

# 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-A100xx and VPL-B100xx motors	22
Added Kinetix 5700 publications to Additional Resources	23

## About the Kinetix VP Low Inertia Motors

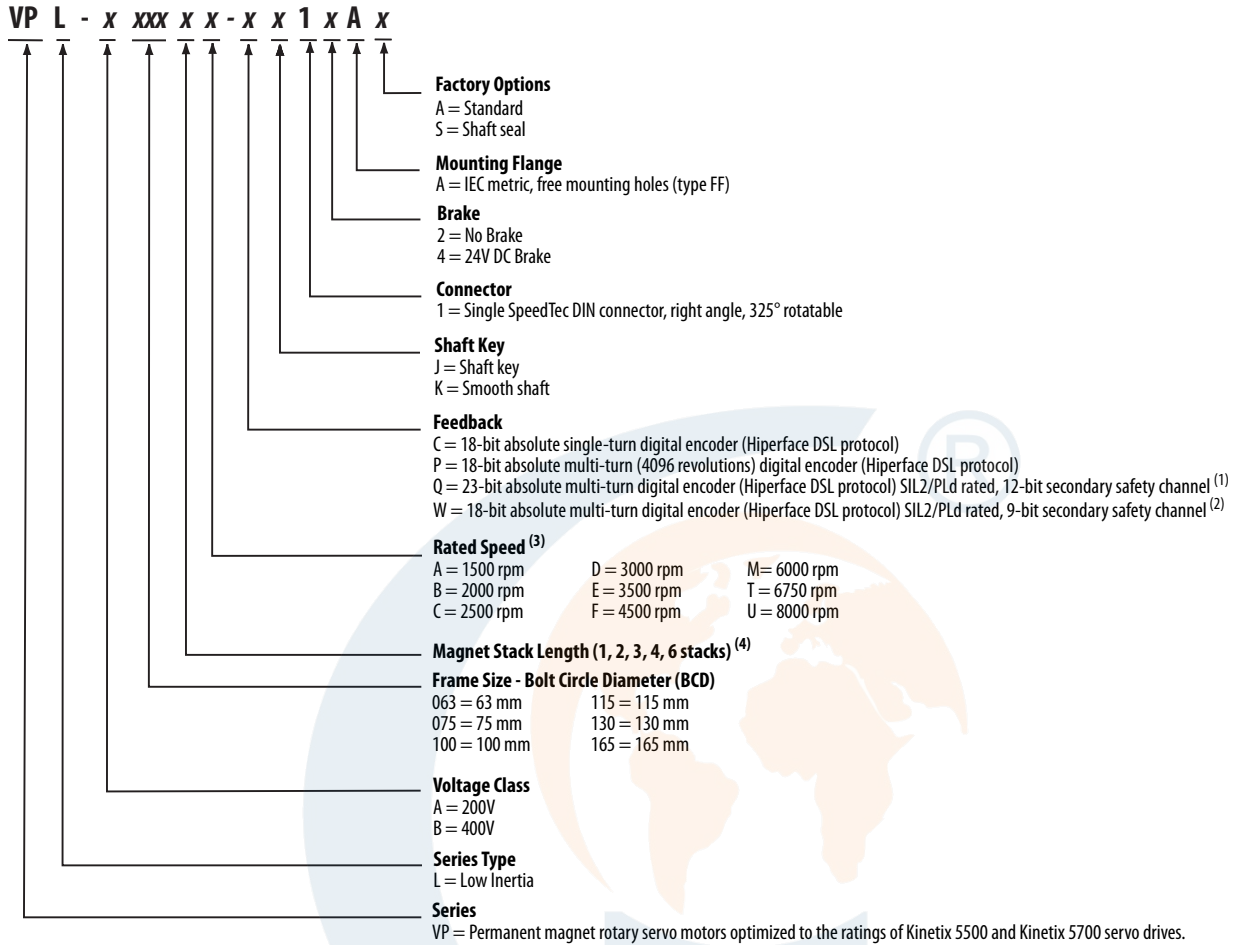
Kinetix® VP low-inertia motors feature single-turn or multi-turn high-resolution absolute encoders, and are available with or without 24V DC brakes. These compact brushless servo motors meet the demanding requirements of high-performance motion systems.

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



- (1) This encoder option is available with only VPL-A/B100xx, VPL-A/B115xx, VPL-A/B130xx, and VPL-B165xx motor frame sizes.
- (2) This encoder option is available with only VPL-B063xx and VPL-B075xx 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.