BROCHURE

Direct Current (DC) motors, tachometers and drives

1/8 - 500 Hp

BALDOR · RELIANCE

Why Baldor-Reliance® motors

For over a century, ABB has strived to provide customers with the best value and reliability in industrial electric motors. That dedication shows in customer preference for Baldor-Reliance motors.

ABB offers the industry's broadest line of Baldor-Reliance stock products.
Save valuable time with just one call. ABB offers more than 10,000 stock motors, drives and tachometers.

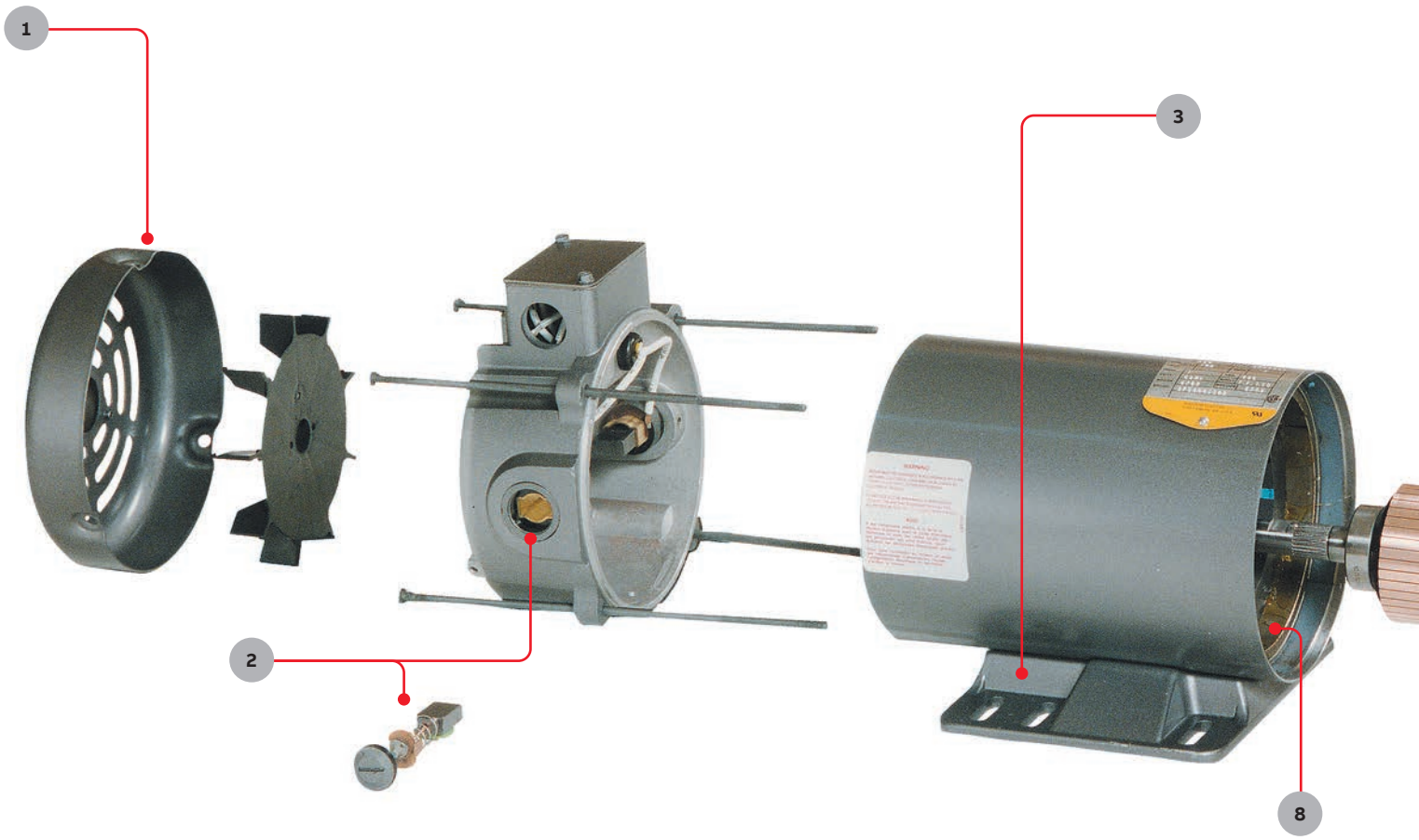
- Baldor-Reliance motors have a **robust design** to ensure reliable performance in any application.
- **Highly customizable** with wide range of accessories.
- The widest range of **custom configurations** available.
- **Large selection of motors in stock** for same day shipping or **modifiable** through our **Mod Express® program** for quick shipment.

Industry's shortest lead times – flexible manufacturing.
ABB has the industry's shortest lead times on custom motors – just ten working days. Our unique Lean Flex FLOW™ manufacturing process lets us produce any order in any quantity, quickly and efficiently.

Baldor-Reliance products are available at more locations than any other brand.
Regional sales offices across North America and hundreds of ABB offices around the world offer immediate availability of Baldor-Reliance products to thousands of customers.

Feature rich product
Baldor-Reliance® permanent magnet DC motor

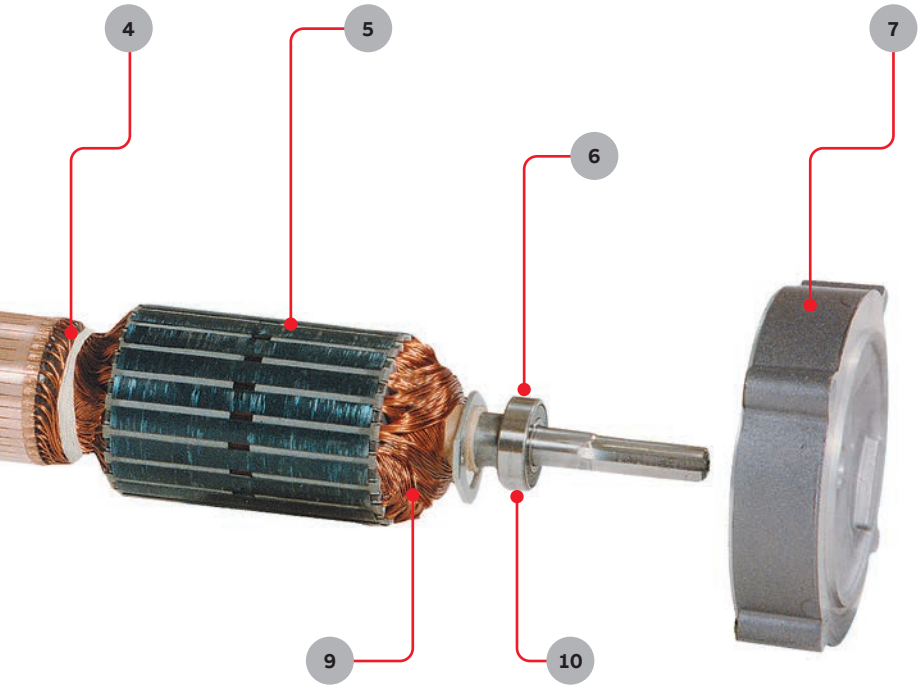
At the heart of our DC motor lineup are the many sizes of our versatile permanent magnet (PM) DC motors. These range in output from 1/8 Hp to the industry's only 5 Hp. Ruggedness, dependability and ease of use are the reasons that Baldor-Reliance PMDC motors are specified by more customers than any other.



Typical frame sizes for permanent magnet DC motors

Hp	Base speed			
	1150	1750	2500	3500
1/4	56C	56C	42C or 48C	42C, 48C or 56C
1/3	56C	56C	56C	56C
1/2	56C	56C	56C	56C
3/4	143-5TC	56C	56C	56C
1	143-5TC	56C	56C	56C
1-1/2	182-4TC	143-5TC	143-5TC	143-5TC
2	182-4TC	143-5TC	143-5TC	182-4TC
3	182-4TC	182-4TC	182-4TC	182-4TC
5	–	1810ATC	182-4TC	182-4TC

Ratings 2 Hp and above designed for 180 Volts only.



1. **Tach adaptable** with optional tach mounting kit (except explosion proof)
2. **Long life brushes,** constant force springs on 42 and 180 frame body sizes (33P & 36P).
3. **Heavy duty steel frames** with removable mounting bases (36P and explosion proof welded-on).
4. **Armature connections fused to commutator** for reliability and low resistance
5. **Class H+ moisture resistant magnet wire** operated at a Class F rise for long insulation life.
6. **Drive end bearing locked in place** allowing vertical mounting or axial shaft loads.
7. **Die cast alloy endplates** with steel bearing inserts.
8. **Highest quality oriented ceramic ferrite magnets** for increased motor efficiency.
9. **Dynamic balanced armature** for smooth operation.
10. **Double seal ball bearings** with moisture resistant grease for long life.

DC motors and controls for many different applications

Available in round frame and unique laminated square frames, Baldor-Reliance DC motors offer performance and reliability in tough applications. Round frame DC motors utilize permanent magnet technology optimizing the commutator, brushes, and inertia to assure the best performance possible. Wound field motors are designed with High Performance molded commutators that provide superior commutation throughout the speed range to ensure trouble-free operation. The insulation system is designed with extra margin of safety to eliminate performance-limiting hot spots.

Baldor-Reliance DC motors meet a wide variety of specifications. From 1/8 to 500 Hp, our rugged industrial designs may be used to power everything from a medical blood centrifuge to the printing press.

DC motors with additional features are available from stock for special applications:

- Explosion-proof for hazardous locations
- Washdown enclosures for food processing
- Metric mounting for replacement of motors built to IEC standards
- Permanent magnet motors with a built-in precision DC tachometer
- 115 and 230 volt power motors built to IEEE 45 and USCG 259 standards for shipboard use

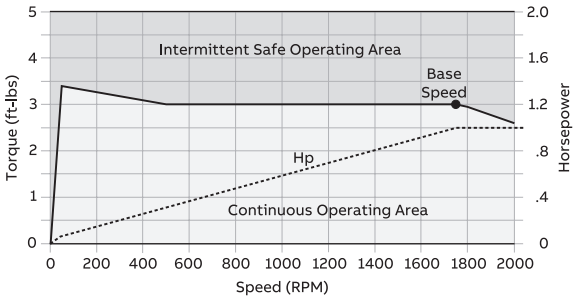
Custom motors are available through 500 Hp with special voltages, base speeds, mountings and other options. With ABB, building a custom DC motor to the specifications you require can eliminate assembly time, adapters, repainting and other costly operations. You buy only what you require, and we deliver when you need it.

Key features of our DC products:

- Designed specifically for rectified DC power operation
- High performance molded commutator construction
- Extensive full load testing to ensure delivered reliability/performance
- Low rotating assembly inertia for high dynamic performance
- Wide voltage ranges – 12 volts DC to 600 volts DC
- Laminated frame construction for superior commutation performance
- Skewed armature construction with no cogging at low speeds
- Versatile foot mounting for retrofitting non Baldor-Reliance products

Matched Performance™

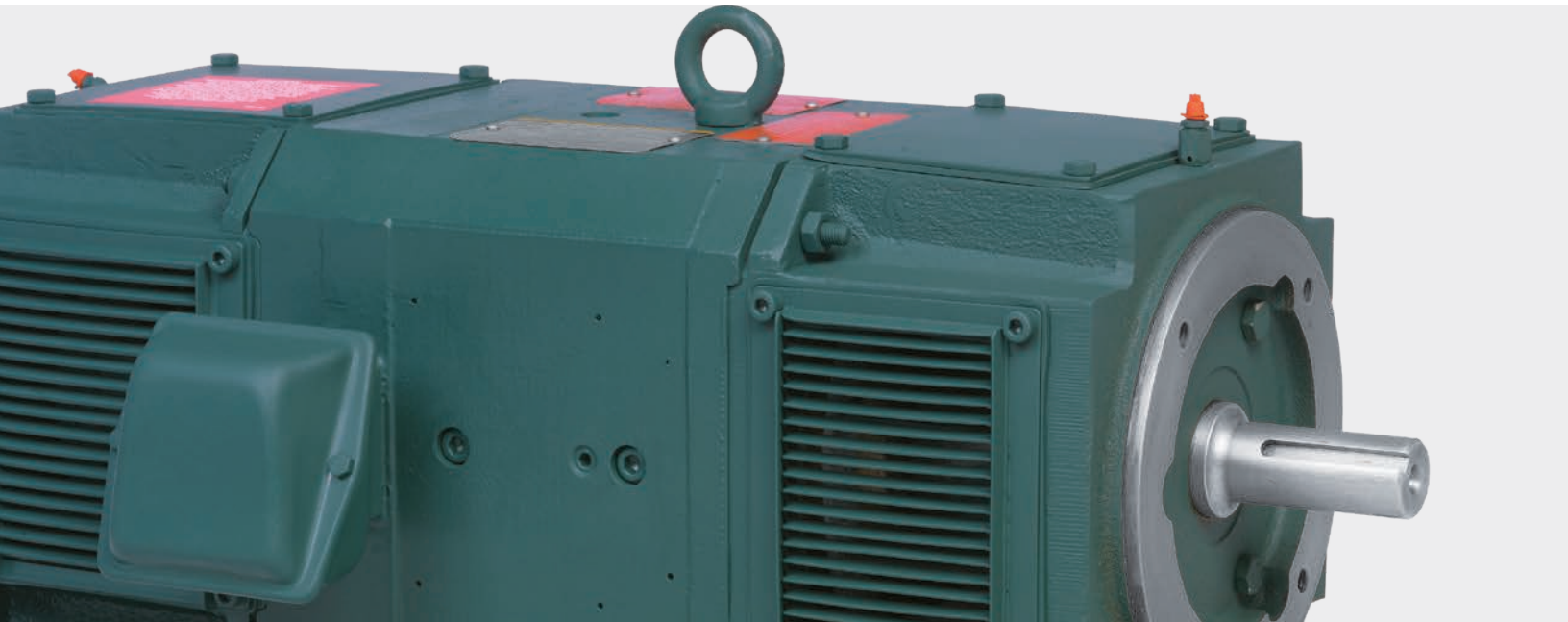
Performance specifications



BC140 Control and CDP3455 motor, 1 Hp

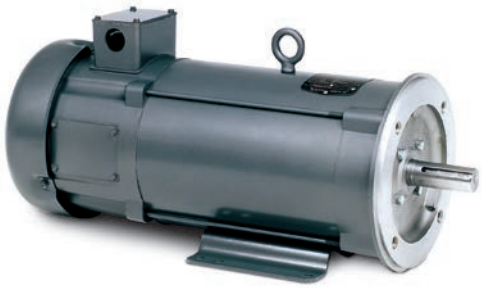
Input voltage:	230 VAC 50/60 Hz 1 Phase
Base speed:	1750 RPM
Operating speed range:	0-2000 RPM
Constant torque speed range:	90-1750 RPM
Constant Hp speed range:	1750-2000 RPM
Speed regulation standard feedback type:	Armature 1% of base speed
Optional feedback type:	Tachometer 1% of set speed
Motor cooling:	TEFC

We know how our DC motors and controls perform when used together to give you the Matched Performance™ that you need. The wide range of SCR controls we offer assures that we have the correct control for most applications. Let ABB products take the guesswork out of matching motors and controls.



SCR-rated permanent magnet DC motors
Specifically designed to assure the best performance

A wide variety of Baldor-Reliance SCR-Rated PMDC motors, each specifically designed to a horsepower range is available. This optimizes the motor's commutator, brushes and inertia to assure the best performance possible. We further modify these designs for specific applications, washdown, explosion proof, metric mountings and integral DC tachometer.



TEFC
1/4 thru 5 Hp
90 or 180 Volt armature
42 - 1810AT frame

Metric face or flange
.18 thru 3.7 kW (1/4 thru 5 Hp)
180 Volt armature
IEC D63D - D112D

Explosion proof
1/4 thru 1-1/2 Hp
90 or 180 Volt armature
56 - 145TC frame

The availability of the wide range of Baldor-Reliance DC motors from stock ensures you have the best motor for your application.

TENV
1/4 thru 1 Hp
90 or 180 Volt armature
48 - 145TC frame

Washdown duty
White Washdown design 1/4 thru 5 Hp
Paint-free 1/4 thru 1 Hp
90 or 180 Volt armature
48 - 1810AT frame

Integral DC Tachometer
1/4 thru 5 Hp
Integral 50V/1000 RPM DC Tachometer
90 or 180 Volt armature
48 - 1810AT frame

Performance data
Permanent magnet DC motors

Performance Data

Hp	RPM	NEMA frame	Enclosure	Catalog number	Armature volts	Full load amps	Rated torque lb-ft
TENV and TEFC PMDC Motors *							
1/4	1750	56C	TENV	**CDP3310**	90	2.5	0.75
	1750	56C	TENV	**CDP3306**	180	1.3	0.75
1/3	1750	56C	TENV	**CDP3320**	90	3.2	1.0
	1750	56C	TENV	**CDP3316**	180	1.6	1.0
1/2	1750	56C	TENV	**CDP3330**	90	4.8	1.5
	1750	56C	TENV	**CDP3326**	180	2.5	1.5
	2500	56C	TENV	**CDP3335**	90	5.0	1.05
3/4	1750	56C	TEFC	**CDP3440**	90	7.6	2.25
	1750	56C	TEFC	**CDP3436**	180	3.7	2.25
	2500	56C	TEFC	**CDP3443**	90	7.5	1.58
1	1750	56C	TEFC	**CDP3445**	90	10.0	3.0
	1750	56C	TEFC	**CDP3455**	180	5.0	3.0
	2500	56C	TEFC	**CDP3450**	90	9.7	2.1
	2500	56C	TEFC	**CDP3460**	180	4.9	2.1
1-1/2	1750	145TC	TEFC	**CDP3575**	180	7.7	4.5
	2500	145TC	TEFC	**CDP3580**	180	7.0	3.15
2	1750	145TC	TEFC	**CDP3585**	180	9.6	6.0
	2500	145TC	TEFC	**CDP3590**	180	10.0	4.2
3	1750	184TC	TEFC	**CDP3603**	180	14.0	9.0
	1750	182C	TEFC	**CDP3604**	180	14.0	9.0
5	1750	1810ATC	TEFC	**CDP3605**	180	21.6	15.0
Explosion Proof PMDC Motors							
1/4	1750	56C	TEFC	**CDPX3410**	90	2.7	0.75
	1750	56C	TEFC	**CDPX3406**	180	1.3	0.75
1/3	1750	56C	TEFC	**CDPX3420**	90	3.6	1.0
	1750	56C	TEFC	**CDPX3416**	180	1.7	1.0
1/2	1750	56C	TEFC	**CDPX3430**	90	5.2	1.5
	1750	56C	TEFC	**CDPX3426**	180	2.5	1.5
3/4	1750	56C	TEFC	**CDPX3440**	90	7.0	2.25
	1750	56C	TEFC	**CDPX3436**	180	3.5	2.25
1	1750	56C	TEFC	**CDPX3545**	90	9.6	3.0
	1750	56C	TEFC	**CDPX3555**	180	4.9	3.0
1-1/2	1750	145TC	TEFC	**CDPX3575**	180	7.1	4.5
kW / Hp	**IEC Metric Frame PMDC Motors ****						
.18 / .25	1750	D71D	TENV	**VP3311D**	180	1.3	.75
.25 / .33	1750	D71D	TENV	**VP3316D**	180	1.6	1.0
.37 / .5	1750	D71D	TENV	**VP3326D**	180	2.5	1.5
	3000	D71D	TEFC	**VP3428D**	180	2.5	0.9
.57 / .75	1750	D80D	TEFC	**VP3436D**	180	3.7	2.25
	3000	D80D	TEFC	**VP3439D**	180	3.6	1.31
.75 / 1.0	1750	D80D	TEFC	**VP3455D**	180	5.0	3.0
	3000	D80D	TEFC	**VP3458D**	180	5.1	1.75
1.1 / 1.5	1750	D90D	TEFC	**VP3575D**	180	7.7	4.5
	3000	D90D	TEFC	**VP3468D**	180	7.7	2.63
1.5 / 2.0	1750	D90D	TEFC	**VP3585D**	180	9.6	6.0
	3000	D90D	TEFC	**VP3588D**	180	10.0	3.5
2.2 / 3.0	1750	D112D	TEFC	**VP3603D**	180	14.0	9.0
3.7 / 5.0	1750	D112D	TEFC	**VP3605D**	180	24.5	15.0

Notes: * Additional motors are available with washdown enclosures and with integral DC tachometers – same performance data.
** Additional motors are available with B14 face

Motor construction
Baldor-Reliance® DC motors

Round frame DC motors utilize permanent magnet technology optimizing the commutator, brushes, and inertia to assure the best performance possible. Wound field motors are designed with superior commutation through the speed range to ensure trouble-free operation. The insulation system is designed with extra margin of safety to eliminate performance-limiting hot spots.

Many different configurations are available from stock or ABB can design and build a motor to meet exact application requirements with our short lead time.

DC Motor construction features

	Fractional Hp	Round frame NEMA	RPM III NEMA
Electrical features			
Hp Range	1/8 - 5 Hp	1-500 Hp	1-500 Hp
Class F insulation	S	F	F
1.0 Service factor	S	S	S
Long life brush system	S	S	S
Precision turned commutator with fused armature connections	S	S	S
Permanent magnet designs	S		
Wound field designs	S	S	S
Operation above base speed with field weakening		S	S
2 electrical pole designs	S	180-320	180
4 electrical pole designs		360-500	210-440
6 electrical pole designs			
8 electrical pole designs			
Overload thermostat	O	S-stock motors	S-stock motors
Mechanical features			
NEMA Frame sizes	48 - 1810AT	182-5011AT	C180ATZ-C440ATZ
IEC Frame sizes	71 - 112	112-315	112-280
TENV and TEFC enclosures	S	S	S
DPFG - open enclosures	O	S	S
DPBV - drip proof - blower cooled enclosures		S	S
Washdown and paint free washdown models	S		
Explosion proof enclosure	S		O
MSHA - Mine Safety and Health Administration models	O	O	O
Integral DC tachometer models	S		
Tach adaptable	S	S	S
Steel Band - Die cast aluminum endplates, steel fan cover	S		
Heavy rolled steel frame - cast iron endplates and fan cover		S	
Laminated steel frame-cast iron end plates and fan cover			S
Die cast aluminum conduit box	S		
Stamped steel conduit box			S
Cast Iron conduit box		S	O
Mill Type fabricated conduit box			O
Double sealed ball bearings	S	S	
Open bearings with inner and outer caps			S
Hardware - cad plated	S	S	S
Motor unfiltered vibration at rated voltage and frequency < 0.15 in/sec velocity	S	S	S
Motor unfiltered vibration at rated voltage and frequency < 0.08 in/sec velocity	O	O	O
Non-sparking external cooling fan on TEFC	S	S	S
Limited warranty	24 months	24 months	24 months

Note: Contact your local sales office for the certified data, dimensions, and features of a specific motor.

Baldor-Reliance® wound field DC motors
Specifically designed to assure the best performance

A wide variety of Baldor-Reliance wound field DC motors ranging from a 48 frame 1/4 Hp motor to 500 Hp are available. We know that some customers still prefer our reliable wound field motors that have been available for over 75 years. We continue to expand our product range so we can be your primary supplier of DC motors and drives.

TEFC 1/4 thru 75 Hp
TEAO 5 thru 100 Hp
180 Volt armature – 100/200 Volt field
240 or 500 Volt armature – 150/300 Volt field

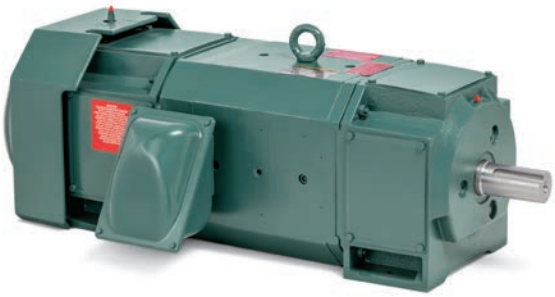
Explosion proof
1/2 thru 3 Hp
180 Volt armature
100/200 Volt field

DPFG 1 thru 250 Hp
DPBV 1 thru 500 Hp
180 Volt armature – 100/200 Volt field
240 or 500 Volt armature – 150/300 Volt field

Low voltage Baldor-Reliance DC wound field motors are available with either a series or compound wound field. Special designs are available for traction applications or hydraulic pumps. Power motors are designed for operation from a generator or batteries.

Metric face or flange
.09 thru 370 kW (1/8 thru 500 Hp)
Choice of voltages to meet most applications

RPM III
DPFG 1 thru 250 Hp
DPG-FV 1 thru 500 Hp
180, 240 or 500 Volt armature
Laminated square frame design for torque density



RPM III
TEFC 2 thru 75 Hp
TENV 1 thru 40 Hp
1/2 - 3 Hp
180, 240 or 500 Volt armature
Laminated square frame design for torque density

Performance data

Shunt wound and explosion proof wound field motors

TENV and TEFC shunt wound DC motors									
Hp	**RPM**	**NEMA frame**	**Enclosure**	**Catalog number**	**Arm /**	**Field volts**	**Full load amperage Arm / Field Hi/Lo**		**Rated torque lb-ft**
1/4	1750	56C	TEFC	**CD3425**	90	100/ 50	3.0	0.3/0.6	0.75
1/3	1750	56C	TEFC	**CD3433**	90	100/ 50	3.4	0.4/0.8	1.00
	1750	56C	TEFC	**CD3434**	180	200/100	1.9	0.21/0.42	1.00
	1750	56C	TEFC	**CD5333**	90	100/ 50	3.7	0.5/1.0	1.00
1/2	1750	56C	TEFC	**CD3450**	90	100/ 50	5.2	0.5/1.0	1.50
	1750	56C	TEFC	**CD3451**	180	200/100	2.6	0.25/0.5	1.50
	1750	56C	TEFC	**CD5350**	90	100/ 50	5.0	0.44/0.88	1.50
3/4	1750	56C	TEFC	**CD3475**	90	100/ 50	7.8	0.6/1.2	2.25
	1750	56C	TEFC	**CD3476**	180	200/100	3.9	0.3/0.6	2.25
	1750	56C	TEFC	**CD5375**	90	100/ 50	8.0	0.6/1.2	2.25
1	1750	56C	TEFC	**CD5319**	90	100/ 50	10.0	0.6/1.2	3.00
	1750	56C	TEFC	**CD5318**	180	200/100	5.0	0.3/0.6	3.00
	1750	184C	TEFC	**CD6219**	90	100/ 50	9.6	0.55/1.1	3.00
	1750	184C	TEFC	**CD6218**	180	200/100	5.0	0.25/0.5	3.00
1-1/2	1750	184C	TEFC	**CD6215**	180	200/100	7.5	0.25/0.5	4.50
2	1750	184C	TEFC	**CD6202**	180	200/100	9.5	0.4/0.8	6.00
	1750	213C	TEFC	**CD7502**	180	200/100	9.5	0.3/0.6	6.00
3	1750	184TC	TEFC	**CD6203**	180	200/100	14.7	0.6/1.2	9.00
	1750	215C	TEFC	**CD7503**	180	200/100	14.7	0.4/0.8	9.00
Explosion proof wound field motors									
1/2	1750	182CZ	TEFC	**CDX1850**	90	100/50	4.9	0.55/1.1	1.50
3/4	1750	182CZ	TEFC	**CDX1875**	90	100/50	7.0	0.55/1.1	2.25
1	1750	182CZ	TEFC	**CDX2001**	180	200/100	5.0	0.25/0.5	3.00
	1750	182C	TEFC	**CDX7100**	180	200/100	5.0	0.25/0.5	3.00
1-1/2	1750	184C	TEFC	**CDX7150**	180	200/100	7.5	0.25/0.5	4.50
2	1750	184C	TEFC	**CDX7200**	180	200/100	9.5	0.4/0.8	6.00

Integral Hp wound field DC motors

Wound field DC motors

DC motors continue to be an important product at ABB. Our extensive stock of integral Hp ratings allows you to obtain the motor required from our inventory. If the motor isn't available from stock, ABB DC motor plants have the capability to build a custom motor with the industries shortest lead times.

ABB offers a variety of motor designs, ratings and enclosures for any application including process lines, extruders, machine tools, stamping presses, crane and hoist, test stands, metals and paper industry applications. In addition, ABB DC motors can be provided with the custom features your application demands including feedback devices, special shafts and mounting requirements.

The following charts provide an overview of ABB's Integral Hp manufacturing capabilities.

DPFG and DPBV enclosure, 500V armature (240 Volt available), typical frame sizes

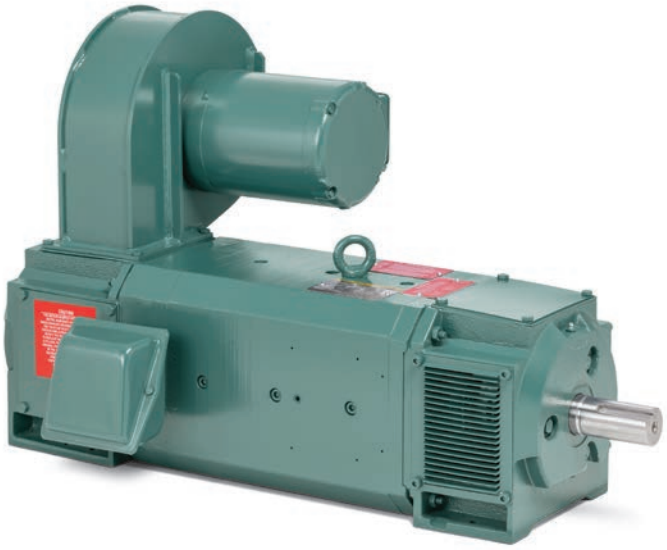
Hp									Base speed
	300	400	500	650	850	1150	1750	2500	3500
1	–	–	–	–	L186AT ①	L182AT ①	L182AT ①	L182AT ①②	L182AT ①②
1.5	–	–	–	–	L186AT ①	L186AT ①	L182AT ①	L182AT ①	L182AT ①
2	–	–	–	–	L186AT	L186AT	L186AT	L182AT	L182AT
3	328AT ①	288AT ①	259AT ①	2110AT ①	218AT	L186AT	L186AT	L186AT	L182AT
5	365AT ①	328AT ①	288AT ①	259AT ①	2110AT	219AT	L186AT	L186AT	L186AT
7.5	368AT	366AT	328AT	288AT	259AT	2110AT	218AT	L186AT	L186AT
10	407AT	366AT	328AT	328AT	288AT	258AT	219AT	218AT	1810AT
15	409AT	407AT	368AT	365AT	328AT	288AT	258AT	219AT	218AT
20	407AT ②	368AT ②	366AT ②	366AT	328AT	328AT	259AT	2110AT	219AT
25	508AT	409AT	368AT ②	366AT ②	366AT	328AT	288AT	258AT	258AT
30	506AT	506AT	407AT	366AT ②	366AT	328AT ②	288AT	259AT	259AT
40	508AT	504AT	504AT	368AT ②	366AT ②	365AT ②	328AT	287AT ②	288AT
50	508AT	506AT ②	506AT	409AT	368AT ②	366AT ②	328AT	288AT	288AT ②
60	506AT ②	506AT ②	506AT	504AT	368AT ②	368AT	366AT	328AT	328AT ②
75	508AT ②	506AT ②	506AT ②	504AT ②	407AT ②	368AT ②	366AT	329AT	328AT ②
100	5011AT ②	5010AT ②	508AT ②	506AT ②	409AT ②	407AT ②	368AT	366AT ②	366AT ②
125	–	5010AT ②	508AT ②	506AT ②	506AT	409AT ②	368AT ②	368AT ②	366AT ②
150	–	5010AT ②	508AT ②	506AT ②	506AT ②	506AT	407AT ②	407AT ②	366AT ②
200	–	–	5011AT ②	508AT ②	506AT ②	506AT ②	409AT ②	409AT ②	–
250	–	–	–	5011AT ②	5010AT ②	506AT ②	504AT ②	–	–
300	–	–	–	5011AT ②	5010AT ②	508AT	506AT ②	–	–
400	–	–	–	–	–	5010AT ②	508AT ②	–	–
500	–	–	–	–	–	5011AT ②	5010AT ②	–	–

Notes: ① 240 Volt armature only
② Blower required (DPBV)
Totally enclosed designs are also available.

Integral Hp custom motor capabilities

Round frame SCR rated DC motors feature a rugged rolled steel frame designed for long life in industrial applications. Our round frame designs are direct replacements for competitive motors of similar design construction. Custom motors are available in a wide variety of enclosures including Drip Proof Fully Guarded (DPFG), Drip Proof Blower Ventilated (DPBV), Totally Enclosed Fan Cooled (TEFC), Totally Enclosed Non Ventilated (TENV), Totally Enclosed Air Over (TEAO).

RPM III



RPM III DC Motors feature a laminated square frame design which provides more power, reliability and serviceability in a smaller package. The field proven laminated frame improves commutation and heat dissipation, and requires less mounting space than conventional designs. Choose from the complete line of enclosures including:

- Drip Proof Guarded (DPG)
- Drip Proof Guarded Force Ventilated (DPG-FV)
- Totally Enclosed Fan Cooled (TEFC)
- Totally Enclosed Non Ventilated (TENV)
- Totally Enclosed Explosion Proof (TEXP)
- Totally Enclosed Air Over (TEAO)

A variety of ratings, enclosures and voltages are stocked through 500 Hp and custom designs are available with a wide variety of modifications to meet your specific application requirements.

RPM III laminated frame, DPG-FV enclosure, 500V armature, typical frame sizes

									Base speed
Hp	**300**	**400**	**500**	**650**	**850**	**1150**	**1750**	**2500**	**3500**
1	–	–	–	–	C1811ATZ	C1811ATZ	C1811ATZ	–	–
1.5	–	–	–	–	C1811ATZ	C1811ATZ	C1811ATZ	–	–
2	–	–	–	–	C1811ATZ	C1811ATZ	C1811ATZ	C1811ATZ	–
3	MC2113ATZ	SC2113ATZ	C1812ATZ	C1812ATZ	C1811ATZ	C1811ATZ	C1811ATZ	C1811ATZ	–
5	LC2113ATZ	MC2113ATZ	MC2113ATZ	SC2113ATZ	C1812ATZ	C1811ATZ	C1811ATZ	C1811ATZ	–
7.5	LC2115ATZ	MC2115ATZ	LC2113ATZ	MC2113ATZ	SC2113ATZ	C1812ATZ	C1811ATZ	C1811ATZ	C1811ATZ
10	LC2512ATZ	MC2512ATZ	MC2115ATZ	MC2115ATZ	SC2113ATZ	SC2113ATZ	C1812ATZ	C1811ATZ	C1811ATZ
15	LC2812ATZ	C2514ATZ	LC2512ATZ	LC2115ATZ	LC2113ATZ	MC2113ATZ	SC2113ATZ	C1812ATZ	C1812ATZ
20	C2815ATZ	LC2812ATZ	C2514ATZ	LC2512ATZ	LC2115ATZ	LC2113ATZ	SC2113ATZ	SC2113ATZ	SC2113ATZ
25	C3214ATZ	C2815ATZ	LC2812ATZ	C2514ATZ	MC2512ATZ	MC2115ATZ	MC2113ATZ	SC2113ATZ	SC2113ATZ
30	C3214ATZ	C2815ATZ	C2815ATZ	C2515ATZ	LC25152ATZ	LC2115ATZ	LC2113ATZ	SC2113ATZ	SC2113ATZ
40	C3613ATZ	C3214ATZ	C2815ATZ	C2515ATZ	C2514ATZ	LC2512ATZ	MC2115ATZ	LC2113ATZ	LC2113ATZ
50	C3613ATZ	LC3612ATZ	C3214ATZ	C2815ATZ	C2515ATZ	C2514ATZ	LC2115ATZ	LC2115ATZ	MC2115ATZ
60	LC4013ATZ	C3613ATZ	LC3612ATZ	C3214ATZ	C2815ATZ	C2515ATZ	LC2512ATZ	LC2115ATZ	MC2115ATZ
75	LC4013ATZ	MC4013ATZ	MC4013ATZ	LC3612ATZ	C2815ATZ	MC3212ATZ	C2515ATZ	LC2512ATZ	MC2512ATZ
100	C4414ATZ	C4413ATZ	MC4013ATZ	C3613ATZ	LC3612ATZ	C3214ATZ	C2515ATZ	LC2812ATZ	MC2812ATZ
125	C4414ATZ	C4413ATZ	LC4013ATZ	MC4013ATZ	LC3612ATZ	C3214ATZ	C2813ATZ	LC2812ATZ	MC3212ATZ
150	–	–	C4412ATZ	MC4013ATZ	C3613ATZ	MC4013ATZ	C2815ATZ	C3214ATZ	LC3212ATZ
200	–	–	–	–	MC4013ATZ	MC4013ATZ	C3214ATZ	C3214ATZ	–
250	–	–	–	–	C4413ATZ	MC4013ATZ	LC3612ATZ	MC3612ATZ	–
300	–	–	–	–	C4413ATZ	LC4013ATZ	LC3613ATZ	–	–
400	–	–	–	–	C4414ATZ	C4413ATZ	MC4013ATZ	–	–
500	–	–	–	–	–	C4414ATZ	C4412ATZ	–	–

DC motors

DC low voltage

More and more vehicles are being powered from batteries. ABB is a long-time supplier of energy efficient DC motors for electric vehicles.

Wound field motors
1/8 thru 8 Hp

DC Power motors

Some applications require a DC motor to operate from a NEMA Type A power supply, a DC generator or back-up battery system. For these jobs, ABB offers a lineup of Baldor-Reliance DC Power Motors for either a 115 or 230 volts DC. These motors are typically compound wound, but are available in shunt or series construction. Some ratings are also available as permanent magnet.

DC power motors
1/8 thru 500 Hp

DC Lifting magnet generators

ABB's rugged industrial Baldor-Reliance DC motors are used as the basis for our 230V DC lifting magnet generators. This provides a heavy duty generator with cast iron endplates and a thick steel housing. Oversized brushes and commutators, sealed ball bearings and corrosion-resistant epoxy paint ensure long life and minimum service requirements. These generators are self-excited and have a drooping voltage characteristic. They are stocked with choice of base mounting or base with C-face in 5-40 kW ratings. Larger custom ratings are also available.

DC Generators are available using ABB rugged Integral Hp DC Motor frames. These can be designed with either external or self-excited fields. Standard output voltages are 120 or 250 DC, other voltages are available.

DC generator
8 - 40 kW

DC Lifting magnet generator
3/4 - 200 kW

Tachometers

Tachometer generators DC, AC and digital output

Applications:

- Speed feedback for controls.

Features:

- Ball bearing construction
- UL/CSA approved
- IP55, standard mounting
- C-Face and foot mounted

Generator type	Voltage	Catalog number	Approximate shipping weight
XPY flange mount (DC)			
XPYIV	50VDC	**CMTG50XPYIV**	5.5
XPYIV	100VDC	**CMTG100XPYIV**	5.5
XPY foot mount (DC)			
XPYIV	50VDC	**FMTG50XPYIV**	6.4
XPYIV	100VDC	**FMTG100XPYIV**	6.4
Encoder based digital PY flange mount			
DPY	1024PPR	**PTG1024LD (a)**	1
Electrically isolated encoder			
E-ACC	1024PPR	**ENC00NV (a)**	2

Notes: Flange mounted tachs require tach adapters.

XPY tachs have UL/CSA listing, file number E351535.

(a) See Feedback Cable Assemblies for cables.

DC Controls

NEMA 1 enclosed DC controls for PMDC and shunt wound motors

1/100 thru 2 Hp, 115/230 VAC, single phase, 50/60 Hz

BC140-FBR
Enclosed (NEMA 1)

BC138
Enclosed (NEMA 1)

Applications:

General purpose industrial use with permanent magnet or shunt wound DC motors.

Features:

SCR controls have a free-wheeling diode and feature adjustable accel, decel, current limit, IR comp, min. and max speed pots to match applications. The anti-demag feature protects PM motors and helps protect the SCR power bridge against direct shorts.

Rugged all-metal NEMA 1 / IP20 enclosure. Unidirectional drives – change motor rotation by switching armature leads or by adding Forward/Brake/Reverse switch kit, if available.

The controls have US and Canadian UL component recognition.

A Plug-in Horsepower Resistor® and armature fuse must be ordered and installed in BC138, BC139, BC140, BC140-FBR, BC141 and BC142.

Chassis mount DC controls

1/100 thru 1.5 Hp, 115 VAC, single phase, 50/60 Hz
1/50 thru 5 Hp, 230 VAC, single phase, 50/60 Hz

BC142-SIH

Applications:

General purpose industrial use with permanent magnet or shunt wound DC motors.

Features:

Chassis-mount SCR controls have a free-wheeling diode and feature adjustable accel, decel, current limit, IR comp, min and max speed pots to match applications. The anti-demag feature protects PM motors and helps protect the SCR power bride against direct shorts. The controls have US and Canadian UL component recognition.

A Plug-in Horsepower Resistor® and armature fuse must be ordered and installed in all versions of BC141 and BC142.

NEMA 4X DC control and accessories

1/4 thru 2 Hp, 115/230 VAC, single phase, 50/60 Hz
3 Hp, 230 VAC, single phase, 50/60 Hz

BC154
BC160
BCWD140
BC354

Applications:

Constant torque, new or replacement.

Features:

NEMA 4X / IP65 sealed enclosure with built-in heat sink for wet/dirty environments. BC154, BCWD140 and BC160 are unidirectional controls. Change motor direction by switching armature leads or by adding Forward/Brake/Reverse switch kit, if available. BC254 is a line regenerative SCR control for reversing applications and can drive the motor to a timed stop. BC354 is a PWM control that provides low-ripple DC power to the motor allowing more Hp when used with a 130 or 260 VDC motor. BC154, BC160, BC254 and BC354 are painted light gray and come with a start-stop switch. BCWD140 has a white epoxy coating (ideal for food processing applications) with forward/brake/reverse and run-jog switches installed. All offer a choice of armature or tachometer feedback and a speed or torque mode.

No Hp resistors are needed for these controls and current is jumper selectable.

Line regenerative DC controls and accessories

1/4 thru 3 Hp, 115/230 VAC, single phase, 50/60 Hz
5 Hp, 230 VAC, single phase, 50/60 Hz

BC254-FBR

BC200
BC201

BC204

Applications:

Frequent start/stop/reverse applications or where controlled braking is required.

Features:

Single phase line regenerative open chassis control to operate permanent magnet or wound field DC motors. These line regen controls are ideal for applications with overhauling loads. In torque mode, it can be used for tensioning applications. Several accessory boards are available to further customize the control.

Includes 5k speed potentiometer. Jumper selectable current settings.

NEMA enclosed DC control specifications

Features	Catalog number							
	BC138	**BC139**	**BC140 or BC140-FBR**		**BCWD140**		**BC154**	
Enclosure	NEMA 1	NEMA 1	NEMA 1		NEMA 4X		NEMA 4X	
Control type	Reversible		Reversible		Reversible		Reversible	
AC Line input (VAC 50/60Hz)	115	230	115	230	115	230	115	230
Max. AC Load current (RMS)	5.0	5.0	12.0	12.0	15.0	15.0	15.0	15.0
Max. AC Load current (RMS) w/ BC143	—	—	16.0	16.0	—	—	—	—
DC Armature voltage nominal (VDC)	90	180	90-130	180	90	180	90	180
Max. DC Load current (ADC)	3.5	3.5	6.0	6.0	10.2	10.2	10.2	10.2
Max. DC Load current (ADC) w/ BC143	—	—	12.0	12.0	—	—	—	—
Shunt field power supply (VDC)	50/100	100/200	50/100	100/200	50/100	100/200	50/100	100/200
Maximum field current (ADC)	1.0	1.0	1.0	1.0	1.13	1.13	1.0	1.0
Rated horsepower range (SCR motor)	1/100 - 1/3	1/50 - 3/4	1/100 - 3/4	1/50 - 1 1/2	1/50 - 1	1/25 - 2	1/50 - 1	1/25 - 2
Rated horsepower range (PWM motor)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Max. Hp with BC143 Ext. Heat Sink	N/A	N/A	1 Hp	2Hp	N/A	N/A	N/A	N/A
Ambient temp range (°C)	0 - 40	0 - 40	0 - 40		0 - 40		0 - 40	
Ambient temp range w/ BC143 (°C)	N/A	N/A	0 - 50		N/A		N/A	
Speed range (Motor may be 20:1 constant torque)	50:1	50:1	50:1		50:1		50:1	
Adjustable accel / decel time (sec)	0.2 - 10	0.2 - 10	0.2 - 10		0.1 - 15		0.1 - 15	
Min. speed adjustable range (% full speed)	0 - 30	0 -30	0 - 30		0 - 30		0 - 30	
Max. speed adjustable range (% full speed)	50 - 110	50 - 110	50 - 110		60 - 140		60 - 140	
Current limit adjustable range (%)	0 - 200	0 - 200	0 - 200		0 - 200		0 - 200	
Adjustable current limit and trip out type	No	No	No		Timed or non-timed		Timed or non-timed	
Control of speed or torque	Speed	Speed	Speed		Speed or Torque		Speed or Torque	
IR Compensation adjustable (VDC)	0 - 24	0 - 24	0 - 24	0 - 48	0 - 15	0 - 30	0 - 15	0 - 30
Tachometer feedback input	No	No	No		Yes		Yes	
Plug-in Horsepower Resistor ®	Required	Required	Required		N/A		N/A	
UL & cUL Listing, CE	Yes	Yes	Yes		Yes		Yes	
AC Line fuse	Included	Included	Included		External		External	
DC Armature fuse	Included with Hp Resistor	Included with Hp Resistor	Included with Hp resistor		Not supplied with control		Not supplied with control	
Options								
AC Line switch	Standard	Standard	Standard		Opt-BC159		Opt - BC159	
Forward/Brake/Reverse switch			(BC140)					
Mechanical	No	No	Opt - BC144		Standard		Opt - BC156	
Electronic	No	No	No		Opt - BC153		Opt - BC153	
Run/Jog switch	No	No	No		Standard		Opt-BC157	
Input signal: Current (1-5, 4-20, 20-50mA)	No	No	External mount Opt - BC145		Internal mount Opt - BC145		Internal mount Opt - BC145	
Input signal: Voltage (0-25, 0-120, 0-550 VDC)	No	No	Opt - BC145		0-5, 0-10 VDC Input standard		0-5, 0-10 VDC Input standard	
Electrical connection to control barrier terminal block	Standard	Standard	Standard		Standard		Standard	
Current sensing relay/overload protector	No	No	No		Standard		Standard	
AC Line filter for CE	Opt -BC24-LF		Opt-BC24-LF		Opt-BC24-LF		Opt-BC24-LF	

NEMA enclosed DC control specifications

Features	Catalog number					
	BC160		BC254 or BC254-FBR		BC354	
Enclosure	NEMA 4X		NEMA 4X		NEMA 4X	
Control type	Reversible		Regenerative		Regenerative	
AC Line input (VAC 50/60Hz)	115	230	115	230	115	230
Max. AC Load current (RMS)	22	22	15	15	11.5	11.5
Max. AC Load current (RMS) w/ BC143	—	—	—	—	—	—
DC Armature voltage nominal (VDC)	90	180	90	180	90	180
Max. DC Load current (ADC)	15	15	11	11	7.5	7.5
Max. DC Load current (ADC) w/ BC143	—	—	—	—	—	—
Shunt field power supply (VDC)	50/100	100/200	50/100	100/200	50/100	100/200
Maximum field current (ADC)	1.5	1.5	1.0	1.0	1.0	1.0
Rated horsepower range (SCR motor)	1.5	3	1/10 - 1	1/5 - 2	1/50 - 3/4	1/25 - 1.5
Rated horsepower range (PWM motor)	N/A	N/A	N/A	N/A	1/30 - 1	1/20 - 2
Max. Hp with BC143 Ext. Heat Sink	N/A	N/A	N/A	NA	N/A	N/A
Ambient temp range (°C)	0 - 45		0 - 40		0 - 40	
Ambient temp range w/ BC143 (°C)	N/A		N/A		N/A	
Speed range (Motor may be 20:1 constant torque)	50:1		50:1		50:1	
Adjustable accel / decel time (sec)	0.1 - 15		0.2 - 15		0.5 - 10	
Min. speed adjustable range (% full speed)	0 -30		N/A		N/A	
Max. speed adjustable range (% full speed)	50 - 110		40 - 110		50 - 140	
Current limit adjustable range (%)	0 - 180		0 - 200		0 - 200	
Adjustable current limit and trip out type	Timed or Non-Timed		Timed or Non-Timed		Timed or Non-Timed	
Control of speed or torque	Speed or Torque		Speed or Torque		Speed or Torque	
IR Compensation adjustable (VDC)	0 - 30		0 - 15	0 - 30	0 - 15	0 - 30
Tachometer feedback input	Yes		Yes		Yes	
Plug-in horsepower resistor ®	N/A		N/A		N/A	
UL & cUL Listing, CE	Yes		Yes		Yes	
AC Line fuse	External		External		External	
DC Armature fuse	External		External		External	
Options						
AC Line switch	No		Opt - BC159		Opt - BC159	
Forward/Brake/Reverse switch			(BC254)			
Mechanical	No		Opt - BC253		Opt - BC156	
Electronic	No		No		Opt - BC153	
Run/Jog switch	Opt-BC157		No		Opt - BC157	
Input signal: Current (1-5, 4-20, 20-50mA)	Internal Mount Opt - BC145		No		Internal Mount Opt - BC145	
Input signal:	0-5, 0-10 VDC		0-5, 0-10 VDC		0-5, 0-10 VDC	
Voltage (0-25, 0-120, 0-550 VDC)	input standard		input standard		input standard	
Electrical connection to control barrier terminal block	Standard		Standard		Standard	
Current sensing relay/overload protector	Standard		Standard		Standard	
AC Line filter for CE	Opt-BC24-LF		Opt-BC24-LF		Opt-BC24-LF	

NEMA enclosed DC control specifications

Features	Catalog Number				
	BC141	**BC142**	**BC142-5 & BC142-6**		**BC155**
Enclosure	Chassis	Chassis		Chassis	Chassis
Control type	Reversible	Reversible		Reversible	Reversible
AC Line input (VAC 50/60Hz)	115	230	115	230	230
Max. AC Load current (RMS)	12.0	12.0	12.0	12.0	38.0
Max. AC Load current (RMS) w/ BC143	24.0	24.0	24.0	24.0	N/A
DC Armature voltage nominal (VDC)	90	180	90	180	180
Max. DC Load current (ADC)	8.0	8.0	8.0	8.0	26.0
Max. DC Load current (ADC) w/ BC143	16.0	16.0	16.0	16.0	N/A
Shunt field power supply (VDC)	50/100	100/200	50/100	100/200	100/200
Maximum field current (ADC)	1.13	1.13	1.13	1.13	2.5
Rated horsepower range	1/100 - 0.75	1/100 - 1.5	1/100 - 0.75	1/100 - 1.5	5
Max. Hp with BC143 Ext. heat sink	1/100 - 1.5	1/50 - 3	1/100 - 1.5	1/50 - 3	N/A
Ambient temp range (°C)	0 - 40	0 - 40		0 - 40	0 - 40
Ambient temp range w/ BC143 (°C)	0 - 40	0 - 40		0 - 40	N/A
Speed range (Motor may be 20:1 constant torque)	50:1	50:1		50:1	50:1
Adjustable accel / decel time (sec)	0.2 - 10	0.2 - 10		0.2 - 10	1 - 10
Min. speed adjustable range (% full speed)	0 - 30	0 - 30		0 - 30	0 - 30
Max. speed adjustable range (% full speed)	50 - 110	50 - 110		50 - 110	50 - 110
Current limit adjustable range (%)	0 - 200	0 - 200		0 -2 00	0 - 200
Adjustable current limit and trip out type	Non timed	Non timed		Non timed	Non timed
Control of speed or torque	Speed	Speed		Speed	Speed or torque
IR Compensation adjustment	Yes	Yes		Yes	Yes
Tachometer feedback input	Yes	Yes		Yes	Yes
Plug-in Horsepower Resistor®	Required	Required		Required	N/A
UL & cUL listing, CE	Yes	Yes		Yes	Yes
AC Line fuse	Included	Included		Included	External
DC Armature fuse	Included with Hp resistor	Included with Hp resistor		Included with Hp resistor	Included with Hp resistor
Options					
Input signal:		Plug on mount		Plug on mount	External mount Opt - BC145
Current (4-20mA)		Opt - BC152		Opt - BC152	
Input signal:		External mount		External Mount	
Current (1-5, 4-20, 20-50mA)		Opt - BC145		Opt - BC145	
Input signal:		0-9 VDC		0-9 VDC	0 to 9 VDC
Voltage (must be isolated)		Standard		Standard	Standard
Input signal:		Plug on mount		Plug on mount	External mount
Voltage (0-5, 0-10, 1-100, or 0-200 VDC)		Opt - BC152		Opt - BC152	
Input signal:		External mount		External mount	Opt - BC145
Voltage (0-25, 0-120, or 0-550 VDC)		Opt - BC145		Opt - BC145	
Push-on quick connects		Standard		Standard	None
Barrier terminal block		Opt - BC147		Opt - BC147	
Regenerative	None	None		None	None
Accel / decel board					
AC Line filter for CE		Opt - BC24-LF		Opt - BC24-LF	Opt - BC24-LF

NEMA enclosed DC control specifications

Features	Catalog Number						
	BC204		BC200		BC201		BC203
Enclosure	Chassis		Chassis		Chassis		Chassis
Control type	Regenerative		Regenerative		Regenerative		Regenerative
AC Line input (VAC 50/60Hz)	115	230	115	230	115	230	230
Max. AC Load current (RMS)	12.0	12.0	16.0	16.0	24.0	24.0	38.0
Max. AC Load current (RMS) w/ BC143	16.0	16.0	N/A	N/A	N/A	N/A	N/A
DC Armature voltage nominal (VDC)	90	180	90	180	90	180	180
Max. DC Load current (ADC)	8.0	8.0	11.0	11.0	16.0	16.0	25.0
Max. DC Load current (ADC) w/ BC143	11.0	11.0	N/A	N/A	N/A	N/A	N/A
Shunt field power supply (VDC)	50/100	100/200	50/100	100/200	50/100	100/200	100/200
Maximum field current (ADC)	1.0	1.0	3.0	3.0	3.0	3.0	3.0
Rated horsepower range	1/6 - 0.75	1/3 - 1	1/4 - 1	1/2 - 2	1/8 - 1.5	1/4 - 3	5
Max. Hp with BC143 Ext. heat sink	1/6 - 1.5	1/3 - 2		N/A		N/A	N/A
Ambient temp range (°C)		0 - 40		0 - 45 (horiz) 0 - 50 (vert)		0 - 45 (horiz) 0 - 50 (vert)	0 - 40
Ambient temp range w/ BC143 (°C)		0 - 40		N/A		N/A	N/A
Speed range (Motor may be 20:1 constant torque)		50:1		50:1		50:1	50:1
Adjustable accel / decel time (sec)		0.1 - 15		0.1 - 15		0.1 - 15	0.5 - 10
Min. speed adjustable range (% full speed)		N/A		N/A		N/A	0 - 30
Max. speed adjustable range (% full speed)		50 - 110		70 - 110		70 - 110	50 - 140
Current limit adjustable range (%)		0 - 175		1 - 15		1 - 15	0 - 200
Adjustable current limit and trip out type		Non timed		Timed		Timed	Timed
Control of speed or torque		Speed or torque		Speed or torque		Speed or torque	Speed
IR Compensation adjustment		Yes		Yes		Yes	Yes
Tachometer feedback input		Yes		Yes		Yes	Yes
Plug-in Horsepower Resistor®		N/A		N/A		N/A	N/A
UL & cUL listing, CE		Yes		Yes		Yes	Yes
AC Line fuse		External		Included		Included	External
DC Armature fuse		External		Included		Included	External
Options							
Input signal: Current (4-20mA) Input signal: Current (1-5, 4-20, 20-50mA)	None		None		None		None
Input signal: Voltage (must be isolated)	0 to ± 10 VDC Standard		0 to ± 10 VDC Standard		0 to ± 10 VDC Standard		0 to ± 10 VDC Standard
Input signal: Voltage (0-5, 0-10, 1-100, or 0-200 VDC)	±5 to ±25 VDC		±5 to ±250 VDC		±5 to ±250 VDC		±5 to ±250 VDC
Input signal: Voltage (0-25, 0-120, or 0-550 VDC)	Opt - BC215		Opt - BC212		Opt - BC212		Opt - BC212
Push-on quick connects Barrier terminal block	None		None		None		None
Regenerative Accel / decel board	None		Opt - BC211		Opt - BC211		Opt - BC211
AC Line filter for CE	Opt - BC24-LF		Opt - BC24-LF		Opt - BC24-LF		Opt - BC24-LF

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