BISON









We Make Your Products Go

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What's New? take a look.

VFsync PERMANENT MAGNET AC MOTOR

pages 6-11

Bison VFsync motors deliver precise velocity control for applications that require synchronization across multiple axes. Available in NEMA and IEC mounts with either TENV, TEFC or TENV with encoder enclosures. A Variable Frequency Drive is required to power VFsync motors. Multiple VFD options are available from Bison.

SANIMotor™

pages 14-15

Bison Gear's innovative SaniMotor™ line of stainless steel gearmotors are designed to meet the IP69K extreme washdown rating established by the IEC for equipment exposed to temperature extremes, wet environments and the use of harsh cleaning agents. 230V and 460V options are available.

PowerSTAR®

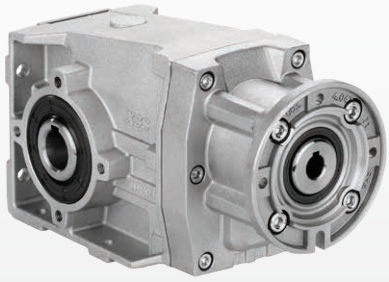
pages 16-23

PowerSTAR right angle gearmotors feature hypoid gearing manufactured using technology exclusive to Bison which offers several operational advantages including: higher torque capability, quieter operation and unmatched energy efficiency.

IHP INTEGRAL HORSEPOWER

Gear reducers designed to handle more power from 1/4 to 5HP. Versatile mounting and configuration options available in worm and hypoid gearing.

S Series Washdown
page 12



X Series Hypoid
page 16

Q Series Worm
pages 64-65

People Relentless

Welcome to Bison Gear & Engineering

For over 60 years, our innovative associates have been designing and manufacturing fractional and integral horsepower electric motors, gearmotors and gear reducers used in industrial and commercial applications around the world.

Today, Bison is a leader in the power transmission industry because of our commitment to excellence, which is achieved by providing the best products and solutions to our customers through exceptional engineering capabilities, supported by our Robusticity™ principles. Innovative technology and technically skilled associates ensure that all of the products we manufacture are "engineered to last". Our commitment to excellence was recognized when we earned the ISO 9001:2015 certification. This certification demonstrates the unwavering dedication and determination of Bison associates and the pride they have in delivering high quality products.

With an extensive product line of more than 1,200 part numbers, combined with our ability to design custom products, we are confident that we will provide the best solution for our customers' needs. We know we have a solution that will work for any application. Supported by a knowledgeable and responsive customer service team, and an experienced network of sales representatives and distribution partners throughout North America, your questions will always be answered in a timely manner.

Bison will continue to demonstrate our commitment to quality and we'll always take **PRIDE** in being a team of "People Relentless In Delivering Excellence." We look forward to working with you soon.

John Burch
CEO

1960

Bison is founded by three engineers who used the first letter of each of their last names – B, S, & N – to create the Bison name.

1989

Bison acquires RAM Tool to manufacture PMDC motors, becoming Bison Electric Corporation.

1981

Bison installs first CNC.

1994

Bison launches 100 series product line incorporating Robusticity™ design features.

BISON'S LEAN CAPABILITES

Utilizing a lean system, Bison is able to shrink overall cycle time, allowing for rapid response to customer needs. Lean manufacturing allows Bison to offer customers a cost-effective product while working in a flexible production environment.

In Delivering Excellence

PRIDE

Each time a customer interacts with Bison we want them to be completely satisfied. To achieve this goal, each employee is empowered, enabled, and encouraged to provide defect-free, highest-value products and services.

BISON PRIDE

1997

Bison and Bison Electric move to current facility with a 115,000 square foot plant and $2M in new equipment.

2000

Bison plant is converted to a Lean Manufacturing Facility.

2005

Bison creates BisonCares, aimed at improving the quality of life in our local and global communities.

BISON Cares

2010

Bison launches SaniMotor line of IP69K Washdown gearmotors.

2012

Bison launches PowerSTAR line of energy-efficient right angle hypoid gearmotors.

2016

Bison adds IHP line of gear reducers to handle higher horsepower applications.

2018

Bison becomes ISO 9001:2015 Certified.

2019

Bison launches VFsync Permanent Magent AC Motor line.

2020

Bison celebrates 60 years as a leader in the power transmission industry.

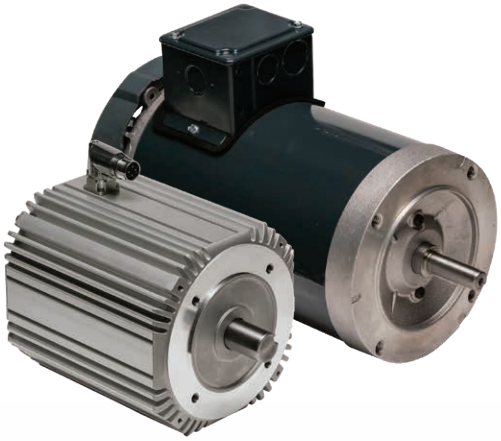
Bison's Robusticity™ design philosophy yields gearmotors that are built to be the best from the inside out. Superior quality and design is the reason customers throughout the world have chosen Bison as the driving force behind their products for more than 60 years.

ROBUSTICITY

Maximum Horsepower. Minimum Size.

VFsync Power Range: .25HP - 1.5HP

The VFsync series is designed to save energy with high power density in general purpose applications by replacing traditional three phase induction motors with more efficient and compact permanent magnet AC synchronous motors like the VFsync series. Bison VFsync motors provides greater mounting versatility within tighter footprints.



63% Lighter and **56% Smaller** than comparable 3-phase induction motors.

Provides greater mounting versatility within tight footprints.

Three Styles Available

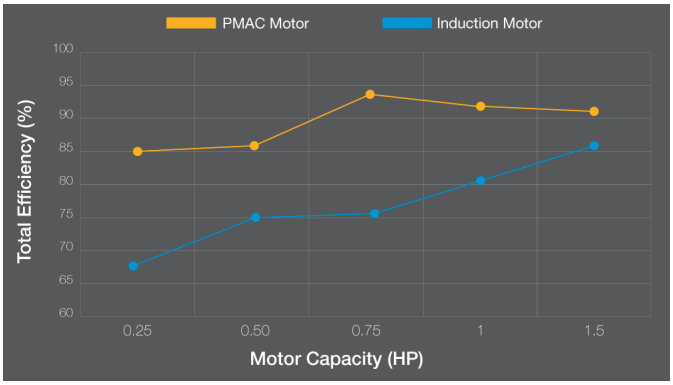
TENV

TENV with Encoder

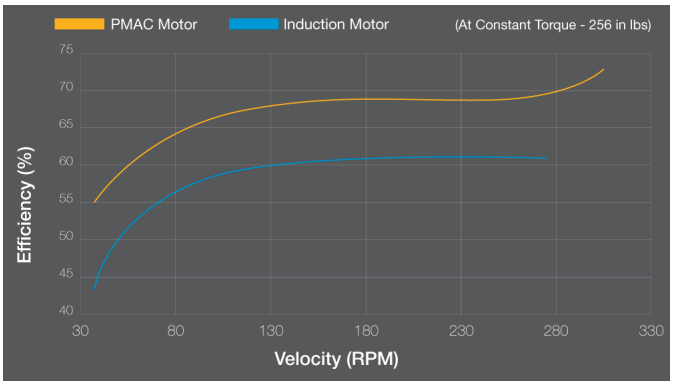
TEFC

PERMANENT MAGNET AC MOTOR
VFsync

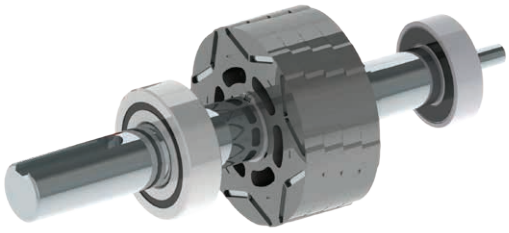
Drive and Motor Efficiency



Gearmotor System Efficiency vs. Velocity



Innovative Rotor Design



VFsync rotors are designed using finite element analysis software and use rotor laminations with interior permanent magnets (IPM). These magnets are made from neodymium-iron-boron, selected for their robust performance and reliability.

Failure modes of earlier designs where magnets are glued onto the surface of a steel shaft have been eliminated since the magnets are embedded within the rotor.

VFsync Part Number Structure

O5B-12-0103-B10-321

Motor Type	Frame Size	Torque Rating	HP Rating	Voltage	Enclosure
O5B - PMAC	12 = 39F 22 = 49F 32 = 55F	01 = 8.8 02 = 17.5 03 = 26.3 04 = 39.4 05 = 52.5	03 = 0.25 05 = 0.50 08 = 0.75 10 = 1.00 11 = 1.25 12 = 1.50	B = 230V D = 460V	321 = IEC/TENV 32A = IEC/TENV w/ Encoder 322 = IEC/TEFC 331 = NEMA/TENV 33A = NEMA/TENV w/ Encoder 332 = NEMA/TEFC

Motor Specifications

Motor Part No.	Rated Power (HP)	Rated Power (W)	Rated Speed (RPM)	Rated Freq. (Hz)	# of Poles	FLA	Torque (in.-lb)	Power Factor	Efficiency (%)	Rotor Inertia (lb-in2)	Back EMF L-L (Vrms/kRPM)
05B-12-0103-B10-321	0.25	187	1800	150	10	1.1	8.8	0.71	84.9	1.97	76.4
05B-12-0205-B10-321	0.50	373	1800	150	10	1.7	17.5	0.69	85.8	3.39	73.6
05B-12-0103-B10-322	0.25	187	1800	150	10	1.1	8.8	0.71	84.9	1.97	76.4
05B-12-0205-B10-322	0.50	373	1800	150	10	1.7	17.5	0.69	85.8	3.39	73.6
05B-12-0103-B10-32A	0.25	187	1800	150	10	1.1	8.8	0.71	84.9	1.97	76.4
05B-12-0205-B10-32A	0.50	373	1800	150	10	1.7	17.5	0.69	85.8	3.39	73.6
05B-22-0308-B10-321	0.75	560	1800	90	6	3.0	26.5	0.67	90.8	5.08	67.2
05B-22-0411-B10-321	1.12	835	1800	90	6	4.0	40.0	0.70	89.8	6.69	72.8
05B-22-0308-D10-321	0.75	560	1800	90	6	1.5	26.5	0.69	93.7	5.08	133.8
05B-22-0411-D10-321	1.12	835	1800	90	6	2.0	40.0	0.71	92.0	6.69	146.0
05B-22-0308-B10-322	0.75	560	1800	90	6	3.0	26.5	0.67	90.8	5.08	67.2
05B-22-0411-B10-322	1.12	835	1800	90	6	4.0	40.0	0.70	89.8	6.69	72.8
05B-22-0308-D10-322	0.75	560	1800	90	6	1.5	26.5	0.69	93.7	5.08	133.8
05B-22-0411-D10-322	1.12	835	1800	90	6	2.0	40.0	0.71	92.0	6.69	146.0
05B-22-0308-B10-32A	0.75	560	1800	90	6	3.0	26.5	0.67	90.8	5.08	67.2
05B-22-0411-B10-32A	1.12	835	1800	90	6	4.0	40.0	0.70	89.8	6.69	72.8
05B-22-0308-D10-32A	0.75	560	1800	90	6	1.5	26.5	0.69	93.7	5.08	133.8
05B-22-0411-D10-32A	1.12	835	1800	90	6	2.0	40.0	0.71	92.0	6.69	146.0
05B-22-0308-B10-331	0.75	560	1800	90	6	3.0	26.5	0.67	90.1	5.08	67.2
05B-22-0411-B10-331	1.12	835	1800	90	6	4.0	40.0	0.70	89.6	6.69	72.9
05B-22-0308-D10-331	0.75	560	1800	90	6	1.5	26.5	0.69	94.2	5.08	133.8
05B-22-0411-D10-331	1.12	835	1800	90	6	2.0	40.0	0.71	93.4	6.69	146.0
05B-22-0308-B10-332	0.75	560	1800	90	6	3.0	26.5	0.67	90.1	5.08	67.2
05B-22-0411-B10-332	1.12	835	1800	90	6	4.0	40.0	0.70	89.6	6.69	72.9
05B-22-0308-D10-332	0.75	560	1800	90	6	1.5	26.5	0.69	94.2	5.08	133.8
05B-22-0411-D10-332	1.12	835	1800	90	6	2.0	40.0	0.71	93.4	6.69	146.0
05B-22-0308-B10-33A	0.75	560	1800	90	6	3.0	26.5	0.67	90.1	5.08	67.2
05B-22-0411-B10-33A	1.12	835	1800	90	6	4.0	40.0	0.70	89.6	6.69	72.9
05B-22-0308-D10-33A	0.75	560	1800	90	6	1.5	26.5	0.69	94.2	5.08	133.8
05B-22-0411-D10-33A	1.12	835	1800	90	6	2.0	40.0	0.71	93.4	6.69	146.0
05B-32-0410-B10-321	1.00	745	1800	90	6	4.3	35.0	0.63	89.9	10.24	59.6
05B-32-0515-B10-321	1.50	1118	1800	90	6	6.0	52.5	0.62	87.6	16.89	64.3
05B-32-0410-D10-321	1.00	745	1800	90	6	2.1	35.0	0.64	92.3	10.24	118.9
05B-32-0515-D10-321	1.50	1118	1800	90	6	3.0	52.5	0.67	91.6	16.89	127.8
05B-32-0410-B10-322	1.00	745	1800	90	6	4.3	35.0	0.63	89.9	10.24	59.6
05B-32-0515-B10-322	1.50	1118	1800	90	6	6.0	52.5	0.62	87.6	16.89	64.3
05B-32-0410-D10-322	1.00	745	1800	90	6	2.1	35.0	0.64	92.3	10.24	118.9
05B-32-0515-D10-322	1.50	1118	1800	90	6	3.0	52.5	0.67	91.6	16.89	127.8
05B-32-0410-B10-32A	1.00	745	1800	90	6	4.3	35.0	0.63	89.9	10.24	59.6
05B-32-0515-B10-32A	1.50	1118	1800	90	6	6.0	52.5	0.62	87.6	16.89	64.3
05B-32-0410-D10-32A	1.00	745	1800	90	6	2.1	35.0	0.64	92.3	10.24	118.9
05B-32-0515-D10-32A	1.50	1118	1800	90	6	3.0	52.5	0.67	91.6	16.89	127.8

PERMANENT MAGNET AC MOTOR
VFsync

Resistance L-L (Ω)	Inductance (Lsd)	Inductance (Lsq)	Peak Amps (A)	Peak Torque (in.-lb)	Mounting Flange	Enclosure	Weight (lbs)	Length (in)	Drive Part Number (IP20 / IP66)			
19.40	19.9	38.3	2.65	29.68	IEC 71 B14	TENV	6.0	5.2				-
6.78	8.4	17.5	4.25	45.90	IEC 71 B14	TENV	8.7	6.2				-
19.40	19.9	38.3	2.65	29.68	IEC 71 B14	TEFC	6.8	6.35	DW10232	DW20232	DW30232	-
6.78	8.4	17.5	4.25	45.90	IEC 71 B14	TEFC	9.5	7.35	DW10236	DW20236	DW30236	-
19.40	19.9	38.3	2.65	29.68	IEC 71 B14	TENV w/Encoder	6.8	6.52				-
6.78	8.4	17.5	4.25	45.90	IEC 71 B14	TENV w/Encoder	9.5	7.52				-
4.40	5.6	18.8	7.35	72.03	IEC 80 B14	TENV	11.7	6.21	DW10432	DW20432	DW30432	-
2.14	4.3	14.2	9.98	105.78	IEC 80 B14	TENV	15.7	7.21	DW10436	DW20436	DW30436	-
17.61	20.1	65.4	3.20	62.72	IEC 80 B14	TENV	11.7	6.21	-	-	-	DW40222
8.54	14.2	53.5	5.03	107.03	IEC 80 B14	TENV	15.7	7.21	-	-	-	DW40226
4.40	5.6	18.8	7.35	72.03	IEC 80 B14	TEFC	12.5	7.35	DW10432	DW20432	DW30432	-
2.14	4.3	14.2	9.98	105.78	IEC 80 B14	TEFC	16.5	8.35	DW10436	DW20436	DW30436	-
17.61	20.1	65.4	3.20	62.72	IEC 80 B14	TEFC	12.5	7.35	-	-	-	DW40222
8.54	14.2	53.5	5.03	107.03	IEC 80 B14	TEFC	16.5	8.35	-	-	-	DW40226
4.40	5.6	18.8	7.35	72.03	IEC 80 B14	TENV w/Encoder	9.9	7.53	DW10432	DW20432	DW30432	-
2.14	4.3	14.2	9.98	105.78	IEC 80 B14	TENV w/Encoder	10.9	8.53	DW10436	DW20436	DW30436	-
17.61	20.1	65.4	3.20	62.72	IEC 80 B14	TENV w/Encoder	9.9	7.53	-	-	-	DW40222
8.54	14.2	53.5	5.03	107.03	IEC 80 B14	TENV w/Encoder	10.9	8.53	-	-	-	DW40226
4.40	5.6	18.8	7.35	72.03	NEMA 56C	TENV	11.5	5.84	DW10432	DW20432	DW30432	-
2.14	4.3	14.2	9.98	106.35	NEMA 56C	TENV	15.5	6.84	DW10436	DW20436	DW30436	-
17.61	20.1	65.4	3.20	62.72	NEMA 56C	TENV	11.5	5.84	-	-	-	DW40222
8.54	14.2	53.5	5.03	107.03	NEMA 56C	TENV	15.5	6.84	-	-	-	DW40226
4.40	5.6	18.8	7.35	72.03	NEMA 56C	TEFC	12.3	6.99	DW10432	DW20432	DW30432	-
2.14	4.3	14.2	9.98	106.35	NEMA 56C	TEFC	16.3	7.99	DW10436	DW20436	DW30436	-
17.61	20.1	65.4	3.20	62.72	NEMA 56C	TEFC	12.3	6.99	-	-	-	DW40222
8.54	14.2	53.5	5.03	107.03	NEMA 56C	TEFC	16.3	7.99	-	-	-	DW40226
4.40	5.6	18.8	7.35	72.03	NEMA 56C	TENV w/Encoder	12.3	7.16	DW10432	DW20432	DW30432	-
2.14	4.3	14.2	9.98	106.35	NEMA 56C	TENV w/Encoder	16.3	8.16	DW10436	DW20436	DW30436	-
17.61	20.1	65.4	3.20	62.72	NEMA 56C	TENV w/Encoder	12.3	7.16	-	-	-	DW40222
8.54	14.2	53.5	5.03	107.03	NEMA 56C	TENV w/Encoder	16.3	8.16	-	-	-	DW40226
2.20	5.7	23.5	10.63	92.48	IEC 90 B14	TENV	15.4	6.23	-	DW20702	DW30702	-
1.05	4.4	15.7	14.90	140.60	IEC 90 B14	TENV	20.4	7.23	-	DW20706	DW30706	-
8.79	26.3	94	4.93	85.78	IEC 90 B14	TENV	15.4	6.23	-	-	-	DW40412
4.22	15.3	61	7.28	136.14	IEC 90 B14	TENV	20.4	7.23	-	-	-	DW40416
2.20	5.7	23.5	10.63	92.48	IEC 90 B14	TEFC	16.2	7.48	-	DW20702	DW30702	-
1.05	4.4	15.7	14.90	140.60	IEC 90 B14	TEFC	21.2	8.48	-	DW20706	DW30706	-
8.79	26.3	94	4.93	85.78	IEC 90 B14	TEFC	16.2	7.48	-	-	-	DW40412
4.22	15.3	61	7.28	136.14	IEC 90 B14	TEFC	21.2	8.48	-	-	-	DW40416
2.20	5.7	23.5	10.63	92.48	IEC 90 B14	TENV w/Encoder	16.2	8.54	-	DW20702	DW30702	-
1.05	4.4	15.7	14.90	140.60	IEC 90 B14	TENV w/Encoder	21.2	9.54	-	DW20706	DW30706	-
8.79	26.3	94	4.93	85.78	IEC 90 B14	TENV w/Encoder	16.2	8.54	-	-	-	DW40412
4.22	15.3	61	7.28	136.14	IEC 90 B14	TENV w/Encoder	21.2	9.54	-	-	-	DW40416

Drives & Cables

VFsync motors require a variable frequency drive that is designed to run permanent magnet synchronous 230/460 V three phase AC motors.

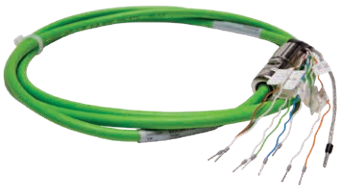
Bison Variable Frequency Drives

Bison Part #	IP Rating	Supply Voltage	Nominal Power		Output Current	Frame
			KW	HP	A	
DW10232	IP20	110-115V (+/- 10% 1P)	0.37	0.5	2.3	1
DW10236	IP66		0.37	0.5	2.3	1
DW10432	IP20		0.75	1	4.3	1
DW10436	IP66		0.75	1	4.3	1
DW20232	IP20	200-230V (+/- 10% 1P)	0.37	0.5	2.3	1
DW20236	IP66		0.37	0.5	2.3	1
DW20432	IP20		0.75	1	4.3	1
DW20436	IP66		0.75	1	4.3	1
DW20702	IP20		1.5	2	7	1
DW20706	IP66		1.5	2	7	1
DW30232	IP20	200-230V (+/- 10% 3P)	0.37	0.5	2.3	1
DW30236	IP66		0.37	0.5	2.3	1
DW30432	IP20		0.75	1	4.3	1
DW30436	IP66		0.75	1	4.3	1
DW30702	IP20		1.5	2	7	1
DW30706	IP66		1.5	2	7	1
DW40222	IP20	380-460V (+/- 10% 3P)	0.75	1	2.2	1
DW40226	IP66		0.75	1	2.2	1
DW40412	IP20		1.5	2	4.1	1
DW40416	IP66		1.5	2	4.1	1

IP66
for Exterior Mounts

IP20
for In Cabinet Mounts

Power Cable
Shielded cable with M17 connector



Feedback Cable
Shielded cable with M17 connector

Power and Feedback Cables

Power Cable*	Length (m)
191-05B-0001	1
191-05B-0002	3
191-05B-0003	6
051-206-5015	90

Feedback Cable*	Length (m)
191-05B-1001	1
191-05B-1002	3
191-05B-1003	6

Accessory	Description
193-170-0001	Programming Stick

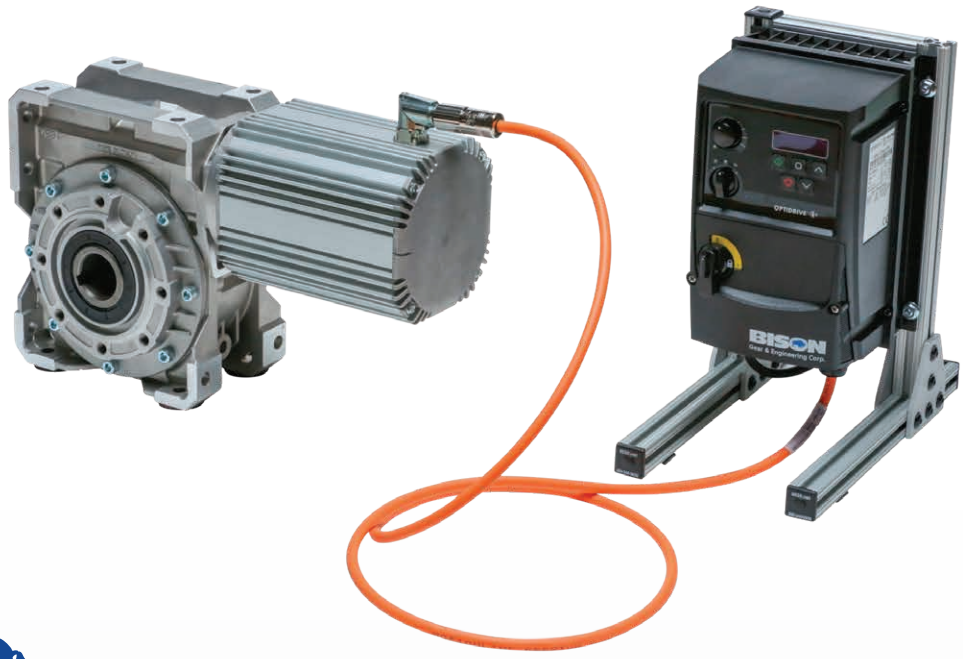
**Customized length is available.*

Bluetooth Optistick and Optitools app available separately for quick motor programming.

PERMANENT MAGNET AC MOTOR
VFsync

Easily Connects to Integral Horsepower Gearbox

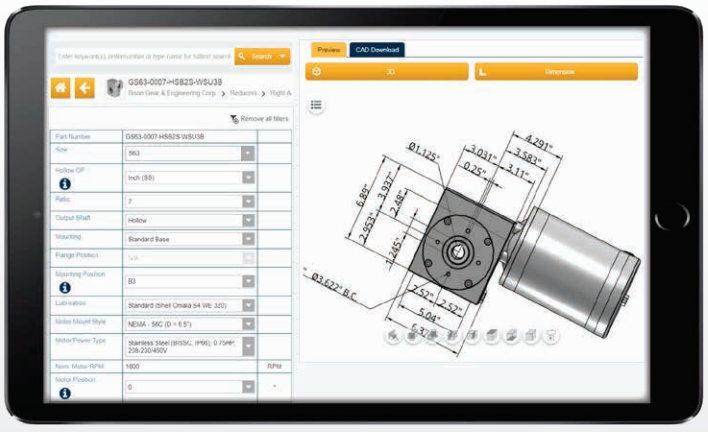
- Perfect for industrial machinery, conveying and packaging applications
- Available in worm or high-efficiency hypoid gearing
- Versatile mounting and configuration options
- Custom options available
- See More About Q-Series Aluminum Worm IHP Gearboxes on Page 64
- See More About S-Series Washdown Worm IHP Gearboxes on Page 12
- See More About X-Series Hypoid IHP Gearboxes on Page 16

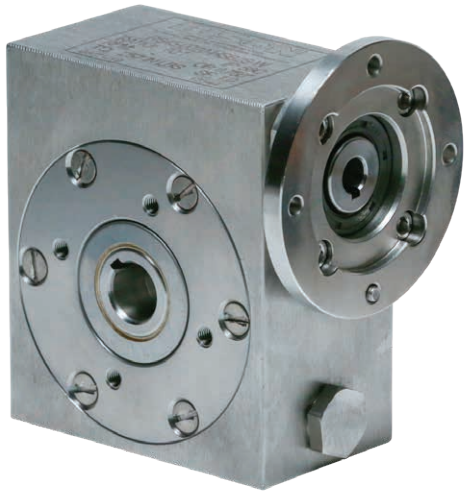


3D CAD CONFIGURATOR

- Design a fully configurable IHP Reducer and add a compatible VFsync motor to create a custom gearmotor.
- 75+ CAD file types to choose from for download.

www.bisongear.com/3Dcad





S Series - Stainless Steel Integral Horsepower Reducer

Features:

- Modular design allows for ultimate flexibility
- IP69 and NSF (Component) certified
- Precision machined Single Piece 304 Stainless Steel alloy housing
- 316L Stainless Steel Hollow Output
- Custom twin-lip Viton Seals with 316L stainless Steel shield
- O-Rings on all closing covers
- Lubricated for life with full-synthetic lube – Vent-free design
- CuSn12Ni (C91700) Nickel bronze worm gears – Centrifugally cast onto steel hub for max strength
- 100% Factory pressure leak tested

Specifications

Size	Torque (in lbs.)	Center Distance	Input Power	Ratio Range	Hollow Output Shaft Diameter
S45	345	1.772″	0.25 to 1 HP	7 to 102:1	0.750″
S50	611	1.969″	0.25 to 2 HP	7 to 100:1	1.000″
S63	1240	2.480″	0.5 to 3 HP	7 to 94:1	1.250″
S85	2921	3.346″	1 to 5 HP	7 to 96:1	1.500″

Visit **www.bisongear.com** for full IHP product specs, dimensional drawings, available accessories and customized 3D CAD downloads.

Options:

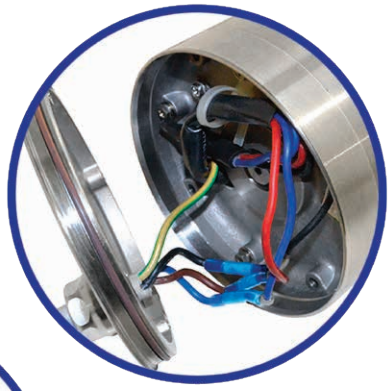
- Output mounting flanges
- Torque arms
- Output shaft inserts
- Fully O-ringed protective shaft covers
- NEMA and IEC input mounting

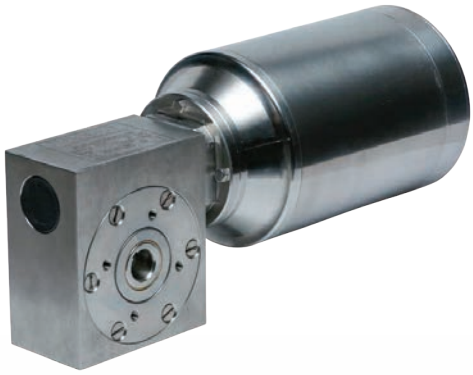
Nickel Bronze Worm Gears

IP69K Stainless Steel Washdown Motors

Features:

- Corrosion resistant coated rotor and stator
- IEC efficiency for motors greater than 1 HP
- Viton O-rings and seals
- 420 stainless shaft
- 316 L stainless body
- Laser etched nameplate
- Stainless steel hygienic cable gland
- Easy connection with wire-to-wire heat shrinkable splicing
- Replacement parts available





Specifications

Model #	Horsepower	Voltage	Motor Frame	RPM	Torque (in lbs)	Amps	Shipping Wt.
P150-030-0004	1/6	230/460	IEC 63 B14	1720	6.1	.60/.33	19.2
P150-030-0014	1/4	230/460	IEC 63 B14	1720	9	.78/.43	22
P150-030-0024	1/3	230/460	IEC 71 B14	1720	11.9	1.0/0.55	25.6
P150-030-0034	1/2	230/460	IEC 71 B14	1720	17.9	1.45/0.80	29.8
P150-030-0044	3/4	230/460	IEC 80 B14	1720	26.9	2.1/1/1	41.9
P150-030-0054	1	230/460	IEC 80 B14	1720	48.5	2.8/1.6	48.5
P150-030-0064	1.5	230/460	IEC 90 B14	1720	53.7	3.9/2.2	59.5
P150-030-0074	2	230/460	IEC 90 B14	1720	71.6	5.4/3.0	72.8
P150-030-1004	1/6	230/460	NEMA 56C	1760	6.1	0.8/0.4	23.6
P150-030-2004	1/4	230/460	NEMA 56C	1760	9	0.92/0.46	23.6
P150-030-3004	1/3	230/460	NEMA 56C	1760	11.9	1.14/0.57	27.6
P150-030-4004	1/2	230/460	NEMA 56C	1760	18.3	1.6/0.8	31.8
P150-030-5004	3/4	230/460	NEMA 56C	1760	26.9	2.3/1.15	41.9
P150-030-6004	1	230/460	NEMA 56C	1760	36.6	3.2/1.6	49.6
P150-030-7004	1.5	230/460	NEMA 56C	1760	55	4.4/2.2	59.5
P150-030-8004	2	230/460	NEMA 56C	1760	73.3	5.8/2.9	72.8

SANIMotor™

IP69K RATED INVERTER DUTY STAINLESS STEEL GEARMOTORS

For use in harsh environments and high pressure, high temperature washdown environments.

** Output torque is gear limited.

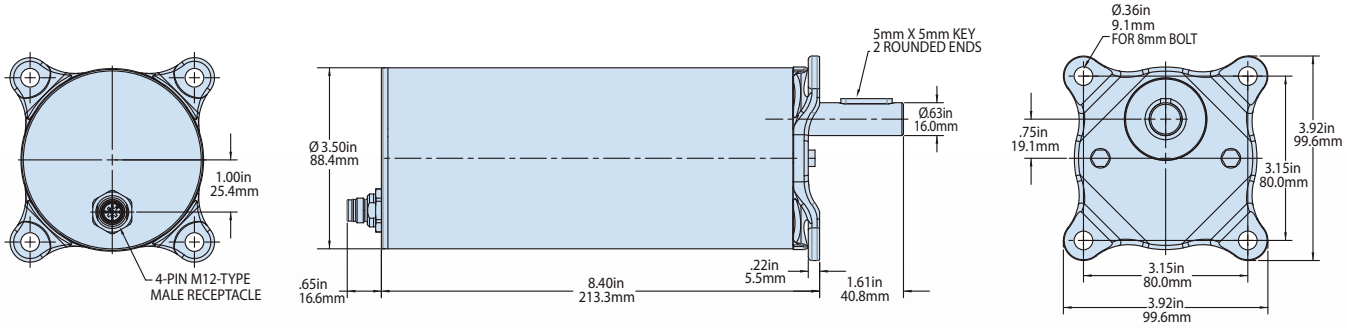
34 Frame 230V VFD 3-Phase Inverter Duty

	Rated Speed (RPM)			Rated Torque (in-lbs)						Amps			
Part Number	6hz	60hz	90hz	6hz	60hz	90hz	Input HP	Gear Ratio	Stages	6hz	60hz	90hz	Shipping Wt.
017-160-0005	33.5	335	500	7	7	5	1/20	5	1	.27	.24	.19	10.5
017-160-0010	17.3	173	258	14	14	9	1/20	10	2	.27	.24	.19	10.5
017-160-0019	8.9	89	132	27	27	17	1/20	19	2	.27	.24	.19	10.5
017-160-0037	4.6	46	68	50	50	33	1/20	37	3	.27	.24	.19	10.5
017-160-0072	2.3	23	35	96	96	63	1/20	72	3	.27	.24	.19	10.5
017-160-0139	1.2	14	18	160**	160**	106**	1/20	139	4	.27	.24	.19	10.5
017-160-0271	0.6	7	10	160**	160**	160**	1/20	271	4	.24	.21	.17	10.5

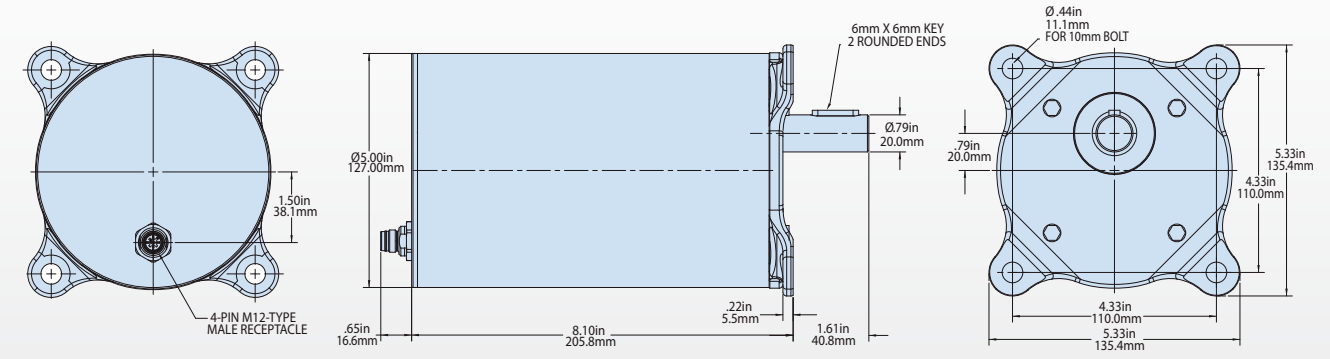
49 Frame 230V VFD 3-Phase Inverter Duty

	Rated Speed (RPM)			Rated Torque (in-lbs)						Amps			
Part Number	6hz	60hz	90hz	6hz	60hz	90hz	Input HP	Gear Ratio	Stages	6hz	60hz	90hz	Shipping Wt.
017-260-0005	34.5	345	518	16	16	11	1/8	5	2	.55	.50	.44	19.5
017-260-0010	17.3	173	260	34	34	23	1/8	10	2	.55	.50	.44	19.5
017-260-0019	9.1	91	137	70	70	46	1/8	19	2	.55	.50	.44	19.5
017-260-0037	4.7	47	71	128	128	85	1/8	37	2	.55	.50	.44	19.5
017-260-0072	2.4	24	36	256	256	170	1/8	72	3	.55	.50	.44	19.5
017-260-0140	1.2	12	19	500**	500**	320**	1/8	140	3	.60	.50	.44	19.5
017-260-0221	0.8	8	12	500**	500**	500**	1/8	221	3	.60	.44	.40	19.5

SANIMotor™ 34 Frame



SANIMotor™ 49 Frame

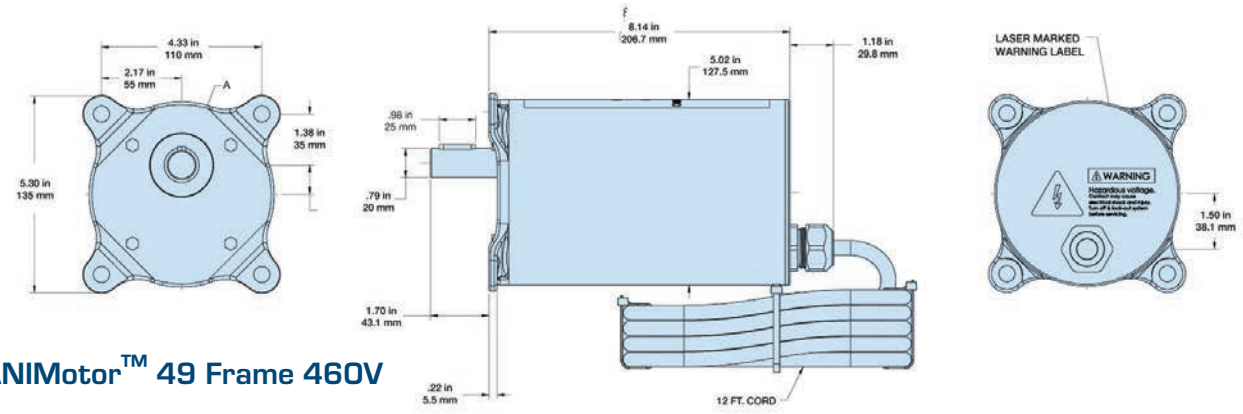


49 Frame 460V VFD 3-Phase Inverter Duty - 12 ft. Cable Included

	Rated Speed (RPM)			Rated Torque (in-lbs)						Amps			
Part Number	6hz	60hz	90hz	6hz	60hz	90hz	Input HP	Gear Ratio	Stages	6hz	60hz	90hz	Shipping Wt.
017-260-2005	23.5	353	528	22	22	15	1/7	5	2	0.21	0.39	0.29	23
017-260-2010	12	177	264	44	44	30	1/7	10	2	0.21	0.39	0.29	23
017-260-2019	6.2	93	139	82	82	58	1/7	19	2	0.21	0.39	0.29	23
017-260-2037	3.1	47.5	71.3	160	160	112	1/7	37	2	0.22	0.4	0.3	23
017-260-2072	1.6	24	37	305	305	207	1/7	72	3	0.23	0.41	0.31	23
017-260-2140	0.8	12.4	19	500**	500**	390	1/7	140	3	0.24	0.42	0.31	23
017-260-2221	0.5	8	12	500**	500**	500**	1/7	221	3	0.24	0.43	0.31	23

49 Frame 460V VFD 3-Phase Inverter Duty - 30 ft. Cable Included

	Rated Speed (RPM)			Rated Torque (in-lbs)						Amps			
Part Number	6hz	60hz	90hz	6hz	60hz	90hz	Input HP	Gear Ratio	Stages	6hz	60hz	90hz	Shipping Wt.
017-260-1005	23.5	353	528	22	22	15	93	5	2	0.21	0.39	0.29	23
017-260-1037	3.1	47.5	71.3	160	160	112	93	37	2	0.22	0.4	0.3	23



SANIMotor™ 49 Frame 460V

Product Features & Benefits

Motor Encapsulation

- Stator is encapsulated with a thermally conductive 2-part epoxy. Heat dissipates better than a motor without encapsulation, allowing use of TENV construction.
- Gearmotor is suited for use with variable frequency drives in constant torque configuration from 6-60 Hz and constant horsepower configuration from 60-90 Hz. Inverter Duty wire is standard.

UL Recognized Component

- Construction features meet UL 1004 and C22.2 #100 described in E89715.
- Class Ft insultation system evaluated to UL 1449 described in E199928.
- Class B temperature rise at 40°C rated ambient temperature allows for use in elevated ambient conditions

Gearmotor Encased in 304 Stainless Steel

- All exterior components are manufactured from 304 stainless steel to provide an exterior shell protecting all interior components.
- Output shaft, supported by sealed ball bearings, is made from 304 stainless steel.
- Laser marked permanent nameplate meets extreme washdown rating.

Bison Geartrain

- Gear centers are precision machined on automated CNC mills.
- All rotating components supported with sealed ball bearings from the motor to the output shaft.
- Gear pinions are the strongest in the industry, capable of 200% shock loading. Pinions are carburized creating a hard outer surface for wear resistance and a durable inner base to handle high torque loads.
- Geartrain lubricated with NSF H1 registered, DIN 51825 certified, high performance grease for food processing applications.

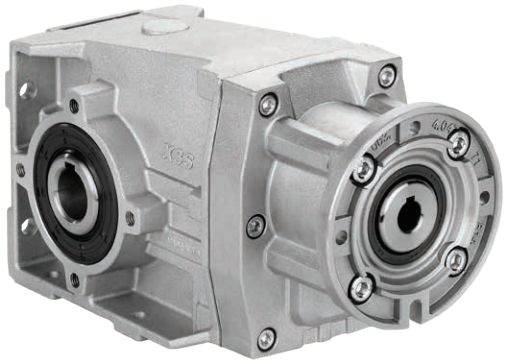
Removable IP69K ABS Cordset

- Removable cordset has a stainless steel modular, multi-pin, power connector.

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95.



PowerSTAR

X Series - Hypoid Integral Horsepower Reducer

Features:

- Modular design allows for ultimate flexibility
- 2 and 3 stage versions for all sizes for a wide ratio range
- Precision machined Single-piece aluminum alloy housing
- All gears hardened and ground for long life and quiet operation
- Removable inspection cover
- Lubricated for life with full-synthetic lube – Vent-free design

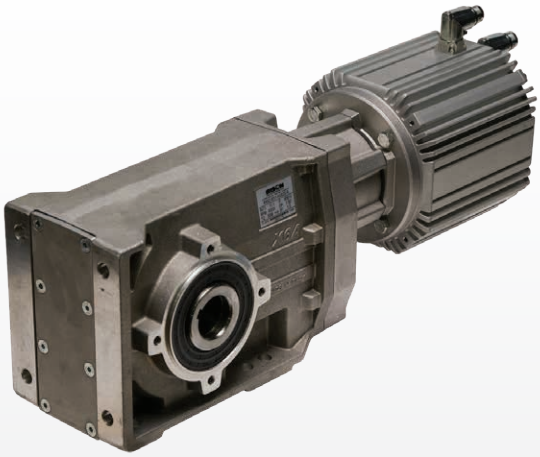
Specifications

Size	Torque (in lbs.)	Input Power	Ratio Range	Hollow Output Shaft Diameter
X42/X43	1416	0.25 to 2 HP	7 to 323:1	1.00" / 25mm
X52/X53	2213	0.25 to 3 HP	6 to 590:1	1.250" / 30mm
X62/X63	3629	0.25 to 5 HP	6 to 590:1	1.375" / 35mm

Visit **www.bisongear.com** for full IHP product specs, dimensional drawings, available accessories and customized 3D CAD downloads.

Options:

- Hollow Output Shaft options
  - Imperial and Metric sizes
- Output mounting flanges
- Torque arms
- Output shaft inserts
- Protective covers for Hollow output shaft
- NEMA and IEC mounting



Compatible Motors

- VFsync PMAC Motors (see pages 6-11)
- Single Phase and Three Phase Induction (Page 65)
- PMDC

PowerSTAR

Best-In-Class Right Angle Hypoid Gearmotors

Features:

- Advanced hypoid gearing technology for improved energy efficiency
- Maximum power density means a compact profile without compromising performance
- Exclusive PowerSTAR EP lubricant for extended life
- Ground gearing provides whisper quiet operation and low backlash precision
- Custom options available

The right angle designed PowerSTAR gearmotor combines the latest technology in hypoid gearing with Bison's long established reputation of providing best-in-class power transmission solutions.

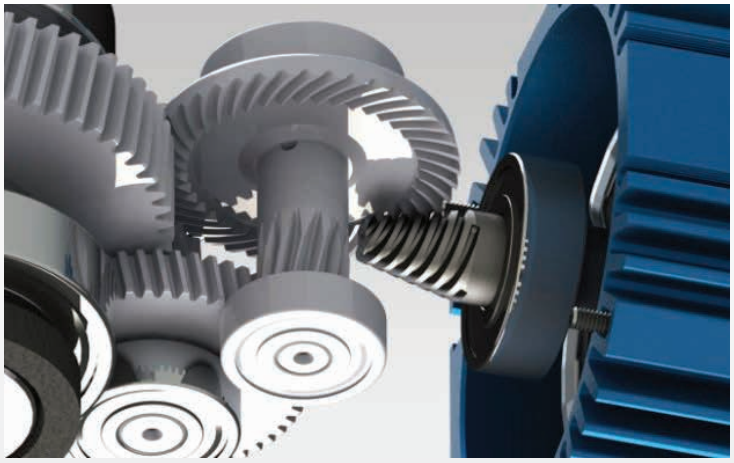
PowerSTAR features hypoid gears manufactured using technology exclusive to Bison which offers several operational advantages including: higher torque capability, quieter operation and unmatched energy efficiency.

The Hypoid Difference

Larger Diameter Pinions
More surface contact area

Multiple Tooth Contact
Handles larger loads at better efficiency

Offset Gears
Transmits higher torque



PowerSTAR 712 Series DC

Model #	Horsepower	Speed (RPM)	Torque (in lbs)	Ratio	OHL	Voltage	Amps	Shipping Wt.
021-712A0010	1/30	179	10	10	145	12	5.1	8
021-712A0015	1/30	119	15	15.1	166	12	5.1	8
021-712A0020	1/30	89	20	20.1	182	12	5.1	8
021-712A0030	1/30	60	30	30.3	206	12	5.1	8
021-712A0040	1/30	45	40	40.4	226	12	5.1	8
021-712A0050	1/30	36	50	49.8	241	12	5.1	8
021-712A0060	1/30	30	60	59.8	254	12	5.1	8
021-712A0080	1/30	22	80	80.3	268	12	5.1	8
021-712A0100	1/30	18	100	100.4	285	12	5.1	8
021-712A0120	1/30	15	120	120.4	299	12	5.1	8
021-712A0150	1/30	12	150	149.9	315	12	5.1	8
021-712A0180	1/30	10	180	180.7	328	12	5.1	8
021-712A0200	1/30	9	200	200.7	333	12	5.1	8
021-712A0240	1/30	7.4	240	240.9	344	12	5.1	8

For 24V option, replace "A" with "C" in the model number when ordering
For 90V option, replace "A" with "D" in the model number when ordering

PowerSTAR 720 Series DC

Model #	Horsepower	Speed (RPM)	Torque (in lbs)	Ratio	OHL	Voltage	Amps	Shipping Wt.
021-720A0010	1/8	180	35	10	270	12	12	16
021-720A0015	1/8	120	52	15	305	12	12	16
021-720A0020	1/8	90	69	20	330	12	12	16
021-720A0030	1/8	60	104	30	370	12	12	16
021-720A0040	1/8	45	138	40	400	12	12	16
021-720A0050	1/8	36	173	50.1	430	12	12	16
021-720A0060	1/8	30	208	60.1	455	12	12	16
021-720A0080	1/8	23	277	80.1	490	12	12	16
021-720A0100	1/8	18	346	100.2	525	12	12	16
021-720A0120	1/8	15	415	120.2	550	12	12	16
021-720A0150	1/15	12	277	150.3	635	12	6.98	16
021-720A0180	1/15	10	332	180.3	670	12	6.98	16
021-720A0240	1/15	7.5	443	240.4	725	12	6.98	16

For 24V option, replace "A" with "C" in the model number when ordering
For 90V option, replace "A" with "D" in the model number when ordering

PowerSTAR

725 Series DC

Model #	Horsepower	Speed (RPM)	Torque (in lbs)	Ratio	OHL	Voltage	Amps	Shipping Wt.
021-725A0010	1/5	200	55	10	355	12	18.6	18
021-725A0015	1/5	133	83	15	400	12	18.6	18
021-725A0020	1/5	100	111	20	430	12	18.6	18
021-725A0030	1/5	67	166	30	475	12	18.6	18
021-725A0040	1/5	50	222	40	510	12	18.6	18
021-725A0050	1/5	40	277	50.1	550	12	18.6	18
021-725A0060	1/5	33	332	60.1	580	12	18.6	18
021-725A0080	1/5	25	443	80.1	620	12	18.6	18
021-725A0100	1/8	18	346	100.2	740	12	12	18
021-725A0120	1/8	15	415	120.2	780	12	12	18
021-725A0150	1/8	12	519	150.3	820	12	12	18
021-725A0180	1/8	10	623	180.3	870	12	12	18
021-725A0240	1/8	7.5	831	240.4	940	12	12	18

For 24V option, replace "A" with "C" in the model number when ordering
For 90V option, replace "A" with "D" in the model number when orderin

PowerSTAR

730 Series DC

Model #	Horsepower	Speed (RPM)	Torque (in lbs)	Ratio	OHL	Voltage	Amps	Shipping Wt.
021-730C0010	1/3	250	66	10	465	24	13.8	23
021-730C0015	1/3	167	100	15	520	24	13.8	23
021-730C0020	1/3	125	133	20	565	24	13.8	23
021-730C0030	1/3	83	199	30	625	24	13.8	23
021-730C0040	1/3	63	266	40	675	24	13.8	23
021-730C0050	1/3	50	332	50.1	720	24	13.8	23
021-730C0060	1/3	42	398	60.1	760	24	13.8	23
021-730C0080	1/3	31	531	80.1	820	24	13.8	23
021-730C0100	1/3	25	499	100.2	910	24	12.9	23
021-730C0120	1/3	21	599	120.2	965	24	12.9	23
021-730C0150	1/3	17	746	150.3	1010	24	12.9	23
021-730C0180	1/3	14	897	180.3	1050	24	12.9	23
021-730C0240	1/3	10	1198	240.4	1120	24	12.9	23

For 90V option, replace "C" with "D" in the model number when ordering

PowerSTAR® 712 Series AC

Model #	Horsepower	Speed (RPM)	Torque (in lbs)	Ratio	OHL	Voltage	Amps	Shipping Wt.
026-712A0010	1/20	163	10	10	145	115	0.7	7
026-712A0015	1/20	108	15	15.1	166	115	0.7	7
026-712A0020	1/20	81	20	20.1	182	115	0.7	7
026-712A0030	1/20	54	30	30.3	206	115	0.7	7
026-712A0040	1/20	41	40	40.4	226	115	0.7	7
026-712A0050	1/20	33	50	49.8	241	115	0.7	7
026-712A0060	1/20	27.1	60	59.8	254	115	0.7	7
026-712A0080	1/20	20.3	80	80.3	268	115	0.7	7
026-712A0100	1/20	16.3	100	100.4	285	115	0.7	7
026-712A0120	1/20	13.5	120	120.4	299	115	0.7	7
026-712A0150	1/20	10.8	150	149.9	315	115	0.7	7
026-712A0180	1/20	9	180	180.7	328	115	0.7	7
026-712A0200	1/20	8.1	200	200.7	333	115	0.7	7
026-712A0240	1/20	6.8	240	240.9	344	115	0.7	7

For 115/230 Dual Voltage option, replace “A” with “E” in the model number when ordering

PowerSTAR® 720 Series AC

Model #	Horsepower	Speed (RPM)	Torque (in lbs)	Ratio	OHL	Voltage	Amps	Shipping Wt.
026-720A0010	1/8	167.8	35	10	270	115	1.7	16
026-720A0015	1/8	112	55	15	305	115	1.7	16
026-720A0020	1/8	83.9	73	20	330	115	1.7	16
026-720A0030	1/8	55.9	105	30	370	115	1.7	16
026-720A0040	1/8	41.9	145	40	400	115	1.7	16
026-720A0050	1/8	33.5	180	50.1	430	115	1.7	16
026-720A0060	1/8	27.9	220	60.1	455	115	1.7	16
026-720A0080	1/8	20.9	295	80.1	490	115	1.7	16
026-720A0100	1/8	16.6	365	100.2	525	115	1.7	16
026-720A0120	1/8	14	440	120.2	550	115	1.7	16
026-720A0150	1/15	11	295	150.3	635	115	0.95	16
026-720A0180	1/15	9.3	355	180.3	670	115	0.95	16
026-720A0240	1/15	7	470	240.4	725	115	0.95	16

For 115/230 Dual Voltage option, replace “A” with “E” in the model number when ordering

PowerSTAR 725 Series AC

Optional Flange Mount
Model Shown

Model #	Horsepower	Speed (RPM)	Torque (in lbs)	Ratio	OHL	Voltage	Amps	Shipping Wt.
026-725A0010	1/5	167.8	60	10	355	115	2.61	22
026-725A0015	1/5	111.9	90	15	400	115	2.61	22
026-725A0020	1/5	83.9	120	20	430	115	2.61	22
026-725A0030	1/5	55.9	180	30	475	115	2.61	22.5
026-725A0040	1/5	41.9	240	40	510	115	2.61	22.5
026-725A0050	1/5	33.5	300	50.1	550	115	2.61	22.5
026-725A0060	1/5	27.9	360	60.1	580	115	2.61	22.5
026-725A0080	1/5	20.9	480	80.1	620	115	2.61	22.5
026-725A0100	1/8	16.6	380	100.2	740	115	1.86	21
026-725A0120	1/8	13.8	450	120.2	780	115	1.86	21
026-725A0150	1/8	11	570	150.3	820	115	1.86	21
026-725A0180	1/8	9.2	680	180.3	870	115	1.86	21
026-725A0240	1/8	6.9	900	240.4	940	115	1.86	21

For 115/230 Dual Voltage option, replace "A" with "E" in the model number when ordering
Flange Mount Available - Add "F" at the end of model # when ordering to indicate

PowerSTAR 730 Series AC

Model #	Horsepower	Speed (RPM)	Torque (in lbs)	Ratio	OHL	Voltage	Amps	Shipping Wt.
026-730A0010T	1/2	160	168	10	465	115	5.3	29.3
026-730A0015T	1/2	108	239	15	520	115	5.3	29.3
026-730A0020T	1/2	80	327	20	565	115	5.3	29.3
026-730A0030T	1/2	53	487	30.1	625	115	5.3	29.3
026-730A0040T	1/2	40	655	40	675	115	5.3	29.3
026-730A0050T	1/2	32	814	50.1	720	115	5.3	29.3
026-730A0060T	1/2	27	982	59.9	760	115	5.3	29.3
026-730A0080	1/3	20.9	766	80.1	820	115	3.35	30
026-730A0100	1/4	16.6	725	100.2	910	115	3.35	30
026-730A0120	1/4	14	871	120.2	965	115	3.35	30
026-730A0150	1/4	11	1090	150.3	1010	115	3.35	30
026-730A0180	1/4	9.3	1310	180.3	1050	115	3.35	30
026-730A0240	1/4	7	1730	240.4	1120	115	3.35	30

For 115/230 Dual Voltage option, replace "A" with "E" in the model number when ordering
Flange Mount Available - Add "F" at the end of model # when ordering to indicate

PowerSTAR®

712 Series AC Three Phase Inverter Duty

Model #	Horsepower	Speed (RPM)	Torque (in lbs)	Ratio	OHL	Voltage	Amps	Shipping Wt.
027-712G0010	1/20	167	10	10	145	230	0.3	7
027-712G0015	1/20	111	15	15.1	166	230	0.3	7
027-712G0020	1/20	84	20	20.1	182	230	0.3	7
027-712G0030	1/20	56	30	30.3	206	230	0.3	7
027-712G0040	1/20	42	40	40.4	226	230	0.3	7
027-712G0050	1/20	34	50	49.8	241	230	0.3	7
027-712G0060	1/20	28	60	59.8	254	230	0.3	7
027-712G0080	1/20	21	80	80.3	268	230	0.3	7
027-712G0100	1/20	17	100	100.4	285	230	0.3	7
027-712G0120	1/20	14	120	120.4	299	230	0.3	7
027-712G0150	1/20	11	150	149.9	315	230	0.3	7
027-712G0180	1/20	9.3	180	180.7	328	230	0.3	7
027-712G0200	1/20	8.4	200	200.7	333	230	0.3	7
027-712G0240	1/20	7	240	240.9	344	230	0.3	7

PowerSTAR®

720 Series AC Three Phase Inverter Duty

Model #	Horsepower	Speed (RPM)	Torque (in lbs)	Ratio	OHL	Voltage	Amps	Shipping Wt.
027-720G0010	1/8	167.8	35	10	270	230	0.63	16
027-720G0015	1/8	112	55	15	305	230	0.63	16
027-720G0020	1/8	83.9	73	20	330	230	0.63	16
027-720G0030	1/8	55.9	105	30	370	230	0.63	16
027-720G0040	1/8	41.9	145	40	400	230	0.63	16
027-720G0050	1/8	33.5	180	50.1	430	230	0.63	16
027-720G0060	1/8	27.9	220	60.1	455	230	0.63	16
027-720G0080	1/8	20.9	295	80.1	490	230	0.63	16
027-720G0100	1/8	16.6	365	100.2	525	230	0.63	16
027-720G0120	1/8	14	440	120.2	550	230	0.63	16
027-720G0150	1/15	11	295	150.3	635	230	0.39	16
027-720G0180	1/15	9.3	355	180.3	670	230	0.39	16
027-720G0240	1/15	7	470	240.4	725	230	0.39	16

PowerSTAR

725 Series AC Three Phase Inverter Duty

Model #	Horsepower	Speed (RPM)	Torque (in lbs)	Ratio	OHL	Voltage	Amps	Shipping Wt.
027-720G0010	1/8	167.8	35	10	270	230	0.63	16
027-720G0015	1/8	112	55	15	305	230	0.63	16
027-720G0020	1/8	83.9	73	20	330	230	0.63	16
027-720G0030	1/8	55.9	105	30	370	230	0.63	16
027-720G0040	1/8	41.9	145	40	400	230	0.63	16
027-720G0050	1/8	33.5	180	50.1	430	230	0.63	16
027-720G0060	1/8	27.9	220	60.1	455	230	0.63	16
027-720G0080	1/8	20.9	295	80.1	490	230	0.63	16
027-720G0100	1/8	16.6	365	100.2	525	230	0.63	16
027-720G0120	1/8	14	440	120.2	550	230	0.63	16
027-720G0150	1/15	11	295	150.3	635	230	0.39	16
027-720G0180	1/15	9.3	355	180.3	670	230	0.39	16
027-720G0240	1/15	7	470	240.4	725	230	0.39	16

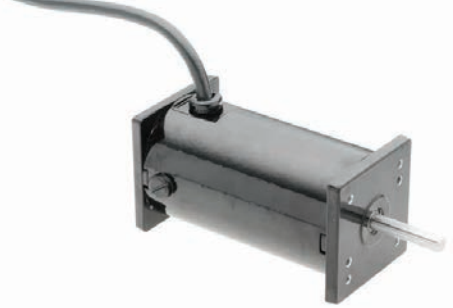
For 230/460 Dual Voltage option, replace “G” with “K” in the model number when ordering
Flange Mount Available - Add “F” at the end of model # when ordering to indicate

PowerSTAR

730 Series AC Three Phase Inverter Duty

Model #	Horsepower	Speed (RPM)	Torque (in lbs)	Ratio	OHL	Voltage	Amps	Shipping Wt.
027-730G0010T	1/2	160	168	10	465	230	1.9	24.6
027-730G0015T	1/2	108	239	15	520	230	1.9	24.6
027-730G0020T	1/2	80	327	20	565	230	1.9	24.6
027-730G0030T	1/2	53	487	30.1	625	230	1.9	24.6
027-730G0040T	1/2	40	655	40	675	230	1.9	24.6
027-730G0050T	1/2	32	814	50.1	720	230	1.9	24.6
027-730G0060T	1/2	27	982	59.9	760	230	1.9	24.6
027-730G0080	1/3	20.9	766	80.1	820	230	1.4	30
027-730G0100	1/4	16.6	725	100.2	910	230	1.55	30
027-730G0120	1/4	14	871	120.2	965	230	1.55	30
027-730G0150	1/4	11	1090	150.3	1010	230	1.55	30
027-730G0180	1/4	9.3	1310	180.3	1050	230	1.55	30
027-730G0240	1/4	7	1730	240.4	1120	230	1.55	30

For 230/460 Dual Voltage option, replace “G” with “K” in the model number when ordering
Flange Mount Available - Add “F” at the end of model # when ordering to indicate



26 Frame Permanent Magnet DC Motors

Motors are available in 12, 24, or 90 volts.
Power range from 1/53 to 1/9 HP.

Specifications

Armatures:	Dynamically balanced
Commutators:	Tang-type, diamond turned
Varnishing:	Class H polyester trickle varnishing
Magnets:	Highest grade ceramic
Finish:	Gloss black powder coat
Brushes:	Oversized with integral shunts
	Replaceable, pg. 86
Bearings:	Double shielded ball
Shafts:	Carbon steel
Casting:	Zinc alloy
Mounting:	Base and face
Insulation:	Class F

Additional Information

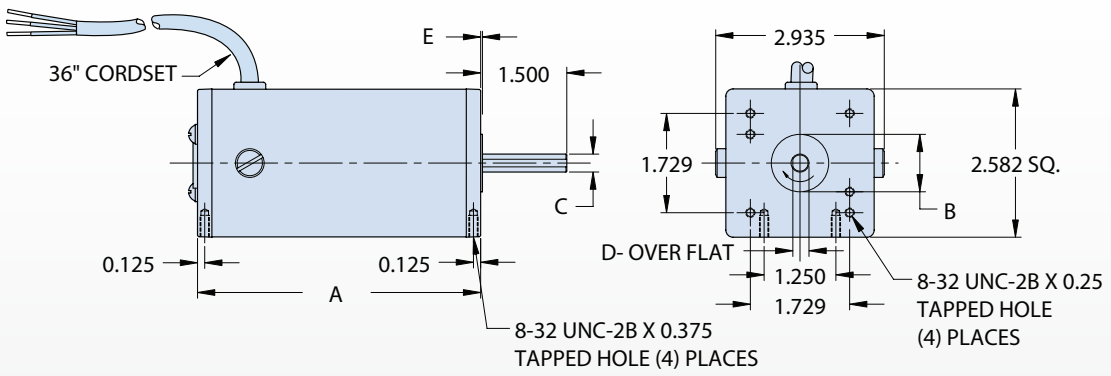
Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

26 Frame Permanent Magnet DC Motors

Part Number	Volts	HP	RPM	Watts	Amps	Form Factor	Torque (oz-in)	Torque Contant	Terminal Resistance	Voltage Contant	Shipping Wt.	Brush
051-206-4005	12 24	1/44 1/18	1870 4246	31 63	2.61	1.3	12.7	6.713	1.069	4.963	3.75	F
051-206-4015	12 24	1/20 1/9	1800 4000	54 108	4.51	1.3	28.8	7.796	0.458	5.769	5.25	F
051-206-5005	90	1/53	2475	26	0.29	1.3	7.6	42.578	41.594	31.508	3.75	G
051-206-5015	90	1/27	1810	41	0.46	1.3	20.8	59.621	24.908	44.120	5.25	G

26 Frame PMDC



Part Number	A	B	C	D	E
051-206-4005	3.750	0.875	0.250	0.218	.080
051-206-4015	4.930	1.000	0.312	0.281	.031
051-206-5005	3.750	0.875	0.250	0.218	.080
051-206-5015	4.930	1.000	0.312	0.281	.031

32 Frame Permanent Magnet DC Motors

Motors are available in 12, 24, 90, or 180 volts.
Power range from 1/18 HP to 1/3 HP.

Specifications

Armatures:	Dynamically balanced
Commutators:	Tang-type, diamond turned
Varnishing:	Class H polyester trickle varnishing
Magnets:	Highest grade ceramic
Finish:	Gloss black powder coat
Brushes:	Oversized with integral shunts
	Replaceable, pg. 86
Bearings:	Double shielded ball
Shafts:	Carbon steel
Casting:	Zinc alloy
Mounting:	Base and face
Insulation:	Class F

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

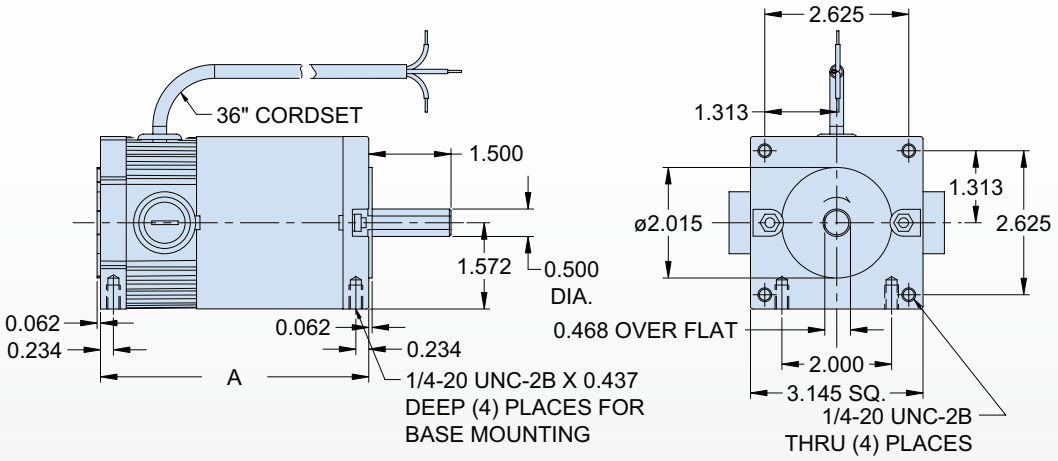
See pages 90-91 for additional accessories

32 Frame Permanent Magnet DC Motors

Part Number	Volts	HP	RPM	Watts	Amps	Form Factor	Torque (oz-in)	KT (oz-in/A)	RT (ohms)	Arm. Induct. (mh)	KE (V/krpm)	Arm Inertia (oz-in-sec²)	Shipping Wt.	Brush
051-203-4025	12 24	1/14 1/6	1750 4200	80 164	6.69 6.83	1.0	41.0	7.260	0.2913	1.1393	5.368	0.0195	8.25	A
051-203-4035	12 24	1/7 1/4	1750 3580	143 292	11.95 12.18	1.0	90.0	8.294	0.1563	0.6367	6.133	0.0423	9.25	A
051-203-4045	12 24	1/6 1/3	1948 4124	170 345	14.17 14.36	1.0	93.4	7.209	0.1033	0.3939	5.33	0.0524	10.75	A
051-203-5025	90	1/18	1800	61	0.68	1.3	31.2	57.070	19.7576	74.6886	42.199	0.0174	8.25	D
051-203-5035	90	1/8	1800	115	1.28	1.3	70.0	61.478	6.6323	34.2597	45.459	0.0411	9.25	D
051-203-5045	90	1/6	1800	155	1.72	1.3	90.0	61.197	5.1412	27.3643	45.251	0.0515	10.75	D
051-203-7005	180	1/14	2350	81	0.45	1.2	31.2	92.349	52.4115	195.5731	68.285	0.0174	8.25	D
051-203-7015	180	1/8	1800	115	0.64	1.3	70.0	122.957	29.4829	137.0389	90.917	0.0411	9.25	D
051-203-7025	180	1/6	1800	155	0.86	1.3	93.4	119.48	19.5003	104.3069	88.347	0.0515	10.75	D

32 Frame PMDC

Part Number	A
051-203-4025	4.890
051-203-4035	6.890
051-203-4045	7.890
051-203-5025	4.890
051-203-5035	6.890
051-203-5045	7.890
051-203-7005	4.890
051-203-7015	6.890
051-203-7025	7.890



VWDIR83 DC

12V & 90V PMDC, TENV DESIGN

Our VWDIR83 offers up to 50 in-lbs of torque.

Specifications

Gearhead

Gearing:	Powdered metal
Housing:	Precision machined die cast zinc
Lubrication:	Grease
Bearings:	Porous bronze sleeve on gear case; Ball on motor
Shafts:	Hardened steel
Mounting:	All positions

Motor

Motor Type:	Permanent magnet
Rotation:	Reversible
Insulation:	Class F
Finish:	Unpainted
Enclosure:	TENV

Features

Units comply with applicable UL & CSA standards

Optional Features

Junction box kit
Part number: P198-100-9111

Additional Information

See pages 90-91 for additional accessories

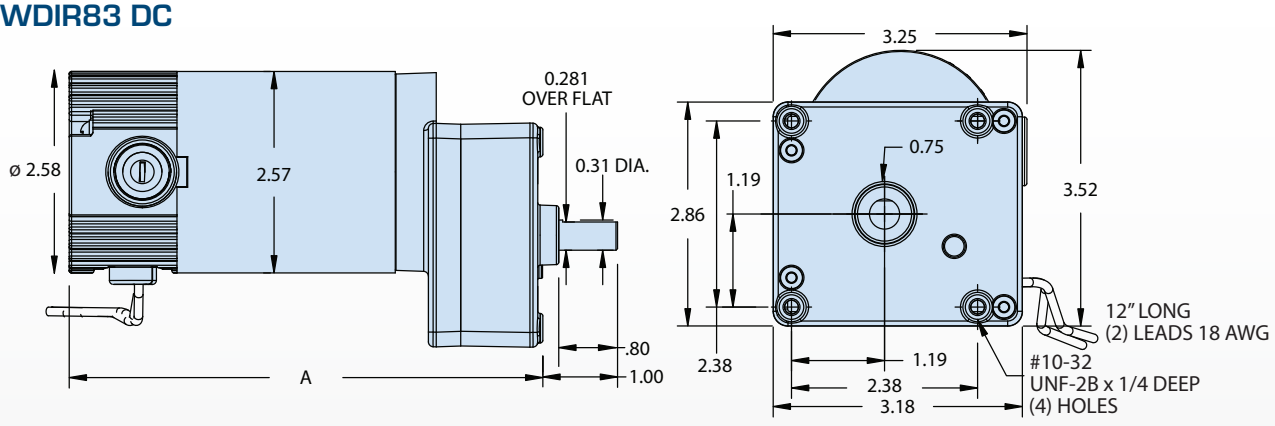
Current drawings available at www.bisongear.com

VWDIR83 PMDC 12V & 90V

Model #	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL	Amps	Shipping Wt.	Brushes
12V PMDC									
011Q507-0031	76	13	1/30	32	3	50	2.1	5	C
011Q507-0063	39	26	1/30	62	3	50	2.1	5	C
011Q507-0098	24	40	1/30	100	3	50	2.1	5	C
011Q507-0161	17	50**	1/30	141	3	50	2.1	5	C
011Q507-0314	9	50**	1/30	273	4	50	2.1	5	C
011Q507-0482	6	50**	1/30	430	4	50	2.1	5	C
90V PMDC									
011Q527-0031	93	13	1/30	32	3	50	0.35	5	B
011Q527-0063	47	26	1/30	62	3	50	0.35	5	B
011Q527-0098	29	40	1/30	100	3	50	0.35	5	B
011Q527-0161	21	50**	1/30	141	3	50	0.35	5	B
011Q527-0314	11	50**	1/30	273	4	50	0.35	5	B
011Q527-0482	7	50**	1/30	430	4	50	0.35	5	B

** Gear Limited (check website for updated information.)

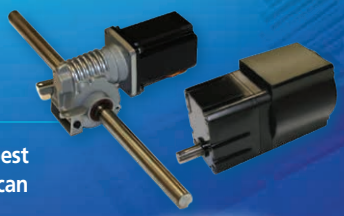
VWDIR83 DC



Model Number	A	Model Number	A
011Q507-0031	5.7 max.	011Q527-0031	5.7 max.
011Q507-0063	5.7 max.	011Q527-0063	5.7 max.
011Q507-0098	5.7 max.	011Q527-0098	5.7 max.
011Q507-0161	5.7 max.	011Q527-0161	5.7 max.
011Q507-0314	6.2 max.	011Q527-0314	6.2 max.
011Q507-0482	6.2 max.	011Q527-0482	6.2 max.

What Everyone Ought to Know About Custom Gearmotors.

How to get exactly what you need:



Bison has built its business over a half of a century, not only by designing robust gearmotors that offer the best value, but also by listening to customers and providing them exactly what they want. Every Bison gearmotor can be customized to meet your application's specific and unique requirements. \

Plus, Bison's ***Robusticity***™ design philosophy yields gearmotors that are built to be the best from the inside out. Superior quality and design together with the flexibility and willingness to give the customer exactly what they want is the reason customers throughout the world have chosen Bison as the driving force behind their products for 50 years.

CERTIFIED QUALITY MANAGEMENT SYSTEM
BISON ISO 9001:2015

Want to know more? **www.bisongear.com** • **1-800-AT-BISON**

BISON Gear & Engineering Corp.

100 Series Parallel Shaft DC

UP TO 100 IN-LBS CONTINUOUS

The 100 Series offers a wide speed range and many voltage options in an ultra-compact package.

Specifications

Gearhead

Gearing:	1st-stage helical steel All other stages heat treated powdered metal spur gearing
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and gasketed
Bearings:	Needle output
Shafts:	Hardened steel
Mounting:	Face (any angle) or optional footplate
Finish:	Gloss black powder coat

Motor

Motor Type:	Permanent magnet
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class F
Finish:	Gloss black powder coat
Enclosure:	TENV

Optional Features

- J-Boxes:
  P198-100-9111 2.58" dia.
- Shaft-mount encoder
- Accessory shaft
- Footplate P125-100-9998

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

See pages 90-91 for additional accessories

100 Series PMDC

Part Number	Speed 12V RPM	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Shipping Wt.	Brush
12V PMDC									
011-190-5096	19	100**	1/20	95.5	3	150	3.85	8	C
011-190-5049	36	74	1/20	49.0	3	130	4.73	8	C
011-190-5025	69	40	1/20	25.2	2	230	4.73	8	C
011-190-5013	136	20	1/20	12.9	2	220	4.73	8	C
011-190-5007	261	11	1/20	6.7	1	200	4.73	8	C

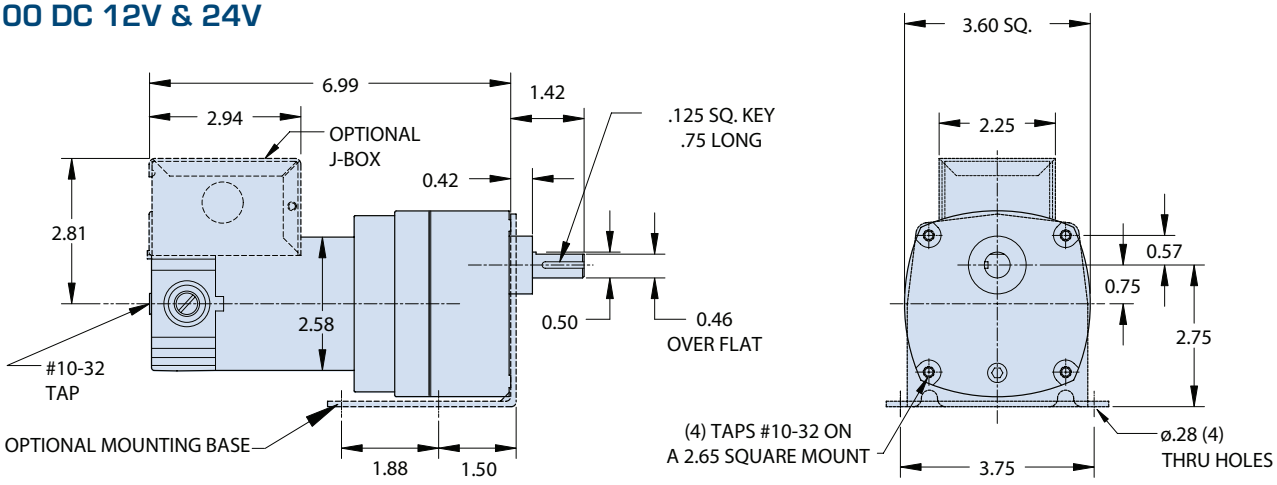
Part Number	Speed 24V RPM	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Shipping Wt.	Brush
24V PMDC									
011-190-4096	20	100**	1/20	95.5	3	150	2.4	8	C
011-190-4049	37	74	1/20	49.0	3	130	2.4	8	C
011-190-4025	71	40	1/20	25.2	2	230	2.4	8	C
011-190-4013	139	20	1/20	12.9	2	220	2.4	8	C
011-190-4007	269	11	1/20	6.7	1	200	2.4	8	C

Part Number	Speed 90V RPM	Speed 130V RPM***	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Shipping Wt.	Brush
90V or 130V PMDC										
011-190-1369	1.3	1.9	100**	1/40	1369.3	5	115	0.13	6.25	B
011-190-0702	2.6	3.8	100**	1/40	702.1	5	115	0.15	6.25	B
011-190-0362	4.5	6.5	100**	1/40	361.7	4	115	0.19	6.25	B
011-190-0271	6.6	10	100**	1/40	271.3	4	115	0.23	6.25	B
011-190-0186	10	14	100**	1/40	185.5	4	85	0.28	6.25	B
011-190-0139	13	19	100**	1/40	139.1	4	85	0.35	6.25	B
011-190-0096	20	29	100**	1/20	95.5	3	150	0.47	6.25	B
011-190-0072	25	36	100**	1/20	71.7	3	150	0.58	6.25	B
011-190-0049	37	53	74	1/20	49.0	3	130	0.62	6.25	B
011-190-0037	49	71	55	1/20	36.7	3	160	0.62	6.25	B
011-190-0025	71	103	40	1/20	25.2	2	230	0.62	6.25	B
011-190-0019	95	137	30	1/20	18.9	2	225	0.62	6.25	B
011-190-0013	139	201	20	1/20	12.9	2	220	0.62	6.25	B
011-190-0010	185	267	15	1/20	9.7	2	218	0.62	6.25	B
011-190-0007	269	389	11	1/20	6.7	1	200	0.62	6.25	B
011-190-0005	359	519	8	1/20	5.0	1	200	0.62	6.25	B

* Maximum overhung load on center of output shaft. ** Output torque is gear limited. *** Units rated for 90V 1.37 form factor drive may be run with 1.05 form factor drive, at 130V

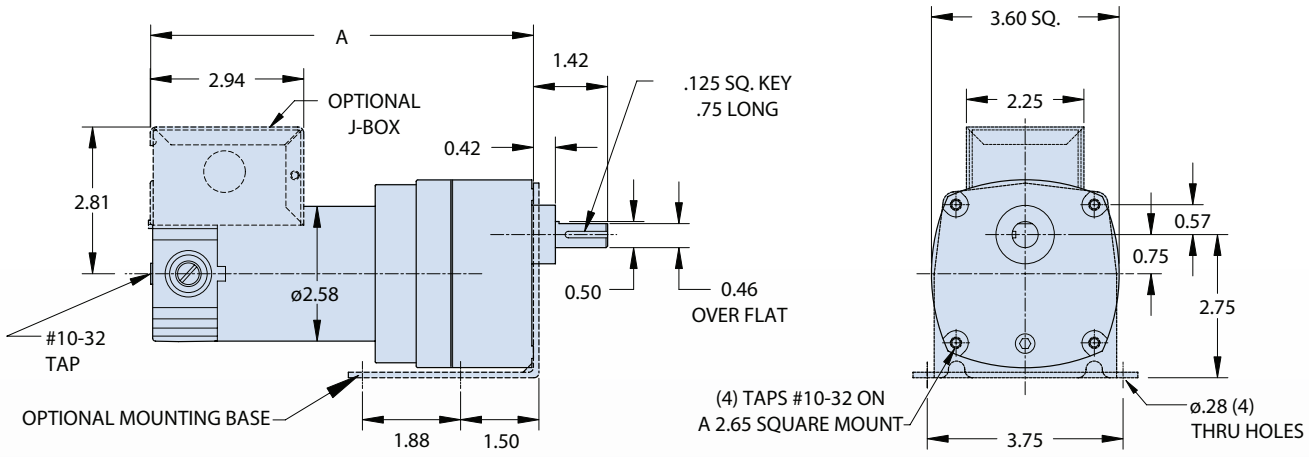
100 Series Parallel Shaft DC

100 DC 12V & 24V



100 DC 90V & 130V

HP	Stages	A
1/20	1, 2, 3	7.38
1/40	4, 5	7.33



175 Series Parallel Shaft DC

UP TO 170 IN-LBS CONTINUOUS

The 175 Series offers a wide speed range in an ultra-compact package.

Specifications

Gearhead

Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and gasketed
Shafts:	Hardened steel
Mounting:	Face (any angle) or optional footplate
Gearing:	1st stage helical steel. All other stages heat-treated steel and/or powdered metal spur gearing

Motor

Motor Type:	Permanent magnet
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class F
Finish:	Gloss black powder coat
Enclosure:	TENV

Optional Features

- Footplate P125-100-9998
- J-Boxes:
  P198-100-9111 2.58" dia.
  P198-100-9121 3.13" dia.
- Shaft-mount encoder
- Accessory shaft

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

See pages 90-91 for additional accessories

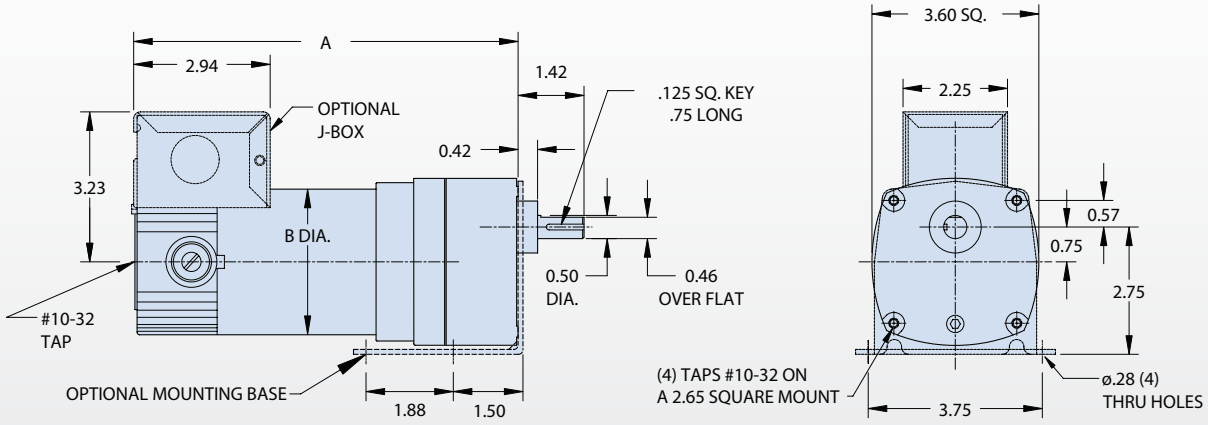
175 Series PMDC 90V or 130V

Part Number	Speed 90V RPM	Speed 130V RPM***	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Shipping Wt.	Brush
011-175-1369	1.3	1.9	160**	1/20	1369.3	5	115	0.17	8.5	B
011-175-0702	2.6	3.8	130**	1/20	702.1	5	95	0.21	8.5	B
011-175-0362	4.5	6.5	155**	1/20	361.7	4	115	0.26	8.5	B
011-175-0271	6.6	10	160**	1/20	271.3	4	115	0.30	8.5	B
011-175-0186	10	14	170**	1/20	185.1	4	85	0.40	8.5	B
011-175-0139	13	19	170**	1/20	139.1	4	85	0.49	8.5	B
011-175-0096	19	27	150**	1/20	95.5	3	150	0.58	8.5	B
011-175-0072	25	36	111	1/20	71.7	3	150	0.62	8.5	B
011-175-0049	37	53	150	1/10	49.0	3	130	1.10	8.5	D
011-175-0037	49	71	115	1/10	36.7	3	160	1.10	8.5	D
011-175-0025	71	103	83	1/10	25.2	2	230	1.10	8.5	D
011-175-0019	95	137	62	1/10	18.9	2	225	1.10	8.5	D
011-175-0013	139	201	42	1/10	12.9	2	220	1.10	8.5	D
011-175-0010	185	267	32	1/10	9.7	2	218	1.10	8.5	D
011-175-0007	268	387	22	1/10	6.7	1	200	1.10	8.5	D
011-175-0005	360	517	17	1/10	5.0	1	200	1.10	9.0	D

* Maximum overhung load on center of output shaft. ** Output torque is gear limited.
*** Units rated for 90V 1.37 form factor drive. May be run with 1.05 form factor drive at 130V.

175 DC

HP	Stages	A	B
1/10	1, 2, 3	8.28	3.13
1/20	3	7.35	2.58
1/20	4, 5	8.05	2.58



BISON Gear & Engineering Corp.

336 Series Parallel Shaft DC

UP TO 300 IN-LBS CONTINUOUS

For up to 300 in-lbs., our 336 Series offers a wider range of speed and mounting options.

Specifications

Gearhead

Gearing:	AGMA class 9 heat treated steel
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and gasketed
Bearings:	Needle and thrust ball
Shafts:	Hardened steel
Mounting:	Face or base, any angle
Finish:	Gloss black powder coat

Motor

Speed:	Variable with appropriate control, (1.37 form factor max)
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class F
Enclosure:	TENV

Features:

Rear tapped hole for encoder mount

Optional Features

Junction box kit

Part numbers:

P198-100-9111, 2.58" dia.

P198-100-9121, 3.13" dia.

P198-300-0000, 3.38" dia.

- Shaft-mount encoder
- Accessory shaft

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

See pages 90-91 for additional accessories

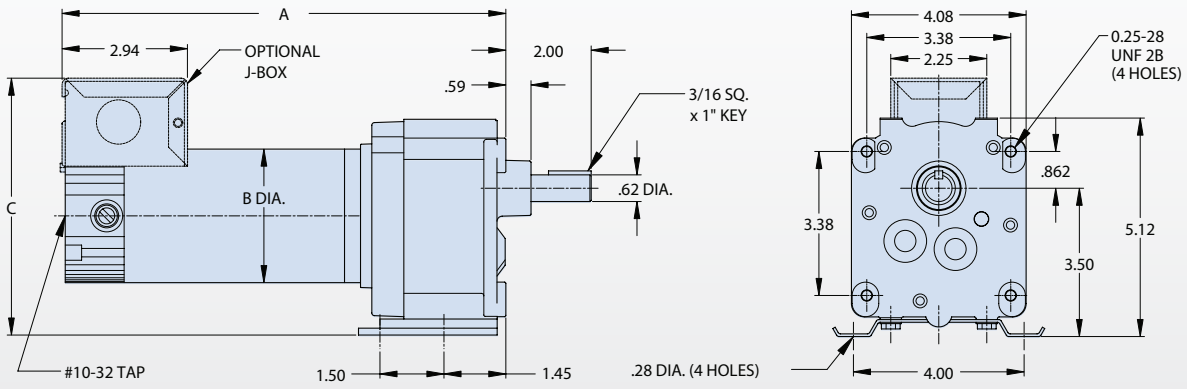
336 Series PMDC 90V or 130V 5/8" Shaft

Part Number	Speed 90V RPM	Speed 130V RPM***	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Shipping Wt.	Brush
011-336-1329	5.9	8.5	183**	1/20	329.1	3	400	0.33	10	B
011-336-1208	8.7	13	293	1/20	208.0	3	400	0.60	10	B
011-336-1091	20	29	140	1/20	90.9	3	385	0.60	10	B
011-336-1053	34	49	85	1/20	52.9	2	344	0.60	10	B
011-336-2082	22	32	300**	1/8	81.8	3	322	1.16	13	D
011-336-2060	30	43	230	1/8	58.3	3	291	1.33	13	D
011-336-2043	42	61	166	1/8	42.9	3	250	1.33	13	D
011-336-2028	64	92	112	1/8	28.1	2	264	1.33	13	D
011-336-2019	94	136	76	1/8	19.1	2	242	1.33	13	D
011-336-2015	121	175	59	1/8	15.0	2	225	1.33	13	D
011-336-2011	170	246	42	1/8	10.6	2	208	1.33	13	D
011-336-2005	360	520	20	1/8	5.0	2	200	1.33	13	D
011-336-4043	42	61	300**	1/4	42.9	3	200	2.30	19.5	D
011-336-4029	64	92	235	1/4	28.1	2	236	2.51	19.5	D
011-336-4019	94	136	160	1/4	19.1	2	200	2.51	19.5	D
011-336-4011	170	246	90	1/4	10.6	2	206	2.51	19.5	D
011-336-4005	360	520	40	1/4	5.0	2	170	2.51	19.5	D

* Maximum overhung load on center of output shaft. ** Output torque is gear limited.
*** Units rated for 90V 1.37 form factor drive. May be run with 1.05 form factor drive at 130V.

336 DC

HP	A	B	C
1/20	8.53	2.58	5.60
1/8	10.34	3.13	6.02
1/4	12.27	3.38	6.23



348 Series Parallel Shaft DC

UP TO 350 IN-LBS CONTINUOUS

For up to 350 in-lbs., our 348 Series offers more standard voltages, mountings and speeds.

Specifications

Gearhead

Gearing:	AGMA class 9 heat treated steel
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and gasketed
Bearings:	Needle and thrust ball
Shafts:	Hardened steel
Mounting:	Face or base, any angle
Finish:	Gloss black powder coat

Motor

Speed:	Variable with appropriate control, (1.37 form factor max)
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class F
Enclosure:	TENV

Features:

Rear tapped hole for encoder mount

Optional Features

Junction box kit

Part numbers:

P198-100-9111, 2 58" dia.

P198-100-9121, 3 13" dia.

P198-300-0000, 3 38" dia.

- Shaft-mount encoder
- Accessory shaft

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

See pages 86-87 for additional accessories

348 Series PMDC

Part Number	Speed 12V RPM	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Shipping Wt.	Brush
12V PMDC									
011-348-3200	8.3	310**	1/6	215.6	3	500	5.51	16	A
011-348-3080	22	300**	1/6	81.8	3	500	11.00	16	A
011-348-3060	30	285	1/6	58.3	3	395	13.98	16	A
011-348-3030	64	150	1/6	28.1	2	290	13.98	16	A
011-348-3015	121	78	1/6	15.0	2	250	13.98	16	A
011-348-3010	170	57	1/6	10.6	2	240	13.98	16	A
011-348-3006	360	27	1/6	5.0	2	210	13.98	16	A

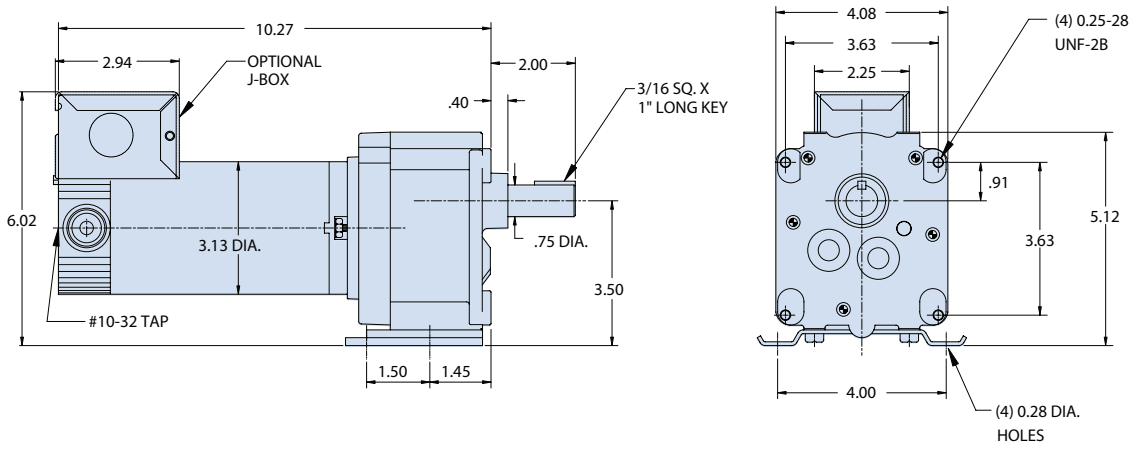
Part Number	Speed 24V RPM	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Shipping Wt.	Brush
24V PMDC									
011-348-5200	8.3	310**	1/8	215.6	3	500	2.50	14	A
011-348-5080	22	300**	1/8	81.8	3	500	4.50	14	A
011-348-5060	30	230	1/8	58.3	3	395	5.18	14	A
011-348-5030	64	112	1/8	28.1	2	290	5.18	14	A
011-348-5015	121	59	1/8	15.0	2	250	5.18	14	A
011-348-5010	170	40	1/8	10.6	2	240	5.18	14	A
011-348-5005	360	19	1/8	5.0	2	210	5.18	14	A

Part Number	Speed 90V RPM	Speed 130V RPM***	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Shipping Wt.	Brush
90V or 130V PMDC										
011-348-4200	8.3	12	310**	1/8	215.6	3	500	1.33	14	D
011-348-4170	11	16	310**	1/8	170.0	3	500	1.33	14	D
011-348-4100	17	25	350**	1/8	102.4	3	500	1.33	14	D
011-348-4080	22	32	300**	1/8	81.8	3	500	1.33	14	D
011-348-4060	30	43	300**	1/4	58.3	3	395	2.30	20	D
011-348-4050	36	52	300**	1/4	48.7	3	350	2.30	20	D
011-348-4040	42	61	300**	1/4	42.9	3	350	2.30	20	D
011-348-4030	64	92	235	1/4	28.1	2	290	2.51	20	D
011-348-4020	94	136	160	1/4	19.1	2	250	2.51	20	D
011-348-4015	121	175	125	1/4	15.0	2	250	2.51	20	D
011-348-4010	170	246	90	1/4	10.6	2	240	2.51	20	D
011-348-4005	360	520	40	1/4	5.0	2	210	2.51	20	D

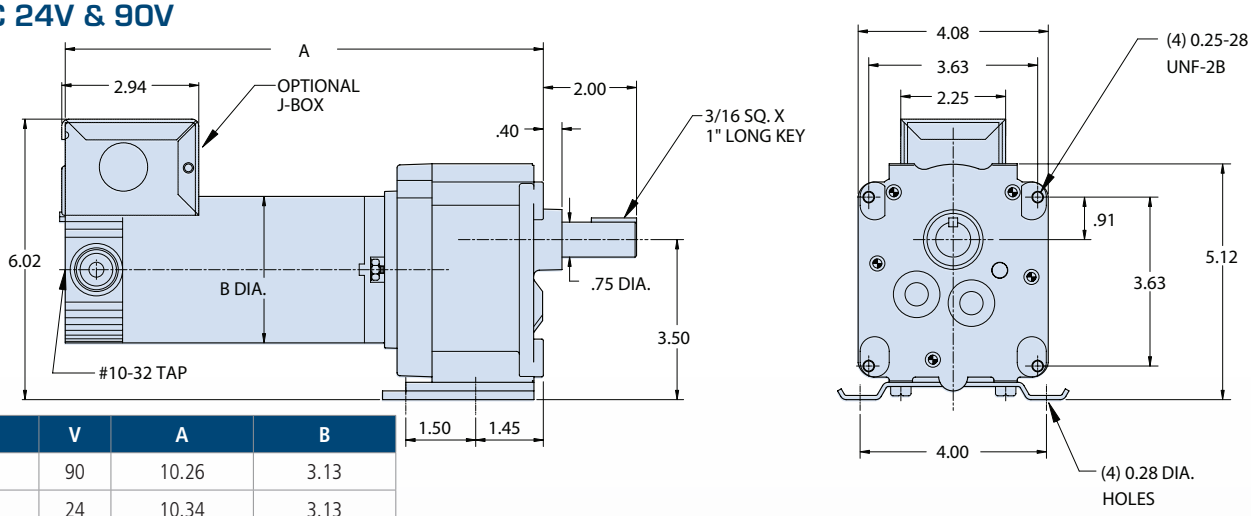
* Maximum overhung load on center of output shaft. ** Output torque is gear limited.
*** Units rated for 90V 1.37 form factor drive. May be run with 1.05 form factor drive at 130V.

348 Series Parallel Shaft DC

348 DC 12V



348 DC 24V & 90V



HP	V	A	B
1/8	90	10.26	3.13
1/8	24	10.34	3.13
1/4	90	12.26	3.38

VWDIR84 DC

12V & 90V PMDC TENV DESIGN

Our VWDIR 84 offers up to 500 in-lbs of torque.

Specifications

Gearhead

Gearing:	Phenolic High Speed and Hardened Steel
Housing:	Precision machined die cast zinc
Lubrication:	Grease
Bearings:	Porous Bronze Sleeve
Shafts:	Hardened steel
Mounting:	All positions
Finish:	Unpainted

Motor

Motor Type:	Permanent magnet
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class F
Enclosure:	TENV

Features

Units comply with applicable UL & CSA standards

Optional Features

Junction box kit
Part number: P198-100-9121

Additional Information

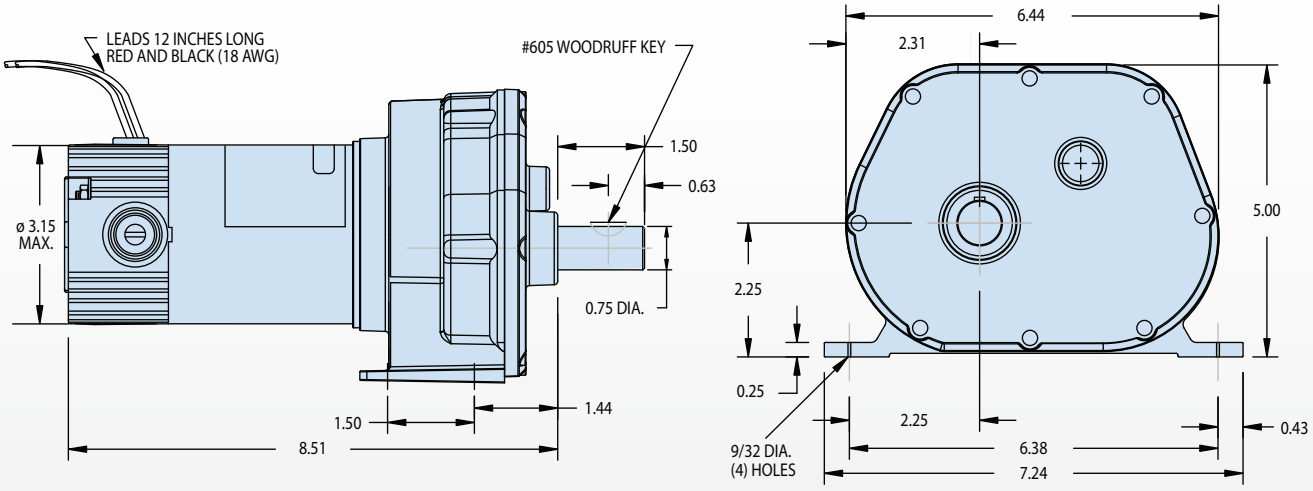
See pages 90-91 for additional accessories

Current drawings available at www.bisongear.com

VWDIR84 PMDC 12V or 90V

Model #	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL	Amps	Shipping Wt.	Brushes
12V PMDC									
011Q107-0035	85	50	1/10	38	3	250	7.7	14	A
011Q107-0040	42	75	1/15	38	3	250	6.2	14	A
011Q107-0053	58	75	1/10	55	3	250	7.7	14	A
011Q107-0081	20	150	1/15	81	3	250	6.2	14	A
011Q107-0134	12	250	1/15	135	3	250	6.2	14	A
011Q107-0267	6	500	1/15	267	3	250	6.2	14.5	A
90V PMDC									
011Q127-0040	46	75	1/15	38	3	250	0.84	14	D
011Q127-0080	21	150	1/15	81	3	250	0.84	14	D
011Q127-0134	13	250	1/15	135	3	250	0.84	14	D
011Q127-0267	6.5	500	1/15	267	3	250	0.84	14.5	D

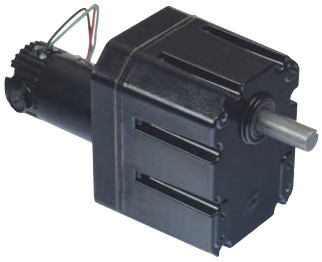
VWDIR84 DC



650 Series Parallel Shaft DC

UP TO 710 IN-LBS CONTINUOUS

The 650 Series offers strength and versatility with torque up to 710 in-lbs and speed down to .9 RPM.



Specifications

Gearhead

Gearing:	Hardened steel, AGMA Class 9
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and gasketed
Bearings:	Needle bearings and thrust balls
Shafts:	Hardened steel
Mounting:	Face or base, (optional) any angle
Finish:	Gloss black powder coat

Motor

Motor Type:	Permanent magnet
Speed:	Variable with appropriate control (1.37 form factor max)
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class F
Enclosure:	TEFC

Features

Junction box kit
- P198-100-9111, 2.58" dia.
- P198-300-0000, 3.25" dia.

Base mounting bracket kit
- P125-650-5000

Other Options

- Accessory shaft
- Shaft-mount encoder

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

See pages 90-91 for additional accessories

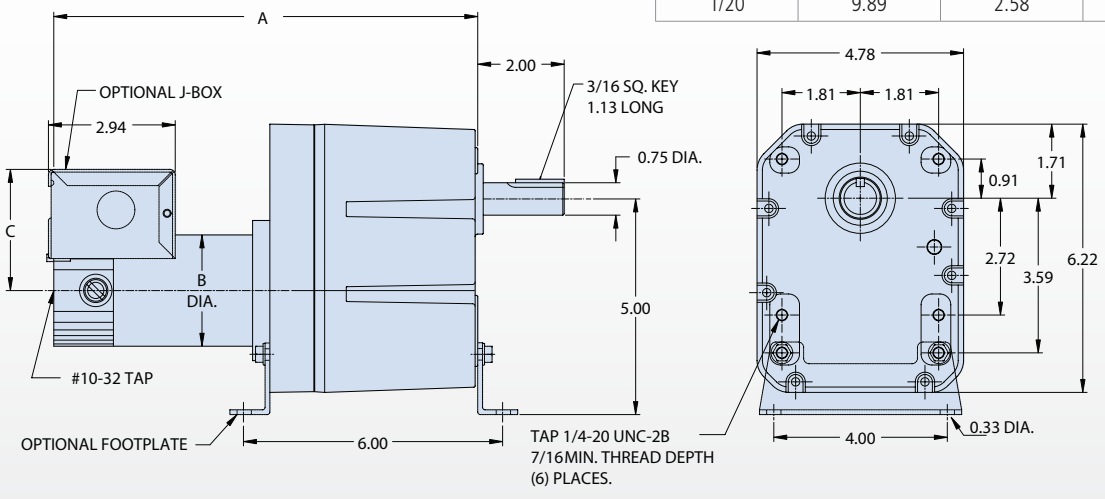
650 Series PMDC 90V or 130V

Part Number	Speed 90V RPM	Speed 130V RPM***	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Shipping Wt.	Brush
011-656-2206	.9	1.3	710**	1/20	2206	5	900	0.23	21.3	B
011-656-1412	1.3	1.9	710**	1/20	1412.8	5	900	0.31	16.5	B
011-656-0276	6.5	9.4	710**	1/6	276.2	4	900	0.96	21.3	D
011-656-0138	13	19	660**	1/6	138.1	4	900	1.70	21.3	D
011-656-0116	15	22	570**	1/6	115.9	4	900	1.70	21.3	D

* Maximum overhung load on center of output shaft.
** Output torque is gear limited.
*** Units rated for 90V 1.37 form factor drive. May be run with 1.05 form factor drive at 130V.

650 DC

HP	A	B	C
1/6	12.43	3.25	3.36
1/20	9.89	2.58	2.81



480 Series Parallel Shaft DC

UP TO 1112 IN-LBS CONTINUOUS

Designed to replace motor-speed reducer combinations, Series 480 parallel shaft gearmotors are more economical and occupy less space.

Specifications

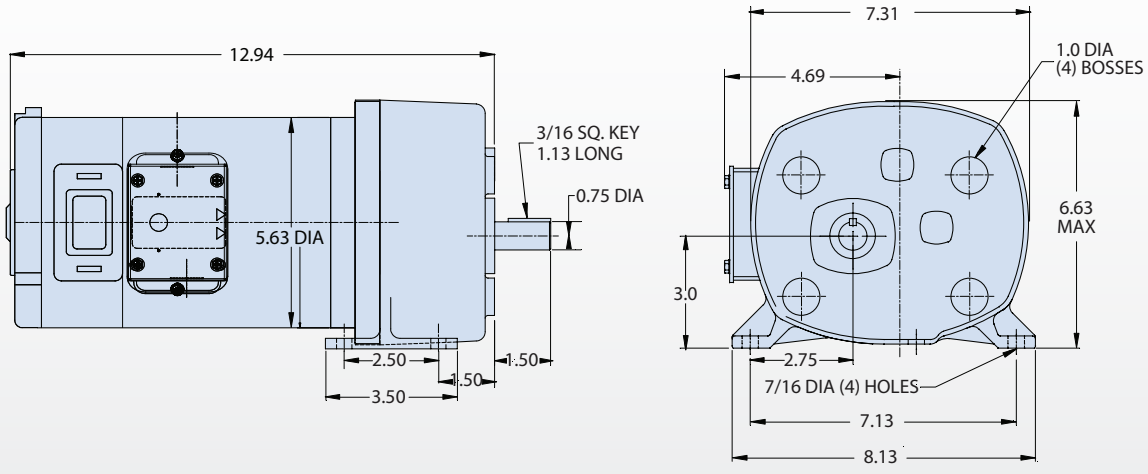
Gearhead		Motor		Additional Information
Gearing:	AGMA class 9 heat treated steel 1st-stage helical, balance spur steel	Motor Type:	Permanent magnet	Current drawings available at www.bisongear.com
Housing:	Precision machined die cast aluminum	Speed:	Variable with appropriate control (1.37 form factor max)	
Lubrication:	Lifetime oil bath, sealed and gasketed	Rotation:	Reversible	
Bearings:	Needle and thrust ball, ball bearing outboard	Bearings:	Ball	
Shafts:	Hardened steel	Insulation:	Class B	
Mounting:	Base, any angle	Enclosures:	1/4 HP TENV 1/2 HP TEFC	
Finish:	Gloss black powder coat			

483 Series PMDC 90V

Part Number	Speed 90V RPM	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Shipping Wt.	Brush
011-483-4197	9	1087**	1/4	195.9	3	800	2.00	33.5	E
011-483-4131	14	960**	1/4	130.8	3	797	2.60	33.5	E
011-483-4087	20	727	1/4	86.5	3	667	2.70	33.5	E
011-483-4041	43	353	1/4	41.1	3	716	2.70	33.5	E
011-483-4028	63	238	1/4	27.8	3	636	2.70	33.5	E
011-483-4018	91	152	1/4	19.3	2	571	2.70	33.5	E
011-483-4012	148	101	1/4	11.8	2	491	2.70	33.5	E
011-483-2087	20	1112**	1/2	86.5	3	667	4.2	27.25	E
011-483-2058	34	822	1/2	50.3	3	682	5.0	27.25	E
011-483-2041	40	664	1/2	41.1	3	716	5.0	27.25	E
011-483-2028	60	464	1/2	27.8	3	636	5.0	27.25	E
011-483-2018	90	305	1/2	19.3	2	571	5.0	27.25	E
011-483-2012	144	202	1/2	11.8	2	491	5.0	27.25	E

* Maximum overhung load on center of output shaft. ** Output torque is gear limited.

483 1/4 HP



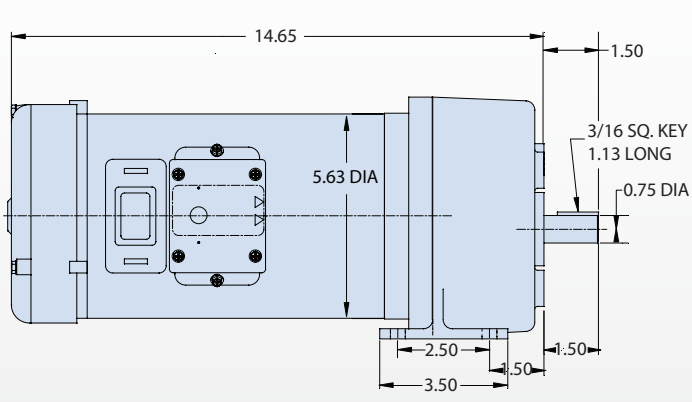
Make sure it's a Bison.

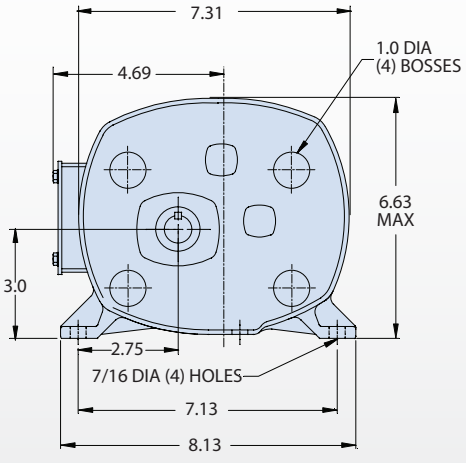
All Gearmotors are NOT Created Equal.

Just because many gearmotors may appear similar from the outside doesn't mean they're built the same on the inside. Take apart a Bison gearmotor, compare it to any others and you'll see the difference. Take permanent magnet DC brushes for instance. Bison's larger size and stainless steel springs mean longer life. Plus, changing brushes is a snap since they're designed for easy maintenance. It's just one small example of how Bison gearmotors are built to last. Bison's Robusticity™ design philosophy yields gearmotors that are built to be the best from the inside out. From components of the highest quality, to innovative design techniques and quality control measures like testing at full rated load and speed, customers have relied on Bison as the driving force behind their products for half a century.

CERTIFIED QUALITY MANAGEMENT SYSTEM
BISON ISO 9001:2015

483 1/2 HP





VWDIR14 AC

115/230V PSC TENV AC DESIGN

Our VWDIR14 offers up to 50 in-lbs of torque.

Specifications

Gearhead		Motor		Additional Information
Gearing:	Plastic high speed and steel	Motor Type:	Permanent split capacitor	Current drawings available at www.bisongear.com
Housing:	Precision machined die cast zinc	Rotation:	Reversible	
Lubrication:	Grease	Bearings:	Ball	
Bearings:	Porous bronze sleeve	Insulation:	Class B minimum	
Shafts:	Hardened steel	Enclosure:	TENV	
Mounting:	All positions			
Finish:	Unpainted			

Features

Units comply with applicable UL & CSA standards

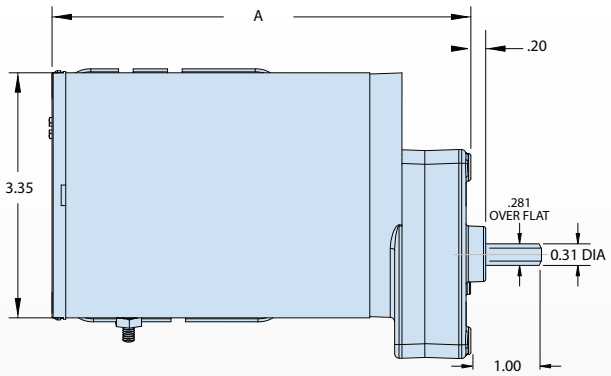
Capacitor and junction box included

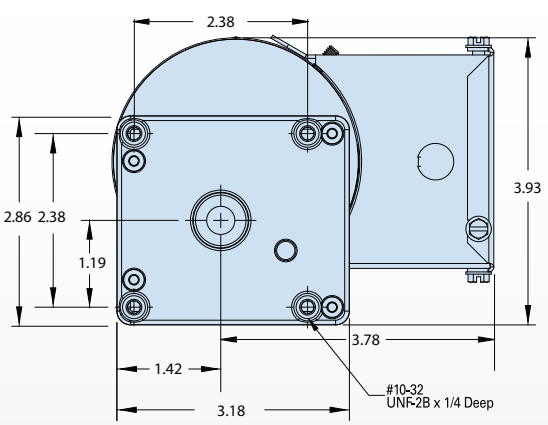
VWDIR14 PSC 115V/230V

Model #	Speed (RPM)*	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL	Amps	Hz	Shipping Wt.
016Q507-0018	181	12	1/20	10	2	50	.62/.38	60/50	8
016Q507-0031	96	20	1/20	18	2	50	.62/.38	60/50	8
016Q507-0050	68	30	1/20	26	2	50	.62/.38	60/50	8
016Q507-0098	36	50**	1/20	47	3	50	.62/.38	60/50	8
016Q507-0482	7	50**	1/20	239	4	50	.62/.38	60/50	8
016Q507-0975	4	50**	1/20	491	4	50	.62/.38	60/50	8

* All ratings are shown at 60Hz operation. Also operable at 50Hz at 5/6 of the rated speed.
** Gear Limited (check website for updated information.)

VWDIR14 AC





Model Number	A
016Q507-0018	5.75
016Q507-0031	5.75
016Q507-0050	5.75
016Q507-0098	5.75
016Q507-0482	6.25
016Q507-0975	6.25

The 100MM "Motor in the Middle"

49F

39F

34F

Bigger Power in a Smaller Footprint

Sometimes it's nice to have the best of both worlds. Bison's newest addition to the AC gearmotor lineup, the 100MM AC motor, is perfect for those applications that need more power in tight spaces. As OEM equipment becomes smaller in size and output power requirements increase, the 1/8 HP (93 watt) parallel shaft gearmotor offers 30% less volume than previously available. Plus, the 39F single phase motor is right "in the middle" of our 49F and 34F product offering and provides up to 104 in-lbs (11.8 N-m) of continuous torque.

Bison's Innopreneurial™ philosophy and design engineering capabilities make this product ideally suited to meet today's OEM applications for packaging equipment, conveyor systems, foodservice, stationary agricultural equipment and other specialty machinery.

CERTIFIED QUALITY MANAGEMENT SYSTEM
BISON ISO 9001:2015

Want to know more? **www.bisongear.com** • **1-800-AT-BISON**

BISON Gear & Engineering Corp.

VWDIR08 AC

115V SHADED POLE OPEN FAN COOLED AC DESIGN

Our VWDIR08 offers up to 113 in-lbs of torque.

Specifications

Gearhead

Gearing:	Plastic high speed and steel
Housing:	Precision machined die cast zinc
Lubrication:	Grease
Bearings:	Porous bronze sleeve
Shafts:	Hardened steel
Mounting:	All positions
Finish:	Unpainted

Motor

Motor Type:	Shaded pole
Rotation:	CW facing output shaft
Bearings:	Ball
Insulation:	Class B minimum
Enclosure:	OFC

Features

Units comply with applicable UL & CSA standards

Additional Information

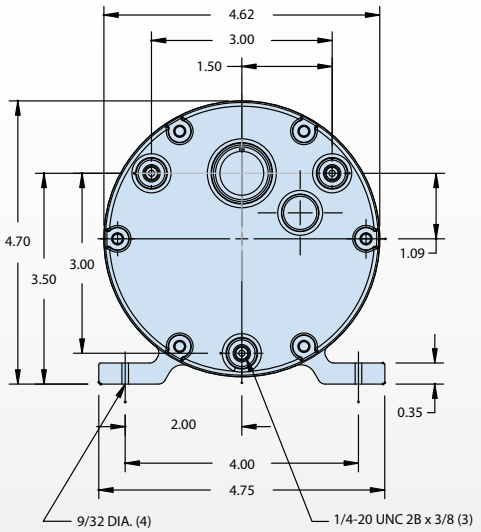
Current drawings available at www.bisongear.com

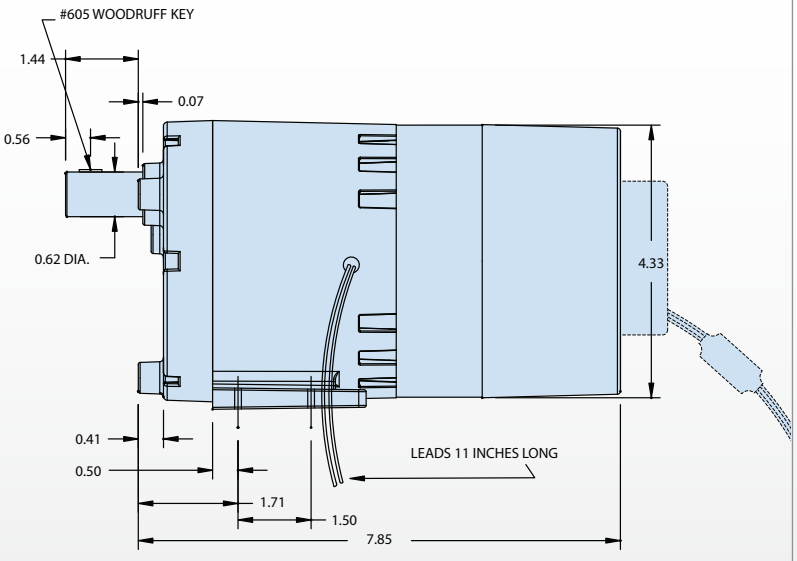
VWDIR08 Shaded Pole 115V

Model #	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL	Amps	Hz	Shipping Wt.
013Q227-0027	60	59	1/10	27	2	150	2.6	60	12.5
013Q227-0052	30	113**	1/10	52	3	150	2.6	60	12.5
013Q227-0128	13	113**	1/10	128	3	150	2.6	60	12.5
013Q227-0250	7	113**	1/10	250	4	150	2.6	60	12.5
With Brake									
013Q207-0027	60	59	1/10	27	2	150	2.6	60	12.5
013Q207-0052	30	113**	1/10	52	3	150	2.6	60	12.5
013Q207-0128	13	113**	1/10	128	3	150	2.6	60	12.5
013Q207-0250	7	113**	1/10	250	4	150	2.6	60	12.5
013Q207-0750	2	113**	1/10	750	5	150	2.6	60	12.5

** Gear Limited (check website for updated information.)

VWDIR08 AC





VWDIR88 AC

115V SHADED POLE TEFC AC DESIGN

Our VWDIR88 offers up to 113 in-lbs of torque.

Specifications

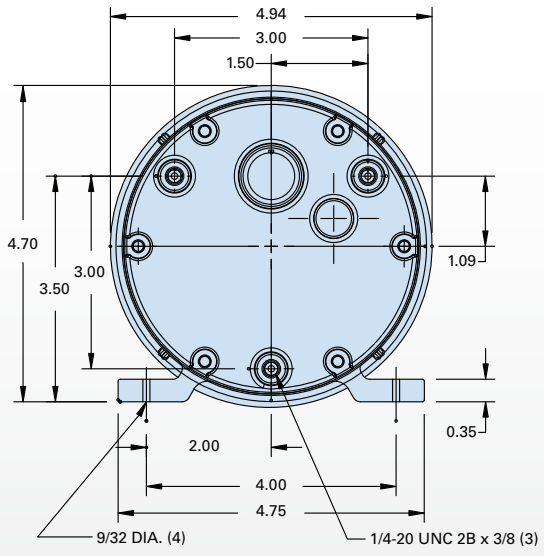
Gearhead		Motor		Additional Information
Gearing:	Plastic high speed and steel	Motor Type:	Shaded pole	Current drawings available at www.bisongear.com
Housing:	Precision machined die cast zinc	Rotation:	CW facing output shaft	
Lubrication:	Grease	Bearings:	Ball	
Bearings:	Porous bronze sleeve	Insulation:	Class B minimum	
Shafts:	Hardened steel	Enclosure:	TEFC	
Mounting:	All positions	**Features**		
Finish:	Unpainted	Units comply with applicable UL & CSA standards		

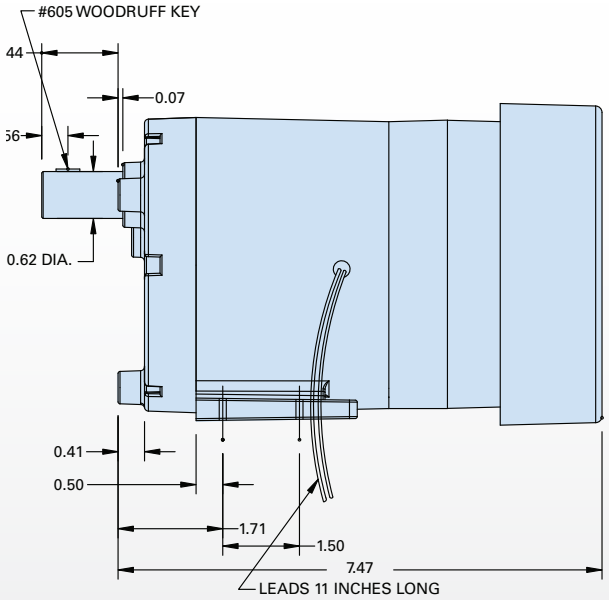
VWDIR88 Shaded Pole 115V

Model #	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL	Amps	Hz	Shipping Wt.
013Q257-0052	30	42	1/20	52	3	150	1.6	60	11.5
013Q257-0128	13	113**	1/20	128	3	150	1.6	60	11.5
013Q257-0250	7	113**	1/20	250	4	150	1.6	60	11.5
013Q257-0750	2	113**	1/20	750	5	150	1.6	60	11.5

** Gear Limited (check website for updated information.)

VWDIR88 AC





100 & 175 Series Parallel Shaft AC

UP TO 170 IN-LBS CONTINUOUS

The 100 and 175 Series offer a wide speed range and many voltage options in an ultra-compact package.

Specifications

Gearhead

Gearing: **100 Series:** 1st-stage helical steel, balance powdered metal or steel
175 Series: 1st-stage helical steel, balance heat treated steel or powdered metal
Housing: Precision machined die cast aluminum
Lubrication: Lifetime oil bath, sealed and gasketed
Bearings: Needle output
Shafts: Hardened steel
Mounting: Face or optional footplate (any angle)

Motor

Motor Type: Permanent split capacitor and 3 phase
Rotation: Reversible
Insulation: Class B minimum
Finish: Gloss black powder coat 175 3-phase unpainted
Enclosure: Open 1/80 & 1/10 HP
TENV 1/20 HP
TEFC 1/12 HP

Features

- Included junction box
- Included capacitor on PSC units
- Rear shaft on PSC units
- 175-3 Phase IP 54 enclosure

Optional Features

- Power-off brake for PSC motors
- Footplate kit
  Part number: P125-100-9998

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

See pages 90-91 for additional accessories

100 Series PSC 115V

Part Number	Speed (RPM)***	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Hz	Shipping Wt.
016-102-1369	1.2	100**	1/80	1369.3	5	115	.30/.32	60/50	6.5
016-102-0702	2.3	100**	1/80	702.1	5	115	.30/.32	60/50	6.5
016-102-0362	4.5	100**	1/80	361.7	4	115	.30/.32	60/50	6.5
016-102-0186	8.8	76	1/80	185.5	4	85	.30/.32	60/50	6.5
016-101-0100	17	100**	1/20	95.5	3	150	.60	60	7.5
016-101-0072	22	100**	1/20	71.7	3	150	.60	60	7.5
016-101-0050	33	96	1/20	49.0	3	130	.60	60	7.5
016-101-0037	43	62	1/20	36.7	3	160	.60	60	7.5
016-101-0026	63	49	1/20	25.2	2	230	.60	60	7.5
016-101-0017	95	30	1/20	16.8	2	225	.60	60	7.5
016-101-0013	124	25	1/20	12.9	2	220	.60	60	7.5
016-101-0010	154	20	1/20	10.5	2	218	.60	60	7.5
016-101-0007	240	13	1/20	6.7	1	200	.60	60	7.5
016-101-0005	320	10	1/20	5.0	1	200	.60	60	7.5

107 Series 3-Phase Inverter Duty 230V

For more specifications see page 70

175 Series PSC 115V and 115/230V

Part Number	Speed (RPM)***	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Volts AC	Amps	Hz	Shipping Wt.
016-175-1369	1.3	160**	1/20	1369.3	5	115	115/230	.32/.18	60/50	8.25
016-175-0702	2.5	130**	1/20	702.1	5	115	115/230	.33/.19	60/50	8.25
016-175-0362	4.5	155**	1/20	361.7	4	115	115/230	.38/.21	60/50	8.25
016-175-0186	8.8	170**	1/20	185.5	4	85	115/230	.46/.26	60/50	8.25
016-175-0096	17	150**	1/20	95.5	3	150	115/230	.56/.29	60/50	8.25
016-175-0049	33	165	1/10	49.1	3	130	115	1.05	60	10
016-175-0025	63	90	1/10	25.2	2	230	115	1.05	60	10
016-175-0013	124	47	1/10	12.9	2	220	115	1.05	60	10
016-175-0007	240	25	1/10	6.7	1	200	115	1.05	60	10

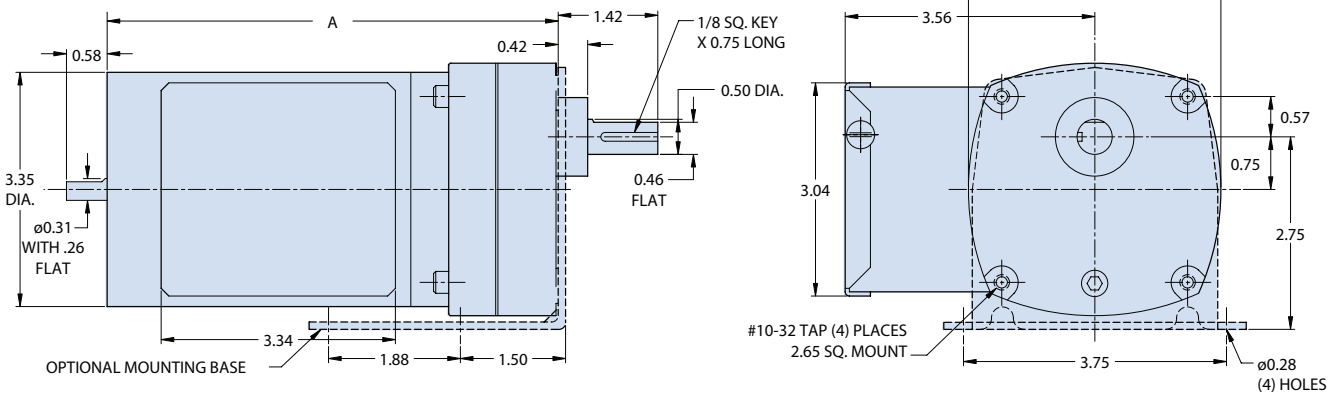
175 Series 3-Phase 230/460V

Part Number	Speed (RPM)***	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Hz	Shipping Wt.
017-175-0096	17	150**	1/12	95.5	3	150	.60/.35	60/50	9
017-175-0050	32	138	1/12	49.0	3	130	.60/.35	60/50	9
017-175-0025	63	74	1/12	25.2	2	230	.60/.35	60/50	9
017-175-0013	122	38	1/12	12.9	2	220	.60/.35	60/50	9

* Maximum overhung load on center of output shaft. ** Output torque is gear limited.
*** All speeds given are at 60 HZ. For dual frequency units, speed will be 5/6 of rated speed.

100 & 175 Series Parallel Shaft AC

100 & 175 AC



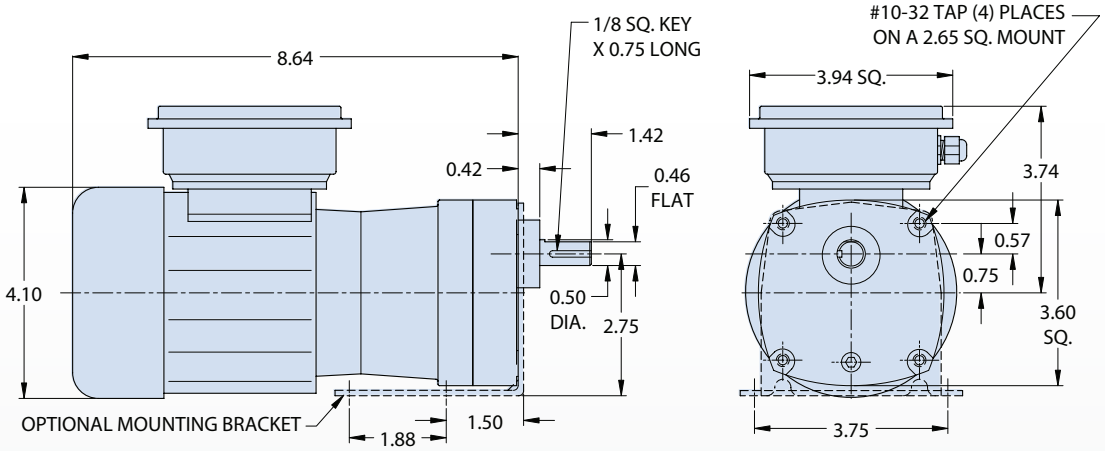
100 PSC 115V

HP	Stages	A
1/20	1, 2, 3	6.44
1/80	4, 5	6.26

175 PSC 115V and 115/230V

HP	Stages	A
1/10	1, 2, 3	7.40
1/20	3	6.78
1/20	4,5	7.48

175 3-Phase



100mm 200 Series Parallel Shaft AC

UP TO 350 IN-LBS CONTINUOUS

For tight-spaces requiring big power, Bison's 100mmAC (4" dia.), 1/8 HP motors offer larger motor power in 30% less volume.

Specifications

Gearhead

Gearing:	AGMA Class 9. heat treated steal 1st-stage helical, balance spur
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and gasketed
Bearings:	Needle with thrust ball
Shafts:	Hardened steel
Mounting:	Face (any angle)

Motor

Motor Type:	Permanent split capacitor
Rotation:	Reversible
Insulation:	Class B minimum
Enclosure:	TEFC
Finish:	Gloss black powder coat

Capacitor included in J-box

Optional Features

- Power-off brake available

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

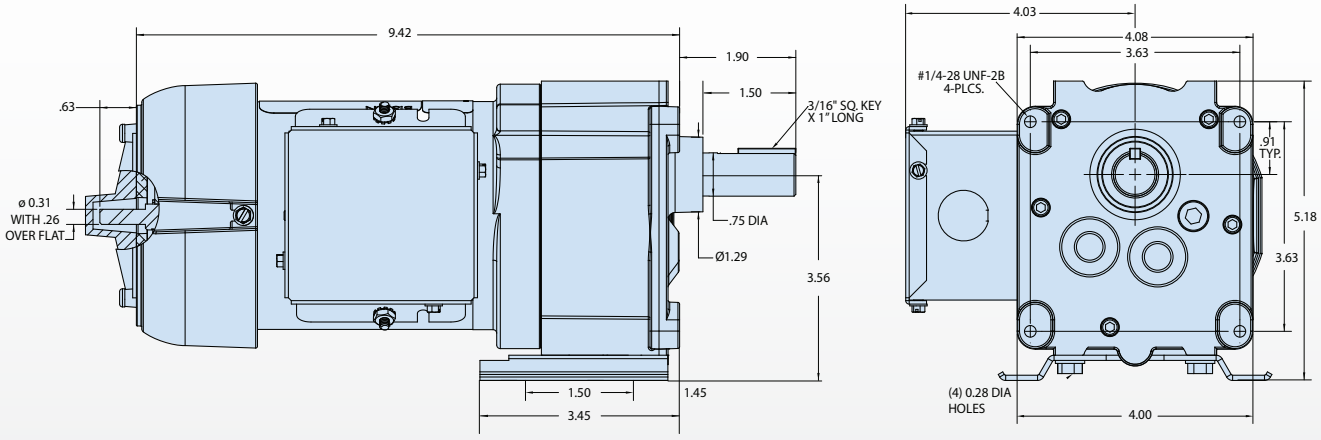
See pages 90-91 for additional accessories

200 Series PSC 115V

Part Number	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	# Stages	OHL	Amps	Hz	Shipping Wt.
016-246-6316	8	310**	1/8	215.6	3	200	1.10	60	12
016-246-6302	17	350**	1/8	102.4	3	200	1.40	60	12
016-246-6382	20	300**	1/8	81.8	3	200	1.40	60	12
016-246-6358	29	249	1/8	58.3	3	200	1.50	60	12
016-246-6329	59	115	1/8	28.8	2	200	1.50	60	12
016-246-6319	89	74	1/8	19.1	2	200	1.50	60	12
016-246-6315	113	58	1/8	15.0	2	200	1.50	60	12
016-246-6311	160	39	1/8	10.6	2	200	1.50	60	12
016-246-6305	340	16	1/8	5.0	2	200	1.50	60	12

** Gear Limited (check website for updated information.)

100mm 115V



200 Series Parallel Shaft AC

UP TO 385 IN-LBS CONTINUOUS

For up to 385 in-lbs, our 200 Series is unmatched in voltage and speed options.

Specifications

Gearhead

Gearing:	Hardened steel, AGMA Class 9. 1st-stage helical metal, balance spur metal
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and gasketed
Bearings:	Needle with thrust ball
Shafts:	Hardened steel
Mounting:	Face (any angle) or baseplate

Motor

Motor Type:	Permanent split capacitor, split phase and 3-phase
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class B minimum
Enclosure:	TEFC
Finish:	Gloss black powder coat/ 3 phase unpainted

Features

- Included junction box
- Mounted capacitor on PSC units, mounted external on 1/4"HP, inside J-Box on 1/6"HP
- Rear shaft extension (1-Phase units only)

Optional Features

- Power-off brake (1-Phase units only)

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

See pages 90-91 for additional accessories

200 Series PSC 115V/230V (For drawings see page 38)

Part Number	Speed (RPM)***	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Hz	Shipping Wt.
016-200-8100	15	202	1/15	107.6	3	175	1.2/.63	60/50	11.75
016-200-8050	31	135	1/15	52.8	2	175	1.2/.63	60/50	11.75
016-200-8035	46	92	1/15	35.4	2	175	1.2/.63	60/50	11.75
016-200-8023	69	61	1/15	23.4	2	175	1.2/.63	60/50	11.75
016-200-8017	98	43	1/15	16.5	2	175	1.2/.63	60/50	11.75
016-200-8012	141	30	1/15	11.5	2	175	1.2/.63	60/50	11.75

242 Series Split Phase 115V (For drawings see page 39)

Part Number	Speed (RPM)***	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Hz	Shipping Wt.
014-242-9015	115	84	1/6	15	2	175	3.8	60	12
014-242-9019	90	107	1/6	19	2	175	3.8	60	12
014-242-9028	61	158	1/6	28	2	175	3.8	60	12
014-242-9036	48	193	1/6	36	3	175	3.8	60	12
014-242-9058	31	278**	1/6	58	3	175	3.8	60	12
014-242-9133	13	277**	1/6	133	3	175	3.8	60	12

246 Series PSC 115V/230V (For drawings see page 39)

Part Number	Speed (RPM)***	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Hz	Shipping Wt.
016-246-6216	7.7	310**	1/6	215.6	3	412	2.1/1.1	60/50	16
016-246-6102	16	350**	1/6	102.4	3	373	2.1/1.1	60/50	16
016-246-6082	20	300**	1/6	81.8	3	327	2.1/1.1	60/50	16
016-246-6058	28	300**	1/6	58.2	3	273	2.1/1.1	60/50	16
016-246-4036	47	294	1/4	35.8	3	215	2.35/1.25	60/50	17.5
016-246-4029	58	227	1/4	28.8	2	236	2.35/1.25	60/50	17.5
016-246-4019	88	163	1/4	19.1	2	200	2.35/1.25	60/50	17.5
016-246-4015	113	128	1/4	15.0	2	195	2.35/1.25	60/50	17.5
016-246-4011	159	91	1/4	10.6	2	206	2.35/1.25	60/50	17.5
016-246-4005	338	41	1/4	5.0	2	170	2.35/1.25	60/50	17.5

* Maximum overhung load on center of output shaft. ** Output torque is gear limited.
*** All speed given are at 60 HZ. For 50 HZ operation, speed will be 5/6 of given speed on PSC units.

For 246 Series see next page

200 Series Parallel Shaft AC (continued)

UP TO 385 IN-LBS CONTINUOUS

For up to 385 in-lbs, our 200 Series is unmatched in voltage and speed options.

Specifications

Gearhead

Gearing:	Hardened steel, AGMA Class 9. 1st-stage helical metal, balance spur metal
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and gasketed
Bearings:	Needle with thrust ball
Shafts:	Hardened steel
Mounting:	Face (any angle) or baseplate

Motor

Motor Type:	Permanent split capacitor and 3-phase
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class B minimum
Enclosure:	TEFC
Finish:	Gloss black powder coat/ 3 phase unpainted

Features

- Included junction box
- Mounted capacitor on PSC units, mounted external on 1/4"HP, inside J-Box on 1/6"HP
- Rear shaft extension (1-Phase units only)
- Relay included on split phase

Optional Features

- Power-off brake (1-Phase units only)

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

See pages 90-91 for additional accessories

246 Series 3-Phase 230/460V

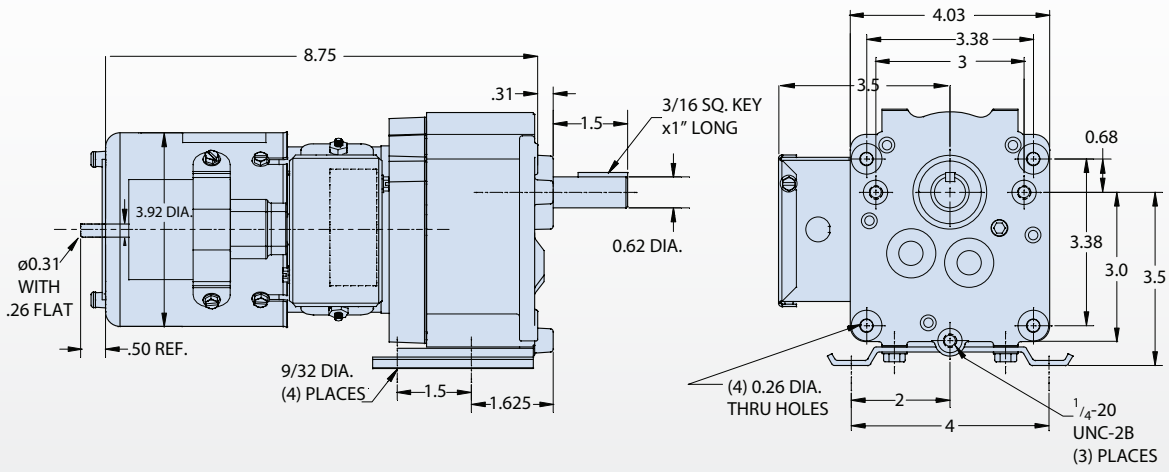
Part Number	Speed (RPM)***	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Hz	Shipping Wt.
017-246-0102	16	385**	1/4	102.4	3	373	1.10/.75	60/50	18
017-246-0058	29	278**	1/4	58.3	3	273	1.10/.75	60/50	18
017-246-0036	47	294**	1/4	35.8	3	215	1.10/.75	60/50	18
017-246-0029	60	159**	1/4	28.1	2	236	1.10/.75	60/50	18
017-246-0023	74	184**	1/4	22.7	2	225	1.10/.75	60/50	18
017-246-0019	88	165	1/4	19.1	2	200	1.10/.75	60/50	18
017-246-0015	112	129	1/4	15.0	2	195	1.10/.75	60/50	18
017-246-0011	159	91	1/4	10.6	2	206	1.10/.75	60/50	18
017-246-0005	336	41	1/4	5.0	2	170	1.10/.75	60/50	18

* Maximum overhung load on center of output shaft. ** Output torque is gear limited.
*** All speed given are at 60 HZ. For 50 HZ operation, speed will be 5/6 of given speed.

247 Series 3-Phase Inverter Duty 230V

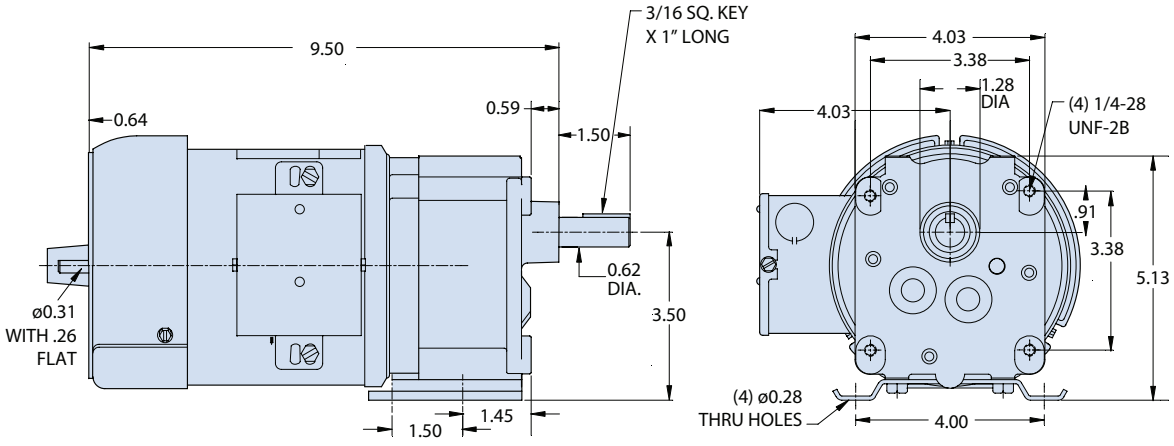
For more specifications see page 70

200 PSC 115/230V

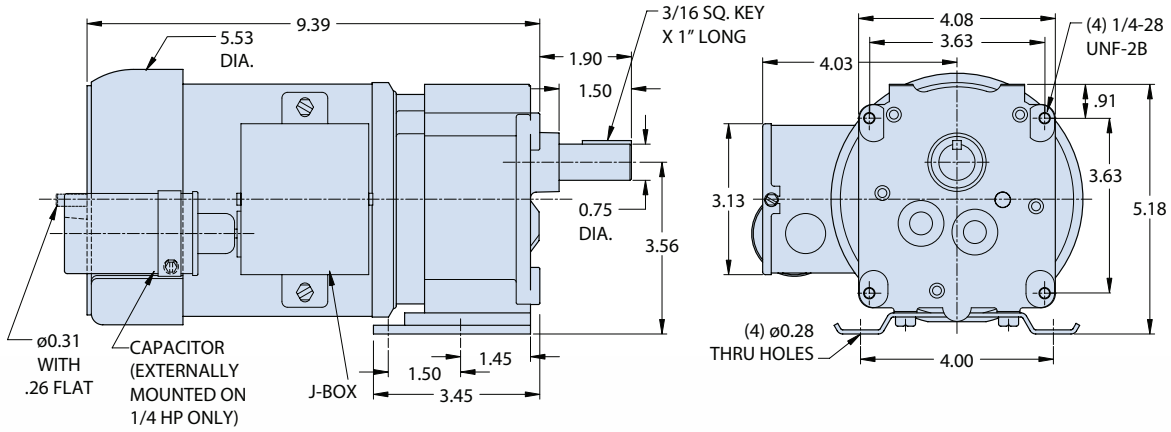


200 Series Parallel Shaft AC

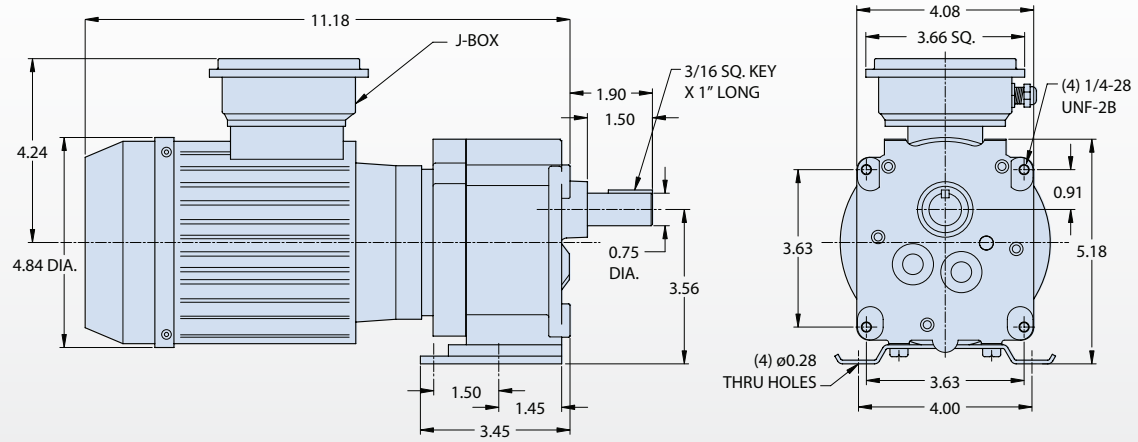
242 PSC 115V



246 PSC 115V/230V



246 3-Phase 230V/460V



VWDIR20 AC

115V SPLIT PHASE OPEN DRIP PROOF AC DESIGN

Our VWDIR20 offers up to 600 in-lbs of torque.

Specifications

Gearhead

Gearing:	Phenolic high speed and steel
Housing:	Precision machined die cast aluminum
Lubrication:	Grease
Bearings:	Porous bronze sleeve
Shafts:	Hardened steel
Mounting:	All positions
Finish:	Unpainted

Motor

Motor Type:	Split phase
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class B minimum
Enclosure:	ODP

Features

Units comply with applicable UL & CSA standards

Additional Information

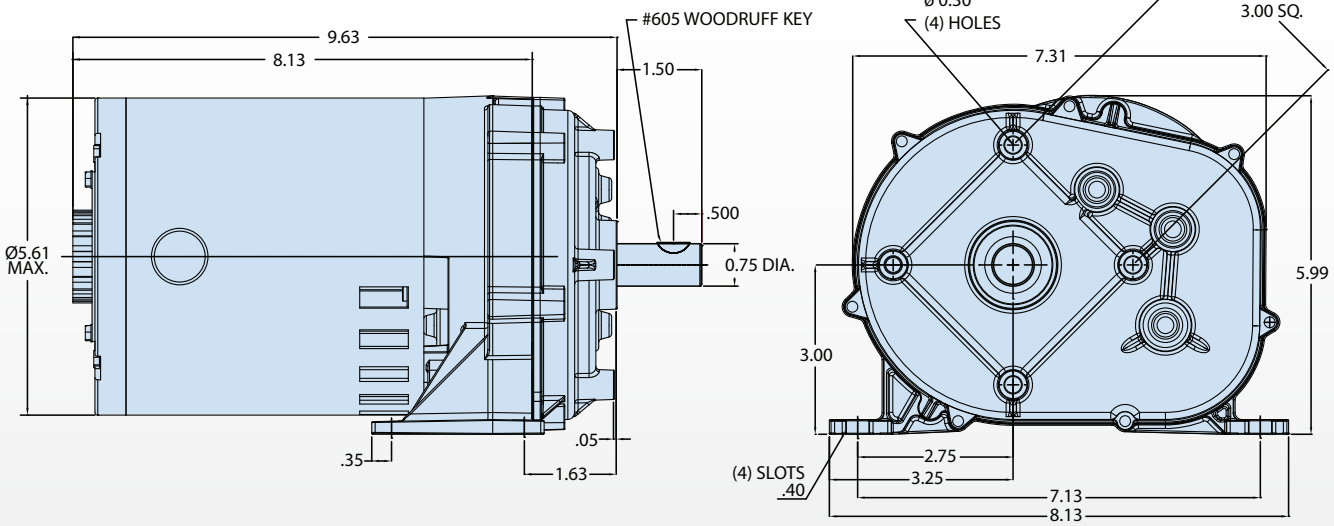
Current drawings available at www.bisongear.com

VWDIR20 Split Phase 115V

Model #	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL	Amps	Hz	Shipping Wt.
014Q307-0014	120	100	1/4	14	2	110	3.9	60	22
014Q307-0019	90	150	1/4	19	2	150	4.1	60	22
014Q307-0029	60	200	1/4	29	2	190	3.9	60	23
014Q307-0043	40	330	1/4	43	2	190	4.1	60	23
014Q307-0057	30	400	1/4	57	3	190	3.9	60	23
014Q307-0096	18	550**	0.19	97	3	300	3.6	60	23
014Q307-0144	12	600**	0.14	144	3	300	3.3	60	23
014Q307-0286	6	600**	0.07	286	3	300	3.1	60	24

** Gear Limited (check website for updated information.)

VWDIR20 AC



VWDIR84 AC

115/230V PSC TEFC AC DESIGN

Our VWDIR84 offers up to 600 in-lbs of torque.

Specifications

Gearhead

Gearing:	Phenolic high speed and hardened steel
Housing:	Precision machined die cast zinc
Lubrication:	Grease
Bearings:	Porous bronze sleeve
Shafts:	Hardened steel
Mounting:	All positions
Finish:	Unpainted

Motor

Motor Type:	Permanent split capacitor
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class B minimum
Enclosure:	TEFC

Capacitor included

Features

Units comply with applicable UL & CSA standards

Optional Features

Power off brake see pages 86-87

Additional Information

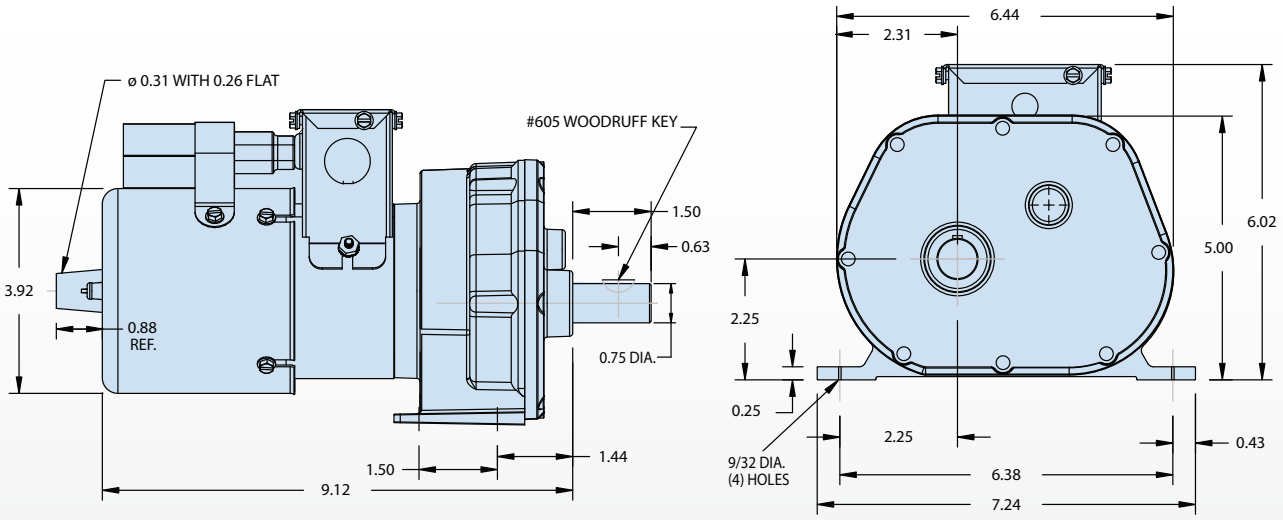
Current drawings available at www.bisongear.com

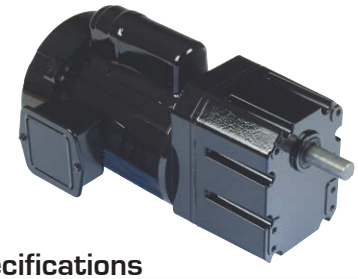
VWDIR84 PSC 115V/230V

Model #	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL	Amps	Hz	Shipping Wt.
016Q107-0081	20	250	1/12	81	3	250	1.2/.63	60/50	17
016Q107-0134	12	400	1/12	135	3	250	1.2/.63	60/50	17
016Q107-0267	6	600	1/12	267	3	250	1.2/.63	60/50	17.5

All ratings are shown at 60Hz operation. Also operable at 50Hz at 5/6 of the rated speed.

VWDIR84 AC





650 Series Parallel Shaft AC

UP TO 710 IN-LBS CONTINUOUS

The 650 Series offers strength and versatility with torques up to 750 in-lbs., and speed down to 1.2RPM.

Specifications

Gearhead

Gearing:	AGMA class 9 heat treated steel 1st-stage helical, balance spur
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and gasketed
Bearings:	Needle and thrust ball
Shafts:	Hardened steel
Mounting:	Face (any angle) or optional footplate on 1/58 HP

Motor

Motor Type:	Permanent split capacitor
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class B minimum
Enclosure:	TEFC / TENV
Finish:	Gloss black powder coat

Features

- Included junction box
- Included capacitor
- Rear shaft on 1/58, 1/6HP

Optional Features

- Power-off brake on 1/58 HP & 1/6 HP only
- Footplate kit for 1/58 HP P125-650-5000

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

See pages 90-91 for additional accessories

656 Series PSC 115V/230V

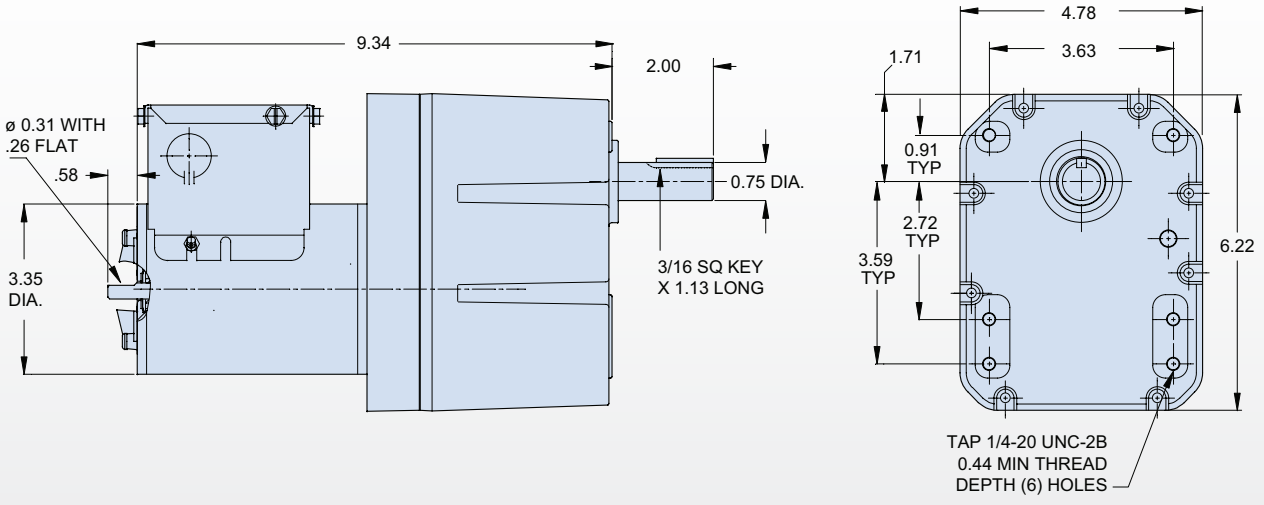
Part Number	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Hz	Shipping Wt.
016-656-1412	1.2	710**	1/58	1412.8	5	900	.36/.21	60/50	15.75
016-656-0276	6.0	710**	1/6	276.2	4	900	2.1/1.1	60/50	22.5
016-656-0138	12	700**	1/6	138.1	4	900	2.1/1.1	60/50	22.5
016-656-0116	14	630**	1/6	115.9	4	900	2.1/1.1	60/50	22.5
016-656-0054	30	660**	1/2	53.8	3	650	5.2/2.8	60/50	28.5
016-656-0028	58	490	1/2	27.7	3	600	5.2/2.8	60/50	28.5
016-656-0019	81	345	1/2	19.5	3	550	5.2/2.8	60/50	28.5
016-656-0014	119	240	1/2	13.7	2	500	5.2/2.8	60/50	28.5

* Maximum overhung load on center of output shaft. ** Output torque is gear limited.
5/6 rated speed @ 50 Hz

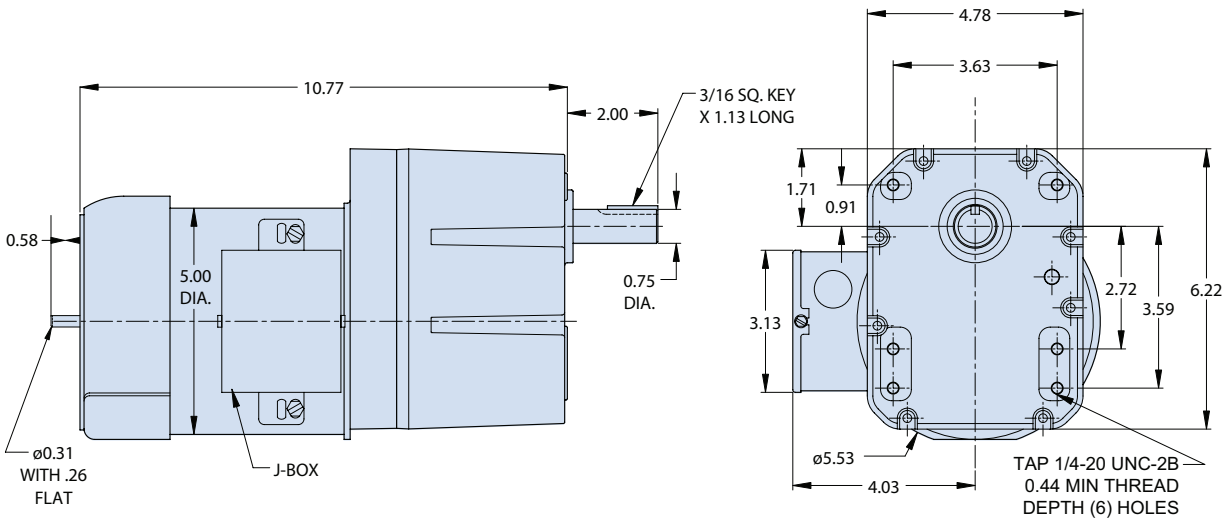
650 Series 3-Phase Inverter Duty 230V

For more specifications see page 70

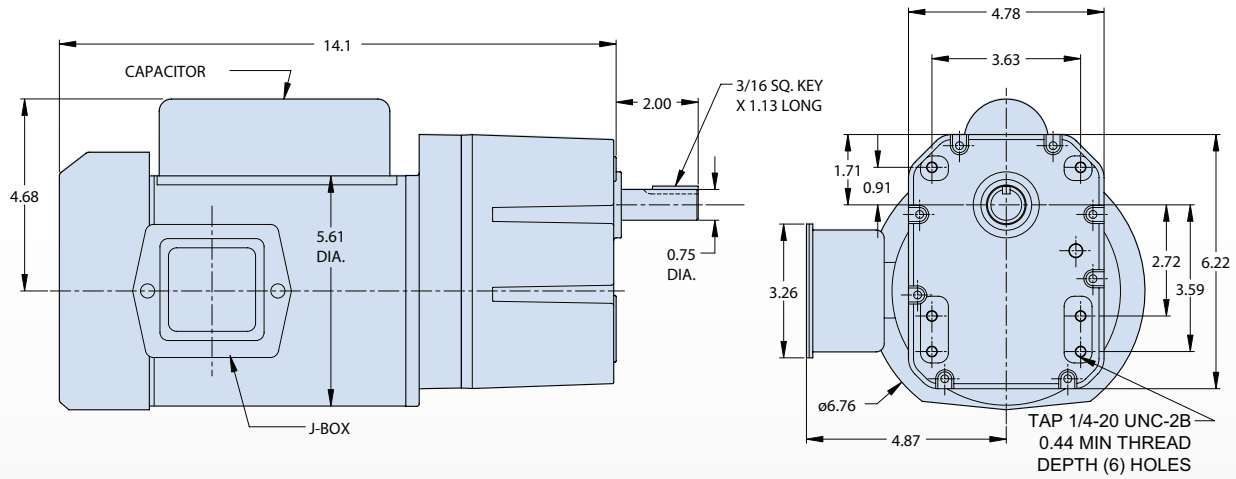
650 PSC-1/58 HP



656 PSC-1/6 HP



656 PSC-1/2 HP



VWDIR40 AC

115V SPLIT PHASE OPEN DRIP PROOF AC DESIGN

Our VWDIR40 offers up to 800 in-lbs of torque.

Specifications

Gearhead		Motor		Additional Information
Gearing:	Phenolic high speed and steel	Motor Type:	Split phase	Current drawings available at www.bisongear.com
Housing:	Precision machined die cast zinc	Rotation:	Reversible	
Lubrication:	Grease	Bearings:	Ball	
Bearings:	Ball	Insulation:	Class B minimum	
Shafts:	Plain	Enclosure:	ODP	
Mounting:	All positions			
Finish:	Unpainted			

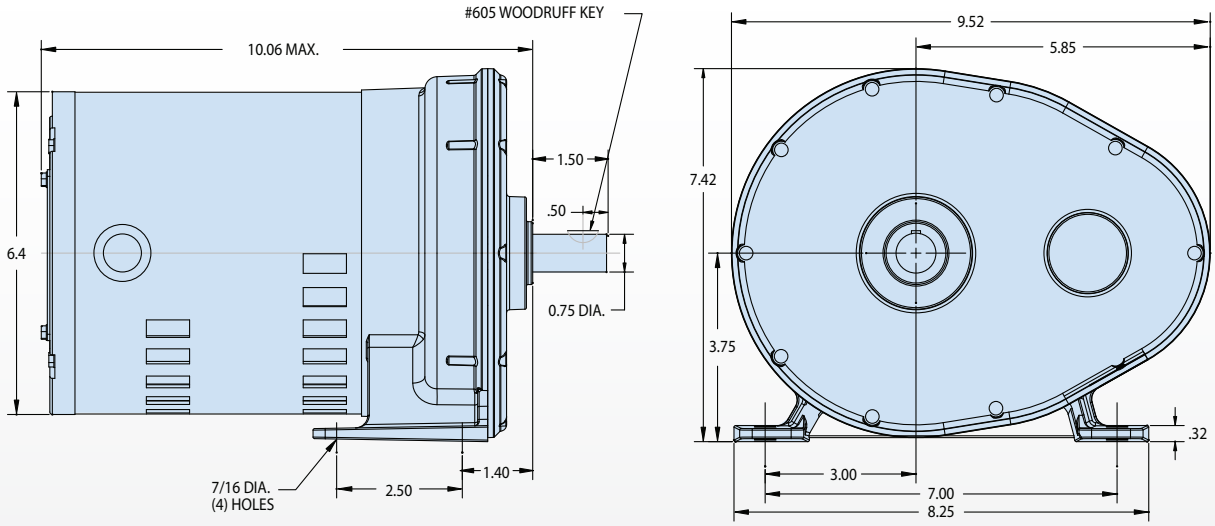
Features

Units comply with applicable UL & CSA standards

VWDIR40 Split Phase 115V

Model #	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL	Amps	Hz	Shipping Wt.
014Q407-0019	92	287	1/2	19	2	400	8.3	60	33
014Q407-0028	62	400	1/2	28	2	400	8.3	60	33
014Q407-0056	31	800	1/2	56	2	400	8.3	60	34

VWDIR40 Split Phase 115V



480 Series Parallel Shaft AC

UP TO 1105 IN-LBS CONTINUOUS

The 480 Series heavy duty gearmotors produce close to 1,200 in-lbs. of output torque, unusual in a very compact fractional horsepower, parallel shaft gearmotor.

Specifications

Gearhead		Motor		Additional Information
Gearing:	AGMA class 9 heat treated steel 1st-stage helical, balance spur	Motor Type:	Split phase & three phase	Current drawings available at www.bisongear.com
Housing:	Precision machined die cast aluminum	Rotation:	Reversible	Wiring diagram pages 92-95
Lubrication:	Lifetime oil bath, sealed and gasketed	Bearings:	Ball	
Bearings:	Needle and ball on output shaft	Insulation:	Class B minimum	
Shafts:	Hardened steel	Finish:	Gloss black powder coat	
Mounting:	Foot, any angle	Enclosure:	TEFC	

482 Series Split Phase 115V

* Maximum overhung load on center of output shaft. **Gear limited

Part Number	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Hz	Shipping Wt.
014-482-4316	5.4	1087**	1/4	315.6	3	797	3.97	60	28
014-482-4211	8.0	974**	1/4	210.0	3	797	3.97	60	28
014-482-4143	12	992	1/4	142.9	3	797	3.97	60	28
014-482-4095	18	800	1/4	95.1	3	797	3.97	60	28
014-482-4064	27	500	1/4	63.5	3	600	3.97	60	28
014-482-4029	60	240	1/4	28.6	2	636	3.97	60	28
014-482-4012	135	100	1/4	12.7	2	491	3.97	60	28
014-482-3095	18	1025**	1/3	95.1	3	797	5.50	60	28
014-482-3042	41	513	1/3	42.1	2	716	5.50	60	28
014-482-3019	91	211	1/3	19.0	2	571	5.50	60	28
014-482-3011	157	125	1/3	11.0	2	491	5.50	60	28
014-482-3006	282	70	1/3	6.0	2	409	5.50	60	28
014-482-2080	22	1105**	1/2	78.9	3	682	7.81	60	30
014-482-2042	41	720	1/2	42.1	2	716	7.81	60	30
014-482-2029	60	482	1/2	28.6	2	636	7.81	60	30
014-482-2019	91	320	1/2	19.0	2	571	7.81	60	30
014-482-2012	135	215	1/2	12.7	2	491	7.81	60	30

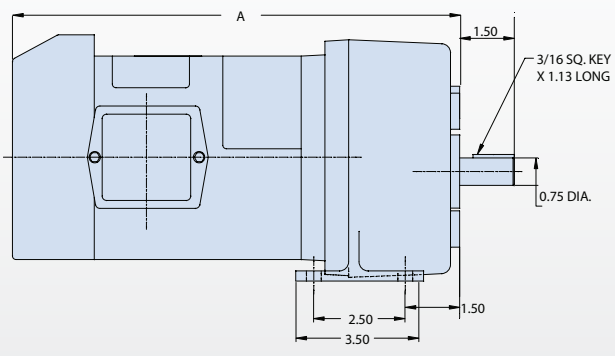
482 Series 3-Phase 230V/460V

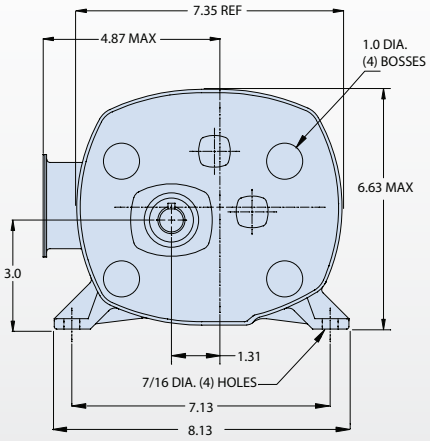
Part Number	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL*	Amps	Hz	Shipping Wt.
017-482-0143	12	992**	1/2	142.9	3	797	1.63/.81	60	40
017-482-0095	22	1017**	1/2	78.9	3	797	1.63/.81	60	40
017-482-0053	33	846	1/2	52.6	2	682	1.63/.81	60	40
017-482-0042	40	708	1/2	42.8	2	716	1.63/.81	60	40
017-482-0029	60	481	1/2	28.6	2	636	1.63/.81	60	40
017-482-0019	91	319	1/2	19.0	2	571	1.63/.81	60	40
017-482-0013	136	213	1/2	12.7	2	491	1.63/.81	60	40
017-482-0006	283	103	1/2	6.1	2	409	1.63/.81	60	40

485 Series 3-Phase Inverter Duty 230V

For more specifications see page 70

480 AC





HP	A
1/2	12.76
1/4, 1/3	12.33

746 Series Right Angle DC

UP TO 68 IN-LBS CONTINUOUS

The 746 Series is our smallest right angle offering, with up to 68 in-lbs continuous torque, and is available in both right and left shaft orientations.

Specifications

Gearhead

Gearing:	Hardened steel worm bronze gear
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and o-ringed
Bearings:	Ball and needle
Shafts:	Hardened steel
Mounting:	Base, any angle

Motor

Motor Type:	Permanent magnet
Speed:	Variable with appropriate control (1.37 form factor max)
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class F
Enclosure:	TENV
Finish:	Gloss black powder coat

Optional Features

Mounting base kit for 746 Series
Part number: P125-746-0500
Junction box kit - Part numbers: P198-100-9111

Other Options

- Accessory shaft
- Shaft-mount encoder
- Footplate

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

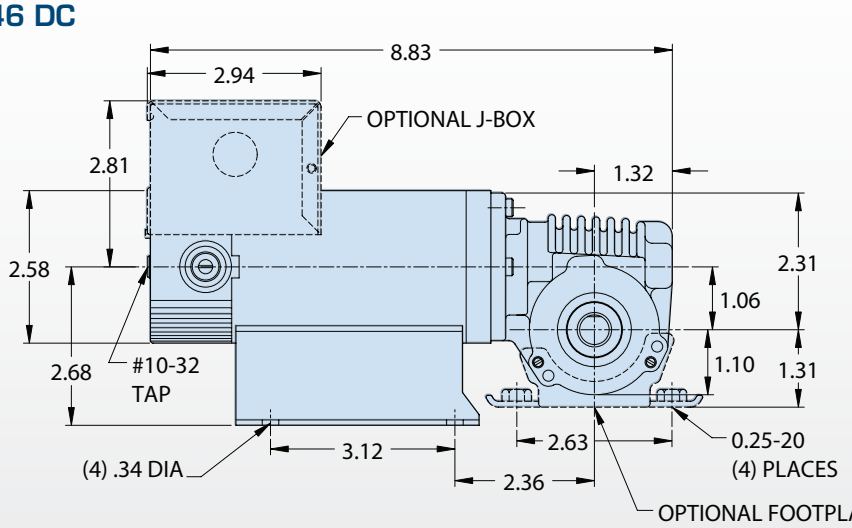
See pages 90-91 for additional accessories

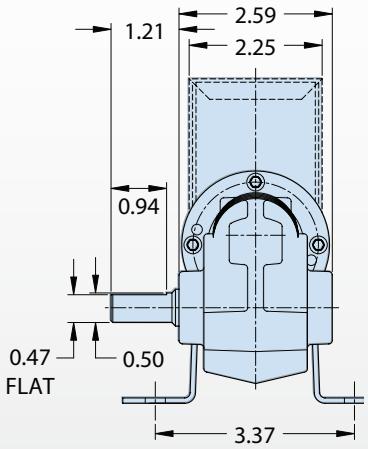
746 Series PMDC 90V or 130V

Part Number	Speed 90V RPM	Speed 130V RPM***	Torque (in-lbs)	Input HP	Gear Ratio	OHL*	Amps	Shipping Wt.	Brush
Right Shaft Ext.									
021-746-9060	30	43	68	1/15	60.0	224	0.77	7.5	B
021-746-9040	45	65	52	1/15	40.0	224	0.77	7.5	B
021-746-9030	59	85	41	1/15	30.0	224	0.77	7.5	B
021-746-9020	87	126	30	1/15	20.5	224	0.77	7.5	B
021-746-9015	120	173	26	1/15	15.5	222	0.77	7.5	B
021-746-9010	180	260	15	1/15	10.3	197	0.77	7.5	B
021-746-9005	360	520	9	1/15	5.0	197	0.77	7.5	B
Left Shaft Ext.									
021-746-9360	30	43	68	1/15	60.0	224	0.77	7.5	B
021-746-9340	45	65	52	1/15	40.0	224	0.77	7.5	B
021-746-9330	59	85	41	1/15	30.0	224	0.77	7.5	B
021-746-9320	87	126	30	1/15	20.0	224	0.77	7.5	B
021-746-9315	120	173	26	1/15	15.0	222	0.77	7.5	B
021-746-9310	180	260	15	1/15	10.0	197	0.77	7.5	B
021-746-9305	360	520	9	1/15	5.0	197	0.77	7.5	B

* Maximum overhung load on center of output shaft. *** Units rated for 90V 1.37 form factor drive. May be run with 1.05 form factor drive at 130V.

746 DC





Right hand ext. shown

The strength of Bison will always be there.

RIGHT ANGLE GEARMOTORS

Solar Power Innovation Driven By Bison

For solar equipment applications, downtime is not an option. That's why more and more solar equipment manufacturers choose Bison gearmotors as the driving force behind their products. They know that Bison gearmotors are built to last longer than any other manufacturer's gearmotors, and that makes all the difference.

Bison's Robusticity™ design philosophy produces gearmotors that are built to be the best from the inside out. From components of the highest quality to innovative design techniques and unequaled quality control measures, solar equipment designers know that the strength of Bison will always be there.

CERTIFIED QUALITY MANAGEMENT SYSTEM
BISON ISO 9001:2015

Want to know more? **www.bisongear.com** • **1-800-AT-BISON**

BISON Gear & Engineering Corp.

750 Series Right Angle DC

UP TO 120 IN-LBS CONTINUOUS

The 750 Series line of hollow shaft gearmotors allows hundreds of mounting configurations enabling engineers to optimize their assemblies. Industry standard mounts are available for drop-in requirements, and a hollow shaft style is available to use with optional accessories to meet your specifications.

Specifications

Gearhead

Gearing:	Hardened steel worm, cast bronze gear
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and o-ringed
Bearings:	Ball
Shafts:	Hardened steel
Mounting:	Face or base, any angle

Motor

Motor Type:	Permanent magnet
Speed:	Variable with appropriate control (1.37 form factor max)
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class F
Enclosure:	TENV
Finish:	Gloss black powder coat

Optional Features

Junction box kit - Part numbers:
P198-100-9121, 1/8 HP
P198-300-0000, 1/4 HP
Standard footplate P125-750-1000

Other Options

- Accessory shaft
- Shaft-mount encoder
- Various output shafts
- Flange mount available

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

See pages 62-63 or 90-91 for additional accessories

756 Series PMDC 90V

Part Number	Speed 90V RPM	Torque (in-lbs)	Input HP	Gear Ratio	OHL*	Amps	Shipping Wt.	Brush
Hollow / No Footplate								
021-756-8460	30	94	1/8	60.0	300	1.28	13	D
021-756-8445	40	82	1/8	45.0	300	1.28	13	D
021-756-8430	60	60	1/8	30.0	300	1.28	13	D
021-756-8420	90	49	1/8	20.5	300	1.28	13	D
021-756-8413	135	35	1/8	13.0	300	1.28	13	D
021-756-8410	180	27	1/8	10.3	300	1.28	13	D
021-756-8405	360	14	1/8	5.2	270	1.28	13	D
021-756-4430	60	120**	1/4	30.0	300	2.33	18	D
021-756-4420	90	100	1/4	20.5	300	2.33	18	D
021-756-4413	135	70	1/4	13.0	300	2.33	18	D
021-756-4410	180	55	1/4	10.3	300	2.33	18	D
021-756-4405	360	30	1/4	5.2	270	2.33	18	D
Standard Shaft / With Footplate								
021-756-8560	30	94	1/8	60.0	300	1.28	14.5	D
021-756-8545	40	82	1/8	45.0	300	1.28	14.5	D
021-756-8530	60	60	1/8	30.0	300	1.28	14.5	D
021-756-8520	90	49	1/8	20.5	300	1.28	14.5	D
021-756-8513	135	35	1/8	13.0	300	1.28	14.5	D
021-756-8510	180	27	1/8	10.3	300	1.28	14.5	D
021-756-8505	360	14	1/8	5.2	270	1.28	14.5	D
021-756-4530	60	120**	1/4	30.0	300	2.33	19.75	D
021-756-4520	90	100	1/4	20.5	300	2.33	19.75	D
021-756-4513	135	70	1/4	13.0	300	2.33	19.75	D
021-756-4510	180	55	1/4	10.3	300	2.33	19.75	D
021-756-4505	360	30	1/4	5.2	270	2.33	19.75	D

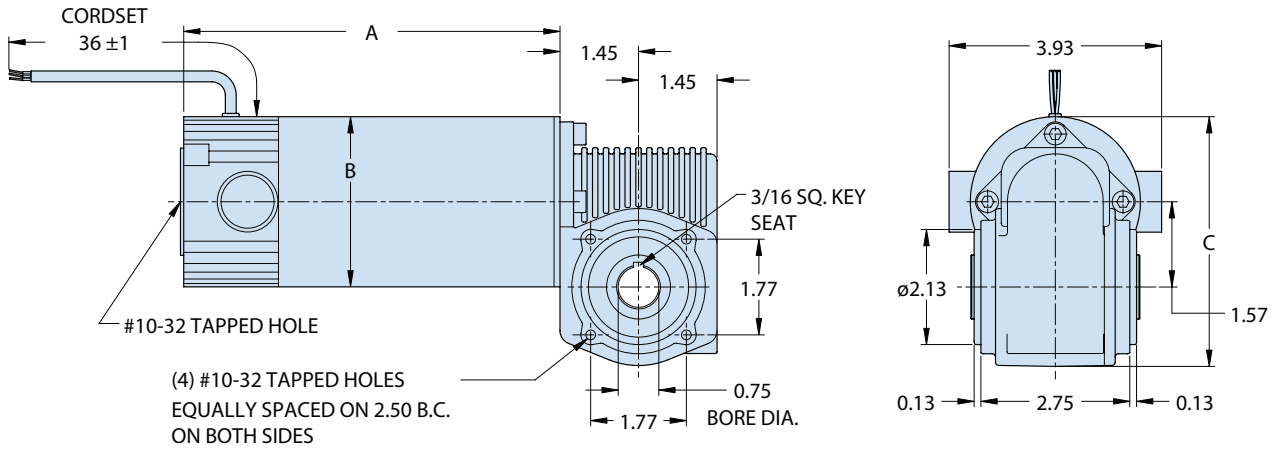
756 Series DC 12V

Hollow Shaft & Pilot Mount	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	OHL*	Amps	Shipping Wt.	Brush
021-756-3405	360	14	1/8	5.2	270	10.2	11.5	A
021-756-3410	180	27	1/8	10.3	300	10.2	11.5	A
021-756-3413	135	35	1/8	13.3	300	10.2	11.5	A
021-756-3420	90	49	1/8	20.5	300	10.2	11.5	A
021-756-3430	60	60	1/8	30.0	300	10.2	11.5	A
021-756-3445	40	82	1/8	45.0	300	10.2	11.5	A
021-756-3460	30	94	1/8	60.0	300	10.2	11.5	A

* Maximum overhung load located 2.5" from centerline of gearbox. ** Output torque is gear limited.

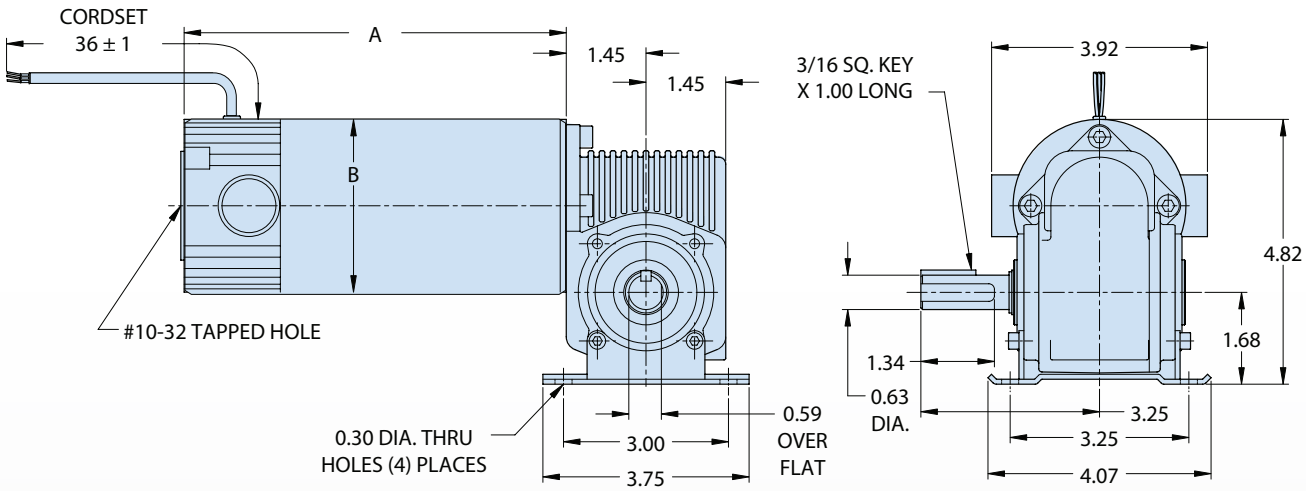
750 Series Right Angle DC

756 DC Hollow



HP	A	B	C
1/8	6.95	3.14	4.61
1/4	8.83	3.38	4.73

756 DC Standard Shaft



HP	A	B	C
1/8	6.95	3.14	4.82
1/4	8.83	3.38	4.94

756 Series DC 24V

With Mounting Bracket & Output Shaft	Hollow Shaft & Pilot Mount	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	OHL*	Amps	Shipping Wt.	Brush
021-756-5505	021-756-5405	360	14	1/8	5.2	270	5.18	14.5	A
021-756-5510	021-756-5410	180	27	1/8	10.3	300	5.18	14.5	A
021-756-5513	021-756-5413	135	35	1/8	13.3	300	5.18	14.5	A
021-756-5520	021-756-5420	90	49	1/8	20.5	300	5.18	14.5	A
021-756-5530	021-756-5430	60	60	1/8	30.0	300	5.18	14.5	A
021-756-5545	021-756-5445	40	82	1/8	45.0	300	5.18	14.5	A
021-756-5560	021-756-5460	30	94	1/8	60.0	300	5.18	14.5	A

* Maximum overhung load located 2.5" from centerline of gearbox.

VWDIR23 DC

90V PMDC TENV DESIGN

Our VWDIR23 offers up to 250 in-lbs of torque.

Specifications

Gearhead

Gearing:	Steel, **Worm:** Hardened Steel, **Output Gear:** Cast Iron
Housing:	Precision machined die cast aluminum
Lubrication:	Grease
Bearings:	Porous bronze sleeve
Shafts:	Hardened steel
Mounting:	All positions

Motor

Motor Type:	Permanent magnet
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class F
Enclosure:	TENV
Finish:	Powdered coat black

Features

Units comply with applicable UL & CSA standards

Additional Information

Junction box P198-100-9121

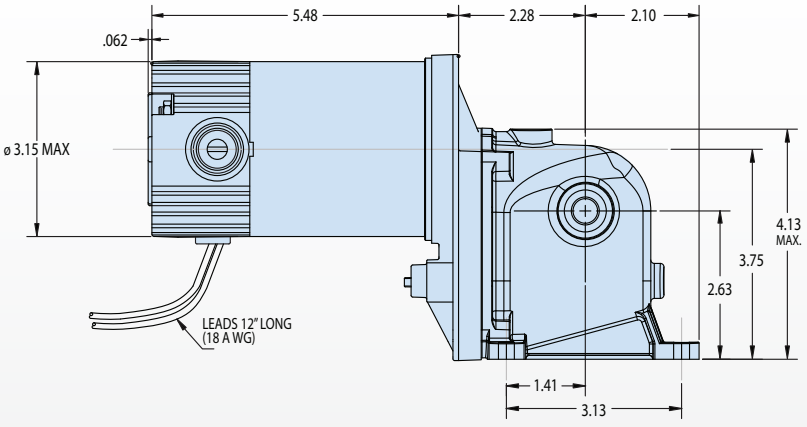
Current drawings available at www.bisongear.com

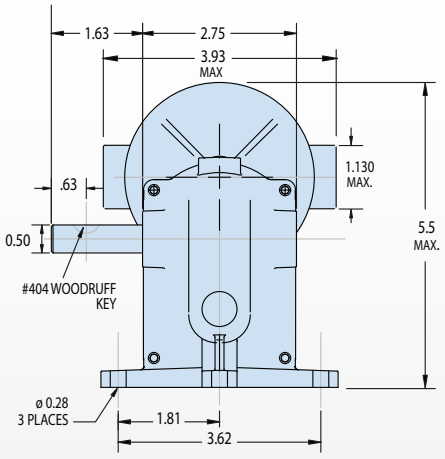
VWDIR23 PMDC 90V

Model #	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL	Amps	Shipping Wt.	Brush
021Q607-0037	90	34	1/10	37	3	100	1.14	10	D
021Q607-0038	45	56	1/20	37	3	100	0.59	10	D
021Q607-0070	24	102	1/20	70	3	100	0.59	10	D
021Q607-0167	10	228	1/20	161	3	100	0.59	10	D
021Q607-0275	6	177**	1/20	275	3	100	0.59	10	D
021Q607-0525	3	250**	1/20	525	3	100	0.59	10	D

** Gear Limited (check website for updated information.)

VWDIR23 PMDC 90V





100mm 750 Series Right Angle AC

UP TO 100 IN-LBS CONTINUOUS

For tight-spaces requiring big power, Bison's 100mmAC (4" dia.), 1/8 HP motors offer larger motor power in 30% less volume.

Specifications

Gearhead

Gearing:	Hardened steel worm, forged bronze gear
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and gasketed
Bearings:	Ball
Shafts:	Hardened steel
Mounting:	Face or base, any angle

Motor

Motor Type:	Permanent split capacitor
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class B minimum
Enclosure:	TEFC
Finish:	Gloss black powder coat

Capacitor included

Features

Motors are supplied with mounted junction box and capacitor, and rear shaft extension for brake

Additional Information

See pages 62-63 or 90-91 for additional accessories

Footplate P/N P125-750-1000

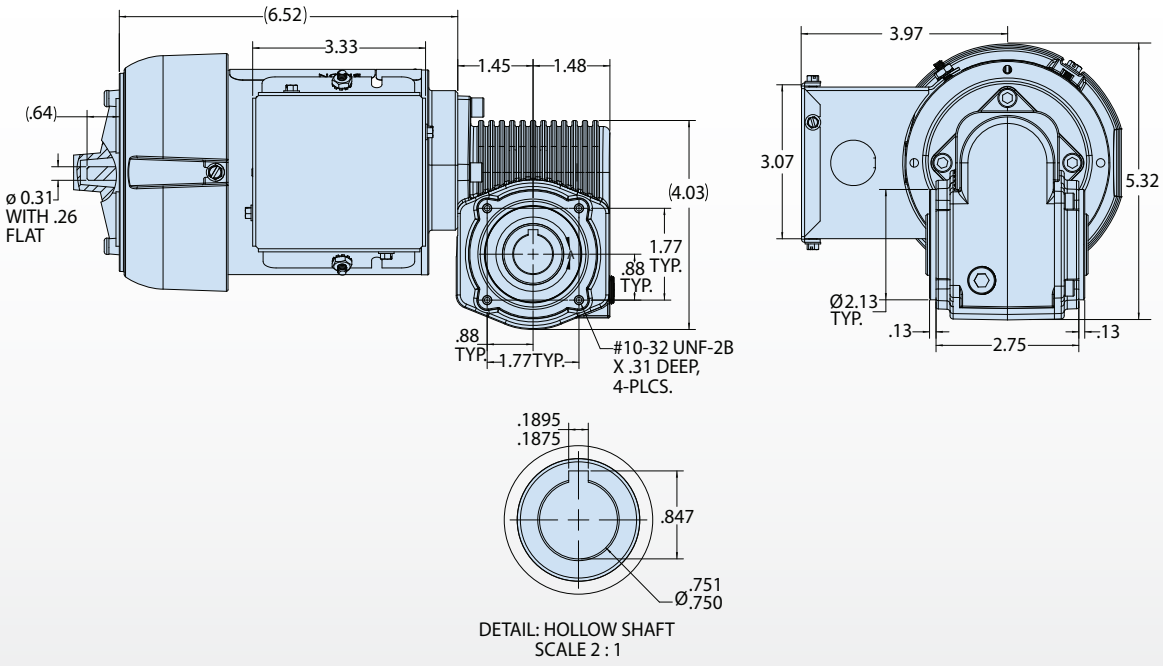
Wiring diagram pages 92-95

Current drawings available at www.bisongear.com

750 Series PSC 115V

Part Number	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL	Hz	Shipping Wt.
026-756-3560	28	100	1/8	60.0	1	300	60	14.75
026-756-3545	37	80	1/8	45.0	1	300	60	14.75
026-756-3530	56	67	1/8	30.0	1	300	60	14.75
026-756-3520	82	43	1/8	20.5	1	300	60	14.75
026-756-3510	164	21	1/8	10.3	1	200	60	14.75
026-756-3505	327	11	1/8	5.2	1	270	60	14.75

750 PSC 115V



750 Series Right Angle AC

UP TO 130 IN-LBS CONTINUOUS

The 750 Series line of hollow shaft gearmotors allows hundreds of mounting configurations enabling engineers to optimize their assemblies. Industry standard mounts are available for drop-in requirements, and a hollow shaft style is available to use with optional accessories to meet your specifications.

Specifications

Gearhead

Gearing:	Hardened steel worm, forged bronze gear
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and o-ringed
Bearings:	Ball
Shafts:	Hardened steel
Mounting:	Face or base, any angle
Finish:	Gloss black powder coat

Motor

Motor Type:	Permanent split capacitor
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class B
Enclosure:	TEFC
Finish:	Gloss black powder coat

Features

Motors are supplied with mounted junction box and capacitor, and rear shaft extension for brake.

Additional Information

Wiring diagram pages 92-95

See pages 62-63 or 90-91 for additional accessories

Footplate P/N P125-750-1000

Current drawings available at www.bisongear.com

756 AC PSC 115V/230V

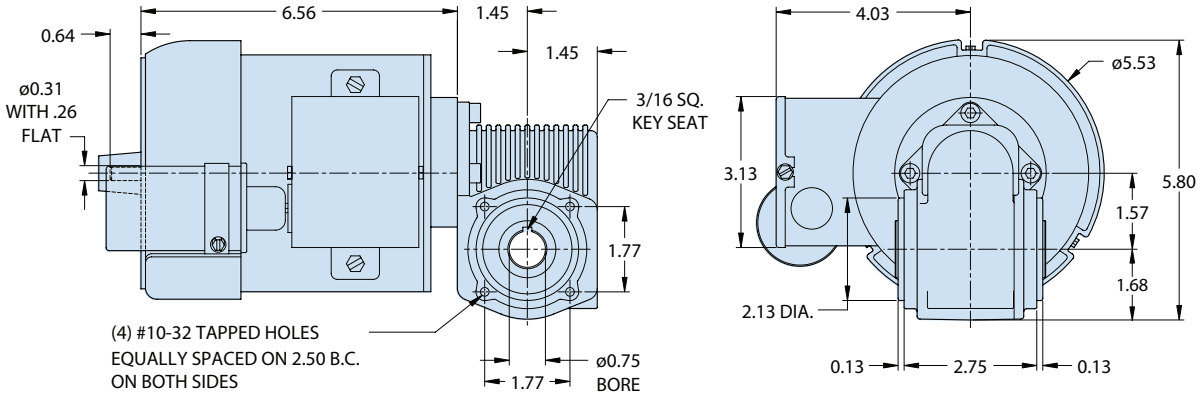
Part Number	Speed (RPM)	Torque (in lbs.)	Input HP	Gear Ratio	Stages	OHL*	Amps	Hz	Shipping Wt.
Hollow / No Footplate									
026-756-4460	28	120**	1/4	60.0	1	300	2.40/1.32	60/50	16.75
026-756-4445	36	120**	1/4	45.0	1	300	2.40/1.32	60/50	16.75
026-756-4430	55	130	1/4	30.0	1	300	2.40/1.32	60/50	16.75
026-756-4420	80	108	1/4	20.5	1	300	2.40/1.32	60/50	16.75
026-756-4413	124	76	1/4	1.3	1	300	2.40/1.32	60/50	16.75
026-756-4410	160	62	1/4	10.3	1	300	2.40/1.32	60/50	16.75
026-756-4405	330	30	1/4	5.2	1	270	2.40/1.32	60/50	16.75
Standard Shaft / With Footplate									
026-756-4660	28	120**	1/4	60.0	1	300	2.40/1.32	60/50	19.75
026-756-4645	36	120**	1/4	45.0	1	300	2.40/1.32	60/50	19.75
026-756-4630	55	130	1/4	30.0	1	300	2.40/1.32	60/50	19.75
026-756-4620	80	108	1/4	20.5	1	300	2.40/1.32	60/50	19.75
026-756-4613	124	76	1/4	1.3	1	300	2.40/1.32	60/50	19.75
026-756-4610	160	62	1/4	10.3	1	300	2.40/1.33	60/50	19.75
026-756-4605	330	30	1/4	5.2	1	270	2.40/1.33	60/50	19.75

* Maximum overhung load located 2.5" from centerline of gearbox.
** Output torque is gear limited.
*** 60Hz speed shown
Also operable @ 50 Hz @ 5/6 of rated speed

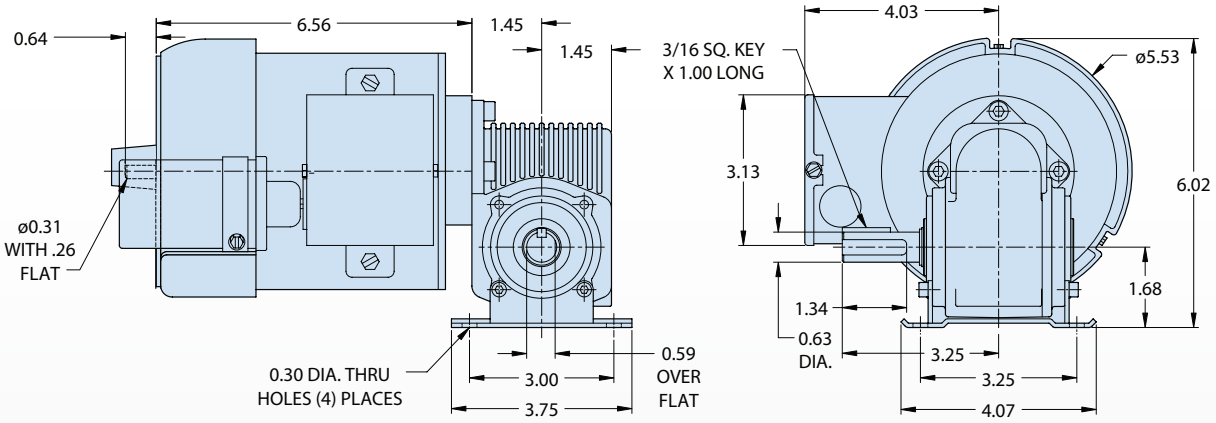
750 Series 3-Phase Inverter Duty 230V

For more specifications see page 72

756 PSC 115V/230V Hollow



756 PSC 115V/230V Standard Shaft



Capacitor in junction box

750 DC & AC Right Angle Gearmotor
Accessories

Build it Your Way

Now you can choose how you want your Bison 750 Series gearmotor to be built, using the same high quality components that have set the industry standard for over 50 years. Bison's gears and housings are precision machined to maximize power and service life as well as to minimize wear and maintenance. Lifetime oil lubrication provides efficient continuous operation and resistance to contaminants, ensuring fewer field failures and downtime.

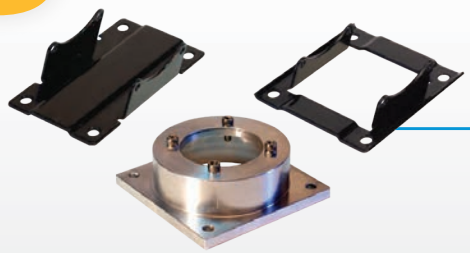
There's a simple philosophy behind the design of every Bison Product: Start with the highest quality components and then through better design and manufacturing techniques, maximize the throughPut those components can produce.

It's all about choices. Build the Bison 750 Series gearmotor your way with multiple mounting configurations. Choose a single, double, or hollow shaft, a footplate, a flange...Bison's manufacturing expertise guarantees that you get the gearmotor you need, along with the best in application engineering, customer service, and product performance. Go ahead. Build it your way.

1 Select Your Hollow Shaft Unit

2 Select Your Shaft Configuration

3 Select Your Mounting Style



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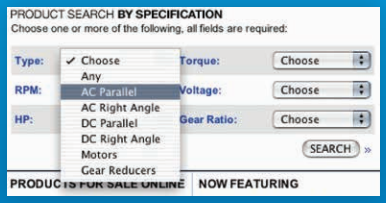
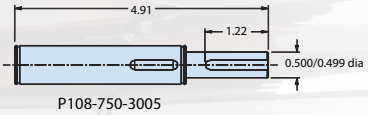
Visit Bison at www.bisongear.com for instantaneous searchable product information, 24 hours a day, 7 days a week. Find up-to-the-minute information on Bison; including news, press releases, product, technical information, CAD drawings, contact information and much more. Plus, sign up for instant email updates. It's only a click away!

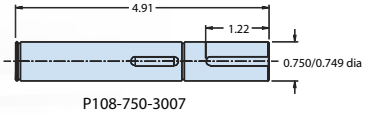


750 DC & AC Right Angle Gearmotor - Accessories

Single Shafts

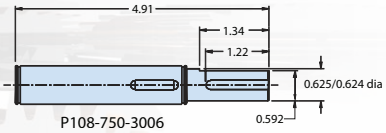


P108-750-3005

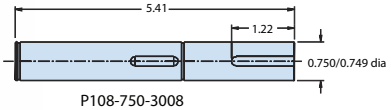


P108-750-3007

All shafts come standard with required keyways and retaining rings.

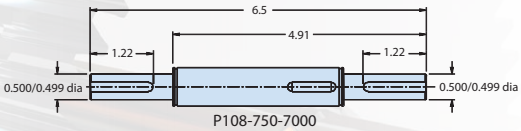


P108-750-3006

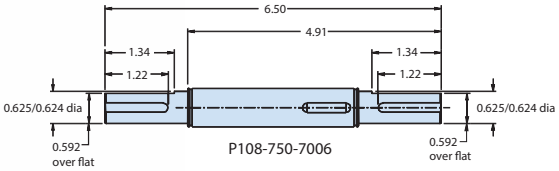


P108-750-3008
(For flange mounting)

Double Shafts

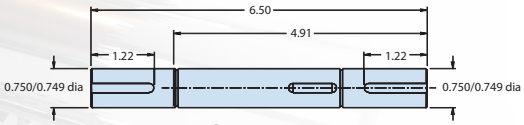


P108-750-7000



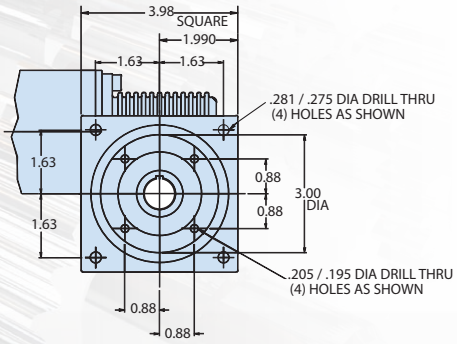
P108-750-7006

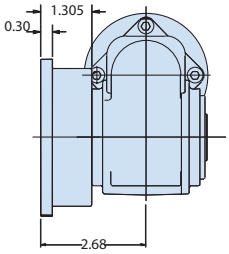
All shafts come standard with required keyways and retaining rings.



P108-750-7007

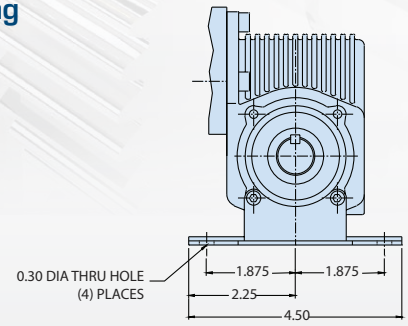
Flange Mounting





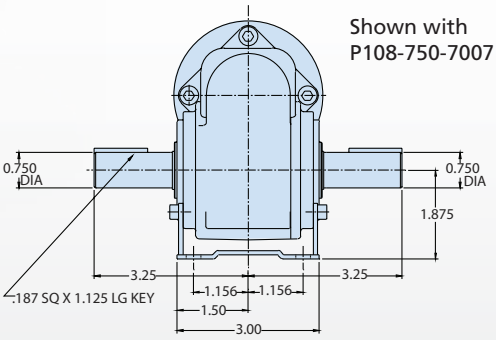
Part#: P103-750-4000

Competitive Mounting



Standard Bison footplate
P125-750-1000

Part#: P125-750-2000



Mount it Your Way

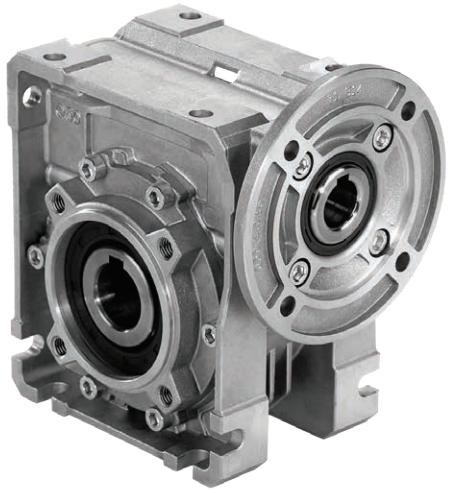
Bison's 750 Series line of hollow shaft gearmotors allows hundreds of mounting configurations enabling engineers to optimize their assemblies. Industry standard mounts are available for drop-in requirements, and a hollow shaft style is available to use with optional accessories to meet your specification!

Assembled units are available either in the traditional Bison mounting or the hollow shaft style. Optional shafts and mounting brackets are available as accessories for field installation.

Accessory Friendly

Following Bison's tradition, some AC units come standard with brake shaft extension for optional AC power-off brakes. DC units have tapped armature shafts to allow mounting of shaft extension kits and optical encoders.

Can't find what you're looking for?
www.bisongear.com



Q Series - Aluminum Worm Integral Horsepower Reducer

Features:

- Modular design allows for ultimate flexibility
- Precision machined Single Piece aluminum alloy housing
- Oversized Bearings
- Lubricated for life with full-synthetic lube – Vent-free design
- CuSn12Ni (C91700) Nickel bronze worm gears – Centrifugally cast onto steel hub for max strength

Specifications

Size	Torque (in lbs.)	Center Distance	Input Power	Ratio Range	Hollow Output Shaft Diameter (Std.)	Hollow OP Dia. (Opt.)
Q45	345	1.772″	0.25 to 1 HP	7 to 102:1	0.750″ / 18mm	
Q50	611	1.969″	0.25 to 2 HP	7 to 100:1	1.000″ / 25mm	
Q63	1240	2.480″	0.5 to 3 HP	7 to 94:1	1.125″ / 25mm	1.250″ SS
Q85	2921	3.346″	1 to 5 HP	7 to 96:1	1.500″ / 35mm	

Visit **www.bisongear.com** for full IHP product specs, dimensional drawings, available accessories and customized 3D CAD downloads.

Options:

- Hollow Output Shaft options
  - Imperial and Metric sizes
  - Carbon steel and Stainless steel
- Output mounting flanges
- Torque arms
- Output shaft inserts
- Protective covers for Hollow output shaft
- Helical Pre-Stage and double-worm options for higher ratios
- NEMA and IEC mounting

Nickel Bronze Worm Gears

Available Motors from Bison Compatible with Q Series and X Series IHP Reducers

Contact a Bison Rep to learn more about these motors
1-800- AT BISON

PERMANENT MAGNET AC MOTOR
VFsync

VFsync

See pages 6-11 for more details on VFsync Permanent Magnet AC Motors

Three Phase Induction - NEMA

- NEMA Premium Efficient
- Inverter duty
- Steel rolled frame construction
- Sizes 0.25 to 5 HP

Three Phase Induction - IEC

- Meets IE3 European and NEMA Premium efficiency standards
- IEC B14 C-Face flanges
- Aluminum frame construction
- Inverter Duty
- IP55 rated
- Sizes 0.25 to 5 HP

Single Phase

- NEMA 56 C-Face
- Sizes 0.25 to 1.5HP
- Steel rolled frame construction

Brake Motors (3PH)

- NEMA Premium Efficient
- Inverter Duty
- Sterns Brakes with manual wear adjustment
- Steel rolled frame construction
- Sizes 0.25 to 5 HP

Contact Bison to learn more about available PMDC motors that are compatible with Q Series and X Series IHP reducers.

VWDIR33 AC

115/230V PSC TEFC AC DESIGN

Our VWDIR33 offers up to 200 in-lbs of torque.

Specifications

Gearhead

Gearing:	Steel, **Worm:** Hardened Steel, **Output Gear:** Cast Iron
Housing:	Precision machined die cast aluminum
Lubrication:	Grease
Bearings:	Porous bronze sleeve
Shafts:	Hardened steel
Mounting:	All positions

Motor

Motor Type:	Permanent split capacitor
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class B minimum
Finish:	Powdered coat black
Enclosure:	TEFC

Capacitor included

Features

Units comply with applicable UL & CSA standards

Optional Features

Power off brake

Additional Information

See pages 90-91 for additional accessories

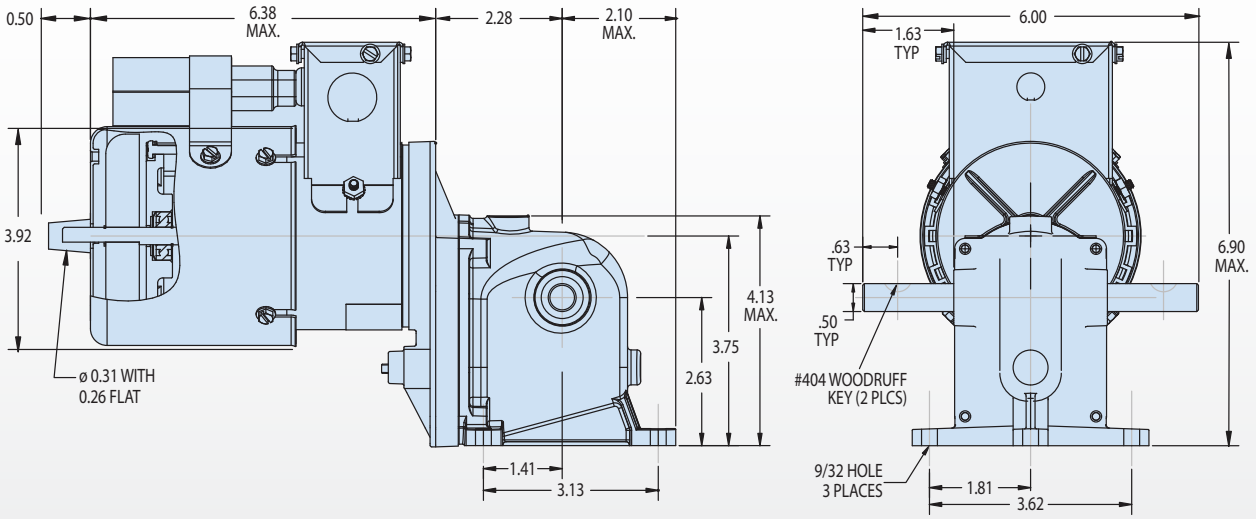
Current drawings available at www.bisongear.com

VWDIR33 PSC 115V/230V

Model #	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL	Amps	Hz	Shipping Wt.
026Q607-0037	40	89	1/12	37	3	100	1.2/.63	60/50	13.5
026Q607-0070	21	170	1/12	70	3	100	1.2/.63	60/50	13.5
026Q607-0167	9.5	200	1/12	161	3	100	1.2/.63	60/50	12.5
026Q607-0275	5.6	200	1/12	275	3	100	1.2/.63	60/50	12.5
026Q607-0525	3	200	1/12	525	3	100	1.2/.63	60/50	12.5
026Q607-1255	1.5	250	1/12	1205	3	100	1.2/.63	60/50	12.5

All ratings are shown at 60Hz operation. Also operable at 50Hz at 5/6 of the rated speed.

VWDIR33 PSC 115V/230V



VWDIR03 Universal

115V UNIVERSAL VENTED DESIGN

Our VWDIR03 offers up to 250 in-lbs of torque for AC or DC.

Specifications

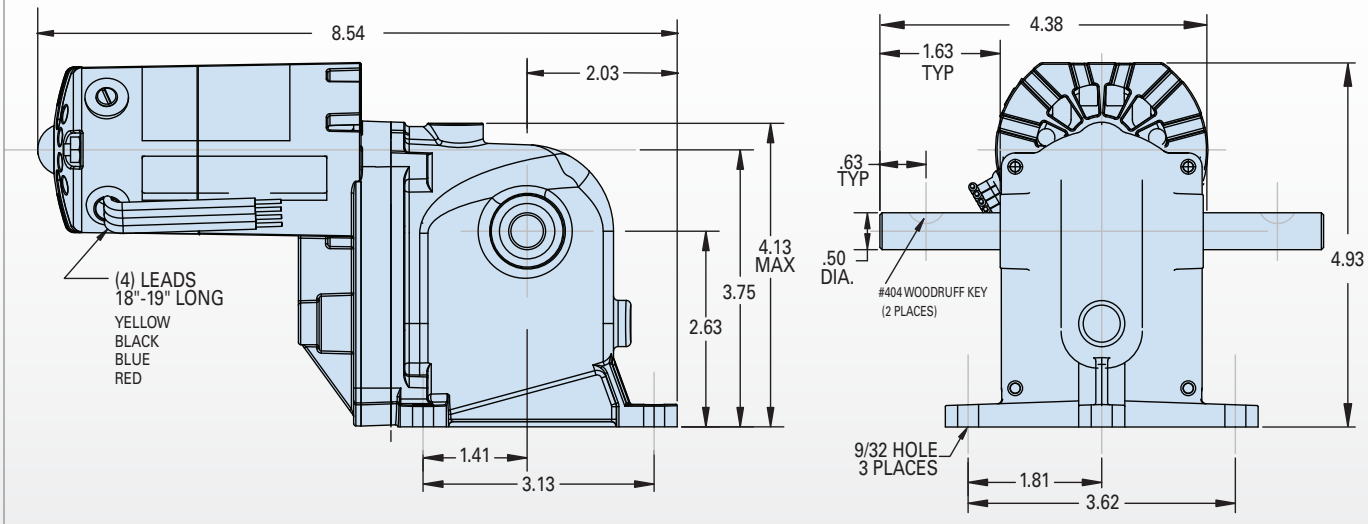
Gearhead		Motor		Additional Information
Gearing:	Steel, **Worm:** Hardened Steel, **Output Gear:** Cast Iron	Motor Type:	AC and DC	Current drawings available at www.bisongear.com
Castings:	Zinc die castings	Rotation:	Reversible	
Housing:	Precision machined die cast aluminum	Bearings:	Ball	
Lubrication:	Grease	Insulation:	Class B minimum	
Bearings:	Porous bronze sleeve	Finish:	Powdered coat black	
Shafts:	Hardened steel	Enclosure:	OPEN	
Mounting:	All positions			

VWDIR03 Universal 115V

Model #	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	OHL	Amps	Hz	Shipping Wt.	Brush
022Q607-0052L	90	18	1/15	52	3	100	1.3	60/50	7	H
022Q607-0052R	90	18	1/15	52	3	100	1.3	60/50	7	H
022Q607-0100L	52	39	1/15	100	3	100	1.3	60/50	7	H
022Q607-0100R	52	39	1/15	100	3	100	1.3	60/50	7	H
022Q607-0238D*	24	85	1/15	229	3	100	1.3	60/50	7	H
022Q607-0238L	24	85	1/15	229	3	100	1.3	60/50	7	H
022Q607-0238R	24	85	1/15	229	3	100	1.3	60/50	7	H
022Q607-0390L	13	84	1/15	391	3	100	1.3	60/50	7	H
022Q607-0390R	13	84	1/15	391	3	100	1.3	60/50	7	H
022Q607-0745L	8	150	1/15	747	3	100	1.3	60/50	7	H
022Q607-0745R	8	150	1/15	747	3	100	1.3	60/50	7	H
022Q607-1787L	4.5	250**	1/15	1714	3	100	1.1	60/50	7	H
022Q607-1787R	4.5	250**	1/15	1714	3	100	1.1	60/50	7	H

* Double Shaft Only ** Gear Limited

VWDIR03 Universal



Inverter Duty AC Gearmotors

VARIABLE SPEED CONSTANT TORQUE

Sturdy. Reliable. Efficient.

Three words that have defined Robusticity™ for more than 50 years now define Bison's energy efficient, three-phase Verdant Duty gearmotors. For applications where greater efficiencies or heavy inverter service are required, Bison's premium-efficiency inverter duty gearmotors consistently deliver Bison durability.

Verdant Duty from Bison, a new standard in Robusticity™.

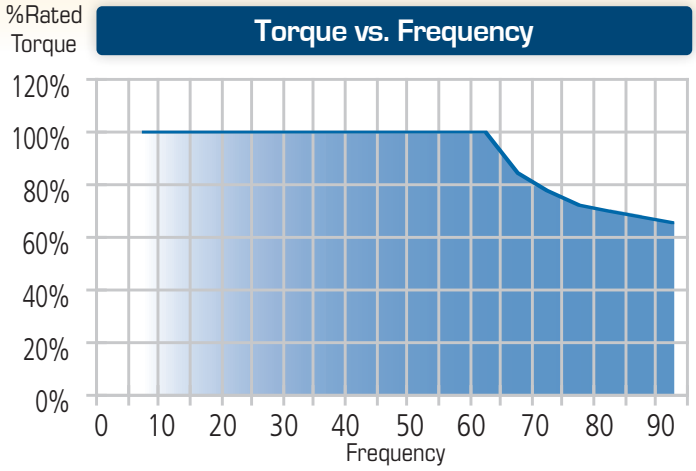
Energy Efficient Gearmotor
VERDANT DUTY™

- Shielded ball bearings (permanently lubricated, electric motor grade) on motor maximize overhung load capability. Preload spring minimizes end play, reducing vibration and noise.
- Class F UL recognized insulation system designed to meet NEMA MG 1 Section 31 offer superior protection against voltage spikes induced by variable frequency drives, enhancing system life.
- High pressure die cast rotor is heat shrunk to a precision machined motor shaft and dynamically balanced for minimal vibration and audible noise.
- Fan and Fan Shroud provide maximum airflow, minimizing motor temperature rise. Fan shroud vents meet UL safety requirements.
- Large junction box has multiple knockouts, providing wiring flexibility.
- Thermostat leads (signal type, normally closed) provide overload protection when coupled with the proper inverter.
- Rear shaft extension for brake mount option.
- Baked on epoxy powder coat paint finish, high gloss black, for durability and maximum heat transfer.

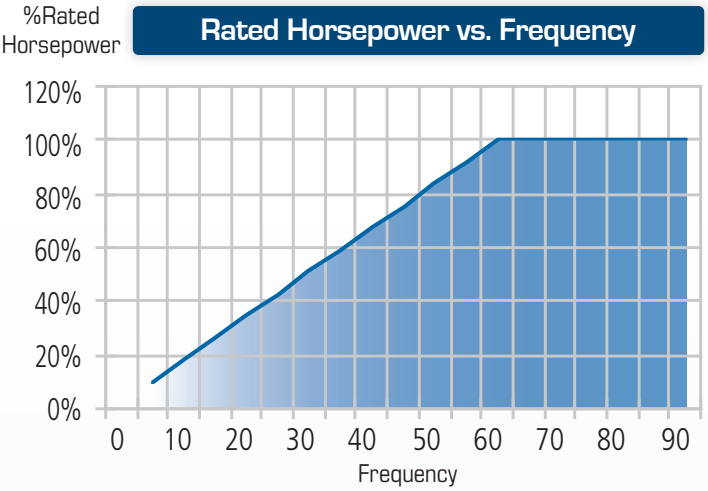
IMPORTANT GUIDELINES

- Maximum cable length between inverter drive and motor not to exceed 50 feet. Longer cable lengths may require special filters.
- 10:1 Constant Torque Speed Range.
- 1.5:1 Constant Horsepower Range.
- Gearmotors will provide rated torque at low frequency inputs with proper voltage boost. Boost must be adjusted to prevent cogging or stall conditions.
- UL and CUL marked for construction.
- Signal type thermostat leads provided.

Torque vs. Frequency

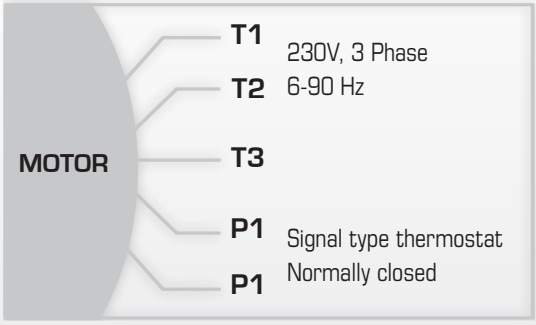


Rated Horsepower vs. Frequency



Wiring Diagram

Motor Specifics



107 Series 1/20 HP

Torques up to 100 in-lbs. and ratios up to 96:1.

247 Series 1/4 HP

Torques up to 350 in-lbs. and ratios up to 216:1.

485 Series 1/2 HP

Torques up to 950 in-lbs. and ratios up to 131:1.

650 Series 1/4 or 1/2 HP

Torques for the 1/2 HP up to 423 in-lbs., and for the 1/4 HP torques up to 722 in-lbs.,with ratios up to 215:1.

750 Series 1/4 HP

Torques up to 120 in-lbs. and ratios up to 60:1.

SANIMotor™

See page 28 for more information.

Inverter Duty AC Gearmotors

DESIGNED FOR ROBUSTICITY™

Specifications

Gearhead

Gearing:	AGMA class 9 heat treated steel
Geartrain:	Engineered to handle up to 200% shockloading
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath
Bearings:	Needle and thrust ball, or ball bearing
Shafts:	Precision ground shaft seal diameters
Mounting:	All position

Motor

Motor Type:	230V, 3 phase, 6-90 Hz
Rotation:	Reversible
Bearings:	Double shielded ball bearing support
Insulation:	Class F (155°C)
Enclosure:	TENV for 1/20 HP, TEFC for 1/4 and 1/2 HP
Thermostat:	Signal type; closed

Product Line Features

- Global safety recognition: UL, CUL
- Insulation system designed to meet NEMA MG 1 Section 31
- Ambient temperature 0° to 40°C
- Continuous duty

Additional Information

Current drawings available at www.bisongear.com

Wiring diagram pages 92-95

See pages 90-91 for additional accessories

107 Series 3-Phase Inverter Duty 230V

Part Number	Rated Speed RPM @ 6hz	Rated Speed RPM @ 60hz	Rated Speed RPM @ 90hz	Rated Torque in-lbs @ 6hz	Rated Torque In-lbs @ 60hz	Rated Torque In-lbs @ 90hz	Input HP	Gear Ratio	Amps	Shipping Wt.
017-107-0007	24	245	368	12	12	7	1/20	6.7	0.24	7.5
017-107-0013	12	127	191	23	23	14	1/20	12.9	0.24	7.5
017-107-0025	6.3	65	98	45	45	27	1/20	25.2	0.24	7.5
017-107-0049	3.3	33	50	84	84	53	1/20	49.0	0.24	7.5
017-107-0096	1.7	17	26	100**	100**	100**	1/20	95.5	0.24	7.5

247 Series 3-Phase Inverter Duty 230V

Part Number	Rated Speed RPM @ 6hz	Rated Speed RPM @ 60hz	Rated Speed RPM @ 90hz	Rated Torque in-lbs @ 6hz	Rated Torque In-lbs @ 60hz	Rated Torque In-lbs @ 90hz	Input HP	Gear Ratio	Amps	Shipping Wt.
017-247-0005	35	350	526	38	38	25	1/4	5.0	0.75	12
017-247-0011	16.5	165	248	80	80	53	1/4	10.6	0.75	12
017-247-0019	9.2	92	138	144	144	96	1/4	19.1	0.75	12
017-247-0028	6.2	62	93	215	215	148	1/4	28.1	0.75	12
017-247-0058	3.0	30	45	300**	300**	272**	1/4	58.3	0.75	12
017-247-1102	1.7	17	25	350**	350**	350**	1/4	102.4	0.75	12
017-247-0216	0.8	8.1	12	310**	310**	310**	1/4	215.6	0.75	12

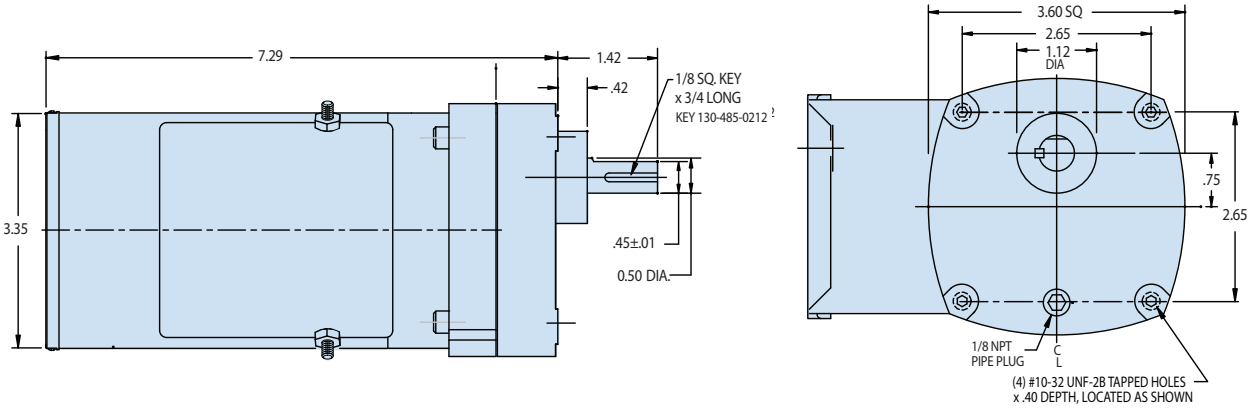
485 Series 3-Phase Inverter Duty 230V

Part Number	Rated Speed RPM @ 6hz	Rated Speed RPM @ 60hz	Rated Speed RPM @ 90hz	Rated Torque in-lbs @ 6hz	Rated Torque In-lbs @ 60hz	Rated Torque In-lbs @ 90hz	Input HP	Gear Ratio	Amps	Shipping Wt.
017-485-0006	29	291	437	91	91	61	1/2	5.9	1.60	43
017-485-0010	18	178	267	150	150	100	1/2	9.8	1.60	43
017-485-0020	9.0	90	135	296	296	187	1/2	19.4	1.60	43
017-485-0028	6.3	63	94	423	423	283	1/2	27.8	1.60	43
017-485-0060	3.0	30	45	818	818	545	1/2	59.1	1.60	43
017-485-0089	2.0	20	30	950**	950**	950**	1/2	88.8	1.60	43
017-485-0131	1.3	13	20	950**	950**	950**	1/2	130.8	1.60	43

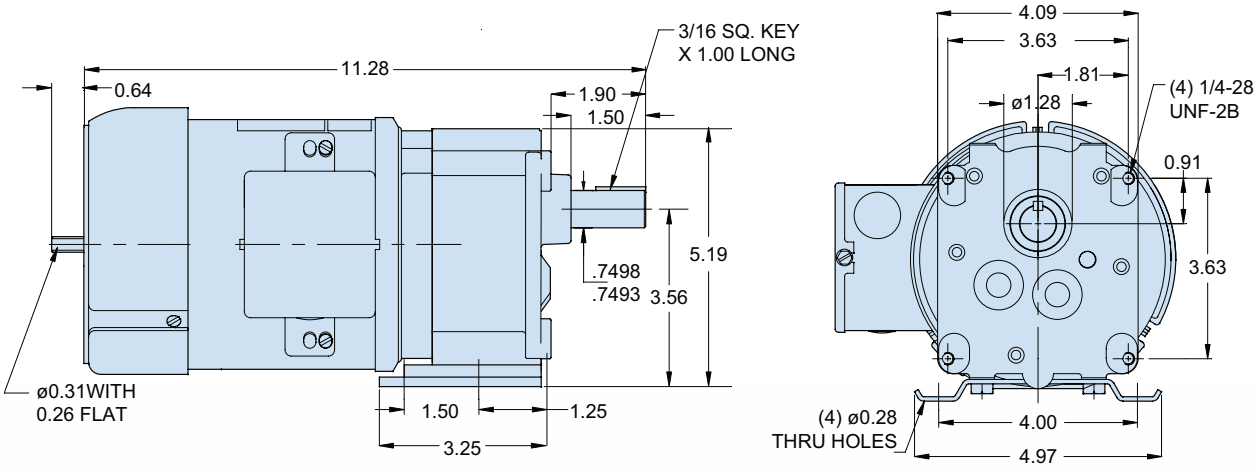
** Output torque is gear limited.

For 650 and 750 Series see pages 64-65

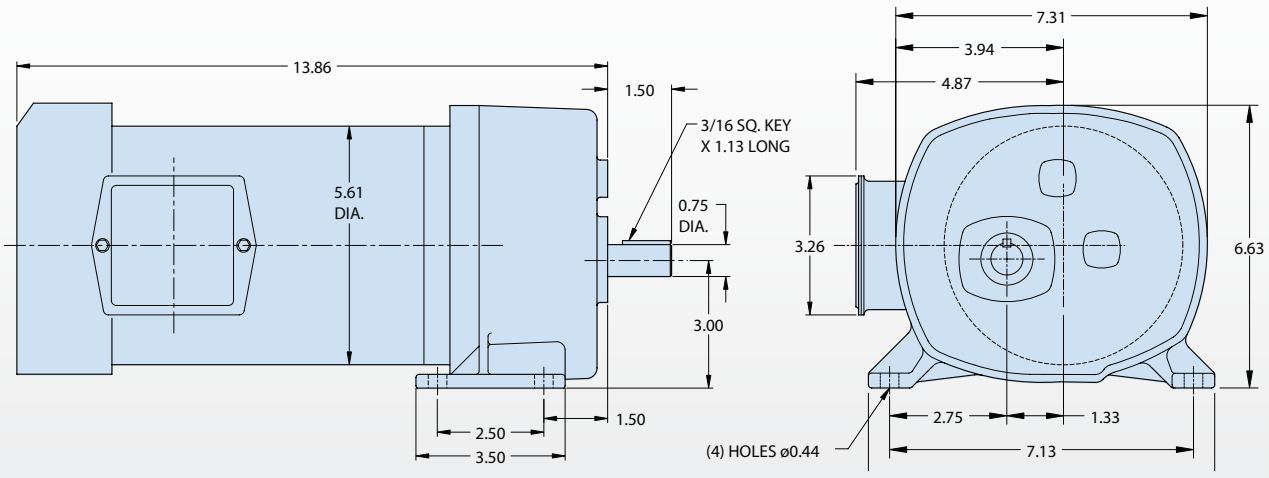
107 3-Phase Inverter Duty 230V



247 3-Phase Inverter Duty 230V



485 3-Phase Inverter Duty 230V



Inverter Duty AC Gearmotors (continued)

DESIGNED FOR ROBUSTICITY™

Specifications

Gearhead		Motor		Product Line Features
Gearing:	AGMA class 9 heat treated steel	Motor Type:	230V, 3 phase, 6-90 Hz	• Global safety recognition: UL, CUL
Geartrain:	Engineered to handle up to 200% shockloading	Rotation:	Reversible	• Insulation system designed to meet NEMA MG 1 Section 31
Housing:	Precision machined die cast aluminum	Bearings:	Double shielded ball bearing support	• Ambient temperature 0° to 40°C
Lubrication:	Lifetime oil bath	Insulation:	Class F (155°C)	• Continuous duty
Bearings:	Needle and thrust ball, or ball bearing	Enclosure:	TEFC	
Shafts:	Precision ground shaft seal diameters	Thermostat:	Signal type; closed	
Mounting:	All position			

Additional Information		
Current drawings available at www.bisongear.com	Wiring diagram pages 92-95	See pages 90-91 for additional accessories

650 Series 3-Phase Inverter Duty 230V

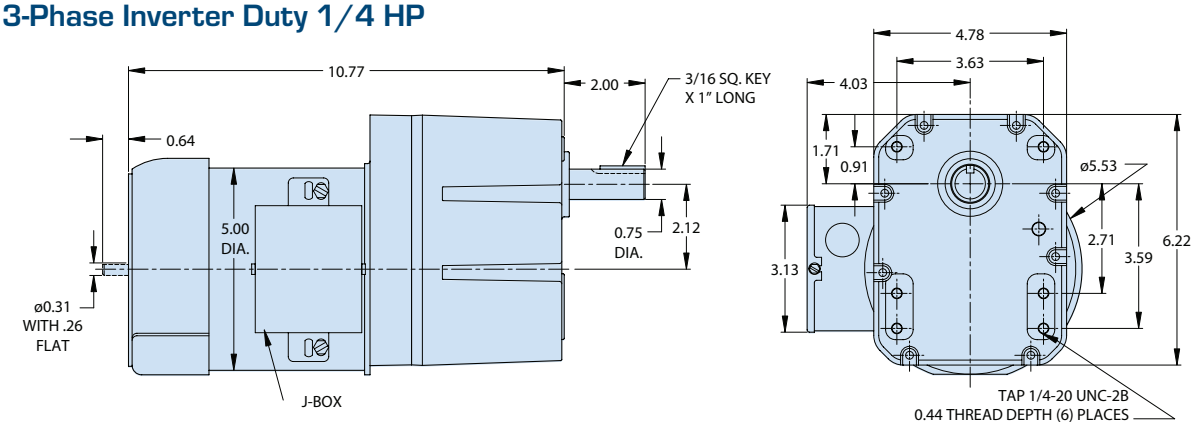
Part Number	Rated Speed RPM @ 6hz	Rated Speed RPM @ 60hz	Rated Speed RPM @ 90hz	Rated Torque in-lbs @ 6hz	Rated Torque In-lbs @ 60hz	Rated Torque In-lbs @ 90hz	Input HP	Gear Ratio	Amps	Shipping Wt.
017-650-0029	6.0	60	90	222	222	148	1/4	28.9	0.75	23
017-650-0070	2.5	25	38	490	490	327	1/4	69.7	0.75	23
017-650-0090	1.7	17	26	722**	722**	442	1/4	89.8	0.75	23
017-650-0214	0.8	7.9	12	650**	650**	650**	1/4	214.5	0.75	23
017-651-0028	6.3	63	95	423	423	282	1/2	27.6	1.60	29

750 Series 3-Phase Inverter Duty 230V

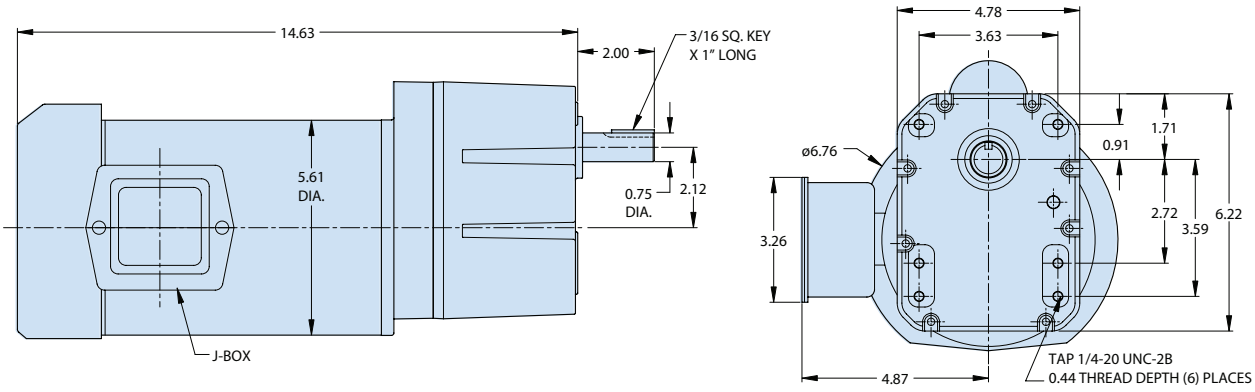
Part Number	Rated Speed RPM @ 6hz	Rated Speed RPM @ 60hz	Rated Speed RPM @ 90hz	Rated Torque in-lbs @ 6hz	Rated Torque In-lbs @ 60hz	Rated Torque In-lbs @ 90hz	Input HP	Gear Ratio	Amps	Shipping Wt.
With Mounting Bracket & Output Shaft										
027-756-4005	33	330	495	30	30	20	1/4	5.2	0.75	19.8
027-756-4010	16	160	240	58	58	39	1/4	10.3	0.75	19.8
027-756-4013	12.4	124	186	76	76	51	1/4	13.0	0.75	19.8
027-756-4020	8	80	120	108	108	72	1/4	20.5	0.75	19.8
027-756-4030	5.5	55	83	130	130	87	1/4	30.0	0.75	19.8
027-756-4045	3.8	38	57	120**	120**	80**	1/4	45.0	0.75	19.8
027-756-4060	2.8	28	42	100**	100**	67**	1/4	60.0	0.75	19.8
Hollow Shaft & Pilot Mount										
027-756-4405	33	330	495	30	30	20	1/4	5.2	0.75	16.8
027-756-4410	16	160	240	58	58	39	1/4	10.3	0.75	16.8
027-756-4413	12.4	124	186	76	76	51	1/4	13.0	0.75	16.8
027-756-4420	8	80	120	108	108	72	1/4	20.5	0.75	16.8
027-756-4430	5.5	55	83	130	130	87	1/4	30.0	0.75	16.8
027-756-4445	3.8	38	57	120**	120**	80**	1/4	45.0	0.75	16.8
027-756-4460	2.8	28	42	100**	100**	67**	1/4	60.0	0.75	16.8

** Output torque is gear limited.

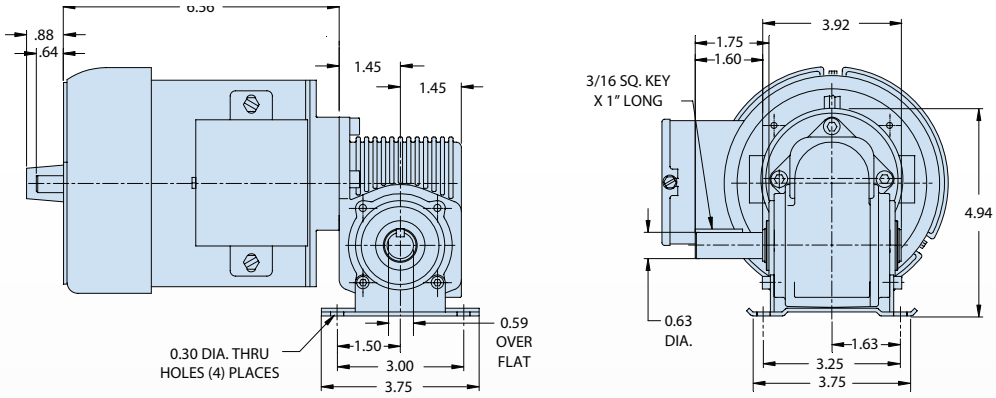
650 3-Phase Inverter Duty 1/4 HP



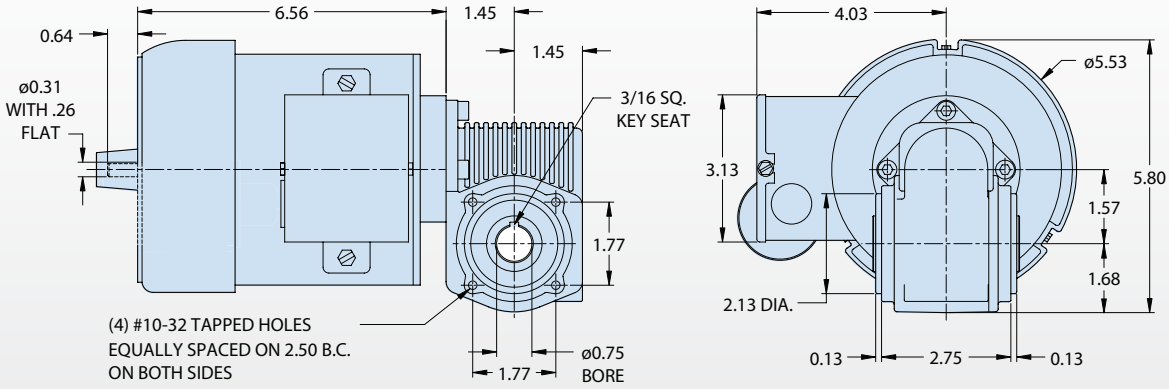
650 3-Phase Inverter Duty 1/2 HP



750 3-Phase Inverter Duty Standard Shaft 1/4 HP



750 3-Phase Inverter Duty Hollow Shaft 1/4 HP



562 Series Parallel Shaft AC or DC

UP TO 1100 IN-LBS CONTINUOUS

The 562 Series offers versatility and flexibility in a small package while delivering high torques. The 562 has ratios available from 27.9 to 1397 in 3 or 4 stages of gearing. In addition, the 562 can be shaft mounted utilizing the hollow output shaft which can reduce overall cost by eliminating couplings.

Specifications

Gearhead

Gearing:	AGMA class 9 heat treated steel 1st-stage helical, balance spur
Housing:	Precision machined die cast aluminum
Lubrication:	Grease
Bearings:	**Output shaft:** supported by ball bearings; **Intermediate gearing:** supported with needle bearings
Stages:	3 or 4 stages
Mounting:	Shaft mount, base mount, or face mount, any angle
Finish:	Unpainted

Motor

Motor Type:	PSC, PMDC
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class B minimum on AC, Class F typical on DC
Enclosure:	TENV
Finish:	Gloss black powdered coat

Features

- Standard hollow shaft or solid shaft insert out of either side of housing
- Terminal boxes or cordsets available

Shaft Options

Size:	**3/4" diameter:** hollow standard; **3/4" diameter or smaller:** double output; **1" diameter or smaller:** single output
Materials:	Carbon steel

Additional Information

For shaft detail see page 63

See pages 90-91 for additional accessories

Wiring diagram pages 92-95

Current drawings available at www.bisongear.com

562 Series PSC 115VAC

** Gear Limited (check website for updated information.)

Part Number	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	Amps	Hz	Shipping Wt.
016-562-1397	1.2	1100**	1/20	1397.1	4	0.59	60	12
016-562-0401	4.1	676	1/20	402.2	3	0.59	60	12
016-562-0285	5.8	478	1/20	284.2	3	0.59	60	12
016-562-0151	11	253	1/20	150.8	3	0.59	60	12
016-562-0121	14	204	1/20	121.4	3	0.59	60	12
016-562-0084	20	142	1/20	84.3	3	0.59	60	12
016-562-0043	38	72	1/20	43.0	3	0.59	60	12

562 Series 12VDC

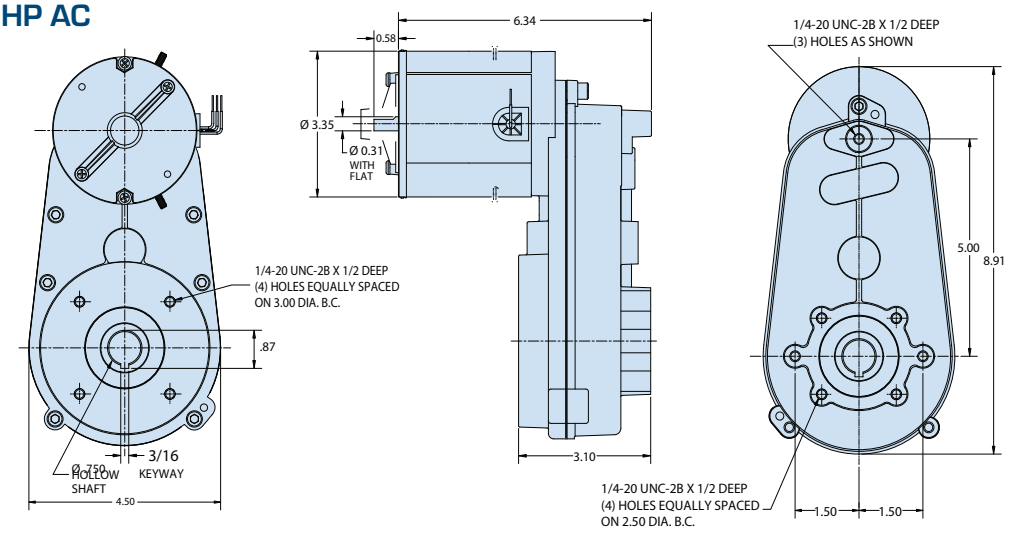
Part Number	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	Amps	Shipping Wt.	Brush
011-562-3397	1.3	1100**	1/20	1397.1	4	3.00	10	C
011-562-3401	4.5	620	1/20	402.2	3	4.73	10	C
011-562-3285	6.3	438	1/20	284.2	3	4.73	10	C
011-562-3151	12	232	1/20	150.8	3	4.73	10	C
011-562-3121	15	187	1/20	121.4	3	4.73	10	C
011-562-3084	21	130	1/20	84.3	3	4.73	10	C
011-562-3043	42	66	1/20	43.0	3	4.73	10	C
011-562-3261	6.9	1005	1/8	261.0	3	10.20	10	A
011-562-3184	9.8	709	1/8	184.1	3	10.20	10	A
011-562-3111	16	428	1/8	111.1	3	10.20	10	A
011-562-3079	23	303	1/8	78.7	3	10.20	10	A
011-562-3055	33	210	1/8	54.6	3	10.20	10	A
011-562-3028	65	107	1/8	27.9	3	10.20	10	A

562 Series 90VDC

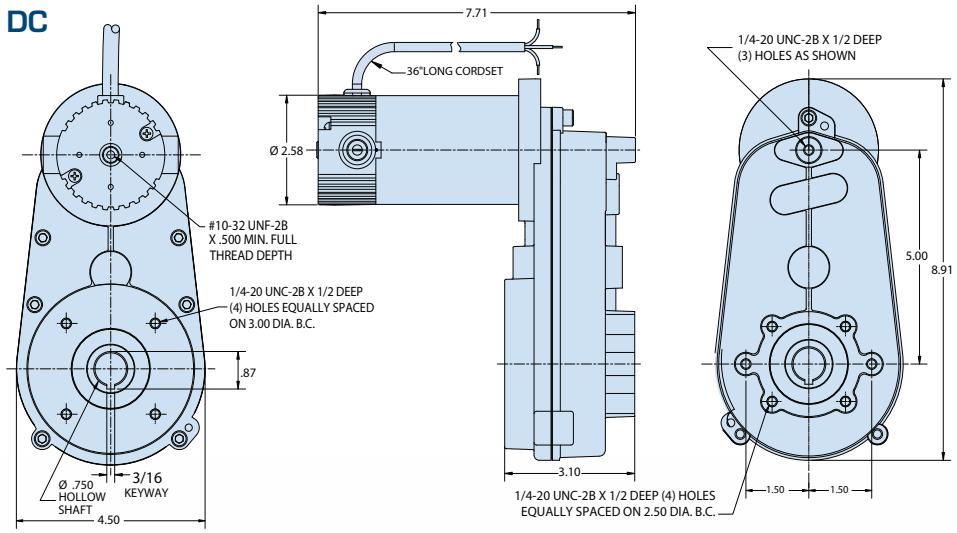
Part Number	Speed 90V (RPM)	Speed 130V (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	Amps	Shipping Wt.	Brush
011-562-1397	1.3	1.9	1100**	1/20	1397.1	4	0.50	10	B
011-562-0401	4.5	6.4	620	1/20	402.2	3	0.72	10	B
011-562-0285	6.3	9	438	1/20	284.2	3	0.72	10	B
011-562-0151	12	17	232	1/20	150.8	3	0.72	10	B
011-562-0121	15	21	187	1/20	121.4	3	0.72	10	B
011-562-0084	21	31	130	1/20	84.3	3	0.72	10	B
011-562-0043	42	60	66	1/20	43.0	3	0.72	10	B
011-562-2261	6.9	9.9	1005	1/8	261.0	3	1.41	10	D
011-562-2184	9.8	14	709	1/8	184.1	3	1.41	10	D
011-562-2111	16	23	428	1/8	111.1	3	1.41	10	D
011-562-2079	23	33	303	1/8	78.7	3	1.41	10	D
011-562-2055	33	47	210	1/8	54.6	3	1.41	10	D
011-562-2028	65	93	107	1/8	27.9	3	1.41	10	D

562 Series Parallel Shaft AC or DC

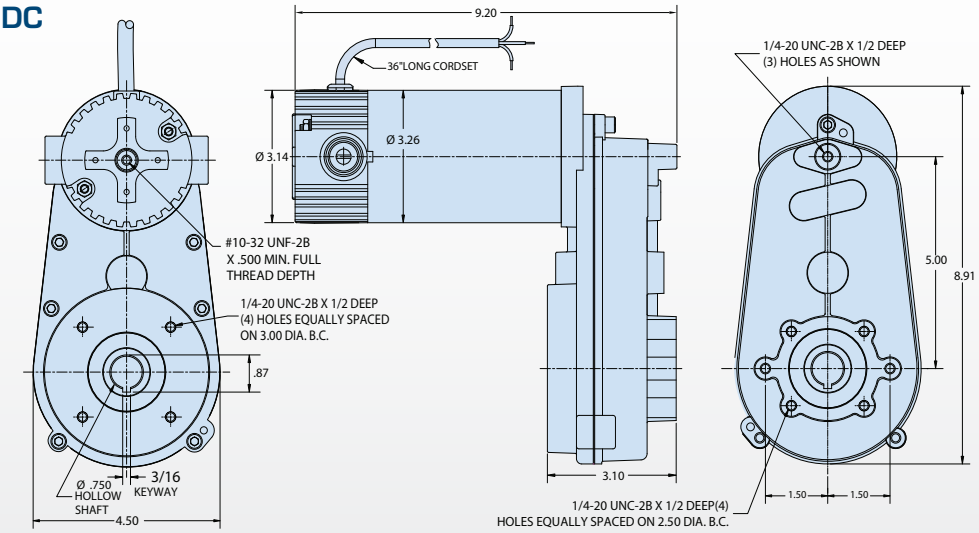
562 1/20 HP AC



562 1/20 HP DC



562 1/8 HP DC



762 Series Parallel Shaft AC

UP TO 2500 IN-LBS CONTINUOUS

The 762 Series hollow shaft offset AC gearmotors are available in single and three-phase from 1/20 to 1/2 HP with speeds to 1 rpm and 2500 in-lbs torque output.

Specifications

Gearhead

Gearing:	AGMA class 9 heat treated steel 1st-stage helical, balance spur
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath
Bearings:	**Output shaft:** supported by ball bearings; **Intermediate gearing:** supported with needle bearings
Mounting:	All positions

Motor

Motor Type:	PSC, Split Phase, 3-Phase Inverter Duty
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class B minimum
Finish:	All cast aluminum
Enclosure:	TENV for 1/20 HP TEFC for 1/4 and 1/2 HP

Optional Accessories

Output shaft
Part Number: P108-762-1250

Additional Information

Wiring diagram pages 92-95

Current drawings available at www.bisongear.com

762 Series PSC 115V

Part Number	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	Amps	Hz	Shipping Wt.
016-762-1645	1	2500	1/20	1644.9	4	0.6	60	28
016-762-1264	1.2	1822	1/20	1263.6	4	0.6	60	28
016-762-0835	1.8	1250	1/20	835.0	4	0.6	60	28
016-762-0736	2	1050	1/20	736.0	4	0.6	60	28
016-762-0418	3.5	625	1/20	418.0	4	0.6	60	28

762 Series PSC 115V/230V

Part Number	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	Amps	Hz	Shipping Wt.
016-762-0267	6	2020	1/4	267.7	4	2.35/1.25	60/50	32
016-762-0150	11	1175	1/4	152.2	3	2.35/1.25	60/50	32

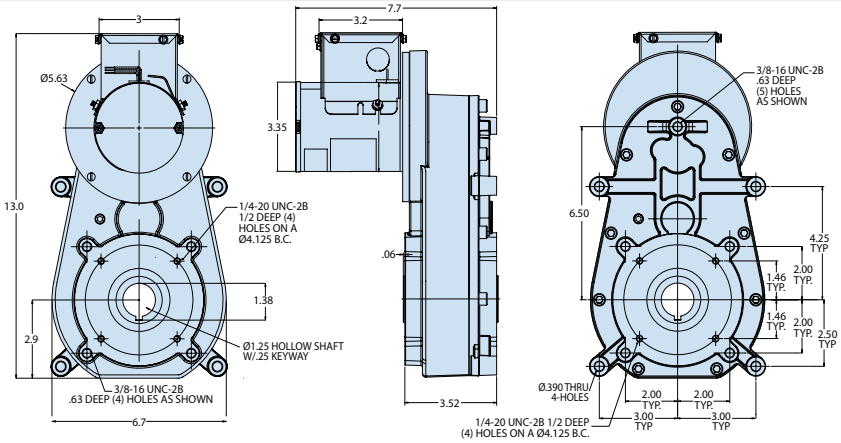
762 Series Split Phase 115V

Part Number	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	Amps	Hz	Shipping Wt.
014-762-0100	17	1776	1/2	99.4	3	7.9	60	34
014-762-0078	21	1375	1/2	78.5	3	7.9	60	34
014-762-0055	30	998	1/2	55.5	3	7.9	60	34
014-762-0028	60	498	1/2	27.9	3	7.9	60	34

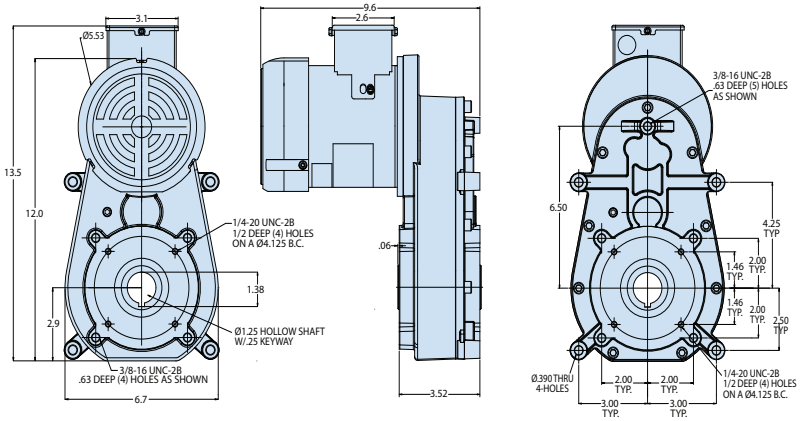
762 Series 3-Phase Inverter Duty 230V

Part Number	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	Amps	Hz	Shipping Wt.
017-762-1100	17	1529	1/2	99.4	3	1.6	60	34
017-762-1078	21	1207	1/2	78.5	3	1.6	60	34
017-762-1055	30	855	1/2	55.5	3	1.6	60	34
017-762-1028	60	430	1/2	27.9	3	1.6	60	34

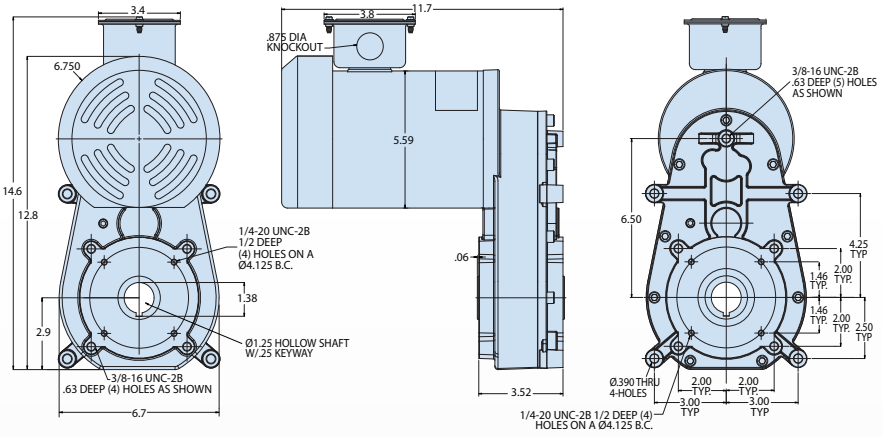
762 1/20 HP 115V
1 Phase 1-4 RPM



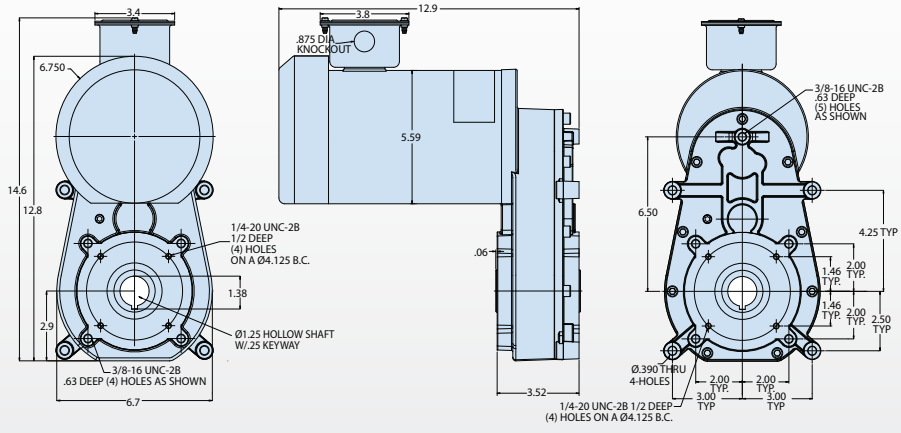
762 1/4 HP 115V/230V
1 Phase 6-11 RPM

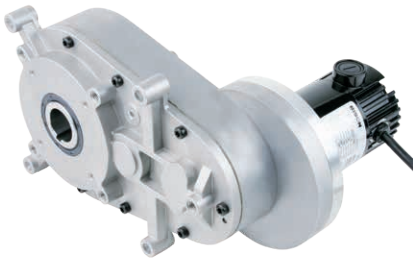


762 1/2 HP 115V
1 Phase 17-60 RPM



762 1/2 HP 230V
3 Phase Inverter Duty
17-60 RPM





762 Series Parallel Shaft DC

UP TO 1805 IN-LBS

The 762 Series hollow shaft offset DC gearmotors are available in single phase 90V from 1/20 to 1/2 HP with speeds to 1.2 rpm and 1805 in-lbs torque output.

Specifications

Gearhead

Gearing:	AGMA class 9 heat treated steel 1st-stage helical, balance spur
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath
Bearings:	**Output shaft:** supported by ball bearings; **Intermediate gearing:** supported with needle bearings
Mounting:	All positions

Motor

Motor Type:	PMDC
Rotation:	Reversible
Bearings:	Ball
Insulation:	Class F
Finish:	Cast aluminum
Enclosure:	TENV

Optional Accesories

- Shaft mount encoder on 1/20 and 1/4 HP
- Accessory shaft
- Junction box

Additional Information

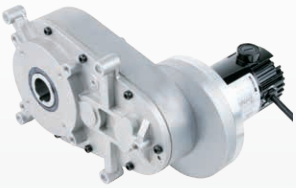
See pages 90-91 for additional accessories

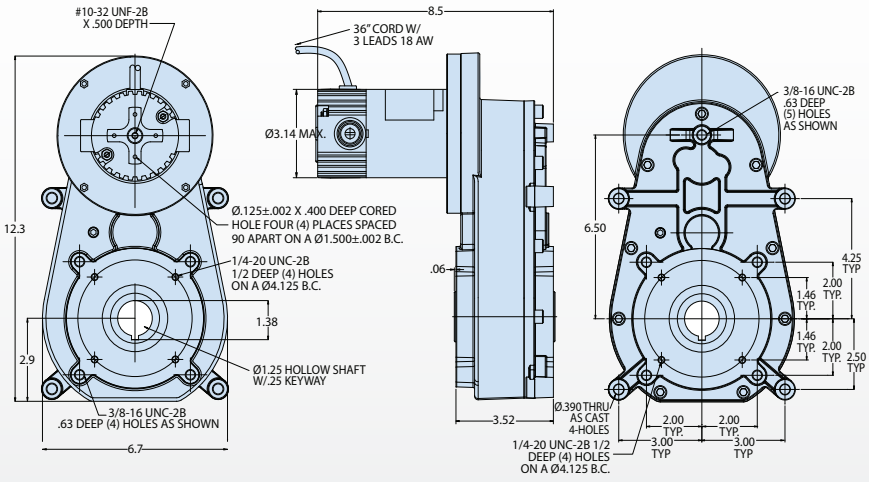
Current drawings available at www.bisongear.com

762 Series PMDC 90V

Part Number	Speed (RPM)	Torque (in-lbs)	Input HP	Gear Ratio	Stages	Amps	Shipping Wt.	Brush
011-762-2264	1.2	1335	1/20	1263.6	4	0.6	28	D
011-762-2736	2.2	755	1/20	736.0	4	0.6	28	D
011-762-2418	4	515	1/20	418.0	4	0.6	28	D
011-762-3267	7	1805	1/4	267.7	4	2.6	28	D
011-762-3150	12	1075	1/4	152.2	3	2.6	28	D
011-762-4100	18	1330	1/2	99.4	3	5.0	38	E
011-762-4078	23	1050	1/2	78.5	3	5.0	38	E
011-762-4055	32	775	1/2	55.5	3	5.0	38	E
011-762-4028	66	427	1/2	27.9	3	5.0	38	E

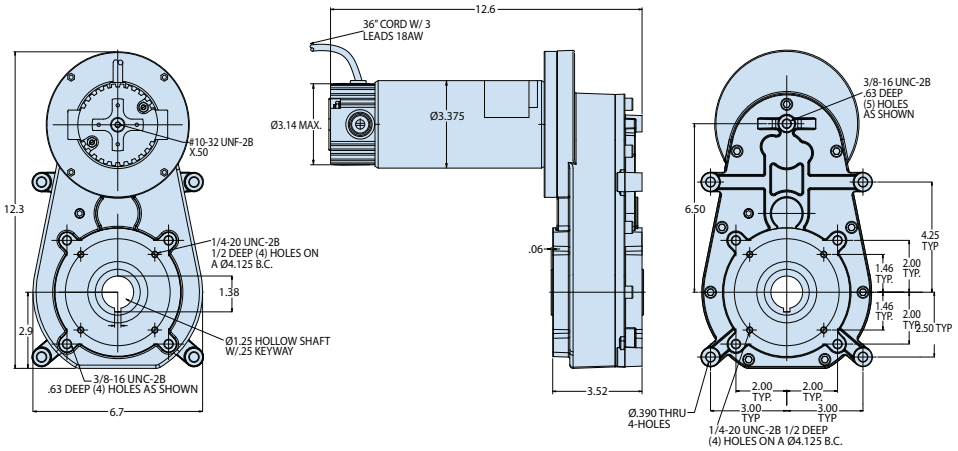
762 1/20 HP 1-4 RPM



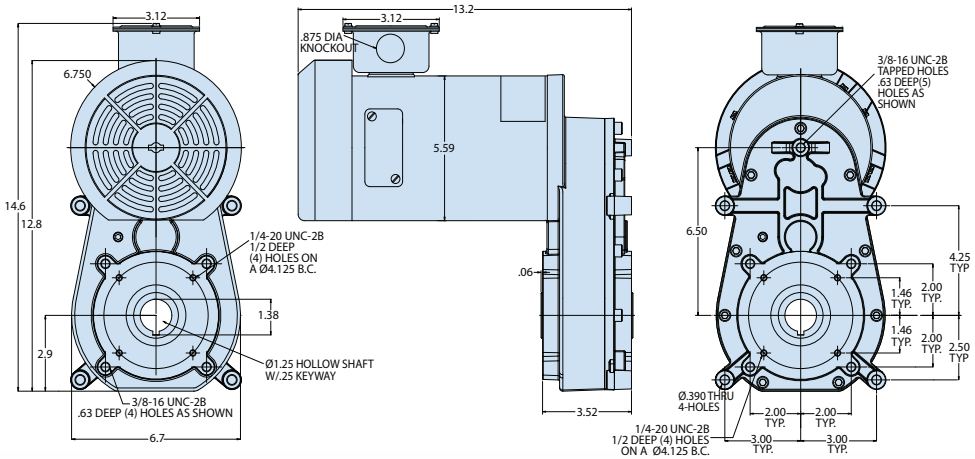


762 Series Parallel Shaft DC

762 1/4 HP
7-12 RPM

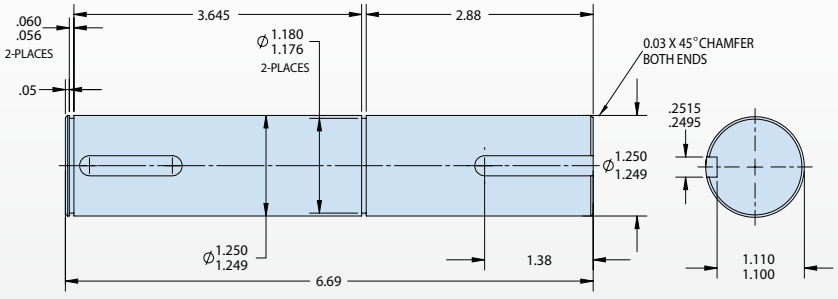


762 1/2 HP
18-65 RPM



762 Output Shaft

P108-762-1250 *(Includes Keys and Retaining Rings)*



250 Series Parallel Shaft Reducers

UP TO 295 IN-LBS

Capable of adapting to a number of input motors, these versatile reducers can handle a wide range of applications. Available to handle a shaft input and a NEMA 42C flange input.

Specifications

250Z & 250CZ

Gearing:	Hardened steel, AGMA Class 9
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and gasketed
Bearings:	Ball, needle and thrust ball
Shafts:	Hardened steel
Mounting:	Face or base, any angle
Weight:	Shaft: 4.5 lbs. 42C: 5 lbs.
Input Features:	Input shaft or 42 CZ motor

Additional Information

Current drawings available at www.bisongear.com

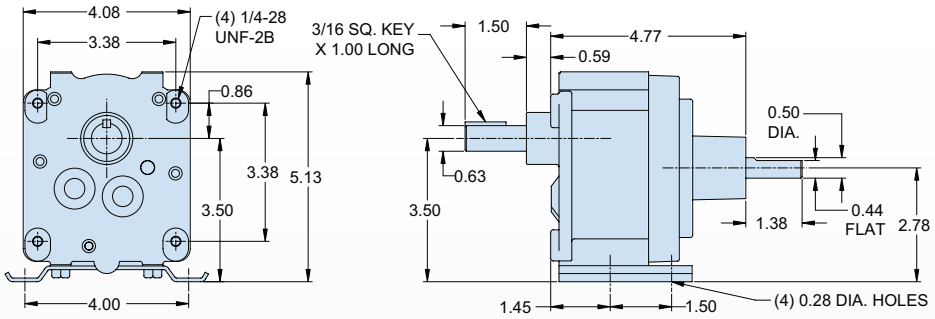
See pages 90-91 for additional accessories

250Z & 250CZ Series Parallel Shaft Reducers

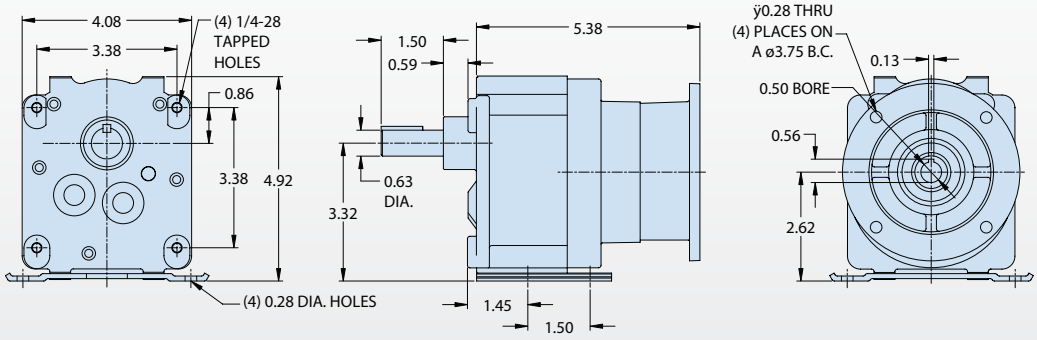
Part Number	Input	Ratio	Stages	Output Speed (RPM)***	Torque (in-lbs.) at listed HP 1/40HP	1/10HP	1/8HP	1/6HP	1/4HP	1/3HP	MAX Torque (in lbs.)	OHL*	Shipping Wt.
030-255-0133	Shaft	133.3	3	13	112	277**					277	390	5.5
030-256-0133	42C	133.3	3	13	112	277**					277	390	6.25
030-255-0095	Shaft	95.0	3	18	80	283**					283	335	5.5
030-256-0095	42C	95.0	3	18	80	283**					283	335	6.25
030-255-0051	Shaft	50.8	3	34	43	167	209**				209	270	5.5
030-256-0051	42C	50.8	3	34	43	167	209**				209	270	6.25
030-255-0036	Shaft	35.8	3	48	30	119	148	200	295**		295	210	5.5
030-256-0036	42C	35.8	3	48	30	119	148	200	295**		295	210	6.25
030-255-0029	Shaft	28.1	2	60	25	97	121	162	242**		242	230	5.5
030-256-0029	42C	28.1	2	60	25	97	121	162	242**		242	230	6.25
030-255-0023	Shaft	22.7	2	76	20	76	96	128	190**		190	220	5.5
030-256-0023	42C	22.7	2	76	20	76	96	128	190**		190	220	6.25
030-255-0019	Shaft	19.1	2	90	16	65	81	108	161	215	226	190	5.5
030-256-0019	42C	19.1	2	90	16	65	81	108	161	215	226	190	6.25
030-255-0013	Shaft	12.7	2	136	11	43	53	71	107	142	176	170	5.5
030-256-0013	42C	12.7	2	136	11	43	53	71	107	142	176	170	6.25

* Maximum overhung load on center of output shaft ** Output torque is gear limited ***RPM based on 1725 input

250Z-Shaft Input



250CZ-Nema 42C Input



881 Series Parallel Shaft Reducers

UP TO 1195 IN-LBS

Specifications

881	
Gearing:	Hardened steel helical and spur AGMA Class 9
Housing:	Precision machined die cast aluminum
Lubrication:	Lifetime oil bath, sealed and gasketed
Bearings:	Ball and needle
Shafts:	Hardened steel
Mounting:	Face or base, any angle; 56C flange input Mounting plates available
Footplate Option:	P125-880-0003

Additional Information

Current drawings available at www.bisongear.com

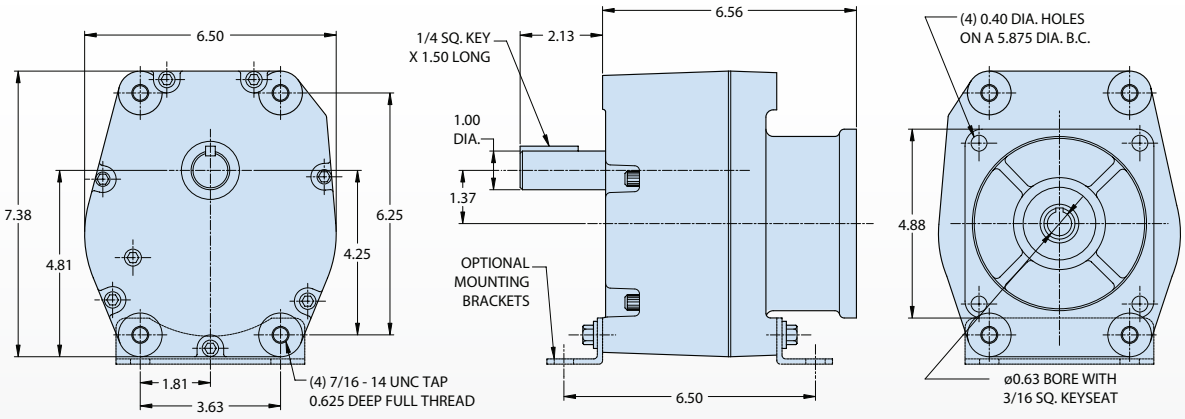
See pages 90-91 for additional accessories

881 Series Parallel Shaft Reducers

Part Number	Ratio	Stages	Output Speed (RPM)***	Torque (in-lbs.) at listed HP 1/4HP	1/3HP	1/2HP	3/4HP	1HP	1/2HP	MAX Torque (in lbs.)	OHL*	Shipping Wt.
060-881-2143	142.9	3	12	992**						992	1383	16.5
060-881-2079	79.0	3	22	630	840	1195**				1195	1165	16.5
060-881-2053	53.9	3	33	420	560	845	1100**			1100	942	16.5
060-881-2041	41.1	3	42	330	440	660	990			1139	858	16.5
060-881-2029	27.8	3	60	223	295	447	670	894		1139	838	16.5
060-881-2018	17.8	2	97	149	199	299	448	598	802**	802	680	16.5
060-881-2012	11.8	2	146	99	132	199	298	397	596**	596	573	16.5
060-881-2007	6.8	2	253	57	76	115	172	229	344**	344	506	16.5
060-881-2004	3.8	2	457	32	42	63	95	127	190**	190	425	16.5

* Maximum overhung load on center of output shaft.
** Output torque is gear limited.
*** RPM based on 1725 input

881 Reducer



Multi-Tech Reducers

REDUCERS UP TO 350 IN-LBS

Add your own stepper or servomotor to our NEMA gearboxes. Highly efficient - helical-spur geartrains transmit 96% of the available power per stage, leading the industry. Low backlash ratings - less than 60 arc-minutes, create the ideal gear reducer for applications such as process conveyors, pumps, and dispensers. Shock load capability 200% - is standard in the Multi-Tech product offering, as it is in all of Bison's products. Gloss black powder coat finish - provides the durability needed for demanding environments. Grease lubricated for all position mounting.

Specifications

185 & 385 Multi-Tech Reducers

Gearing:	Hardened steel, AGMA Class 9
Housing:	Precision machined die cast aluminum
Lubrication:	Grease filled, sealed and gasketed
Bearings:	Needle and thrust ball
Shafts:	Hardened steel
Mounting:	Face or base, any angle
Input Features:	• 1/4" diameter, for NEMA 23 mounting • 3/8" or 1/2" diameter, for NEMA 34 mounting input speed • 3000 RPM maximum input speed

Optional Features

- Footplate
  - 185 series
  - Part number: P125-100-9998
  - 385 series
  - Part number: P125-287-0200

Additional Information

See pages 90-91 for additional accessories

Current drawings available at www.bisongear.com

185 NEMA 23 Input

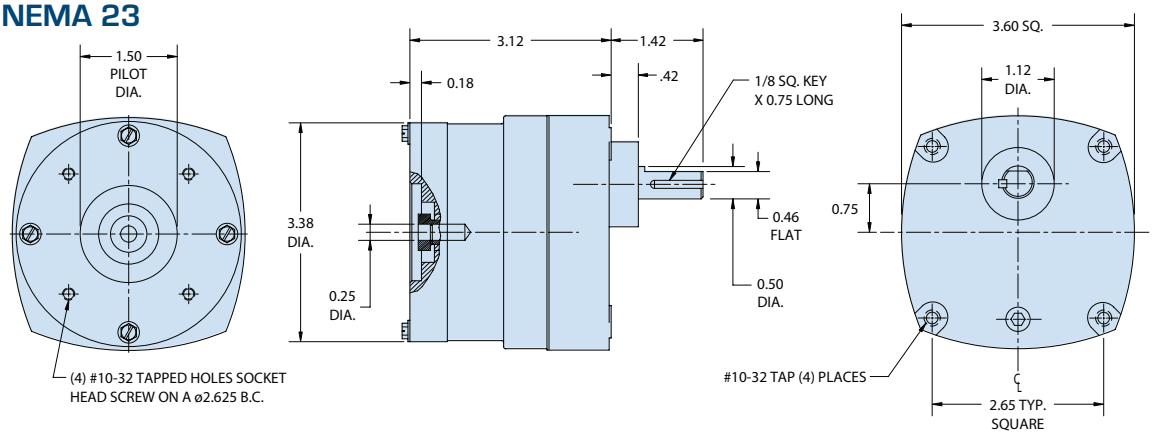
Part Number	Ratio	Rated Torque In-Lbs	Rated Torque N-m	Radial Load lb	Radial Load kg	Axial Load lb	Axial Load kg	Inertia oz-in-sec2	Inertia kg-m2	Backlash arc-min
060-185-0003	3.0065	20	2.26	200	90.9	25	11.4	4X10-4	6X10-6	60
060-185-0005	4.9573	32	3.62	200	90.9	25	11.4	9X10-5	6X10-7	60
060-185-0007	6.6667	45	5	200	90.9	25	11.4	7X10-5	5X10-7	60
060-185-0013	12.9411	90	10.16	200	90.9	25	11.4	5X10-5	4X10-7	60
060-185-0025	25.2381	90	10.16	200	90.9	25	11.4	4X10-5	3X10-7	60
060-185-0049	48.9916	150**	16.95	130	59.1	25	11.4	4X10-5	3X10-7	60
060-185-0096	95.5442	150**	16.95	150	68.2	25	11.4	3X10-5	4X10-7	60

385 NEMA 34 Input

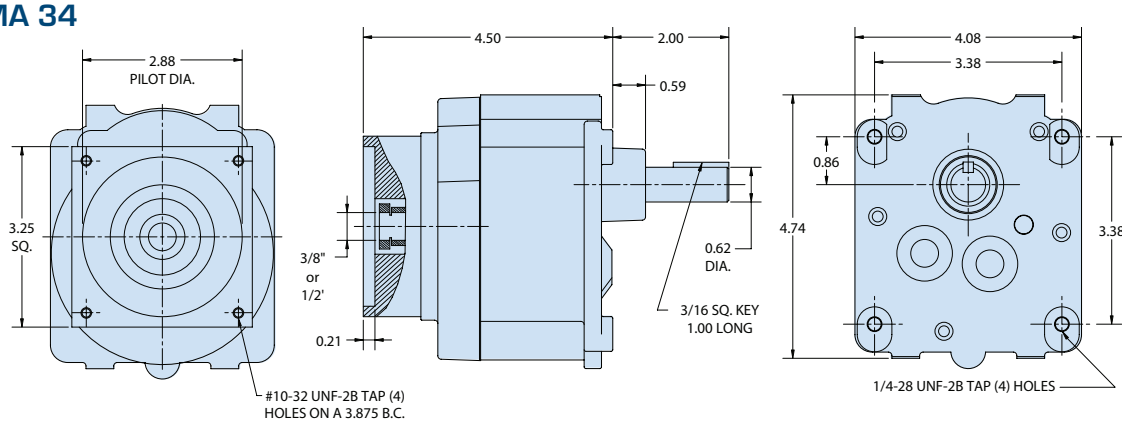
Part Number	Input	Ratio	Rated Torque In-Lbs	Rated Torque N-m	Radial Load lb	Radial Load kg	Axial Load lb	Axial Load kg	Inertia oz-in-sec2	Inertia kg-m2	Backlash arc-min
060-385-0003	3/8" Input Shaft	3.0625	88	9.94	170	77.3	40	18.2	1X10-3	9X10-6	60
060-385-0005	3/8" Input Shaft	4.5208	130	14.69	170	77.3	40	18.2	1X10-3	8X10-6	60
060-385-0011	3/8" Input Shaft	10.8889	300**	34	200	90.9	40	18.2	8X10-4	6X10-6	60
060-385-0015	3/8" Input Shaft	15.3013	300**	34	220	100	40	18.2	7X10-4	5X10-6	60
060-385-0021	3/8" Input Shaft	20.7958	300**	34	230	104.5	40	18.2	7X10-4	5X10-6	60
060-385-0030	3/8" Input Shaft	29.8324	300**	34	250	113.6	40	18.2	7X10-4	5X10-6	60
060-385-0050	3/8" Input Shaft	50.0889	350**	40	250	113.6	40	18.2	6X10-4	5X10-6	60
060-385-1003	1/2" Input Shaft	3.0625	88	9.94	170	77.3	40	18.2	1X10-3	9X10-6	60
060-385-1005	1/2" Input Shaft	4.5208	130	14.69	170	77.3	40	18.2	1X10-3	8X10-6	60
060-385-1011	1/2" Input Shaft	10.8889	300**	34	200	90.9	40	18.2	8X10-4	6X10-6	60
060-385-1015	1/2" Input Shaft	15.3013	300**	34	220	100	40	18.2	7X10-4	5X10-6	60
060-385-1021	1/2" Input Shaft	20.7958	300**	34	230	104.5	40	18.2	7X10-4	5X10-6	60
060-385-1030	1/2" Input Shaft	29.8324	300**	34	250	113.6	40	18.2	7X10-4	5X10-6	60
060-385-1050	1/2" Input Shaft	50.0889	350**	40	250	113.6	40	18.2	6X10-4	5X10-6	60

** Gear limited. Visit www.bisongear.com for more details.

185 NEMA 23



385 NEMA 34



Superior Seals

DID YOU KNOW?

Since most Bison gearboxes are oil lubricated for life, we understand the importance of precision ground seal areas. Bison shafts are hardened prior to grind in order to minimize wear on the seal journal. After heat treat, shafts are plunge ground on an automated grinding wheel, maintaining tight tolerances on grind diameter, lead, surface finish, and roundness. This superior seal grind coupled with spring loaded lip seals provides dependable, leak-free performance and the flexibility to mount all Bison gearmotors in any orientation.

Perfection DRIVEN

1-800-AT-BISON

ROBUSTICITY

Motor Mounted Speed Control

1/8 HP, 90 VDC, 2.5 AMPS, FIELD INSTALLED

Designed to be easily field mounted on Bison PMDC motors, the speed control is mounted within an aluminum extrusion for superior heat dissipation. A simple knob provides a convenient on-off switch. Three adjustable potentiometers provide settings for minimum RPM, maximum RPM, and current limit. A pre-wired three foot long cord with plug is provided for use with 115V, 60 Hz.

TightDrive™

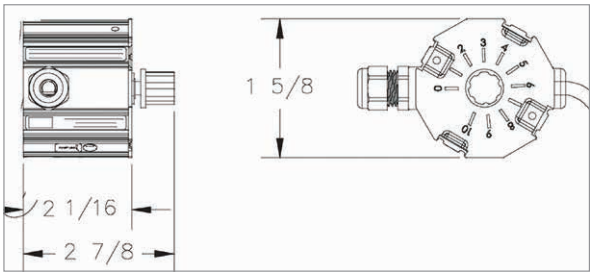
- **Simple Mounting and Assembly.** Allows the drive to start working for you in the field as quickly as possible
- **Easy Operation.** Speed is controlled with a simple on/off potentiometer in conjunction with current limit, min. speed, and max. speed settings
- **All Metal Enclosure.** Durable aluminum housing with steel cover plates disperses heat more efficiently
- **Includes Power Cord with Plug.** Three foot power cord is included with a NEMA 5-15P plug for use with 115VAC 60Hz
- **More Consistent Speed Under All Loads.** SCR circuitry provides much more consistent speed throughout the motor's rated torque
- **Specifications.** Up to 2.5 AMPS (1/8 HP @ 90VDC)

TightDrive Motor Mounted Speed Control

Part Number	Input Voltage	Output Voltage	Max Current	Max Output Power	Enclosure Rating	Reversible?	Form Factor	UL / CUL	CE	ROHS
170-113-0003	115 Volt, Single Phase, 60 Hz	90 Volt, Direct Current	2.5 Amps	1/6 HP, 124 Watt	IP 30	Non-Reversible	1.37	Pending	Yes	Yes

Operational Specifications	
Input Voltage @ 50/60 Hz	115 VAC
Maximum Output Voltage	90VDC
Maximum Continuous Duty HP	1/8

Feature Specifications	
Speed Range	20:1
On/Off Switch	Yes



SCR Drives

SCR DC Chassis / NEMA 4X

Bison's SCR speed controls are dual voltage drives that can control speed or torque. When torque mode is selected, the functions of the speed and torque pots change. The external potentiometer sets the torque reference, the on-board torque pot sets maximum speed and the on-board Max Speed pot sets maximum torque.

- Accel / Decel Range 0.5 to 17 seconds
- User adjustable calibration pots: IR compensation, min speed, max speed, torque, acceleration and deceleration.
- Diagnostics: LEDs for power and current limit status
- Stopping Modes: coast to minimum speed or to stop with selectable N.O. or N.C. inhibit contacts. Decelerate to minimum speed via the pot circuit. Braking on enclosed reversing models.
- Spade and screw terminals: easy to use spade terminals on chassis; screw terminals on enclosed units.
- Flexible inhibit: Select with jumper pins the preferred inhibit functionality.

Dual Voltage SCR Speed Control

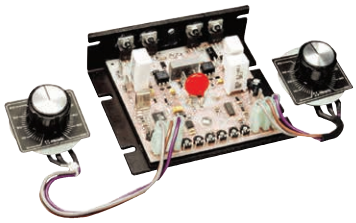
Part Number	HP Rating 230VAC	Output Amps (DC)	Configuration
170-103-0002	1/10-1/4	1.5	Chassis
170-103-0010	1/4-2	10.0*	Chassis
170-143-0002	1/10-1/4	1.5	NEMA 4X
170-143-0010	1/4-2	10.0*	NEMA 4X

*Heatsink #170-990-0100 required above 5 amp DC

Dual Voltage SCR Speed Controls	
Input Voltage	115/230VAC +/- 10%, 60/50Hz, single phase
Output Voltage	0-90 or 0-180 VDC
Form Factor (AC amps/DC Amps)	1.37

Dual SCR Chassis

The Dual SCR drive provides the power of two drives in one! Now with one DC drive, you can control two different DC motors either independently or in a ratio mode. In independent mode, each side of the drive can be controlled differently with different trimmer pot settings and different speeds. In speed ratio mode, one speed potentiometer sets the main speed while the other one determines the ratio of the speeds between the motors. In this mode, the drive replaces two single drives and possibly a separate master/follower card resulting in extreme cost and panel space savings!



- Ability to control two different DC motors at once: Jumper selectable independent or speed ratio mode.
- Industry Standard footprint for chassis mount
- User adjustable calibration pots: Two each of minimum speed, maximum speed, IR compensation, current limit and acceleration / deceleration.
- Stopping Modes: Decelerate or coast (jumper selectable) using inhibit function (N.O.)
- Speed or Torque Mode: Jumper selectable. Speed mode regulates speed and limits current. Torque mode regulates current and limits speed.
- Microprocessor based: Can custom program the trimmer pot ranges and inhibit for OEM applications.
- Spade and screw terminals: easy to use spade terminals on chassis.
- Panel Space Saving: Replace two DC drives with one compact package.

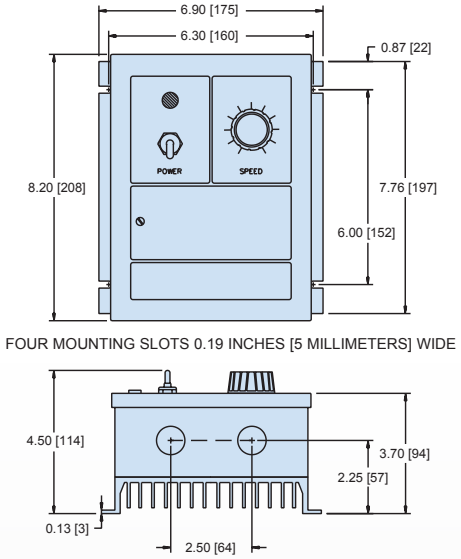
Chassis SCR Speed Control for Two Motors

Part Number	HP Rating	Max Total HP	Output Amps (DC) each side	Max TotalAmps of Both Sides	Configuration
170-101-0212	1/15-1/2 (per side)	5/8	10.0*	11.5*	Chassis

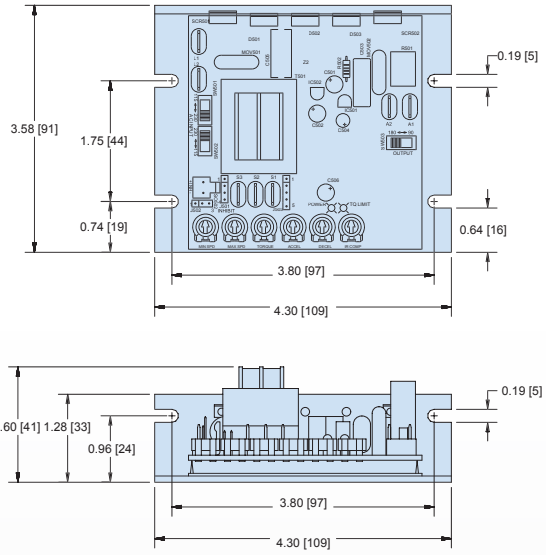
*Heatsink #170-990-0100 required whenever one side is more than 5 amps or the total of both sides is more than 6.5 amps

Chassis SCR Speed Control for Two Motors	
Input Voltage	115VAC, 60Hz, single phase
Output Voltage	0-90 VDC
Form Factor (AC amps/DC Amps)	1.37

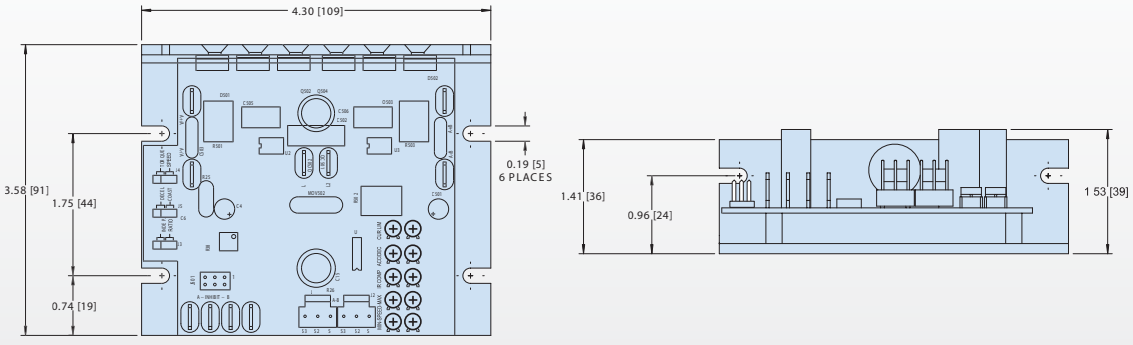
SCR NEMA 4X



SCR DC Chassis



Dual SCR Chassis



PWM Drives

PWM DC NEMA 4X

Bison's filtered pulse-width-modulated (PWM) variable speed DC drives provide exceptional performance. This series of drives, housed within a NEMA 4X enclosure, guarantees protection from washdown, corrosive material, windblown dust, incidental contact with enclosed equipment, or unwanted external solid objects.

- AC input power is dual voltage dual frequency 115/230VAC +/- 10%, 60/50Hz, single phase
- Output voltage is 0-130 or 0-240 VDC
- Form factor, (AC amps / DC Amps) at rated output power is 1.05
- NEMA 4X enclosure: Protects against external corrosive material and incidental contact.
- User adjustable calibration pots: IR compensation, min speed, max speed, current limit, acceleration and deceleration.
- Diagnostics: LED for power on front of enclosure
- Stopping modes: Coast to a stop with Power On/Off switch or via inhibit terminals (N.O.).
- Speed range and regulation: 1% regulation over 100:1 speed range.

Dual Voltage PWM Speed Controls NEMA 4X

Part Number	HP Rating 120 VAC	HP Rating 240 VAC	Field Supply (VCD)	Output Amps (DC)	Configuration
170-243-0003	1/20-1/3	1/8-1/2	50/100/200 (1 Amp)	3.0	NEMA 4X

Dual Voltage SCR Speed Controls NEMA 4X	
Input Voltage	115/230VAC +/- 10%, 60/50Hz, single phase
Output Voltage	0-130 or 0-240 VDC
Form Factor (AC amps / DC amps)	1.05

PWM DC CHASSIS

Bison's filtered pulse-width-modulated (PWM) variable speed DC drives output nearly pure DC power to brush type motors and feature the same footmount as the SCR controls.

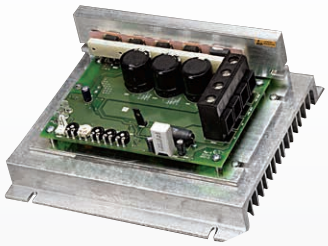
- User adjustable calibration pots: IR compensation, min speed, max speed, current limit, acceleration and deceleration.
- Diagnostics: LEDs for power and current limit status
- Cage Clamp Terminal Block: Quick and easy wire terminations reduce installation time!
- Spade and screw terminals: easy to use spade terminals on chassis
- 16.5 kHz switching frequency: A high switching frequency means a quite motor.
- Speed range and regulation: 1% regulation over 100:1 speed range.

Dual Voltage PWM Speed Control Chassis Style

Part Number	HP Rating 120 VAC	HP Rating 240 VAC	Output Amps (DC)	Configuration
170-203-0002	1/20 to 1/4	1/10 to 1/2	2.0	Chassis
170-203-0005	1/4 to 1/2	1/2 to 1	5.0	Chassis

Dual Voltage SCR Speed Controls Chassis Style	
Input Voltage	120/240VAC +/- 10%, 60/50Hz, single phase
Output Voltage	0-130 or 0-240 VDC
Form Factor (AC amps / DC amps)	1.05

Low Voltage PWM DC



Bison's DC in/DC out PWM chassis drives include inhibit for remote starting and stopping, a power LED, and trimmer pot adjustments for minimum speed, maximum speed, acceleration, IR comp, and current limit. All trimmer pots are non-interactive making calibration quick and easy.

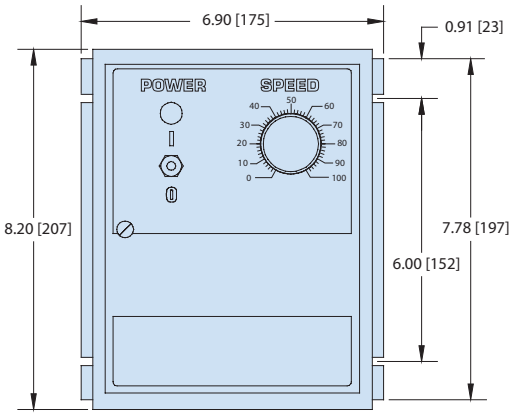
- Speed range and regulation: 1% regulation over 80:1 speed range
- User adjustable calibration pots: IR compensation, min speed, max speed, current limit and acceleration.
- Diagnostics: LED for power
- Stopping Modes: The user can coast the motor to a stop (N.O.) using inhibit circuitry.
- Spade and screw terminal block: easy to use
- DC Input Voltage Range: Accepts DC inputs and outputs DC voltage up to 95% of the input with near perfect form factor.
- One Drive for two motor voltages: On board jumper to select 12 or 24V motor.
- Ideal for battery powered equipment: Maintains variable speed control even as battery voltage declines. Extends total running time of equipment.
- Additional features include extruded chassis and non-interactive t rimmer pots.

DC to DC PMW Controller for 12V & 24V Motor

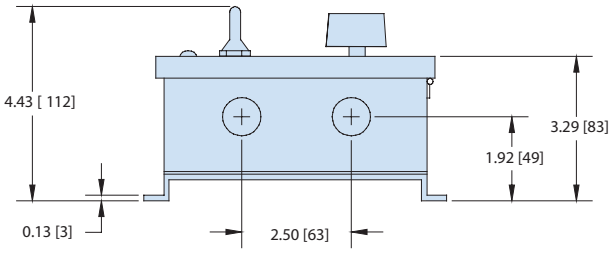
Part Number	HP Rating	Output Amps (DC)	Configuration
170-205-0016	1/4 to 1/2	16.0	Chassis

DC to DC PWM Controller for 12 & 24V Motor	
Input Voltage	10 to 32 VDC
Output Voltage	Up to 95% of input voltage
Form Factor (AC amps / DC amps)	1.01

PWM DC NEMA 4X



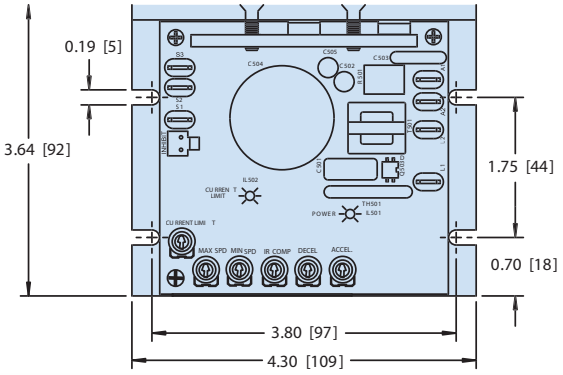
FOUR MOUNTING SLOTS 0.19 [5] WIDE

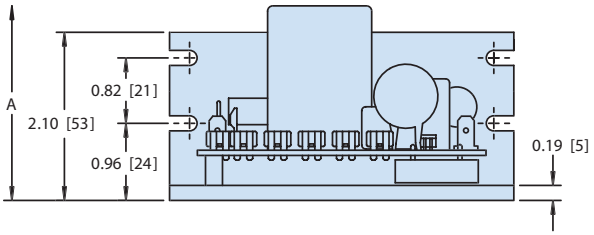


TWO 0.88 [22] KNOCKOUTS

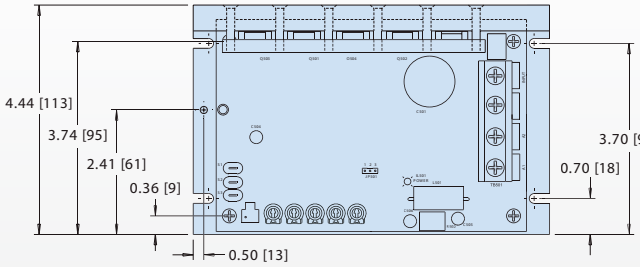
ALL DIMENSIONS IN INCHES [MILLIMETERS]

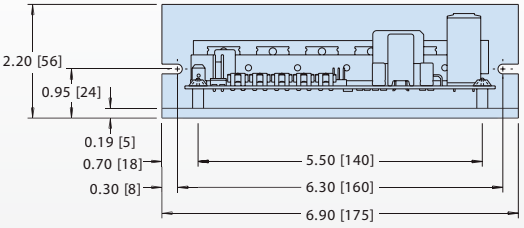
PWM DC Chassis





Low Voltage PWM DC

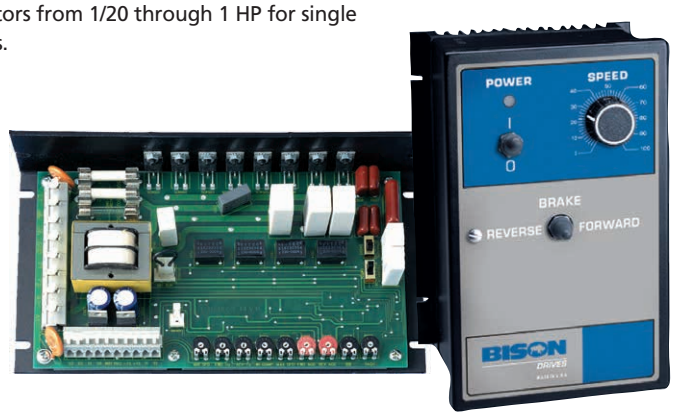




Regenerative Drives

SCR DC Regen CHASSIS / NEMA 4X

Bison's Regen Drives consist of full-wave, four-quadrant regenerative SCR controls to provide smooth motoring and braking torque for brush-type DC motors. Control motors from 1/20 through 1 HP for single or bi-directional variable speed, without using mechanical contactors.



- Speed Range and Regulation: 1% regulation over 50:1 speed range. 1% regulation over 60:1 speed range with the addition of a tachometer for feedback.
- 4 Quadrant Reversing: Regenerative / 4 quadrant drives have the ability to perform quick, contactorless, reversing on-the-fly.
- Stopping Modes: User can decelerate (N.O.), regeneratively brake (N.O.) or coast the motor to a stop (N.O.). User can also decelerate to minimum speed (N.O.).
- Cage Clamp terminal block: Quick and easy wire terminations.
- User adjustable calibration pots: IR compensation, forward torque, reverse torque, tachometer, min speed, max speed, forward acceleration, reverse acceleration and deadband.
- Additional Features: Dual voltage AC input, switch selectable armature or tachometer feedback mode and field supply for shunt wound motors.
- On board fusing: No need to add external fusing for protection of your motor or drive.

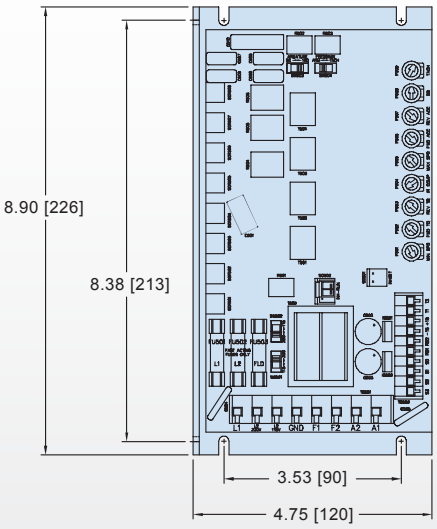
SCR Four Quadrant Regenerative Drives

Part Number	Horsepower	Output	Configuration
170-303-0003	1/20-1/8	3.0	Chassis
170-303-0010	1/8-1	10.0*	Chassis
170-343-0003	1/20-1/8	3.0	NEMA 4X
170-343-0010	1/8-1	10.0	NEMA 4X

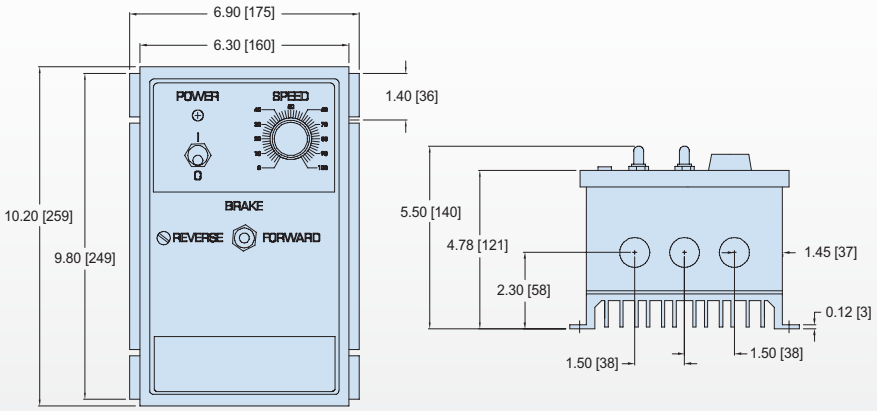
* Heatsink #170-990-0300 required above 7Amps DC.

SCR Four Quadrant Regnerative Drives	
Input Voltage	115/230VAC +/- 10%, 60/50Hz, single phase
Output Voltage	0-90 or 0-180 VDC
Form Factor (AC amps / DC amps)	1.37
Field Supply Voltage	50/100/200

Chassis



NEMA 4X



Variable Frequency Drives

Isolated PWM AC NEMA 4X

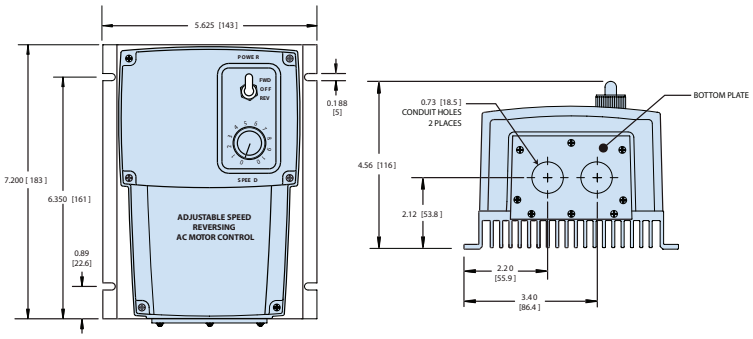
Bison's variable frequency Drives feature a lightweight, plastic NEMA 4X enclosure, an isolated front end, minimum speed adjustment potentiometer (pot), output voltage doubling, DC injection braking, and automatic or manual restart when power is restored.

- NEMA 4x enclosure: Compact, easy to mount, black plastic enclosure.
- Isolated inputs: Accepts floating or grounded signals 0-10VDC, 0-5VDC or 4-20 mA
- User adjustable calibration pots: Minimum speed, maximum speed, current limit, acceleration, deceleration, slip compensation, boost, zero set, brake current, and brake time.
- Diagnostic LED's: Power, fault, and torque limit
- Stopping modes: DC injection braking or coast (jumper schedule)
- Adjustable 4 to 16 kHz switching frequency; Quiet motor operation or reduced electrical noise.
- Quick Disconnect terminal block: Allows up to 200% torque to overcome intermittent peak loads.
- Additional features: Auto or manual restart after low input voltage fault (jumper selectable), line fusing, enable and direction inputs.

Variable Frequency AC Chassis Drive

Part Number	Input Voltage	HP Rating	Output Current	Output Frequency	Configuration
170-543-0004	115 or 230V Single Phase	1/6 to 1	4.0A	0-120 Hz	NEMA 4X

PWM NEMA 4X



PWM AC Chassis

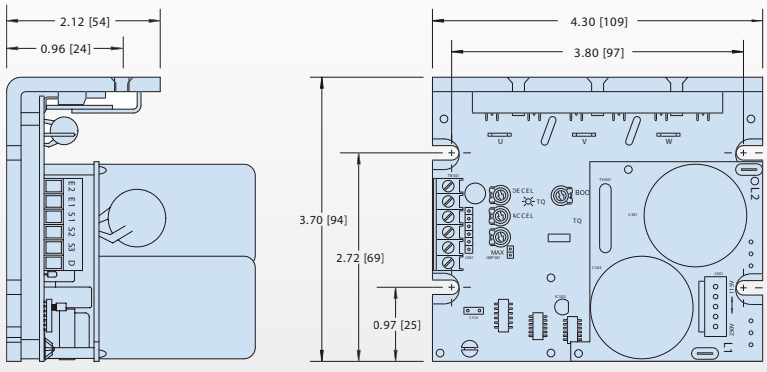
The cost-conscious and compact chassis design of Bison VFD Chassis Drives maintain the industry standard for mounting hole location and the coded LEDs make it easy to visually determine the drive status. With it's compact design and application flexibility, this is an excellent choice for most AC applications.

- Compact Size: 4.3" x 3.7" Easy to mount in small spaces with industry standard mounting hole pattern.
- Easy to Calibrate & set up: On board trimmer pot adjustments for boost, maximum speed, acceleration, deceleration.
- Torque "foldback' feature: Allows up to 200% torque for short periods to overcome intermittent peak loads, then reduces the torque to a preset safe level.
- 16kHz switching frequency, with option to change between 4 and 16 kHz in the field: A high switching frequency results in quiet motor operation. Adjustments to a lower frequency if desired can be done in the field.

Variable Frequency AC Chassis Drive

Part Number	Input Voltage	HP Rating	Output Current	Output Frequency	Configuration
170-503-0002	115 or 230V Single Phase	1/6 to 1/2	2.4A	0-120 Hz	Chassis

PWM Chassis



Accessories

Bison Shaft Mount Encoder

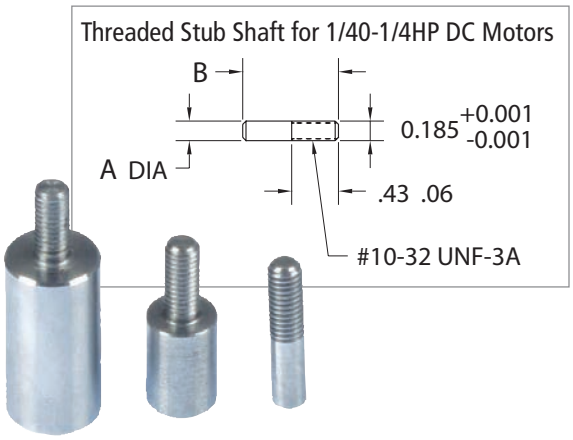
Part Number	Voltage	Pulses	Channels	Weight
P208-010-0012	5	12	1	1
P208-010-0030	5	30	1	1
P208-010-0100	5	100	1	1
P208-010-2030	5	30	2	1

All mounting hardware and stub shaft included

Armature Shaft Extension Kit

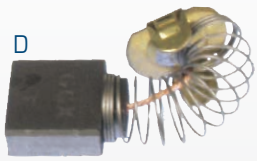
Part Number	A	B	Weight
108-100-0316	.184/.186"	0.88	1
108-100-0416	.246/.248"	0.88	1
108-100-0516	.309/.311"	1.03	1
108-100-0616	.371/.373"	1.03	1
108-100-0716	.434/.436"	1.43	1
108-100-0816	.496/.498"	1.43	1

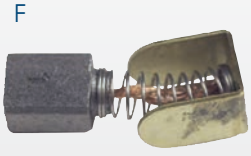
Threaded stub shafts fit Bison's PMDC Gearmotors under 1/2 HP.

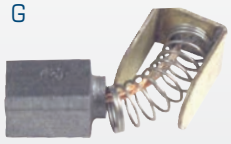


Replacement Brushes

Part Number	Key
P158-200-2001	A
P158-200-2600	B
P158-200-2615	C
P158-200-9000	D
P158-406-0008	E
P158-200-2624	F
P158-200-2690	G
P158-060-2000	H







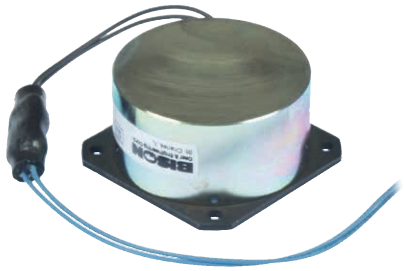
Power-Off Brakes*

Part Number	Voltage	Bolt Circle	Bore	Static Holding Torque (In-Lbs.)	Weight
P133-100-0003	115V	2.88	5/16"	3	2
P133-540-0007	115V	2.88	5/16"	7	2
P133-550-0018	115V	2.88	5/16"	18	2

All mounting hardware included

* Power off brakes should be used with the AC gearmotors only. Does not mount to 1/4 HP-480 Series motors, 1/2 HP or 1 HP motors. Call Bison at 1-800-AT-BISON to talk to an application engineer today.

The holding torque listed is specified at the motor shaft. Motor shaft holding torque can be calculated by dividing the gear ratio into the static output shaft torque, less 5% per stage of gearing.



Shaft Bushing 5/8" to 7/8"

Part Number	Weight
134-158-0200	1

Mounting Base 100 Series

Part Number	Gearcase	Shipping Wt.
P125-100-9998	100	1

Mounting Base 650 Series

Part Number	Gearcase	Shipping Wt
P125-650-5000	650	1

Mounting Base 746 Series

Part Number	Gearcase	Shipping Wt
P125-746-0500	746	1

Mounting Base 881 Series

Part Number	Gearcase	Shipping Wt
P125-880-0003	881	1

P125-100-9998 shown.
See website for additional mounting boxes.

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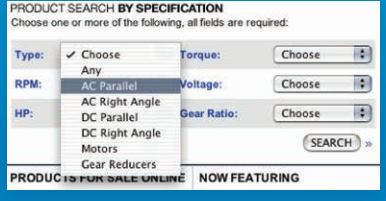
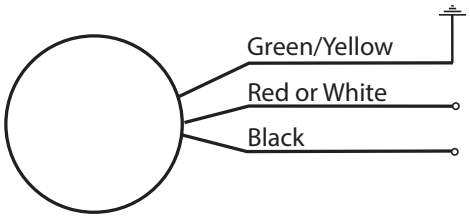


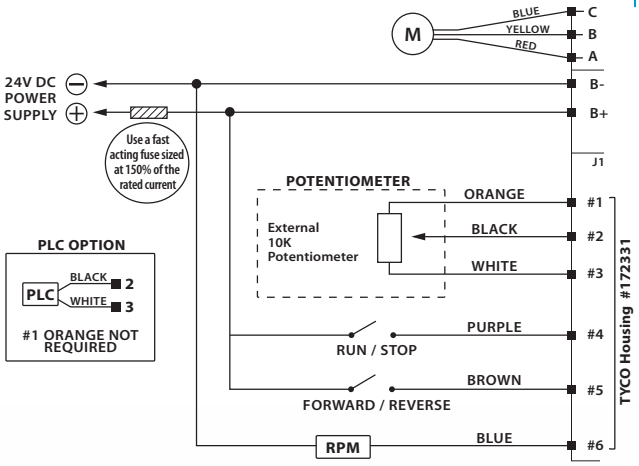
Wiring Diagrams

PMDC Motors

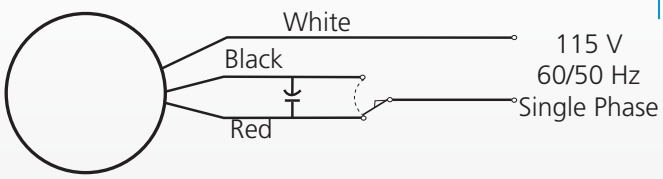


To Reverse, interchange Red and Black leads.
Note: Some motors have white and black leads.

AUTONOmotor™

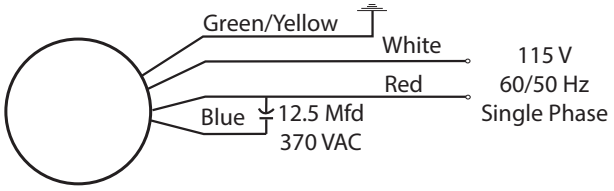


100 Series PSC 115 V 1/80 and 1/20 HP



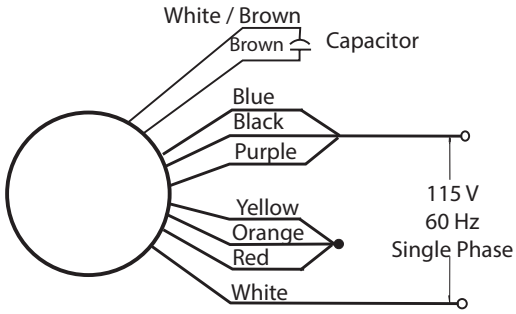
To Reverse direction interchange red and black leads.

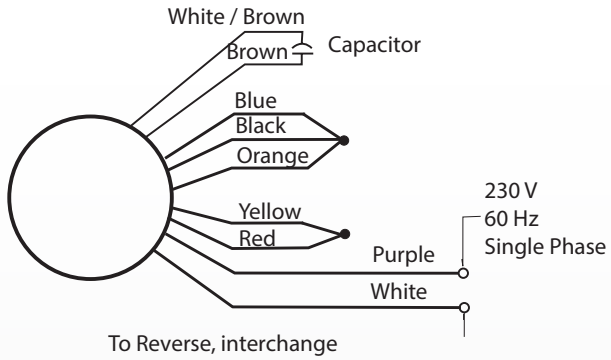
175 Series PSC 115 V 1/10 HP



To reverse direction interchange red and blue leads.

175 Series PSC 115/230 V 1/20 HP

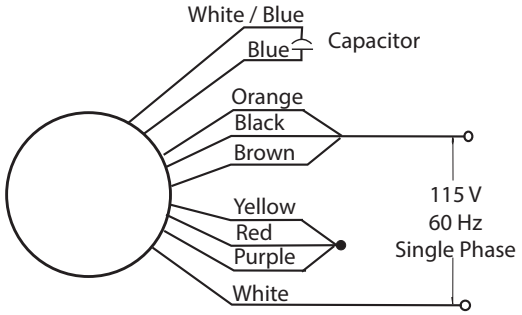


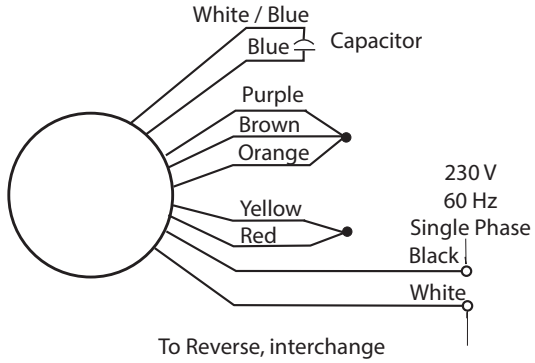


To Reverse, interchange red and blue leads.

Note: Direction of rotation has not been listed by gearmotor part number. Rotation of direction varies on the number of stages within the specific geartrain.

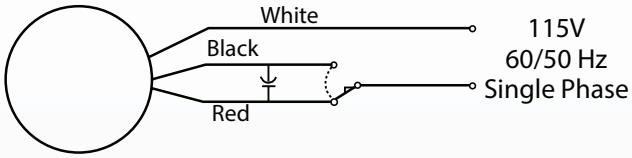
200 and 746 Series PSC 115/230 V 1/15 HP





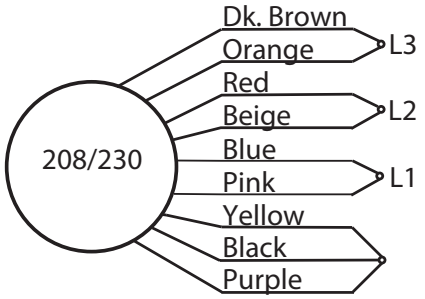
To Reverse, interchange red and brown leads.

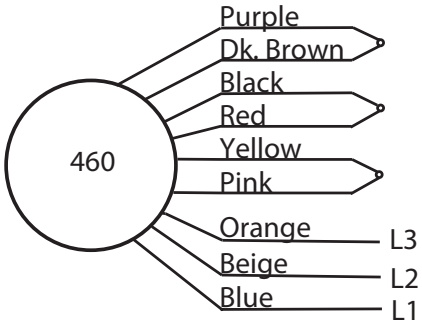
100mm 200 and 756 Series



To reverse direction interchange red and black leads.

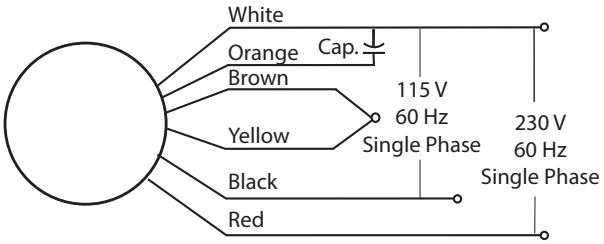
Three Phase 482 Series





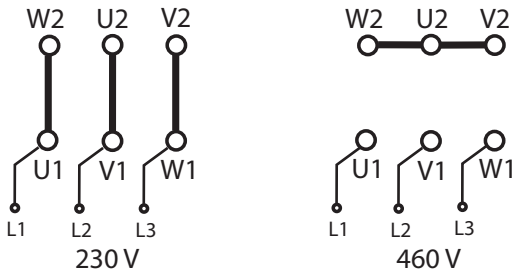
Wiring Diagrams

246 and 650 Series PSC
115/230 V 1/6 HP

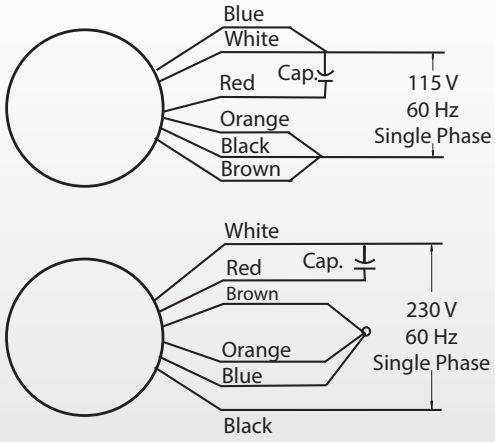


To reverse, interchange yellow and orange leads.
Insulate Red lead for 115 V configuration.
Insulate black lead for 230V configuration.

Three Phase IEC Motors and 246 Series
230-460 V Constant Speed

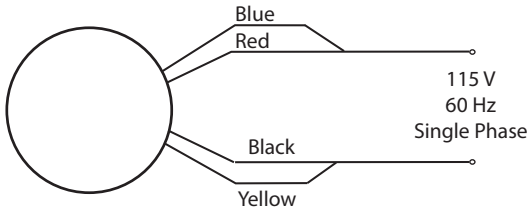


246 and 756 Series PSC
115/230 V 1/4 HP



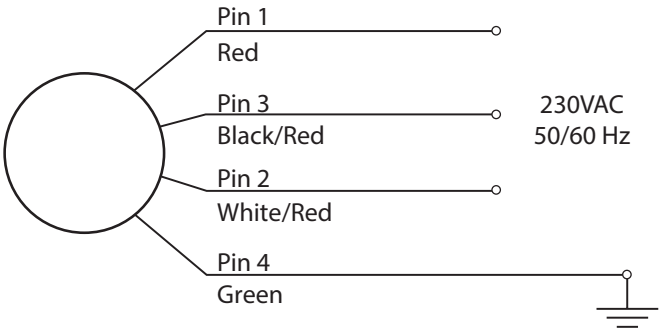
To Reverse, interchange red and brown leads.

480 Series Split Phase
115 V AC 1/4, 1/3 and 1/2 HP



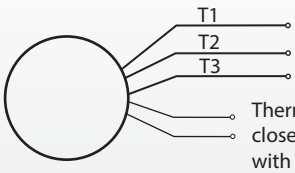
To Reverse, interchange blue and yellow leads.

SANIMotor™



To Reverse, interchange any two motor leads

Inverter Duty Three Phase 230V
6 to 90 Hz

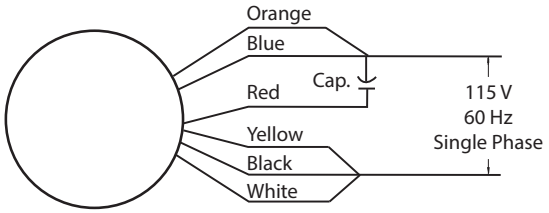


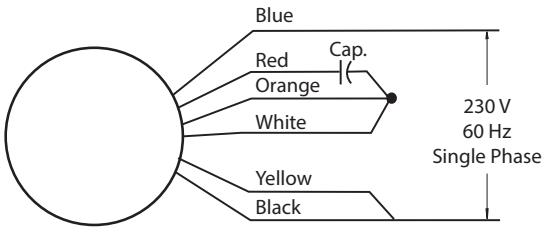
To Reverse, interchange red and brown leads.

Thermostat signal wires. Contacts normally closed. May be used to protect motor when us with a drive that can accomodate a thermal proteciton signal from the motor.

Note: Direction of rotation has not been listed by gearmotor part number. Rotation of direction varies on the number of stages within the specific geartrain.

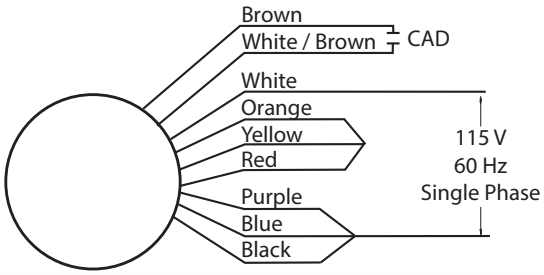
650 Series PSC
115/230 V 1/2 HP

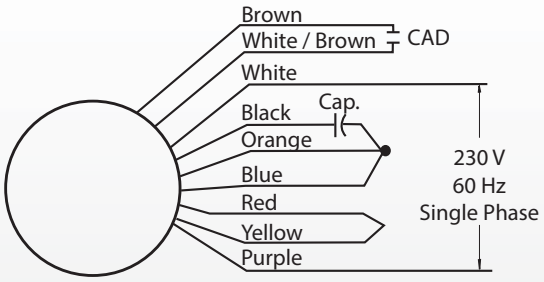




To Reverse, interchange red and black leads.

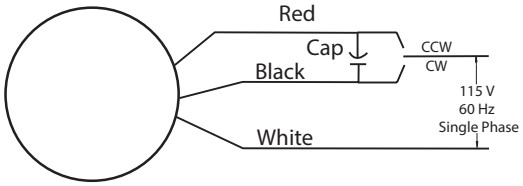
650 Series PSC
115/230 V 1/58 HP





To reverse, interchange blue and red leads.

756 Series PSC
115 V 1/8 HP



To reverse, interchange red and black leads.

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Engineering Fundamentals

Determining Torque

Selecting the proper gearmotor is a matter of matching output speed and torque to an application's needs. RPM is determined by the driven machine's requirements and should be known. That leaves torque to be determined.

For machines where the load is primarily friction, running torque and starting torque are approximately the same. Here's an easy method of determining starting torque.

1. Attach a pulley securely to the shaft of the machine the gearmotor is required to drive.
2. Wrap a cord securely around the pulley and fasten the end to a spring scale.
3. Pull on the scale noting the weight at the time the shaft begins to turn. Do this several times and average the reading.
4. Then multiply the reading in pounds or ounces, depending upon the scale used, by the radius of the pulley in inches. The resulting figure will be torque either in inch-pounds or inch-ounces. Metric measurements, of course, may be used as well.

   T (torque) = F (force) X R (radius)

Gearmotor Load Factors

After determining output and speed requirements, the performance life of a gearmotor must be considered. Performance life is a function of three key factors: duty cycle, shock load, and overhung load.

Bison's published ratings are for continuous duty. Therefore, they may be increased by the factor indicated when applications call for less than continuous loads.

Usage*	Factor
Continuous duty – 8 to 10 hours per day.	1.00
Intermittent loads – several minutes per hour.	1.25
Occasional loads – 15 to 30 minutes per day with a maximum of two minutes at any one time.	1.50

*As defined by AGMA. Bison gearmotors and reducers can generally run continuously for up to 24 hours a day without rating loss. Specific applications should be reviewed by Bison application engineers.

Overhung Load

A pinion, sprocket, pulley or crank mounted to a gearmotor output shaft exerts a force perpendicular to it. This force is termed overhung load (OHL) and care should be taken to make sure the OHL does not exceed the maximum load shown on the appropriate Performance / Ratings Specifications. Note that ratings shown on charts are for loads applied perpendicular to the output shaft at the center of key, or flat on the output shaft.

The formula for overhung load

$$\text{OHL (pounds)} = \frac{\textbf{T} \text{ (torque in-lbs.)} \times \textbf{K} \text{ (load factor)}}{\textbf{R} \text{ (radius of pulley or sprocket)}}$$

OHL load factors

Drive Type	"K" Factor
Chain and Sprocket	1.00
Gear	1.25
V-Belt	1.50

Shock Load

Some applications subject gearmotors to unusually heavy, erratically occurring loads. Cubes in an ice cube dispenser, for example, occasionally clump together. A large tree root may require a greater than average torque from a power rodder. Heavy objects that may be accidentally dropped on a conveyor can also be a problem. Under these circumstances, the extent of the "shock" and its duration become important considerations when determining proper gearmotor or reducer size. While Bison gearmotors have little difficulty handling maximum momentary shock loads as much as 200% higher than running loads, an application analysis may indicate the need for higher rated units.

You may, at this point, refer to the torques and output speeds listed for each gearmotor series shown in this catalog and select from among those whose speed and output torque ratings fall within your parameters. The following equations are provided for those interested in gearmotor design considerations.

Input Horsepower

Once torque and output speed are known, a further calculation determines the horsepower of the input motor required to produce that torque and speed.

$$\textbf{HP (input motor)} = \frac{\textbf{RPM} \text{ (gearmotor output)} \times \textbf{T} \text{ (in-lbs.)}}{\textbf{63025} \text{ (a constant)} \ \textbf{E} \text{ (gearmotor efficiency)}}$$

Input Speed

After calculating the input motor horsepower it may be necessary to determine the motor (input) speed.

Input Speed (RPM) = **Output Speed** (RPM) x **mg**
where mg = gear ratio

Note: When speed at 50 Hz is required, multiply the 60 Hz speed by 5/6.

Gearmotor Efficiency

Gearmotor efficiency is a function of the number of stages in the case of an in-line or parallel shaft gearmotor. A conservative formula for efficiency for in-line gearmotors is:

Gearmotor efficiency = $\mathbf{.96}^{N}$
where N = number of stages
The number of stages is listed on the performance chart for each series.

The efficiency of right angle gearmotors can vary greatly with size and ratio. A conservative formula for estimating efficiency of worm gears is:

$$\mathbf{E} = \frac{\mathbf{74 - .66}\ mg}{\mathbf{100}}$$

where mg = gear ratio

Torque Conversion Table

MULTIPLY	BY	TO OBTAIN
Foot-Pounds	12	Inch-Pounds
Foot-Pounds	16	Foot-Ounces
Foot-Pounds	192	Inch-Ounces
Foot-Pounds	0.1383	Meter-Kilograms
Foot-Pounds	1.355	Newton-Meters
Foot-Pounds	13,830	Centimeter-Grams
Inch-Pounds	1.333	Foot-Ounces
Inch-Pounds	16	Inch-Ounces
Inch-Pounds	.113	Newton-Meters
Inch-Pounds	1,152	Centimeter-Grams
Foot-Ounces	12	Inch-Ounces
Foot-Ounces	0.00864	Centimeter-Grams
Inch-Ounces	0.000720	Meter-Kilograms
Inch-Ounces	72	Centimeter-Grams
Meter-Kilograms	100,000	Centimeter-Grams
Newton-Meters	.738	Foot-Pounds
Newton-Meters	8.85	Inch-Pounds
Newton-Meters	141.6	Inch-Ounces

Output Horsepower

Output horsepower may be determined with the following formula:

$$\mathbf{HP}\ (output) = \frac{\mathbf{T}\ (in\text{-}lbs.) \times \mathbf{RPM}\ (output)}{\mathbf{63{,}025}} \quad or,$$

$$\mathbf{HP}\ (output) = \frac{\mathbf{T}\ (in\text{-}oz.) \times \mathbf{RPM}\ (output)}{\mathbf{1{,}008{,}400}}$$

Wattage Measurements

(1 HP = 746 Watts)
Watts Input = DC Volts x Amps
Watts Out = HP (output) x 746
Due to the nature of AC motor characteristics (power factor) no single formula can be easily applied. It is best to measure AC watts with a wattmeter. Because of the power factor, amperage is not a true indication of load change. Thus a wattmeter is necessary to measure load change.

$$\text{Overall Efficiency} = \frac{\text{Watts Out}}{\text{Watts In}}$$

$$\%\ \text{Overall Efficiency} = \frac{\text{Watts Out} \times 100}{\text{Watts In}}$$

Form Factor

Longer brush life and a cooler running motor are benefits of a lower form factor. A form factor of up to 1.37 is generally considered acceptable.

To measure the form factor of a DC power supply, you will need an ammeter with both DC and RMS capability. Connect the ammeter in series with motor lead and take DC and RMS current readings. Then calculate form factor with the formula:

$$\text{Form Factor} = \frac{\text{amps RMS}}{\text{amps DC}}$$

Can we help?

Our staff of application engineers are available through phone, fax or email. Challenge us with your application!

1-800-AT-BISON
630-377-6777
info@bisongear.com

Specialists for Difficult Applications

Bison has been focusing on supplying manufacturers who incorporate motors, gearmotors, or reducers in their products for over 50 years. In that time we've become an industry leader in manufacturing motors, gearmotors and reducers under the Bison Gear & Engineering Corporation name in St. Charles, Illinois. And, because more companies around the world are discovering that Bison offers more advantages than others, our growth is continuing. Bison power transmission products are currently being used in conveyors, icemaker-dispensers, food preparation equipment, food dispensers, hot melt dispensers, chemical mixers, door openers, automatic feeders, ventilation systems, exercise equipment, metal cutting equipment, packaging equipment, medical pumping and positioning equipment, battery powered vehicles, military applications, and more.

What Everyone Ought to Know About Custom Gearmotors...

Bison has built its business over a half century not only by designing robust gearmotors that offer the best value, but also by listening to customers and giving them exactly what they want. Every Bison gearmotor can be customized to meet your application's specific and unique requirements.

How To Get Exactly What You Need

We have a team of engineers dedicated to providing optimized solutions for your specific requirements. These solutions range from modified assemblies of standard components to complete custom designs.

Our lean manufacturing environment accommodates short-run, unique components and assemblies. We build customs everyday. Let one of our Application Engineers review your design.

Have Something in Mind?

Contact us today at 1-800-AT-BISON to discuss your requirements.

Bison's ISO 9001:2015 certification means that all our work, including our custom products, meets a standard of excellence that's recognized around the world.

The Bison Advantage

Robusticity

The simple philosophy behind the design of every Bison product defines robusticity. Components are optimized for design and manufacturability to create the highest quality products.

Engineering Excellence

Whether you require a standard unit or a custom design, Bison has the engineering capability to provide optimized solutions for your application needs.

Flexible Manufacturing

Whether order quantities are large or small, Bison's lean manufacturing floor is able to rapidly respond to your needs and get our products into your hands faster.

Customer First Experience

Our dedicated staff of inside sales specialists and outside technical sales are always available to provide a quick response to your immediate needs.

BQS Bison Quick Ship

Most BQS Products are kept in-stock and ready to ship.

Order Before Noon CT to receive same day shipping.

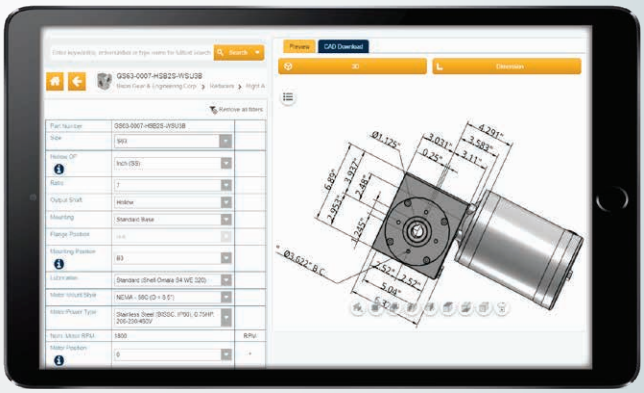
Ship Your Order collect by UPS or provide a shipping account number.

DNS - Distribution Not Stocked Products

Products that have a production lead time and minimum order quantity.

3D CAD CONFIGURATOR

- 3D CAD files are available for most Bison standard catalog products
- Design a fully Configurable IHP reducer and choose from dozens of motor option to create a custom gearmotor
- 75+ CAD file types to choose from for download



www.bisongear.com/3Dcad

ROBUSTICITY

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CERTIFIED QUALITY MANAGEMENT SYSTEM
BISON ISO 9001:2015

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