

# Micron MOTIONEERING®

## User's Guide

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## 1.0 Introduction

Welcome to Micron MOTIONEERING®! This web based tool is a quick and easy way to find the right gearhead for almost any application. There are two basic modes of functionality in this tool: “Sizing and Selection” and “Select by Model Number”.

“Sizing and Selection” mode will allow you to enter your application parameters such as RPM, output torque, radial and axial loads, etc. The tool takes this information and recommends possible solutions for you. You can use things like price, torque capacity and other specifications to choose between different solutions.

“Select by Model Number” mode would be used if you already know the gearhead you want and are looking for information such as your RediMount kit, price, delivery or you want to download a CAD model.

You can also click on the “Gearhead Express” link directly from the home page. This works just like the “Select by Model Number” mode with the exception that it only shows you solutions that are available through this program.

## 2.0 “Sizing and Selection” Mode

This mode is used for sizing and selecting a gearhead using several application parameters. You can use information such as your motor RPM, the required output torque and radial and axial load requirements to size the correct gearhead for your application. You will have the option to simply enter in torque and speed requirements or build an entire motion profile.

### 2.1. Primary Configuration

On the first screen of the “Sizing and Selection” process, there are four critical pieces of information that are needed.

- 1) The Gearhead Type or Orientation (in-line or right angle)  
The right angle gearhead type has three separate options available: standard shaft, dual shaft and hollow shaft.
- 2) Application Type  
Choose between “Cyclical Operation” and “Continuous Duty”. For details on how this is determined see section 2.2.
- 3) Backlash Requirement  
Micron has 3 distinct backlash classes.
  - “Ultra Precision” class which has a maximum backlash specification of 4 arc-minutes for a single stage and 5 arc-minutes for a double stage.
  - “High Precision” class which would have 8 arc-minutes and 9 arc-minutes
  - “Precision” class (13/15).
- 4) Ratio  
After choosing the first three variables, the tool will only show you ratios that are available for those combinations to choose from. For example, if you choose an in-line orientation, 1:1 and 2:1 ratios will be “grayed out” since they are only available in a right angle.

## 2.2. Application Types

There are two basic types of applications that are defined in the Micron MOTIONEERING tool: Cyclical Operation and Continuous Duty. The definition of each of these application types may vary throughout the industry. Any application that is running in one direction for 4 hours or more, without stopping or changing speeds will be considered continuous duty and are sized differently using this tool. All other applications, including applications that are running for more than 4 hours but are changing direction, are considered cyclical operation. For questions concerning the application type, please contact application engineering.

## 2.3. Torque and Speed Requirements

After entering the four parameters in the primary configuration section, you will then be asked to enter your torque and speed requirement. This can be done in either of two ways. The first option is to enter these as only maximum torque requirement and RPM. This can be done using input or output (the tool will calculate the other using the ratio). For more complex applications, you will also have the option to build a complete motion profile. The instructions on how to do this are in section 2.4. After those requirements are entered, you will then have the option to enter any radial or axial loads that may be present in your application.

## 2.4. The Motion Profile

In the Sizing and selection section of the tool, you will have the option to build your entire motion profile. By clicking on the “Motion Profile” link, you will have the ability to start the first segment of your profile. Each segment of the motion profile has four pieces of information that are required: the speed at the beginning of the segment, the speed at the end of the segment, the segment time and the torque during that segment. The ending speed of one segment is automatically populated as the beginning speed of the next. You will be able to view a graph of the motion profile to confirm your information. Any segment that has a segment time longer than 4 hours would be considered a continuous duty application (Section 2.3) and would result in an error unless you have chosen a primary configuration that is available in continuous duty. Once you enter a zero as your ending speed in a segment, this will be considered the end of your cycle. At this point you will be prompted for your dwell time (this can be entered as zero if your application has no dwell time). When complete, all of the segment times are added together to calculate the total cycle time. After that, the cycles/hour, the mean input speed and modified equivalent torque are generated by the tool. The minimum number of segments allowed is 2 and maximum will be 10. The user could view the motion profile by clicking the “Generate Motion Profile” button. From here you would follow to the radial and axial load page of the tool as in the above section. Note: The torque and speed data in the motion profile should be entered as positive values.

## 3.0 Selecting a RediMount Kit

RediMount is the name of Micron’s innovative mounting system that is used to mount all of Micron’s True Planetary gearheads to any motor on the market today. In order to complete

your part number and eventually order any gearhead, you will need to know your RediMount part number. You will have the option of choosing your motor from a list of over 300 of today's most popular motor manufacturers and model numbers. Many times your motor will be on this list already.

### **3.1. Select by Motor Model Number**

By selecting your motor in the pull down menu, the tool will automatically generate your RediMount kit part number (ex/ RM060-1). The motor dimensions will also be populated on the screen for your reference. If your motor is not on the list, go to section 3.2.

### **3.2. Entering Your Motor Dimensions Manually**

Although there is a large selection of motors available, there will be times when you cannot find the motor you are using on the list. For this reason, the tool has an option available to manually input motor dimensions. The critical dimensions such as your shaft diameter and length, the bolt circle and the pilot diameter will be used to generate the RediMount kit number needed for your gearhead. You will have the option to enter these dimensions in either English or metric.

### **3.3. Problems Generating RediMount Part Numbers**

The RediMount system has specific guidelines (maximum and minimum motor dimensions) for each frame size that a motor needs to fall into. If you encounter an issue when choosing a motor from the list or manually entering the motor information, the data may be out of range. See the detailed guidelines in Appendix A. For example, if you choose a 180mm square motor and try to mount a 60mm gearhead, this would generate an error. If your motor dimensions fall into the guidelines, a RediMount number will be generated. If they fall out of the guidelines and you see an error, a larger or smaller gearhead would need to be used (please contact application engineering if this is an issue).

## **4.0 Choosing a Solution**

After entering all of your application parameters and selecting your RediMount kit, you can review your work on the results page. After clicking "Finish" you will be able to view your solutions. The tool will give you all of the available gearheads that meet the criteria you have selected. They will be sorted by price from the most economical solution to the most expensive. The safety factor between your required torque and the gearhead's rated torque will also be listed for every solution. After you choose the solution that works best for you, click "Finish" and you will have the option to download a 2D or 3D model, request a quote or save your application.

## **5.0 Select Gearhead by Model Number Mode**

This section is used when you already know which gearhead you want to use. It allows you to view list pricing, catalog specifications and download a CAD model. From the home page you can access this portion of the tool by clicking on any of the gearhead families listed (you will be able to change your selection on the next screen). From here you can pull down product type, frame size, ratio and your RediMount kit. If you do not know your RediMount kit, please see section 3.1-3.3. From here it will take you directly to the solutions screen where you can view pricing, lead time and the catalog information for the gearhead you have chosen. After clicking finish, you will have the option to Download a 2D or 3D model, request a quote or save your application.

## **6.0 Gearhead Express**

Gearhead Express is a program that allows you to receive the most popular Micron True Planetary Gearheads in 24hrs for only a 10% premium. There are two ways to utilize this program using the Micron MOTIONEERING Tool.

- From the home page, you can click on “Gearhead Express” and this will bring you directly to the “Select by Model Number” section outlined in section 5.0 in this guide. However, the difference is that the pull down choices for product type, frame size and ratio will only give you options that are available through the Gearhead Express program.
- In both the “Sizing and Selection” and “Select by Model Number” modes, Gearhead Express can also be utilized. When viewing the solutions of either path, the last column on the solutions page titled “Gearhead Express?” indicates a “Yes” for the parts that are available in the program. However, the pricing reflected on the solutions page is the standard list price, before the 10% is added for the Gearhead Express program. For details on how to order from Gearhead Express, see Appendix C.

## 7.0 Appendices

### 7.1. Appendix A - RediMount Guidelines

#### **REDIMOUNT MOUNTING GUIDELINES FOR MICRON REDIMOUNT KITS**

Every Micron RediMount kit has specific minimum and maximum dimensional guidelines. If your motor falls outside of any one of these guidelines, then it is either too small or too large for the RediMount kit. You should select either a larger gearhead, or, if possible, a smaller frame motor.

MOTOR DIMENSIONAL GUIDELINES: mm (in)							
Micron RediMount KIT	Motor Bolt Circle		Motor Shaft Diameter		Motor Shaft Length		Motor Pilot Diameter
	Min	Max	Min	Max	Min	Max	Max
RM040	38 (1.496)	68 (2.677)	4 (0.158)	10 (0.394)	13 (0.512)	27 (1.063)	50 (1.969)
RM060	60 (2.362)	105 (4.134)	6 (0.238)	14 (0.551)	17 (0.669)	39 (1.535)	80 (3.150)
RM075	68 (2.677)	145 (5.701)	9 (0.354)	20 (0.787)	22 (0.866)	64 (2.520)	110 (4.331)
RM090	68 (2.677)	145 (5.701)	9 (0.354)	20 (0.787)	22 (0.866)	64 (2.520)	110 (4.331)
RM100	91 (3.583)	165 (6.496)	9 (0.354)	26 (1.024)	25 (0.984)	65 (2.559)	130 (5.118)
RM115	91 (3.583)	165 (6.496)	9 (0.354)	26 (1.024)	25 (0.984)	65 (2.559)	130 (5.118)
RM142	106 (4.173)	230 (9.055)	13 (0.512)	35 (1.378)	36 (1.417)	81 (3.189)	180 (7.087)
RM180	130 (5.118)	300 (11.811)	19 (0.748)	52 (2.047)	39 (1.535)	111 (4.370)	250 (9.843)
RM220	130 (5.118)	300 (11.811)	19 (0.748)	52 (2.047)	39 (1.535)	115 (4.528)	300 (11.811)

– If your motor has a tapped face or other specific defining features, please contact DMAC for further assistance.

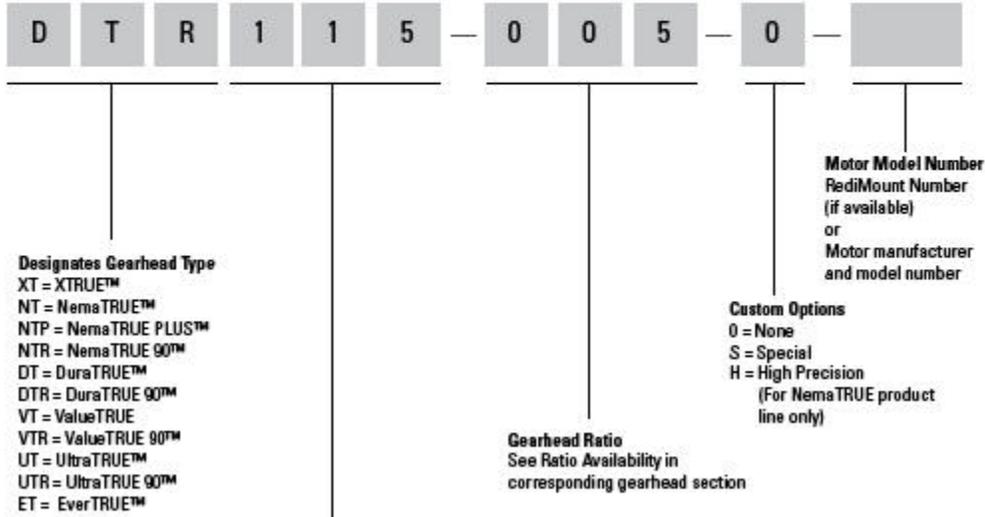
#### Micron "RediMount to Gearhead" reference:

RediMount kit	Used with Micron gearhead(s):
RM040	XT040
RM060	XT060, NT23, NT60, NTP23, NTR23, DT060, DTR060, DTRS60, UT060, UTR060, VT060, VTR060
RM075	UT075, UTR075, UT090, UTR090, VT075, VTR075, VT090, VTR090
RM090	XT080, NT34, NT90, NTP34, NTR34, DT090, DTR090, DTRS090, DTRD090, DTRH090
RM100	UT010, UTR010, UT115, UTR115, VT010, VTR010, VT115, VTR115, ET010
RM115	XT120, NT42, NTP42, NT115, NTR42, DT115, DTR115, DTRS115, DTRD115, DTRH115
RM142	XT160, DT142, DTR142, DTRS142, DTRH142, DTRD142, UT014, UTR014, VT014, VTR014, ET014
RM180	UT018, UTR018, VT018, VTR018, ET018
RM220	UT022, VT022

## 7.2. Appendix B – Part Number Description



### Gearhead Ordering Information



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

### 7.3. Appendix C - How to Order Using Gearhead Express™

Gearhead Express is a program that allows the most popular frame sizes and ratio gearheads available from Micron to ship in 24 hours. The premium for utilizing the Gearhead Express program is 10%. The price reflected in any of the published price books or the Micron Motioneering tool reflects standard list price (and the standard lead time, usually 1 week), without the 10% premium for Gearhead Express. When wanting to order something from the Gearhead Express program, you need to do three specific things on your purchase order.

- 1) Make sure the term “Gearhead Express” is referenced clearly in the notes of your purchase order.
- 2) Make sure the 10% premium is added to your PO as a second item.
- 3) Make sure the due date on your PO is set for tomorrow.

The product will ship in 24 hours or “next day”. Most Gearhead Express orders that are entered before noon will be shipped same day. For a list of all of the frame sizes and ratios available in this program, please see the chart below.

#### What Gearheads Are Available in Gearhead Express?

DuraTRUE		NemaTRUE			UltraTRUE		ValueTRUE	
DT060-003	DT115-003	NT23-003	NT42-003	NT90-003	UT006-004	UT010-004	VT006-004	VT010-004
DT060-004	DT115-004	NT23-004	NT42-004	NT90-004	UT006-005	UT010-005	VT006-005	VT010-005
DT060-005	DT115-005	NT23-005	NT42-005	NT90-005	UT006-007	UT010-007	VT006-007	VT010-007
DT060-007	DT115-007	NT23-007	NT42-007	NT90-007	UT006-010	UT010-010	VT006-010	VT010-010
DT060-010	DT115-010	NT23-010	NT42-010	NT90-010	UT006-016	UT010-016	VT006-016	VT010-016
DT060-015	DT115-015	NT23-015	NT42-015	NT90-015	UT006-020	UT010-020	VT006-020	VT010-020
DT060-020	DT115-020	NT23-020	NT42-020	NT90-020	UT006-025	UT010-025	VT006-025	VT010-025
DT060-025	DT115-025	NT23-025	NT42-025	NT90-025	UT006-028	UT010-028	VT006-028	VT010-028
DT060-030	DT115-030	NT23-030	NT42-030	NT90-030	UT006-035	UT010-035	VT006-035	VT010-035
DT060-040	DT115-040	NT23-050	NT42-050	NT90-050	UT006-040	UT010-040	VT006-040	VT010-040
DT060-050	DT115-050	NT23-070	NT42-070	NT90-070	UT006-050	UT010-050	VT006-050	VT010-050
DT060-070	DT115-070	NT23-100	NT42-100	NT90-100	UT006-070	UT010-070	VT006-070	VT010-070
DT060-100	DT115-100	NT34-003	NT60-003	NT115-003	UT006-100	UT010-100	VT006-100	VT010-100
DT090-003	DT142-003	NT34-004	NT60-004	NT115-004	UT075-004	UT014-004	VT075-004	VT014-004
DT090-004	DT142-004	NT34-005	NT60-005	NT115-005	UT075-005	UT014-005	VT075-005	VT014-005
DT090-005	DT142-005	NT34-007	NT60-007	NT115-007	UT075-007	UT014-007	VT075-007	VT014-007
DT090-007	DT142-007	NT34-010	NT60-010	NT115-010	UT075-010	UT014-010	VT075-010	VT014-010
DT090-010	DT142-010	NT34-015	NT60-015	NT115-015	UT075-016	UT014-016	VT075-016	VT014-016
DT090-015	DT142-015	NT34-020	NT60-020	NT115-020	UT075-020	UT014-020	VT075-020	VT014-020
DT090-020	DT142-020	NT34-025	NT60-025	NT115-025	UT075-025	UT014-025	VT075-025	VT014-025
DT090-025	DT142-025	NT34-030	NT60-030	NT115-030	UT075-028	UT014-028	VT075-028	VT014-028
DT090-030	DT142-030	NT34-050	NT60-050	NT115-050	UT075-035	UT014-035	VT075-035	VT014-035
DT090-040	DT142-040	NT34-070	NT60-070	NT115-070	UT075-040	UT014-040	VT075-040	VT014-040
DT090-050	DT142-050	NT34-100	NT60-100	NT115-100	UT075-050	UT014-050	VT075-050	VT014-050
DT090-070	DT142-070				UT075-070	UT014-070	VT075-070	VT014-070
DT090-100	DT142-100				UT075-100	UT014-100	VT075-100	VT014-100

Over 200 Size and Ratio Combinations ready for delivery in 24 hours.

DT = Product Type
060 = Frame Size
003 = Ratio