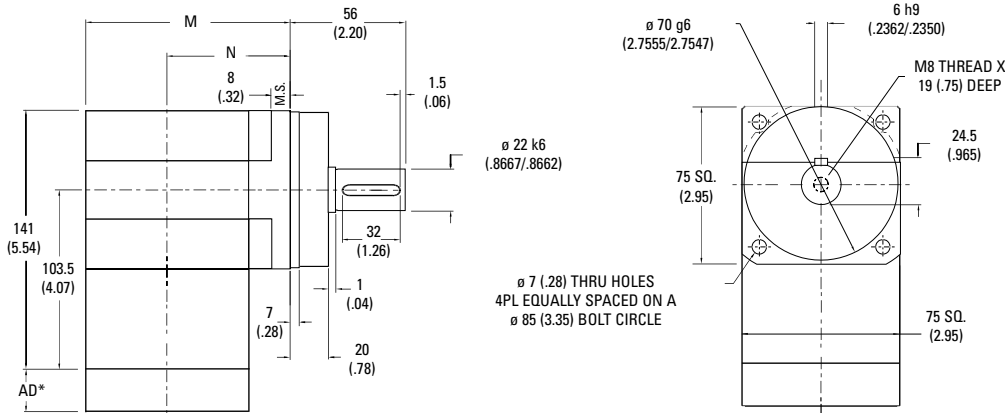
¹ Ratios are exact, higher ratios are also available, consult factory.
 T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
 J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

UltraTRUE 90™ Size 75

Helical Right Angle Gearheads

Metric



Ratio ¹	Dimension 'M' mm [in]	Dimension 'N' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1	89 [3.51]	52 [2.04]	4 max	4.8 [10]	98%
8:1 to 50:1	114.5 [4.51]	77 [3.04]	5 max	5.3 [11.1]	93%

All dimensions are: mm (inch)
AD** = Adapter length
Adapter length will vary depending on motor.
M.S.= Mounting Surface
Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T peak Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UTR075-001	1:1	25 [220]	23 [200]	20 [181]	71 [625]	23 [203]	21 [185]	19 [167]	3,7 [33]	5,1 [46]
UTR075-002	2:1	56 [498]	51 [455]	46 [411]	159 [1410]	52 [460]	47 [420]	43 [380]	1,9 [17]	7,7 [69]
UTR075-003	3:1	37 [329]	34 [300]	31 [271]	129 [1146]	34 [304]	31 [277]	28 [250]	1,6 [15]	8,8 [78]
UTR075-004	4:1	28 [252]	26 [230]	23 [208]	99 [880]	26 [232]	24 [212]	22 [192]	1,5 [13]	9,2 [81]
UTR075-005	5:1	21 [185]	19 [169]	17 [153]	83 [735]	19 [171]	18 [156]	16 [141]	1,5 [13]	9,4 [83]
UTR075-008	8:1	91 [802]	83 [737]	79 [702]	189 [1671]	89 [785]	81 [720]	78 [686]	1,9 [17]	4,7 [41]
UTR075-010	10:1	88 [777]	81 [716]	77 [684]	183 [1617]	86 [759]	79 [700]	76 [669]	1,9 [17]	4,1 [36]
UTR075-012	12:1	93 [824]	86 [762]	82 [730]	194 [1715]	91 [805]	84 [746]	81 [714]	1,5 [14]	4,6 [41]
UTR075-014	14:1	83 [738]	77 [685]	74 [657]	174 [1536]	82 [722]	76 [670]	73 [643]	1,9 [17]	6,6 [58]
UTR075-015	15:1	90 [796]	84 [740]	80 [710]	187 [1656]	88 [779]	82 [723]	78 [694]	1,5 [13]	6,7 [59]
UTR075-016	16:1	95 [838]	88 [780]	85 [749]	197 [1743]	93 [820]	86 [762]	83 [732]	1,5 [14]	6,7 [59]
UTR075-020	20:1	91 [810]	85 [756]	82 [727]	190 [1681]	89 [792]	83 [739]	80 [711]	1,5 [14]	6,5 [58]
UTR075-025	25:1	93 [820]	87 [767]	84 [740]	192 [1698]	91 [801]	85 [750]	80 [705]	1,5 [13]	6,4 [57]
UTR075-028	28:1	87 [768]	81 [720]	79 [695]	179 [1589]	85 [751]	80 [704]	77 [679]	1,5 [14]	5,9 [52]
UTR075-030	30:1	54 [480]	47 [418]	44 [391]	166 [1473]	50 [444]	44 [387]	41 [361]	1,6 [15]	6,3 [56]
UTR075-035	35:1	88 [776]	83 [730]	80 [706]	181 [1603]	86 [759]	81 [714]	78 [690]	1,5 [13]	6,3 [56]
UTR075-040	40:1	56 [497]	49 [433]	46 [406]	168 [1489]	52 [460]	45 [401]	42 [375]	1,5 [14]	6,7 [59]
UTR075-050	50:1	58 [510]	50 [446]	47 [418]	170 [1500]	53 [472]	47 [413]	44 [387]	1,5 [13]	6,6 [58]

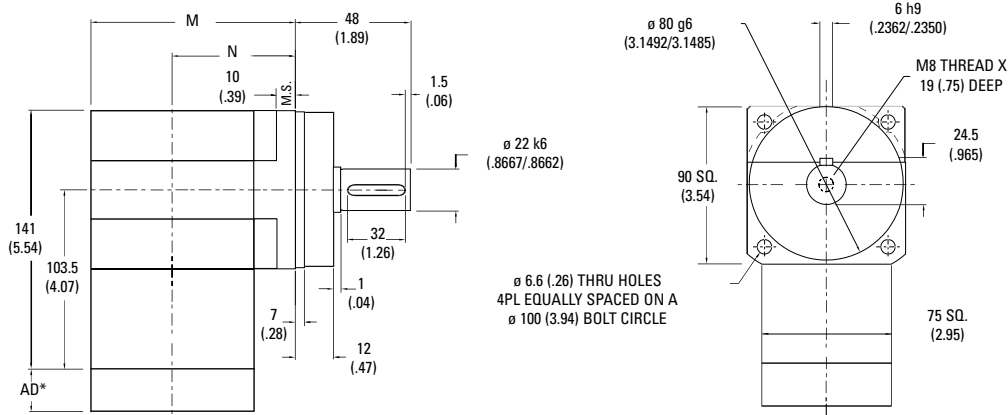
¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

UltraTRUE 90™ Size 90

Helical Right Angle Gearheads

Metric



Ratio ¹	Dimension 'M' mm [in]	Dimension 'N' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1	97 [3.82]	60 [2.35]	4 max	4.8 [10]	98%
8:1 to 50:1	122.5 [4.82]	85 [3.35]	5 max	5.3 [11.1]	93%

All dimensions are: mm (inch)
 AD** = Adapter length
 Adapter length will vary depending on motor. M.S. = Mounting Surface
 Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T _{peak} Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UTR090-001	1:1	25 [220]	23 [200]	20 [181]	71 [625]	23 [203]	21 [185]	19 [167]	3,7 [33]	5,1 [46]
UTR090-002	2:1	56 [498]	51 [455]	46 [411]	159 [1410]	52 [460]	47 [420]	43 [380]	1,9 [17]	7,7 [69]
UTR090-003	3:1	37 [329]	34 [300]	31 [271]	129 [1146]	34 [304]	31 [277]	28 [250]	1,6 [15]	8,8 [78]
UTR090-004	4:1	28 [252]	26 [230]	23 [208]	99 [880]	26 [232]	24 [212]	22 [192]	1,5 [13]	9,2 [81]
UTR090-005	5:1	21 [185]	19 [169]	17 [153]	83 [735]	19 [171]	18 [156]	16 [141]	1,5 [13]	9,4 [83]
UTR090-008	8:1	91 [802]	83 [737]	79 [702]	189 [1671]	89 [785]	81 [720]	78 [686]	1,9 [17]	4,7 [41]
UTR090-010	10:1	88 [777]	81 [716]	77 [684]	183 [1617]	86 [759]	79 [700]	76 [669]	1,9 [17]	4,1 [36]
UTR090-012	12:1	93 [824]	86 [762]	82 [730]	194 [1715]	91 [805]	84 [746]	81 [714]	1,5 [14]	4,6 [41]
UTR090-014	14:1	83 [738]	77 [685]	74 [657]	174 [1536]	82 [722]	76 [670]	73 [643]	1,9 [17]	6,6 [58]
UTR090-015	15:1	90 [796]	84 [740]	80 [710]	187 [1656]	88 [779]	82 [723]	78 [694]	1,5 [13]	6,7 [59]
UTR090-016	16:1	95 [838]	88 [780]	85 [749]	197 [1743]	93 [820]	86 [762]	83 [732]	1,5 [14]	6,7 [59]
UTR090-020	20:1	91 [810]	85 [756]	82 [727]	190 [1681]	89 [792]	83 [739]	80 [711]	1,5 [14]	6,5 [58]
UTR090-025	25:1	93 [820]	87 [767]	84 [740]	192 [1698]	91 [801]	85 [750]	80 [705]	1,5 [13]	6,4 [57]
UTR090-028	28:1	87 [768]	81 [720]	79 [695]	179 [1589]	85 [751]	80 [704]	77 [679]	1,5 [14]	5,9 [52]
UTR090-030	30:1	54 [480]	47 [418]	44 [391]	166 [1473]	50 [444]	44 [387]	41 [361]	1,6 [15]	6,3 [56]
UTR090-035	35:1	88 [776]	83 [730]	80 [706]	181 [1603]	86 [759]	81 [714]	78 [690]	1,5 [13]	6,3 [56]
UTR090-040	40:1	56 [497]	49 [433]	46 [406]	168 [1489]	52 [460]	45 [401]	42 [375]	1,5 [14]	6,7 [59]
UTR090-050	50:1	58 [510]	50 [446]	47 [418]	170 [1500]	53 [472]	47 [413]	44 [387]	1,5 [13]	6,6 [58]

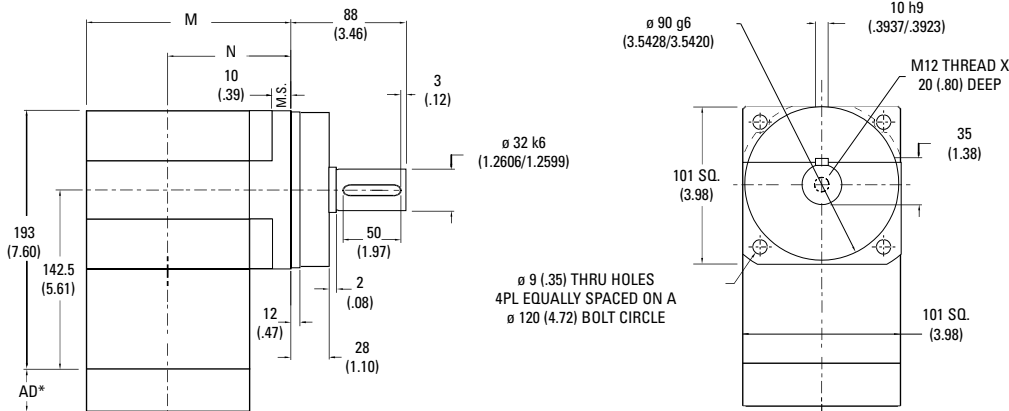
¹ Ratios are exact, higher ratios are also available, consult factory.
 T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
 J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

UltraTRUE 90™ Size 10

Helical Right Angle Gearheads

Metric



Ratio ¹	Dimension 'M' mm [in]	Dimension 'N' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1	121 [4.75]	70 [2.76]	4 max	11 [24]	98%
8:1 to 50:1	149 [5.88]	99 [3.89]	5 max	12 [26.2]	93%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor.

M.S.= Mounting Surface

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T peak Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UTR010-001	1:1	73 [648]	67 [591]	60 [535]	232 [2052]	68 [598]	62 [546]	56 [494]	6,3 [56]	9,2 [81]
UTR010-002	2:1	131 [1157]	119 [1056]	108 [955]	323 [2856]	121 [1068]	110 [975]	100 [882]	3,2 [29]	15,0 [133]
UTR010-003	3:1	101 [898]	93 [820]	84 [741]	292 [2582]	94 [830]	86 [757]	77 [684]	2,8 [25]	17,1 [151]
UTR010-004	4:1	68 [598]	62 [546]	56 [494]	227 [2006]	62 [552]	57 [504]	51 [456]	2,6 [23]	17,9 [159]
UTR010-005	5:1	51 [449]	46 [409]	42 [370]	187 [1653]	47 [414]	43 [378]	39 [342]	2,5 [23]	18,3 [162]
UTR010-008	8:1	266 [2358]	243 [2147]	229 [2031]	547 [4844]	260 [2305]	217 [1923]	186 [1650]	3,3 [29]	16,6 [147]
UTR010-010	10:1	258 [2286]	236 [2092]	225 [1989]	531 [4701]	253 [2235]	226 [2005]	194 [1720]	3,3 [29]	13,1 [116]
UTR010-012	12:1	274 [2426]	252 [2229]	240 [2125]	564 [4992]	270 [2389]	245 [2171]	210 [1863]	2,6 [23]	18,8 [167]
UTR010-014	14:1	246 [2178]	227 [2007]	217 [1917]	506 [4481]	241 [2129]	222 [1963]	207 [1834]	3,3 [29]	23,1 [204]
UTR010-015	15:1	265 [2349]	245 [2168]	234 [2072]	546 [4832]	259 [2297]	240 [2120]	219 [1943]	2,5 [23]	24,3 [215]
UTR010-016	16:1	270 [2393]	247 [2184]	223 [1975]	575 [5085]	250 [2210]	228 [2016]	206 [1823]	2,6 [23]	24,8 [220]
UTR010-020	20:1	270 [2391]	251 [2219]	240 [2127]	555 [4916]	264 [2338]	245 [2170]	235 [2080]	2,6 [23]	22,1 [196]
UTR010-025	25:1	253 [2243]	231 [2047]	209 [1851]	562 [4974]	234 [2072]	214 [1890]	193 [1709]	2,5 [23]	22,1 [196]
UTR010-028	28:1	256 [2270]	239 [2119]	230 [2038]	526 [4659]	251 [2220]	234 [2072]	225 [1993]	2,6 [23]	19,2 [170]
UTR010-030	30:1	159 [1405]	138 [1220]	129 [1139]	488 [4317]	147 [1300]	128 [1129]	119 [1054]	2,8 [25]	19,1 [169]
UTR010-035	35:1	260 [2298]	243 [2152]	234 [2074]	532 [4707]	254 [2248]	238 [2104]	229 [2028]	2,5 [23]	19,0 [168]
UTR010-040	40:1	164 [1456]	143 [1267]	134 [1184]	494 [4372]	152 [1347]	132 [1173]	124 [1096]	2,6 [23]	24,9 [221]
UTR010-050	50:1	169 [1496]	147 [1304]	138 [1220]	498 [4410]	156 [1384]	136 [1207]	128 [1129]	2,5 [23]	21,9 [194]

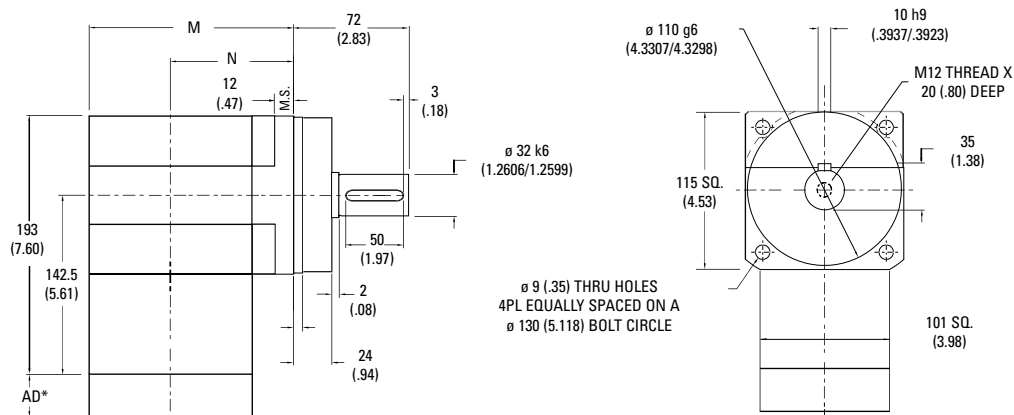
¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

UltraTRUE 90™ Size 115

Helical Right Angle Gearheads

Metric



Ratio ¹	Dimension 'M' mm [in]	Dimension 'N' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1	136,7 [5.38]	86 [3.39]	4 max	11 [24]	98%
8:1 to 50:1	165 [6.51]	114,8 [4.52]	5 max	12 [26.2]	93%

All dimensions are: mm (inch)
 AD** = Adapter length
 Adapter length will vary depending on motor.
 M.S. = Mounting Surface
 Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T _{peak} Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UTR115-001	1:1	73 [648]	67 [591]	60 [535]	232 [2052]	68 [598]	62 [546]	56 [494]	6,3 [56]	9,2 [81]
UTR115-002	2:1	131 [1157]	119 [1056]	108 [955]	323 [2856]	121 [1068]	110 [975]	100 [882]	3,2 [29]	15,0 [133]
UTR115-003	3:1	101 [898]	93 [820]	84 [741]	292 [2582]	94 [830]	86 [757]	77 [684]	2,8 [25]	17,1 [151]
UTR115-004	4:1	68 [598]	62 [546]	56 [494]	227 [2006]	62 [552]	57 [504]	51 [456]	2,6 [23]	17,9 [159]
UTR115-005	5:1	51 [449]	46 [409]	42 [370]	187 [1653]	47 [414]	43 [378]	39 [342]	2,5 [23]	18,3 [162]
UTR115-008	8:1	266 [2358]	243 [2147]	229 [2031]	547 [4844]	260 [2305]	217 [1923]	186 [1650]	3,3 [29]	16,6 [147]
UTR115-010	10:1	258 [2286]	236 [2092]	225 [1989]	531 [4701]	253 [2235]	226 [2005]	194 [1720]	3,3 [29]	13,1 [116]
UTR115-012	12:1	274 [2426]	252 [2229]	240 [2125]	564 [4992]	270 [2389]	245 [2171]	210 [1863]	2,6 [23]	18,8 [167]
UTR115-014	14:1	246 [2178]	227 [2007]	217 [1917]	506 [4481]	241 [2129]	222 [1963]	207 [1834]	3,3 [29]	23,1 [204]
UTR115-015	15:1	265 [2349]	245 [2168]	234 [2072]	546 [4832]	259 [2297]	240 [2120]	219 [1943]	2,5 [23]	24,3 [215]
UTR115-016	16:1	270 [2393]	247 [2184]	223 [1975]	575 [5085]	250 [2210]	228 [2016]	206 [1823]	2,6 [23]	24,8 [220]
UTR115-020	20:1	270 [2391]	251 [2219]	240 [2127]	555 [4916]	264 [2338]	245 [2170]	235 [2080]	2,6 [23]	22,1 [196]
UTR115-025	25:1	253 [2243]	231 [2047]	209 [1851]	562 [4974]	234 [2072]	214 [1890]	193 [1709]	2,5 [23]	22,1 [196]
UTR115-028	28:1	256 [2270]	239 [2119]	230 [2038]	526 [4659]	251 [2220]	234 [2072]	225 [1993]	2,6 [23]	19,2 [170]
UTR115-030	30:1	159 [1405]	138 [1220]	129 [1139]	488 [4317]	147 [1300]	128 [1129]	119 [1054]	2,8 [25]	19,1 [169]
UTR115-035	35:1	260 [2298]	243 [2152]	234 [2074]	532 [4707]	254 [2248]	238 [2104]	229 [2028]	2,5 [23]	19,0 [168]
UTR115-040	40:1	164 [1456]	143 [1267]	134 [1184]	494 [4372]	152 [1347]	132 [1173]	124 [1096]	2,6 [23]	24,9 [221]
UTR115-050	50:1	169 [1496]	147 [1304]	138 [1220]	498 [4410]	156 [1384]	136 [1207]	128 [1129]	2,5 [23]	21,9 [194]

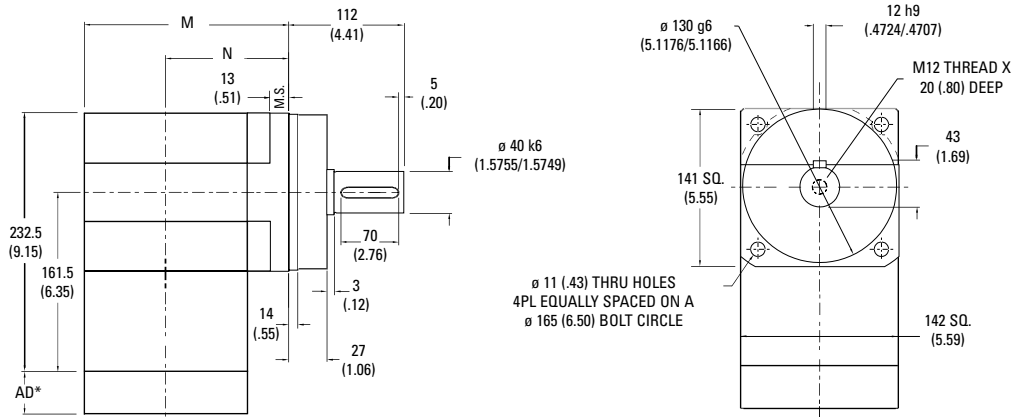
¹ Ratios are exact, higher ratios are also available, consult factory.
 T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
 J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

UltraTRUE 90™ Size 14

Helical Right Angle Gearheads

Metric



Ratio ¹	Dimension 'M' mm [in]	Dimension 'N' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1P	166 [6.53]	95 [3.74]	4 max	24 [53]	98%
8:1 to 50:1	222 [8.74]	151 [5.95]	5 max	29 [64]	93%

All dimensions are: mm (inch)

AD** = Adapter length

Adapter length will vary depending on motor.

M.S.= Mounting Surface

Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T _{peak} Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UTR014-001	1:1	158 [1396]	144 [1274]	130 [1152]	380 [3363]	146 [1289]	133 [1177]	120 [1064]	32 [279]	28,4 [252]
UTR014-002	2:1	327 [2893]	298 [2640]	270 [2387]	708 [6270]	302 [2671]	275 [2438]	249 [2204]	16 [143]	46,6 [413]
UTR014-003	3:1	220 [1944]	201 [1774]	181 [1604]	545 [4822]	203 [1796]	185 [1639]	167 [1481]	14 [123]	52,9 [468]
UTR014-004	4:1	158 [1396]	144 [1274]	130 [1152]	471 [4172]	146 [1289]	133 [1177]	120 [1064]	13 [114]	55,5 [491]
UTR014-005	5:1	118 [1047]	108 [956]	98 [864]	396 [3506]	109 [967]	100 [883]	90 [798]	13 [112]	56,8 [503]
UTR014-008	8:1	625 [5531]	565 [5000]	533 [4719]	1269 [11,233]	611 [5408]	530 [4688]	454 [4022]	16 [146]	36,7 [325]
UTR014-010	10:1	606 [5364]	551 [4876]	522 [4617]	1233 [10,911]	593 [5245]	539 [4768]	474 [4192]	16 [145]	31,9 [282]
UTR014-012	12:1	644 [5702]	588 [5207]	559 [4944]	1313 [11,616]	630 [5576]	575 [5092]	513 [4542]	13 [116]	22,1 [195]
UTR014-014	14:1	578 [5118]	530 [4690]	504 [4461]	1179 [10,430]	565 [5005]	518 [4586]	493 [4363]	16 [145]	51,6 [457]
UTR014-015	15:1	624 [5522]	572 [5067]	545 [4824]	1272 [11,253]	610 [5399]	560 [4955]	533 [4717]	12 [113]	51,7 [457]
UTR014-016	16:1	631 [5587]	576 [5099]	521 [4610]	1340 [11,860]	583 [5160]	532 [4708]	481 [4257]	13 [115]	52,8 [467]
UTR014-020	20:1	636 [5627]	587 [5194]	561 [4963]	1296 [11,471]	622 [5503]	574 [5079]	548 [4854]	13 [115]	49,2 [435]
UTR014-025	25:1	592 [5240]	540 [4782]	488 [4324]	1314 [11,625]	547 [4839]	499 [4415]	451 [3992]	12 [113]	49,2 [435]
UTR014-028	28:1	605 [5350]	561 [4969]	539 [4767]	1231 [10,896]	591 [5232]	549 [4859]	527 [4661]	13 [115]	42,8 [379]
UTR014-030	30:1	380 [3363]	329 [2914]	307 [2715]	1143 [10,111]	352 [3112]	305 [2696]	284 [2512]	14 [124]	44,7 [396]
UTR014-035	35:1	612 [5420]	571 [5052]	549 [4857]	1246 [11,024]	599 [5300]	558 [4941]	537 [4750]	12 [113]	40,2 [356]
UTR014-040	40:1	394 [3486]	342 [3028]	319 [2826]	1159 [10,257]	364 [3226]	317 [2802]	295 [2615]	13 [115]	52,6 [466]
UTR014-050	50:1	405 [3584]	352 [3118]	329 [2914]	1171 [10,360]	375 [3316]	326 [2886]	305 [2696]	12 [112]	49,2 [435]

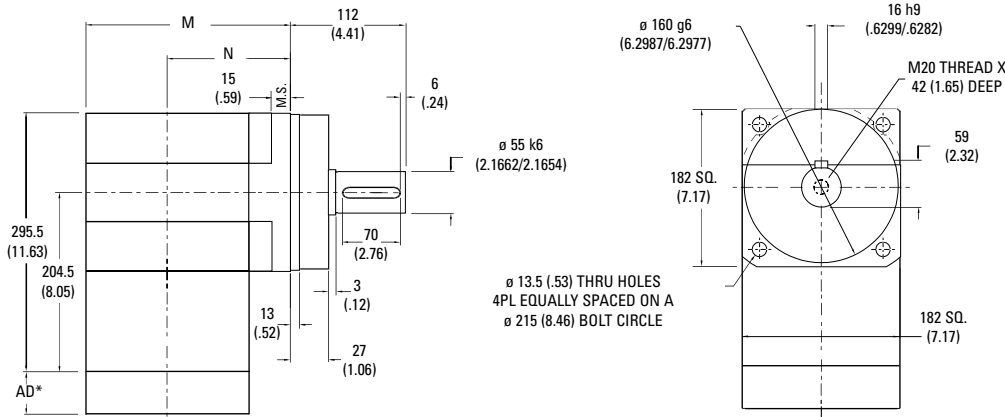
¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

UltraTRUE 90™ Size 18

Helical Right Angle Gearheads

Metric



Ratio ¹	Dimension 'M' mm [in]	Dimension 'N' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
1:1 to 5:1	219 [8.64]	128.5 [5.06]	4 max	43 [96]	98%
8:1 to 50:1	277 [10.91]	186 [7.33]	5 max	48 [106]	93%

All dimensions are: mm (inch)
 AD** = Adapter length
 Adapter length will vary depending on motor.
 M.S.= Mounting Surface
 Efficiency is calculated at 100% of the rated torque.

Performance Specifications

Part Number	Ratio ¹	10,000 Hour Life			T _{peak} Nm [in-lb]	20,000 Hour Life			J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]		
UTR018-001	1:1	248 [2195]	226 [2003]	205 [1811]	819 [7246]	229 [2027]	209 [1850]	189 [1672]	111 [985]	50 [440]
UTR018-002	2:1	654 [5786]	597 [5280]	539 [4774]	1911 [16914]	604 [5343]	551 [4876]	498 [4408]	57 [505]	82 [722]
UTR018-003	3:1	507 [4489]	463 [4096]	419 [3704]	1674 [14817]	468 [4145]	427 [3783]	386 [3420]	49 [434]	93 [820]
UTR018-004	4:1	361 [3192]	329 [2913]	298 [2633]	1190 [10536]	333 [2947]	304 [2690]	275 [2432]	46 [403]	97 [860]
UTR018-005	5:1	254 [2245]	231 [2048]	209 [1852]	837 [7410]	234 [2073]	214 [1892]	193 [1710]	45 [396]	99 [880]
UTR018-008	8:1	1460 [12920]	1309 [11589]	1230 [10888]	2929 [25920]	1428 [12634]	1184 [10476]	1016 [8988]	45 [401]	113 [998]
UTR018-010	10:1	1418 [12547]	1279 [11322]	1206 [10673]	2851 [25228]	1386 [12269]	1234 [10918]	1058 [9366]	45 [398]	92 [812]
UTR018-012	12:1	1509 [13352]	1368 [12108]	1294 [11448]	3040 [26900]	1475 [13057]	1337 [11832]	1147 [10150]	36 [317]	63 [560]
UTR018-014	14:1	1355 [11993]	1234 [10917]	1169 [10344]	2733 [24185]	1325 [11728]	1206 [10675]	1129 [9989]	45 [398]	111 [986]
UTR018-015	15:1	1463 [12944]	1333 [11800]	1265 [11192]	2950 [26109]	1430 [12657]	1304 [11539]	1195 [10578]	35 [310]	144 [1272]
UTR018-016	16:1	1443 [12769]	1317 [11652]	1191 [10536]	3111 [27532]	1332 [11791]	1216 [10760]	1099 [9729]	36 [316]	147 [1299]
UTR018-020	20:1	1493 [13209]	1370 [12121]	1304 [11541]	3014 [26674]	1460 [12917]	1339 [11853]	1275 [11285]	36 [316]	142 [1257]
UTR018-025	25:1	1268 [11226]	1158 [10245]	1047 [9263]	3060 [27078]	1171 [10366]	1069 [9460]	967 [8554]	35 [309]	119 [1055]
UTR018-028	28:1	1421 [12576]	1313 [11620]	1255 [11110]	2870 [25400]	1390 [12298]	1284 [11362]	1228 [10864]	36 [316]	126 [1113]
UTR018-030	30:1	897 [7935]	775 [6856]	721 [6377]	2665 [23583]	830 [7342]	717 [6344]	667 [5900]	38 [339]	113 [997]
UTR018-035	35:1	1441 [12750]	1337 [11828]	1281 [11338]	2908 [25736]	1409 [12468]	1307 [11567]	1253 [11087]	35 [309]	113 [998]
UTR018-040	40:1	930 [8231]	806 [7131]	751 [6645]	2708 [23967]	861 [7616]	746 [6599]	695 [6149]	36 [314]	147 [1299]
UTR018-050	50:1	956 [8465]	830 [7348]	775 [6856]	2739 [24239]	885 [7832]	768 [6799]	717 [6344]	35 [308]	142 [1257]

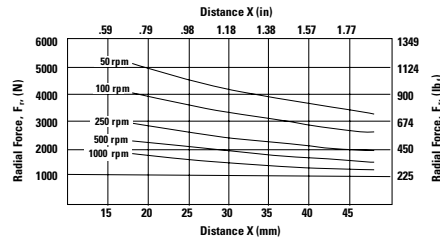
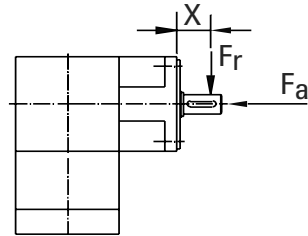
¹ Ratios are exact, higher ratios are also available, consult factory.
 T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
 J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

Radial and Axial Load Ratings

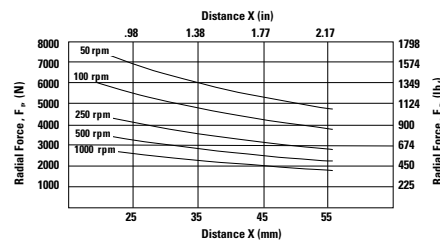
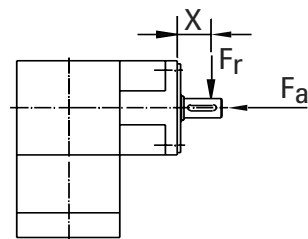
Ratios 1:1 thru 5:1 only

UTR006



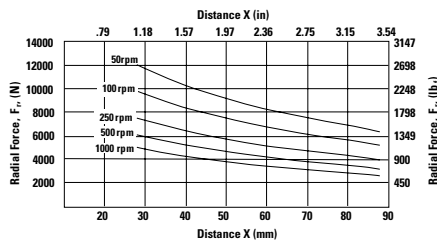
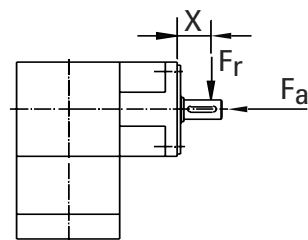
Speed rpm	Axial Load, F_a N [lb _f]
50	6543 [1471]
100	5191 [1167]
250	3825 [860]
500	3038 [683]
1000	2411 [542]

UTR075 and UTR090



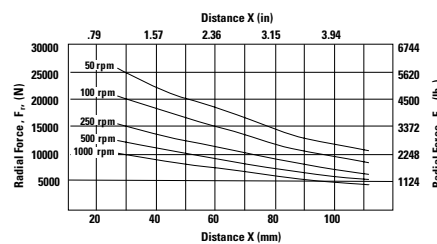
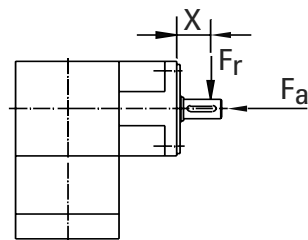
Speed rpm	Axial Load, F_a N [lb _f]
50	9003 [2024]
100	7148 [1607]
250	5266 [1184]
500	4181 [940]
1000	3318 [746]

UTR010 and UTR115



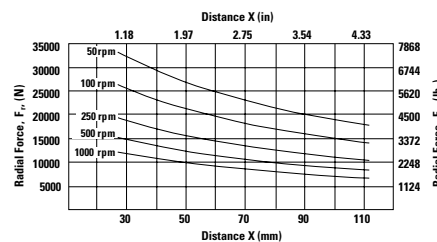
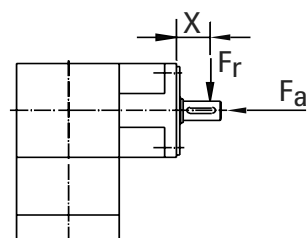
Speed rpm	Axial Load, F_a N [lb _f]
50	12,432 [2795]
100	10,097 [2270]
250	7668 [1724]
500	6232 [1401]
1000	5062 [1138]

UTR014



Speed rpm	Axial Load, F_a N [lb _f]
50	23,067 [5186]
100	18,735 [4212]
250	14,234 [3200]
500	11,560 [2599]
1000	9390 [2111]

UTR018

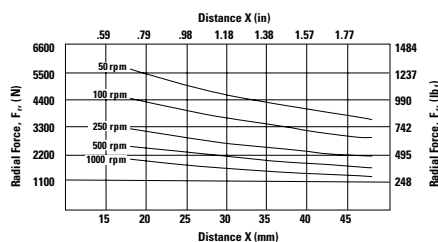
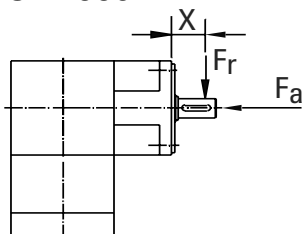


Speed rpm	Axial Load, F_a N [lb _f]
50	31,398 [7059]
100	24,922 [5603]
250	18,361 [4128]
500	14,576 [3277]
1000	11,569 [2601]

These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{mout} , as described on page 10.

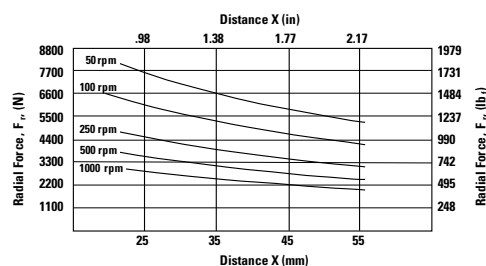
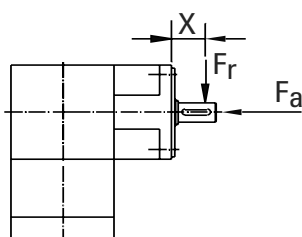
Radial and Axial Load Ratings

Ratios 8:1 thru 50:1 only
UTR006



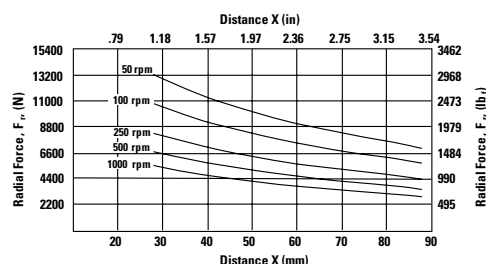
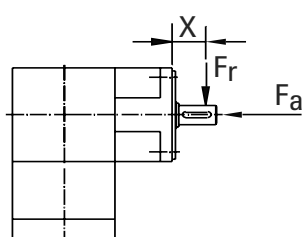
Speed rpm	Axial Load, F_a N [lb _f]
50	7198 [1618]
100	5710 [1284]
250	4208 [946]
500	3342 [751]
1000	2652 [596]

UTR075 and UTR090



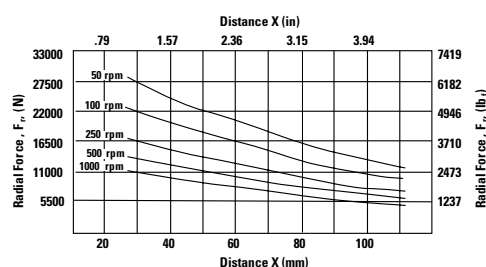
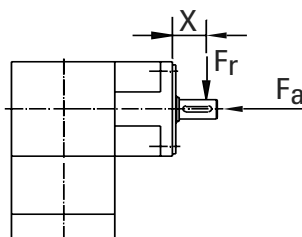
Speed rpm	Axial Load, F_a N [lb _f]
50	9903 [2227]
100	7863 [1768]
250	5793 [1303]
500	4599 [1034]
1000	3650 [821]

UTR010 and UTR115



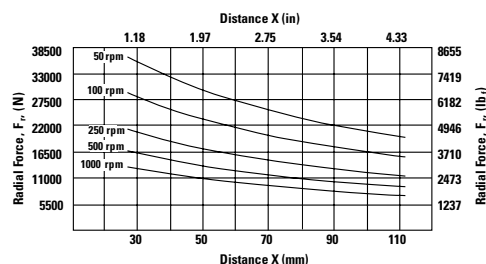
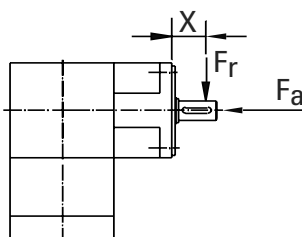
Speed rpm	Axial Load, F_a N [lb _f]
50	13,675 [3075]
100	11,107 [2497]
250	8435 [1897]
500	6855 [1542]
1000	5568 [1252]

UTR014



Speed rpm	Axial Load, F_a N [lb _f]
50	25,374 [5705]
100	20,609 [4633]
250	15,657 [3520]
500	12,716 [2859]
1000	10,329 [2322]

UTR018



Speed rpm	Axial Load, F_a N [lb _f]
50	34,538 [7765]
100	27,414 [6163]
250	20,197 [4541]
500	16,034 [3605]
1000	12,726 [2861]

These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{mout} , as described on page 10.

EverTRUE™ Continuous Duty

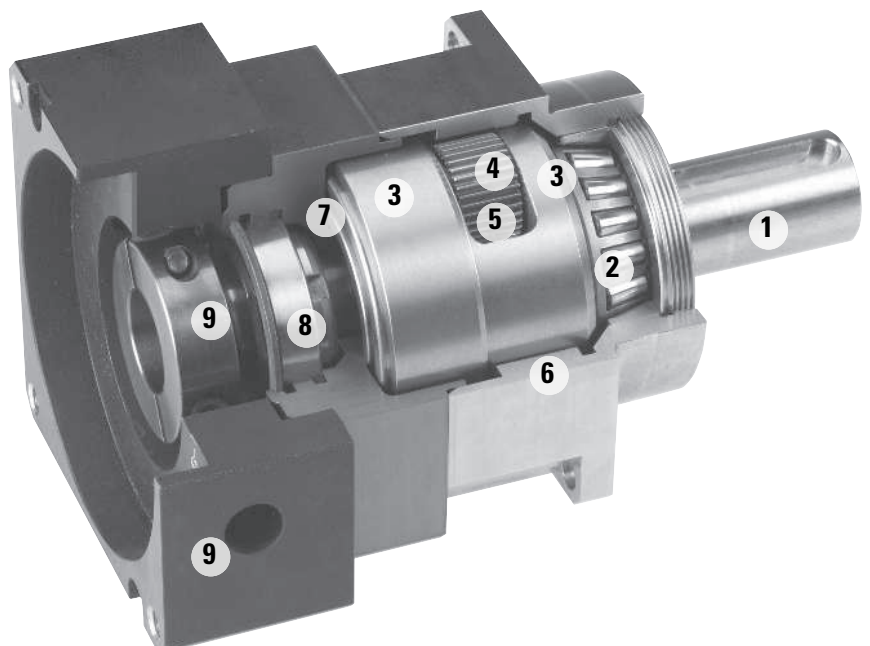
True Planetary™ Gearheads

Ready for Immediate Delivery

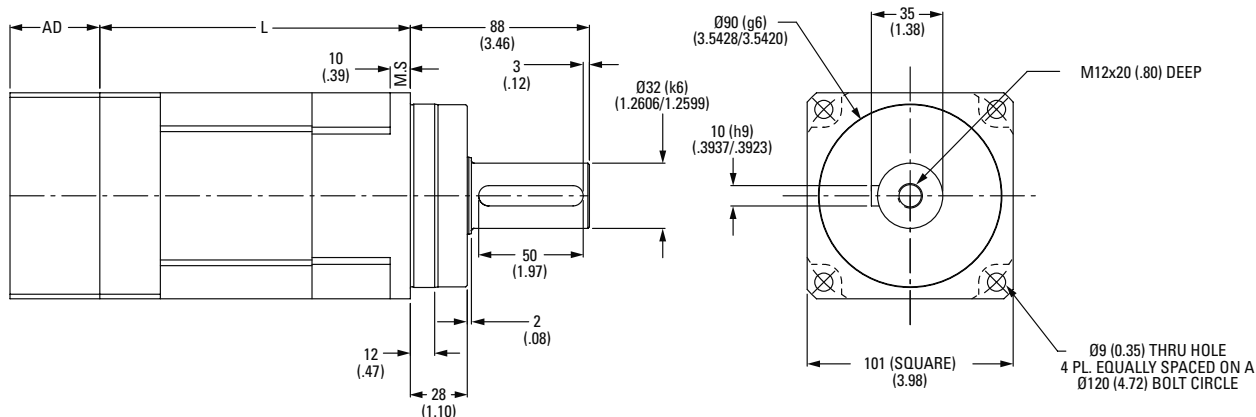
Precision	4 arc-minutes
Frame Sizes	100mm, 140mm and 180mm
Torque Capacity	up to 1017 Nm
Ratio Availability	4:1 thru 100:1
Radial load capacity	up to 44600 N
Mounting System	RediMount™

- 1 **Single piece output shaft with**
straddle mount bearing for
increased stiffness
- 2 **High capacity tapered roller bearings**
- 3 **Double full complement needle**
bearings for continuous operation
- 4 **Gears lubricated with**
continuous duty grease
- 5 **True Planetary Gearing**
optimized for continuous duty
- 6 **Single piece output**
housing with integral internal gear
- 7 **Angular contact bearing**
- 8 **Input bearing with thermal**
compensation feature
- 9 **RediMount™ system**
provides error-free installation

Stainless steel output housing



True Planetary™ Gearheads



Ratio¹	Stages	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
4:1 to 10:1	1	78 [3.07]	4 max	6 [13]	95%
16:1 to 100:1	2	146 [5.75]	5 max	8 [18]	90%

All dimensions are in mm (in)
AD** = Adapter length
Adapter length will vary depending
on motor.
Efficiency is calculated at 100% of
the rated torque.

Performance Specifications

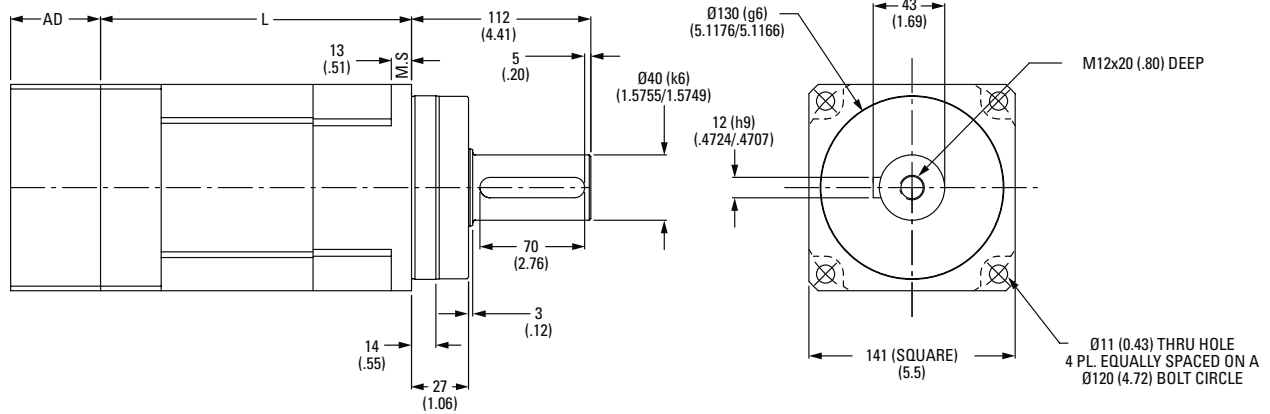
Part Number	Ratio ¹	Intermittent (Trc) Nm [in·lb]	30000 Hour Life			Tpeak Nm [in·lb]	J kg·cm ² [in·lb·sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc·min [in·lb/arc·min]
			T _r	T _r	T _r			
			(1000 rpm) Nm [in·lb]	(3000 rpm) Nm [in·lb]	(5000 rpm) Nm [in·lb]			
ET010-004	4:1	171 [1514]	147 [1303]	106 [937]	91 [804]	463 [4093]	1,50 [13.3]	28,27 [250]
ET010-005	5:1	178 [1579]	144 [1272]	110 [977]	95 [838]	451 [3991]	1,29 [11.5]	25,08 [222]
ET010-007	7:1	190 [1684]	137 [1217]	118 [1042]	101 [893]	433 [3830]	0,92 [8.1]	23,21 [205]
ET010-010	10:1	106 [940]	77 [677]	66 [581]	61 [539]	411 [3640]	0,86 [7.6]	15,84 [140]
ET010-016	16:1	245 [2166]	164 [1450]	151 [1340]	138 [1218]	517 [4577]	1,05 [9.2]	30,03 [267]
ET010-020	20:1	249 [2205]	166 [1470]	154 [1364]	147 [1303]	524 [4637]	1,05 [9.2]	26,73 [237]
ET010-025	25:1	242 [2140]	161 [1421]	150 [1324]	14 [127]	506 [4477]	1,05 [9.2]	26,73 [237]
ET010-028	28:1	255 [2261]	169 [1499]	158 [1399]	152 [1345]	533 [4718]	0,89 [7.9]	23,21 [205]
ET010-035	35:1	248 [2191]	164 [1448]	153 [1355]	148 [1306]	514 [4549]	0,75 [6.7]	22,99 [204]
ET010-040	40:1	262 [2316]	173 [1528]	162 [1433]	156 [1383]	542 [4794]	0,75 [6.7]	30,14 [267]
ET010-050	50:1	253 [2243]	167 [1475]	157 [1387]	152 [1341]	521 [4615]	0,74 [6.6]	26,51 [235]
ET010-070	70:1	241 [2131]	158 [1396]	149 [1318]	144 [1277]	491 [4349]	0,74 [6.6]	23,21 [205]
ET010-100	100:1	144 [1277]	102 [902]	89 [790]	84 [741]	459 [4059]	0,74 [6.6]	18,92 [168]

1 Ratios are exact, higher ratios are also available, consult factory.
 T_r = Rated output torque at rated speed for specific hours of life.
 T_{rc} = Rated output torque for intermittent operation at 3,000 RPM
 (20,000 hr life - for catalog comparison)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
 J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

EverTRUE™ Size 14 Continuous Duty

True Planetary™ Gearheads



Ratio ¹	Stages	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
4:1 to 10:1	1	110,5 [4.35]	4 max	14 [31]	95%
16:1 to 100:1	2	195 [7.69]	5 max	18 [40]	90%

All dimensions are in mm (in)
 AD** = Adapter length
 Adapter length will vary depending on motor.
 Efficiency is calculated at 100% of the rated torque.

Performance Specifications

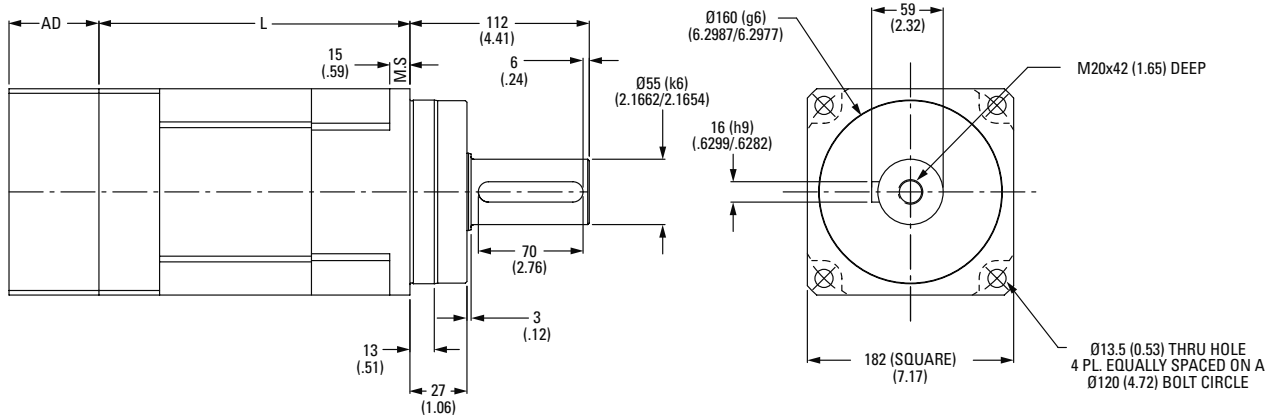
Part Number	Ratio ¹	Intermittent (T _{rc}) Nm [in-lb]	30000 Hour Life			T _{peak} Nm [in-lb]	J kg-cm ² [in-lb-sec ² ×10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
			T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]			
ET014-004	4:1	417 [3694]	345 [3055]	258 [2285]	221 [1960]	1066 [9431]	6,18 [55]	60,50 [536]
ET014-005	5:1	435 [3849]	336 [2972]	269 [2381]	231 [2042]	1040 [9206]	4,77 [42]	56,10 [497]
ET014-007	7:1	464 [4105]	322 [2849]	287 [2539]	246 [2179]	1002 [8866]	3,61 [32]	51,70 [458]
ET014-010	10:1	253 [2237]	183 [1618]	156 [1384]	145 [1279]	956 [8459]	3,22 [29]	38,50 [341]
ET014-016	16:1	573 [5070]	386 [3413]	354 [3136]	336 [2971]	1206 [10674]	4,00 [35]	63,80 [565]
ET014-020	20:1	584 [5168]	391 [3463]	361 [3197]	345 [3055]	1224 [10832]	3,87 [34]	59,40 [526]
ET014-025	25:1	567 [5016]	378 [3347]	351 [3103]	336 [2972]	1182 [10463]	3,87 [34]	59,40 [526]
ET014-028	28:1	600 [5309]	399 [3535]	371 [3284]	356 [3150]	1248 [11047]	3,35 [30]	51,70 [458]
ET014-035	35:1	581 [5145]	386 [3415]	360 [3182]	346 [3059]	1204 [10653]	2,84 [25]	48,40 [428]
ET014-040	40:1	616 [5448]	408 [3608]	381 [3370]	367 [3245]	1271 [11248]	2,84 [25]	63,80 [565]
ET014-050	50:1	596 [5274]	393 [3482]	369 [3262]	356 [3146]	1224 [10831]	2,71 [24]	59,40 [526]
ET014-070	70:1	567 [5019]	373 [3299]	351 [3104]	339 [3002]	1155 [10223]	2,71 [24]	53,90 [478]
ET014-100	100:1	346 [3058]	245 [2164]	214 [1892]	200 [1772]	1081 [9564]	2,71 [24]	38,50 [341]

¹ Ratios are exact, higher ratios are also available, consult factory.
 T_r = Rated output torque at rated speed for specific hours of life.
 T_{rc} = Rated output torque for intermittent operation at 3,000 RPM
 (20,000 hr life - for catalog comparison)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
 J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

EverTRUE™ Size 18 Continuous Duty

True Planetary™ Gearheads



Ratio ¹	Stages	Dimension 'L' mm [in]	Backlash [arc-min]	Weight kg [lb]	Efficiency
4:1 to 10:1	1	136 [5.35]	4 max	40 [88]	95%
16:1 to 100:1	2	244 [9.59]	5 max	45 [99]	90%

All dimensions are in mm (in)
 AD** = Adapter length
 Adapter length will vary depending on motor.
 Efficiency is calculated at 100% of the rated torque.

Performance Specifications

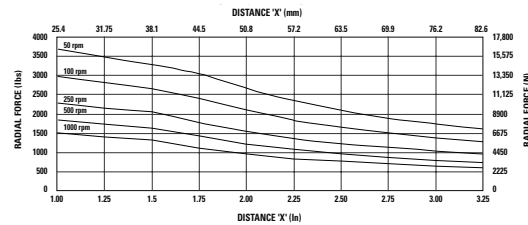
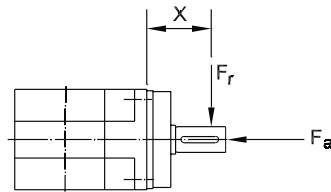
Part Number	Ratio ¹	Intermittent (T _{rc}) Nm [in-lb]	30000 Hour Life			T _{peak} Nm [in-lb]	J kg-cm ² [in-lb-sec ² x10 ⁻⁴]	Torsional Stiffness Nm/arc-min [in-lb/arc-min]
			T _r (1000 rpm) Nm [in-lb]	T _r (3000 rpm) Nm [in-lb]	T _r (5000 rpm) Nm [in-lb]			
ET018-004	4:1	933 [8254]	802 [7099]	577 [5105]	495 [4380]	2442 [21609]	24,61 [218]	168,30 [1461]
ET018-005	5:1	972 [8602]	782 [6923]	601 [5321]	516 [4565]	2389 [21143]	19,00 [168]	165,00 [1461]
ET018-007	7:1	1037 [9174]	752 [6652]	641 [5675]	550 [4868]	2308 [20429]	13,87 [123]	147,40 [1306]
ET018-010	10:1	592 [5242]	430 [3806]	366 [3242]	338 [2990]	2210 [19561]	12,35 [109]	111,10 [984]
ET018-016	16:1	1335 [11816]	904 [8003]	826 [7309]	750 [6639]	2800 [24779]	15,30 [136]	177,10 [1569]
ET018-020	20:1	1363 [12061]	919 [8129]	843 [7460]	802 [7099]	2846 [25187]	14,82 [131]	171,60 [1520]
ET018-025	25:1	1325 [11722]	889 [7866]	819 [7251]	782 [6923]	2754 [24370]	14,82 [131]	144,10 [1277]
ET018-028	28:1	1403 [12414]	939 [8311]	868 [7679]	830 [7342]	2910 [25751]	12,83 [114]	151,80 [1345]
ET018-035	35:1	1361 [12047]	908 [8033]	842 [7452]	807 [7142]	2810 [24870]	10,83 [96]	136,40 [1209]
ET018-040	40:1	1443 [12767]	960 [8492]	892 [7897]	857 [7580]	2970 [26281]	10,83 [96]	177,10 [1569]
ET018-050	50:1	1398 [12371]	927 [8201]	865 [7652]	832 [7361]	2863 [25338]	10,36 [92]	171,60 [1520]
ET018-070	70:1	1332 [11789]	879 [7778]	824 [7292]	795 [7037]	2707 [23959]	10,36 [92]	151,80 [1345]
ET018-100	100:1	816 [7219]	578 [5117]	505 [4465]	472 [4180]	2537 [22454]	10,36 [92]	113,30 [1004]

¹ Ratios are exact, higher ratios are also available, consult factory.
 T_r = Rated output torque at rated speed for specific hours of life.
 T_{rc} = Rated output torque for intermittent operation at 3,000 RPM
 (20,000 hr life - for catalog comparison)

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
 J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

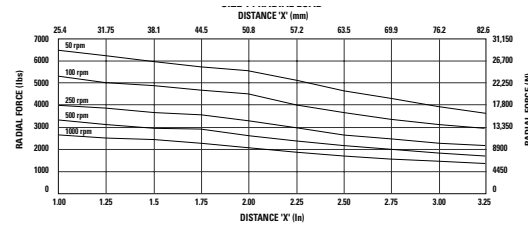
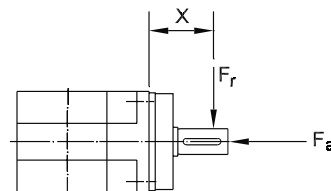
Radial and Axial Load Ratings

ET010



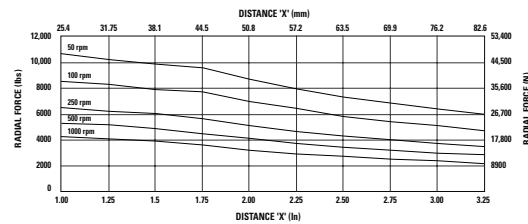
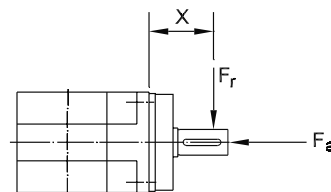
Speed rpm	Axial Load, F_a N [lb _f]
50	13675 [3075]
100	11107 [2497]
250	8435 [1897]
500	6855 [1542]
1000	5568 [1252]

ET014



Speed rpm	Axial Load, F_a N [lb _f]
50	25074 [5705]
100	20609 [4633]
250	15657 [3520]
500	12716 [2859]
1000	10329 [2322]

ET018



Speed rpm	Axial Load, F_a N [lb _f]
50	34538 [7765]
100	27414 [6163]
250	20197 [4541]
500	16034 [3605]
1000	12726 [2861]

These graphs display the allowable radial load at a given distance (X) from the mounting surface based on an L_{10} life of 10,000 hours for the mean output speed n_{mout} , as described on page 10.



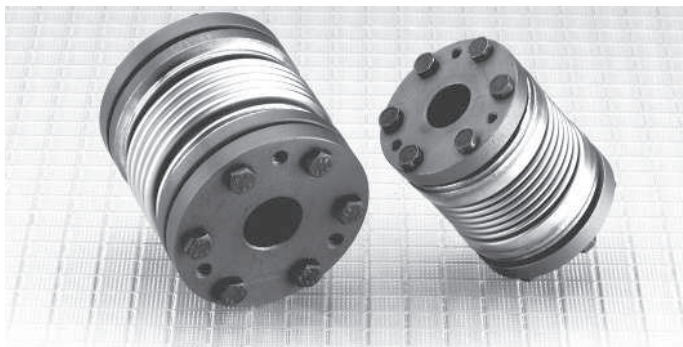
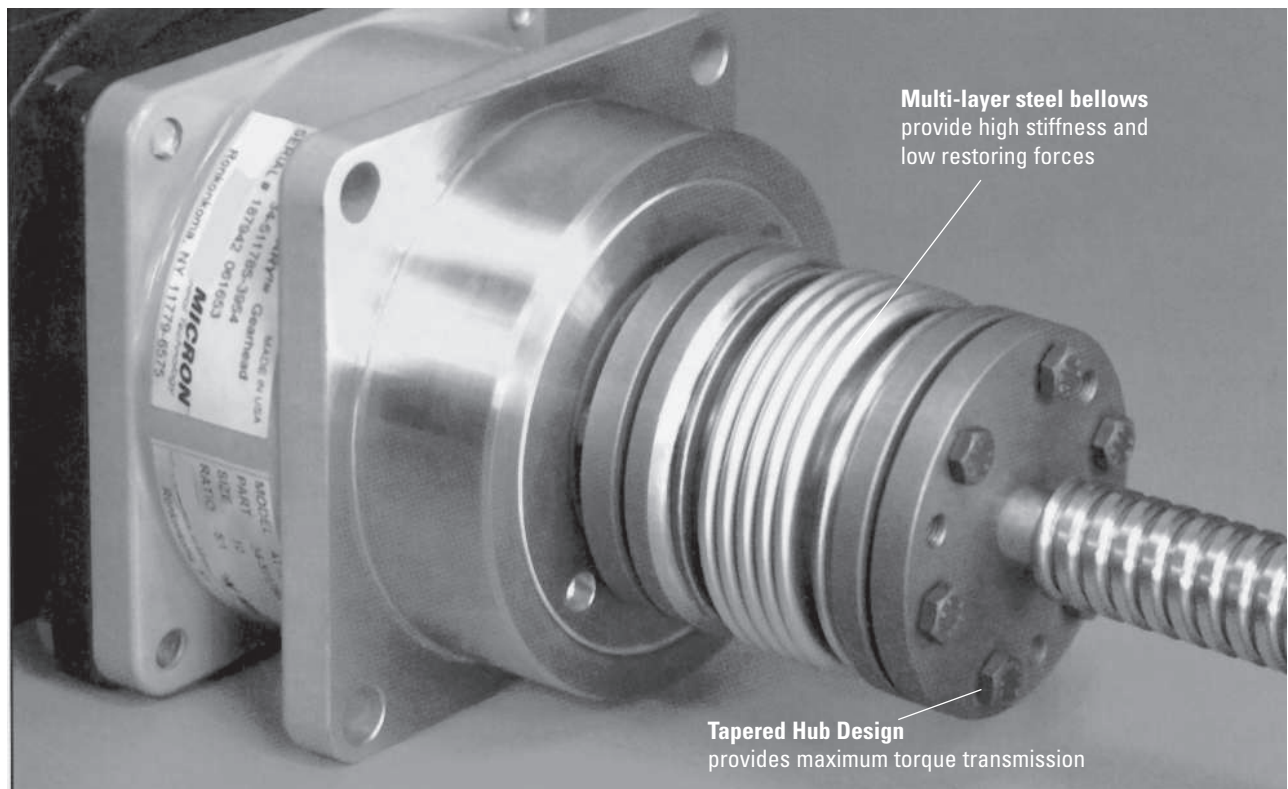
AccuLOCK* - Zero Backlash

Flexible Steel Bellows Coupling

Ready for Immediate Delivery

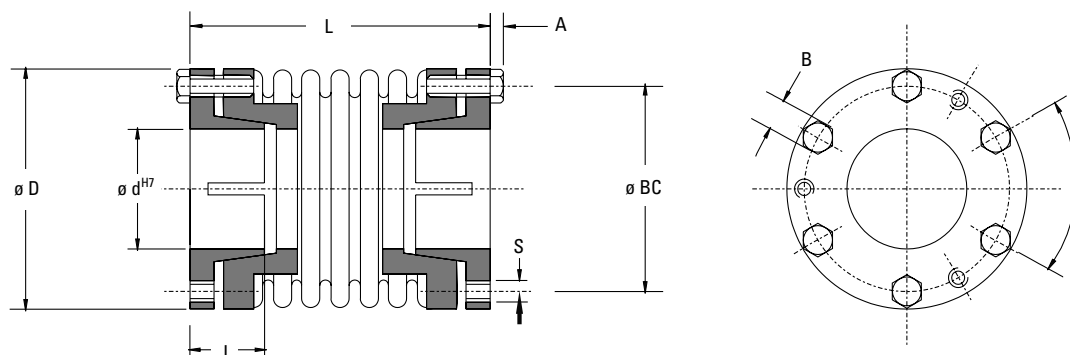
Bore Range	9mm thru 50mm
Torque Capacity	up to 5310 in-lb
Available	in 6 sizes for immediate delivery

- **Lightweight compact design** - meets the low inertia requirement of high performance motion control applications.
- **High torsional stiffness** - provides high stiffness as well as low restoring forces.



AccuLOCK* - Zero Backlash

Flexible Steel Bellows Coupling



Dimensions

Size	Bore		D mm [in]	L ⁽¹⁾ mm [in]	A mm [in]	I ⁽¹⁾ mm [in]	S	BC mm [in]	B mm	C
	d _{min} mm [in]	d _{max} mm [in]								
AL030	9 [.35]	16 [.63]	41 [1.61]	46 [1.81]	2,8 [.11]	21,5 [.85]	2 x M4	30,5 [1.2]	7	4 x 90°
AL060	12 [.47]	20 [.79]	50 [1.97]	54 [2.12]	2,8 [.11]	25 [.98]	3 x M4	38 [1.5]	7	6 x 60°
AL100	15 [.59]	25 [.98]	60 [2.36]	63 [2.48]	3,5 [.14]	29 [1.14]	3 x M5	47 [1.85]	8	6 x 60°
AL200	24 [.94]	35 [1.38]	71 [2.80]	72 [2.83]	4,0 [.16]	33 [1.30]	3 x M6	58 [2.28]	10	6 x 60°
AL350	30 [1.18]	42 [1.65]	82 [3.23]	81 [3.19]	5,5 [.22]	37 [1.46]	3 x M8	66 [2.60]	13	6 x 60°
AL600	35 [1.38]	50 [1.97]	98 [3.86]	98 [3.86]	5,5 [.22]	45 [1.77]	4 x M8	80 [3.15]	13	8 x 45°

⁽¹⁾ Dimensions in untensioned condition

Technical Data

Size	T _n Nm [in-lb]	N _{max} rpm	Torsional Stiffness Nm/arc-min [in-lb/arc-min]	Axial Stiffness N/mm [lb _f /in]	Tightening Torque Nm [in-lb]	J kg-cm ² [in-lb-sec ²]	Weight kg [lb]
AL030	30 [266]	13000	4,3 [18]	125 [714]	2,9 [26]	,48 [4.1x10 ⁻⁴]	,26 [.57]
AL060	60 [531]	11000	5,5 [49]	110 [628]	2,9 [26]	1,29 [1.14x10 ⁻³]	,44 [.97]
AL100	100 [885]	9500	11,1 [98]	135 [771]	5,5 [49]	3,62 [3.19x10 ⁻³]	,78 [1.72]
AL200	200 [1770]	9000	16,3 [144]	200 [1142]	9,5 [84]	7,52 [6.62x10 ⁻³]	1,12 [2.47]
AL350	350 [3097]	7500	37,8 [335]	175 [999]	23 [204]	14,6 [12.8x10 ⁻³]	1,62 [3.57]
AL600	600 [5310]	6300	49,5 [438]	135 [771]	23 [204]	37,5 [33.0x10 ⁻³]	2,90 [6.39]

T_n = coupling nominal torque

N_{max} = maximum coupling speed

J = mass moment of inertia

Permissible Shaft Misalignments

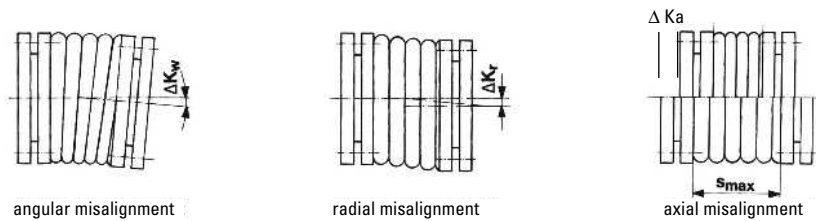


Figure 1

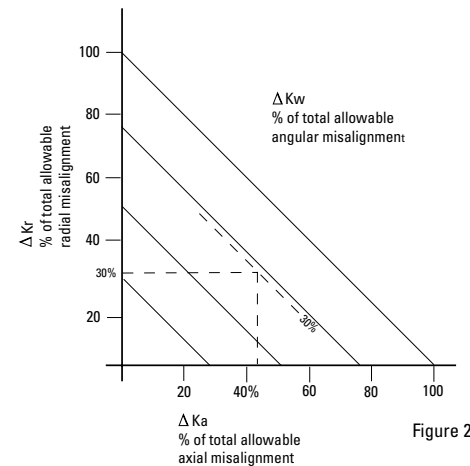


Figure 2

Allowable Shaft Misalignment

The Micron AccuLOCK® Flexible Steel Bellows Coupling compensates radial, axial, and angular shaft misalignment (Figure 1). The maximum permissible* shaft alignments from this table must not be achieved simultaneously or exceed the maximum value. If there are several different misalignment simultaneously, they will influence each other as shown in Figure 2.

Allowable Misalignment			
Size	Axial mm [in+/-]	Radial mm [in]	Angular degrees
AL030	.38 [.015]	.10 [.004]	2
AL060	.48 [.019]	.10 [.004]	2
AL100	.58 [.023]	.15 [.006]	2
AL200	.79 [.031]	.20 [.008]	2
AL350	.99 [.039]	.20 [.008]	2
AL600	1.19 [.047]	.30 [.012]	2

Ordering

A L 0 6 0 - 0 6 0 - .500

Specify Mating Shaft Diameter
 $d^{(2)}$
 (Where $d_{min} < d < d_{max}$)

Specify Shaft Diameter $d^{(2)}$
 (Where $d_{min} < d < d_{max}$)

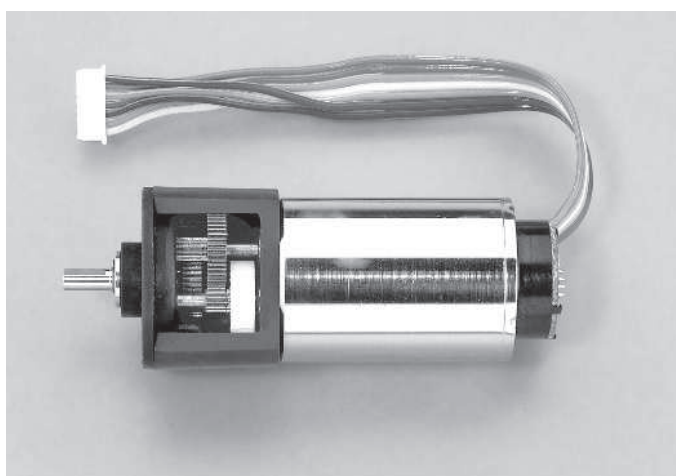
Coupling Size
 030 = 30 Nm (266 in-lbs)
 060 = 60 Nm (531 in-lbs)
 100 = 100 Nm (885 in-lbs)
 200 = 200 Nm (1770 in-lbs)
 350 = 350 Nm (3097 in-lbs)
 600 = 600 Nm (5310 in-lbs)

Designates AccuLOCK Coupling

⁽²⁾ When specifying shaft diameter also include units and tolerances when ordering

Custom Engineered Solutions

- Concept to prototype within weeks
- Compact integrated servo-actuator solutions
- Precision gearing to AGMA 14 standards
- State-of-the-art CNC gear cutting capabilities
- ISO 9001 certified with in-house product testing and fully accredited metallurgical lab



Integral In-line Gearmotors

A precision low noise, highly efficient gearhead is coupled together with an encoder and brush type permanent magnet DC motor to create a complete drive solution. The innovative material selection of the gearing greatly extends life, increases gearhead efficiency, and eliminates noise.



Thin Profile Gearbox

A parallel shaft spur and helical gearbox which is fully compatible with commonly available "pancake" style disc armature motors. The lightweight aluminum alloy housing encases the 150:1 ratio low noise gearing.

Custom Engineered Solutions



Spur Gear Differentials

Combining differential gearing technology with a position feedback sensor results in this highly sensitive assembly used on windpowered devices to adjust the pitch of the driving and wind vanes.



Integral Planetary Gearmotors

A more compact, higher torque drive assembly can be created by integrating a pinion gear directly on the motor shaft.

Micron Gearhead RediMount™ Reference Table

for Kollmorgen AKM Series Servo Motors*

Performance Specifications

Kollmorgen AKM Motors	Micron RediMount™	"AD"† Length in [mm]	Kollmorgen AKM Motors	Micron Redimount™	"AD"† Length in [mm]
AKM1xx - Ax	RM060-130	1.38 [35,1]	AKM4xx - Ax	RM075-40	1.69 [42,9]
				RM090-40	1.74 [44,1]
AKM1xx - Cx	RM060-XXX	TBD		RM100-40	1.72 [43,7]
				RM115-40	1.93 [48,9]
AKM2xx - Ax	RM060-6	1.22 [31,0]	AKM4xx - Bx	RM075-307	TBD
	RM075-6	TBD		RM090-307	2.47 [62,7]
	RM090-6	2.47 [62,7]		RM100-307	TBD
				RM115-307	1.93 [48,9]
AKM2xx - Bx	RM060-11	1.22 [31,0]	AKM4xx - Cx	RM075-124	1.69 [42,9]
	RM075-11	TBD		RM090-124	1.74 [44,1]
	RM090-11	2.47 [62,7]		RM100-124	1.72 [43,7]
				RM115-124	1.93 [48,9]
AKM2xx - Cx	RM060-343	1.22 [31,0]	AKM4xx - Ex	RM075-28	1.69 [42,9]
	RM075-343	1.69 [42,9]		RM090-28	1.74 [44,1]
	RM090-343	1.74 [44,1]		RM100-28	1.72 [43,7]
				RM115-28	1.93 [48,9]
AKM2xx - Dx	RM060-355	1.22 [31,0]	AKM4xx - Gx	RM075-37	1.69 [42,9]
	RM075-XXX	TBD		RM090-37	1.74 [44,1]
	RM090-XXX	TBD		RM100-37	1.72 [43,7]
				RM115-37	1.93 [48,9]
AKM2xx - Ex	RM060-11	1.22 [31,0]	AKM4xx - Hx	RM075-25	1.69 [42,9]
	RM075-11	TBD		RM090-25	1.74 [44,1]
	RM090-11	2.47 [62,7]		RM100-25	1.72 [43,7]
				RM115-25	1.93 [48,9]
AKM3xx - Ax	RM060-19	1.22 [31,0]	AKM4xx - Kx	RM075-105	1.69 [42,9]
	RM075-19	1.69 [42,9]		RM090-105	1.74 [44,1]
	RM090-19	1.74 [44,1]		RM100-105	1.72 [43,7]
	RM100-19	2.32 [58,9]		RM115-105	1.93 [48,9]
AKM3xx - Cx	RM060-XXX	TBD			
	RM075-XXX	TBD			
	RM090-XXX	TBD			
	RM100-XXX	TBD			
AKM3xx - Gx	RM060-20	1.22 [31,0]			
	RM075-20	1.69 [42,9]			
	RM090-20	1.74 [44,1]			

* Revised August 2007

† AD Dimension: RediMount™ adapter length changes with motor being used.

See below to match RediMount™ Kits to Micron Gearheads

RediMount™ Gearhead

RM060	DT060, DTR060, DTR060S, DTR060D, NT23, NTP23, NT60, NTR23, VTR006, VTR006, UT006, UTR006, VT075, VTR075, VT090, VTR090, UT075, UTR075, UT090, UTR090
RM075	DT090, DTR090, DTR090S, DTR090H, DTR090D, NT34, NTP34, NT90, NTR34
RM090	VT010, VTR010, VT115, VTR115, UT010, UTR010, UT115, UTR115, ET010
RM100	

RediMount™ Gearhead

RM115	NT42, NTP42, NT115, NTR42, DT115, DTR115, DTR115S, DTR115H, DTR115D
RM142	DT142, DTR142, DTR142S, DTR142H, DTR142D, UTR014, ET014
RM180	VT018, VTR018, UT018, UTR018, ET018
RM220	VT014, VTR014, UT022

¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

Micron Gearhead RediMount™ Reference Table

for Kollmorgen AKM Series Servo Motors*

Performance Specifications

Kollmorgen AKM Motors	Micron RediMount™	"AD"† Length in [mm]	Kollmorgen AKM Motors	Micron RediMount™	"AD"† Length in [mm]
AKM5xx - Ax	RM100-71	1.72 [43,7]	AKM6xx - Ax	RM142-92	3.21 [81,5]
	RM115-71	1.93 [48,9]		RM180-92	3.60 [91,4]
	RM142-71	2.74 [69,6]		RM220-92	2.74 [69,5]
AKM5xx - Bx	RM100-72	2.08 [52,8]	AKM6xx - Gx	RM142-88	3.21 [81,5]
	RM115-72	2.36 [59,9]		RM180-88	3.60 [91,4]
	RM142-72	2.74 [69,6]		RM220-88	TBD
AKM5xx - Cx	RM100-53	TBD	AKM6xx - Kx	RM142-83	2.74 [69,6]
	RM115-53	2.36 [59,9]		RM180-83	TBD
	RM142-53	TBD		RM220-83	TBD
AKM5xx - Dx	RM100-XXX	TBD	AKM6xx - Lx	RM142-XXX	TBD
	RM115-XXX	TBD		RM180-XXX	TBD
	RM142-XXX	TBD		RM220-XXX	TBD
AKM5xx - Gx	RM100-69	1.72 [43,7]	AKM7xx - Ax	RM180-114	3.60 [91,4]
	RM115-69	1.93 [48,9]		RM220-114	2.74 [69,6]
	RM142-69	2.74 [69,6]			
AKM5xx - Hx	RM100-52	1.72 [43,7]	AKM7xx - Gx	RM180-107	3.60 [91,4]
	RM115-52	2.36 [59,9]		RM220-107	2.74 [69,9]
	RM142-52	2.74 [69,6]			
			AKM7xx - Kx	RM180-96	3.60 [91,4]
				RM220-96	TBD

* Revised August 2007

† AD Dimension: RediMount™ adapter length changes with motor being used.

See below to match RediMount™ Kits to Micron Gearheads

RediMount™ Gearhead

RM060	DT060, DTR060, DTR060S, DTR060D, NT23, NTP23, NT60, NTR23, VT006, VTR006, UT006, UTR006,
RM075	VT075, VTR075, VT090, VTR090, UT075, UTR075, UT090, UTR090
RM090	DT090, DTR090, DTR090S, DTR090H, DTR090D, NT34, NTP34, NT90, NTR34
RM100	VT010, VTR010, VT115, VTR115, UT010, UTR010, UT115, UTR115, ET010

RediMount™ Gearhead

RM115	NT42, NTP42, NT115, NTR42, DT115, DTR115, DTR115S, DTR115H, DTR115D
RM142	DT142, DTR142, DTR142S, DTR142H, DTR142D, UTR014, ET014
RM180	VT018, VTR018, UT018, UTR018, ET018
RM220	VT014, VTR014, UT022

¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

Micron Gearhead RediMount™ Reference Table

for Kollmorgen DBL, DBK, 6SM & SM Series Motors*

Performance Specifications

Kollmorgen AKM Motors	Micron RediMount™	"AD" [†] Length in [mm]	Kollmorgen AKM Motors	Micron Redimount™	"AD" [†] Length in [mm]
DBL2x	RM060-7	1.22 [31,0]	DBK6x	RM180-XXX	3.60 [91,4]
	RM075-7	TBD		RM220-XXX	2.74 [69,6]
DBL3x (11mm shaft dia.)	RM075-57	1.69 [42,9]	DBK7x	RM180-317	3.60 [91,4]
	RM090-57A	1.74 [44,1]		RM220-317	2.74 [69,6]
DBL3x (14mm shaft dia.)	RM075-25	1.69 [42,9]	6SM2x	RM060-7	1.22 [31,0]
	RM090-25	1.74 [44,1]		RM075-7	TBD
	RM100-25	1.72 [43,7]	6SM3x	RM075-57	1.69 [42,9]
DBL4x	RM090-52A	1.74 [44,1]		RM090-57A	1.74 [44,1]
	RM100-52	1.72 [43,7]	6SM4x, SM4x	RM075-37	1.69 [42,9]
	RM115-52	2.36 [59,9]		RM090-37	1.74 [44,1]
DBL5x	RM142-88	3.21 [81,5]		RM100-37	1.72 [43,7]
	RM180-88	3.60 [91,4]		RM115-37	1.93 [48,9]
	RM220-88	TBD	6SM5x, SM5x	RM090-52A	1.74 [44,1]
DBL6x	RM180-XXX	3.60 [91,4]		RM100-52	1.72 [43,7]
	RM220-XXX	2.74 [69,6]		RM115-52	2.36 [59,9]
DBL7x	RM142-107	3.36 [85,3]		RM142-52	2.74 [69,6]
	RM180-107	3.60 [91,4]	6SM7x, SM7x	RM142-88	3.21 [81,5]
	RM220-107	2.74 [69,6]		RM180-88	3.60 [91,4]
DBL8x	RM220-119	3.35 [85,1]		RM220-88	TBD
DBK4x	RM075-49B	TBD	6SM10x, SM10x	RM180-107	3.60 [91,4]
	RM090-49B	1.74 [44,1]		RM220-107	2.74 [69,6]
	RM100-49B	TBD	* Revised August 2007		
	RM115-49B	1.93 [48,9]			
DBK5x	RM142-84	3.21 [81,5]			
	RM180-84	3.60 [91,4]			
	RM220-84	TBD	† AD Dimension: RediMount™ adapter length changes with motor being used.		

See below to match RediMount™ Kits to Micron Gearheads

RediMount™ Gearhead

RM060	DT060, DTR060, DTR060S, DTR060D, NT23, NTP23, NT60, NTR23, VT006, VTR006, UT006, UTR006,
RM075	VT075, VTR075, VT090, VTR090, UT075, UTR075, UT090, UTR090
RM090	DT090, DTR090, DTR090S, DTR090H, DTR090D, NT34, NTP34, NT90, NTR34
RM100	VT010, VTR010, VT115, VTR115, UT010, UTR010, UT115, UTR115, ET010

RediMount™ Gearhead

RM115	NT42, NTP42, NT115, NTR42, DT115, DTR115, DTR115S, DTR115H, DTR115D
RM142	DT142, DTR142, DTR142S, DTR142H, DTR142D, UTR014, ET014
RM180	VT018, VTR018, UT018, UTR018, ET018
RM220	VT014, VTR014, UT022

¹ Ratios are exact, higher ratios are also available, consult factory.
T_r = Rated output torque at rated speed for specific hours of life.

T_{peak} = Allowable momentary peak torque for emergency stop or heavy shock loading.
J = Mass moment of inertia reflected to the input shaft (including pinion assembly).

Gearhead Application Analysis Form

General Information

Customer Name: _____ Fax: _____ Order Date: _____
 Buyer Contact: _____ Phone: _____ Required Date: _____
 Technical Contact: _____
 Bill to Address: _____ Town/County: _____ State/Zip: _____
 Ship to Address: _____ Town/County: _____ State/Zip: _____
 E-mail: _____ Website: _____

Motor Information

Motor Manufacturer: _____ Motor Model #: _____
 Continuous Torque (Nm) _____ Peak Torque (Nm) _____
 Maximum Speed (rpm) _____

Application Information

Brief description of your application: _____

 Acceleration time (sec) _____ Acceleration torque (Nm) _____ Max speed (rpm) _____
 Dwell time (sec) _____ Dwell torque (Nm) _____ Dwell speed (rpm) _____
 Deceleration time (sec) _____ Deceleration torque (Nm) _____ Min speed (rpm) _____
 Radial Load (N) _____ Axial Load (N) _____ Target inertia match _____
 External load inertia (Nm-sec²) _____ Maximun speed of motor (rpm) _____

Ordering Information

Part Number	Quantity	Price	Delivery
_____	_____	_____	_____

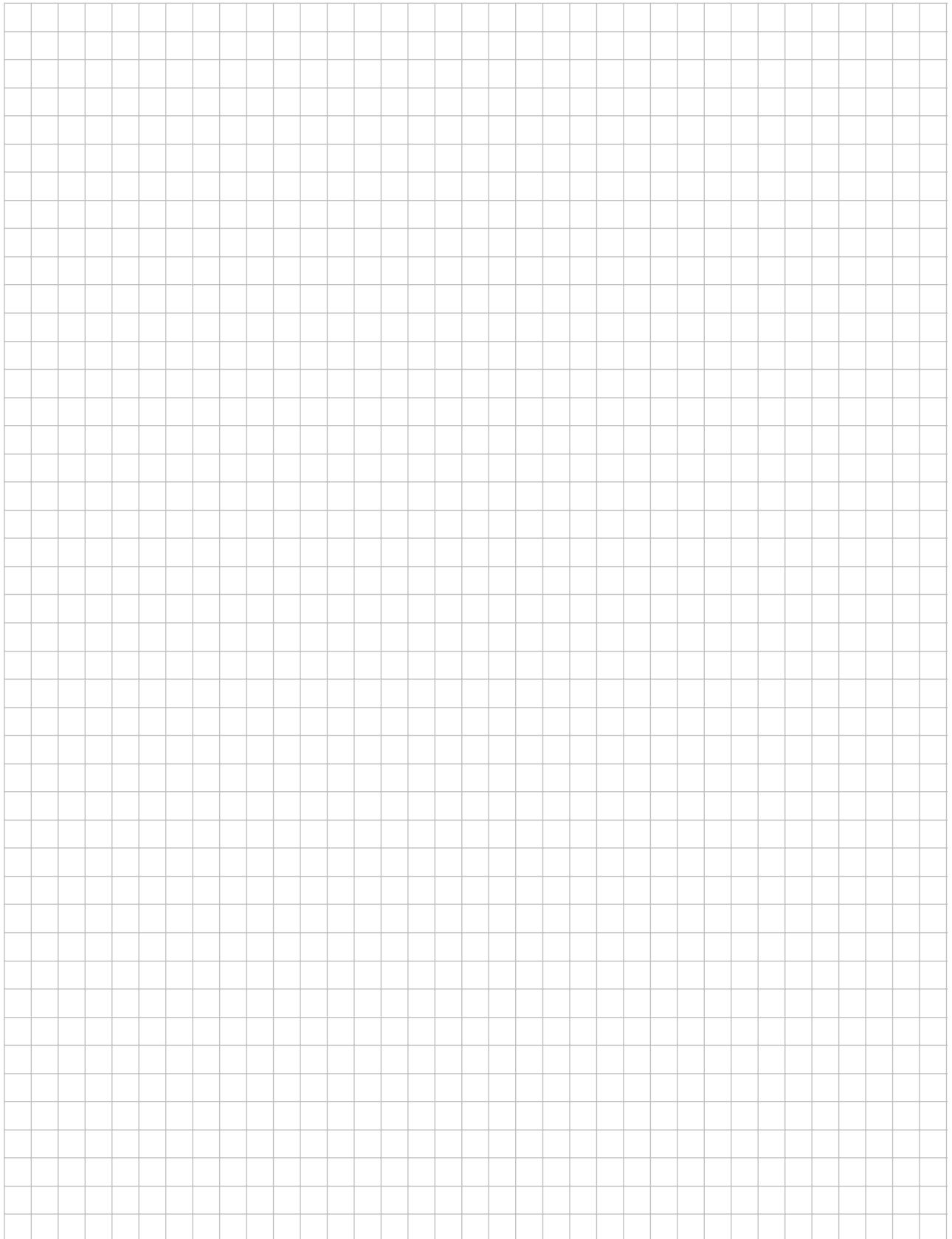
Gearhead Ordering Information

D	T	R	1	1	5	—	0	0	5	—	0	—	
Designates Gearhead Type XT = XTRUE™ NT = NemaTRUE™ NTP = NemaTRUE PLUS™ NTR = NemaTRUE 90™ DT = DuraTRUE™ DTR = DuraTRUE 90™ VT = ValueTRUE VTR = ValueTRUE 90™ UT = UltraTRUE™ UTR = UltraTRUE 90™ ET = EverTRUE™						Gearhead Ratio See Ratio Availability in corresponding gearhead section			Motor Model Number RediMount Number (if available) or Motor manufacturer and model number				
									Custom Options 0 = None S = Special H = High Precision (For NemaTRUE product line only)				
GEARHEAD SIZE													

XTRUE™	NemaTRUE™ NemaTRUE PLUS™ NemaTRUE 90™	DuraTRUE™ DuraTRUE 90™ DuraTRUE™ (Hollow Shaft) DuraTRUE™ (Dual Shaft)	UltraTRUE™ UltraTRUE 90™	EverTRUE™	ValueTRUE™ ValueTRUE 90™
40 = Size 40	17 = Size 17	60 = Size 60	006 = Size 60	10 = Size 10	006 = Size 60
60 = Size 60	23 = Size 23	90 = Size 90	075 = Size 75	14 = Size 14	075 = Size 75
80 = Size 80	34 = Size 34	115 = Size 115	090 = Size 90	18 = Size 18	090 = Size 90
120 = Size 120	42 = Size 42	142 = Size 142	010 = Size 10		010 = Size 10
160 = Size 160	60 = Size 60		115 = Size 115		115 = Size 115
	90 = Size 90		014 = Size 14		014 = Size 14
	115 = Size 115		018 = Size 18		018 = Size 18
			022 = Size 22 (UltraTRUE™ only)		022 = Size 22

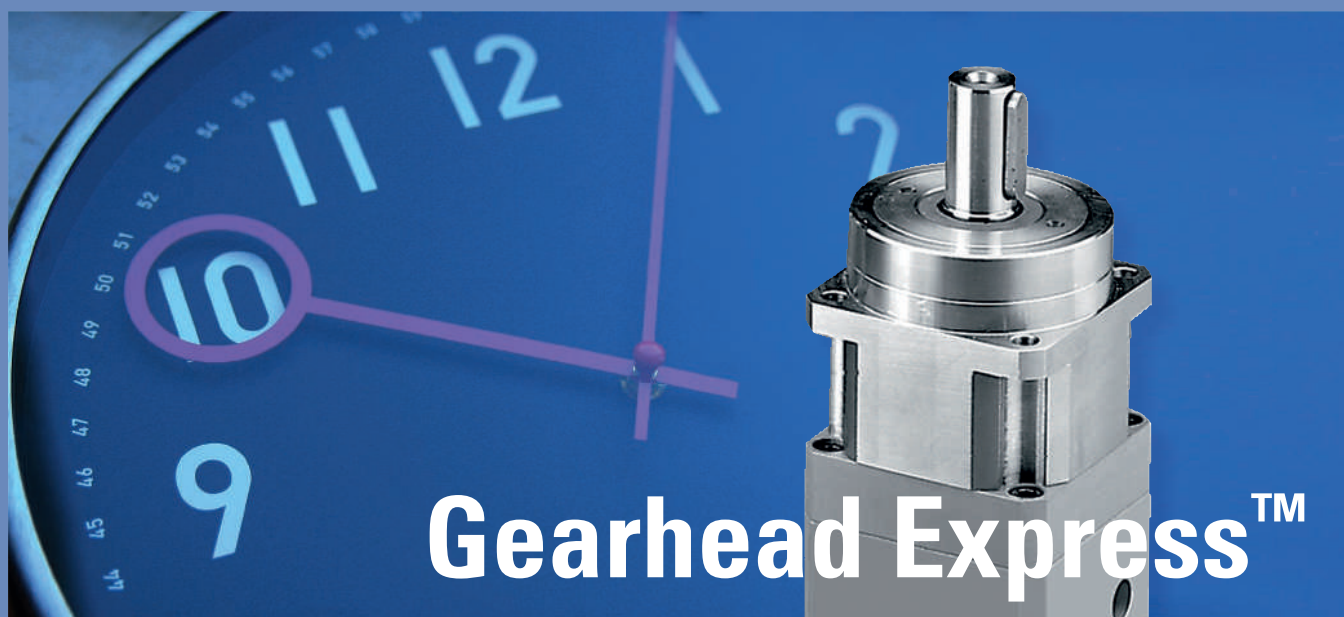
Gearhead Express

If the product you require is available in the Gearhead Express program (see inside back cover for available products and details) and you would like to utilize the 24 hour delivery, simply add an "X" to the front of the part number (before gearhead type) and your product will be shipped the following day.





***Micron True Planetary™ Gearheads
shipped within 24 hours!***



Gearhead Express™

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for quick delivery.***

NemaTRUE, DuraTRUE and UltraTRUE products have the most popular sizes and ratios in stock with 24 hour delivery through the Gearhead Express Program.

Gearheads in the Gearhead Express Program are indicated below and on the product pages inside this catalog.

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Frame sizes 23, 34 and 42
Ratios: 3, 5, 10, 25:1
- **DuraTRUE**
Frame sizes 60, 90, 115 and 142
Ratios: 3, 5, 10, 15, 30:1
- **UltraTRUE**
Frame sizes 60, 75, 10 and 14
Ratios: 5, 10, 25:1

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