

# Performance Data



## Energy Efficient (EFF1)

# 400V – 50Hz / EE

Inverter duty • TEFC

Synchronous speed 1500rpm @ 50Hz • 4-pole • Three-phase

Voltages: 400V (380-420) – 50Hz • 1.0 Service Factor

Continuous Duty • 40°C Ambient • up to 3300ft Elevation

Class B temperature rise • Class F insulation



Motor Type	Power Pn		Nn Full-load [rpm]	In Full-Load Current 400V * a) (380-420V) [A]	Ia/In [%]	Code Letter	Torque Tn [lb-in]	Ta/Tn	Tk/Tn	pf	Eff Full load [%]	Eff 75% load [%]	Eff Class	Jm Inertia [lb-ft <sup>2</sup> ]
	[hp]	[kW]												
90SH/4	1.5	1.1	1430	2.51	520	G	64.6	2.8	3.1	0.75	84.0	85.1	EFF1	0.082
90LH/4	2	1.5	1435	3.59	560	H	87.7	3.6	3.7	0.71	85.0	85.3	EFF1	0.093
100LH/4	3	2.2	1465	4.88	685	J	126	3.3	4.0	0.74	87.5	87.9	EFF1	0.17
112SH/4	4	3	1460	6.7	715	K	172	3.25	4.2	0.72	87.4	90.0	EFF1	0.28
112MH/4	5.4	4	1455	8.9	685	J	224	3.4	4.1	0.74	88.3	90.2	EFF1	0.30
132SH/4	7.5	5.5	1470	12	750	K	314	3.8	4.15	0.73	90.1	90.5	EFF1	0.75
132MH/4	10	7.5	1470	15.5	665	J	428	2.9	3.5	0.77	90.8	91.0	EFF1	0.84
160MH/4	15	11	1460	20.5	690	H	632	2.7	3.2	0.85	91.5	92.0	EFF1	1.23
160LH/4	20	15	1460	27.5	700	H	861	2.9	3.3	0.86	92.0	92.3	EFF1	1.35
180MH/4	25	18.5	1465	34.5	700	H	1063	2.5	3.2	0.84	92.5	93.0	EFF1	3.56
180LH/4	30	22	1465	40.5	730	H	1266	2.6	3.4	0.84	93.0	93.4	EFF1	4.51
200LH/4	40	30	1465	53	700	H	1722	2.6	3.2	0.87	93.5	94.0	EFF1	7.60
225SH/4	50	37	1480	67	720	H	2100	2.6	3.0	0.85	94.0	94.4	EFF1	9.5
225MH/4	60	45	1480	80	720	H	2548	2.6	3.0	0.86	94.5	94.7	EFF1	11.6
250MH/4	75	55	1485	96	740	H	3110	2.6	3.0	0.87	95.0	95.2	EFF1	20.4
280SH/4	100	75	1485	132	730	H	4235	2.5	3.0	0.86	95.2	95.3	EFF1	36.3
280MH/4	125	90	1485	158	740	H	5088	2.5	3.0	0.86	95.6	95.6	EFF1	43.4

a) Motors 10 hp(7.5 kW) and below are rated 230 /400Y – volts, motors above 10 hp(7.5 kW) are rated 400 /690Y-volts

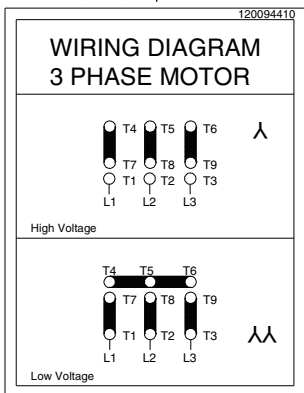
Pn	-	Full load power
Nn	-	Full load speed
In	-	Full load current
Ia	-	Locked-rotor current
Ia/In	-	Locked-rotor current ratio (%)
Tn	-	Full-load torque
Ta	-	Locked-rotor torque

Ta/Tn	-	Locked-rotor torque ratio
Tk	-	Break-down torque
Tk/Tn	-	Break-down torque ratio
pf	-	Power factor
Eff	-	Normal efficiency
Jm	-	Motor inertia

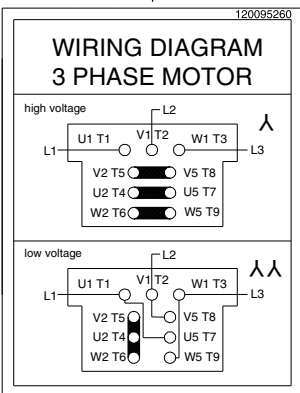


# Connection Diagrams

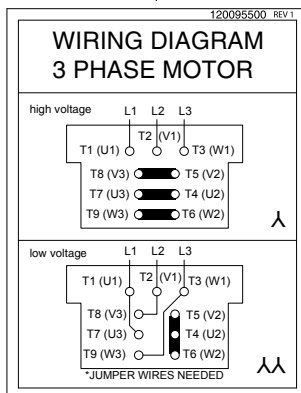
Frames 63-132  
230 / 460V, 60Hz, 3Ø | 200 / 400V, 50Hz, 3Ø  
190 / 380V, 60Hz, 3Ø



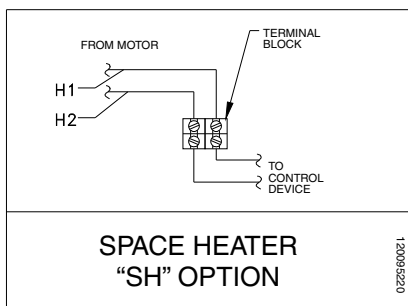
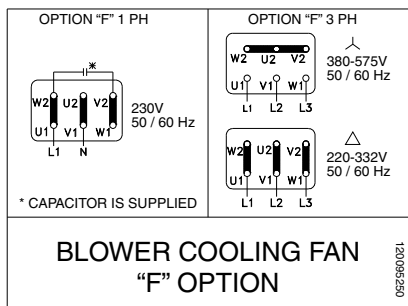
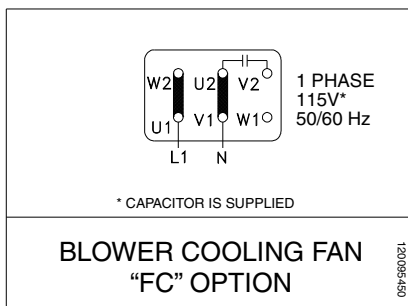
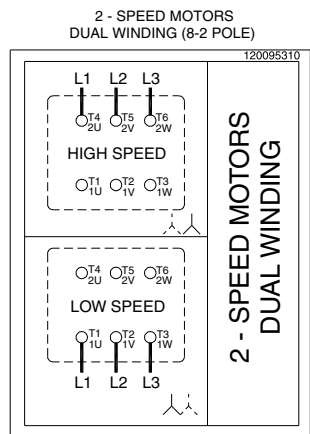
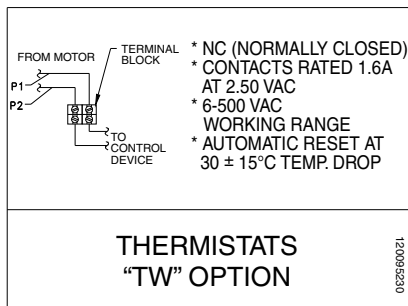
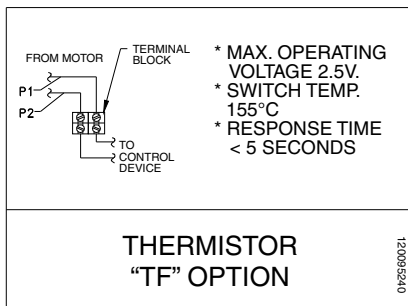
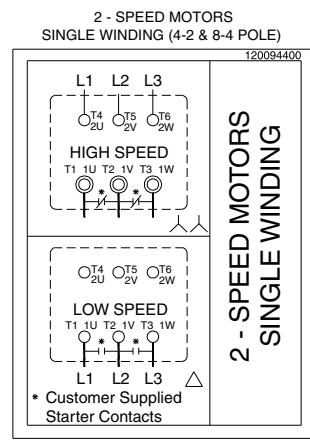
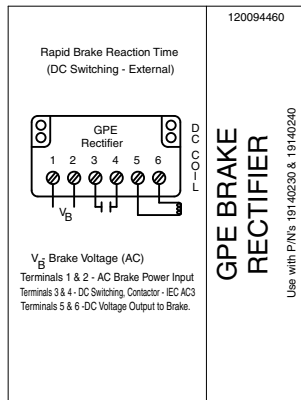
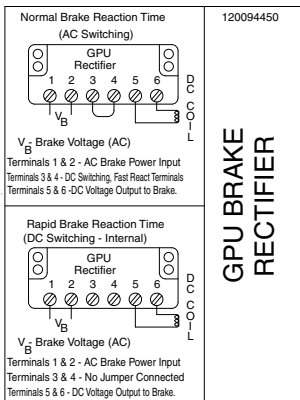
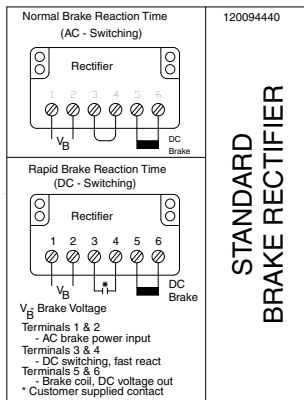
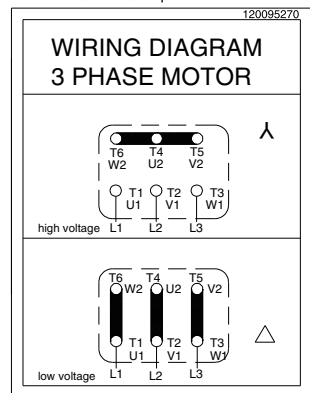
Frames 160 +  
230 / 460V, 60Hz, 3Ø | 200 / 400V, 50Hz, 3Ø  
190 / 380V, 60Hz, 3Ø



Frames 160 +  
230 / 460V, 60Hz, 3Ø | 200 / 400V, 50Hz, 3Ø  
190 / 380V, 60Hz, 3Ø



460 / 800V, 60Hz, 3Ø | 230 / 400V, 50Hz, 3Ø  
208 / 360V, 60Hz, 3Ø | 400 / 690V, 50Hz, 3Ø  
332 / 575V, 60Hz, 3Ø



## Options



### Quiet Brake Release (NRB1)

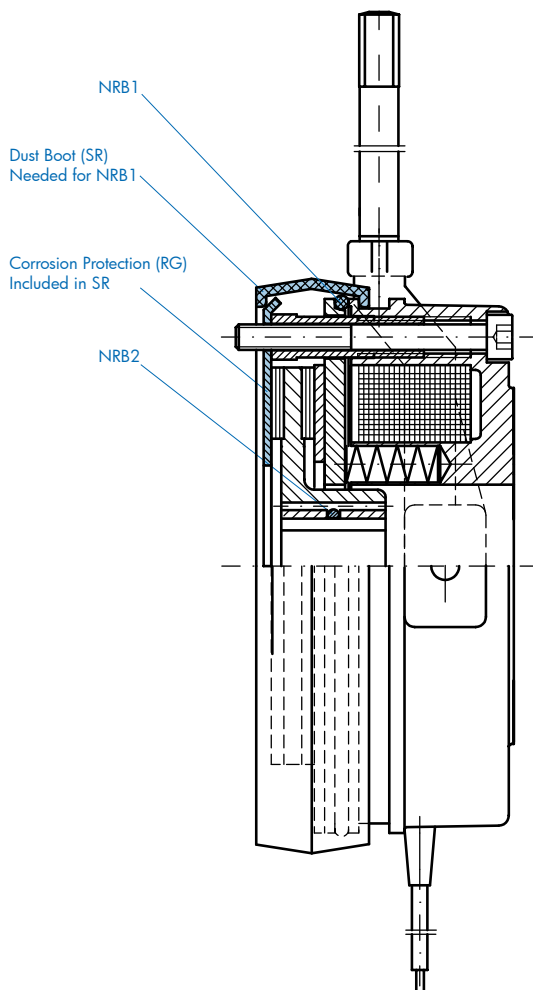
Build

To reduce the noise of the brake release, an o-ring can be placed between the brake coil body and the armature plate (stationary disc). The o-ring dampens the impact caused by the armature plate hitting the brake coil body during the release process. When ordering NRB1, the SR (Dust Boot) option is required. The SR option also includes the RG stainless steel corrosion plate.

### Quiet Brake Motor Operation (NRB2)

Build

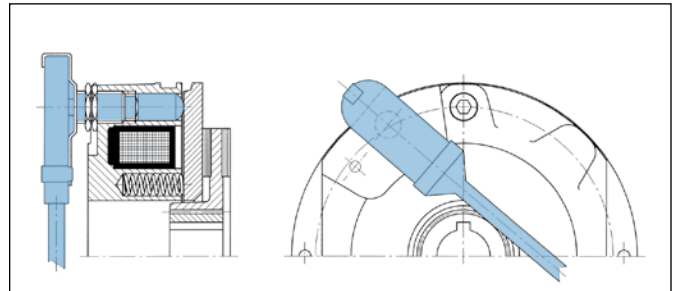
Noise due to vibration in the brake components is possible during motor operation particularly with variable frequency drive or single phase motor operation. To reduce this vibration the brake can be constructed with an o-ring between the brake carrier hub and the armature plate. This o-ring will prevent the clattering caused by the rapid micro speed changes in the motor caused by inverter or single phase operation.



### Micro Switch (MIK)

Build

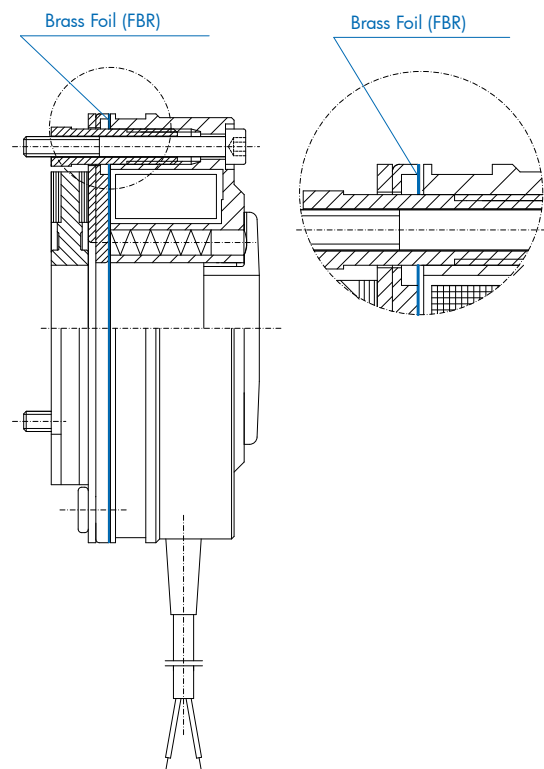
The micro switch monitors the release state of the brake and can be wired into external control circuitry to provide additional safety. The switch can also be used to detect certain brake service problems including excessive brake wear.



### Brass Foil (FBR)

Build

NORD brakes can be fitted with a brass foil in between the armature plate and the brake coil body. The foil acts as a magnetic resistance to weaken the brake coil's magnetic attraction to the armature plate. The weaker magnetic attraction between the armature plate and the brake coil will provide faster brake reaction (stopping) times. The brake release (start) times will be increased. The brass foil is normally used in combination with the fast GP rectifiers in over excitation mode.



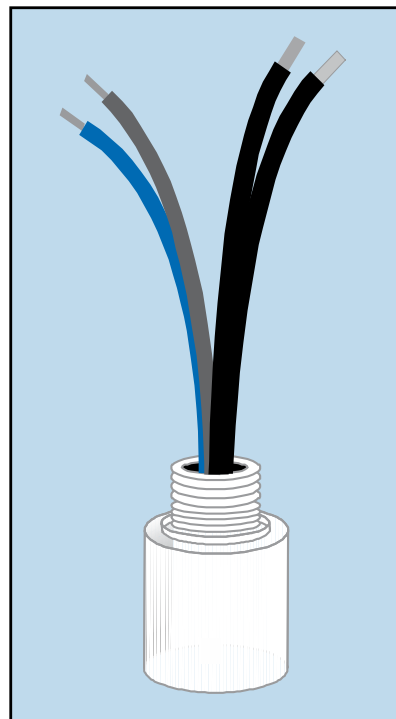


# Options

## Current Sensing Relay (IR)

Mod

The current sensing relay, is used to achieve a fast brake engagement (stopping) without the use of external control equipment or additional wiring. The relay is mounted directly on the conduit box, and is powered from the motor's terminal block. The power leads for the relay replace one of the brass jumper bars on the terminal block of any single speed motor. The switch leads are connected to terminals 3 and 4 of the rectifier. When the power to the motor is shut off, the IR relay opens the brake circuit on the DC side which allows the brake to de-magnetize quickly.



	<b>CAUTIONS</b>	
<b>Requirements</b>		
<ul style="list-style-type: none"> <li>• Brake must be powered from the motor's terminal block (not seperately powered)</li> <li>• Motor must be a single speed and should not be powered by a frequency inverter or soft starter.</li> </ul>		

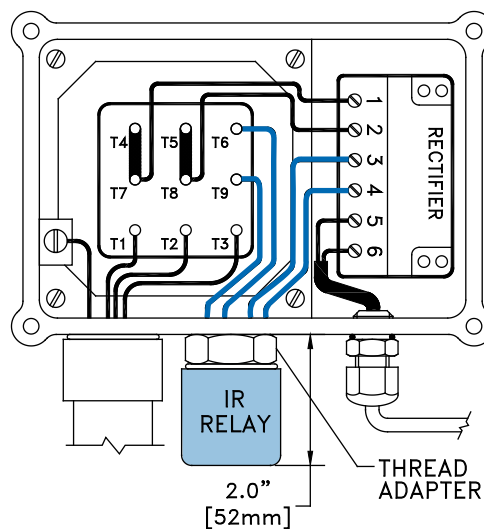
### Ratings

Part number	18556010	18556020
Motor Frame Sizes	*63S - 180M	180L - 225M
AC Input Current - black/white wires	25A <sub>AC</sub> 75 A <sub>AC</sub> - 0.2 s	50 A <sub>AC</sub> 75 A <sub>AC</sub> - 0.2 s
DC Brake Current - red/blue wires	2.0 A <sub>DC</sub>	2.0 A <sub>DC</sub>
Additional Brake Setting Delay	18 ms	18 ms
Ambient Temperature	- 40 to 75 °C - 40 to 167 °F	- 40 to 75 °C - 40 to 167 °F
Enclosure Rating	IP65	IP65

\* For 180MX motor frame at 230/460V use part number 18556020

### Connection Notes

Rectifier			IR-Relay Wires to Rectifier	
Model Type	Part Number	Design	Red	Blue
GVE20L	19141000	Full-wave	3	4
GHE40L	19141010	Half-wave	4	3
GHE50L	19141020	Half-wave	4	3
GPE20L	19140230	Push-hybrid	4	3
GPE40L	19140240	Push-hybrid	4	3



### Conduit Box Thread Adapter

Thread	Motor Frame	Part Number	O-Ring
M20	63-71	18542006	25501615
M25	80-90	18522253	25501615
M32	100-132	18522320	25501615
M40	160-180	18522400 & 18522253	25501615

## Options



### Double Brakes (DBR)

Build

Some applications require two independent brakes to meet industry safety guidelines.

### Double Brakes for Theatrical Applications

Many international standards for braking systems used on theatre hoists mandate the use of brakes that automatically set when power is removed. Redundancy is also required with the system brakes. If one brake fails, the other brake can still operate the system by running independently and parallel to each other. NORD DBR (2xBRE) brake systems are designed to meet these requirements. The NORD double brakes are also designed for quiet operation < 50dB(A).

Some safety standards require that the load brake hold 1.25 times the rated load at test. We recommend selecting the brake for approximately 1.6 to a maximum of 2.0 times the required operating torque for each brake.

The NORD double theatre brakes do not need to be worn-in and will achieve their full braking torque initially.

Two brake rectifiers are required for operating a double brake systems. These will be provided as loose parts and are normally mounted in the customer's control panel.

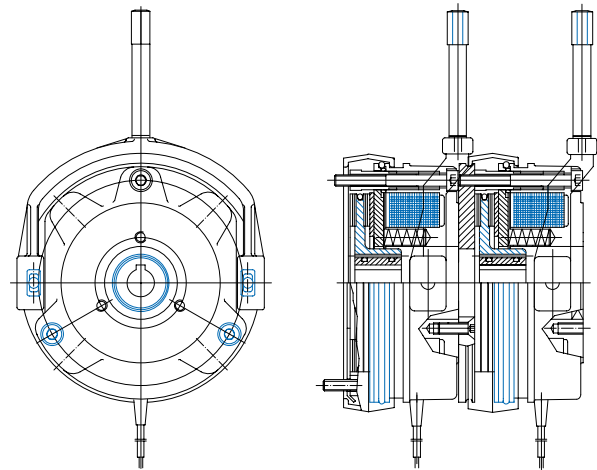
The double brake option will add motor length compared to the single brake.



### CAUTIONS



- NORD recommends delayed operation of one of the brakes. If the brakes are operated simultaneously, the combined torques may result in excessive torque for the gear unit or other mechanical system elements. If the brakes are set at the same time even in an E-stop condition, the gear units must be sized to handle this increased torque.



BRAKES

Motor	Brake	7 Springs		5 Springs		4 Springs	
		[Nm]	[lb-ft]	[Nm]	[lb-ft]	[Nm]	[lb-ft]
63S/L	DBR6	2 x 6	2 x 4.4	2 x 4	2 x 3	2 x 3.5	2 x 2.6
71S/L	DBR6	2 x 6	2 x 4.4	2 x 4	2 x 3	2 x 3.5	2 x 2.6
80S	DBR6	2 x 6	2 x 4.4	2 x 4	2 x 3	2 x 3.5	2 x 2.6
80L	DBR12	2 x 12.5	2 x 9.2	2 x 8.5	2 x 6.3	2 x 7	2 x 5.2
90S	DBR12	2 x 12.5	2 x 9.2	2 x 8.5	2 x 6.3	2 x 7	2 x 5.2
90L	DBR25	2 x 25	2 x 18.4	2 x 17.5	2 x 12.9	2 x 14	2 x 10.3
100L	DBR25	2 x 25	2 x 18.4	2 x 17.5	2 x 12.9	2 x 14	2 x 10.3
100LA/4	DBR50	2 x 50	2 x 37	2 x 35	2 x 26	2 x 28	2 x 20.7
112M	DBR50	2 x 50	2 x 37	2 x 35	2 x 26	2 x 28	2 x 20.7
132S	DBR75	2 x 75	2 x 55	2 x 52	2 x 38	2 x 42	2 x 31
132M	DBR125	2 x 125	2 x 92	2 x 89	2 x 66	2 x 70	2 x 52
160M	DBR187	2 x 187	2 x 138	2 x 132	2 x 97	2 x 107	2 x 79
160L	DBR187	2 x 187	2 x 138	2 x 132	2 x 97	2 x 107	2 x 79
180MX/LX	DBR300	2 x 300	2 x 221	2 x 225	2 x 166	2 x 150	2 x 111
200L	DBR500	2 x 500	2 x 369	2 x 375	2 x 277	2 x 250	2 x 184