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Installation Instructions

Original Instructions

Kinetix VP Low Inertia Servo Motors with 063…165 mm Frame Size

Catalog Numbers VPL-A0631, VPL-A0632, VPL-A0633, VPL-A0751, VPL-A0752, VPL-A0753, VPL-A1001, VPL-A1002, VPL-A1003, VPL-A1152, VPL-A1153, VPL-A1303, VPL-A1304, VPL-A1306, VPL-B0631, VPL-B0632, VPL-B0633, VPL-B0751, VPL-B0752, VPL-B0753, VPL-B1001, VPL-B1002, VPL-B1003, VPL-B1152, VPL-B1153, VPL-B1303, VPL-B1304, VPL-B1306, VPL-B1651, VPL-B1652, VPL-B1653, VPL-B1654

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Summary of Changes

This publication contains new and updated information as indicated in the following table.

Topic	Page
Added the -W and -Q safety catalog number designators to the catalog number Feedback field	2
Added the Functional Safety topic	4
Updated the Relative humidity specification	22
Corrected the shaft-seal kit catalog number for VPL-A100*xx* and VPL-B100*xx* motors	22
Added Kinetix 5700 publications to Additional Resources	23

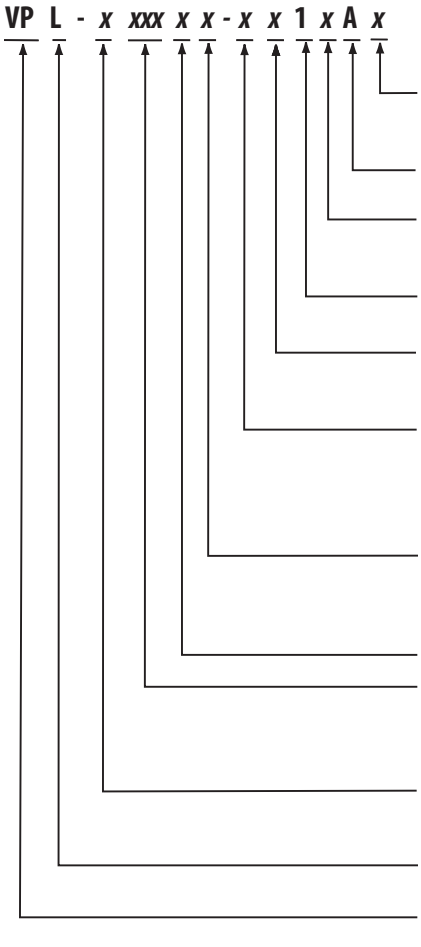
About the Kinetix VP Low Inertia Motors

Kinetix® VP low-inertia motors feature single-turn or multi-turn high-resolution absolute encoders, and are available with or without 24V DC brakes. These compact brushless servo motors meet the demanding requirements of high-performance motion systems.

You are responsible for inspecting the equipment before accepting the shipment from the freight company. Check the items you receive against your purchase order. Notify the carrier of shipping damage or missing items immediately. Store or operate your motor in a clean and dry location within the Environmental Specifications on page 22.

ATTENTION: To avoid personal injury and damage to the motor, do not lift or handle the motor by the motor shaft. The cap on the shaft can come loose and cause you to drop the motor.

Catalog Number Explanation



Factory Options
A = Standard
S = Shaft seal

Mounting Flange
A = IEC metric, free mounting holes (type FF)

Brake
2 = No Brake
4 = 24V DC Brake

Connector
1 = Single SpeedTec DIN connector, right angle, 325° rotatable

Shaft Key
J = Shaft key
K = Smooth shaft

Feedback
C = 18-bit absolute single-turn digital encoder (Hiperface DSL protocol)
P = 18-bit absolute multi-turn (4096 revolutions) digital encoder (Hiperface DSL protocol)
Q = 23-bit absolute multi-turn digital encoder (Hiperface DSL protocol) SIL2/PLd rated, 12-bit secondary safety channel (1)
W = 18-bit absolute multi-turn digital encoder (Hiperface DSL protocol) SIL2/PLd rated, 9-bit secondary safety channel (2)

Rated Speed (3)

A = 1500 rpm	D = 3000 rpm	M= 6000 rpm
B = 2000 rpm	E = 3500 rpm	T = 6750 rpm
C = 2500 rpm	F = 4500 rpm	U = 8000 rpm

Magnet Stack Length (1, 2, 3, 4, 6 stacks) (4)

Frame Size - Bolt Circle Diameter (BCD)

063 = 63 mm	115 = 115 mm
075 = 75 mm	130 = 130 mm
100 = 100 mm	165 = 165 mm

Voltage Class
A = 200V
B = 400V

Series Type
L = Low Inertia

Series
VP = Permanent magnet rotary servo motors optimized to the ratings of Kinetix 5500 and Kinetix 5700 servo drives.

(1) This encoder option is available with only VPL-A/B100*xx*, VPL-A/B115*xx*, VPL-A/B130*xx*, and VPL-B165*xx* motor frame sizes.
(2) This encoder option is available with only VPL-B063*xx* and VPL-B075*xx* motor frame sizes.
(3) Rated speed hierarchy is only for comparative purposes. Use Motion Analyzer software to size and select motors for your application, and/or the torque/speed curves in the Kinetix 5500 Drive System Design Guide, publication KNX-RM009 and the Kinetix 5700 Drive System Design Guide, publication KNX-RM010.
(4) Refer to Motor Dimensions (063 mm and 075 mm frame sizes) on page 7 and Motor Dimensions (100…165 mm frame sizes) on page 8 for dimensional changes (L, LB, LD, and LE) that result from the number of magnet stacks.

Before You Install the Motor

Perform these inspection steps and review the guidelines for shaft seals, couplings and pulleys, and electrical noise prevention.

1. Remove the motor carefully from its shipping container.
2. Inspect the motor for any damage.
3. Examine the motor frame, front output shaft, and mounting pilot for any defects.
4. Notify the carrier of shipping damage immediately.



ATTENTION: Do not attempt to open and modify the motor beyond changing the connector orientation as described on page 5. Only a qualified Rockwell Automation employee can service this motor.

Remove the Shaft Cap

Remove the protective cap installed on the motor shaft with your hand or by prying it off with a screwdriver. Do not use a hammer or other tools as they can damage the motor shaft.

Prolong Motor Life

Proper design and maintenance can increase the life of a servo motor. Follow these guidelines to maximize the life of a servo motor operated within the Environmental Specifications on page 22:

- Create a drip loop in the single motor cable to carry liquids away from the connection to the motor.
- Whenever possible, provide shields that protect the motor housing, shaft, seals, and their junctions from contamination by foreign matter or fluids.
- Shaft seals are subject to wear and require periodic inspection and replacement. Replacement is recommended every 3 months, not to exceed 12 months, depending on use. See Shaft Seal Kits on page 22 for more information.
- Inspect the motor and seals for damage or wear on a regular basis. If you detect damage or excessive wear, replace the item.

Shaft Seals

An additional seal is required on the motor shaft near the motor front bearing if the shaft is exposed to significant amounts of fine dust or fluids, such as lubricating oil from a gearbox. An IP66 rating for the motor requires a shaft seal and environmentally sealed connectors and cables.

The additional seal is not recommended in applications where the motor shaft area is free of liquids or fine dust, and a lower rating is sufficient:

- See Environmental Specifications on page 22 for a brief description of the IP rating for these motors.
- See Shaft Seal Kits on page 22 for seal kits compatible with your motor.
- See Kinetix Rotary Motion Specifications Technical Data, publication KNX-TD001, for Bulletin 2090 cables with environmentally sealed connectors compatible with these motors.

Couplings and Pulleys

Mechanical connections to the motor shaft, such as couplings and pulleys, require a torsionally rigid coupling or a reinforced timing belt. The high dynamic performance of servo motors can cause couplings, pulleys, or belts to loosen or slip over time. A loose or slipping connection causes system instability and can damage the motor shaft. All connections between the system and the servo motor shaft must be rigid to achieve acceptable response from the system. Periodically inspect connections to verify their rigidity.

When mounting couplings or pulleys to the motor shaft, verify that the connections are properly aligned and that axial and radial loads are within the specifications of the motor. See Load Force Ratings on page 11 for guidelines to achieve 20,000 hours of motor bearing life.



ATTENTION: Damage can occur to the motor bearings and the feedback device if sharp impact is applied to the shaft during installation of couplings and pulleys. Damage to the feedback device can result from applying leverage to the motor mounting face when removing devices mounted on the motor shaft.

Do not strike the shaft, couplings, or pulleys with tools during installation or removal. Use a wheel puller, to apply pressure from the user end of the shaft, when attempting to remove any device from the motor shaft.

Prevent Electrical Noise

Electromagnetic interference (EMI), commonly called electrical noise, can affect motor performance. Follow these guidelines to reduce the effects of EMI:

- Isolate the power transformers or install line filters on all AC input power lines.
- Use shielded cables.
- Shield signal cables from power wiring.
- Do not route motor cables over the vent openings on servo drives.
- Ground all equipment by using a single-point parallel ground system that employs ground bus-bars or large straps.
- If necessary, use additional electrical-noise reduction techniques to reduce EMI in noisy environments.

See System Design for Control of Electrical Noise Reference Manual, publication GMC-RM001, for additional information on reducing EMI.

Install Cables

Knowledgeable cable routing and careful cable construction improves system electromagnetic compatibility (EMC).



ATTENTION: The overall shield on the single motor cable must be grounded to obtain an effective encoder signal. The encoder data signal is transmitted through an impedance-matched twisted-wire pair that requires effective shielding for optimum performance. Be sure there is an effective connection between the cable shield and the drive system ground.

To install the single motor cable, observe these guidelines:

- Keep the cable length as short as possible.
- Ground the cable shield to prevent EMI from affecting other equipment.

ATTENTION: High voltage can be present on the shields of the single motor cable if the shields are not grounded.
Verify there is a connection to ground for all shields in the single motor cable.

Functional Safety

Motors that are equipped with a Hiperface DSL functional safety-rated feedback sensor are designed in compliance with the requirements of the following SICK STEGMANN GmbH documentation to maintain the functional safety rating of the feedback sensor attached. See Catalog Number Explanation on page 2 for details about each option.

Motor Cat. No.	Feedback Sensor Functional-safety Reference Documentation (SICK STEGMANN GmbH)	
VPL-*xxxxx*-Q	HIPERFACE DSL Safety Manual, publication 8017596/YLR0	EFM50-2 Safe Motor Feedback Systems Operating Instructions, publication 8019321/2016-02-17
VPL-*xxxxx*-W		EKM36-2 Safe Motor Feedback Systems Operating Instructions, publication 8019481/2016-02-23

IMPORTANT In accordance with the feedback sensor manufacturer, you must mount a HIPERFACE DSL motor feedback system (used for a safety function) in an installation situation with a minimum protection class of IP54 according to standard IEC60529:1989 + A1:1999 + A2:2013.

Certification

The TÜV Rheinland group has approved Kinetix VP low-inertia servo motors equipped with functional-safety certified Hiperface DSL digital encoders to be capable of letting a system achieve a functional safety rating up to Performance Level d (PLd) and safety category 3 (CAT. 3) per EN ISO 13849, and SIL 2 per IEC 61508, EN 61800-5-2, and EN 62061 when used in conjunction with variable frequency drives that satisfy functional safety requirements of the HIPERFACE DSL Safety Manual (SICK STEGMANN GmbH, publication 8017596/YLR0).

To view the TÜV Rheinland certificate and other product certifications currently available from Rockwell Automation, go to http://www.rockwellautomation.com/global/certification/overview. page.

Important Safety Considerations

In addition to the instructions throughout this document, you are also responsible for the following:

- Complete a machine-level risk assessment.
- Certification of the machine to the desired EN ISO 13849 performance level or EN 62061 SIL level.
- Project management and proof testing in accordance with EN 61800-5-2.
- The safe-motor feedback system has a maximum Mission Time of 20 years. After this time, the feedback system must be taken out of service.
- The motor feedback system cannot support safety functions that are based on the absolute position without additional measures. In the case of safety functions that are based on the safe absolute position, the motor feedback system supplies only one channel without safety-related diagnostics upon powerup. You must implement a second channel by using other measures.
- The motor feedback system is not able to create a safe state for the drive system independently. The drive system creates the safe state as a response to an error displayed by the motor feedback system.
- To plan and use motors equipped with safety-rated feedback sensors requires technical skills that are not explained in this document.

ATTENTION: To avoid damage to the equipment, do not establish or remove electrical connections to the motor feedback system with the voltage switched on.

Performance Level (PL) and Safety Integrity Level (SIL)

For safety-related control systems, Performance Level (PL), according to EN ISO 13849-1, and SIL levels, according to IEC EN 61508 and EN 62061, include a rating of the system's ability to perform its safety functions. All of the safety related components of the control system must be included in a risk assessment and the determination of the achieved levels.

Refer to the EN ISO 13849-1, IEC EN 61508, and EN 62061 standards for complete information on the requirements for PL and SIL determination.

Safety-related Parameters

A motor that is equipped with a Hiperface DSL functional safety-rated feedback sensor is designed to maintain the functional safety rating of the feedback sensor attached. The safety parameters of the feedback sensors are as follows.

Attribute	Motor Cat. No.	
	VPL-*xxxxxx*-W*x*1*x*A*x*	**VPL-*xxxxxx*-Q*x*1*x*A*x***
Safety Integrity Level (SIL)	SIL2 (IEC 61508), SIL CL2 (EN 62061)	
Probability of a Dangerous Failure per Hour (PFH)	4.0 E-08 1/h	3.80 E-08 1/h
Safety Category	CAT. 3 (EN ISO 13849)	
Performance Level (PL)	PLd (EN ISO 13849)	

Motor Installation

Motor installation must comply with all local regulations and use of equipment and installation practices that promote safety and electromagnetic compatibility:

- All motors include a mounting pilot for aligning the motor on a machine.
- Preferred fasteners are stainless steel.



ATTENTION: Unmounted motors, disconnected mechanical couplings, loose shaft keys, and disconnected cables are dangerous if power is applied. Identify (tag-out) disassembled equipment and restrict access to (lock-out) the electrical power.

Before applying power to the motor, remove the shaft key and other mechanical couplings that could be thrown from the shaft.



ATTENTION: Verify that cables are installed and restrained to prevent uneven tension or flexing at the connector. Provide support at 3 m (10 ft) intervals throughout the cable run.

Excessive and uneven lateral force at the cable connector can result in the connector's environmental seal opening and closing as the cable flexes.

Change Connector Orientation

Kinetix VP low-inertia motors use a connector style that integrates the power, brake, and feedback signals within a single connector. You can identify the connector style by the variable number in the motor catalog string. For example, in catalog number VPL-A1303F-CJ**1**2AA, the **1** indicates a SpeedTec, right-angle, 325° rotatable connector (see Catalog Number Explanation on page 2).

The rotatable connector housing lets you move the connector into a position that best protects the connection from environmental contaminates and provides easy access.



ATTENTION: Connectors are designed to be rotated into a fixed position during motor installation, and remain in that position without further adjustment. Strictly limit the applied forces and the number of times the connector is rotated to make sure that connectors meet the International Protection (IP) rating as outlined in Environmental Specifications on page 22.



ATTENTION: Excessive force can damage the connector. Do not pull on the cable and do not use tools, such as pliers or vise-grips, to rotate the connector. Use your hands to rotate the connector.

Follow these steps to rotate a connector to a new position.

1. Mount and fully seat a mating cable on the motor connector.
   This provides a larger area to grasp and extends the leverage force.
2. Grasp the mated connector and cable plug with your hands and slowly rotate the motor connector into the new position.
3. Remove the cable plug after the connector is aligned.

Install the Motor

Perform these steps to install the motor.

ATTENTION: Damage can occur to the motor bearings and the feedback device if sharp impact is applied to the shaft during installation of couplings and pulleys. Damage to the feedback device can result from applying leverage to the motor mounting face when removing devices mounted on the motor shaft.

Do not strike the shaft, couplings, or pulleys with tools during installation or removal. Use a wheel puller, to apply pressure from the user end of the shaft, when attempting to remove any device from the motor shaft.

1. Leave enough space around the motor so it can dissipate heat and stay within its specified operating temperature range.
   See Environmental Specifications on page 22 for the operating temperature range. Do not enclose the motor unless forced air is blown across the motor for cooling. A fan that blows air across the motor improves its performance. Keep other heat-producing devices away from the motor.
2. See Load Force Ratings on page 11 to determine the radial and axial shaft load limitations of your motor.
3. Install the motor with the connector positioned beneath the motor housing.
   This position can provide better environmental protection for the connector.

BURN HAZARD: Outer surfaces of the motor can reach a high temperature, 125 °C (257 °F), during motor operation.

Take precautions to prevent accidental contact with hot surfaces. Consider motor surface temperature when selecting motor mating connections and cables.

4. Mount and align the motor.
5. Attach the single motor cable that transmits the power, feedback, and brake signals as described below.
   a. Carefully align the cable connector with the motor connector.
      The flat surface on the top of the motor connector and the flat surfaces on the cable connector must align for the cable connector to mate with the motor connector.

ATTENTION: Keyed connectors must be properly aligned and hand-tightened.

Do not use tools, or apply excessive force, when mating the cable to the motor connector. If the connectors do not go together with light hand force, realign and try again.

   b. Hand-tighten the knurled collar one-quarter turn to fully seat the cable connector.

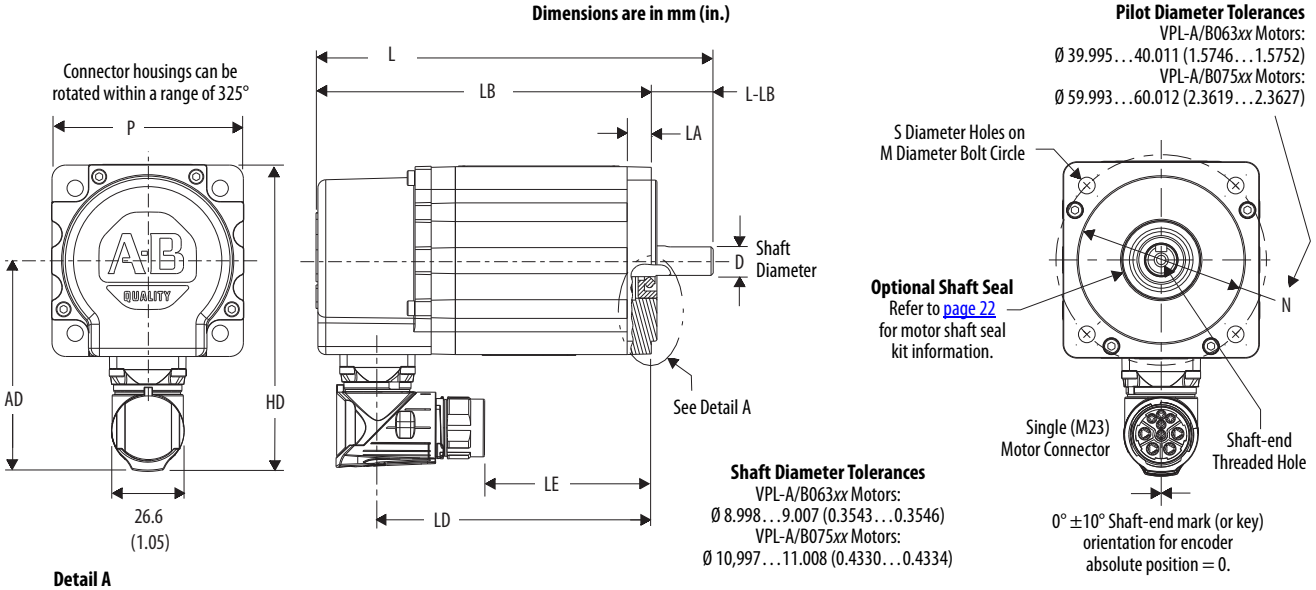
ATTENTION: The overall shield on the single motor cable must be grounded to obtain an effective encoder signal.

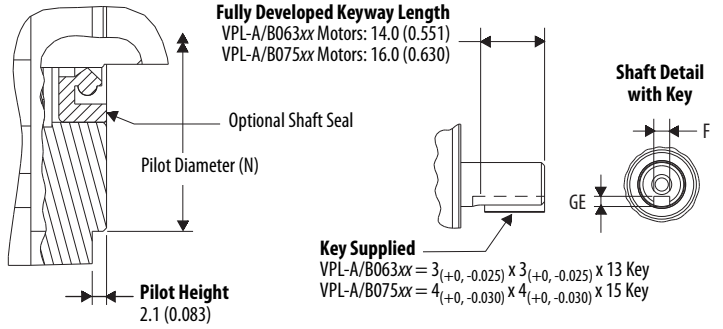
The encoder data signal is transmitted through an impedance-matched twisted-wire pair that requires effective shielding for optimum performance.

Be sure there is an effective connection between the single motor cable shield and the drive system ground.

   c. Form a drip loop in the cable to carry liquids away from the connectors.

Motor Dimensions (063 mm and 075 mm frame sizes)





Shaft, Pilot, and Keyway Tolerances	VPL-A/B063*xx*	VPL-A/B075*xx*
Shaft Runout (T.I.R.)	0.030 (0.0012)	0.035 (0.0014)
Pilot Eccentricity (T.I.R.)	0.08 (0.0031)	0.08 (0.0031)
Max Face Runout (T.I.R.)	0.08 (0.0031)	0.08 (0.0031)
Keyway Depth (GE)	1.80…1.90 (0.071…0.075)	2.50…2.60 (0.098…0.102)
Keyway Width (F)	2.971…2.996 (0.117…0.118)	3.970…4.000 (0.156…0.158)
Shaft-end Threaded Hole	Thread - M3 x 0.5-6H Thread Depth - 9.0 (0.354)	Thread - M4 x 0.7-6H Thread Depth - 10.0 (0.393)

Motor Dimensions (063 and 075 mm frame sizes)

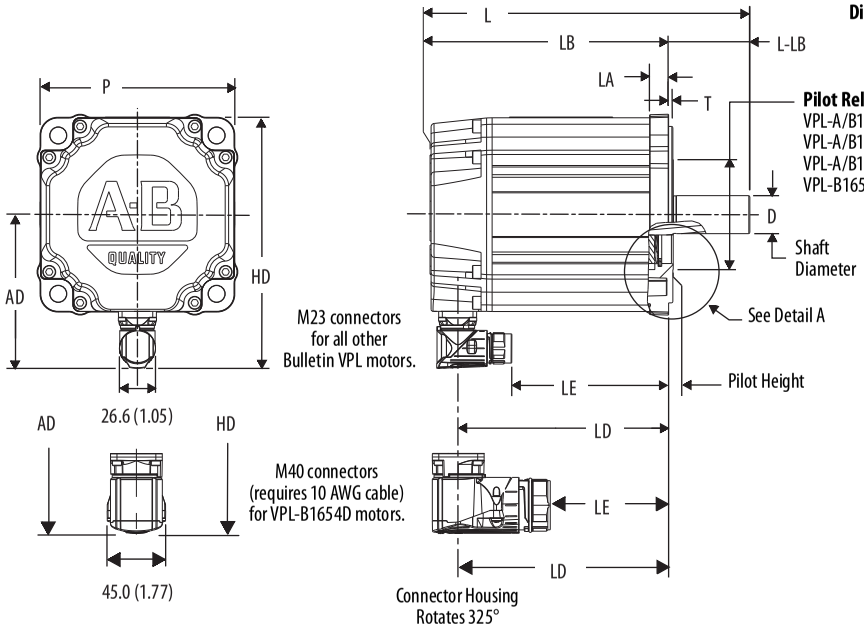
Motor Cat. No.	AD mm (in.)	HD mm (in.)	LA mm (in.)	LD (1) mm (in.)	LE (1) mm (in.)	L (1) mm (in.)	LB (1) mm (in.)	L-LB (2) mm (in.)	D (4) mm (in.)	M mm (in.)	S (3) mm (in.)	N (4) mm (in.)	P mm (in.)	GE (4) mm (in.)	F (4) mm (in.)
VPL-A/B0631	69.5 (2.74)	97.0 (3.82)	9.0 (0.35)	100.2 (3.94)	60.3 (2.37)	143.1 (5.63)	123.1 (4.85)	20.0 (0.787)	9.0 (0.354)	63.0 (2.480)	5.80 (0.234)	40.0 (1.575)	55.0 (2.17)	1.90 (0.075)	3.0 (0.118)
VPL-A/B0632				125.2 (4.93)	85.3 (3.36)	168.1 (6.61)	148.1 (5.83)								
VPL-A/B0633				150.2 (5.91)	110.3 (4.34)	193.1 (7.59)	173.1 (6.81)								
VPL-A/B0751	77.0 (3.03)	112.0 (4.41)	9.0 (0.35)	102.0 (4.02)	62.1 (2.44)	147.9 (5.82)	124.9 (4.92)	23.0 (0.906)	11.0 (0.433)	75.0 (2.953)	5.80 (0.234)	60.0 (2.362)	70.0 (2.76)	2.60 (0.102)	4.0 (0.157)
VPL-A/B0752				127.0 (5.00)	87.1 (3.43)	172.9 (6.80)	149.9 (5.90)								
VPL-A/B0753				152.0 (5.98)	112.1 (4.41)	197.9 (7.79)	174.9 (6.89)								

(1) If ordering an VPL-A/B063*xx* or VPL-A/B075*xx* motor with brake, add 30.6 mm (1.20 in.) to dimension L, LB, LE, and LD.
(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).
(3) Tolerance for this dimension is +0.3, -0.0 mm (±0.006 in.).
(4) For keyway, shaft diameter, and pilot diameter tolerances, see the diagram or Shaft, Pilot, and Keyway Tolerances table above.

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

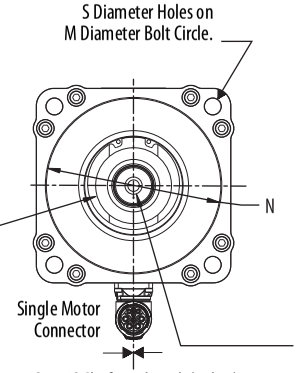
Motor Dimensions (100…165 mm frame sizes)

Dimensions are in mm (in.)



Pilot Relief Diameter
VPL-A/B100*xx* Motors = Ø 53.3 (2.10)
VPL-A/B115*xx* Motors = Ø 59.7 (2.35)
VPL-A/B130*xx* Motors = Ø 71.1 (2.80)
VPL-B165*xx* Motors = Ø 81.0 (3.19)

Optional Shaft Seal
Refer to page 22 for motor shaft seal kit information.

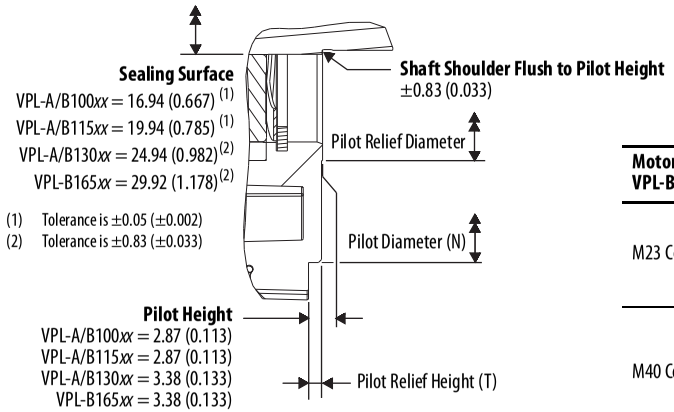


Pilot Diameter Tolerances
VPL-A/B100*xx* Motors:
Ø 79.993…80.012 (3.1493…3.1501)
VPL-A/B115*xx* Motors:
Ø 94.991…95.013 (3.7398…3.7407)
VPL-A/B130*xx* Motors:
Ø 109.991…110.013 (4.3303…4.3312)
VPL-B165*xx* Motors:
Ø 129.991…130.014 (5.1178…5.1187)

Shaft Diameter Tolerances
VPL-A/B100*xx* = Ø 15.997…16.008 (0.6298…0.6301)
VPL-A/B115*xx* = Ø 18.996…19.009 (0.7479…0.7483)
VPL-A/B130*xx* = Ø 23.996…24.009 (0.9448…0.9451)
VPL-B165*xx* = Ø 27.996…28.009 (1.1022…1.1027)

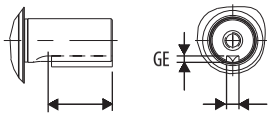
Shaft-end Threaded Hole
VPL-A/B100*xx* Motors:
Thread - M5 x 0.8-6H
Thread Depth - 12.5 (0.49)
VPL-A/B115*xx* Motors:
Thread - M6 x 1.0-6H
Thread Depth - 16.0 (0.63)
VPL-A/B130*xx* Motors:
Thread - M8 x 1.25-6H
Thread Depth - 19.1 (0.75)
VPL-B165*xx* Motors:
Thread - M10 x 1.5-6H
Thread Depth - 22.1 (0.87)

Detail A

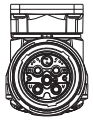


Shaft Detail with Key

Keyway Length
VPL-A/B100*xx* = 25.4 (1.00)
VPL-A/B115*xx* = 25.4 (1.00)
VPL-A/B130*xx* = 32.3 (1.27)
VPL-B165*xx* = 41.1 (1.62)



Key Supplied
VPL-A/B100*xx* = $5_{(+0,\ -0.030)}$ x $5_{(+0,\ -0.030)}$ x 24 Key
VPL-A/B115*xx* = $6_{(+0,\ -0.030)}$ x $6_{(+0,\ -0.030)}$ x 24 Key
VPL-A/B130*xx* = $8_{(+0,\ -0.036)}$ x $7_{(+0,\ -0.090)}$ x 31 Key
VPL-B165*xx* = $8_{(+0,\ -0.036)}$ x $7_{(+0,\ -0.090)}$ x 39 Key

Motor Connectors on VPL-B165*xx* Motors		Motor Cat. No.
M23 Connector		VPL-B1651*x* VPL-B1652*x* VPL-B1653*x* VPL-B1654B
M40 Connector		VPL-B1654D

Shaft, Pilot, and Keyway Tolerances	VPL-A/B100*xx*	VPL-A/B115*xx*	VPL-A/B130*xx* VPL-B165*xx*
Shaft Runout (T.I.R.)	0.04 (0.0016)		
Pilot Eccentricity (T.I.R.)	0.078 (0.0031)		
Max Face Runout (T.I.R.)	0.078 (0.0031)		
Keyway Depth (GE)	3.00…3.10 (0.118…0.122)	3.50…3.60 (0.138…0.142)	4.00…4.20 (0.158…0.165)
Keyway Width (F)	4.97…5.00 (0.196…0.197)	5.97…6.00 (0.235…0.236)	7.96…8.00 (0.314…0.315)

Motor Dimensions (100…165 mm frame sizes)

Motor Cat. No.	AD mm (in.)	HD mm (in.)	T mm (in.)	LA mm (in.)	LD (1) mm (in.)	LE (1) mm (in.)	L (1) mm (in.)	LB (1) mm (in.)	L-LB (2) mm (in.)	D (3) mm (in.)	M mm (in.)	S mm (in.)	N (3) mm (in.)	P mm (in.)	GE (3) mm (in.)	F (3) mm (in.)
VPL-A/B1001	86.5 (3.40)	131.2 (5.17)	2.74 (0.108)	9.90 (0.39)	108.7 (4.28)	68.9 (2.71)	169.8 (6.68)	129.8 (5.11)	40.0 (1.575)	16.0 (0.630)	100.0 (3.937)	7.00 (4) (0.283)	80.0 (3.15)	89.4 (3.52)	3.0 (0.118)	5.0 (0.197)
VPL-A/B1002					134.1 (5.28)	94.3 (3.71)	195.2 (7.68)	155.2 (6.11)								
VPL-A/B1003					159.5 (6.28)	119.7 (4.71)	220.6 (8.68)	180.6 (7.11)								
VPL-A/B1152	90.8 (3.58)	140.0 (5.51)	2.74 (0.108)	10.16 (0.40)	130.6 (5.14)	90.7 (3.57)	191.6 (7.54)	151.6 (5.97)	40.0 (1.575)	19.0 (0.748)	115.0 (4.528)	10.00 (4) (0.401)	95.0 (3.74)	98.3 (3.87)	3.5 (0.138)	6.0 (0.236)
VPL-A/B1153					156.0 (6.14)	116.1 (4.57)	217.0 (8.54)	177.0 (6.97)								
VPL-A/B1303	98.6 (3.88)	155.4 (6.12)	2.74 (0.108)	12.19 (0.48)	159.3 (6.27)	119.4 (4.70)	230.3 (9.06)	180.3 (7.10)	50.0 (1.969)	24.0 (0.945)	130.0 (5.118)	10.00 (4) (0.401)	110.0 (4.331)	113.7 (4.48)	4.0 (0.158)	8.0 (0.315)
VPL-A/B1304					184.7 (7.27)	144.8 (5.70)	255.7 (10.06)	205.7 (8.10)								
VPL-A/B1306					235.5 (9.27)	195.6 (7.70)	306.5 (12.06)	256.5 (10.10)								
VPL-B1651	113.3 (4.46)	185.0 (7.28)	3.12 (0.123)	14.0 (0.55)	155.4 (6.12)	115.6 (4.55)	235.6 (9.27)	175.6 (6.92)	60.0 (2.362)	28.0 (1.102)	165.0 (6.496)	12.00 (5) (0.481)	130.0 (5.118)	143.5 (5.65)	4.0 (0.158)	8.0 (0.315)
VPL-B1652					206.2 (8.12)	166.4 (6.55)	286.4 (11.27)	226.4 (8.92)								
VPL-B1653					257.0 (10.12)	217.2 (8.55)	337.2 (13.27)	277.2 (10.92)								
VPL-B1654B					307.8 (12.12)	268.0 (10.55)	388.0 (15.28)	328.0 (12.92)								
VPL-B1654D	132.9 (5.23)	204.6 (8.06)			306.8 (12.08)	235.8 (9.28)										

(1) If ordering a VPL-A/B100*xx-xxx*4*xx* motor with brake, add 34.5 mm (1.36 in.) to dimensions L, LB, LE, and LD.
If ordering a VPL-A/B115*xx-xxx*4*xx* motor with brake, add 48.5 mm (1.91 in.) to dimensions L, LB, LE, and LD.
If ordering a VPL-A/B130*xx-xxx*4*xx* motor with brake, add 48.5 mm (1.91 in.) to dimensions L, LB, LE, and LD.
If ordering a VPL-B165*xx-xxx*4*xx* motor with brake, add 51.5 mm (2.03 in.) to dimensions L, LB, LE, and LD.

(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).

(3) For keyway, shaft diameter, and pilot diameter tolerances, see the diagram or Shaft, Pilot, and Keyway Tolerances on page 8.

(4) Tolerance for this dimension is +0.36, -0.0 mm (±0.007 in.).

(5) Tolerance for this dimension is +0.43 -0.0 mm (±0.008 in.).

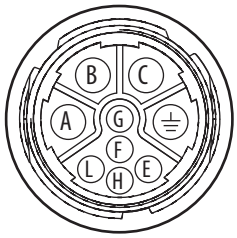
Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

Connector Data

This section identifies the power, feedback, and brake pins on the motor connectors.

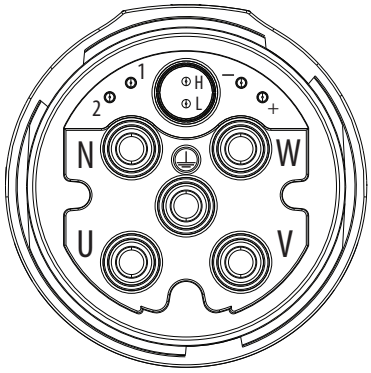
M23 Motor Connector Pinouts (for all motors except VPL-B1654D)

Pin	High Resolution Encoder
A	Phase U
B	Phase V
C	Phase W
⏚	Ground
E	DATA+
F	MBRK+
G	MBRK-
H	DATA-
L	Reserved



M40 Motor Connector Pinouts (for VPL-B1654D motors)

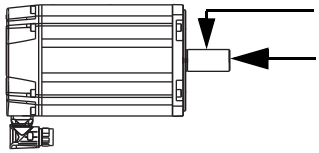
Pin	High Resolution Encoder
U	Phase U
V	Phase V
W	Phase W
⏚	Ground
1	MBRK+
2	MBRK-
L	DATA+
H	DATA-
+	–
–	–
N	–



Load Force Ratings

Motors are capable of operating with a sustained shaft load. The location and direction of radial and axial load forces are shown in the figure, and maximum load rating values are in the tables.

Load Forces on Shaft



The following tables represent 20,000-hour L10 bearing fatigue life at various loads and speeds. This 20,000-hour bearing life does not account for possible application-specific life reduction, such as bearing grease contamination from external sources.

Kinetix Low Inertia Motors (063 and 075 mm frame sizes)

Radial Load Force Ratings (maximum) for Non-brake Motors

Motor Cat. No. (1)	Speed, max rpm	RPM														
		500 kgf	1000 kgf	1500 kgf	2000 kgf	2500 kgf	3000 kgf	3500 kgf	4000 kgf	4500 kgf	5000 kgf	6000 kgf	6500 kgf	7000 kgf	7500 kgf	8000 kgf
VPL-A0631E	4500	–	26.7	–	–	20.8 *	18.5	–	–	16.2	–	–	–	–	–	–
VPL-A0631M	7200	–	–	23.3	–	19.7	–	–	–	16.7 *	–	–	–	–	13.8	–
VPL-A0632F	4800	–	28.9	25.2	–	–	21.0 *	–	–	–	17.1 *	–	–	–	–	–
VPL-A0633C	3000	38.1	30.3	27.4 *	–	–	21.0	–	–	–	–	–	–	–	–	–
VPL-A0633F	4500	38.1	–	26.4	–	–	21.0	–	–	18.3	–	–	–	–	–	–
VPL-A0751E	4800	33.3	26.4	–	–	20.6 *	–	–	–	–	15.7 *	–	–	–	–	–
VPL-A0752C	3300	36.1	28.6	25.9 *	–	–	–	19.2 *	–	–	–	–	–	–	–	–
VPL-A0752E	4800	36.1	28.6	–	–	21.8 *	–	–	–	–	17.0 *	–	–	–	–	–
VPL-A0753C	3300	37.8	30.0	27.5 *	–	–	–	20.2 *	–	–	–	–	–	–	–	–
VPL-A0753E	4600	37.8	30.0	–	–	23.3 *	–	–	–	–	18.0 *	–	–	–	–	–
VPL-B0631T	8000	–	–	23.3	–	–	18.5	–	–	–	–	14.9 *	–	–	–	13.3
VPL-B0631U	8000	–	–	23.3	–	–	18.5	–	–	–	15.6	–	–	–	–	13.3
VPL-B0632F	4800	–	28.9	25.2	–	–	21.0 *	–	–	–	17.1 *	–	–	–	–	–
VPL-B0632T	8000	–	–	–	22.9	–	–	–	18.2	–	–	–	15.6 *	–	–	14.4
VPL-B0633M	6900	–	30.3	–	24.0	–	–	–	19.2 *	–	–	–	–	15.9 *	–	–
VPL-B0633T	8000	–	–	26.4	–	–	21.0	–	–	–	–	16.8 *	–	–	–	15.1
VPL-B0751M	8000	–	–	23.1	–	–	18.3	–	–	–	15.7 *	–	–	–	–	13.2
VPL-B0752E	4800	36.1	28.6	–	–	22.0 *	–	–	–	–	17.0 *	–	–	–	–	–
VPL-B0752F	7000	–	28.6	–	22.7	–	–	19.3 *	–	–	–	–	–	15.0	–	–
VPL-B0752M	8000	–	–	25.0	–	–	20.8	–	–	–	16.8 *	–	–	–	–	14.3
VPL-B0753E	4500	37.8	30.0	–	23.8	–	–	–	–	18.2	–	–	–	–	–	–
VPL-B0753F	6500	–	30.0	–	23.8	–		20.6 *	–	–	–	–	16.1	–	–	–
VPL-B0753M	8000	–	–	26.2	–	–	19.8	–	–	–	18.0 *	–	–	–	–	15.0

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating that is measured at an rpm value that is less than the value listed for that column.

Axial Load Force Ratings (maximum radial load) for Non-brake Motors

Motor Cat. No. (1)	Speed, max rpm	RPM														
		500 kgf	1000 kgf	1500 kgf	2000 kgf	2500 kgf	3000 kgf	3500 kgf	4000 kgf	4500 kgf	5000 kgf	6000 kgf	6500 kgf	7000 kgf	7500 kgf	8000 kgf
VPL-A0631E	4500	–	22.3	–	–	16.1 *	13.8	–	–	11.6	–	–	–	–	–	–
VPL-A0631M	7200	–	–	18.7	–	15.0	–	–	–	12.1 *	–	–	–	–	9.5 *	–
VPL-A0632F	4800	–	23.5	19.7	–	–	15.5 *	–	–	–	11.9 *	–	–	–	–	–
VPL-A0633C	3000	32.7	24.2	21.3 *	–	–	15.0	–	–	–	–	–	–	–	–	–
VPL-A0633F	4500	32.7	–	20.3	–	–	15.0	–	–	12.6	–	–	–	–	–	–
VPL-A0751E	4800	30.0	22.2	–	–	16.1 *	–	–	–	–	11.2 *	–	–	–	–	–
VPL-A0752C	3300	31.5	23.3	20.5 *	–	–	–	13.9 *	–	–	–	–	–	–	–	–
VPL-A0752E	4800	31.5	23.3	–	–	16.4 *	–	–	–	–	11.8 *	–	–	–	–	–
VPL-A0753C	3300	32.5	24.1	21.5 *	–	–	–	14.3 *	–	–	–	–	–	–	–	–
VPL-A0753E	4600	32.5	24.1	–	–	17.3 *	–	–	–	–	12.4 *	–	–	–	–	–
VPL-B0631T	8000	–	–	18.7	–	–	13.8	–	–	–	–	10.5 *	–	–	–	9.0
VPL-B0631U	8000	–	–	18.7	–	–	13.8	–	–	–	11.1	–	–	–	–	9.0
VPL-B0632F	4800	–	23.5	19.7	–	–	15.5 *	–	–	–	11.9 *	–	–	–	–	–
VPL-B0632T	8000	–	–	–	17.4	–	–	–	12.9	–	–	–	10.6	–	–	9.5
VPL-B0633M	6900	–	24.2	–	17.9	–	–	–	13.4 *	–	–	–	–	10.5 *	–	–
VPL-B0633T	8000	–	–	20.3	–	–	15.0	–	–	–	–	11.3 *	–	–	–	9.8
VPL-B0751M	8000	–	–	18.6	–	–	13.8	–	–	–	11.2 *	–	–	–	–	9.0
VPL-B0752E	4800	31.5	23.3	–	–	16.6 *	–	–	–	–	11.8 *	–	–	–	–	–
VPL-B0752F	7000	–	23.3	–	17.3	–	–	14.0 *	–	–	–	–	–	10.0	–	–
VPL-B0752M	8000	–	–	19.6	–	–	14.5	–	–	–	11.7 *	–	–	–	–	9.5
VPL-B0753E	4500	32.5	24.1	–	17.8	–	–	–	–	12.5	–	–	–	–	–	–
VPL-B0753F	6500	–	24.1	–	17.8	–	–	14.7 *	–	–	–	–	10.7	–	–	–
VPL-B0753M	8000	–	–	20.2	–	–	14.9	–	–	–	12.4 *	–	–	–	–	9.8

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating that is measured at an rpm value that is less than the value listed for that column.

Axial Load Force Ratings (zero radial load) for Non-brake Motors

Motor Cat. No. (1)	Speed, max rpm	RPM														
		500 kgf	1000 kgf	1500 kgf	2000 kgf	2500 kgf	3000 kgf	3500 kgf	4000 kgf	4500 kgf	5000 kgf	6000 kgf	6500 kgf	7000 kgf	7500 kgf	8000 kgf
VPL-A0631E	4500	–	27.5	–	–	19.9 *	17.1	–	–	14.3	–	–	–	–	–	–
VPL-A0631M	7200	–	–	23.0	–	18.5	–	–	–	14.9 *	–	–	–	–	11.7 *	–
VPL-A0632F	4800	–	27.5	23.0	–	–	18.1 *	–	–	–	13.9 *	–	–	–	–	–
VPL-A0633C	3000	37.1	27.5	24.1 *	–	–	17.1	–	–	–	–	–	–	–	–	–
VPL-A0633F	4500	37.1	–	23.0	–	–	17.1	–	–	14.3	–	–	–	–	–	–
VPL-A0751E	4800	37.1	27.5	–	–	19.9 *	–	–	–	–	13.9 *	–	–	–	–	–
VPL-A0752C	3300	37.1	27.5	24.1 *	–	–	–	16.4 *	–	–	–	–	–	–	–	–
VPL-A0752E	4800	37.1	27.5	–	–	19.3 *	–	–	–	–	13.9 *	–	–	–	–	–
VPL-A0753C	3300	37.1	27.5	24.5 *	–	–	–	16.4 *	–	–	–	–	–	–	–	–
VPL-A0753E	4600	37.1	27.5	–	–	19.7 *	–	–	–	–	14.2 *	–	–	–	–	–
VPL-B0631T	8000	–	–	23.0	–	–	17.1	–	–	–	–	12.9 *	–	–	–	11.1
VPL-B0631U	8000	–	–	23.0	–	–	17.1	–	–	–	13.7	–	–	–	–	11.1

Axial Load Force Ratings (zero radial load) for Non-brake Motors (continued)

Motor Cat. No. (1)	Speed, max rpm	RPM														
		500 kgf	1000 kgf	1500 kgf	2000 kgf	2500 kgf	3000 kgf	3500 kgf	4000 kgf	4500 kgf	5000 kgf	6000 kgf	6500 kgf	7000 kgf	7500 kgf	8000 kgf
VPL-B0632F	4800	–	27.5	23.0	–	–	18.1 *	–	–	–	13.9 *	–	–	–	–	–
VPL-B0632T	8000	–	–	–	20.3	–	–	–	15.1	–	–	–	12.4 *	–	–	11.1
VPL-B0633M	6900	–	27.5	–	20.3	–	–	–	15.2 *	–	–	–	–	11.9 *	–	–
VPL-B0633T	8000	–	–	23.0	–	–	17.1	–	–	–	–	12.8 *	–	–	–	11.1
VPL-B0751M	8000	–	–	23.0	–	–	17.1	–	–	–	13.9 *	–	–	–	–	11.1
VPL-B0752E	4800	37.1	27.5	–	–	19.5 *	–	–	–	–	13.9 *	–	–	–	–	–
VPL-B0752F	7000	–	27.5	–	20.3	–	–	16.5 *	–	–	–	–	–	11.8	–	–
VPL-B0752M	8000	–	–	23.0	–	–	17.1	–	–	–	13.8 *	–	–	–	–	11.1
VPL-B0753E	4500	37.1	27.5	–	20.3	–	–	–	–	14.3	–	–	–	–	–	–
VPL-B0753F	6500	–	27.5	–	20.3	–	–	16.8 *	–	–	–	–	12.2	–	–	–
VPL-B0753M	8000	–	–	23.0	–	–	17.1	–	–	–	14.2 *	–	–	–	–	11.1

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating that is measured at an rpm value that is less than the value listed for that column.

Radial Load Force Ratings (maximum) for Brake Motors

Motor Cat. No. (1)	Speed, max rpm	RPM														
		500 kgf	1000 kgf	1500 kgf	2000 kgf	2500 kgf	3000 kgf	3500 kgf	4000 kgf	4500 kgf	5000 kgf	6000 kgf	6500 kgf	7000 kgf	7500 kgf	8000 kgf
VPL-A0631E	4500	–	29.2	–	–	22.8 *	20.3	–	–	17.7	–	–	–	–	–	–
VPL-A0631M	7200	–	–	25.5	–	21.5	–	–	–	18.3 *	–	–	–	–	15.1 *	–
VPL-A0632F	4800	–	30.5	26.6	–	–	22.2 *	–	–	–	18.1 *	–	–	–	–	–
VPL-A0633C	3000	39.5	31.4	28.4 *	–	–	21.8	–	–	–	–	–	–	–	–	–
VPL-A0633F	4500	39.5	–	27.4	–	–	21.8	–	–	19.0	–	–	–	–	–	–
VPL-A0751E	4800	36.5	29.0	–	–	22.6 *	–	–	–	–	17.2 *	–	–	–	–	–
VPL-A0752C	3300	38.1	30.3	27.4	–	–	–	20.3 *	–	–	–	–	–	–	–	–
VPL-A0752E	4800	38.1	30.3	–	–	23.1 *	–	–	–	–	17.9 *	–	–	–	–	–
VPL-A0753C	3300	39.2	31.2	28.5 *	–	–	–	20.9 *	–	–	–	–	–	–	–	–
VPL-A0753E	4600	39.2	31.2	–	–	24.1 *	–	–	–	–	18.7 *	–	–	–	–	–
VPL-B0631T	8000	–	–	25.5	–	–	20.3	–	–	–	–	16.4 *	–	–	–	14.6
VPL-B0631U	8000	–	–	25.5	–	–	20.3	–	–	–	17.1	–	–	–	–	14.6
VPL-B0632F	4800	–	30.5	26.6	–	–	22.2 *	–	–	–	18.1 *	–	–	–	–	–
VPL-B0632T	8000	–	–	–	24.2	–	–	–	19.2	–	–	–	16.5 *	–	–	15.3
VPL-B0633M	6900	–	31.4	–	24.9	–	–	–	19.9 *	–	–	–	–	16.5 *	–	–
VPL-B0633T	8000	–	–	27.4	–	–	21.8	–	–	–	–	17.5 *	–	–	–	15.7
VPL-B0751M	8000	–	–	25.3	–	–	20.1	–	–	–	17.2 *	–	–	–	–	14.5
VPL-B0752E	4800	38.1	30.3	–	–	23.3 *	–	–	–	–	17.9 *	–	–	–	–	–
VPL-B0752F	7000	–	30.3	–	24.0	–	–	20.4 *	–	–	–	–	–	15.8	–	–
VPL-B0752M	8000	–	–	26.4	–	–	21.0	–	–	–	17.8 *	–	–	–	–	15.1
VPL-B0753E	4500	39.2	31.2	–	24.7	–	–	–	–	18.9	–	–	–	–	–	–
VPL-B0753F	6500	–	31.2	–	24.7	–	–	21.4 *	–	–	–	–	16.7	–	–	–
VPL-B0753M	8000	–	–	27.2	–	–	21.6	–	–	–	18.7 *	–	–	–	–	15.6

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating that is measured at an rpm value that is less than the value listed for that column.

Axial Load Force Ratings (maximum radial load) for Brake Motors

Motor Cat. No. (1)	Speed, max rpm	RPM														
		500 kgf	1000 kgf	1500 kgf	2000 kgf	2500 kgf	3000 kgf	3500 kgf	4000 kgf	4500 kgf	5000 kgf	6000 kgf	6500 kgf	7000 kgf	7500 kgf	8000 kgf
VPL-A0631E	4500	–	23.7	–	–	17.2 *	14.7	–	–	12.3	–	–	–	–	–	–
VPL-A0631M	7200	–	–	19.9	–	15.9	–	–	–	12.8	–	–	–	–	10.0 *	–
VPL-A0632F	4800	–	24.3	20.4	–	–	16.1 *	–	–	–	12.3 *	–	–	–	–	–
VPL-A0633C	3000	33.5	24.8	21.8 *	–	–	15.4	–	–	–	–	–	–	–	–	–
VPL-A0633F	4500	33.5	–	20.8	–	–	15.4	–	–	12.9	–	–	–	–	–	–
VPL-A0751E	4800	31.8	23.5	–	–	17.1 *	–	–	–	–	11.9 *	–	–	–	–	–
VPL-A0752C	3300	32.7	24.2	21.3 *	–		–	14.4 *	–	–	–	–	–	–	–	–
VPL-A0752E	4800	32.7	24.2	–	–	17.0 *	–	–	–	–	12.3 *	–	–	–	–	–
VPL-A0753C	3300	33.4	24.7	22.0 *	–		–	14.7 *	–	–	–	–	–	–	–	–
VPL-A0753E	4600	33.4	24.7	–	–	17.7 *	–	–	–	–	12.7 *	–	–	–	–	–
VPL-B0631T	8000	–	–	19.9	–	–	14.7	–	–	–	–	11.1 *	–	–	–	9.6
VPL-B0631U	8000	–	–	19.9	–	–	14.7	–	–	–	11.8	–	–	–	–	9.6
VPL-B0632F	4800	–	24.3	20.4	–	–	16.1 *	–	–	–	12.3 *	–	–	–	–	–
VPL-B0632T	8000	–	–	–	18.0	–	–	–	13.3	–	–	–	11.0 *	–	–	9.9
VPL-B0633M	6900	–	24.8	–	18.4	–	–	–	13.7 *	–	–	–	–	10.7 *	–	–
VPL-B0633T	8000	–	–	20.8	–	–	15.4	–	–	–	–	11.6 *	–	–	–	10.1
VPL-B0751M	8000	–	–	19.7	–	–	14.6	–	–	–	11.9 *	–	–	–	–	9.5
VPL-B0752E	4800	32.7	24.2	–	–	17.2 *	–	–	–	–	12.3 *	–	–	–	–	–
VPL-B0752F	7000	–	24.2	–	17.9	–	–	14.5 *	–	–	–	–	–	10.4	–	–
VPL-B0752M	8000	–	–	20.3	–	–	15.0	–	–	–	12.1 *	–	–	–	–	9.8
VPL-B0753E	4500	33.4	24.7	–	18.3	–	–	–	–	12.9	–	–	–	–	–	–
VPL-B0753F	6500	–	24.7	–	18.3	–	–	15.1 *	–	–	–	–	11.0	–	–	–
VPL-B0753M	8000	–	–	20.7	–	–	15.3	–	–	–	12.7 *	–	–	–	–	10.0

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating that is measured at an rpm value that is less than the value listed for that column.

Axial Load Force Ratings (zero radial load) for Brake Motors

Motor Cat. No. (1)	Speed, max rpm	RPM													
		500 kgf	1000 kgf	1500 kgf	2000 kgf	2500 kgf	3000 kgf	3500 kgf	4000 kgf	4500 kgf	5000 kgf	6000 kgf	6500 kgf	7000 kgf	7500 kgf	8000 kgf
VPL-A0631E	4500	–	27.5	–	–	19.9 *	17.1	–	–	14.3	–	–	–	–	–	–
VPL-A0631M	7200	–	–	23.0	–	18.5	–	–	–	14.9 *	–	–	–	–	11.7 *	–
VPL-A0632F	4800	–	27.5	23.0	–	–	18.1 *	–	–	–	13.9 *	–	–	–	–	–
VPL-A0633C	3000	37.1	27.5	24.1 *	–	–	17.1	–	–	–	–	–	–	–	–	–
VPL-A0633F	4500	37.1	–	23.0	–	–	17.1	–	–	14.3	–	–	–	–	–	–
VPL-A0751E	4800	37.1	27.5	–	–	19.9 *	–	–	–	–	13.9 *	–	–	–	–	–
VPL-A0752C	3300	37.1	27.5	24.1 *	–	–	–	16.4 *	–	–	–	–	–	–	–	–
VPL-A0752E	4800	37.1	27.5	–	–	19.3 *	–	–	–	–	13.9 *	–	–	–	–	–
VPL-A0753C	3300	37.1	27.5	24.5 *	–	–	–	16.4 *	–	–	–	–	–	–	–	–
VPL-A0753E	4600	37.1	27.5	–	–	19.7 *	–	–	–	–	14.2 *	–	–	–	–	–
VPL-B0631T	8000	–	–	23.0	–	–	17.1	–	–	–	–	12.9 *	–	–	–	11.1
VPL-B0631U	8000	–	–	23.0	–	–	17.1	–	–	–	13.7	–	–	–	–	11.1
VPL-B0632F	4800	–	27.5	23.0	–	–	18.1 *	–	–	–	13.9 *	–	–	–	–	–
VPL-B0632T	8000	–	–	–	20.3	–	–	–	15.1	–	–	–	12.4 *	–	–	11.1
VPL-B0633M	6900	–	27.5	–	20.3	–	–	–	15.2 *	–	–	–	–	11.9 *	–	–
VPL-B0633T	8000	–	–	23.0	–	–	17.1	–	–	–	–	12.8 *	–	–	–	11.1
VPL-B0751M	8000	–	–	23.0	–	–	17.1	–	–	–	13.9 *	–	–	–	–	11.1
VPL-B0752E	4800	37.1	27.5	–	–	19.5 *	–	–	–	–	13.9 *	–	–	–	–	–
VPL-B0752F	7000	–	27.5	–	20.3	–	–	16.5 *	–	–	–	–	–	11.8	–	–
VPL-B0752M	8000	–	–	23.0	–	–	17.1	–	–	–	13.8 *	–	–	–	–	11.1
VPL-B0753E	4500	37.1	27.5	–	20.3	–	–	–	–	14.3	–	–	–	–	–	–
VPL-B0753F	6500	–	27.5	–	20.3	–	–	16.8 *	–	–	–	–	12.2	–	–	–
VPL-B0753M	8000	–	–	23.0	–	–	17.1	–	–	–	14.2 *	–	–	–	–	11.1

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating that is measured at an rpm value that is less than the value listed for that column.

Kinetix VP Low Inertia Motors (100…165 mm frame sizes)

Radial Load Force Ratings (maximum) for Non-brake Motors

Motor Cat. No. (1)	Speed, max rpm	RPM														
		500 kgf	750 kgf	1000 kgf	1500 kgf	2000 kgf	2500 kgf	3000 kgf	3500 kgf	4000 kgf	4500 kgf	5000 kgf	5500 kgf	6000 kgf	6500 kgf	7000 kgf
VPL-A1001C	2800	79.1	–	62.8	–	49.8	–	44.6 *	–	–	–	–	–	–	–	–
VPL-A1001M	6500	–	–	–	54.9	–	46.3	–	–	–	38.0	–	–	–	33.6	–
VPL-A1002C	3000	87.9	–	69.7	–	55.4	–	48.4	–	–	–	–	–	–	–	–
VPL-A1002F	5000	–	–	69.7	60.9	–	–	48.4	–	–	–	40.8	–	–	–	–
VPL-A1003C	2250	93.6	–	74.3	64.9	–	56.7 *	–	–	–	–	–	–	–	–	–
VPL-A1003E	3750	93.6	–	74.3	–	59.0	–	–	–	47.8 *	–	–	–	–	–	–
VPL-A1003F	5500	–	–	–	64.9	–	54.8	–	–	46.8	–	–	42.1	–	–	–
VPL-A1152B	2150	98.8	–	78.4	68.5	–	60.8 *	–	–	–	–	–	–	–	–	–
VPL-A1152E	3300	98.8	–	78.4	–	62.2	–	–	52.7 *	–	–	–	–	–	–	–
VPL-A1152F	5000	–	–	78.4	–	62.2	–	54.4	–	–	–	45.9	–	–	–	–
VPL-A1153C	2300	106.4	–	84.5	73.8	–	64.0 *	–	–	–	–	–	–	–	–	–
VPL-A1303B	1950	132.9	–	105.5	92.2	84.4 *	–	–	–	–	–	–	–	–	–	–
VPL-A1303F	4000	–	–	105.5	–	83.7	–	73.1	–	66.5		–	–	–	–	–
VPL-A1304A	1600	140.2	122.5	112.2 *	–	95.2 *	–	–	–	–	–	–	–	–	–	–
VPL-A1304D	3000	140.2	–	111.3	–	88.3	–	77.2	–	–	–	–	–	–	–	–
VPL-A1306C	2000	150.0	–	128.3 *	107.7 *	94.5	–	–	–	–	–	–	–	–	–	–
VPL-B1001M	6000	–	–	–	–	49.8	–	43.5	–	39.6	–	–	–	34.6	–	–
VPL-B1002E	3300	87.9	–	69.7	–	55.4	–	–	46.8 *	–	–	–	–	–	–	–
VPL-B1002M	6000	–	–	–	60.9	–	–	48.4	–	–	42.2	–	–	38.4	–	–
VPL-B1003C	2500	93.6	–	74.3	64.9	–	54.8	–	–	–	–	–	–	–	–	–
VPL-B1003F	4750	–	–	74.3	64.9	–	–	51.5	–	–	–	44.2 *	–	–	–	–
VPL-B1003T	7000	–	–	–	64.9	–	54.8	–	–	–	45.0	–	–	–	–	38.9
VPL-B1152C	2250	98.8	–	78.4	68.5	–	59.8 *	–	–	–	–	–	–	–	–	–
VPL-B1152F	4500	–	–	78.4	–	62.2		54.4	–	–	47.5	–	–	–	–	–
VPL-B1152T	6500	–	–	–	68.5	–	57.8	–	–	49.4	–	–	–	–	42.0	–
VPL-B1153E	3200	106.4	–	84.5	–	67.0	–	–	57.3 *	–	–	–	–	–	–	–
VPL-B1153F	5000	–	–	84.5	–	67.0	–	58.6	–	–	–	49.4	–	–	–	–
VPL-B1303C	2250	132.9	–	105.5	92.2	–	80.5 *	–	–	–	–	–	–	–	–	–
VPL-B1303F	4000	–	–	105.5	–	83.7	–	74.0 *	–	66.5	–	–	–	–	–	–
VPL-B1304C	2150	140.2	–	111.3	99.5 *	–	86.2 *	–	–	–	–	–	–	–	–	–
VPL-B1304E	3500	–	–	111.3	97.2	–	84.3 *	–	73.3	–	–	–	–	–	–	–
VPL-B1306C	2500	150.0	–	119.1	–	100.8 *	87.7	–	–	–	–	–	–	–	–	–
VPL-B1306F	4250	–	–	119.0	–	94.5	–	82.6	–	–	73.5 *	–	–	–	–	–
VPL-B1651C	2750	161.3	–	128.0	–	108.3 *	–	91.4 *	–	–	–	–	–	–	–	–
VPL-B1651F	4750	–	–	128.0	–	101.6	–	88.7	–	–	–	76.1 *	–	–	–	–
VPL-B1652C	2700	180.7	–	143.4	125.3	–	–	103.0 *	–	–	–	–	–	–	–	–
VPL-B1652F	4000	–	–	143.4	125.3		105.7	–	–	90.4	–	–	–	–	–	–
VPL-B1653C	2300	192.4	–	152.7	136.5 *	–	115.7 *	–	–	–	–	–	–	–	–	–
VPL-B1653D	3000	–	–	152.7	139.9 *	125.5 *	–	105.9	–	–	–	–	–	–	–	–
VPL-B1654B	1850	200.1	174.8	–	152.5 *	129.4 *	–	–	–	–	–	–	–	–	–	–
VPL-B1654D	3000	–	–	158.8	138.8	126.1	–	110.1	–	–	–	–	–	–	–	–

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating that is measured at an rpm value that is less than the value listed for that column.

Axial Load Force Ratings (maximum radial load) for Non-brake Motors

Motor Cat. No. (1)	Speed, max rpm	RPM														
		500 kgf	750 kgf	1000 kgf	1500 kgf	2000 kgf	2500 kgf	3000 kgf	3500 kgf	4000 kgf	4500 kgf	5000 kgf	5500 kgf	6000 kgf	6500 kgf	7000 kgf
VPL-A1001C	2800	25.0	–	19.0	–	10.0	–	10.0 *	–	–	–	–	–	–	–	–
VPL-A1001M	6500	–	–	–	15.0	–	12.0	–	–	–	9.0	–	–	–	8.0	–
VPL-A1002C	3000	30.0	–	22.0	–	16.0	–	13.0	–	–	–	–	–	–	–	–
VPL-A1002F	5000	–	–	22.0	18.0	–	–	13.0	–	–	–	11.0	–	–	–	–
VPL-A1003C	2250	33.0	–	24.0	20.0	–	17.0 *	–	–	–	–	–	–	–	–	–
VPL-A1003E	3750	33.0	–	24.0	–	18.0	–	–	–	13.0 *	–	–	–	–	–	–
VPL-A1003F	5500	–	–	–	20.0	–	16.0	–	–	13.0	–	–	11.0	–	–	–
VPL-A1152B	2150	44.0	–	32.0	27.0	–	23.0 *	–	–	–	–	–	–	–	–	–
VPL-A1152E	3300	44.0	–	32.0	–	24.0	–	–	15.0 *	–	–	–	–	–	–	–
VPL-A1152F	5000	–	–	32.0	–	24.0	–	20.0	–	–	–	16.0	–	–	–	–
VPL-A1153C	2300	48.0	–	35.0	29.0	–	24.0 *	–	–	–	–	–	–	–	–	–
VPL-A1303B	1950	39.0	–	29.0	24.0	22.0 *	–	–	–	–	–	–	–	–	–	–
VPL-A1303F	4000	–	–	29.0	–	21.0	–	18.0	–	16.0	–	–	–	–	–	–
VPL-A1304A	1600	43.0	36.0	32.0 *	–	26.0 *	–	–	–	–	–	–	–	–	–	–
VPL-A1304D	3000	43.0	–	32.0	–	23.0	–	20.0	–	–	–	–	–	–	–	–
VPL-A1306C	2000	48.0	–	39.0 *	31.0 *	26.0	–	–	–	–	–	–	–	–	–	–
VPL-B1001M	6000	–	–	–	–	14.0	–	11.0	–	10.0	–	–	–	8.0	–	–
VPL-B1002E	3300	30.0	–	22.0	–	16.0	–	–	13.0 *	–	–	–	–	–	–	–
VPL-B1002M	6000	–	–	–	18.0	–	–	13.0	–	–	11.0	–	–	10.0	–	–
VPL-B1003C	2500	33.0	–	24.0	20.0	–	16.0	–	–	–	–	–	–	–	–	–
VPL-B1003F	4750	–	–	24.0	20.0	–	–	15.0	–	–	–	12.0 *	–	–	–	–
VPL-B1003T	7000	–	–	–	20.0	–	16.0	–	–	–	12.0	–	–	–	–	10.0
VPL-B1152C	2250	44.0	–	32.0	27.0	–	22.0 *	–	–	–	–	–	–	–	–	–
VPL-B1152F	4500	–	–	32.0	–	24.0	–	20.0	–	–	17.0	–	–	–	–	–
VPL-B1152T	6500	–	–	–	27.0	–	21.0	–	–	17.0	–	–	–	–	14.0	–
VPL-B1153E	3200	48.0	–	35.0	–	26.0	–	–	21.0 *	–	–	–	–	–	–	–
VPL-B1153F	5000	–	–	35.0	–	26.0	–	22.0	–	–	–	17.0	–	–	–	–
VPL-B1303C	2250	39.0	–	29.0	–	24.0	20.0 *	–	–	–	–	–	–	–	–	–
VPL-B1303F	4000	–	–	29.0	–	21.0	–	18.0 *	–	16.0	–	–	–	–	–	–
VPL-B1304C	2150	43.0	–	32.0	27.0 *	–	23.0 *	–	–	–	–	–	–	–	–	–
VPL-B1304E	3500	–	–	32.0	27.0	–	22.0 *	–	18.0	–	–	–	–	–	–	–
VPL-B1306C	2500	48.0	–	36.0	–	29.0 *	24.0	–	–	–	–	–	–	–	–	–
VPL-B1306F	4250	–	–	36.0	–	26.0	–	22.0	–	–	19.0 *	–	–	–	–	–
VPL-B1651C	2750	48.0	–	35.0	–	28.0 *	–	23.0 *	–	–	–	–	–	–	–	–
VPL-B1651F	4750	–	–	35.0	–	26.0	–	22.0	–	–	–	18.0 *	–	–	–	–
VPL-B1652C	2700	58.0	–	43.0	36.0	–	–	27.0 *	–	–	–	–	–	–	–	–
VPL-B1652F	4000	–	–	43.1	36.1	–	28.9	–	–	23.6	–	–	–	–	–	–
VPL-B1653C	2300	64.0	–	47.0	41.0 *	–	33.0 *	–	–	–	–	–	–	–	–	–
VPL-B1653D	3000	–	–	47.6	42.5 *	36.9 *	–	29.5	–	–	–	–	–	–	–	–
VPL-B1654B	1850	68.0	–	57.0	48.0 *	38.0 *	–	–	–	–	–	–	–	–	–	–
VPL-B1654D	3000	–	–	50.7	42.5	37.5	–	31.5	–	–	–	–	–	–	–	–

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating that is measured at an rpm value that is less than the value listed for that column.

Axial Load Force Ratings (zero radial load) for Non-brake Motors

Motor Cat. No. (1)	Speed, max rpm	RPM														
		500 kgf	750 kgf	1000 kgf	1500 kgf	2000 kgf	2500 kgf	3000 kgf	3500 kgf	4000 kgf	4500 kgf	5000 kgf	5500 kgf	6000 kgf	6500 kgf	7000 kgf
VPL-A1001C	2800	49.4	–	36.5	–	27.0	–	23.4 *	–	–	–	–	–	–	–	–
VPL-A1001M	6500	–	–	–	30.6	–	24.5	–	–	–	19.0	–	–	–	16.2	–
VPL-A1002C	3000	49.4	–	36.5	–	27.0	–	22.7	–	–	–	–	–	–	–	–
VPL-A1002F	5000	–	–	36.5	30.6	–	–	22.7	–	–	–	18.2	–	–	–	–
VPL-A1003C	2250	49.4	–	36.5	30.6	–	25.7 *	–	–	–	–	–	–	–	–	–
VPL-A1003E	3750	49.4	–	36.5	–	27.0	–	–	–	20.6 *	–	–	–	–	–	–
VPL-A1003F	5500	–	–	–	30.6	–	24.5	–	–	20.0	–	–	17.4	–	–	–
VPL-A1152B	2150	68.3	–	50.5	42.4	–	36.0 *	–	–	–	–	–	–	–	–	–
VPL-A1152E	3300	68.3	–	50.5	–	37.4	–	–	30.1 *	–	–	–	–	–	–	–
VPL-A1152F	5000	–	–	50.5	–	37.4	–	31.4	–	–	–	25.1	–	–	–	–
VPL-A1153C	2300	68.3	–	50.5	42.4		35.2 *	–	–	–	–	–	–	–	–	–
VPL-A1303B	1950	68.3	–	50.5	42.4	37.8 *	–	–	–	–	–	–	–	–	–	–
VPL-A1303F	4000	–	–	50.5	–	37.4	–	31.4	–	27.7	–	–	–	–	–	–
VPL-A1304A	1600	68.3	57.2	51.1 *	–	41.2 *	–	–	–	–	–	–	–	–	–	–
VPL-A1304D	3000	68.3	–	50.5	–	37.4	–	31.4	–	–	–	–	–	–	–	–
VPL-A1306C	2000	68.3	–	55.7 *	44.3 *	37.4	–	–	–	–	–	–	–	–	–	–
VPL-B1001M	6000	–	–	–	–	27.0	–	22.7	–	20.0	–	–	–	16.8	–	–
VPL-B1002E	3300	49.4	–	36.5	–	27.0	–	–	21.8 *	–	–	–	–		–	–
VPL-B1002M	6000	–	–	–	30.6	–	–	22.7	–	–	19.0	–	–	16.8	–	–
VPL-B1003C	2500	49.4	–	36.5	30.6	–	24.5	–	–	–	–	–	–	–	–	–
VPL-B1003F	4750	–	–	36.5	30.6	–	–	22.7	–	–	–	18.6 *	–	–	–	–
VPL-B1003T	7000	–	–	–	30.6	–	24.5	–	–	–	19.0	–	–	–	–	15.7
VPL-B1152C	2250	68.3	–	50.5	42.4	–	35.5 *	–	–	–	–	–	–	–	–	–
VPL-B1152F	4500	–	–	50.5	–	37.4	–	31.4	–	–	26.3	–	–	–	–	–
VPL-B1152T	6500	–	–	–	42.4	–	33.9	–	–	27.7	–	–	–	–	22.4	–
VPL-B1153E	3200	68.3	–	50.5	–	37.4	–	–	30.5 *	–	–	–	–	–	–	–
VPL-B1153F	5000	–	–	50.5	–	37.4	–	31.4	–	–	–	25.1	–	–	–	–
VPL-B1303C	2250	68.3	–	50.5	42.3	–	35.5 *	–	–	–	–	–	–	–	–	–
VPL-B1303F	4000	–	–	50.5	–	37.4	–	31.8 *	–	27.7	–	–	–	–	–	–
VPL-B1304C	2150	68.3	–	50.5	43.6 *	–	36.2 *	–	–	–	–	–	–	–	–	–
VPL-B1304E	3500	–	–	50.5	42.4	–	35.2 *	–	29.3	–	–	–	–	–	–	–
VPL-B1306C	2500	68.3	–	50.5	–	40.6 *	33.9	–	–	–	–	–	–	–	–	–
VPL-B1306F	4250	–	–	50.5	–	37.4	–	31.4	–	–	27.0 *	–	–	–	–	–
VPL-B1651C	2750	90.1	–	66.7	–	53.7 *	–	43.0 *	–	–	–	–	–	–	–	–
VPL-B1651F	4750	–	–	66.7	–	49.4	–	41.4	–	–	–	33.9 *	–	–	–	–
VPL-B1652C	2700	90.1	–	66.7	55.9	–	–	43.3 *	–	–	–	–	–	–	–	–
VPL-B1652F	4000	–	–	66.7	55.9	–	44.8	–	–	36.5	–	–	–	–	–	–
VPL-B1653C	2300	90.1	–	66.7	57.6 *	–	46.4 *	–	–	–	–	–	–	–	–	–
VPL-B1653D	3000	–	–	66.7	59.5 *	51.7 *	–	41.4	–	–	–	–	–	–	–	–
VPL-B1654B	1850	90.1	75.6	–	63.2 *	51.1 *	–	–	–	–	–	–	–	–	–	–
VPL-B1654D	3000	–	–	66.7	55.9	49.4	–	41.4	–	–	–	–	–	–	–	–

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating that is measured at an rpm value that is less than the value listed for that column.

Radial Load Force Ratings (maximum) for Brake Motors

Motor Cat. No. (1)	Speed, max rpm	RPM														
		500 kgf	750 kgf	1000 kgf	1500 kgf	2000 kgf	2500 kgf	3000 kgf	3500 kgf	4000 kgf	4500 kgf	5000 kgf	5500 kgf	6000 kgf	6500 kgf	7000 kgf
VPL-A1001C	2800	90.2	–	71.6	–	56.8	–	50.8 *	–	–	–	–	–	–	–	–
VPL-A1001M	6500	–	–	–	62.5	–	52.7	–	–	–	43.4	–	–	–	38.4	–
VPL-A1002C	3000	95.3	–	75.6	–	60.0	–	52.4	–	–	–	–	–	–	–	–
VPL-A1002F	5000	–	–	75.6	66.1	–	–	52.4	–	–	–	44.2	–	–	–	–
VPL-A1003C	2250	99.0	–	78.5	68.6	–	59.9 *	–	–	–	–	–	–	–	–	–
VPL-A1003E	3750	99.0	–	78.5	–	62.3	–	–	–	50.6 *	–	–	–	–	–	–
VPL-A1003F	5500	–	–	–	68.6	–	57.9	–	–	49.5	–	–	44.5	–	–	–
VPL-A1152B	2150	111.3	–	88.4	77.2	–	68.5 *	–	–	–	–	–	–	–	–	–
VPL-A1152E	3300	111.3	–	88.4	–	70.1	–	–	59.4 *	–	–	–	–	–	–	–
VPL-A1152F	5000	–	–	88.4	–	70.1	–	61.3	–	–	–	51.7	–	–	–	–
VPL-A1153C	2300	115.4	–	91.6	80.0	–	69.4 *	–	–	–	–	–	–	–	–	–
VPL-A1303B	1950	145.3	–	115.3	100.7	92.3 *	–	–	–	–	–	–	–	–	–	–
VPL-A1303F	4000	–	–	115.3	–	91.5	–	80.0	–	72.7	–	–	–	–	–	–
VPL-A1304A	1600	149.7	130.8	119.8 *	–	101.6 *	–	–	–	–	–	–	–	–	–	–
VPL-A1304D	3000	149.5	–	118.6	–	94.2	–	82.3	–	–	–	–	–	–	–	–
VPL-A1306C	2000	156.0	–	133.4 *	112.1 *	98.3	–	–	–	–	–	–	–	–	–	–
VPL-B1001M	6000	–	–	–	–	56.8	–	49.6	–	45.1	–	–	–	39.4	–	–
VPL-B1002E	3300	95.3	–	75.6	–	60.0	–	–	50.8 *	–	–	–	–	–	–	–
VPL-B1002M	6000	–	–	–	66.1	–	–	52.4	–	–	45.8	–	–	41.6	–	–
VPL-B1003C	2500	99.0	–	78.5	68.6	–	57.9	–	–	–	–	–	–	–	–	–
VPL-B1003F	4750	–	–	78.5	68.6	–		54.5	–	–	–	46.7 *	–	–	–	–
VPL-B1003T	7000	–	–	–	68.6	–	57.9	–	–	–	47.6	–	–	–	–	41.1
VPL-B1152C	2250	111.3	–	88.4	77.2	–	67.4 *	–	–	–	–	–	–	–	–	–
VPL-B1152F	4500	–	–	88.4	–	70.1	–	61.3	–	–	53.5	–	–	–	–	–
VPL-B1152T	6500	–	–	–	77.2	–	65.1	–	–	55.7	–	–	–	–	47.4	–
VPL-B1153E	3200	115.4	–	91.6	–	72.7	–	–	62.2 *	–	–	–	–	–	–	–
VPL-B1153F	5000	–	–	91.6	–	72.7	–	63.5	–	–	–	53.6	–	–	–	–
VPL-B1303C	2250	145.3	–	115.3	100.7	–	88.0 *	–	–	–	–	–	–	–	–	–
VPL-B1303F	4000	–	–	115.3	–	91.5	–	80.9 *	–	72.7	–	–	–	–	–	–
VPL-B1304C	2150	149.7	–	118.8	106.2 *	–	92.0 *	–	–	–	–	–	–	–	–	–
VPL-B1304E	3500	–	–	118.8	103.8	–	90.0 *	–	78.2	–	–	–	–	–	–	–
VPL-B1306C	2500	156.0	–	123.8	–	104.8 *	91.2	–	–	–	–	–	–	–	–	–
VPL-B1306F	4250	–	–	123.8	–	98.3	–	85.9	–	–	76.5 *	–	–	–	–	–
VPL-B1651C	2750	180.9	–	143.6	–	121.5 *	–	102.5 *	–	–	–	–	–	–	–	–
VPL-B1651F	4750	–	–	143.6	–	114.0	–	99.6	–	–	–	85.4 *	–	–	–	–
VPL-B1652C	2700	192.5	–	152.8	133.5	–	–	109.7 *	–	–	–	–	–	–	–	–
VPL-B1652F	4000	–	–	152.8	133.5	–	112.6	–	–	96.3	–	–	–	–	–	–
VPL-B1653C	2300	200.2	–	158.9	142.1 *	–	120.4 *	–	–	–	–	–	–	–	–	–
VPL-B1653D	3000	–	–	158.9	145.6 *	130.6 *	–	110.2	–	–	–	–	–	–	–	–
VPL-B1654B	1850	205.7	179.7	–	156.8 *	133.0 *	–	–	–	–	–	–	–	–	–	–
VPL-B1654D	3000	–	–	163.3	142.7	129.6	–	113.2	–	–	–	–	–	–	–	–

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating that is measured at an rpm value that is less than the value listed for that column.

Axial Load Force Ratings (maximum radial load) for Brake Motors

Motor Cat. No. (1)	Speed, max rpm	RPM														
		500 kgf	750 kgf	1000 kgf	1500 kgf	2000 kgf	2500 kgf	3000 kgf	3500 kgf	4000 kgf	4500 kgf	5000 kgf	5500 kgf	6000 kgf	6500 kgf	7000 kgf
VPL-A1001C	2800	31.0	–	23.0	–	17.0	–	14.0 *	–	–	–	–	–	–	–	–
VPL-A1001M	6500	–	–	–	19.0	–	15.0	–	–	–	12.0	–	–	–	10.0	–
VPL-A1002C	3000	34.0	–	25.0	–	18.0	–	15.0	–	–	–	–	–	–	–	–
VPL-A1002F	5000	–	–	25.0	21.0	–	–	15.0	–	–	–	12.0	–	–	–	–
VPL-A1003C	2250	36.0	–	26.0	22.0	–	18.0 *	–	–	–	–	–	–	–	–	–
VPL-A1003E	3750	36.0	–	26.0	–	19.0	–	–	–	15.0 *	–	–	–	–	–	–
VPL-A1003F	5500	–	–	–	22.0	–	18.0	–	–	14.0	–	–	12.0	–	–	–
VPL-A1152B	2150	50.0	–	37.0	31.0	–	26.0 *	–	–	–	–	–	–	–	–	–
VPL-A1152E	3300	51.0	–	37.0	–	27.0	–	–	22.0 *	–	–	–	–	–	–	–
VPL-A1152F	5000	–	–	37.0	–	27.0	–	23.0	–	–	–	18.0	–	–	–	–
VPL-A1153C	2300	53.0	–	39.0	32.0	–	27.0 *	–	–	–	–	–	–	–	–	–
VPL-A1303B	1950	46.0	–	34.0	28.0	25.0 *	–	–	–	–	–	–	–	–	–	–
VPL-A1303F	4000	–	–	34.0	–	25.0	–	21.0	–	18.0	–	–	–	–	–	–
VPL-A1304A	1600	48.0	40.0	36.0 *	–	29.0 *	–	–	–	–	–	–	–	–	–	–
VPL-A1304D	3000	48.0	–	36.0	–	26.0	–	22.0	–	–	–	–	–	–	–	–
VPL-A1306C	2000	52.0	–	42.0 *	33.3 *	28.0	–	–	–	–	–	–	–	–	–	–
VPL-B1001M	6000	–	–	–	–	17.0	–	14.0	–	12.0	–	–	–	10.0	–	–
VPL-B1002E	3300	34.0	–	25.0	–	18.0	–	–	15.0 *	–	–	–	–	–	–	–
VPL-B1002M	6000	–	–	–	21.0	–	–	15.0	–	–	13.0	–	–	11.0	–	–
VPL-B1003C	2500	36.0	–	26.0	22.0	–	18.0	–	–	–	–	–	–	–	–	–
VPL-B1003F	4750	–	–	26.0	22.0	–	–	16.0	–	–	–	13.0 *	–	–	–	–
VPL-B1003T	7000	–	–	–	22.0	–	18.0	–	–	–	13.0	–	–	–	–	11.0
VPL-B1152C	2250	51.0	–	37.0	31.0	–	26.0 *	–	–	–	–	–	–	–	–	–
VPL-B1152F	4500	–	–	37.0	–	27.0	–	23.0	–	–	19.0	–	–	–	–	–
VPL-B1152T	6500	–	–	–	31.0	–	25.0	–	–	20.0	–	–	–	–	16.0	–
VPL-B1153E	3200	53.0	–	39.0	–	29.0	–	–	23.0*	–	–	–	–	–	–	–
VPL-B1153F	5000	–	–	39.0	–	29.0	–	24.0	–	–	–	19.0	–	–	–	–
VPL-B1303C	2250	46.0	–	34.0	28.0	–	24.0 *	–	–	–	–	–	–	–	–	–
VPL-B1303F	4000	–	–	34.0	–	25.0	–	21.0 *	–	18.0	–	–	–	–	–	–
VPL-B1304C	2150	48.0	–	36.0	31.0 *	–	25.0 *	–	–	–	–	–	–	–	–	–
VPL-B1304E	3500	–	–	36.0	30.0	–	25.0 *	–	20.0	–	–	–	–	–	–	–
VPL-B1306C	2500	52.0	–	38.0	–	31.0 *	25.0	–	–	–	–	–	–	–	–	–
VPL-B1306F	4250	–	–	38.0	–	28.0	–	24.0	–	–	20.0 *	–	–	–	–	–
VPL-B1651C	2750	58.0	–	43.0	–	34.0 *	–	27.0 *	–	–	–	–	–	–	–	–
VPL-B1651F	4750	–	–	43.0	–	31.0	–	26.0	–	–	–	21.0 *	–	–	–	–
VPL-B1652C	2700	64.0	–	47.0	39.0	–	–	30.0 *	–	–	–	–	–	–	–	–
VPL-B1652F	4000	–	–	47.6	40.0	–	32.0	–	–	26.1	–	–	–	–	–	–
VPL-B1653C	2300	68.0	–	50.0	43.0 *	–	35.0 *	–	–	–	–	–	–	–	–	–
VPL-B1653D	3000	–	–	50.7	45.3 *	39.3 *	–	31.5	–	–	–	–	–	–	–	–
VPL-B1654B	1850	71.0	59.0	–	50.0 *	40.0 *	–	–	–	–	–	–	–	–	–	–
VPL-B1654D	3000	–	–	52.9	44.4	39.2	–	32.9	–	–	–	–	–	–	–	–

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating that is measured at an rpm value that is less than the value listed for that column.

Axial Load Force Ratings (zero radial load) for Brake Motors

Motor Cat. No. (1)	Speed, max rpm	RPM														
		500 kgf	750 kgf	1000 kgf	1500 kgf	2000 kgf	2500 kgf	3000 kgf	3500 kgf	4000 kgf	4500 kgf	5000 kgf	5500 kgf	6000 kgf	6500 kgf	7000 kgf
VPL-A1001C	2800	49.4	–	36.5	–	27.0	–	23.4 *	–	–	–	–	–	–	–	–
VPL-A1001M	6500	–	–	–	30.6	–	24.5	–	–	–	19.0	–	–	–	16.2	–
VPL-A1002C	3000	49.4	–	36.5	–	27.0	–	22.7	–	–	–	–	–	–	–	–
VPL-A1002F	5000	–	–	36.5	30.6	–	–	22.7	–	–	–	18.2	–	–	–	–
VPL-A1003C	2250	49.4	–	36.5	30.6	–	25.7 *	–	–	–	–	–	–	–	–	–
VPL-A1003E	3750	49.4	–	36.5	–	27.0	–	–	–	20.6 *	–	–	–	–	–	–
VPL-A1003F	5500	–	–		30.6	–	24.5	–	–	20.0	–	–	17.4	–	–	–
VPL-A1152B	2150	68.3	–	50.5	42.4	–	36.2 *	–	–	–	–	–	–	–	–	–
VPL-A1152E	3300	68.3	–	50.5	–	37.4	–	–	30.1 *	–	–	–	–	–	–	–
VPL-A1152F	5000	–	–	50.5	–	37.4	–	31.4	–	–	–	25.1	–	–	–	–
VPL-A1153C	2300	68.3	–	50.5	42.4	–	35.2 *	–	–	–	–	–	–	–	–	–
VPL-A1303B	1950	68.3	–	50.5	42.4	37.8 *	–	–	–	–	–	–	–	–	–	–
VPL-A1303F	4000	–	–	50.5	–	37.4	–	31.4	–	27.7	–	–	–	–	–	–
VPL-A1304A	1600	68.3	57.2	51.1 *	–	41.2 *	–	–	–	–	–	–	–	–	–	–
VPL-A1304D	3000	68.3	–	50.5	–	37.4	–	31.4	–	–	–	–	–	–	–	–
VPL-A1306C	2000	68.3	–	55.7 *	44.3	37.4	–	–	–	–	–	–	–	–	–	–
VPL-B1001M	6000	–	–	–	–	27.0	–	22.7	–	20.0	–	–	–	16.8	–	–
VPL-B1002E	3300	49.4	–	36.5	–	27.0	–	–	21.8 *	–	–	–	–	–	–	–
VPL-B1002M	6000	–	–	–	30.6	–	–	22.7	–	–	19.0	–	–	16.8	–	–
VPL-B1003C	2500	49.4	–	36.5	30.6	–	24.5	–	–	–	–	–	–	–	–	–
VPL-B1003F	4750	–	–	36.5	30.6	–	–	22.7	–	–	–	18.6 *	–	–	–	–
VPL-B1003T	7000	–	–	–	30.6	–	24.5	–	–	–	19.0	–	–	–	–	15.7
VPL-B1152C	2250	68.3	–	50.5	42.4	–	35.5 *	–	–	–		–	–	–	–	–
VPL-B1152F	4500	–	–	50.5	–	37.4	–	31.4	–	–	26.3	–	–	–	–	–
VPL-B1152T	6500	–	–	–	42.4	–	33.9	–	–	27.7	–	–	–	–	22.4	–
VPL-B1153E	3200	68.3	–	50.5	–	37.4	–	–	30.5 *	–	–	–	–	–	–	–
VPL-B1153F	5000	–	–	50.5	–	37.4	–	31.4	–	–	–	25.1	–	–	–	–
VPL-B1303C	2250	68.3	–	50.5	42.4	–	35.5 *	–	–	–	–	–	–	–	–	–
VPL-B1303F	4000	–	–	50.5	–	37.4	–	31.8 *	–	27.7	–	–	–	–	–	–
VPL-B1304C	2150	68.3	–	50.5	43.6 *	–	36.2 *	–	–	–	–	–	–	–	–	–
VPL-B1304E	3500	–	–	50.5	42.4	–	35.2 *	–	29.3	–	–	–	–	–	–	–
VPL-B1306C	2500	68.3	–	50.5	–	40.6 *	33.9	–	–	–	–	–	–	–	–	–
VPL-B1306F	4250	–	–	50.5	–	37.4	–	31.4	–	–	27.0 *	–	–	–	–	–
VPL-B1651C	2750	90.1	–	66.7	–	53.7	–	43.0 *	–	–	–	–	–	–	–	–
VPL-B1651F	4750	–	–	66.7	–	49.4	–	41.4	–	–	–	33.9 *	–	–	–	–
VPL-B1652C	2700	90.1	–	66.7	55.9	–	–	43.3 *	–	–	–	–	–	–	–	–
VPL-B1652F	4000	–	–	66.7	55.9	–	44.8	–	–	36.5	–	–	–	–	–	–
VPL-B1653C	2300	90.1	–	66.7	57.6 *	–	46.4 *	–	–	–	–	–	–	–	–	–
VPL-B1653D	3000	–	–	66.7	59.5 *	51.7 *	–	41.4	–	–	–	–	–	–	–	–
VPL-B1654B	1850	90.1	75.6	–	63.2 *	51.1 *	–	–	–	–	–	–	–	–	–	–
VPL-B1654D	3000	–	–	66.7	55.9	49.4	–	41.4	–	–	–	–	–	–	–	–

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating that is measured at an rpm value that is less than the value listed for that column.

Environmental Specifications

Attribute		Value
Temperature, operating		0…40 °C (32…104 °F) [3]
Temperature, storage		-30…+40 °C (-22…+104 °F)
Relative humidity, storage		5…90% noncondensing
Atmosphere, storage		Noncorrosive
IP rating [1] of motor with optional shaft seal [2] and use of environmentally sealed cable connectors		IP66 – dust tight, jet spray [4]
IP rating of motor without a shaft seal, and mounted in this direction:	Shaft down	IP53 – dust tight, powerful water jets [4]
	Shaft horizontal	IP51 – dust tight, water dripping vertically [4]
	Shaft up	IP50 – dust tight, no protection from water [4]

(1) International Protection Code (IP66) is roughly equivalent to a NEMA 35 (dust tight, drip tight).
(2) An optional shaft seal kit is required to provide the specified IP rating for the motor. A system level rating is also dependent on the IP rating of the cable. See Additional Resources on page 23 for shaft seal installation instructions.
(3) To obtain this thermal rating, mount the motor on a surface with heat dissipation equivalent to the size of an aluminum heatsink as listed here.
Frame 063 mm, 203.2 x 203.2 x 6.35 mm (8 x 8 x 0.25 in.);
Frame 075 mm, 254.0 x 254.0 x 6.35 mm (10 x 10 x 0.25 in.);
Frames 100…165 mm, 304.8 x 304.8 x 12.7 mm (12 x 12 x 0.5 in.).
(4) IP rating descriptions are for reference only. See the international standards for more complete rating descriptions.

Motor Accessories

The following accessories are available for Kinetix low-inertia servo motors.

2090-Series Single Motor Cables

Factory-manufactured single motor cables are required with Kinetix VP low-inertia motors. Single motor cables are designed to effectively isolate the power, and feedback or brake signals, within the cable. Single motor cables are available in configurable standard-cable lengths, and provide environmental and shield termination.

Contact your nearest Rockwell Automation sales office or refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for information about available 2090-Series single motor cables.

Shaft Seal Kits

Shaft seal kits are available, as are replacement kits for field installation. A shaft seal provides a barrier that prevents moisture and particles from entering the motor bearings. Shaft seals are made of nitrile and kits include a lubricant to reduce wear.

IMPORTANT Shaft seals are subject to wear and require periodic inspection and replacement. Replacement is recommended every 3 months, not to exceed 12 months, depending on use.

Shaft Seal Kit Catalog Numbers

Motor Cat. No.	Shaft Seal Kit Cat. No.
VPL-A063*xx* and VPL-B063*xx*	VPL-SSN-F063075
VPL-A075*xx* and VPL-B075*xx*	
VPL-A100*xx* and VPL-B100*xx*	MPL-SSN-A3B3
VPL-A115*xx* and VPL-B115*xx*	MPL-SSN-A4B4
VPL-A130*xx* and VPL-B130*xx*	MPL-SSN-A5B5
VPL-B165*xx*	MPL-SSN-F165

See the Shaft Seal Kit Installation Instructions, publication 2090-IN012, for instructions on how to install a shaft seal.

Additional Resources

These documents contain information concerning related products from Rockwell Automation.

Resource	Description
Kinetix Rotary Motion Specifications Technical Data, publication KNX-TD001	Product specifications for Allen-Bradley® rotary motors, with performance, environmental, certifications, load force, and dimension drawings.
Kinetix Motion Accessories Specifications, publication KNX-TD004	Product specifications and dimensions for Allen-Bradley servo drive accessories.
Kinetix 5500 Servo Drives User Manual, publication 2198-UM001	Information on installing, configuring, starting, and troubleshooting a servo drive system.
Kinetix 5700 Servo Drives User Manual, publication 2198-UM002	
Kinetix 5500 Drive System Design Guide, publication KNX-RM009	Information on drive system components and accessory items you need for your Kinetix drive/motor combination.
Kinetix 5700 Drive System Design Guide, publication KNX-RM010	
Shaft Seal Kit Installation Instructions, publication 2090-IN012	Information on the installation of a shaft seal on this and other servo motors.
Product Certifications website, http://www.rockwellautomation.com/global/certification/overview.page	Provides declarations of conformity, certificates, and other certification details.
Allen-Bradley Industrial Automation Glossary, publication AG-7.1	A glossary of industrial automation terms and abbreviations.
System Design for Control of Electrical Noise Reference Manual, publication GMC-RM001	Information, examples, and techniques that are designed to minimize system failures that are caused by electrical noise.

You can view or download publications at http://www.rockwellautomation.com/global/literature-library/overview.page. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Rockwell Automation Support

Use the following resources to access support information.

Technical Support Center	Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.	https://rockwellautomation.custhelp.com/
Local Technical Support Phone Numbers	Locate the phone number for your country.	http://www.rockwellautomation.com/global/support/get-support-now.page
Direct Dial Codes	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	http://www.rockwellautomation.com/global/support/direct-dial.page
Literature Library	Installation Instructions, Manuals, Brochures, and Technical Data.	http://www.rockwellautomation.com/global/literature-library/overview.page
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	http://www.rockwellautomation.com/global/support/pcdc.page

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete the How Are We Doing? form at http://literature.rockwellautomation.com/idc/groups/literature/documents/du/ra-du002_-en-e.pdf.

Rockwell Automation maintains current product environmental information on its website at http://www.rockwellautomation.com/rockwellautomation/about-us/sustainability-ethics/product-environmental-compliance.page.

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