# ABB ACS150 micro drives

## Achieve high performance with maximum versatility in your application

**ABB micro drives**

Take performance to the next level with the wide power range and functionality of the ACS150. The ACS150 variable frequency drive has an extensive list of programmable drive parameters that are used to achieve high performance with maximum versatility in many applications. The drive includes a variety of predefined I/O configuration macros, including ABB standard, 3-wire control, digital input control, PID control, hand/auto control and a PLC interface, for easy setup and commissioning. User defined macros can also be created.

ACS150 micro drives are compact with multiple mounting positions and options. The drive features an integrated control panel with LCD display and built-in speed potentiometer. Rapid programming and commissioning are possible using the onboard setup macros. The DrivePM (Drive Parameter Manager) software tool can be used to create, edit, and copy parameter sets using the MFDT-01 FlashDrop tool.

ACS150 micro drives are designed to be incorporated into a wide variety of machines, such as mixers, conveyors, fans, pumps, or anywhere a motor needs to run at variable speed. The ACS150 is ideal for panel builders and OEMs needing an easy-to-commission, cost-effective micro drive with flexible mounting options.

**Highlights**

- Single and three phase input available
- 150% peak overload capacity
- Common height and depth across the product line, for flexible installation
- Easy access to power and I/O connections for rapid installation
- Options for input reactors, output filters and braking resistors
- UL listing includes use of ABB manual motor protectors for branch circuit protection instead of fuses
- NEMA 1 kits for standalone installation

| Feature | Advantage | Benefit |
|---|---|---|
| Worldwide availability and service | Drives are available worldwide and permanently stocked in four regions.<br>Dedicated global service and support provided by a network that is one of the widest in the industry. | Fast and reliable delivery with dedicated support to any country in the world. |
| User-friendly LCD control panel and integrated potentiometer | Clear alphanumeric display. Easy setup and use. | Time savings due to quick setup and simple configuration. |
| Flexible mounting alternatives | Wall or DIN rail mounting, sideways or side-by-side. | One drive type can be used in various designs, saving installation costs and time. |
| Integrated EMC filter | High electromagnetic compatibility. | Low EMC emissions in selected environments. |
| Built-in brake chopper as standard | No need for an external brake chopper. | Space savings, reduced installation cost. |
| FlashDrop tool | Faster and easier drive setup and commissioning for volume manufacturing and maintenance. The FlashDrop tool enables both downloading and uploading drive parameters. | Fast, safe and trouble-free parameter setting without the need to power-up the drive. |
| PID control | Varies the drive's performance according to the need of the application. | Enhances production output, stability and accuracy. |
| Coated boards | Board coating protects the electronics from hazards including static discharge and airborne contaminates, including moisture. | High reliability enables reduced maintenance the electronic components are protected. |

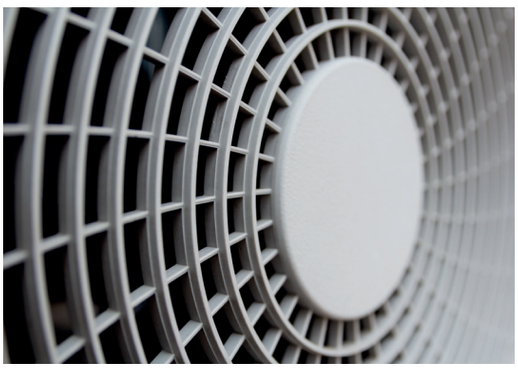
# Applications

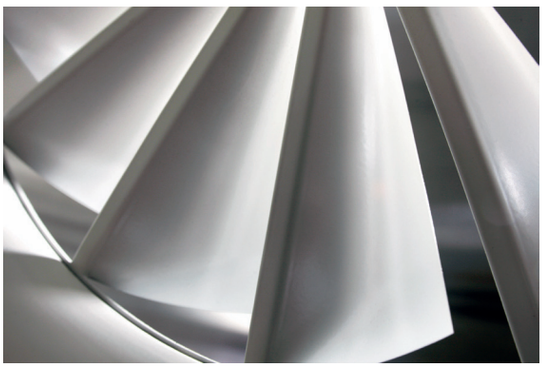
**In mixing applications** the drive provides high starting torque which benefits the start of the mixing operation. The silent operation mode adjusts the switching frequency of the drive to a higher level after the high-torque start, resulting in lower audible noise. The FlashDrop tool provides a quick and safe way to configure multiple drives for identical mixer applications.

**In conveyors** the belt speed can be controlled using a drive and a motor. Production lines often have multiple stages, including conveyors, which need to be efficiently linked with each other to provide high production output. A drive provides smooth start and stop of the conveyor, thereby reducing mechanical stress and lowering maintenance costs.

**A heat pump system** consists of an indoor unit with fan and an outdoor unit with a compressor and a blower. The outdoor unit uses the compressor and the blower to dissipate the heat. The cooled air is blown indoors by fans located in the indoor unit. Drive allows the user to variably control the cooling power based on customer request. AC drives optimizes systems' energy efficiency and smooths system operation.

**Fans** are used for process cooling and ventilation in industrial, commercial and domestic environments. Using a drive to control air flow enables energy savings compared to mechanical flow control methods. An ABB drive has integrated PID control which provides optimal air flow by adjusting the fan speed based on a given reference value.





# Ratings, types and dimensions

**Type designation**
In column 4 on the right is the unique reference number that clearly identifies your drive by power rating and frame size. Once you have selected the type designation, the frame size (column 5) can be used to determine the drives dimensions, shown below.

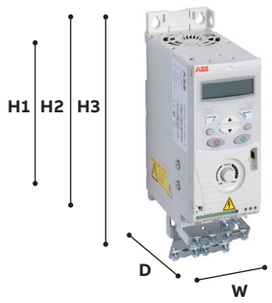
**Voltages**
ACS150 is available in two voltage ranges:
2 = 200 to 240 V
4 = 380 to 480 V
Insert either “2” or “4”, depending on your chosen voltage, into the type designation shown on the page 7.

**Construction**
“01X” and “03X” within the type designation varies depending on the drive phase and EMC filtering. Choose below the one you need.
01 = 1-phase
03 = 3-phase
E = EMC filter connected, 50 Hz frequency
The European variant of the ACS150 will have an "E" in the type code indicating the EMC filter is connected with a metal grounding screw in the EMC port
U = EMC filter disconnected, 60 Hz frequency
The standard configuration of the ACS150 for drives stocked in the U.S. will have a "U" in the type code, indicating there is a nylon screw in the "EMC" port to disconnect the filter. A metal screw is provided in the parts bag to replace the nylon screw and connect the EMC filter.

| Ratings | | | | |
|---|---|---|---|---|
| $P_N$ hp | $P_N$ kW | $I_{2N}$ A | Type designation | Frame size |
| **1-phase AC supply, 200 to 240 V** | | | | |
| 0.5 | 0.37 | 2.4 | ACS150-01U-02A4-2 | R0 |
| 1 | 0.75 | 4.7 | ACS150-01U-04A7-2 | R1 |
| 1.5 | 1.1 | 6.7 | ACS150-01U-06A7-2 | R1 |
| 2 | 1.5 | 7.5 | ACS150-01U-07A5-2 | R2 |
| 3 | 2.2 | 9.8 | ACS150-01U-09A8-2 | R2 |
| **3-phase AC supply, 200 to 240 V** | | | | |
| 0.5 | 0.37 | 2.4 | ACS150-03U-02A4-2 | R0 |
| 0.75 | 0.55 | 3.5 | ACS150-03U-03A5-2 | R0 |
| 1 | 0.75 | 4.7 | ACS150-03U-04A7-2 | R1 |
| 1.5 | 1.1 | 6.7 | ACS150-03U-06A7-2 | R1 |
| 2 | 1.5 | 7.5 | ACS150-03U-07A5-2 | R1 |
| 3 | 2.2 | 9.8 | ACS150-03U-09A8-2 | R2 |
| **3-phase AC supply, 380 to 480 V** | | | | |
| 0.5 | 0.37 | 1.2 | ACS150-03U-01A2-4 | R0 |
| 0.75 | 0.55 | 1.9 | ACS150-03U-01A9-4 | R0 |
| 1 | 0.75 | 2.4 | ACS150-03U-02A4-4 | R1 |
| 1.5 | 1.1 | 3.3 | ACS150-03U-03A3-4 | R1 |
| 2 | 1.5 | 4.1 | ACS150-03U-04A1-4 | R1 |
| 3 | 2.2 | 5.6 | ACS150-03U-05A6-4 | R1 |
| 5 | 4 | 8.8 | ACS150-03U-08A8-4 | R1 |

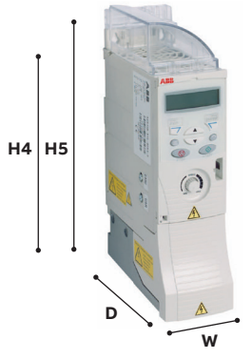
| Cabinet-mounted drives (UL open) | | | | | | |
|---|---|---|---|---|---|---|
| | IP20 UL open | | | | | |
| Frame size | H1 mm | H2 mm | H3 mm | W mm | D mm | Weight kg |
| R0 | 169 | 202 | 239 | 70 | 142 | 1.1 |
| R1 | 169 | 202 | 239 | 70 | 142 | 1.3 |
| R2 | 169 | 202 | 239 | 105 | 142 | 1.5 |

H1 = Height without fastenings and clamping plate.
H2 = Height with fastenings but without clamping plate.
H3 = Height with fastenings and clamping plate.
W = Width
D = Depth




| Wall-mounted drives (NEMA 1) | | | | | |
|---|---|---|---|---|---|
| | NEMA 1 | | | | |
| Frame size | H4 mm | H5 mm | W mm | D mm | Weight kg |
| R0 | 257 | 280 | 70 | 142 | 1.5 |
| R1 | 257 | 280 | 70 | 142 | 1.7 |
| R2 | 257 | 282 | 105 | 142 | 1.9 |

H4 = Height with fastenings and NEMA 1 connection box.
H5 = Height with fastenings, NEMA 1 connection box and hood.
W = Width
D = Depth



# Technical data

| **Mains connection** | |
|---|---|
| **Voltage and power range** | 1-phase, 200 to 240 V ± 10%<br>0.5 to 3 hp (0.37 to 2.2 kW)<br>3-phase, 200 to 240 V ± 10%<br>0.5 to 3 hp (0.37 to 2.2 kW)<br>3-phase, 380 to 480 V ± 10%<br>0.5 to 5 hp (0.37 to 4 kW) |
| **Frequency** | 48 to 63 Hz |
| **Motor connection** | |
| **Voltage** | 3-phase, from 0 to $U_{supply}$ |
| **Frequency** | 0 to 500 Hz |
| **Continuous loading capability (constant torque at a max. ambient temperature of 40 °C)** | Rated output current $I_{2N}$ |
| **Overload capability (at a max. ambient temperature of 40 °C)** | At heavy duty use 1.5 x $I_{2N}$ for 1 minute every 10 minutes<br>At start 1.8 x $I_{2N}$ for 2 s |
| **Switching frequency**<br>Default<br>Selectable | <br>4 kHz<br>4 to 16 kHz with 4 kHz steps |
| **Acceleration time** | 0.1 to 1800 s |
| **Deceleration time** | 0.1 to 1800 s |
| **Braking** | Built-in brake chopper as standard |
| **Motor control method** | Scalar U/f |
| **Environmental limits** | |
| **Ambient temperature** | -10 to 40 °C (14 to 104 °F), no frost allowed, 50 °C (122 °F) with 10% derating |
| **Altitude**<br>Output current | <br>Rated current available at 0 to 1000 m (0 to 3281 ft) reduced by 1% per 100 m (328 ft) over 1000 to 2000 m (3281 to 6562 ft) |
| **Relative humidity** | Lower than 95% (without condensation) |
| **Degree of protection** | IP20/Optional NEMA 1 enclosure |
| **Enclosure color** | NCS 1502-Y, RAL 9002, PMS 420 C |
| **Contamination levels**<br>Transportation<br>Storage<br>Operation | IEC 721-3-3<br>No conductive dust allowed<br>Class 1C2 (chemical gases)<br>Class 1S2 (solid particles)<br>Class 2C2 (chemical gases)<br>Class 2S2 (solid particles)<br>Class 3C2 (chemical gases)<br>Class 3S2 (solid particles) |

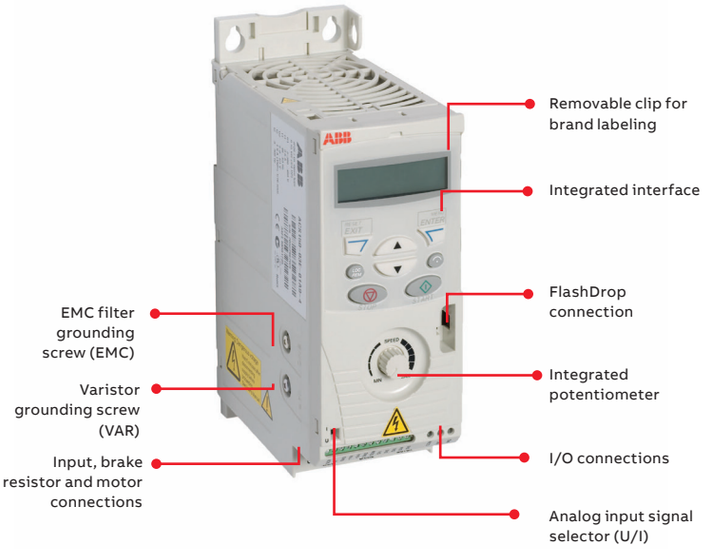
| **Power conditioning** | |
|---|---|
| **AC input reactors** | External option. For reducing THD in partial loads and to comply with EN 61000-3-2. |
| **Dv/dt output filters** | External option. To achieve longer motor cables. |
| **Programmable control connections** | |
| **One analog input**<br>Voltage signal<br>Current signal<br>Potentiometer reference value<br>Resolution<br>Accuracy | <br>0 (2) to 10 V, $R_{in}$ > 312 kΩ<br>0 (4) to 20 mA, $R_{in}$ = 100 Ω<br>10 V ± 1% max.<br>10 mA, R < 10 kΩ<br>0.1%<br>± 2% |
| **Auxiliary voltage** | 24 V DC ± 10%, max. 200 mA |
| **Five digital inputs** | 12 to 24 V DC with internal or external supply,<br>PNP and NPN, pulse train<br>0 to 16 kHz |
| **Input impedance** | 2.4 kΩ |
| **One relay output**<br>Type<br>Maximum switching voltage<br>Maximum switching current<br>Maximum continuous current | <br>NO + NC<br>250 V AC/30 V DC<br>0.5 A/30 V DC; 5 A/230 V AC 2<br>2 A rms |
| **Product compliance** | |
| Low voltage Directive 2006/95/EC with supplements<br>Machinery Directive 2006/42/EC<br>EMC Directive 2004/108/EC with supplements<br>Quality assurance system ISO 9001<br>Environmental system ISO 14001<br>UL, cUL, CE, RCM and EAC approvals<br>RoHS compliant | |

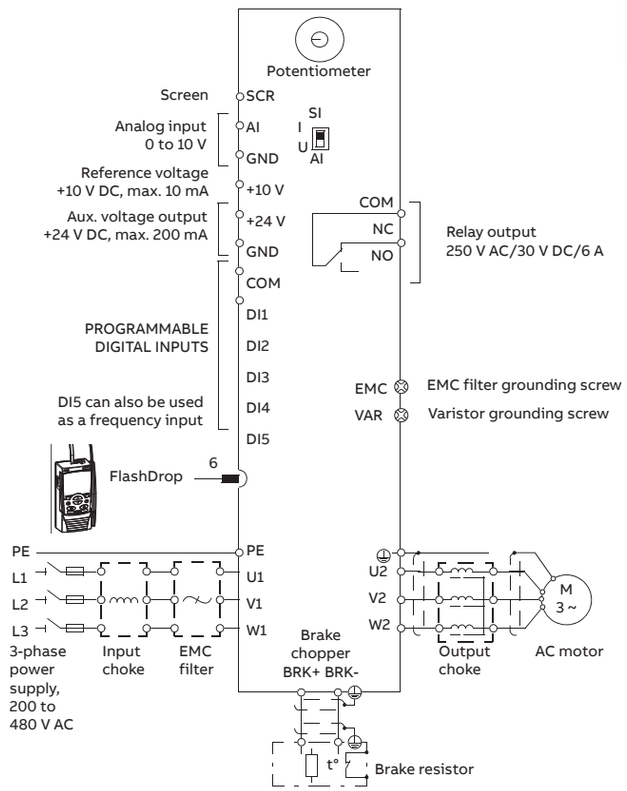
# Control connections and interfaces

**Application macros**
Application macros are preprogrammed parameter sets. When starting up the drive, the user typically selects one of the macros that is best suited for the application. The diagram below gives an overview of ACS150 control connections and shows the default I/O connections for the ABB standard macro.

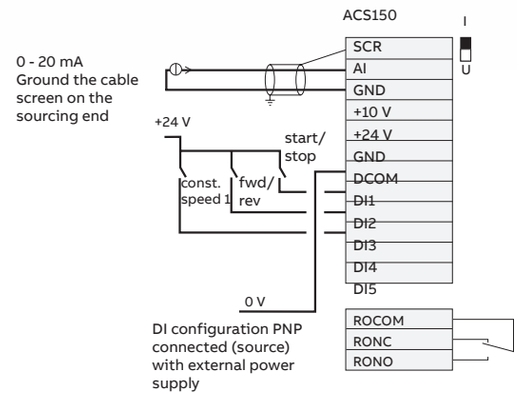
**ABB micro drives have six standard macros:**
- ABB standard macro
- 3-wire macro
- Alternate macro
- Motor potentiometer macro
- Hand/auto macro
- PID control macro

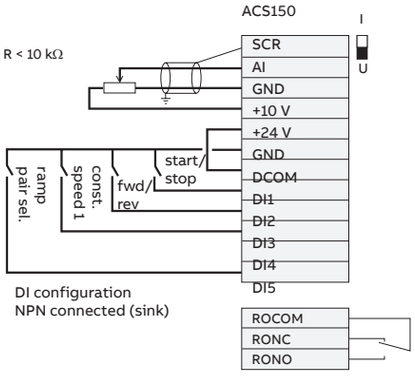
In addition to the standard macros the user can create three user macros. The user macro allows the user to save the parameter settings for later use.




## Typical I/O connections



# Cooling

**Cooling**
ACS150 is fitted with cooling fans as standard. The cooling air must be free from corrosive substances and must not be above the maximum ambient temperature of 40 °C (50 °C with derating). For more specific limits see the Technical data - Environmental limits in this catalog.

## Cooling air flow

| | | Heat dissipation | | Air flow | |
|---|---|---|---|---|---|
| **Type designation** | **Frame size** | **[W]** | **BTU/hr** | **$m^3/h$** | **$ft^3/min$** |
| **1-phase, 200 to 240 V** | | | | | |
| ACS150-01U-02A4-2 | R0 | 25 | 85 | -*) | -*) |
| ACS150-01U-04A7-2 | R1 | 46 | 157 | 24 | 14 |
| ACS150-01U-06A7-2 | R1 | 71 | 242 | 24 | 14 |
| ACS150-01U-07A5-2 | R2 | 73 | 249 | 21 | 12 |
| ACS150-01U-09A8-2 | R2 | 96 | 328 | 21 | 12 |
| **3-phase, 200 to 240 V** | | | | | |
| ACS150-03U-02A4-2 | R0 | 19 | 65 | -*) | -*) |
| ACS150-03U-03A5-2 | R0 | 31 | 106 | -*) | -*) |
| ACS150-03U-04A7-2 | R1 | 38 | 130 | 24 | 14 |
| ACS150-03U-06A7-2 | R1 | 60 | 205 | 24 | 14 |
| ACS150-03U-07A5-2 | R1 | 62 | 212 | 21 | 12 |
| ACS150-03U-09A8-2 | R2 | 83 | 283 | 21 | 12 |
| **3-phase, 380 to 480 V** | | | | | |
| ACS150-03U-01A2-4 | R0 | 11 | 38 | -*) | -*) |
| ACS150-03U-01A9-4 | R0 | 16 | 55 | -*) | -*) |
| ACS150-03U-02A4-4 | R1 | 21 | 72 | 13 | 8 |
| ACS150-03U-03A3-4 | R1 | 31 | 106 | 13 | 8 |
| ACS150-03U-04A1-4 | R1 | 40 | 137 | 13 | 8 |
| ACS150-03U-05A6-4 | R1 | 61 | 208 | 19 | 11 |
| ACS150-03U-07A3-4 | R1 | 74 | 253 | 24 | 14 |
| ACS150-03U-08A8-4 | R1 | 94 | 321 | 24 | 14 |

*) Frame size R0 with free convection cooling.

## Free space requirements

| Enclosure type | Space above mm | Space below mm | Space on left/right mm |
|---|---|---|---|
| All frame sizes | 75 | 75 | 0 |

# Fuses and circuit protection

**Fuses or manual motor protectors for circuit protection**
Standard fuses or manual motor protectors can be used with ACS150 drives for branch circuit protection.
Use the following table for selecting the correct fuse or protector for each drive.

**Manual motor protectors**
ABB UL file E211945 Volume 1, Section 4 lists the ABB Type E manual motor protectors MS132 & S1-M3-25, MS165, MS495 as an alternate to UL classified fuses as a means of branch circuit protection. This is in accordance with the National Electrical Code (NEC).

When the correct ABB Type E manual motor protector is selected from the table and used for branch circuit protection the drive is suitable for use in a circuit capable of delivering not more than 65 kA RMS symmetrical amperes at the drive maximum rated voltage.

Drives with and without NEMA 1 enclosure kits are included in the UL file. The MMP selections in the table are also valid for drives having a NEMA 1 enclosure kit installed.

| Type code | Frame | IEC fuses | UL fuses | Manual motor protectors | | |
|---|---|---|---|---|---|---|
| | | Fuse type gG* [A] | UL class T or CC (600V) [A] | MMP Type E[1,2] | MMP trip current setting [A] | Minimum Enclosure Vol.[5] [cu in] |
| **1 Phase 200 to 240 V** | | | | | | |
| ACS150-01U-02A4-2 | R0 | 10 | 10 | MS132-6.3 & S1-M3-253 | 6.1 | 1152 |
| ACS150-01U-04A7-2 | R1 | 16 | 20 | MS165-16 | 11.4 | 1152 |
| ACS150-01U-06A7-2 | R1 | 20 | 25 | MS165-20 | 16.1 | 1152 |
| ACS150-01U-07A5-2 | R2 | 25 | 30 | MS165-20 | 16.8 | - |
| ACS150-01U-09A8-2 | R2 | 35 | 35 | MS165-25 | 21 | - |
| **3 Phase 200 to 240 V** | | | | | | |
| ACS150-03U-02A4-2 | R0 | 10 | 10 | MS132-6.3 & S1-M3-25[3] | 4.3 | 1152 |
| ACS150-03U-03A5-2 | R0 | 10 | 10 | MS132-6.3 & S1-M3-25[3] | 6.1 | 1152 |
| ACS150-03U-04A7-2 | R1 | 10 | 15 | MS132-10 & S1-M3-25[3] | 7.6 | 1152 |
| ACS150-03U-06A7-2 | R1 | 16 | 15 | MS165-16 | 11.8 | 1152 |
| ACS150-03U-07A5-2 | R1 | 16 | 15 | MS165-16 | 12.0 | 1152 |
| ACS150-03U-09A8-2 | R2 | 16 | 20 | MS165-16 | 14.3 | - |
| **3 Phase 440, 460, 480 V [4]** | | | | | | |
| ACS150-03U-01A2-4 | R0 | 10 | 10 | MS132-2.5 & S1-M3-25 | 1.8 | 1152 |
| ACS150-03U-01A9-4 | R0 | 10 | 10 | MS132-4.0 & S1-M3-25 | 3.0 | 1152 |
| ACS150-03U-02A4-4 | R1 | 10 | 10 | MS132-4.0 & S1-M3-25 | 3.4 | 1152 |
| ACS150-03U-03A3-4 | R1 | 10 | 10 | MS132-6.3 & S1-M3-25 | 5.0 | 1152 |
| ACS150-03U-04A1-4 | R1 | 16 | 15 | MS132-6.3 & S1-M3-25 | 5.8 | 1152 |
| ACS150-03U-05A6-4 | R1 | 16 | 15 | MS132-10 & S1-M3-25 | 8.0 | 1152 |
| ACS150-03U-07A3-4 | R1 | 16 | 20 | MS132-10 & S1-M3-25 | 9.7 | 1152 |
| ACS150-03U-08A8-4 | R1 | 20 | 25 | MS165-16 | 11.3 | 1152 |

*According to the IEC-60269 standard
[1] All manual motor protectors listed are Type E self-protected up to 65kA. See ABB publication 2CDC131085M0201 - Manual Motor Starters - North American Applications for complete technical data on ABB Type E manual motor protectors.
[2] Manual motor protectors may require adjusting the trip limit from the factory setting at or above the drive input Amps to avoid nuisance tripping. If the manual motor protector is set to the maximum current trip level and nuisance tripping is occurring, then select the next size MMP. (MS132-10 is the highest size in MS132 frame size to meet Type E at 65kA; the next size up is the MS165-16.
[3] Requires use of the S1-M3-25 line side feeder terminal with the manual motor protector to meet Type E self-protection class.
[4] 480Y/277V delta systems only: Short-circuit protective devices with slash voltage ratings (e.g. 480Y/277 VAC) can be applies only in solidly grounded networks where the voltage from line-to-ground does not exceed the lower of the two ratings (e.g. 277 V AC), and the voltage from line-to-line does not exceed the higher of the two ratings (e.g. 480 V AC). The lower rating represents the device's interrupting capability per pole.
[5] Minimum enclosure volume is specified in the UL listing for R0 & R1 frame drives when applied with the ABB Type E MMP shown in the table. ACS150 drives are intended to be mounted in an enclosure unless a NEMA 1 kit is added.
For all drives, the enclosure must be sized to accommodate the specific thermal considerations of the application as well as provide free space for cooling.
See the applicable ABB User Manual for free space requirements.

To obtain the most current product documentation go to www.abb.com and select Offerings/Low Voltage AC Drives to navigate to the complete User Manual for the appropriate drive.

# Input reactors

A separate order line and type designation is required for any of these external options.

**Input reactors**

- Using an input reactor increases uptime, improves power factor, and increases drive lifetime by reducing heat. Drives are vulnerable to electrical distortion on the line. The addition of a KDR Reactor will reduce harmonic content, which reduces the total RMS current, thereby improving the total power factor. In most cases, the use of an external input reactor is recommended for use with an AC drive. Advantages of using an input reactor include:
- Reduction of nuisance tripping caused by:
  - Transient voltages caused by capacitor switching
  - Line notching
  - DC bus overvoltage tripping
  - Inverter overcurrent and overvoltage
  - Reduced nuisance tripping
- Additional benefits include:
  - Lowering injected percentage of harmonic current
  - Improving true power factor
  - Reducing cross-talk between drives
  - Adding impedance to drives with DC link chokes/reactors when more impedance is desired due to a relatively stiff source

**Features**

Open, UL Type 1 and UL Type 3R construction - all are UL Listed.

Cable lugs are provided with the reactor or as a separate kit as noted in the tables.

| **Single phase 200-240V applications** | | | | |
|---|---|---|---|---|
| **Drive Part # ACS150-01U-** | **HP ND** | **Input current @ 200V** | **Input current @ 200V with 5% choke** | **Output Current $I_{2N}$** |
| **02A4-2** | **0.5** | **6.1** | **4.5** | 2.4 |
| **04A7-2** | **1** | **11** | **8.1** | 4.7 |
| **06A7-2** | **1.5** | **16** | **11** | 6.7 |
| **07A5-2** | **2** | **17** | **12** | 7.5 |
| **09A8-2** | **3** | **21** | **15** | 9.8 |
| **Three phase 200-240V applications** | | | | |
| **Drive Part # ACS150-03U-** | **HP ND** | **Drive Input Current @ 200V** | **Drive Input current @ 200V with 5% choke** | |
| **02A4-2** | **0.5** | **4.3** | **2.2** | 2.4 |
| **03A5-2** | **0.75** | **6.1** | **3.5** | 3.5 |
| **04A7-2** | **1** | **7.6** | **4.2** | 4.7 |
| **06A7-2** | **1.5** | **12** | **6.1** | 6.7 |
| **07A5-2** | **2** | **12** | **6.9** | 7.5 |
| **09A8-2** | **3** | **14** | **9.2** | 9.8 |
| **Three phase 380-480V applications** | | | | |
| **Drive Part # ACS150-03U-** | **HP ND** | **Drive Input Current @ 480V** | **Drive Input current @ 480V with 5% choke** | |
| **01A2-4** | **0.5** | **1.8** | **0.9** | 1.2 |
| **01A9-4** | **0.75** | **3.0** | **1.5** | 1.9 |
| **02A4-4** | **1** | **3.4** | **1.9** | 2.4 |
| **03A3-4** | **1.5** | **5.0** | **2.6** | 3.3 |
| **04A1-4** | **2** | **5.8** | **2.9** | 4.1 |
| **05A6-4** | **3** | **8.0** | **4.0** | 5.6 |
| **08A8-4** | **5** | **11** | **6.4** | 8.8 |

# Input reactors

## Low impedance

### Input Reactors for Single Phase 200-240V applications (connect to terminals A and C)

| Drive Part # ACS150-01U- | HP ND | Drive Output Current I2N | KDR 3%, UL Listed, Open | | | | KDR 3%, UL Type 1 Enclosure | | | | KDR 3%, UL Type 3R Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Part Number | Watts Loss | Dimensions (HxWxD) | Weight | Part Number | Watts Loss | Dimensions (HxWxD) | Weight | Part Number | Watts Loss | Dimensions (HxWxD) | Weight |
| 02A4-2 | 0.5 | 2.4 | KDRMA8L1 | 30.6 | 3.63x4.45x1.78 | 4 | KDRMA8L1E01 | 30.6 | 12.25x12.5x6.75 | 12 | KDRMA8L1E3R1 | 30.6 | 11.5x10x12 | 17 |
| 04A7-2 | 1 | 4.7 | KDRAA3L2 | 4405 | 4.44x4.25x2.64 | 3 | KDRAA3L2E01 | 4405 | 12.25x12.5x6.75 | 14 | KDRAA3L2E3R1 | 4405 | 11.5x10x12 | 18 |
| 06A7-2 | 1.5 | 6.7 | KDRAA4L2 | 62.9 | 4.44 x 4.25 x 2.64 | 4 | KDRAA4L2E01 | 62.9 | 12.25x12.5x6.75 | 14 | KDRAA4L2E3R1 | 62.9 | 11.5x10x12 | 18 |
| 07A5-2 | 2 | 7.5 | KDRB22L | 38 | 5.00 x 6.00 x 4.00 | 8 | KDRB22LE01 | 38 | 12.25x12.5x6.75 | 18.5 | KDRB22LE3R | 38 | 11.5x10x12 | 23 |
| 09A8-2 | 3 | 9.8 | KDRB22L | 38 | 5.00 x 6.00 x 4.00 | 8 | KDRB22LE01 | 38 | 12.25x12.5x6.75 | 18.5 | KDRB22LE3R | 38 | 11.5x10x12 | 23 |

### Input Reactors for Three Phase 200-240V applications

| Drive Part # ACS150-03U- | HP ND | Drive Output Current I2N | KDR 3%, UL Listed, Open | | | | KDR 3%, UL Type 1 Enclosure | | | | KDR 3%, UL Type 3R Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Part Number | Watts Loss | Dimensions (HxWxD) | Weight | Part Number | Watts Loss | Dimensions (HxWxD) | Weight | Part Number | Watts Loss | Dimensions (HxWxD) | Weight |
| 02A4-2 | 0.5 | 2.4 | KDRMA8L1 | 30.6 | 3.63x4.45x1.78 | 4 | KDRMA8L1E01 | 30.6 | 12.25x12.5x6.75 | 12 | KDRMA8L1E3R1 | 30.6 | 11.5x10x12 | 17 |
| 03A5-2 | 0.75 | 3.5 | KDRAA3L2 | 44.5 | 4.44x4.25x2.64 | 3 | KDRAA3L2E01 | 44.5 | 12.25x12.5x6.75 | 14 | KDRAA3L2E3R1 | 44.5 | 11.5x10x12 | 18 |
| 04A7-2 | 1 | 4.7 | KDRAA4L2 | 62.9 | 4.44x4.258x2.64 | 4 | KDRAA4L2E01 | 62.9 | 12.25x12.5x6.75 | 14 | KDRAA4L2E3R1 | 62.9 | 11.5x10x12 | 19 |
| 06A7-2 | 1.5 | 6.7 | KDRAA4L2 | 62.9 | 4.44x4.25x2.64 | 4 | KDRAA4L2E01 | 62.9 | 12.25x12.5x6.75 | 14 | KDRAA4L2E3R1 | 62.9 | 11.5x10x12 | 19 |
| 07A5-2 | 2 | 7.5 | KDRA27L | 21 | 4 x4.18 x3.75 | 4 | KDRA27LE01 | 21 | 12.25x12.5x6.75 | 14.5 | KDRA27LE3R | 21 | 11.5x10x12 | 19 |
| 09A8-2 | 3 | 9.8 | KDRA28L | 29 | 4 x4.18 x3.75 | 4 | KDRA28LE01 | 29 | 12.25x12.5x6.75 | 14.5 | KDRA28LE3R | 29 | 11.5x10x12 | 19 |

### Input Reactors for Three Phase 380-480V applications

| Drive Part # ACS150-03U- | HP ND | Drive Output Current I2N | KDR 3%, UL Listed, Open | | | | KDR 3%, UL Type 1 Enclosure | | | | KDR 3%, UL Type 3R Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Part Number | Watts Loss | Dimensions (HxWxD) | Weight | Part Number | Watts Loss | Dimensions (HxWxD) | Weight | Part Number | Watts Loss | Dimensions (HxWxD) | Weight |
| 01A2-4 | 0.5 | 1.2 | KDRMA3L1 | 9.7 | 3.63x4.45x1.78 | 2 | KDRMA3L1E01 | 9.7 | 12.25x12.5x6.75 | 12 | KDRMA3L1E3R1 | 9.7 | 11.5x10x12 | 17 |
| 01A9-4 | 0.75 | 1.9 | KDRMA4L1 | 12.2 | 3.63x4.45x1.78 | 2 | KDRMA4L1E01 | 12.2 | 12.25x12.5x6.75 | 12 | KDRMA4L1E3R1 | 12.2 | 11.5x10x12 | 17 |
| 02A4-4 | 1 | 2.4 | KDRMA5L1 | 25.2 | 3.63x4.45x1.78 | 2 | KDRMA5L1E01 | 25.2 | 12.25x12.5x6.75 | 12 | KDRMA5L1E3R1 | 25.2 | 11.5x10x12 | 17 |
| 03A3-4 | 1.5 | 3.3 | KDRMA6L1 | 26.4 | 3.63x4.45x1.78 | 2 | KDRMA6L1E01 | 26.4 | 12.25x12.5x6.75 | 12 | KDRMA6L1E3R1 | 26.4 | 11.5x10x12 | 17 |
| 04A1-4 | 2 | 4.1 | KDRMA7L1 | 23.5 | 3.63x4.45x1.78 | 2 | KDRMA7L1E01 | 23.5 | 12.25x12.5x6.75 | 12 | KDRMA7L1E3R1 | 23.5 | 11.5x10x12 | 17 |
| 05A6-4 | 3 | 5.6 | KDRMA8L1 | 30.6 | 3.63x4.45x1.78 | 2 | KDRMA8L1E01 | 30.6 | 12.25x12.5x6.75 | 12 | KDRMA8L1E3R1 | 30.6 | 11.5x10x12 | 17 |
| 08A8-4 | 5 | 8.8 | KDRAA3L2 | 48.8 | 4.44x4.25x2.64 | 3 | KDRAA3L2E01 | 48.8 | 12.25x12.5x6.75 | 14 | KDRAA3L2E3R1 | 48.8 | 11.5x10x12 | 18 |

# Input reactors

## High impedance

### Input Reactors for Single Phase 200-240V applications (connect to terminals A and C)

| Drive Part # ACS150-01U- | HP PN | Drive Output Current I2N | KDR 5%, UL Listed, Open | | | | KDR 5%, UL Type 1 Enclosure | | | | KDR 5%, UL Type 3R Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Part Number | Watts Loss | Dimensions (HxWxD) | Weight | Part Number | Watts Loss | Dimensions (HxWxD) | Weight | Part Number | Watts Loss | Dimensions (HxWxD) | Weight |
| 02A4-2 | 0.5 | 2.4 | KDRMA8L1 | 30.6 | 3.63x4.45x1.78 | 4 | KDRMA8L1E01 | 30.6 | 12.3x12.5x6.75 | 14 | KDRMA8L1E3R1 | 30.6 | 11.5x10x12 | 19 |
| 04A7-2 | 1 | 4.7 | KDRAA3L2 | 44.5 | 4.44x4.25x2.64 | 4 | KDRAA3L2E01 | 44.5 | 12.3x12.5x6.75 | 14 | KDRAA3L2E3R1 | 44.5 | 11.5x10x12 | 19 |
| 06A7-2 | 1.5 | 6.7 | KDRA28H | 43.1 | 4.00x4.18x3.75 | 4 | KDRA28HE01 | 43.1 | 12.3x12.5x6.75 | 14.5 | KDRA28HE3R | 43.1 | 11.5x10x12 | 19 |
| 07A5-2 | 2 | 7.5 | KDRB25H | 53.1 | 5.00 x 6.00 x 4.00 | 8 | KDRB25HE01 | 53.1 | 12.3x12.5x6.75 | 18.5 | KDRB25HE3R | 53.1 | 11.5x10x12 | 23 |
| 09A8-2 | 3 | 9.8 | KDRB26H | 66.5 | 5.00 x 6.00 x 4.00 | 8 | KDRB26HE01 | 66.5 | 12.3x12.5x6.75 | 18.5 | KDRB26HE3R | 66.5 | 11.5x10x12 | 23 |

### Input Reactors for Three Phase 200-240V applications

| Drive Part # ACS150-03U- | HP PN | Drive Output Current I2N | KDR 5%, UL Listed, Open | | | | KDR 5%, UL Type 1 Enclosure | | | | KDR 5%, UL Type 3R Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Part Number | Watts Loss | Dimensions (HxWxD) | Weight | Part Number | Watts Loss | Dimensions (HxWxD) | Weight | Part Number | Watts Loss | Dimensions (HxWxD) | Weight |
| 02A4-2 | 0.5 | 2.4 | KDRMA6L1 | 26.4 | 3.63x4.45x1.78 | 2 | KDRMA6L1E01 | 26.4 | 12.3x12.5x6.75 | 13 | KDRMA6L1E3R1 | 26.4 | 11.5x10x12 | 17 |
| 03A5-2 | 0.75 | 3.5 | KDRMA8L1 | 30.6 | 3.63x4.45x1.78 | 4 | KDRMA8L1E01 | 30.6 | 12.3x12.5x6.75 | 14 | KDRMA8L1E3R1 | 30.6 | 11.5x10x12 | 19 |
| 04A7-2 | 1 | 4.7 | KDRAA6L2 | 39.2 | 4.44x4.25x2.64 | 3 | KDRAA6L2E01 | 39.2 | 12.3x12.5x6.75 | 13 | KDRAA6L2E3R1 | 39.2 | 11.5x10x12 | 18 |
| 06A7-2 | 1.5 | 6.7 | KDRAA3L2 | 44.5 | 4.44x4.25x2.64 | 3 | KDRAA3L2E01 | 44.5 | 12.3x12.5x6.75 | 13 | KDRAA3L2E3R1 | 44.5 | 11.5x10x12 | 18 |
| 07A5-2 | 2 | 7.5 | KDRA26H | 30.5 | 4.00x4.18x3.75 | 4 | KDRA26HE01 | 30.5 | 12.3x12.5x6.75 | 14.5 | KDRA26HE3R | 30.6 | 11.5x10x12 | 19 |
| 09A8-2 | 3 | 9.8 | KDRA28H | 43.1 | 4.00x4.18x3.75 | 4 | KDRA28HE01 | 43.1 | 12.25x12.5x6.75 | 14.5 | KDRA28HE3R | 43.1 | 11.5x10x12 | 19 |

### Input Reactors for Three Phase 380-480V applications

| Drive Part # ACS150-03U- | HP PN | Drive Output Current I2N | KDR 5%, UL Listed, Open | | | | KDR 5%, UL Type 1 Enclosure | | | | KDR 5%, UL Type 3R Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Part Number | Watts Loss | Dimensions (HxWxD) | Weight | Part Number | Watts Loss | Dimensions (HxWxD) | Weight | Part Number | Watts Loss | Dimensions (HxWxD) | Weight |
| 01A2-4 | 0.5 | 1.2 | KDRMA3H1 | 14.3 | 3.63x4.45x1.78 | 2 | KDRMA3H1E01 | 14.3 | 12.3x12.5x6.75 | 13 | KDRMA3H1E3R1 | 14.3 | 11.5x10x12 | 17 |
| 01A9-4 | 0.75 | 1.9 | KDRMA4H1 | 19.3 | 3.63x4.45x1.78 | 2 | KDRMA4H1E01 | 19.3 | 12.3x12.5x6.75 | 13 | KDRMA4H1E3R1 | 19.3 | 11.5x10x12 | 17 |
| 02A4-4 | 1 | 2.4 | KDRMA5H1 | 26.7 | 3.63x4.45x1.78 | 2 | KDRMA5H1E01 | 26.7 | 12.3x12.5x6.75 | 13 | KDRMA5H1E3R1 | 26.7 | 11.5x10x12 | 17 |
| 03A3-4 | 1.5 | 3.3 | KDRMA6H1 | 30 | 3.63x4.45x1.78 | 2 | KDRMA6H1E01 | 30 | 12.3x12.5x6.75 | 13 | KDRMA6H1E3R1 | 30 | 11.5x10x12 | 17 |
| 04A1-4 | 2 | 4.1 | KDRAA1H2 | 45 | 4.44x4.25x2.64 | 3 | KDRAA1H2E01 | 45 | 12.3x12.5x6.75 | 14 | KDRAA1H2E3R1 | 45 | 11.5x10x12 | 18 |
| 05A6-4 | 3 | 5.6 | KDRAA2H2 | 41.8 | 4.44x4.25x2.64 | 3 | KDRAA2H2E01 | 41.8 | 12.3x12.5x6.75 | 14 | KDRAA2H2E3R1 | 41.8 | 11.5x10x12 | 18 |
| 08A8-4 | 5 | 8.8 | KDRAA3H2 | 66 | 4.44x4.25x2.64 | 3 | KDRAA3H2E01 | 66 | 12.3x12.5x6.75 | 14 | KDRAA3H2E3R1 | 66 | 11.5x10x12 | 18 |

# dv/dt Output filters

A separate order line and type designation is required for any of these external options.

**dv/dt output filters**
V1k Output Filters provide motor protection by limiting voltage spikes to 1,000 volts, or below, for long motor cable applications. Greatly extends the life of the motor and cable for all applications up to 1000 feet. For multi-motor applications note that motor lead length is cumulative and the 1000 foot limit still applies.

30% reduction in common mode current enough.
**Available types**
Open, UL Type 1 and UL Type 3R construction with connection terminals.
Note: The drives internal EMC filter must remain disconnected when using these filters. When applying these output filters the drive output frequency is limited to 60 Hz.

**Single phase 200-240V applications**

| Drive Part # ACS150-01U- | HP ND | Drive Output Current $I_{2N}$ | V1K UL Open | | | | V1K UL Type 1 Enclosure | | | | V1k UL Type 3R Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Part Number | Watts | Dimensions (HxWxD) | Weight | Part Number | Watts | Dimensions (HxWxD) | Weight | Part Number | Watts | Dimensions (HxWxD) | Weight |
| 02A4-2 | 0.5 | 2.4 | V1K3A00 | 75 | 9x5.50x7.25 | 8 | V1K3A01 | 75 | 9x5.50x10 | 11 | V1K3A03 | 75 | 11.45x10x12 | 25 |
| 04A7-2 | 1 | 4.7 | V1K6A00 | 80 | 9x5.50x7.25 | 8 | V1K6A01 | 80 | 9x5.50x10 | 11 | V1K6A03 | 80 | 11.45x10x12 | 25 |
| 06A7-2 | 1.5 | 6.7 | V1K8A00 | 90 | 9x5.50x7.25 | 8 | V1K8A01 | 90 | 9x5.50x10 | 11 | V1K8A03 | 90 | 11.45x10x12 | 25 |
| 07A5-2 | 2 | 7.5 | V1K8A00 | 90 | 9x5.50x7.25 | 8 | V1K8A01 | 90 | 9x5.50x10 | 11 | V1K8A03 | 90 | 11.45x10x12 | 25 |
| 09A8-2 | 3 | 9.8 | V1K12A00 | 95 | 9x5.50x7.25 | 8 | V1K12A01 | 95 | 9x5.50x10 | 11 | V1K12A03 | 95 | 11.45x10x12 | 25 |

**Three phase 200-240V applications**

| Drive Part # ACS150-03U- | HP ND | Drive Output Current $I_{2N}$ | V1K UL Open | | | | V1K UL Type 1 Enclosure | | | | V1k UL Type 3R Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Part Number | Watts | Dimensions (HxWxD) | Weight | Part Number | Watts | Dimensions (HxWxD) | Weight | Part Number | Watts | Dimensions (HxWxD) | Weight |
| 02A4-2 | 0.5 | 2.4 | V1K3A00 | 75 | 9x5.50x7.25 | 8 | V1K3A01 | 75 | 9x5.50x10 | 11 | V1K3A03 | 75 | 11.45x10x12 | 25 |
| 03A5-2 | 0.75 | 3.5 | V1K4A00 | 75 | 9x5.50x7.25 | 8 | V1K4A01 | 75 | 9x5.50x10 | 11 | V1K4A03 | 75 | 11.45x10x12 | 25 |
| 04A7-2 | 1 | 4.7 | V1K6A00 | 80 | 9x5.50x7.25 | 8 | V1K6A01 | 80 | 9x5.50x10 | 11 | V1K6A03 | 80 | 11.45x10x12 | 25 |
| 06A7-2 | 1.5 | 6.7 | V1K8A00 | 90 | 9x5.50x7.25 | 8 | V1K8A01 | 90 | 9x5.50x10 | 11 | V1K8A03 | 90 | 11.45x10x12 | 25 |
| 07A5-2 | 2 | 7.5 | V1K8A00 | 90 | 9x5.50x7.25 | 8 | V1K8A01 | 90 | 9x5.50x10 | 11 | V1K8A03 | 90 | 11.45x10x12 | 25 |
| 09A8-2 | 3 | 9.8 | V1K12A00 | 95 | 9x5.50x7.25 | 8 | V1K12A01 | 95 | 9x5.50x10 | 11 | V1K12A03 | 95 | 11.45x10x12 | 25 |

**Three phase 380-480V applications**

| Drive Part # ACS150-03U- | HP ND | Drive Output Current $I_{2N}$ | V1K UL Open | | | | V1K UL Type 1 Enclosure | | | | V1k UL Type 3R Enclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Part Number | Watts | Dimensions (HxWxD) | Weight | Part Number | Watts | Dimensions (HxWxD) | Weight | Part Number | Watts | Dimensions (HxWxD) | Weight |
| 01A2-4 | 0.5 | 1.2 | V1K2A00 | 75 | 9x5.50x7.25 | 8 | V1K2A01 | 75 | 9x5.50x10 | 11 | V1K2A03 | 11 | 11.45x10x12 | 25 |
| 01A9-4 | 0.75 | 1.9 | V1K2A00 | 75 | 9x5.50x7.25 | 8 | V1K2A01 | 75 | 9x5.50x10 | 11 | V1K2A03 | 11 | 11.45x10x12 | 25 |
| 02A4-4 | 1 | 2.4 | V1K3A00 | 75 | 9x5.50x7.25 | 8 | V1K3A01 | 75 | 9x5.50x10 | 11 | V1K3A03 | 11 | 11.45x10x12 | 25 |
| 03A3-4 | 1.5 | 3.3 | V1K4A00 | 75 | 9x5.50x7.25 | 8 | V1K4A01 | 75 | 9x5.50x10 | 11 | V1K4A03 | 75 | 11.45x10x12 | 25 |
| 04A1-4 | 2 | 4.1 | V1K6A00 | 80 | 9x5.50x7.25 | 8 | V1K6A01 | 80 | 9x5.50x10 | 11 | V1K6A03 | 11 | 11.45x10x12 | 25 |
| 05A6-4 | 3 | 5.6 | V1K6A00 | 80 | 9x5.50x7.25 | 8 | V1K6A01 | 80 | 9x5.50x10 | 11 | V1K6A03 | 11 | 11.45x10x12 | 25 |
| 07A3-4 | 3 | 7.3 | V1K8A00 | 90 | 9x5.50x7.25 | 8 | V1K8A01 | 90 | 9x5.50x10 | 11 | V1K8A03 | 90 | 11.45x10x12 | 25 |
| 08A8-4 | 5 | 8.8 | V1K12A00 | 95 | 9x5.50x7.25 | 8 | V1K12A01 | 95 | 9x5.50x10 | 11 | V1K12A03 | 95 | 11.45x10x12 | 25 |