UM Series UniModule

Pre-assembled, C-face Clutches and Brakes

UniModules offer the ultimate in Clutch/ Brake performance and convenience. UniModules offer the same performance as EM's without the assembly required.

Completely pre-assembled one-piece clutch and clutch/brake packages in five sizes. Can be motor or reducer mounted or used as a separate drive unit powered by a prime mover.

Pre-assembled, pre-aligned, and pre-burnished at the factory for rated torque directly out-of-the-box.

- Easy installation
- Available with standard power-on and electrically released power-off brake units
- Fan cooled for high cycle rate operation
- Maintenance Free
- Available in 50, 100, 180, 210, and 215 sizes. NEMA C-face design
- UL listed
- Can be applied with control fitted as standard
- Bearing mounted clutch rotor eases assembly alignment
- Single access hole for all wires

GEN 2 Design
Sizes 50, 100 & 180

Original Design
Sizes 210 & 215

UniModule Combinations

Clutch Combinations

1040

Motor Clutch/Output Clutch

Use for clutch only applications. Has hollow bore input for mounting directly to C-face motors. Shaft and C-face on output side of unit accommodates reducer, parallel drive or coupling. Motor Clutch is fan cooled for long life and consistent performance. Basic components are field, rotor and armature. See page 21 in this catalog.

3040

Input Clutch/Output Clutch

Use for clutch only applications. Features dual C-faces and shafts. Unit input from parallel drive or coupling. Output to reducer. Input Clutch is fan cooled and has sealed coil. Twin bearing mounted shafts maintain tight concentricities. The Output Clutch utilizes Autogap™ which automatically adjusts armature for wear. Basic components are field, rotor and armature. See page 23 in this catalog.

3040-B

Input Clutch/Output Clutch – with Accessory Base Mounting

Base mounting allows the clutch unit to be utilized as a separate drive unit. Attach with pulleys, sprockets, etc. See page 23 in this catalog.

Clutch/Brake Combinations

1020

Motor Clutch/Brake

Use for clutch/brake applications. Has hollow bore input for mounting directly to C-face motors. Brake shaft and C-face on output side accommodate a reducer, parallel drive or coupling. Basic components: field, rotor, 2 armatures and power-on magnet. See page 20 in this catalog.

Heavy-duty models available with increased spline length and higher load capacity bearings.

2030

Input Clutch/Brake

Use for clutch/brake applications. Features dual C-faces and shafts. Input from parallel drive or coupling. Output to reducer. Basic components are field, rotor, 2 armatures and power-on magnet. See page 22 in this catalog.

2030-B

Input Clutch/Brake – with Accessory Base Mounting

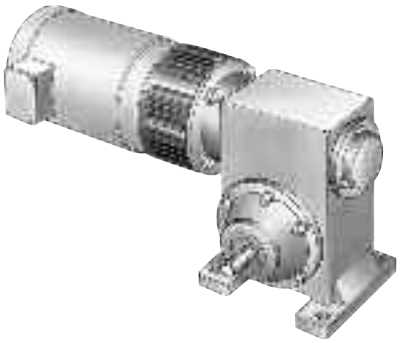
Base mounting allows the clutch/brake units to be utilized as a separate drive unit. Attach with pulleys, sprockets, etc. See page 22 in this catalog.

Selection

UniModule clutch, brake and clutch/brake units may be mounted directly to NEMA C-face motors and reducers, or can be base mounted.

1. Select Configuration

a. NEMA C-face Mounting



To select the correct UniModule package, determine the NEMA frame size of your motor and/or reducer, and choose the corresponding size UniModule from the Frame Size Selection chart.

Size UM-100 modules utilize a 5/8" diameter shaft to fit 56C/48Y motor frames with components of UM-180 units for higher torque and heat dissipation capacity than the UM-50.

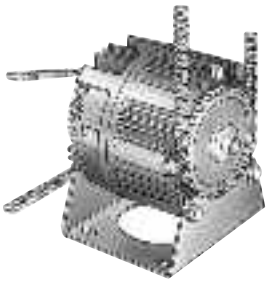
UM-100 modules are available in 1020 and 2030 clutch/brake and 1040 and 3040 clutch configurations. For C-face mounting, select either a 1020 clutch/brake or a 1040 clutch configuration. The 2030 and 3040 configurations are for base mounting.

Frame Size Selection

NEMA Frame Size	UniModule Size
56C/48Y	UM-50* UM-100**
182C/143TC 184C/145TC	UM-180
213C/182TC 215C/184TC	UM-210
213TC/215TC	UM-215

* For 56C/48Y Frame motors 3/4 HP and smaller the UM-100 size may be used where extended life is desirable.
** UM-100 size is recommended for motors 1 HP and larger.

b. Base Mounting



UniModule assemblies may be mounted as separate drive units driven from the prime mover by V-belts, chain and sprockets, couplings, timing belts and other standard power transmission components.

Select the correct size module from the Horsepower vs. Shaft Speed chart by determining the motor horsepower and RPM at the module location. The correct size UniModule is shown at the intersection of the HP and operating speed.

For additional sizing information, refer to the technical sizing procedure (step 2).

2. Determine Technical Requirements

Technical considerations for sizing and selection are torque and heat dissipation. Each merits careful consideration, especially heat dissipation as over time, use in excessive temperature environments will have an adverse effect on bearing life and coil wire insulation integrity.

Compare the calculated torque requirement with the average dynamic torque ratings. Select a unit with adequate torque. If the unit selected on torque is different than the unit selected based on heat, select the larger size unit.

Horsepower vs. Shaft Speed

HP	SHAFT SPEED AT CLUTCH (IN RPM)																	
▼	100	200	300	400	500	600	700	800	900	1000	1100	1200	1500	1800	2000	2400	3000	3600
1/4										UM-50								
1/2																		
3/4							UM-100 or UM -180											
1																		
1-1/2																		
2						UM-210 0R UM-215													
3																		
5								UM-215										
7-1/2																		

a. Heat Dissipation Sizing

Friction surfaces slip during the initial period of engagement and, as a result, heat is generated. The clutch/brake selected must have a heat dissipation rating greater than the heat generated by the application. Therefore, in high inertia or high cycle rate applications, it is necessary to check the heat dissipation carefully. Inertia, speed and cycle rate are the required parameters.

Heat dissipation requirement is calculated as follows:

E = 1.7 x WR2 x (N/100)2 x F

where:

E = Heat (lb. ft./min.)

WR2 = Total reflected inertia at the clutch/brake shaft. Include the clutch/brake output inertia. (lb.ft.2)

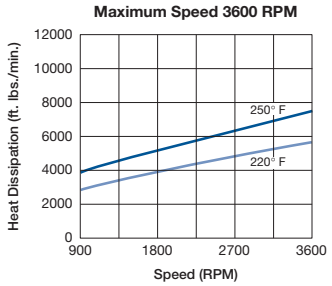
N = Speed in revolutions per minute. (RPM)

F = Cycle rate in cycles per minute (CPM)

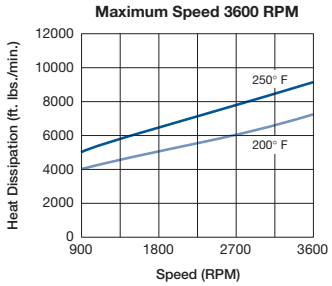
Compare the calculated heat generated in the application to the unit ratings using the heat dissipation curves. Select the appropriate unit that has adequate heat dissipation ability.

Heat Dissipation Curves

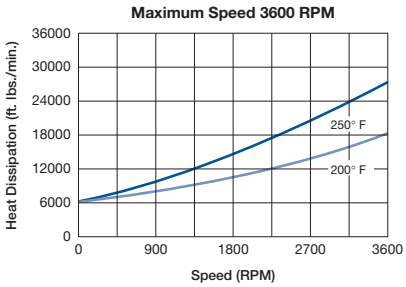
Size 50



Size 100/180



Size 210/215



b. Torque Sizing

For most applications, the correct size clutch/brake can be selected from the Horsepower vs. Shaft Speed chart on page 16. Determine the motor horsepower and the RPM at the clutch/brake. The correct size unit is shown at the intersection of horsepower and shaft speed.

If the static torque requirements are known, refer to the technical ratings chart to select a unit.

For some applications, the torque requirement is determined by the time allowed to accelerate and decelerate the load. (This time is generally specified in milliseconds.) For these applications, it is necessary to determine the torque requirement based on load inertia and the time allowed for engagement.

The torque requirements are calculated as follows:

T = (WR2 x N) / (308 x t)

where:

T = Average Dynamic Torque (lb. ft.)

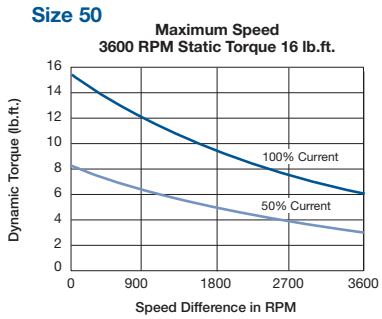
WR2 = Total reflected inertia at the clutch/brake shaft. Include the clutch/brake output inertia. (lb. ft.2)

N = Speed in revolutions per minute. (RPM)

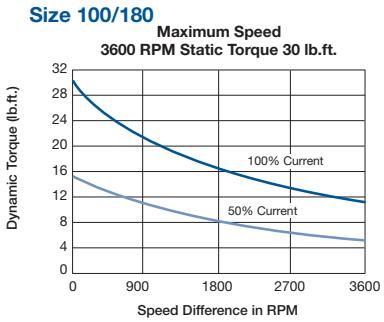
t = Time allowed for the engagement (sec)

C-face Clutch/Power-on Brake Dynamic Torque Curves

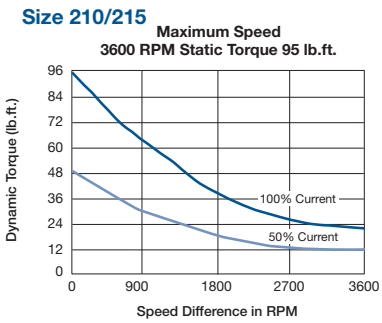
Size 50



Size 100/180



Size 210/215



Specifications (Blue shaded areas indicate GEN 2 design)

UM Size	Static Torque lb. ft.	Maximum RPM	Voltage DC
50	16	3600	6, 24, or 90
100	30	3600	6, 24, or 90
180	30	3600	6, 24, or 90
210	95	3600	6, 24, or 90
215	95	3600	6, 24, or 90

3. Accessories

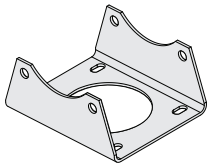
Warner Electric UniModules can be fitted with several accessories to extend their capacity and ease of mounting.

a. Conduit Box

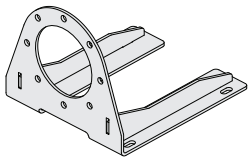
NEMA 4 and UL listed, available in standard and washdown versions.

b. Mounting Brackets

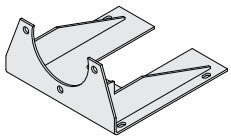
Two styles of mounting brackets are available for simplified installation. The base mount is used with the 2030 and 3040 configurations. A motor mount is also available and provides sturdy support for 1020 and 1040 units and a motor.



Base Mount



Motor Mount
For 50, 100 & 180 sizes



Motor Mount
For 210 & 215 sizes

c. Cover Kit – For sizes 50, 100 & 180

Each cover kit includes two (2) vent covers, two (2) gaskets and four (4) screws needed to convert a vented design into an enclosed design (non-washdown).

4. Select Control

Warner Electric manufactures clutch/brake controls to meet several system functions including:

- On/Off
- Torque adjust
- Over excitation
- Position loop

Many requirements beyond function can impact control selection. See the Controls Section on page 201 for complete information.

Model No.		Voltage D.C.	GEN 2 Part No.	Original Part No.
UM-1020 w/Pre-installed control				
UM50-1020	w/CBC-150-1	90	5370-273-230	5370-9
UM100-1020	w/CBC-150-1	90	5370-273-231	5370-10
UM180-1020	w/CBC-150-1	90	5370-273-232	5370-273-122
UM180-1020 (heavy-duty)	w/CBC-150-1	90	5370-273-324	
UM210-1020	w/CBC-150-1	90		5371-4
UM215-1020	w/CBC-150-1	90		5371-273-090

Ordering Information

Part Numbers

(Blue shaded areas indicate GEN 2 design)

Only 50, 100, and 180 sizes of the models listed will be converted to the new GEN 2 design. 210 and 215 sizes will continue to be offered in the original design and will not be converted.

Model No.	Voltage D.C.	GEN 2 Part No.	Original Part No.
1020 Motor Clutch/Brake			
UM-50-1020	6	5370-273-201	5370-273-016
UM-50-1020	24	5370-273-203	5370-273-018
UM-50-1020	90	5370-273-204	5370-273-017
UM-100-1020	6	5370-273-206	5370-273-026
UM-100-1020	24	5370-273-208	5370-273-028
UM-100-1020	90	5370-273-209	5370-273-027
UM-180-1020	6	5370-273-211	5370-273-006
UM-180-1020	24	5370-273-213	5370-273-008
UM-180-1020	90	5370-273-214	5370-273-007
UM-210-1020	6		5371-273-002
UM-210-1020	24		5371-273-004
UM-210-1020	90		5371-273-003
UM-215-1020	6		5371-273-076
UM-215-1020	24		5371-273-077
UM-215-1020	90		5371-273-078
Heavy-Duty Models			
UM-180-1020	90	5370-273-323	
UM-180-1020*	90	5370-273-324	
1040 Motor Clutch Output Clutch			
UM-50-1040	6	5370-271-201	5370-271-004
UM-50-1040	24	5370-271-203	5370-271-006
UM-50-1040	90	5370-271-204	5370-271-005
UM-100-1040	6	5370-271-206	5370-271-024
UM-100-1040	24	5370-271-208	5370-271-026
UM-100-1040	90	5370-271-209	5370-271-025
UM-180-1040	6	5370-271-211	5370-271-014
UM-180-1040	24	5370-271-213	5370-271-016
UM-180-1040	90	5370-271-214	5370-271-015
UM-210-1040	6		5371-271-002
UM-210-1040	24		5371-271-004
UM-210-1040	90		5371-271-003
UM-215-1040	6		5371-271-026
UM-215-1040	24		5371-271-027
UM-215-1040	90		5371-271-028
2030 Input Clutch/Brake			
UM-50-2030	6	5370-273-216	5370-273-021
UM-50-2030	24	5370-273-218	5370-273-023
UM-50-2030	90	5370-273-219	5370-273-022
UM-100-2030	6	5370-273-221	5370-273-031
UM-100-2030	24	5370-273-223	5370-273-033
UM-100-2030	90	5370-273-224	5370-273-032
UM-180-2030	6	5370-273-226	5370-273-011
UM-180-2030	24	5370-273-228	5370-273-013
UM-180-2030	90	5370-273-229	5370-273-012
UM-210-2030	6		5371-273-007
UM-210-2030	24		5371-273-009
UM-210-2030	90		5371-273-008
UM-215-2030	6		5371-273-043
UM-215-2030	24		5371-273-044
UM-215-2030	90		5371-273-045

* Includes CBC-150-1

Model No.	Voltage D.C.	GEN 2 Part No.	Original Part No.
3040 Input Clutch Output Clutch			
UM-50-3040	6	5370-271-216	5370-271-009
UM-50-3040	24	5370-271-218	5370-271-011
UM-50-3040	90	5370-271-219	5370-271-010
UM-100-3040	6	5370-271-221	5370-271-029
UM-100-3040	24	5370-271-223	5370-271-031
UM-100-3040	90	5370-271-224	5370-271-030
UM-180-3040	6	5370-271-226	5370-271-019
UM-180-3040	24	5370-271-228	5370-271-021
UM-180-3040	90	5370-271-229	5370-271-020
UM-210-3040	6		5371-271-007
UM-210-3040	24		5371-271-009
UM-210-3040	90		5371-271-008
UM-215-3040	6		5371-271-021
UM-215-3040	24		5371-271-022
UM-215-3040	90		5371-271-023

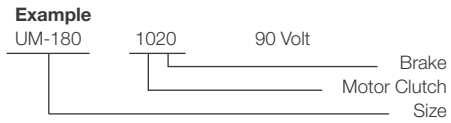
Accessories

Description	UM Size	Part No.
Conduit Box	All sizes	5370-101-042
Base Mount Kit for 2030, 3040	50/100	5370-101-004
	180	5370-101-002
	210/215	5371-101-001
Motor Mount Kit for 1020, 1040	50/100	5370-101-078
	180	5370-101-079
	210/215	5371-101-012
Cover Kit	50/100/180	5370-101-076

How to Order

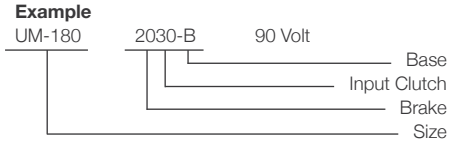
Motor or Reducer Mounted

Simply combine the size number with the configuration of the required UniModule. Specify voltage. See chart for specific part numbers. Power-off brake UniModules are found on page 106. Order optional conduit box if desired.



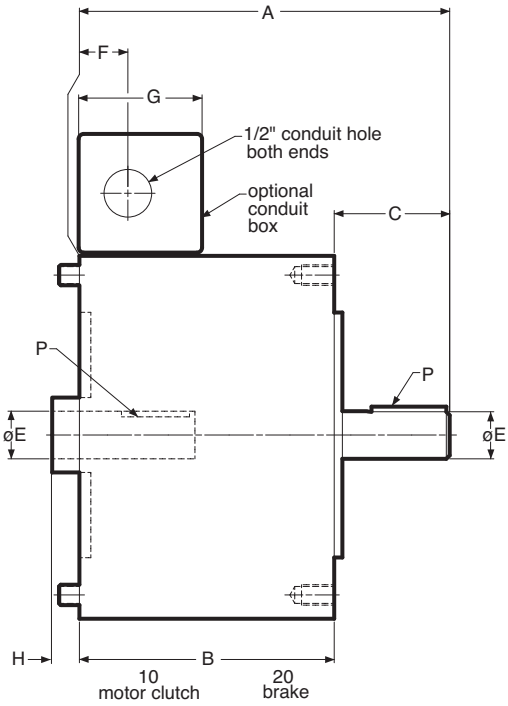
Base Mounted

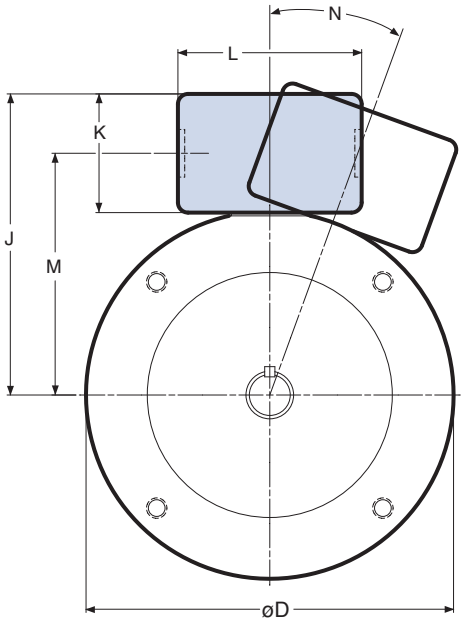
Simply combine the size number with the configuration of the required UniModule. Specify voltage. See chart for specific part numbers. Power-off brake UniModules are found on page 106. Order optional conduit box if desired.



Select Appropriate Power Supply/Control.

UM-1020 Motor Clutch/Brake Combination





(Blue shaded areas indicate GEN 2 design)

Note: Some 90 VDC units are available with pre-installed controls. On all other modules, conduit box is optional and is ordered separately.

Dimensions (Blue shaded areas indicate GEN 2 design)

Size	A	B	C	D	E	F	G	H
50	6.720	4.680	2.040	6.750	.625	.890	2.267	—
100	6.741	4.680	2.061	6.750	.625	.890	2.267	—
180	6.801	4.680	2.121	6.750	.875	.890	2.267	—
210	8.891	5.922	2.500	9.250	1.125	.500	2.267	.500
215	9.391	5.922	3.000	9.250	1.375	.500	2.267	.500

Size	J	K	L	M	N	P
50	5.516	2.180	3.250	4.426	0°	3/16 x 3/16
100	5.516	2.180	3.250	4.426	0°	3/16 x 3/16
180	5.516	2.180	3.250	4.426	0°	3/16 x 3/16
210	6.859	2.180	3.250	5.766	20°	1/4 x 1/4
215	6.859	2.180	3.250	5.766	20°	5/16 x 5/16

Specifications (Blue shaded areas indicate GEN 2 design)

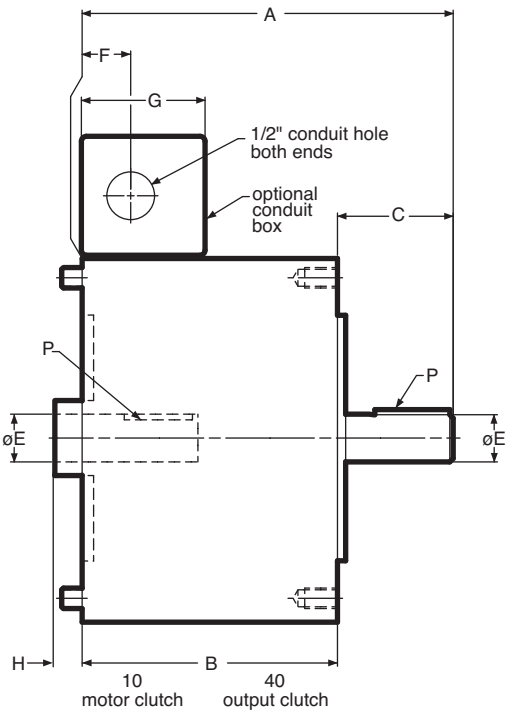
Model Size	Voltage DC	Static Torque lb. ft.	Max. RPM	NEMA Frame Size
50	6, 24, 90	16	3600	56C/48Y*
100	6, 24, 90	30	3600	56C/48Y**
180	6, 24, 90	30	3600	182C/143TC 184C/145TC
210	6, 24, 90	95	3600	213C/182TC 215C/184TC
215	6, 24, 90	95	3600	213TC/215TC

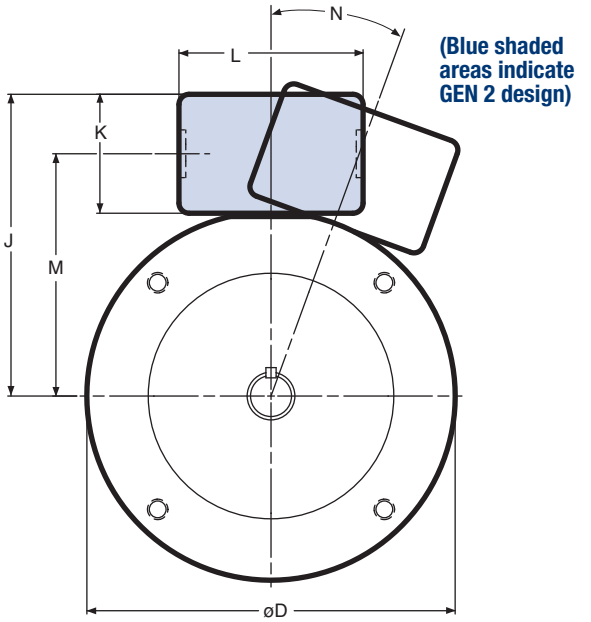
* For 56C/48Y Frame motors 3/4 HP and smaller the UM-100 size may be used where extended life is desirable.
** UM-100 size is recommended for motors 1 HP and larger.

For standard NEMA frame dimensions, see page 187.

Only 50, 100, and 180 sizes of the models listed will be converted to the new GEN 2 design. 210 and 215 sizes will continue to be offered in the original design and will not be converted.

UM-1040 Motor Clutch/Output Clutch Combination





Note: Conduit box is optional and is ordered separately.

Dimensions (Blue shaded areas indicate GEN 2 design)

Size	A	B	C	D	E	F	G	H
50	6.720	4.680	2.040	6.750	.625	.890	2.267	—
100	6.741	4.680	2.061	6.750	.625	.890	2.267	—
180	6.801	4.680	2.121	6.750	.875	.890	2.267	—
210	8.891	5.922	2.500	9.250	1.125	.500	2.267	.500
215	9.391	5.922	3.000	9.250	1.375	.500	2.267	.500

Size	J	K	L	M	N	P
50	5.516	2.180	3.250	4.426	0°	3/16 x 3/16
100	5.516	2.180	3.250	4.426	0°	3/16 x 3/16
180	5.516	2.180	3.250	4.426	0°	3/16 x 3/16
210	6.859	2.180	3.250	5.766	20°	1/4 x 1/4
215	6.859	2.180	3.250	5.766	20°	5/16 x 5/16

Specifications (Blue shaded areas indicate GEN 2 design)

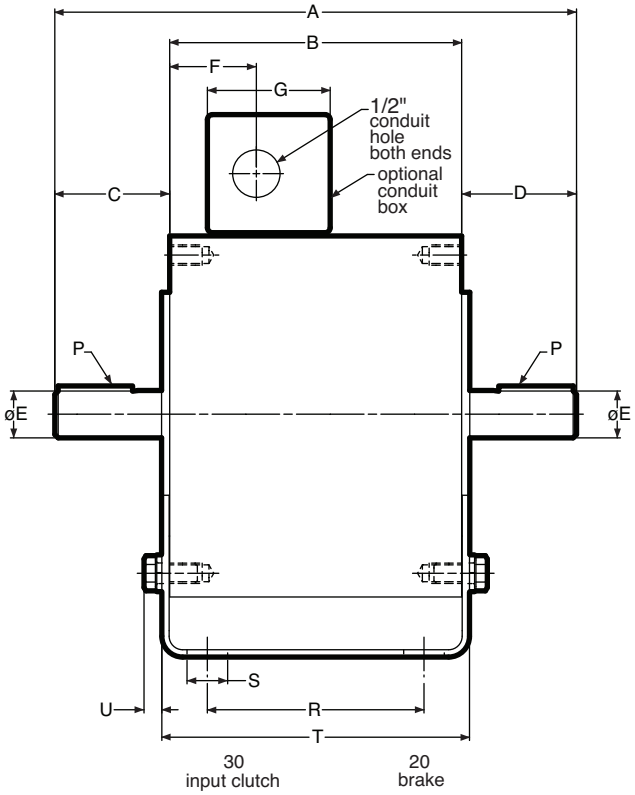
Model Size	Voltage DC	Static Torque lb. ft.	Max. RPM	NEMA Frame Size
50	6, 24, 90	16	3600	56C/48Y*
100	6, 24, 90	30	3600	56C/48Y**
180	6, 24, 90	30	3600	182C/143TC 184C/145TC
210	6, 24, 90	95	3600	213C/182TC 215C/184TC
215	6, 24, 90	95	3600	213TC/215TC

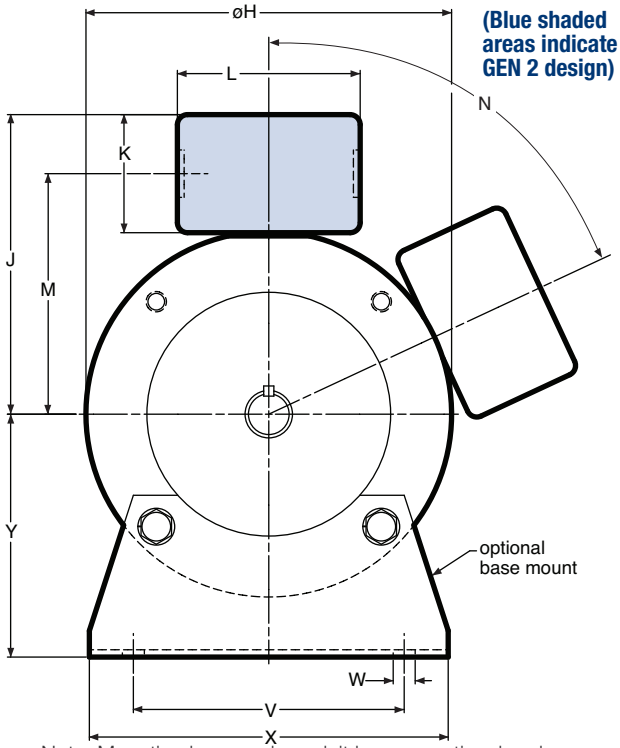
* For 56C/48Y Frame motors 3/4 HP and smaller the UM-100 size may be used where extended life is desirable.
** UM-100 size is recommended for motors 1 HP and larger.

For standard NEMA frame dimensions, see page 187.

Only 50, 100, and 180 sizes of the models listed will be converted to the new GEN 2 design.
210 and 215 sizes will continue to be offered in the original design and will not be converted.

UM-2030 Input Clutch/Brake Combination
UM-2030-B Input Clutch/Brake Combination – Base Mounted





Note: Mounting base and conduit box are optional and are ordered separately.

Dimensions (Blue shaded areas indicate GEN 2 design)

Size	A	B	C	D	E	F	G	H	J	K	L	M
50	9.492	5.390	2.062	2.040	.625	1.600	2.267	6.750	5.516	2.180	3.250	4.426
100	9.512	5.390	2.061	2.061	.625	1.600	2.267	6.750	5.516	2.180	3.250	4.426
180	9.632	5.390	2.121	2.121	.875	1.600	2.267	6.750	5.516	2.180	3.250	4.426
210	12.969	7.719	2.500	2.500	1.125	1.812	2.267	9.250	6.859	2.180	3.250	5.766
215	12.969	7.719	2.500	2.500	1.375	1.812	2.267	9.250	6.859	2.180	3.250	5.766

Size	N	P	R	S	T	U	V	W	X	Y
50	0°	3/16 x 3/16	4.000	.800	5.680	.329	5.000	.406	6.000	3.500
100	0°	3/16 x 3/16	4.000	.800	5.680	.329	5.000	.406	6.000	3.500
180	0°	3/16 x 3/16	4.000	.750	5.680	.329	5.000	.406	6.625	4.500
210	65°	1/4 x 1/4	6.000	.750	8.260	.437	7.750	.534	9.000	5.250
215	65°	5/16 x 5/16	6.000	.750	8.260	.437	7.750	.534	9.000	5.250

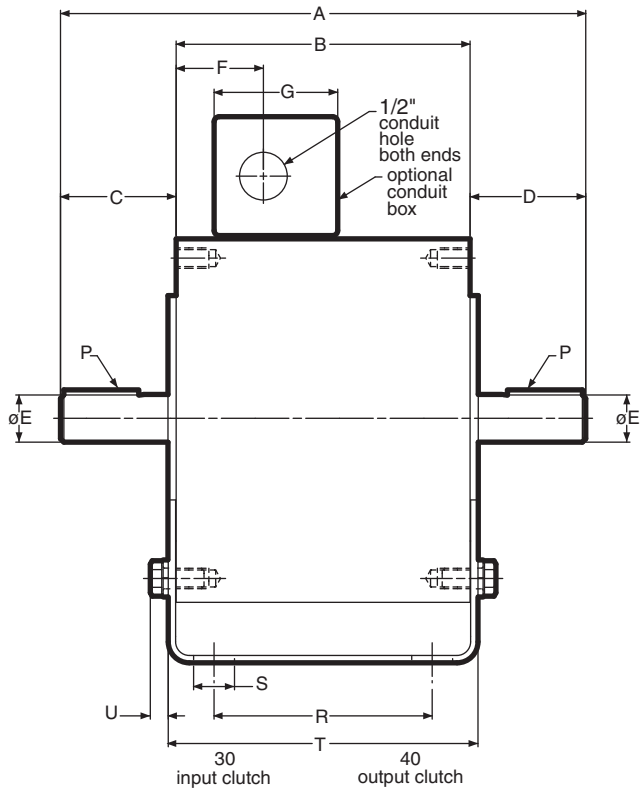
Specifications (Blue shaded areas indicate GEN 2 design)

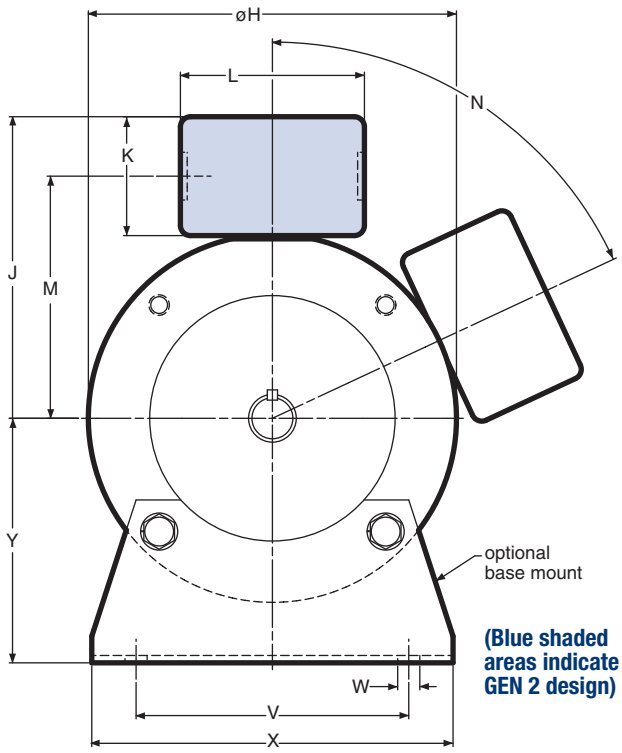
Model Size	Voltage DC	Static Torque lb. ft.	Max. RPM
50	6, 24, 90	16	3600
100	6, 24, 90	30	3600
180	6, 24, 90	30	3600
210	6, 24, 90	95	3600
215	6, 24, 90	95	3600

For standard NEMA frame dimensions, see page 187.

Only 50, 100, and 180 sizes of the models listed will be converted to the new GEN 2 design.
210 and 215 sizes will continue to be offered in the original design and will not be converted.

UM-3040 Input Clutch/Output Clutch Combination
UM-3040-B Input Clutch/Output Clutch Combination–Base Mounted





(Blue shaded areas indicate GEN 2 design)

Note: Mounting base and conduit box are optional and are ordered separately.

Dimensions (Blue shaded areas indicate GEN 2 design)

Size	A	B	C	D	E	F	G	H	J	K	L	M
50	9.492	5.390	2.062	2.040	.625	1.600	2.267	6.750	5.516	2.180	3.250	4.426
100	9.512	5.390	2.061	2.061	.625	1.600	2.267	6.750	5.516	2.180	3.250	4.426
180	9.632	5.390	2.121	2.121	.875	1.600	2.267	6.750	5.516	2.180	3.250	4.426
210	12.969	7.719	2.500	2.500	1.125	1.812	2.267	9.250	6.859	2.180	3.250	5.766
215	12.969	7.719	2.500	2.500	1.375	1.812	2.267	9.250	6.859	2.180	3.250	5.766

Size	N	P	R	S	T	U	V	W	X	Y
50	0°	3/16 x 3/16	4.000	.800	5.680	.329	5.000	.406	6.000	3.500
100	0°	3/16 x 3/16	4.000	.800	5.680	.329	5.000	.406	6.000	3.500
180	0°	3/16 x 3/16	4.000	.750	5.680	.329	5.000	.406	6.625	4.500
210	65°	1/4 x 1/4	6.000	.750	8.260	.437	7.750	.534	9.000	5.250
215	65°	5/16 x 5/16	6.000	.750	8.260	.437	7.750	.534	9.000	5.250

Specifications (Blue shaded areas indicate GEN 2 design)

Model Size	Voltage DC	Static Torque lb. ft.	Max. RPM
50	6, 24, 90	16	3600
100	6, 24, 90	30	3600
180	6, 24, 90	30	3600
210	6, 24, 90	95	3600
215	6, 24, 90	95	3600

For standard NEMA frame dimensions, see page 187.

Only 50, 100, and 180 sizes of the models listed will be converted to the new GEN 2 design.
210 and 215 sizes will continue to be offered in the original design and will not be converted.

UM Series Smooth-Start UniModules

Warner Electric Smooth-Start™ UniModules are designed for applications that require a softer than standard engagement. Through the use of LK friction material, the Smooth-Start design provides reduced torque to provide a less aggressive engagement, without suffering a loss of overall life due to the longer slip times.

When used with an adjustable power supply such as the CBC 300 or CBC 500/550, the Smooth-Start designs can provide a soft engagement that can be adjusted to meet specific application needs.

Smooth-Start™ UniModules

Warner Electric's new Smooth-Start UniModules are offered in 90 volt configurations as listed below. If you require another voltage, size or mounting configuration, please contact Warner Electric for assistance.

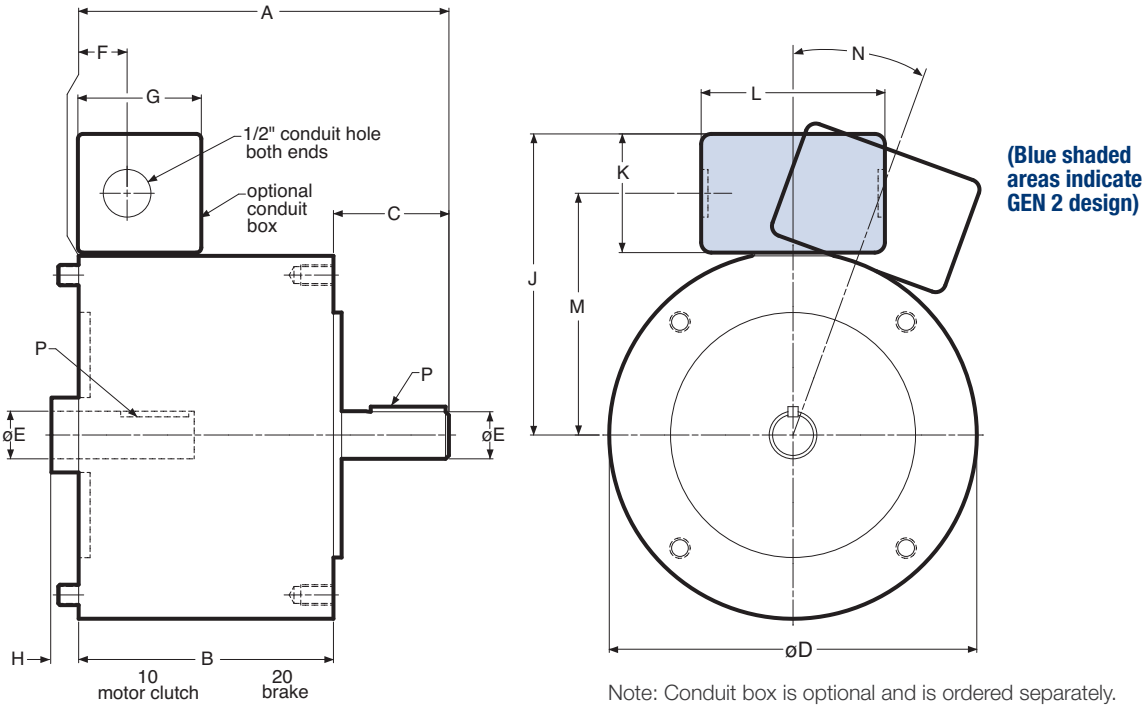
UniModule Size	NEMA Frame	Max. RPM	Static Torque (lb-ft)	Voltage (DC)	Original Part Number	GEN2 Part Number
50	56C/48Y	3600	10	90	5370-273-157	5370-273-236
100	56C/48Y	3600	18	90	5370-273-237	5370-273-237
180	182C/143TC 184C/145TC	3600	18	90	5370-273-158	5370-273-238
210	213C/182TC 215C/184TC	3600	57	90	5371-273-103	
215	213TC/215TC	3600	57	90	5371-273-080	

CBC-300 Dual Channel Torque Adjust Clutch/Brake Control

Conveyor applications occasionally require more clutch torque to start the line, and less brake torque to stop the line. With two independently adjustable channels, Warner Electric's CBC-300 allows you to set the torque levels for the clutch and brake independently of each other, so each can be tailored to every application to achieve optimum system performance.

Part Number	6021-448-001
Input Power	120 VAC +10% -15%, 50/60 Hz, single phase, 215 VA max.
Output	Pulse-width modulated full wave rectified D.C. Constant current, switch selectable ranges, 0-90 volt.
Current Adjust	Dual adjustable channels. Adjust via front panel potentiometers.
Other Features	UL listed; short circuit protection, line to line; torque limiting protects machine components from damage.

UM-1020 Motor Clutch/Brake Combination



Note: Conduit box is optional and is ordered separately.

Dimensions (Blue shaded areas indicate GEN 2 design)

Size	A	B	C	D	E	F	G	H
50	6.720	4.680	2.040	6.750	.625	.890	2.267	—
100	6.741	4.680	2.061	6.750	.625	.890	2.267	—
180	6.801	4.680	2.121	6.750	.875	.890	2.267	—
210	8.891	5.922	2.500	9.250	1.125	.500	2.267	.500
215	9.391	5.922	3.000	9.250	1.375	.500	2.267	.500

Size	J	K	L	M	N	P
50	5.516	2.180	3.250	4.426	0°	3/16 x 3/16
100	5.516	2.180	3.250	4.426	0°	3/16 x 3/16
180	5.516	2.180	3.250	4.426	0°	3/16 x 3/16
210	6.859	2.180	3.250	5.766	20°	1/4 x 1/4
215	6.859	2.180	3.250	5.766	20°	5/16 x 5/16

Specifications (Blue shaded areas indicate GEN 2 design)

Model Size	Voltage DC	Static Torque lb. ft.	Max. RPM	NEMA Frame Size
50	6, 24, 90	10	3600	56C/48Y*
100	6, 24, 90	18	3600	56C/48Y*
180	6, 24, 90	18	3600	182C/143TC 184C/145TC
210	6, 24, 90	57	3600	213C/182TC 215C/184TC
215	6, 24, 90	57	3600	213TC/215TC

* For 56C/48Y Frame motors 3/4 HP and smaller the UM-100 size may be used where extended life is desirable.
** UM-100 size is recommended for motors 1 HP and larger.

For standard NEMA frame dimensions, see page 187.

Only 50, 100, and 180 sizes of the models listed will be converted to the new GEN 2 design.
210 and 215 sizes will continue to be offered in the original design and will not be converted.

UM-C Series UniModule – Ceramic Faced

High Performance with Extended Life

UniModules with ceramic friction material are pre-burnished during manufacturing to provide rated torque performance upon start up. They have been designed to mate easily with industry standard motors, reducers and other power transmission components.

- Bolt-it-down, wire-it-up… it's ready to go
- Available in 3 sizes; 50, 180 and 210 and 2 configurations; 1020 and 2030
- Standard voltages available 6V, 24V and 90V DC
- C-face or foot mounted
- No maintenance required
- Accurate positioning when used with CBC-700 OEX control

Original Design
Size 210

GEN 2 Design
Sizes 50 & 180

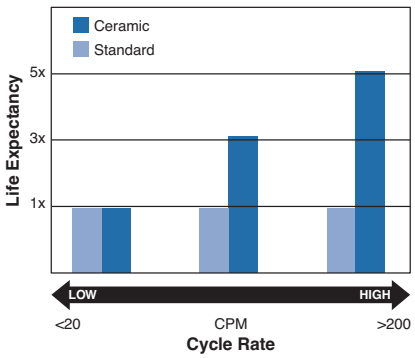
The Ceramic Difference . . .

Extended Life for High Cycle Rate Use
Ceramic faced clutches and brakes have been designed specifically for rapid cycling applications to satisfy today's needs for high speed equipment. Ceramic friction material provides excellent wear resistance that extends life 3 to 5 times that of standard clutch/brakes in demanding applications.

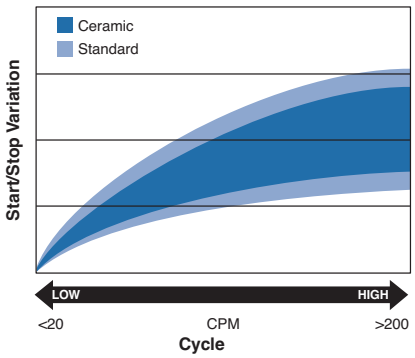
Consistent Torque and Cycle Repeatability
Preloaded armatures keep the ceramic friction surfaces lightly in contact to provide consistent torque and cycle-to-cycle repeatability. Variation is reduced by up to 30% over standard units. Autogap™ is not required.

Controllability – Smooth Start/Stop
With the ceramic friction surfaces always in contact, dynamic torque response is fast and precise. When used with a CBC-700 over-excitation control and CBC-1000 programmable counter, exceptional closed loop clutch/brake performance can be achieved approaching that of more expensive motion control technologies–The PerformancePlus difference!

UM-C Product Life



UM-C Cycle Repeat

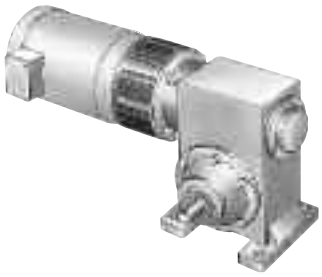


Selection

Ceramic UniModule clutch/brake units may be mounted directly to NEMA C-face motors and reducers, or can be base mounted.

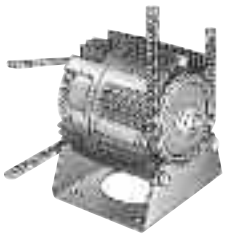
1. Determine Mounting Configuration

a. NEMA C-face Mounting (1020 Configuration)



To select the correct Ceramic UniModule package, determine the NEMA frame size of your motor and/or reducer, and choose the corresponding size UniModule from the Frame Size Selection chart.

b. Base Mount (2030 Configuration)



Ceramic UniModule assemblies may be mounted as separate drive units driven from the prime mover by V-belts, chain and sprockets, couplings, timing belts and other standard power transmission components.

Select the correct size module from the Horsepower vs. Shaft Speed chart by determining the motor horsepower and RPM at the module location. The correct size UniModule is shown at the intersection of the HP and operating speed. For additional sizing information, refer to the technical sizing procedure (step 2).

2. Determine Technical Requirements

Technical considerations for sizing and selection are torque and heat dissipation. Each merits careful consideration, especially heat dissipation as over time, use in excessive temperature environments will have an adverse effect on bearing life and coil wire insulation integrity.

Compare the calculated torque requirement with the average dynamic torque ratings. Select a unit with adequate torque. If the unit selected on torque is different than the unit selected based on heat, select the larger size unit.

Frame Size Selection

NEMA Frame Size	UniModule Size
56C/48Y	UM-50-C
182C/143TC 184C/145TC	UM-180-C
213C/182TC 215C/184TC	UM-210-C

Horsepower vs. Shaft Speed

HP	SHAFT SPEED AT CLUTCH (IN RPM)																	
▼	100	200	300	400	500	600	700	800	900	1000	1100	1200	1500	1800	2000	2400	3000	3600
1/4																		
1/2																		
3/4																		
1																		
1-1/2																		
2																		
3																		
5																		
7-1/2																		
10																		

UM-50-C

UM-180-C

UM-210-C

a. Heat Dissipation Sizing

Friction surfaces slip during the initial period of engagement and, as a result, heat is generated. The clutch/brake selected must have a heat dissipation rating greater than the heat generated by the application. Therefore, in high inertia or high cycle rate applications, it is necessary to check the heat dissipation carefully. Inertia, speed and cycle rate are the required parameters.

Heat dissipation requirement is calculated as follows:

$E = 1.7 \times WR^2 \times (N/100)^2 \times F$

where:

E = Heat (lb. ft./min.)

WR^2 = Total reflected inertia at the clutch/brake shaft. Include the clutch/brake output inertia. ($lb.ft.^2$)

N = Speed in revolutions per minute (RPM)

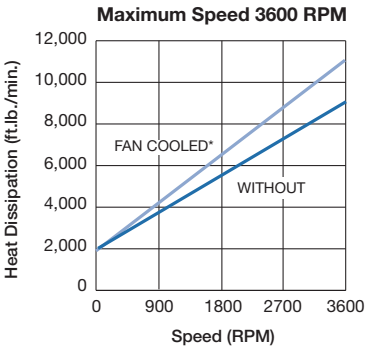
F = Cycle rate in cycles per minute (CPM)

Compare the calculated heat generated in the application to the unit ratings using the heat dissipation curves. Select the appropriate unit that has adequate heat dissipation ability.

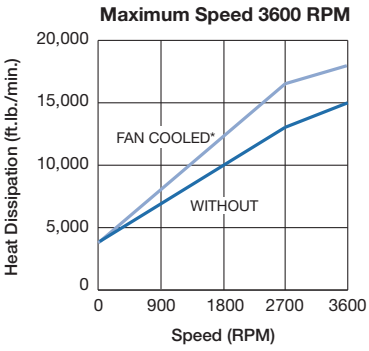
Note: At low cycle rates, the ceramic designs provide no additional wear life than standard designs.

Heat Dissipation Curves

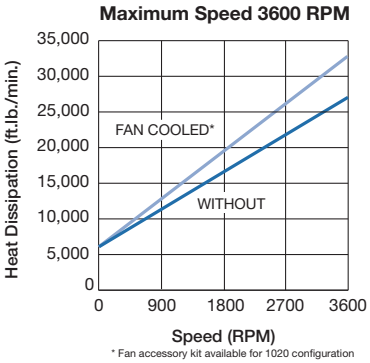
UM-50-C



UM-180-C



UM-210-C



b. Torque Sizing

For most applications, the correct size clutch/brake can be selected from the Horsepower vs. Shaft Speed chart.

Determine the motor horsepower and the RPM at the clutch/brake. The correct size unit is shown at the intersection of horsepower and shaft speed.

If the static torque requirements are known, refer to the Specifications Table to select a unit.

For some applications, the torque requirement is determined by the time allowed to accelerate and decelerate the load. (This time is generally specified in milliseconds.) For these applications, it is necessary to determine the torque requirement based on load inertia and the time allowed for engagement.

The torque requirements are calculated as follows:

$T = (WR^2 \times N) / (308 \times t)$

where:

T = Average Dynamic Torque (lb. ft.)

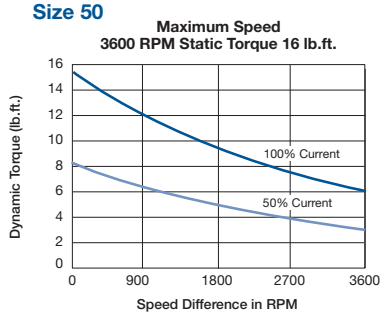
WR^2 = Total reflected inertia at the clutch/brake shaft. Include the clutch/brake output inertia. ($lb.\ ft.^2$)

N = Speed in revolutions per minute (RPM)

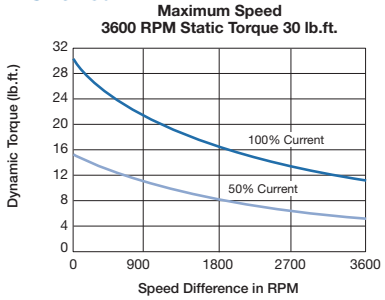
t = Time allowed for the engagement (sec)

C-face Clutch/Power-on Brake Dynamic Torque Curves

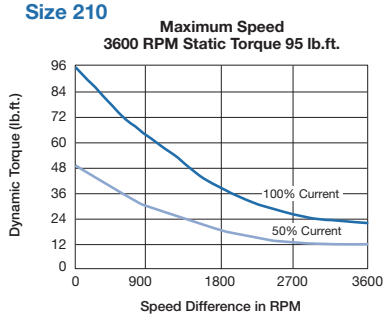
Size 50



Size 180



Size 210



Selection/Ordering Information

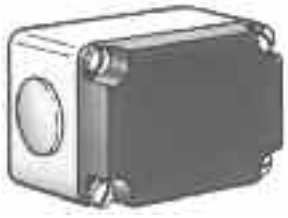
Specifications (Blue shaded areas indicate GEN 2 design)

UniModule Size	Shaft Dia.	Static Torque lb. ft.	Horsepower	Max. RPM	Voltage DC	NEMA Frame Size
UM50-C	5/8"	16	1/4-3/4	3600	6, 24 and 90	56C/48Y
UM180-C	7/8"	30	1-2	3600	6, 24 and 90	182C/143TC 184C/145TC
UM210-C	1-1/8"	95	3-5	3600	6, 24 and 90	213/182TC 215C/184TC

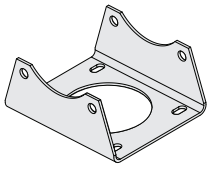
3. Select Accessories

Warner Electric UniModules can be fitted with several accessories to extend their capacity and ease of mounting.

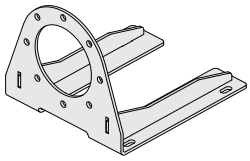
a. Conduit Box
NEMA 4 and UL listed.



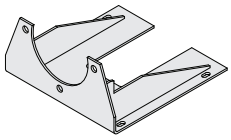
b. Mounting Brackets
Two styles of mounting brackets are available for simplified installation. The base mount is used with the 2030 configuration. A motor mount is also available and provides sturdy support for the 1020 and a motor.



Base Mount



Motor Mount
For 50 & 180 sizes



Motor Mount
For 210 size

c. Fan Kit (1020 only)
Extends the thermal capacity of any size UM. Mounts between motor and UM, includes shaft fan, guard and hardware.

4. Select Control

Warner Electric manufactures clutch/brake controls to meet several system functions including:

- On/Off
- Torque adjust
- Overexcitation
- Position loop

Many requirements beyond function can impact control selection. See the Controls Section on page 201 for complete information.

UM-C Series UniModule – Ceramic Faced

Selection/Ordering Information

Part Numbers

Model No.	Voltage	GEN 2 Part No.	Original Part No.
1020 (Motor Clutch/Brake)			
UM 50-1020-C	6	5370-273-271	5370-273-077
	24	5370-273-273	5370-273-078
	90	5370-273-274	5370-273-079
UM 180-1020-C	6	5370-273-276	5370-273-073
	24	5370-273-278	5370-273-074
	90	5370-273-279	5370-273-075
UM 210-1020-C	6		5371-273-035
	24		5371-273-036
	90		5371-273-037
2030 (Input Clutch/Brake)			
UM 50-2030-C	6	5370-273-281	5370-273-085
	24	5370-273-283	5370-273-086
	90	5370-273-284	5370-273-087
UM 180-2030-C	6	5370-273-286	5370-273-081
	24	5370-273-288	5370-273-082
	90	5370-273-289	5370-273-083
UM 210-2030-C	6		5371-273-039
	24		5371-273-040
	90		5371-273-041

Accessories

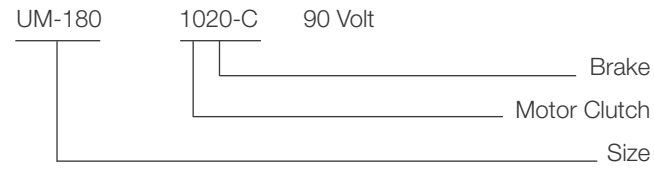
Description	UM-C Size	Part Number
Conduit Box	All sizes	5370-101-042
Fan Kits 1020	50	5370-101-055
	180	5370-101-054
	210	5371-101-029
Base Mount Kits for 2030-C	50	5370-101-004
	180	5370-101-002
	210	5371-101-001
Motor Mount Kits for 1020-C	50	5370-101-078
	180	5370-101-079
	210	5371-101-012

How to Order

Motor or Reducer Mounted

Simply combine the size number with the configuration of the required UniModule. Specify voltage. See chart for specific part numbers. Order optional conduit box if desired.

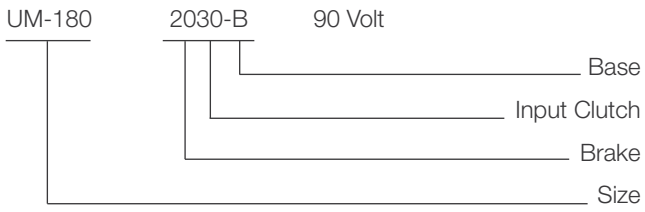
Example



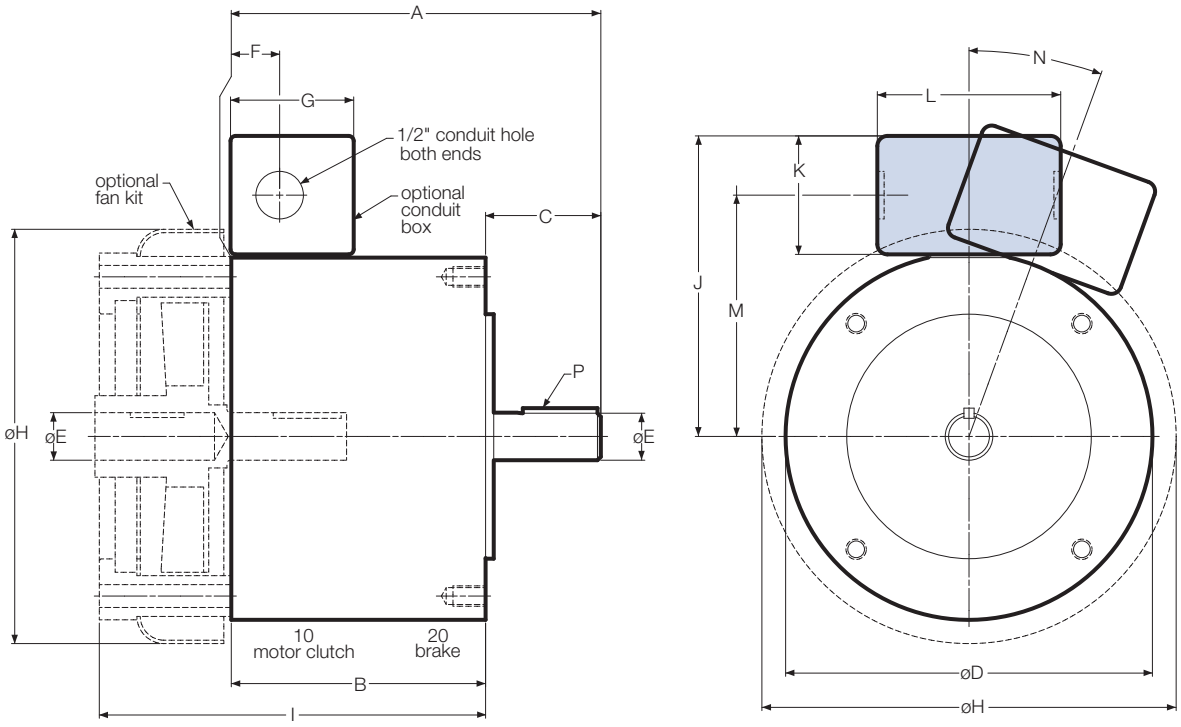
Base Mounted

Simply combine the size number with the configuration of the required UniModule. Specify voltage. See chart for specific part numbers. Order optional conduit box if desired.

Example



UM-1020-C Motor Clutch/Brake Combination



Dimensions (Blue shaded areas indicate GEN 2 design)

Size	A	B	C	D	E	F	G	H
50	6.720	4.680	2.040	6.750	.625	.890	2.267	7.620
180	6.801	4.680	2.121	6.750	.875	.890	2.267	7.620
210	9.391*	6.422*	2.500	9.250	1.125	.500	2.267	10.187

Size	I	J	K	L	M	N	P
50	7.110	5.516	2.180	3.250	4.426	0°	3/16 x 3/16
180	7.110	5.516	2.180	3.250	4.426	0°	3/16 x 3/16
210	9.297	6.859	2.180	3.250	5.766	20°	1/4 x 1/4

*Dimension includes the .500 thick adapter. Required for C-face mounting to a motor.

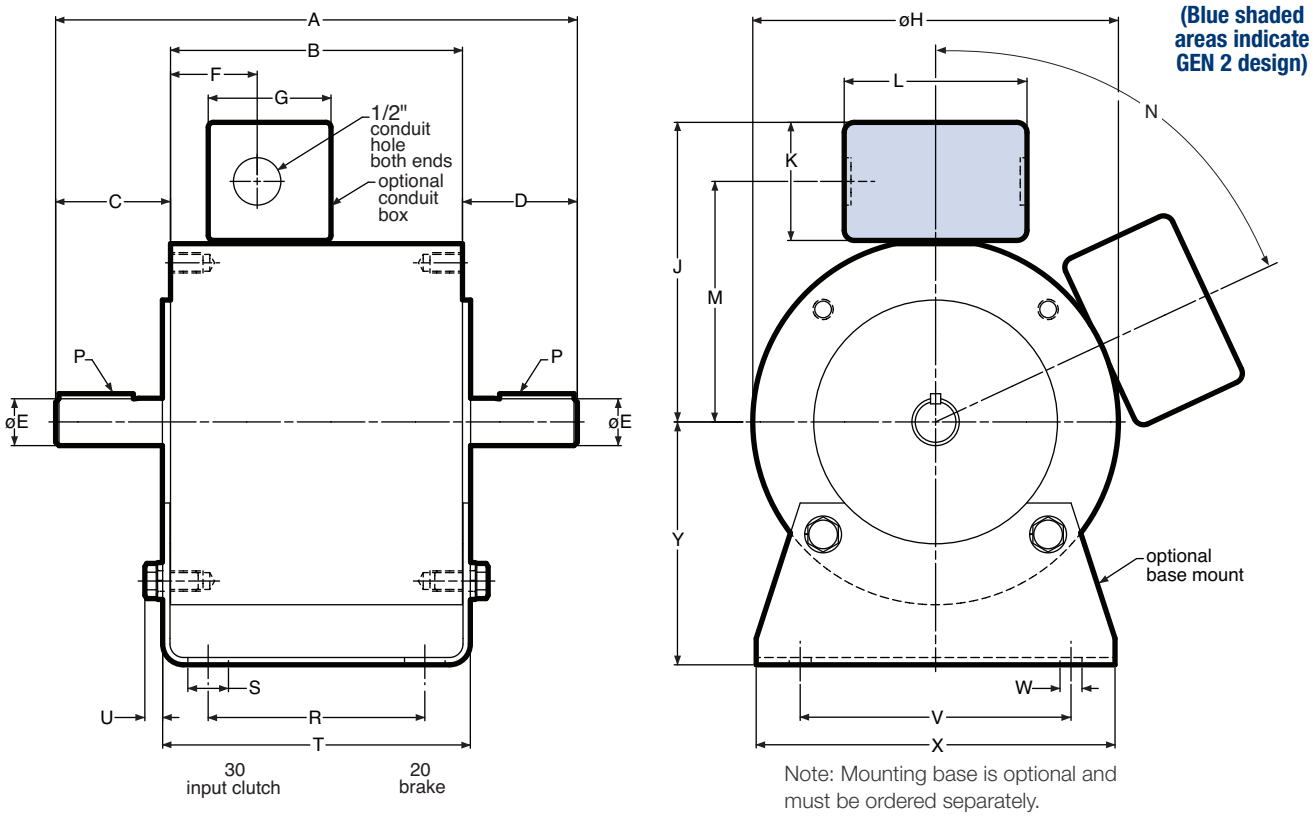
Specifications (Blue shaded areas indicate GEN 2 design)

UniModule Size	Static Torque lb. ft.	Horsepower	Max. RPM	Voltage DC	NEMA Frame Size
UM50-C	16	1/4-3/4	3600	6, 24 and 90	56C/48Y
UM180-C	30	1-2	3600	6, 24 and 90	182C/143TC 184C/145TC
UM210-C	95	3-5	3600	6, 24 and 90	213/182TC 215C/184TC

For standard NEMA frame dimensions, see page 187.

Only 50 and 180 sizes of the models listed will be converted to the new GEN 2 design.
210 size will continue to be offered in the original design and will not be converted.

UM-2030-C Brake/Input Clutch Combination
UM-2030-C-B Brake/Input Clutch Combination–Base Mounted



Note: Mounting base is optional and must be ordered separately.

Dimensions (Blue shaded areas indicate GEN 2 design)

Size	A	B	C	D	E	F	G	H	J	K	L	M
50	9.492	5.390	2.062	2.040	.625	1.600	2.267	6.750	5.516	2.180	3.250	4.426
180	9.632	5.390	2.121	2.121	.875	1.600	2.267	6.750	5.516	2.180	3.250	4.426
210	12.969	7.719	2.500	2.500	1.125	1.812	2.267	9.250	6.859	2.180	3.250	5.766

Size	N	P	R	S	T	U	V	W	X	Y
50	0°	3/16 x 3/16	4.000	.800	5.680	.329	5.000	.406	6.000	3.500
180	0°	3/16 x 3/16	4.000	.750	5.680	.329	5.000	.406	6.625	4.500
210	65°	1/4 x 1/4	6.000	.750	8.260	.437	7.750	.534	9.000	5.250

For standard NEMA frame dimensions, see page 187.

Specifications (Blue shaded areas indicate GEN 2 design)

UniModule Size	Static Torque lb. ft.	Horsepower	Max. RPM	Voltage DC	NEMA Frame Size
UM50-C	16	1/4-3/4	3600	6, 24 and 90	56C/48Y
UM180-C	30	1-2	3600	6, 24 and 90	182C/143TC 184C/145TC
UM210-C	95	3-5	3600	6, 24 and 90	213/182TC 215C/184TC

For standard NEMA frame dimensions, see page 187.

Only 50 and 180 sizes of the models listed will be converted to the new GEN 2 design.
210 size will continue to be offered in the original design and will not be converted.

Contamination-Proof Design

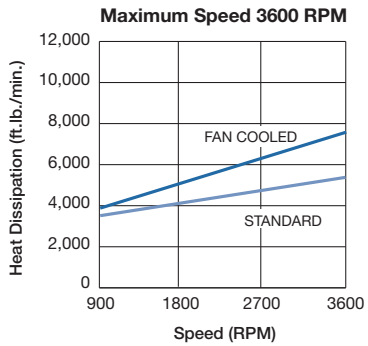
Clean, quiet, operation. Nothing can get in, nothing can get out. Enclosed design eliminates damage to the working components. Prevents friction wear particles from escaping.

Totally Enclosed Version

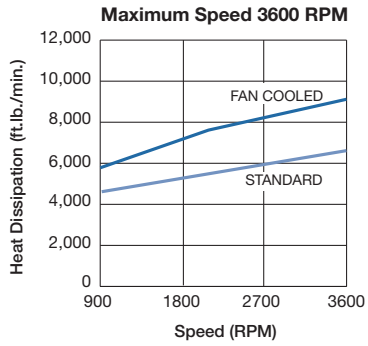
The Enclosed Electro Module packages the hardworking components from EM products into a totally enclosed housing. This rugged housing keeps wear particles in and contaminants out and provides quiet operation. When enclosed, units are suitable for most industrial applications and tolerate infrequent, light washing.

- Keeps contaminants out
- Keeps wear particles in
- Quiet operation
- Finned for heat dissipation
- UL listed when optional conduit box is installed

EUM-50



EUM-100/180



To convert any Gen 2 Electro Module 50, 100, and 180 sizes to an enclosed model purchase optional Cover Kit

(part number 5370-101-076)

(part number 5370-101-082 for brake only)

Enclosed Electro Module (10-20, 10-40, 20-30, 30-40)

An optional cover kit (part number 5370-101-076) can be purchased separately to enclose the open vents in the housing. Each cover kit includes two vent covers, two gaskets and four screws needed to convert a vented Electro Module to an enclosed design (non-washdown).

Enclosed Electro Module-Brake Only (20 or 20MB)

An optional cover kit (part number 5370-101-082) can be purchased separately to enclose the open vents in the housing and a cover plate to close off the back of the module. Each cover kit includes two vent covers, two gaskets, four screws and one cover plate needed to convert a vented Electro Module 20 to an enclosed design (non-washdown).

NOTE:

Enclosed option is not available for existing 210 & 215 size Electro Modules (EM)