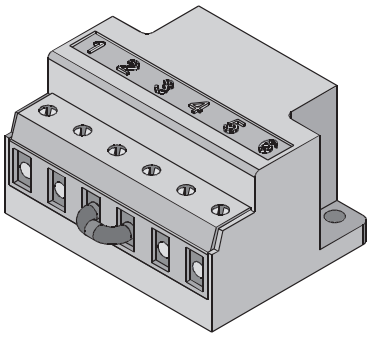
FAST ACTING BRAKE RECTIFIERS (GPE, GPU & PMG)



General Instructions

This manual provides general operating instructions for the "Fast Acting Brake Rectifiers type "GPE, GPU, and PMG" that are commonly offered by NORD in addition to the standard brake control rectifiers. Please feel free to contact NORD with any questions concerning the supplied brake rectifiers and brake components.

Safety Notice

Only qualified personnel should attempt installation, operation and maintenance of NORD brakes and brake rectifiers. If you have a question about a procedure or are uncertain about any detail, seek clarification and DO NOT PROCEED.

⚠ DANGER

- This equipment contains high electrical voltage. Remove and lockout all power from the electric motor and brake before any work is completed on the brake.
- The user is responsible for conforming to all national and local electrical and safety codes. Wiring practices, proper grounding, disconnects, and over current protection, are of particular importance.
- Make certain the load is supported when servicing the brake. Removing power from the brake or removing the brake from the motor will release the load, which may cause severe injury or death.
- Failure to follow proper procedures and precautions may result in severe bodily injury or death.

Brake Control Rectifiers

NORD brake control rectifiers convert AC voltage to DC voltage. Rectifiers are used because most applications require AC voltage to power the motor, but DC power is required to power the brake and DC power is not typically available. NORD brakemotors typically include the rectifier located inside the terminal box.

Rectifier Advantages

- Individual power source for each brake.
- Compact size, mounted inside the terminal box.
- Multiple types, voltage options and release/engagement modes available.
- Mountable in a separate control cabinet.
- Integral protection against voltage spikes.

Standard Rectifier Types

Full-Wave Rectifier

A rectifier in which both the positive and negative half-cycles of the AC input signal are rectified to produce a uni-directional DC current supply to the load or the brake. The output voltage is 90% of the input voltage ($V_{DC} = 0.90 \times V_{AC}$).

Half-Wave Rectifier

A rectifier in which only alternate half-cycles of the AC input signal are rectified to produce a uni-directional DC current supply to the load or the brake. The output voltage is 45% of the input voltage ($V_{DC} = 0.45 \times V_{AC}$).

Dual-Wave Rectifier

A rectifier that can be wired as either a full-wave rectifier or a half-wave rectifier depending upon how it is connected to the AC input signal.

IMPORTANT NOTE

This manual provides general operating instructions for NORD brakes with Fast-Acting brake Rectifiers. For additional brake and brake rectifier information please reference User Manual U35000.

Fast-Acting or Push-Hybrid Rectifiers [GPE, GPU & PMG]

A push-hybrid rectifier or fast-acting brake rectifier provides an initial "push" in the form of a timed full-wave brake-release function, which is then followed by a continuous half-wave brake-holding function. There are two ways to apply these rectifiers as follows:

- "Overexcitation" of the brake coil provides faster brake release or improved cycling capacity. The DC voltage of the brake coil is determined based upon using a half-wave rectifier. The output voltage is 45% of the input voltage ($V_{DC} = 0.45 \times V_{AC}$).
- "Reducer-Power Holding" of the brake coil maintains the brake in a released state by using only 25% of the power needed for the initial brake release. This results in very fast brake stopping. The DC voltage of the brake coil is determined based upon using a full-wave rectifier. The output voltage is 90% of the input voltage. ($V_{DC} = 0.90 \times V_{AC}$).

NOTICE

In order to prevent rapid wear, the PMG 500 rectifier is required when utilizing the larger 800 Nm (590 lb-ft) and 1200 Nm (885 lb-ft) twin-rotor brakes. The PMG500 rectifier is wired to "overexcite" the brake during its initial release.

FAST ACTING BRAKE RECTIFIERS (GPE, GPU & PMG)

Push-Hybrid Rectifiers External DC Switching (GPE)

Like the standard NORD brake control rectifiers, NORD's fast acting brake control rectifiers convert AC voltage to DC voltage. The "Fast Acting Brake Rectifiers"are utilized to improve brake performance and are often recommended in order to provide shorter brake release times or to provide faster stopping times.

The fast acting rectifiers are a two-stage "push" design. When power is first applied these rectifiers operate like a full-wave rectifier and then after a relatively short period of time they act like a half-wave rectifier. The GPE type rectifiers start out in full-wave mode when power is first applied and then after approximately 250 ms they switch to half-wave mode.

GPE rectifiers were designed for external control of the brake's DC-switching. GPE rectifiers are primarily used in across-the-line applications where the brake power is supplied by the motor terminals but they may also be used in situations where the brake power is supplied separately to the brake rectifier.

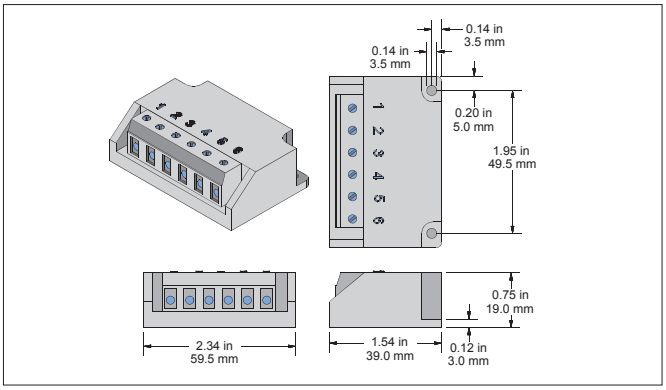
There are two ways to apply the fast acting rectifiers:

- The first method, known as "Overexcitation," provides fast brake release. The brake coil is selected like a half-wave system (45% of the AC supply voltage).
- The second method, known as "Reduced Power Holding," provides very fast brake stopping. The brake coil is selected like a full-wave system (90% of the AC supply voltage).

IMPORTANT NOTE

If the motor is connected to a frequency inverter, soft start, or is a two-speed motor, then seperate AC power must be supplied to the brake rectifier.

GPE Rectifier Dimensions



Ratings & Part Numbers

Model Type	GPE20L	GPE40L
Part Number	19140230	19140240
Protection (electronics)	Coated	Coated
Color	Black	
Input Voltage (V_{AC})	200V-275V	380V-480V
Output Voltage (V_{DC})	(V_{DC}=0.45 x V_{AC}) - As Half-Wave (V_{DC}=0.90 x V_{AC}) - As Full-Wave	
Rated Current @ 40°C	0.7 A	0.7A
Rated Current @ 75°C	0.5 A	0.5A
Temperature Range	-20°C to 75°C	
DC-Switching via	External Contact or IR Relay	

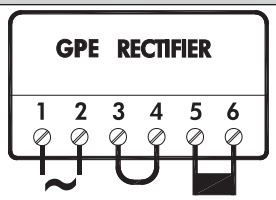
Braking Method

Braking Method	Break Release (Start)	Brake Engage (Stop)	Power Source
40	Standard	Very Fast (Reduced Power Holding)	Motor terminals
30	Fast (Overecitation)	Standard (AC Switching)	Motor terminals
35	Fast (Overecitation)	Fast (DC Switching)	Motor terminals

Basic Connection (AC & DC Switching)

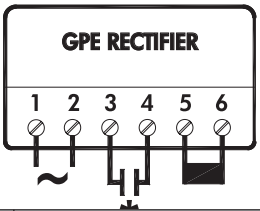
The GPE brake system can be connected for standard stopping (AC-Switching), fast stopping (DC-Switching) and very fast stopping (Reduced power holding & DC-Switching). Fast brake release can also be achieved by selecting a different brake coil combination.

STANDARD STOPPING (AC-SWITCHING)



1 & 2	3 & 4	5 & 6
AC BRAKE VOLTAGE	JUMPER	DC BRAKE

FAST & VERY FAST STOPPING (DC-SWITCHING)



1 & 2	3 & 4	5 & 6
AC BRAKE VOLTAGE	NORMALLY OPEN CONTACT	DC BRAKE

* The normally open contact/s (NO) is not supplied by NORD it must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated at IEC AC3.

FAST ACTING BRAKE RECTIFIERS (GPE, GPU & PMG)

Push-Hybrid Rectifiers Integrated DC Switching (GPU)

Like the standard NORD brake control rectifiers, NORD's fast acting brake control rectifiers convert AC voltage to DC voltage. The "Fast Acting Brake Rectifiers"are utilized to improve brake performance and are often recommended in order to provide shorter brake release times or to provide faster stopping times.

The fast acting rectifiers are a two-stage "push" design. When power is first applied these rectifiers operate like a full-wave rectifier and then after a relatively short period of time they act like a half-wave rectifier. The GPU rectifiers start out in full-wave mode when power is first applied and then after approximately 250 ms they switch to half-wave mode.

GPU rectifiers were designed for integrated control of the brake's DC-switching and are voltage sensing. GPU rectifiers are primarily used in applications where there is a frequency inverter, soft start, or two-speed motor. Seperate AC power must be supplied to the brake rectifier.

There are two ways to apply the fast acting rectifiers:

- The first method, known as "Overexcitation," provides fast brake release. The brake coil is selected like a half-wave system (45% of the AC supply voltage).
- The second method, known as "Reduced Power Holding," provides very fast brake stopping. The brake coil is selected like a full-wave system (90% of the AC supply voltage).

IMPORTANT NOTE

The GPU rectifier may also be utilized for across-the-line applications; however it must always be powered separate from the motor and have its own pair of contactors or starters. It is unadvisable to use the motor terminal block to supply the GPU rectifier's AC power due to the motor's slow energy dissipation when switched off.

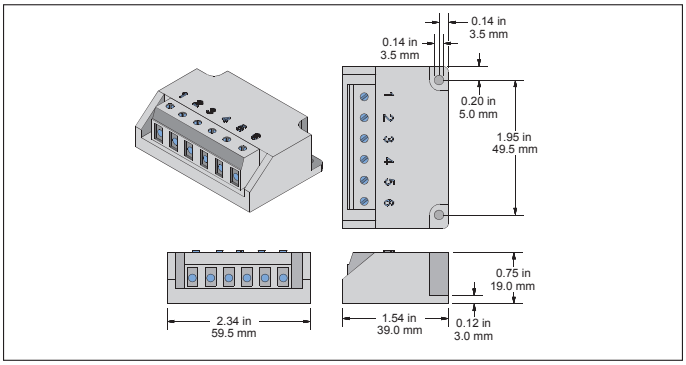
IMPORTANT NOTE

If the motor is connected to a frequency inverter, soft start, or is a two-speed motor, then seperate AC power must be supplied to the brake rectifier.

Braking Method

Braking Method	Break Release (Start)	Brake Engage (Stop)	Power Source
55	Standard	Very Fast (Reduced Power Holding)	Seperate power
45	Fast (Overecitation)	Standard (AC Switching)	Seperate power
50	Fast (Overecitation)	Fast (DC Switching)	Seperate power

GPU Rectifier Dimensions



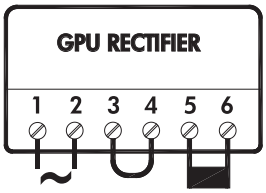
Ratings & Part Numbers

Model Type	GPU20L	GPU40L
Part Number	19140090	19140170
Protection (electronics)	Coated	Coated
Color	Black	
Input Voltage (V_{AC})	200V-275V	380V-480V
Output Voltage (V_{DC})	(V_{DC}=0.45 x V_{AC}) - As Half-Wave (V_{DC}=0.90 x V_{AC}) - As Full-Wave	
Rated Current @ 40°C	0.7A	0.7A
Rated Current @ 75°C	0.5A	0.5A
Temperature Range	-20°C to 75°C	
DC-Switching via	Internal Activation	

Basic Connection (AC & DC Switching)

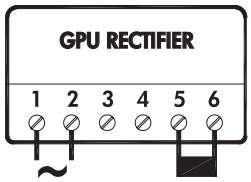
The GPU brake system can be connected for standard stopping (AC-Switching), fast stopping (DC-Switching) and very fast stopping (Reduced power holding & DC-Switching). Fast brake release can also be achieved by selecting a different brake coil combination.

STANDARD STOPPING AC-SWITCHING



1 & 2	3 & 4	5 & 6
AC BRAKE VOLTAGE	JUMPER	DC BRAKE

FAST & VERY FAST STOPPING DC-SWITCHING



1 & 2	3 & 4	5 & 6
AC BRAKE VOLTAGE	-	DC BRAKE

FAST ACTING BRAKE RECTIFIERS (GPE, GPU & PMG)

Push-Hybrid Rectifiers External DC Switching (PMG)

Like the standard NORD brake control rectifiers, NORD's fast acting brake control rectifiers convert AC voltage to DC voltage. The "Fast Acting Brake Rectifiers"are utilized to improve brake performance and are often recommended in order to provide shorter brake release times or to provide faster stopping times.

The fast acting rectifiers are a two-stage "push" design. When power is first applied these rectifiers operate like a full-wave rectifier and then after a relatively short period of time they act like a half-wave rectifier. The PMG type rectifiers start out in full-wave mode when power is first applied and then after approximately 250 ms they switch to half-wave mode.

PMG rectifiers were designed for external control of the brake's DC-switching. PMG rectifiers are primarily used in across-the-line applications where the brake power is supplied by the motor terminals, but they may also be used in situations where the brake power is supplied separately from the brake rectifier.

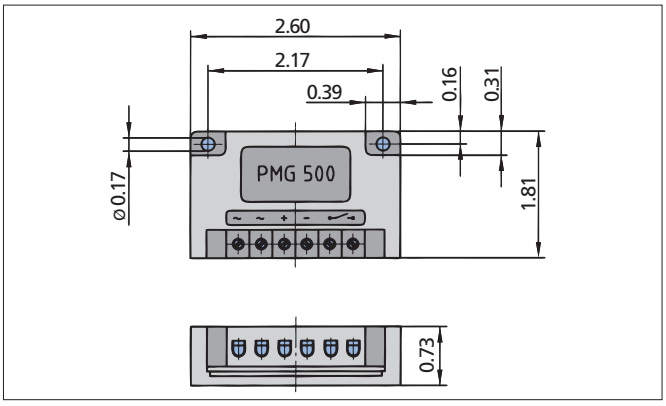
There are two ways to apply the fast acting rectifiers:

- The first method, known as "Overexcitation," provides fast brake release. The brake coil is selected like a half-wave system (45% of the AC supply voltage).
- The second method, known as "Reduced Power Holding," provides very fast brake stopping. The brake coil is selected like a full-wave system (90% of the AC supply voltage).

IMPORTANT NOTE

If the motor is connected to a frequency inverter, soft start, or is a two-speed motor, then seperate AC power must be supplied to the brake rectifier.

PMG Rectifier Dimensions



Ratings & Part Numbers

Model Type	PMG 500
Part Number	19140200
Protection (electronics)	Coated
Color	Black
Input Voltage (V_{AC})	200-500V_{AC} +/- 10%
Output Voltage (V_{DC})	(V_{DC}=0.45 x V_{AC}) - As Half-Wave (V_{DC}=0.90 x V_{AC}) - As Full-Wave
Rated Current @ 40°C	4.0 A
Rated Current @ 75°C	2.8 A
Temperature Range	-15°C to 80°C
DC-Switching via	External Contact

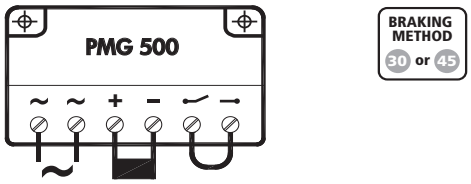
Braking Method

Braking Method	Break Release (Start)	Brake Engage (Stop)	Power Source
40	Standard	Very Fast (Reduced Power Holding)	Motor terminals
30	Fast (Overecitation)	Standard (AC Switching)	Motor terminals
35	Fast (Overecitation)	Fast (DC Switching)	Motor terminals
55	Standard	Very Fast (Reduced Power Holding)	Seperate power
45	Fast (Overecitation)	Standard (AC Switching)	Seperate power
50	Fast (Overecitation)	Fast (DC Switching)	Seperate power

Basic Connection (AC & DC Switching)

The PMG brake system can be connected for standard stopping (AC-Switching), fast stopping (DC-Switching) and very fast stopping (Reduced power holding & DC-Switching). Fast brake release can also be achieved by selecting a different brake coil combination.

STANDARD STOPPING (AC-SWITCHING)



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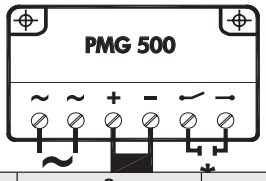
AC BRAKE VOLTAGE	DC BRAKE	JUMPER

FAST & VERY FAST STOPPING (DC-SWITCHING)



~ & ~	+ & -	⏜ & ⊸
AC BRAKE VOLTAGE	DC BRAKE	NORMALLY OPEN CONTACT

* The normally open contact/s (NO) is not supplied by NORD it must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated at IEC AC3.

FAST ACTING BRAKE RECTIFIERS (GPE, GPU & PMG)

Brake Times & Electrical Selection

Brake timing performance is critical in selecting the optimal brake system. NORD brakes can provide exceptional performance in terms of the release (start) times and engagement (stop) times. Use the following guidelines in order to select the correct brake control components and connections.

1) Determine if the brake needs to be wired directly from the motor terminal block or powered by a separate source.

- If you are using a frequency inverter, soft-start or a two speed motor you will need to supply the rectifier from a separate power source.

- If the motor is powered direct across-the-line the rectifier power can be supplied from the motor's terminal block.

2) What type of performance do I need?

- Is the standard brake performance OK?

- Is a higher performance required for fast brake release or very fast brake stopping?

3) Determine the brake supply voltage and check the rectifier compatability using the table on the page 6.

Selection Suggestions

When Fast or Very Fast Stopping is Recommended

Any applications that require quick stops and positive action at stand-still

Recommended Applications

- conveyors and inclined conveyors
- hoists and lifts
- bulk material handling equipment (bucket elevators, idler conveyor's).

⚠ *WARNING*

Hoisting (lifting/lowering) applications - must have the brake wired for fast response (DC-switching) Hoisting (lifting/lowering) applications must have the brake wired for fast response to protect against injury or damage to the equipment.

When Fast-Release is Recommended (Overexcitation)

Any application that is very high-cycling with frequent starts and stops. These applications require the brake to release very-quickly in order to avoid excessive heat build-up in the AC motor and brake coil.

Recommended Applications

- Index conveyors
- Diverters

Power Source	Brake Release (start)	Brake engagement (stop)	Braking Method *	Rectifier
Motor Terminal Block	Standard	Very Fast (Reduced power holding)	40	GPE or PMG 500
	Fast (Overexcitation)	Standard (AC switching)	30	GPE or PMG 500
	Fast (Overexcitation)	Fast (DC switching)	35	GPE or PMG 500
Seperate Power Source	Standard	Very Fast (Reduced power holding)	55	GPU or PMG 500
	Fast (Overexcitation)	Standard (AC switching)	45	GPU or PMG 500
	Fast (Overexcitation)	Fast (DC switching)	50	GPU or PMG 500

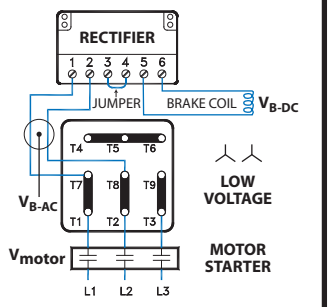
*** Braking methods referenced in connection diagrams on pages 7-11.**

FAST ACTING BRAKE RECTIFIERS (GPE, GPU & PMG)

Rectifier Supply Voltage (VAC)	Brake Coil Voltage (VDC)	Braking Method	Rectifier Type	Rectifier P/N	BRE 5	BRE 10	BRE 20	BRE 40	BRE 60	BRE 100	BRE 150	BRE 250	BRE 400	BRE 800	BRE 1200
208 (200-208)	105	30	GPE20L	19140230	X	X	X	X							
	105	30	PMG500	19140200					X	X	X	X	X	X	X
	105	35	GPE20L	19140230	X	X	X	X							
	105	35	PMG500	19140200					X	X	X	X	X	X	X
	180	40	GPE20L	19140230	X	X	X	X	X	X	X				
	180	40	PMG500	19140200								X	X	X	X
	105	45	GPU20L	19140090	X	X	X	X							
	105	45	PMG500	19140200					X	X	X	X	X	X	X
	105	50	GPU20L	19140090	X	X	X	X							
	105	50	PMG500	19140200					X	X	X	X	X	X	X
	180	55	GPU20L	19140090	X	X	X	X	X	X	X				
	180	55	PMG500	19140200								X	X	X	X
230 (220-240)	105	30	GPE20L	19140230	X	X	X	X							
	105	30	PMG500	19140200					X	X	X	X	X	X	X
	105	35	GPE20L	19140230	X	X	X	X	X	X	X				
	105	35	PMG500	19140200								X	X	X	X
	205	40	GPE20L	19140230	X	X	X	X	X	X	X				
	205	40	PMG500	19140200								X	X	X	X
	105	45	GPU20L	19140090	X	X	X	X							
	105	45	PMG500	19140200					X	X	X	X	X	X	X
	105	50	GPU20L	19140090	X	X	X	X							
	105	50	PMG500	19140200					X	X	X	X	X	X	X
	205	55	GPU20L	19140090	X	X	X	X	X	X	X				
	205	55	PMG500	19140200								X	X	X	X
332	180	30	GPE40L	19140240	X	X	X	X	X	X	X				
	180	30	PMG500	19140200								X	X	X	X
	180	35	GPE40L	19140240	X	X	X	X	X	X	X				
	180	35	PMG500	19140200								X	X	X	X
	180	45	GPU40L	19140170	X	X	X	X	X	X	X				
	180	50	GPU40L	19140170	X	X	X	X	X	X	X				
400 (380-415)	180	30	GPE40L	19140240	X	X	X	X	X	X	X				
	180	30	PMG500	19140200								X	X	X	X
	180	35	GPE40L	19140240	X	X	X	X	X	X	X				
	180	35	PMG500	19140200								X	X	X	X
	180	45	GPU20L	19140090	X	X	X	X	X	X	X				
	180	45	PMG500	19140200								X	X	X	X
	180	50	GPU20L	19140090	X	X	X	X	X	X	X				
	180	50	PMG500	19140200								X	X	X	X
460 (440-480)	205	30	GPE40L	19140240	X	X	X	X	X	X	X				
	205	30	PMG500	19140200								X	X	X	X
	205	35	GPE40L	19140240	X	X	X	X	X	X	X				
	205	35	PMG500	19140200								X	X	X	X
	205	45	GPU40L	19140170	X	X	X	X	X	X	X				
	205	45	PMG500	19140200								X	X	X	X
	205	50	GPU40L	19140170	X	X	X	X	X	X	X				
	205	50	PMG500	19140200								X	X	X	X

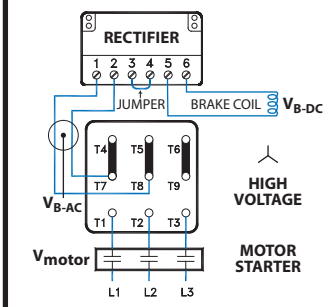
FAST ACTING BRAKE RECTIFIERS (GPE, GPU & PMG)

GP101A — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 30



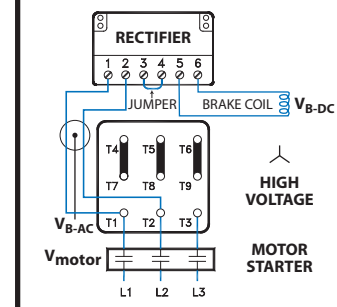
MOTOR	RECTIFIER	Vmotor	VB-AC	VB-DC
230YY/460Y	GPE20L	230 VAC	230 VAC	105 VDC

GP101B — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 30



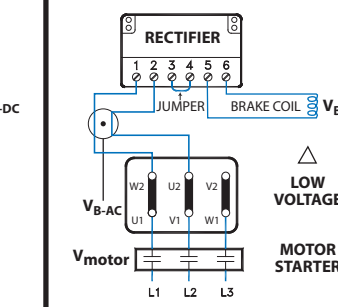
MOTOR	RECTIFIER	Vmotor	VB-AC	VB-DC
230YY/460Y	GPE20L	460 VAC	230 VAC	105 VDC

GP101C — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 30



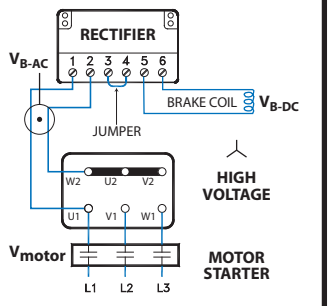
MOTOR	RECTIFIER	Vmotor	VB-AC	VB-DC
230YY/460Y	GPE40L	460 VAC	460 VAC	205 VDC

GP101D — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 30



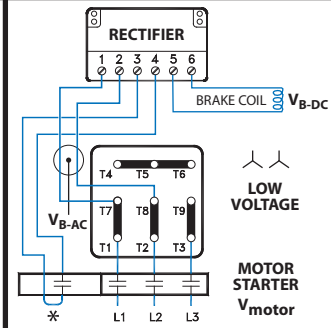
MOTOR	RECTIFIER	Vmotor	VB-AC	VB-DC
208Δ/360Y	GPE20L	208 VAC	208 VAC	105 VDC
230Δ/400Y	GPE20L	230 VAC	230 VAC	105 VDC
400Δ/690Y	GPE40L	400 VAC	400 VAC	180 VDC
460Δ/Y	GPE40L	460 VAC	460 VAC	205 VDC

GP101E — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 30



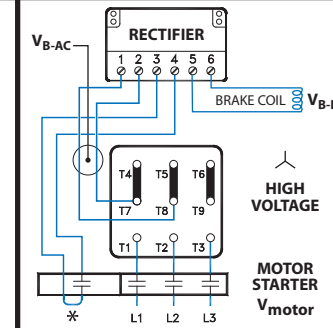
MOTOR	RECTIFIER	Vmotor	VB-AC	VB-DC
230Δ/400Y	GPE20L	400 VAC	230 VAC	105 VDC
332Δ/575Y	GPE40L	575 VAC	332 VAC	180 VDC

GP102A — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — FAST STOPPING (DC-SWITCHING) — 35



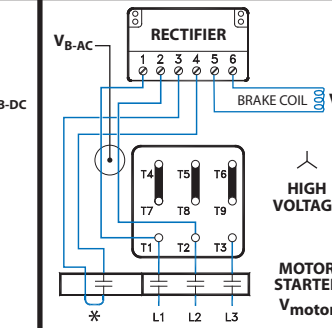
MOTOR	RECTIFIER	Vmotor	VB-AC	VB-DC
230YY/460Y	GPE20L	230 VAC	230 VAC	105 VDC

GP102B — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — FAST STOPPING (DC-SWITCHING) — 35



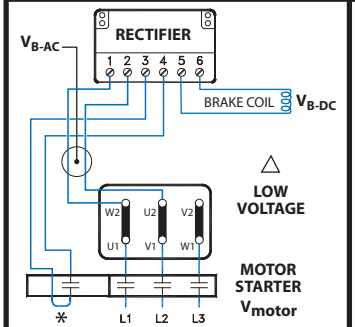
MOTOR	RECTIFIER	Vmotor	VB-AC	VB-DC
230YY/460Y	GPE20L	460 VAC	230 VAC	105 VDC

GP102C — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — FAST STOPPING (DC-SWITCHING) — 35



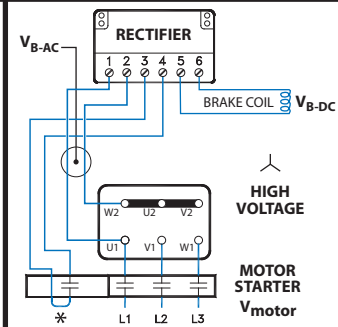
MOTOR	RECTIFIER	Vmotor	VB-AC	VB-DC
230YY/460Y	GPE40L	460 VAC	460 VAC	205 VDC

GP102D — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — FAST STOPPING (DC-SWITCHING) — 35



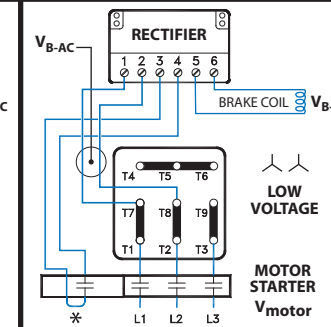
MOTOR	RECTIFIER	Vmotor	VB-AC	VB-DC
208Δ/360Y	GPE20L	208 VAC	208 VAC	105 VDC
230Δ/400Y	GPE20L	230 VAC	230 VAC	105 VDC
400Δ/690Y	GPE40L	400 VAC	400 VAC	180 VDC
460Δ/Y	GPE40L	460 VAC	460 VAC	205 VDC

GP102E — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — FAST STOPPING (DC-SWITCHING) — 35



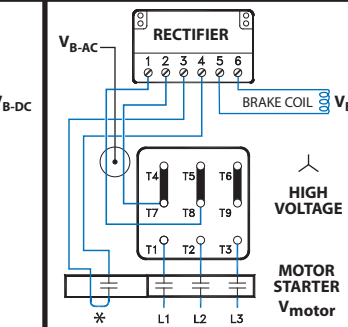
MOTOR	RECTIFIER	Vmotor	VB-AC	VB-DC
230Δ/400Y	GPE20L	400 VAC	230 VAC	105 VDC
332Δ/575Y	GPE40L	575 VAC	332 VAC	180 VDC

GP103A — POWERED FROM MOTOR TERMINAL BLOCK — STANDARD RELEASE — VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING) — 40



MOTOR	RECTIFIER	Vmotor	VB-AC	VB-DC
230YY/460Y	GPE20L	230 VAC	230 VAC	205 VDC

GP103B — POWERED FROM MOTOR TERMINAL BLOCK — STANDARD RELEASE — VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING) — 40



MOTOR	RECTIFIER	Vmotor	VB-AC	VB-DC
230YY/460Y	GPE20L	460 VAC	230 VAC	205 VDC

✱ The normally open contact/s (NO) is not supplied by NORD. It must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated IEC AC3.

= Braking Method

NORD Gear Limited
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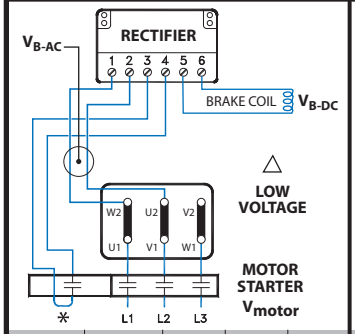
NORD Gear Corporation
Toll Free in the United States: 888.314.6673

FAST ACTING BRAKE RECTIFIERS (GPE, GPU & PMG)

GP103C — 40

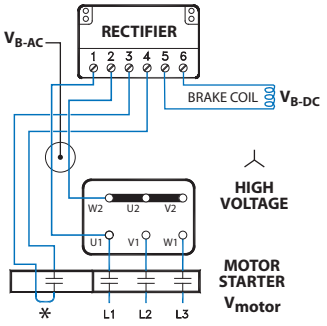
POWERED FROM MOTOR TERMINAL BLOCK
STANDARD RELEASE
VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
208Δ/360Y	GPE20L	208 VAC	208 VAC	180 VDC
230Δ/400Y	GPE20L	230 VAC	230 VAC	205 VDC

GP103D — 40

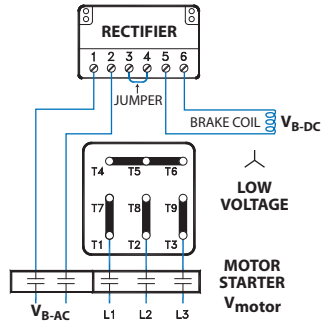
POWERED FROM MOTOR TERMINAL BLOCK
STANDARD RELEASE
VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230Δ/400Y	GPE20L	400 VAC	230 VAC	205 VDC

GP104A — 45

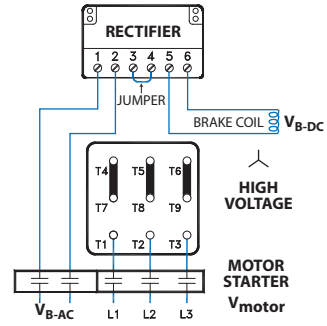
SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
NORMAL STOPPING (AC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	GPU20L	230 VAC	230 VAC	105 VDC

GP104B — 45

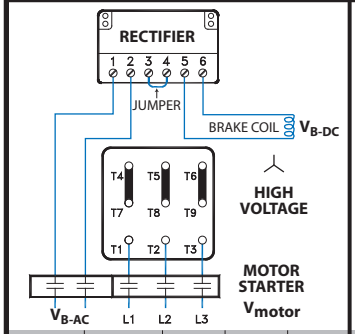
SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
NORMAL STOPPING (AC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	GPU20L	460 VAC	230 VAC	105 VDC

GP104C — 45

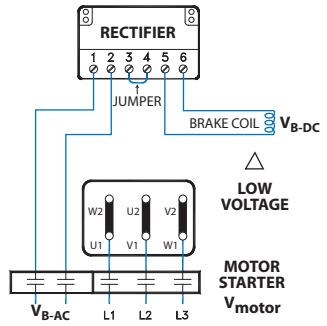
SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
NORMAL STOPPING (AC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	GPU40L	460 VAC	460 VAC	205 VDC

GP104D — 45

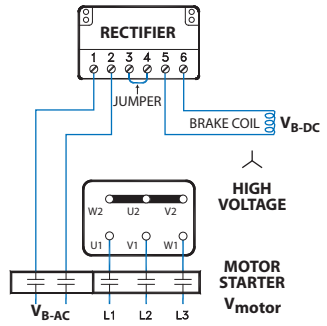
SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
NORMAL STOPPING (AC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
208Δ/360Y	GPU20L	208 VAC	208 VAC	105 VDC
230Δ/400Y	GPU20L	230 VAC	230 VAC	105 VDC
400Δ/690Y	GPU40L	400 VAC	400 VAC	180 VDC
460Δ/Y	GPU40L	460 VAC	460 VAC	205 VDC

GP104E — 45

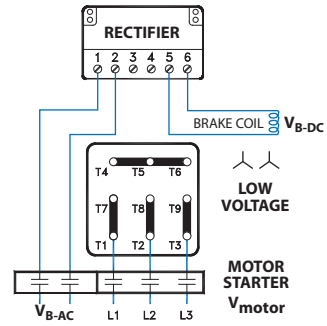
SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
NORMAL STOPPING (AC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230Δ/400Y	GPU20L	400 VAC	230 VAC	105 VDC
332Δ/575Y	GPU40L	575 VAC	332 VAC	180 VDC

GP105A — 50

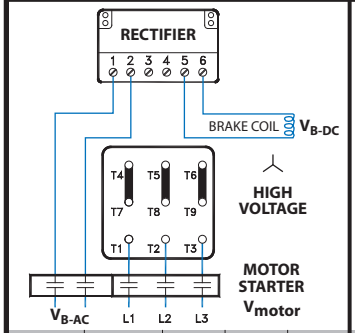
SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
FAST STOPPING (DC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	GPU20L	230 VAC	230 VAC	105 VDC

GP105B — 50

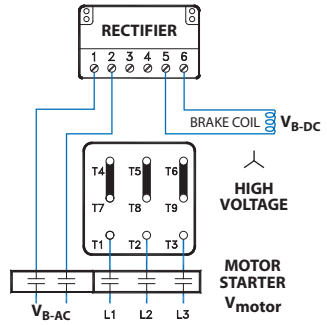
SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
FAST STOPPING (DC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	GPU20L	460 VAC	230 VAC	105 VDC

GP105C — 50

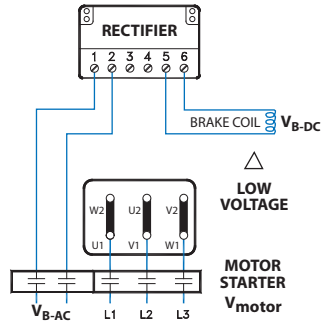
SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
FAST STOPPING (DC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	GPU40L	460 VAC	460 VAC	205 VDC

GP105D — 50

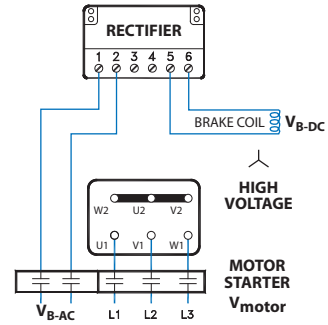
SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
FAST STOPPING (DC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
208Δ/360Y	GPU20L	208 VAC	208 VAC	105 VDC
230Δ/400Y	GPU20L	230 VAC	230 VAC	105 VDC
400Δ/690Y	GPU40L	400 VAC	400 VAC	180 VDC
460Δ/Y	GPU40L	460 VAC	460 VAC	205 VDC

GP105E — 50

SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
FAST STOPPING (DC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230Δ/400Y	GPU20L	400 VAC	230 VAC	105 VDC
332Δ/575Y	GPU40L	575 VAC	332 VAC	180 VDC

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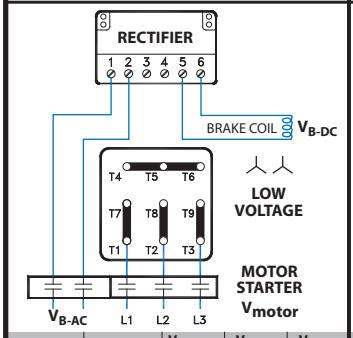
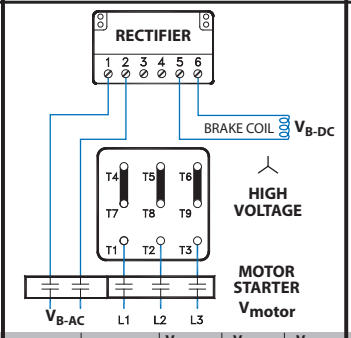
FAST ACTING BRAKE RECTIFIERS (GPE, GPU & PMG)

GP106A — SEPERATE POWER SOURCE — STANDARD RELEASE — VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING) — 55



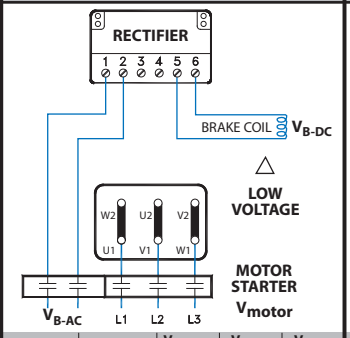
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	GPU20L	230 VAC	230 VAC	205 VDC

GP106B — SEPERATE POWER SOURCE — STANDARD RELEASE — VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING) — 55



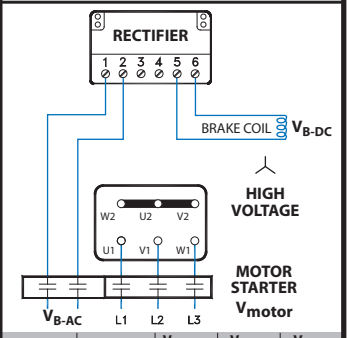
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	GPU20L	460 VAC	230 VAC	205 VDC

GP106C — SEPERATE POWER SOURCE — STANDARD RELEASE — VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING) — 55



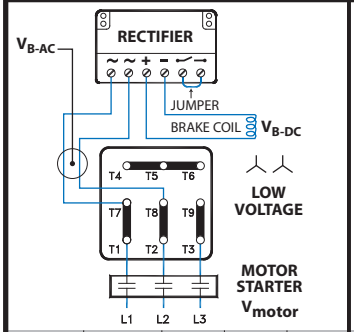
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
208Δ/360Y	GPU20L	208 VAC	208 VAC	180 VDC
230Δ/400Y	GPU20L	230 VAC	230 VAC	205 VDC

GP106D — SEPERATE POWER SOURCE — STANDARD RELEASE — VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING) — 55



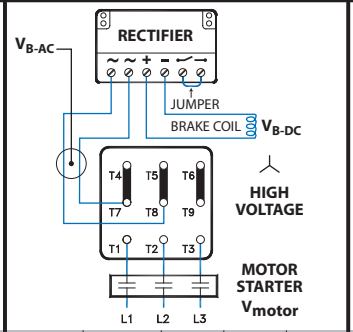
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230Δ/400Y	GPU20L	400 VAC	230 VAC	205 VDC

PMG101A — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 30



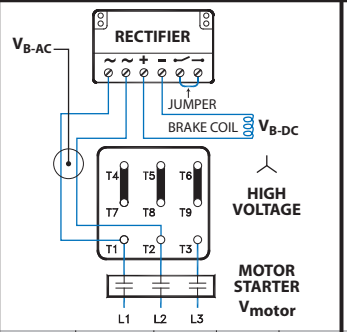
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	230 VAC	230 VAC	105 VDC

PMG101B — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 30



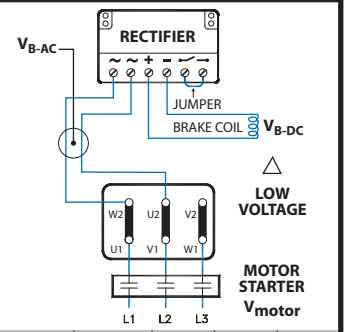
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	460 VAC	230 VAC	105 VDC

PMG101C — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 30



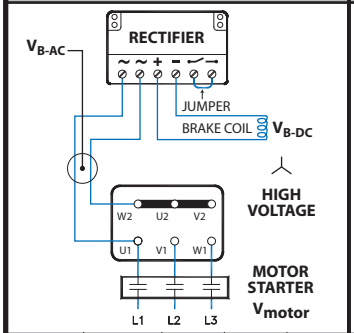
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	460 VAC	460 VAC	205 VDC

PMG101D — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 30



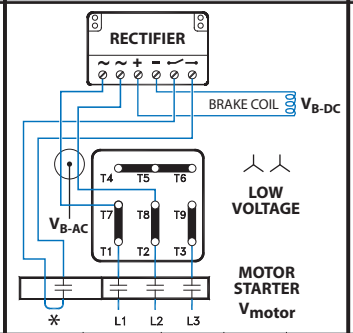
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
208Δ/360Y	PMG500	208 VAC	208 VAC	105 VDC
230Δ/400Y	PMG500	230 VAC	230 VAC	105 VDC
400Δ/690Y	PMG500	400 VAC	400 VAC	180 VDC
460Δ/Y	PMG500	460 VAC	460 VAC	205 VDC

PMG101E — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 30



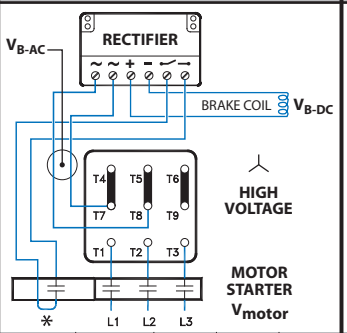
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230Δ/400Y	PMG500	400 VAC	230 VAC	105 VDC

PMG102A — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — FAST STOPPING (DC-SWITCHING) — 35



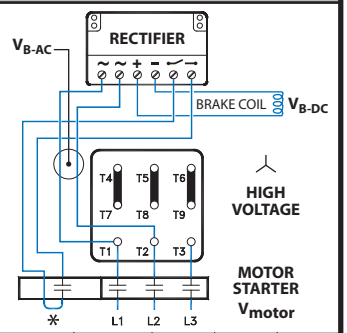
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	230 VAC	230 VAC	105 VDC

PMG102B — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — FAST STOPPING (DC-SWITCHING) — 35



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	460 VAC	230 VAC	105 VDC

PMG102C — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — FAST STOPPING (DC-SWITCHING) — 35



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	460 VAC	460 VAC	205 VDC

✻ The normally open contact/s (NO) is not supplied by NORD. It must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated IEC AC3.

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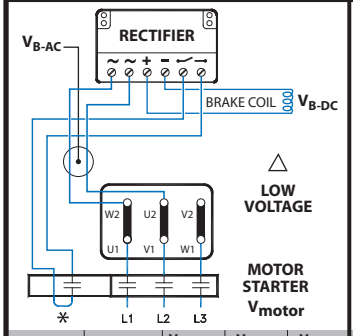
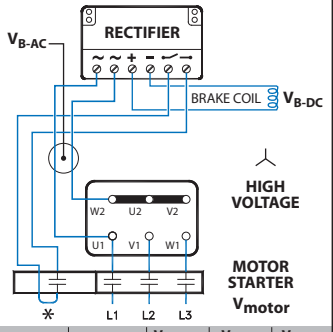
FAST ACTING BRAKE RECTIFIERS (GPE, GPU & PMG)

PMG102D — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — FAST STOPPING (DC-SWITCHING) — 35



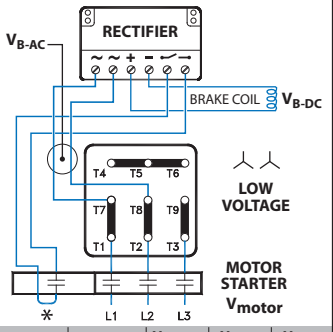
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
208Δ/360Y	PMG500	208 VAC	208 VAC	105 VDC
230Δ/400Y	PMG500	230 VAC	230 VAC	105 VDC
400Δ/690Y	PMG500	400 VAC	400 VAC	180 VDC
460Δ/Y	PMG500	460 VAC	460 VAC	205 VDC

PMG102E — POWERED FROM MOTOR TERMINAL BLOCK — FAST-RELEASE (OVER EXCITATION) — FAST STOPPING (DC-SWITCHING) — 35



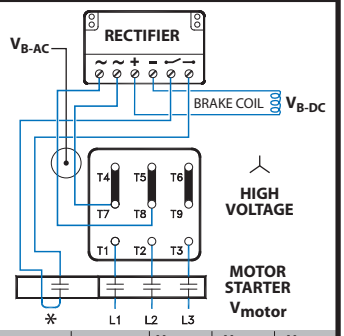
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230Δ/400Y	PMG500	400 VAC	230 VAC	105 VDC

PMG103A — POWERED FROM MOTOR TERMINAL BLOCK — STANDARD RELEASE — VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING) — 40



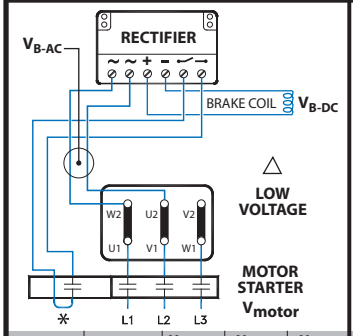
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	230 VAC	230 VAC	205 VDC

PMG103B — POWERED FROM MOTOR TERMINAL BLOCK — STANDARD RELEASE — VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING) — 40



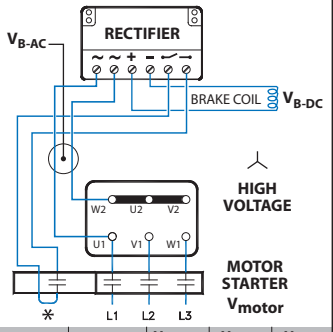
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	460 VAC	230 VAC	205 VDC

PMG103C — POWERED FROM MOTOR TERMINAL BLOCK — STANDARD RELEASE — VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING) — 40



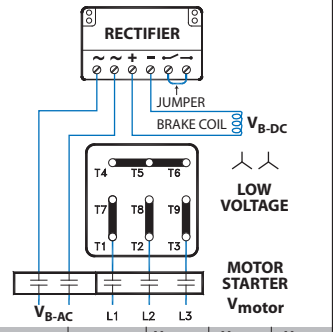
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
208Δ/360Y	PMG500	208 VAC	208 VAC	180 VDC
230Δ/400Y	PMG500	230 VAC	230 VAC	205 VDC

PMG103D — POWERED FROM MOTOR TERMINAL BLOCK — STANDARD RELEASE — VERY FAST STOPPING (DC-SWITCHING + REDUCED POWER HOLDING) — 40



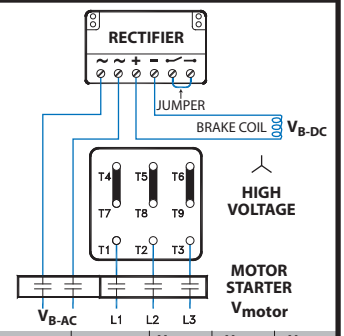
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230Δ/400Y	PMG500	400 VAC	230 VAC	205 VDC

PMG104A — SEPERATE POWER SOURCE — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 45



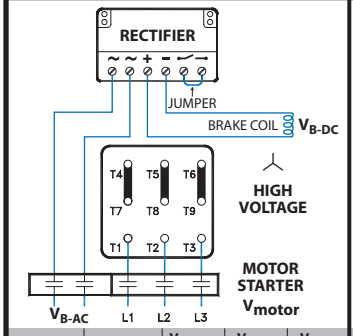
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	230 VAC	230 VAC	105 VDC

PMG104B — SEPERATE POWER SOURCE — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 45



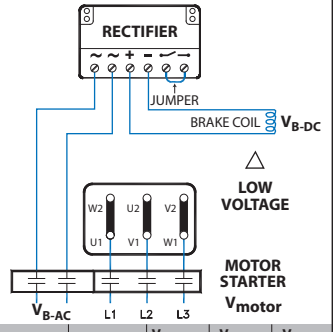
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	460 VAC	230 VAC	105 VDC

PMG104C — SEPERATE POWER SOURCE — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 45



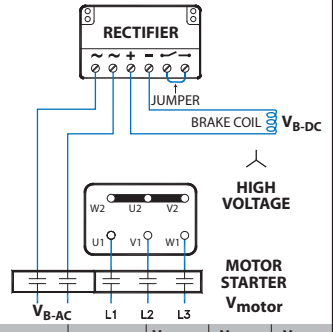
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	460 VAC	460 VAC	205 VDC

PMG104D — SEPERATE POWER SOURCE — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 45



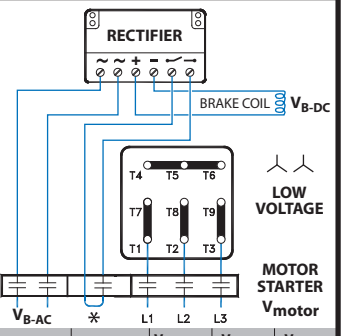
MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
208Δ/360Y	PMG500	208 VAC	208 VAC	105 VDC
230Δ/400Y	PMG500	230 VAC	230 VAC	105 VDC
400Δ/690Y	PMG500	400 VAC	400 VAC	180 VDC
460Δ/Y	PMG500	460 VAC	460 VAC	205 VDC

PMG104E — SEPERATE POWER SOURCE — FAST-RELEASE (OVER EXCITATION) — NORMAL STOPPING (AC-SWITCHING) — 45



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230Δ/400Y	PMG500	400 VAC	230 VAC	105 VDC

PMG105A — SEPERATE POWER SOURCE — FAST-RELEASE (OVER EXCITATION) — FAST STOPPING (DC-SWITCHING) — 50



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	230 VAC	230 VAC	105 VDC

✱ The normally open contact/s (NO) is not supplied by NORD. It must close at the same time power is supplied to the brake. The contact must be capable of switching inductive loads and/or be rated IEC AC3.

= Braking Method

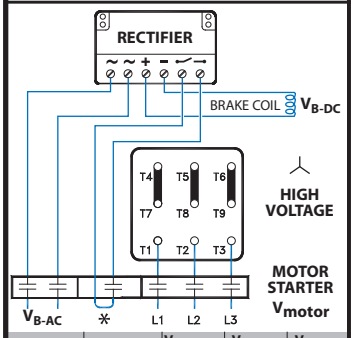
NORD Gear Limited
Toll Free in Canada: 800.668.4378

NORD Gear Corporation
Toll Free in the United States: 888.314.6673

FAST ACTING BRAKE RECTIFIERS (GPE, GPU & PMG)

PMG105B

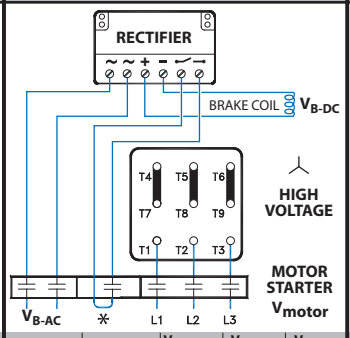
50 — SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
FAST STOPPING (DC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	460 VAC	230 VAC	105 VDC

PMG105C

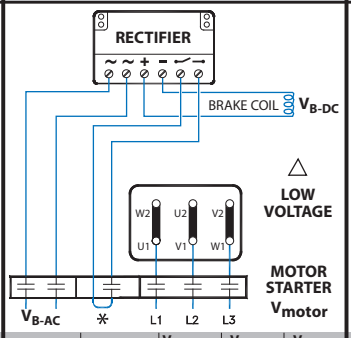
50 — SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
FAST STOPPING (DC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	460 VAC	460 VAC	205 VDC

PMG105D

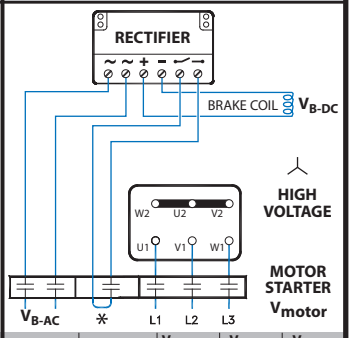
50 — SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
FAST STOPPING (DC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
208Δ/360Y	PMG500	208 VAC	208 VAC	105 VDC
230Δ/400Y	PMG500	230 VAC	230 VAC	105 VDC
400Δ/690Y	PMG500	400 VAC	400 VAC	180 VDC
460Δ/Y	PMG500	460 VAC	460 VAC	205 VDC

PMG105E

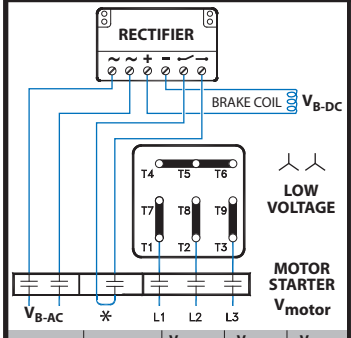
50 — SEPERATE POWER SOURCE
FAST-RELEASE (OVER EXCITATION)
FAST STOPPING (DC-SWITCHING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230Δ/400Y	PMG500	400 VAC	230 VAC	105 VDC

PMG106A

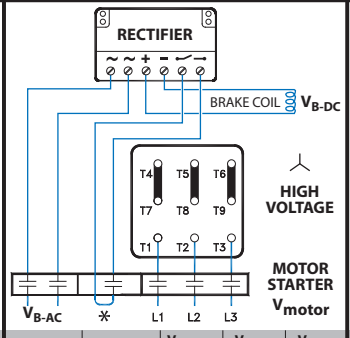
55 — SEPERATE POWER SOURCE
STANDARD RELEASE
VERY FAST STOPPING
(DC-SWITCHING + REDUCED POWER HOLDING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	230 VAC	230 VAC	205 VDC

PMG106B

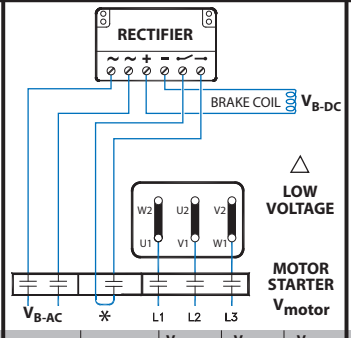
55 — SEPERATE POWER SOURCE
STANDARD RELEASE
VERY FAST STOPPING
(DC-SWITCHING + REDUCED POWER HOLDING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230YY/460Y	PMG500	460 VAC	230 VAC	205 VDC

PMG106C

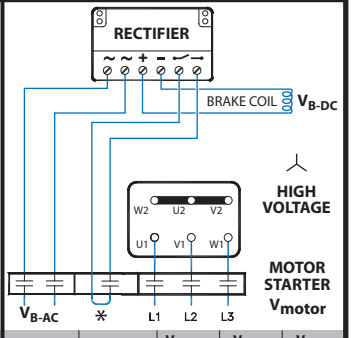
55 — SEPERATE POWER SOURCE
STANDARD RELEASE
VERY FAST STOPPING
(DC-SWITCHING + REDUCED POWER HOLDING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
208Δ/360Y	PMG500	208 VAC	208 VAC	180 VDC
230Δ/400Y	PMG500	230 VAC	230 VAC	205 VDC

PMG106D

55 — SEPERATE POWER SOURCE
STANDARD RELEASE
VERY FAST STOPPING
(DC-SWITCHING + REDUCED POWER HOLDING)



MOTOR	RECTIFIER	V_{motor}	V_{B-AC}	V_{B-DC}
230Δ/400Y	PMG500	400 VAC	230 VAC	205 VDC

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