GVM142 Global Vehicle Motor

Permanent Magnet (PMAC) Motors and Generators for Vehicle Applications

Integrated SMART Electrification Connected Efficient

Parker

ENGINEERING YOUR SUCCESS.

GVM Series Motors

Breakthrough Performance

The GVM (Global Vehicle Motor) is Parker's PMAC offering for electric and hybrid electric powertrain motors, and electro-hydraulic actuation.

The GVM utilizes highly engineered magnetics to achieve efficiencies in peak regions not obtainable in other designs. It uses a new patent-pending advanced cooling system that has minimal impact on the size and weight of the motor. The scalability of the GVM allows the widest performance range available.

Tested to the demanding heavy duty vehicle grade standards of SAE J1455 the GVM can handle the toughest jobs making it a powerful choice for both on and off-road vehicles.

Features

- **Peak power density up to 4.2 kW/kg**
- **Continuous power density up to 2.3 kW/kg**
- **Operating voltages available from 24 to 800 VDC**
- **Samarium Cobalt (SmCo) magnets allow high temperature operation and removes demagnetization failure mode**
- **Highly efficient design reduces thermal dissipation requirements, lowering overall cooling system costs**
- **Very low torque ripple - even at peak current**
- **Low rotor inertia for high dynamic responsiveness**
- **Can provide up to 20% more range for a given battery pack**
- **Ultra-thin stator laminations with reduced slots virtually eliminates eddy currents**
- **Patent pending cooling configuration yields very high cooling effectiveness regardless of motor length**
- **Meets SAE J1455 heavy-duty vehicle environmental standards**

Motor Performance Definitions

GVM Series motors are designed to meet the power requirements in a wide variety of vehicle applications. The GVM has the ability to operate at different bus voltages, without loss of power.

- **Two frame sizes**
- **Multiple operating voltages**
- **Numerous rotor lengths**
- **Multiple winding configurations per length**

= **Hundreds of unique motor size and performance configurations**

By selecting the appropriate voltage, rotor length and winding variation, the following parameters can be refined to match the vehicle's specific performance requirements:

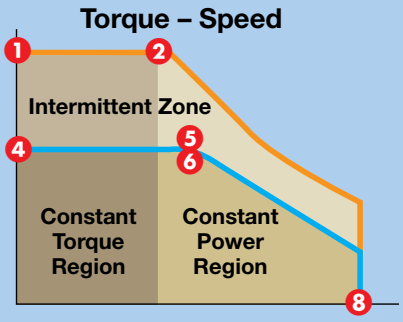
- **Peak torque**
- **Base speed**
- **Peak power**
- **Stall torque**
- **Rated torque**
- **Rated speed**
- **Rated power**
- **Maximum speed**

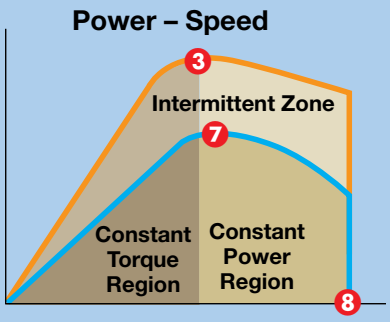
The performance data on the following pages of this catalog provide speed, torque and power performance at various specified VDC (as defined by the illustrations and chart example shown below).

To Estimate Performances at Other Voltages:

1) Calculate Voltage Ratio Vrat=(Vnew/350VDC) or Vrat = (Vnew/650VDC)
2) Multiply speed and power values by ratio (#2, #3, #6, #7, #8)
3) Do not change torque values
4) Overlay new values for #1 - #8 onto definitions chart for rough performance curve

Please contact your Parker Representative for assistance.





	Parameter	GVM210-050A	GVM210-05
1	Peak Torque (Nm)	76	77
2	Base Speed (RPM)	843	1,374
3	Peak Power (kW)	8	13
4	Stall Torque Continuous (Nm)	42	4
5	Rated Torque (Nm)	36	36
6	Rated Speed (RPM)	1,361	2,245
7	Rated Shaft Output Power (kW)	5	8
8	Max Continuous Speed* (RPM)	1,966	3,0
	Stall Current Peak (Amp RMS)	29	
	Stall Current Continuous (Amp RMS)	14	
	Coolant Temperature (°C)	60	
	Max Winding Temperature (°C)	180	
	Winding Temp at Rating (°C)	140	

Winding Configuration Code

Rotor Length

Frame Size

* Maximum continuous speed is reached when B_{emf} exceeds bus voltage. Maximum continuous mechanical speed is 8000 rpm, and maximum intermittent speed is 10,500 rpm.

GVM Series Motors

GVM142
Accessory Motors & Generators



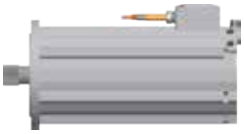
Model	GVM142-050	GVM142-075	GVM142-100
Page	6 – 11	12 – 17	18 – 23
Max. Torque Output Range (Nm)			
Peak	32.0	50.2	67.4
Continuous	17.2	26.8	36.0
Winding Choices Available			
48 VDC	12	11	11
96 VDC	10	11	11
350 VDC	8	9	9
Rated Speed[1] (RPM)			
48 VDC	1669 – 10,318	1449 – 6879	1033 – 5081
96 VDC	1729 – 11,009	1438 – 10,030	1043 – 8006
350 VDC	1699 – 12,472	1747 – 12,671	1267 – 9841
Peak Power[1] (kW)			
48 VDC	3.9 – 27.0	5.0 – 27.0	4.6 – 28.0
96 VDC	4.0 – 31.0	5.0 – 43.0	4.7 – 43.0
350 VDC	3.8 – 36.0	6.3 – 56.0	6.0 – 57.0
Rated Shaft Output Power[1] (kW)			
48 VDC	2.6 – 14.0	3.4 – 14.0	3.3 – 13.9
96 VDC	2.6 – 16.0	3.4 – 23.0	3.3 – 24.0
350 VDC	2.5 – 17.0	4.1 – 27.0	4.0 – 30.0

[1] Rated value dependant on winding selection
[2] Maximum peak power shows performance of the motor at base speeds of ~7500 rpm. Contact factory for details

GVM210 Traction Motors & Generators



Model	GVM210-050	GVM210-100	GVM210-150
Page	28 – 31	32 – 35	36 – 39
Max. Torque Output Range (Nm)			
Peak	79	168	258
Continuous	43	79	122
Winding Choices Available			
350 VDC	8	11	12
650 VDC	5	7	10
Base Speed[1] (RPM)			
350 VDC	843 – 6166	1303 – 5902	1207 – 4933
650 VDC	1685 – 7575	1246 – 5549	1146 – 5990
Peak Power[1] (kW)			
350 VDC	8 – 58	26 – 117	36 – 150
650 VDC	16 – 63	25 – 110	34 – 179
Rated Shaft Output Power[1] (kW)			
350 VDC	5 – 32	18 – 65	26 – 90
650 VDC	10 – 31	17 – 63	25 – 97
Maximum Peak Power[2] (kw)	70	142	220


Model	GVM210-200	GVM210-300	GVM210-400
Page	40 – 43	44 –47	48-51
Max. Torque Output Range (Nm)			
Peak	315	527	703
Continuous	149	252	406
Winding Choices Available			
350 VDC	11	9	4
650 VDC	11	10	9
Base Speed[1] (RPM)			
350 VDC	1327 – 5012	1023 – 2795	1216 – 1763
650 VDC	1271 – 5814	1735 – 5285	1268 – 3357
Peak Power[1] (kW)			
350 VDC	51 – 186	63 – 173	102 – 147
650 VDC	48 – 214	108 – 325	107 – 279
Rated Shaft Output Power[1] (kW)			
350 VDC	33 – 97	47 – 117	76 – 106
650 VDC	31 – 103	78 – 182	79 – 184
Maximum Peak Power[2] (kw)	323	421	625

[1] Rated value dependant on winding selection
[2] Maximum peak power shows performance of the motor at base speeds of ~7500 rpm. Contact factory for details

GVM142 Accessory Motors & Generators

GVM142-050 Performance @ 48 VDC

Parameter		GVM142-050L	GVM142-050M	GVM142-050N	GVM142-050P	GVM142-050Q	GVM142-050R
Peak Torque (Nm)		32	32	32	32	32	33
Peak Power (kW)		4	5	7	9	12	13
Stall Torque Continuous (Nm)		17	17	17	17	17	17
Rated Torque (Nm)	Liquid Cooled*	15	15	15	15	14	15
	Air Cooled	11	11	11	11	11	11
Rated Speed (RPM)	Liquid Cooled*	1,669	2,210	2,723	3,514	4,620	4,966
	Air Cooled	1,642	2,148	2,647	3,376	4,285	4,606
Rated Shaft Output Power (kW)							
Liquid Cooled*		3	3	4	6	7	8
Air Cooled		2	3	3	4	5	5
Max Continuous Speed (RPM)							
Liquid Cooled*		2,532	3,244	3,934	4,997	6,370	6,847
Air Cooled		2,449	3,103	3,763	4,726	5,820	6,256
Stall Current Peak (Amp RMS)		109	138	171	216	274	301
Stall Current Continuous (Amp RMS)		54	69	85	108	137	150
Coolant Temperature (°C)*		60	60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140	140	140
Rotor Inertia (kg-m²)		0.000273483	0.000273483	0.000273483	0.000273483	0.000273483	0.000273483
Motor Weight (kg)		11.0	11.0	11.0	11.0	11.0	11.0

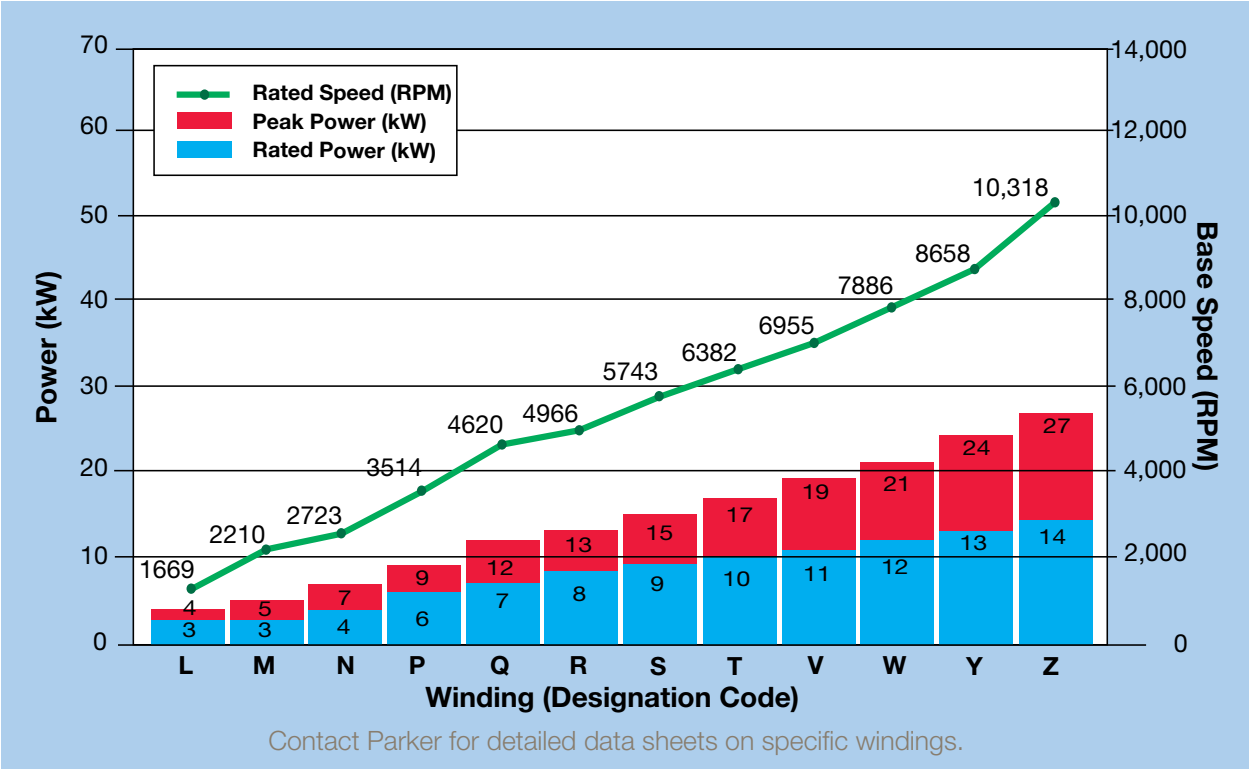
Parameter		GVM142-050S	GVM142-050T	GVM142-050V	GVM142-050W	GVM142-050Y	GVM142-050Z
Peak Torque (Nm)		32	32	32	33	32	32
Peak Power (kW)		15	17	19	21	24	27
Stall Torque Continuous (Nm)		17	17	17	17	17	14
Rated Torque (Nm)	Liquid Cooled*	15	14	15	14	14	13
	Air Cooled	10	10	10	9	9	8
Rated Speed (RPM)	Liquid Cooled*	5,743	6,382	6,955	7,886	8,658	10,318
	Air Cooled	5,373	5,809	6,451	7,121	7,448	7,453
Rated Shaft Output Power (kW)							
Liquid Cooled*		9	10	11	12	13	14
Air Cooled		6	6	6	7	7	7
Max Continuous Speed (RPM)							
Liquid Cooled*		8,040	8,800	9,737	10,874	12,310	14,227
Air Cooled		7,087	7,661	8,268	9,000	9,683	10,434
Stall Current Peak (Amp RMS)		345	383	426	478	539	613
Stall Current Continuous (Amp RMS)		173	192	213	239	260	260
Coolant Temperature (°C)*		60	60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140	140	135
Rotor Inertia (kg-m²)		0.000273483	0.000273483	0.000273483	0.000273483	0.000273483	0.000273483
Motor Weight (kg)		11.0	11.0	11.0	11.0	11.0	11.0

* 50/50 water/glycol mixture, consult Parker Engineering for other coolants
** With 5 m/sec airflow

Contact Parker for compatible inverter recommendations

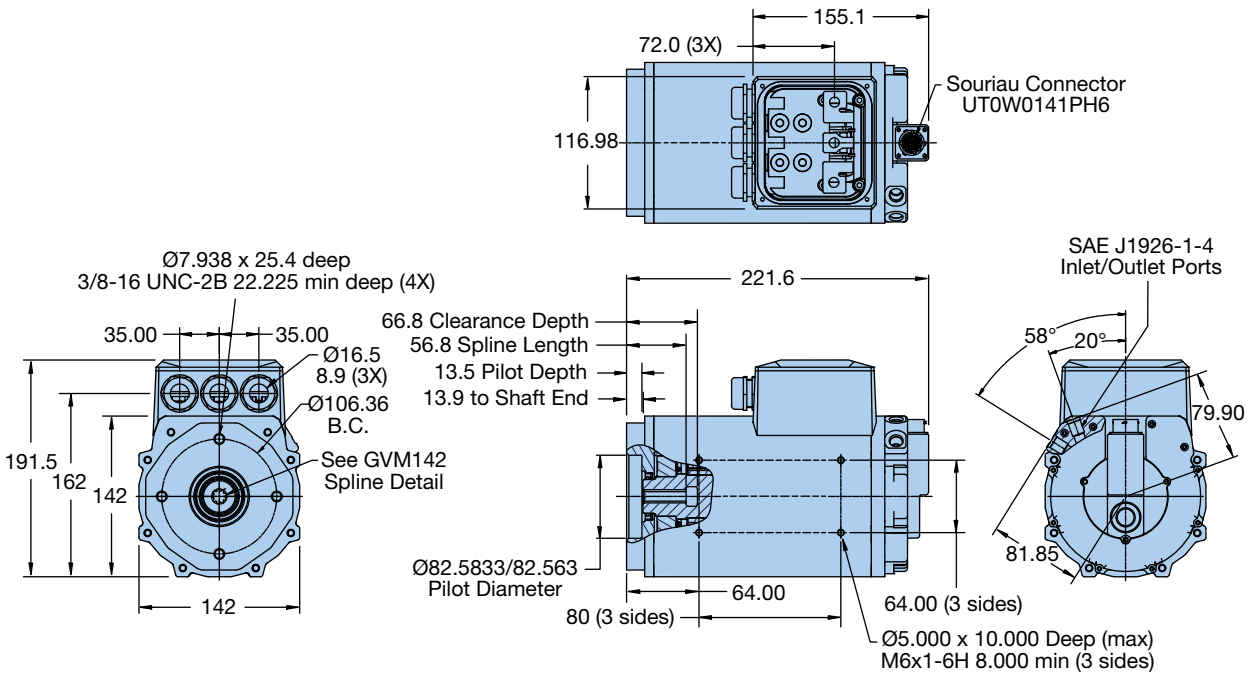
GVM142-050 Winding Performance & Selection @ 48 VDC

(Liquid Cooled Models Shown)



Contact Parker for detailed data sheets on specific windings.

GVM142-050 Dimensions



GVM142 Accessory Motors & Generators

GVM142-050 Performance @ 96 VDC

Parameter		GVM142-050H	GVM142-050J	GVM142-050K	GVM142-050L	GVM142-050M
Peak Torque (Nm)		31	32	32	32	32
Peak Power (kW)		4	5	7	9	12
Stall Torque Continuous (Nm)		17	17	17	17	17
Rated Torque (Nm)	Liquid Cooled*	15	15	15	15	15
	Air Cooled	11	11	11	11	10
Rated Speed (RPM)	Liquid Cooled*	1,729	2,229	2,858	3,617	4,562
	Air Cooled	1,709	2,167	2,703	3,382	4,364
Rated Shaft Output Power (kW)						
Liquid Cooled*		3	3	4	6	7
Air Cooled		2	3	3	4	5
Max Continuous Speed (RPM)						
Liquid Cooled*		2,622	3,271	4,063	5,063	6,487
Air Cooled		2,508	3,130	3,843	4,735	5,927
Stall Current Peak (Amp RMS)		55	69	87	109	138
Stall Current Continuous (Amp RMS)		28	35	43	54	69
Coolant Temperature (°C)*		60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140	140
Rotor Inertia (kg-m²)		0.000273483	0.000273483	0.000273483	0.000273483	0.000273483
Motor Weight (kg)		11.0	11.0	11.0	11.0	11.0

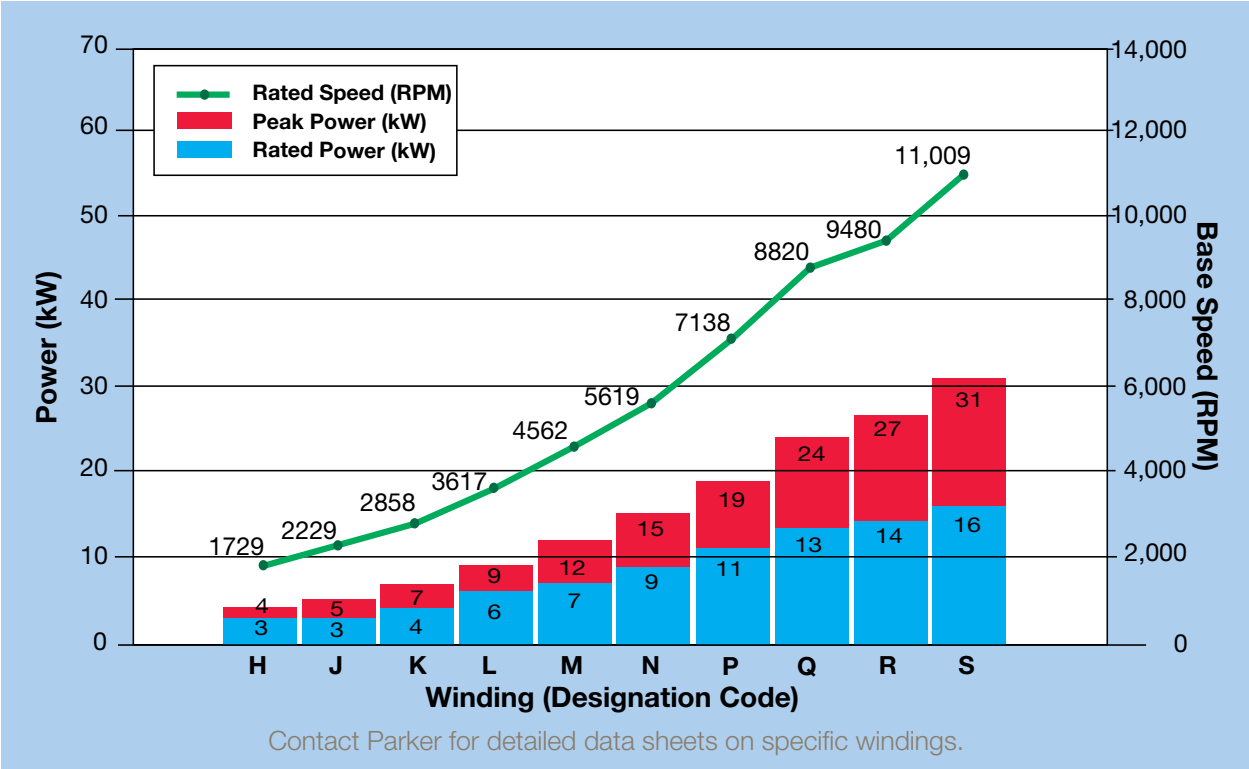
Parameter		GVM142-050N	GVM142-050P	GVM142-050Q	GVM142-050R	GVM142-050S
Peak Torque (Nm)		32	32	32	33	32
Peak Power (kW)		15	19	24	27	31
Stall Torque Continuous (Nm)		17	17	17	17	17
Rated Torque (Nm)	Liquid Cooled*	15	14	14	15	14
	Air Cooled	10	9	8	9	8
Rated Speed (RPM)	Liquid Cooled*	5,619	7,138	8,820	9,480	11,009
	Air Cooled	5,245	6,547	7,495	7,495	7,455
Rated Shaft Output Power (kW)						
Liquid Cooled*		9	11	13	14	16
Air Cooled		6	6	7	7	7
Max Continuous Speed (RPM)						
Liquid Cooled*		7,867	9,993	12,739	13,694	15,902
Air Cooled		7,019	8,391	9,885	10,335	10,768
Stall Current Peak (Amp RMS)		171	216	274	301	345
Stall Current Continuous (Amp RMS)		85	108	137	150	173
Coolant Temperature (°C)*		60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140	140
Rotor Inertia (kg-m²)		0.000273483	0.000273483	0.000273483	0.000273483	0.000273483
Motor Weight (kg)		11.0	11.0	11.0	11.0	11.0

* 50/50 water/glycol mixture, consult Parker Engineering for other coolants
** With 5 m/sec airflow

Contact Parker for compatible inverter recommendations

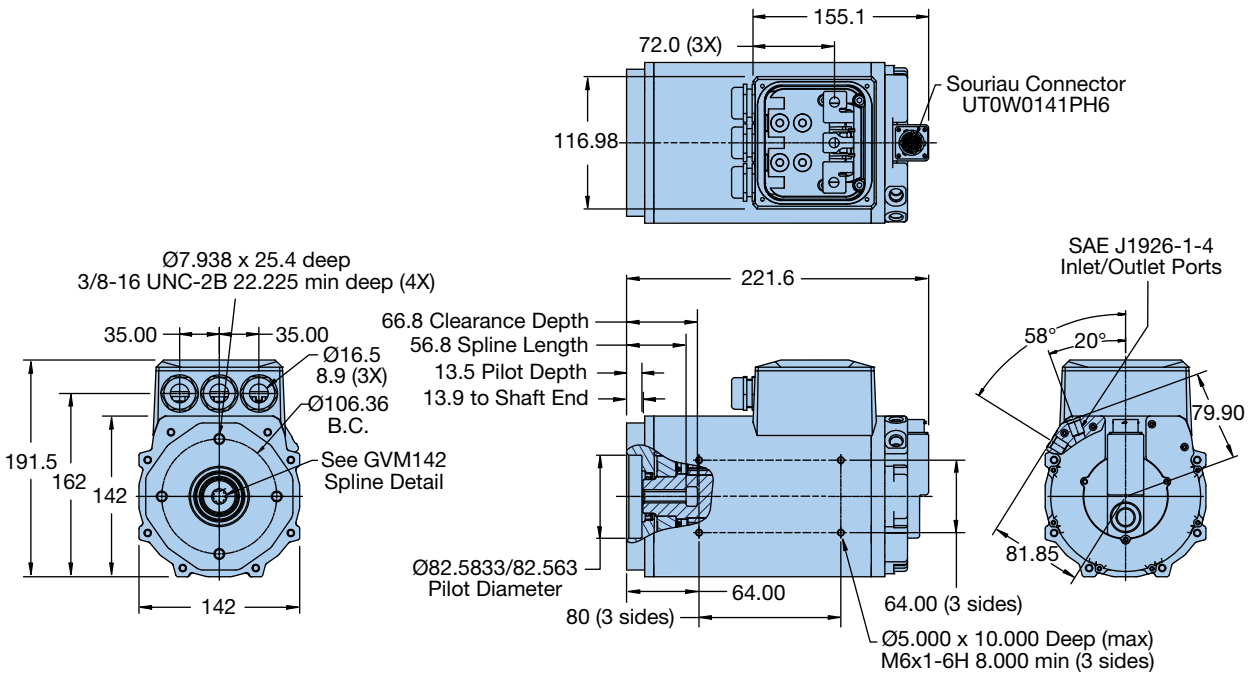
GVM142-050 Winding Performance & Selection @ 96 VDC

(Liquid Cooled Models Shown)



Contact Parker for detailed data sheets on specific windings.

GVM142-050 Dimensions



GVM142 Accessory Motors & Generators

GVM142-050 Performance @ 350 VDC

Parameter		GVM142-050C	GVM142-050D	GVM142-050F	GVM142-050G
Peak Torque (Nm)		30	31	31	31
Peak Power (kW)		4	7	11	14
Stall Torque Continuous (Nm)		16	16	16	16
Rated Torque (Nm)	Liquid Cooled*	14	14	14	14
	Air Cooled	11	11	10	10
Rated Speed (RPM)	Liquid Cooled*	1,699	2,752	4,328	5,501
	Air Cooled	1,642	2,656	4,140	5,147
Rated Shaft Output Power (kW)					
Liquid Cooled*		3	4	7	8
Air Cooled		2	3	5	5
Max Continuous Speed (RPM)					
Liquid Cooled*		2,577	3,976	6,154	7,701
Air Cooled		2,411	3,718	5,623	6,788
Stall Current Peak (Amp RMS)		14	22	35	44
Stall Current Continuous (Amp RMS)		7	11	18	22
Coolant Temperature (°C)*		60	60	60	60
Ambient Temperature (°C)**		45	45	45	45
Max Winding Temperature (°C)		180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140
Rotor Inertia (kg-m²)		0.000273483	0.000273483	0.000273483	0.000273483
Motor Weight (kg)		11.0	11.0	11.0	11.0

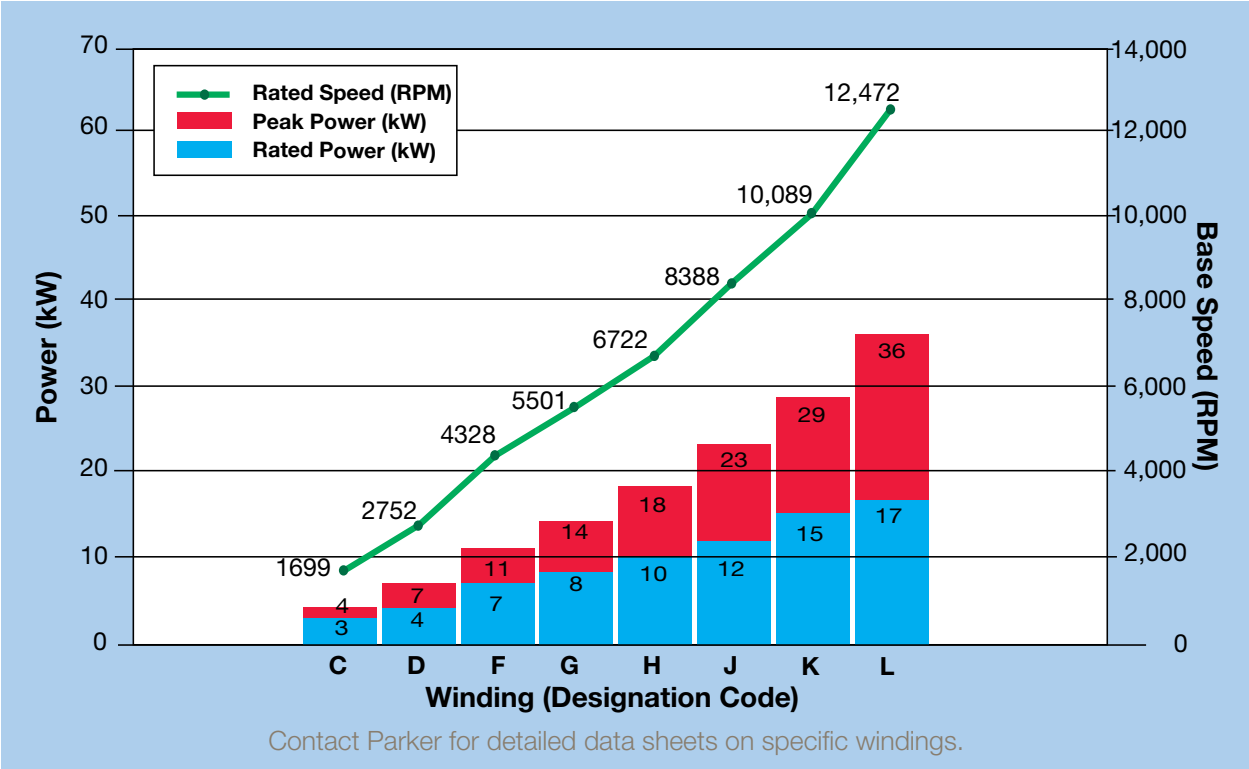
Parameter		GVM142-050H	GVM142-050J	GVM142-050K	GVM142-050L
Peak Torque (Nm)		31	32	32	32
Peak Power (kW)		18	23	29	36
Stall Torque Continuous (Nm)		17	17	17	17
Rated Torque (Nm)	Liquid Cooled*	14	14	14	13
	Air Cooled	9	8	8	8
Rated Speed (RPM)	Liquid Cooled*	6,722	8,388	10,089	12,472
	Air Cooled	6,333	7,506	7,446	7,471
Rated Shaft Output Power (kW)					
Liquid Cooled*		10	12	15	17
Air Cooled		6	7	7	7
Max Continuous Speed (RPM)					
Liquid Cooled*		9,558	11,927	14,808	17,461
Air Cooled		8,116	9,487	10,587	10,792
Stall Current Peak (Amp RMS)		55	69	87	109
Stall Current Continuous (Amp RMS)		28	35	43	54
Coolant Temperature (°C)*		60	60	60	60
Ambient Temperature (°C)**		45	45	45	45
Max Winding Temperature (°C)		180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140
Rotor Inertia (kg-m²)		0.000273483	0.000273483	0.000273483	0.000273483
Motor Weight (kg)		11.0	11.0	11.0	11.0

* 50/50 water/glycol mixture, consult Parker Engineering for other coolants
** With 5 m/sec airflow

Contact Parker for compatible inverter recommendations

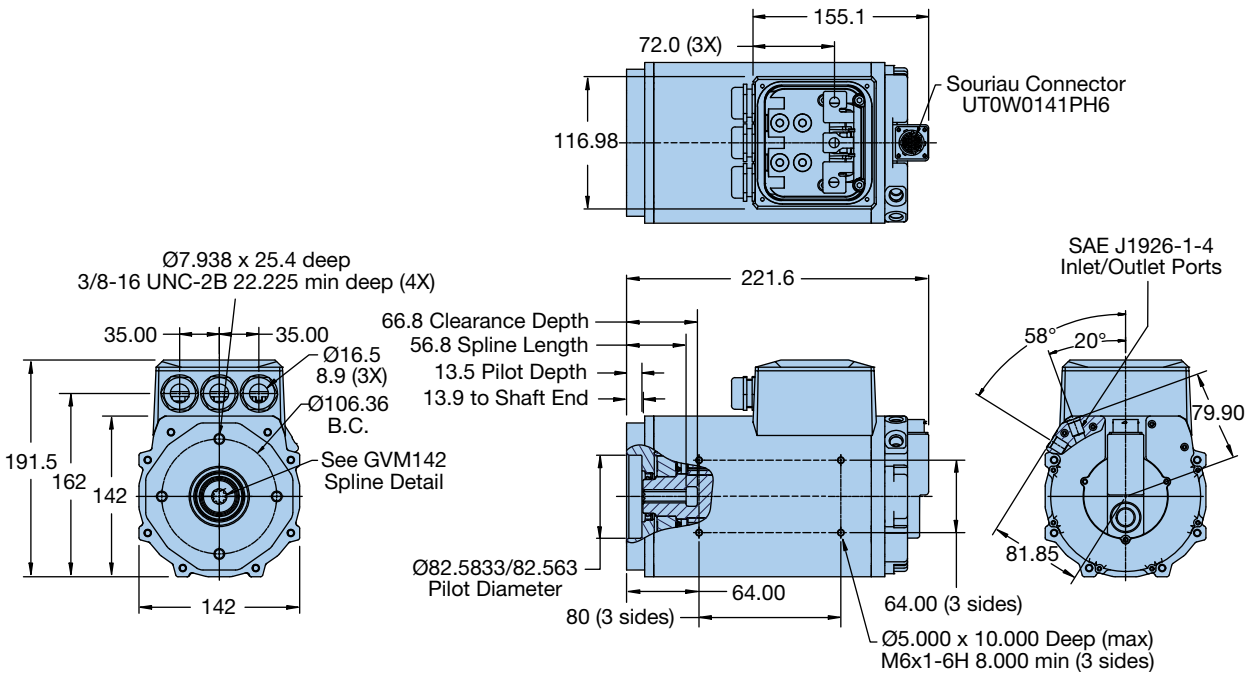
GVM142-050 Winding Performance & Selection @ 350 VDC

(Liquid Cooled Models Shown)



Contact Parker for detailed data sheets on specific windings.

GVM142-050 Dimensions



GVM142 Accessory Motors & Generators

GVM142-075 Performance @ 48 VDC

Parameter		GVM142-075M	GVM142-075N	GVM142-075P	GVM142-075Q	GVM142-075R	GVM142-075S
Peak Torque (Nm)		49	50	50	49	50	49
Peak Power (kW)		5	7	9	12	13	15
Stall Torque Continuous (Nm)		26	26	26	26	27	26
Rated Torque (Nm)	Liquid Cooled*	22	23	23	23	23	23
	Air Cooled	17	17	17	17	17	17
Rated Speed (RPM)	Liquid Cooled*	1,449	1,815	2,305	3036	3,260	3,885
	Air Cooled	1,409	1,728	2,205	2,872	3,084	3,592
Rated Shaft Output Power (kW)							
Liquid Cooled*		3	4	6	7	8	9
Air Cooled		3	3	4	5	6	6
Max Continuous Speed (RPM)							
Liquid Cooled*		2,162	2,622	3,330	4,250	4,565	5,357
Air Cooled		2,068	2,537	3,186	4,020	4,318	4,952
Stall Current Peak (Amp RMS)		144	178	225	285	313	359
Stall Current Continuous (Amp RMS)		72	89	112	143	157	180
Coolant Temperature (°C)*		60	60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140	140	140
Rotor Inertia (kg-m²)		0.000314706	0.000314706	0.000314706	0.000314706	0.000314706	0.000314706
Motor Weight (kg)		13.3	13.3	13.3	13.3	13.3	13.3

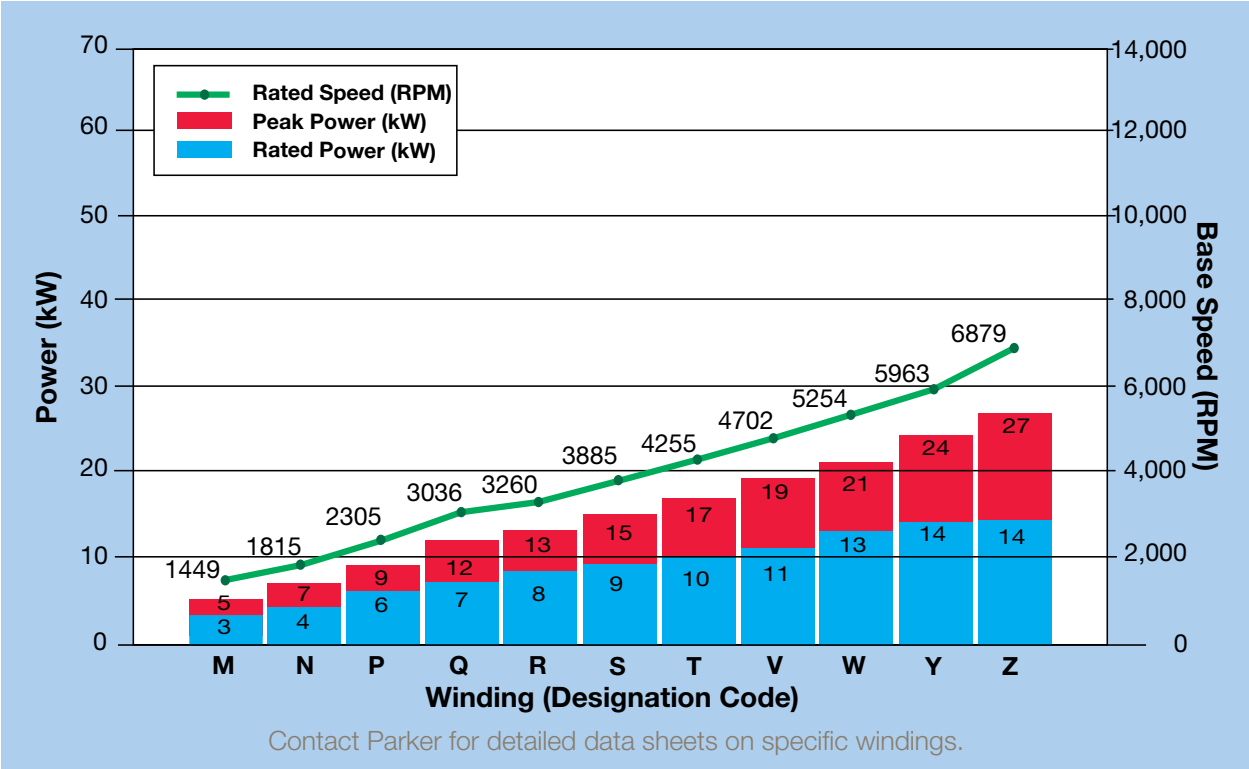
Parameter		GVM142-075T	GVM142-075V	GVM142-075W	GVM142-075Y	GVM142-075Z
Peak Torque (Nm)		50	50	50	50	50
Peak Power (kW)		17	19	21	24	27
Stall Torque Continuous (Nm)		27	27	27	25	22
Rated Torque (Nm)	Liquid Cooled*	23	23	23	22	19
	Air Cooled	16	16	16	15	14
Rated Speed (RPM)	Liquid Cooled*	4,255	4,702	5,254	5,963	6,879
	Air Cooled	3,946	4,374	4,829	5,427	6,204
Rated Shaft Output Power (kW)						
Liquid Cooled*		10	11	13	14	14
Air Cooled		7	7	8	9	9
Max Continuous Speed (RPM)						
Liquid Cooled*		5,866	6,483	7,244	8,221	9,485
Air Cooled		5,360	5,853	6,462	7,158	7,952
Stall Current Peak (Amp RMS)		399	444	497	561	638
Stall Current Continuous (Amp RMS)		199	222	249	260	260
Coolant Temperature (°C)*		60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	137	123
Rotor Inertia (kg-m²)		0.000314706	0.000314706	0.000314706	0.000314706	0.000314706
Motor Weight (kg)		13.3	13.3	13.3	13.3	13.3

* 50/50 water/glycol mixture, consult Parker Engineering for other coolants
** With 5 m/sec airflow

Contact Parker for compatible inverter recommendations

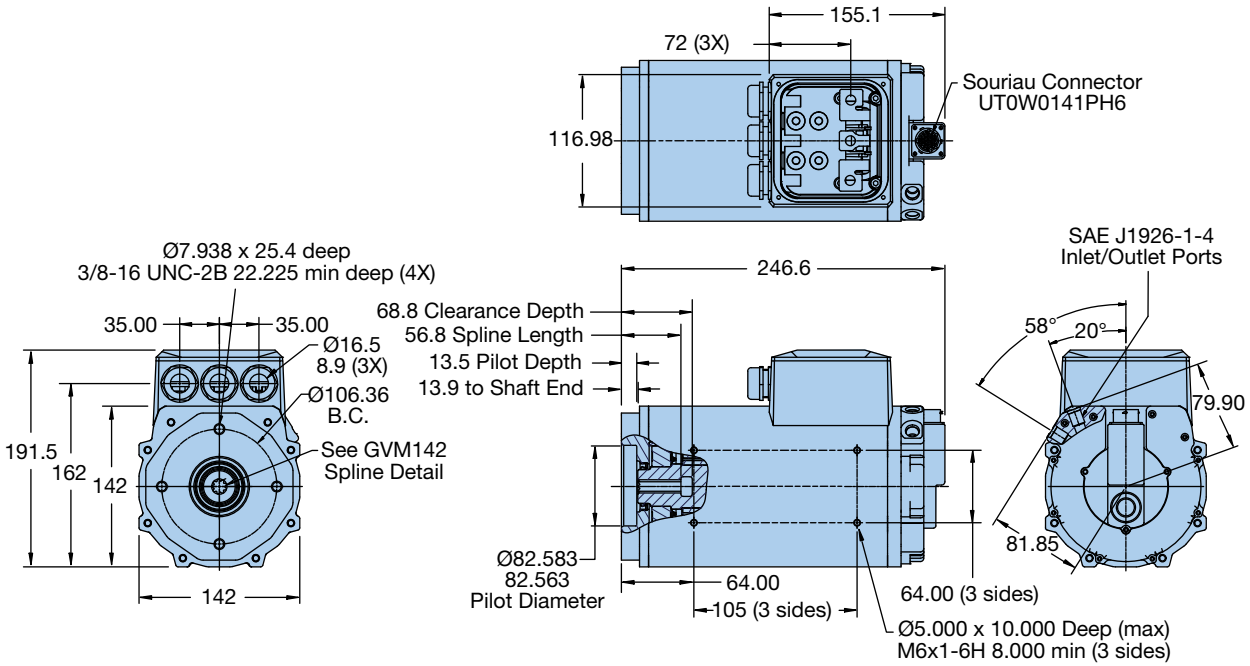
GVM142-075 Winding Performance & Selection @ 48 VDC

(Liquid Cooled Models Shown)



Contact Parker for detailed data sheets on specific windings.

GVM142-075 Dimensions



GVM142 Accessory Motors & Generators

GVM142-075 Performance @ 96 VDC

Parameter		GVM142-075J	GVM142-075K	GVM142-075L	GVM142-075M	GVM142-075N	GVM142-075P
Peak Torque (Nm)		49	49	49	49	50	50
Peak Power (kW)		5	7	9	12	15	19
Stall Torque Continuous (Nm)		26	26	26	26	26	26
Rated Torque (Nm)	Liquid Cooled*	23	23	23	22	23	23
	Air Cooled	17	17	17	17	17	16
Rated Speed (RPM)	Liquid Cooled*	1,438	1,815	2,374	3,088	3,804	4,830
	Air Cooled	1,398	1,794	2,236	2,933	3,518	4,493
Rated Shaft Output Power (kW)							
Liquid Cooled*		3	4	6	7	9	11
Air Cooled		3	3	4	5	6	7
Max Continuous Speed (RPM)							
Liquid Cooled*		2,181	2,708	3,376	4,324	5,245	6,660
Air Cooled		2,086	2,591	3,230	4,043	4,850	6,013
Stall Current Peak (Amp RMS)		72	90	113	144	178	225
Stall Current Continuous (Amp RMS)		36	45	57	72	89	112
Coolant Temperature (°C)*		60	60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140	140	140
Rotor Inertia (kg-m²)		0.000314706	0.000314706	0.000314706	0.000314706	0.000314706	0.000314706
Motor Weight (kg)		13.3	13.3	13.3	13.3	13.3	13.3

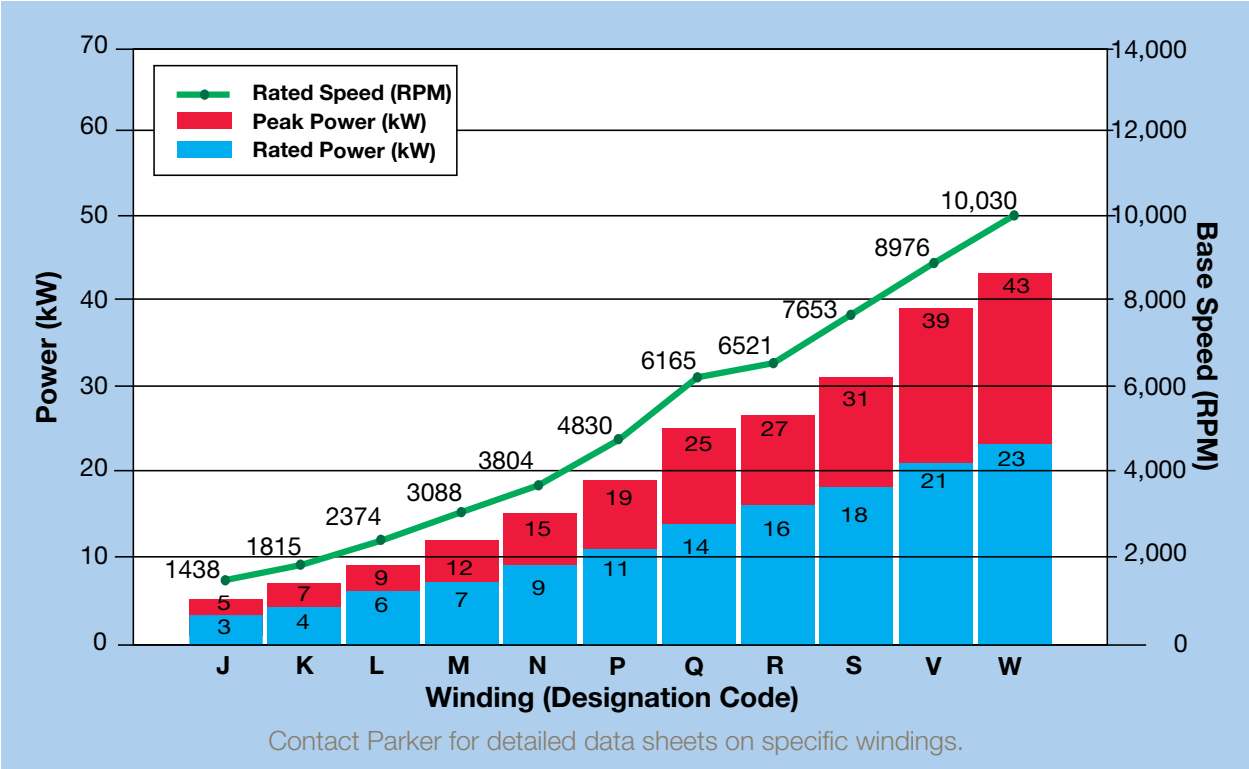
Parameter		GVM142-075Q	GVM142-075R	GVM142-075S	GVM142-075V	GVM142-075W
Peak Torque (Nm)		49	50	49	50	50
Peak Power (kW)		25	27	31	39	43
Stall Torque Continuous (Nm)		26	27	26	27	24
Rated Torque (Nm)	Liquid Cooled*	22	23	22	22	22
	Air Cooled	15	15	13	13	13
Rated Speed (RPM)	Liquid Cooled*	6,165	6,521	7,653	8,976	10,030
	Air Cooled	5,623	5,963	6,852	6,792	6,823
Rated Shaft Output Power (kW)						
Liquid Cooled*		14	16	18	21	23
Air Cooled		9	9	9	9	9
Max Continuous Speed (RPM)						
Liquid Cooled*		8,500	9,129	10,714	12,965	14,487
Air Cooled		7,310	7,752	8,541	9,509	9,855
Stall Current Peak (Amp RMS)		285	313	359	444	497
Stall Current Continuous (Amp RMS)		143	157	180	220	220
Coolant Temperature (°C)*		60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140	140
Rotor Inertia (kg-m²)		0.000314706	0.000314706	0.000314706	0.000314706	0.000314706
Motor Weight (kg)		13.3	13.3	13.3	13.3	13.3

* 50/50 water/glycol mixture, consult Parker Engineering for other coolants
** With 5 m/sec airflow

Contact Parker for compatible inverter recommendations

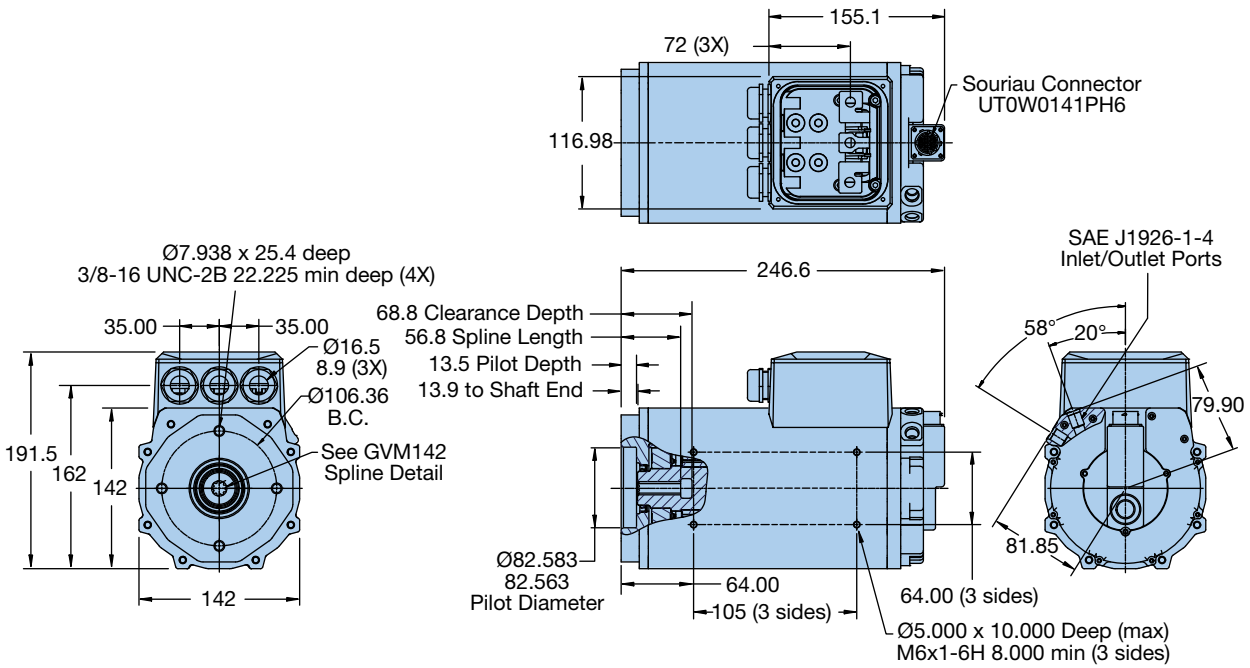
GVM142-075 Winding Performance & Selection @ 96 VDC

(Liquid Cooled Models Shown)



Contact Parker for detailed data sheets on specific windings.

GVM142-075 Dimensions



GVM142 Accessory Motors & Generators

GVM142-075 Performance @ 350 VDC

Parameter		GVM142-075D	GVM142-075F	GVM142-075G	GVM142-075H	GVM142-075J
Peak Torque (Nm)		48	48	48	49	49
Peak Power (kW)		6	11	14	18	23
Stall Torque Continuous (Nm)		25	25	26	26	26
Rated Torque (Nm)	Liquid Cooled*	23	23	22	22	22
	Air Cooled	17	16	16	16	15
Rated Speed (RPM)	Liquid Cooled*	1,747	2,840	3,668	4622	5,766
	Air Cooled	1,708	2,741	3,456	4,300	5,266
Rated Shaft Output Power (kW)						
Liquid Cooled*		4	7	9	11	13
Air Cooled		3	5	6	7	8
Max Continuous Speed (RPM)						
Liquid Cooled*		2,650	4,103	5,135	6,373	7,950
Air Cooled		2,507	3,837	4,694	5,754	6,845
Stall Current Peak (Amp RMS)		23	37	46	57	72
Stall Current Continuous (Amp RMS)		12	18	23	29	36
Coolant Temperature (°C)*		60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140	140
Rotor Inertia (kg-m^2)		0.000314706	0.000314706	0.000314706	0.000314706	0.000314706
Motor Weight (kg)		13.3	13.3	13.3	13.3	13.3

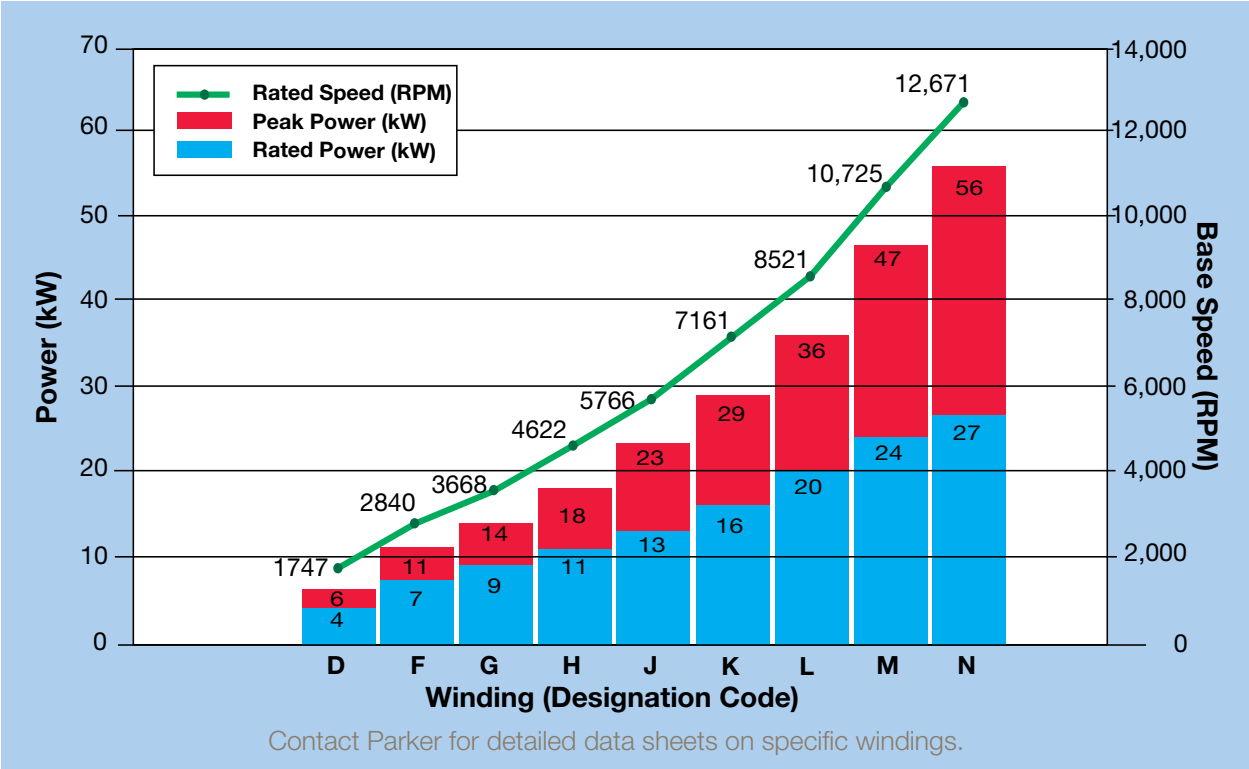
Parameter		GVM142-075K	GVM142-075L	GVM142-075M	GVM142-075N
Peak Torque (Nm)		49	49	49	46
Peak Power (kW)		29	36	47	56
Stall Torque Continuous (Nm)		26	26	26	24
Rated Torque (Nm)	Liquid Cooled*	22	22	21	20
	Air Cooled	13	13	13	13
Rated Speed (RPM)	Liquid Cooled*	7,161	8,521	10,725	12,671
	Air Cooled	6,483	6,839	6,844	6,817
Rated Shaft Output Power (kW)					
Liquid Cooled*		16	20	24	27
Air Cooled		9	9	9	9
Max Continuous Speed (RPM)					
Liquid Cooled*		9,874	12,308	15,250	17,470
Air Cooled		8,082	9,289	9,886	9,847
Stall Current Peak (Amp RMS)		90	113	144	160
Stall Current Continuous (Amp RMS)		45	57	72	80
Coolant Temperature (°C)*		60	60	60	60
Ambient Temperature (°C)**		45	45	45	45
Max Winding Temperature (°C)		180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140
Rotor Inertia (kg-m^2)		0.000314706	0.000314706	0.000314706	0.000314706
Motor Weight (kg)		13.3	13.3	13.3	13.3

* 50/50 water/glycol mixture, consult Parker Engineering for other coolants
** With 5 m/sec airflow

Contact Parker for compatible inverter recommendations

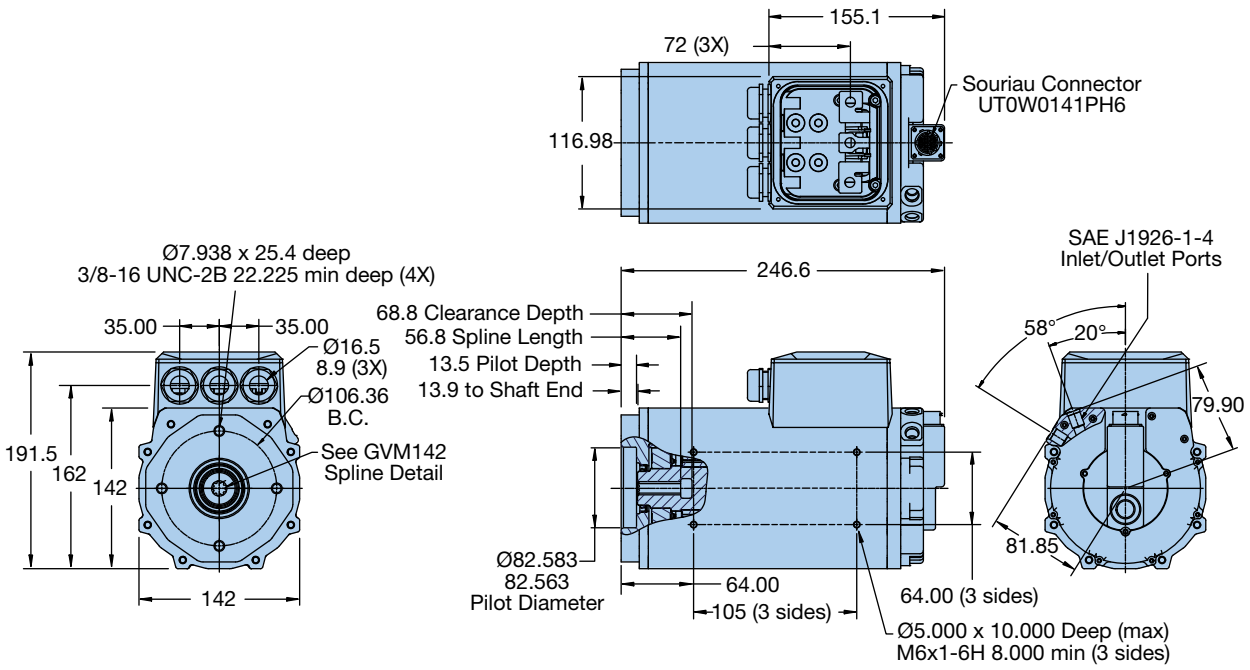
GVM142-075 Winding Performance & Selection @ 350 VDC

(Liquid Cooled Models Shown)



Contact Parker for detailed data sheets on specific windings.

GVM142-075 Dimensions



GVM142 Accessory Motors & Generators

GVM142-100 Performance @ 48 VDC

Parameter		GVM142-100M	GVM142-100N	GVM142-100P	GVM142-100Q	GVM142-100R	GVM142-100S
Peak Torque (Nm)		66	67	67	66	67	66
Peak Power (kW)		5	6	8	11	12	15
Stall Torque Continuous (Nm)		35	36	35	35	36	35
Rated Torque (Nm)	Liquid Cooled*	31	31	31	31	31	31
	Air Cooled	23	23	23	23	23	22
Rated Speed (RPM)	Liquid Cooled*	1,033	1,296	1,702	2,241	2,445	2,869
	Air Cooled	1,023	1,275	1,673	2,144	2,303	2,714
Rated Shaft Output Power (kW)							
Liquid Cooled*		3	4	6	7	8	9
Air Cooled		3	3	4	5	6	6
Max Continuous Speed (RPM)							
Liquid Cooled*		1,621	1,966	2,498	3,187	3,423	4,017
Air Cooled		1,551	1,902	2,417	3,049	3,275	3,799
Stall Current Peak (Amp RMS)		145	179	226	287	316	362
Stall Current Continuous (Amp RMS)		72	90	113	144	158	181
Coolant Temperature (°C)*		60	60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140	140	140
Rotor Inertia (kg-m²)		0.000355927	0.000355927	0.000355927	0.000355927	0.000355927	0.000355927
Motor Weight (kg)		15.7	15.7	15.7	15.7	15.7	15.7

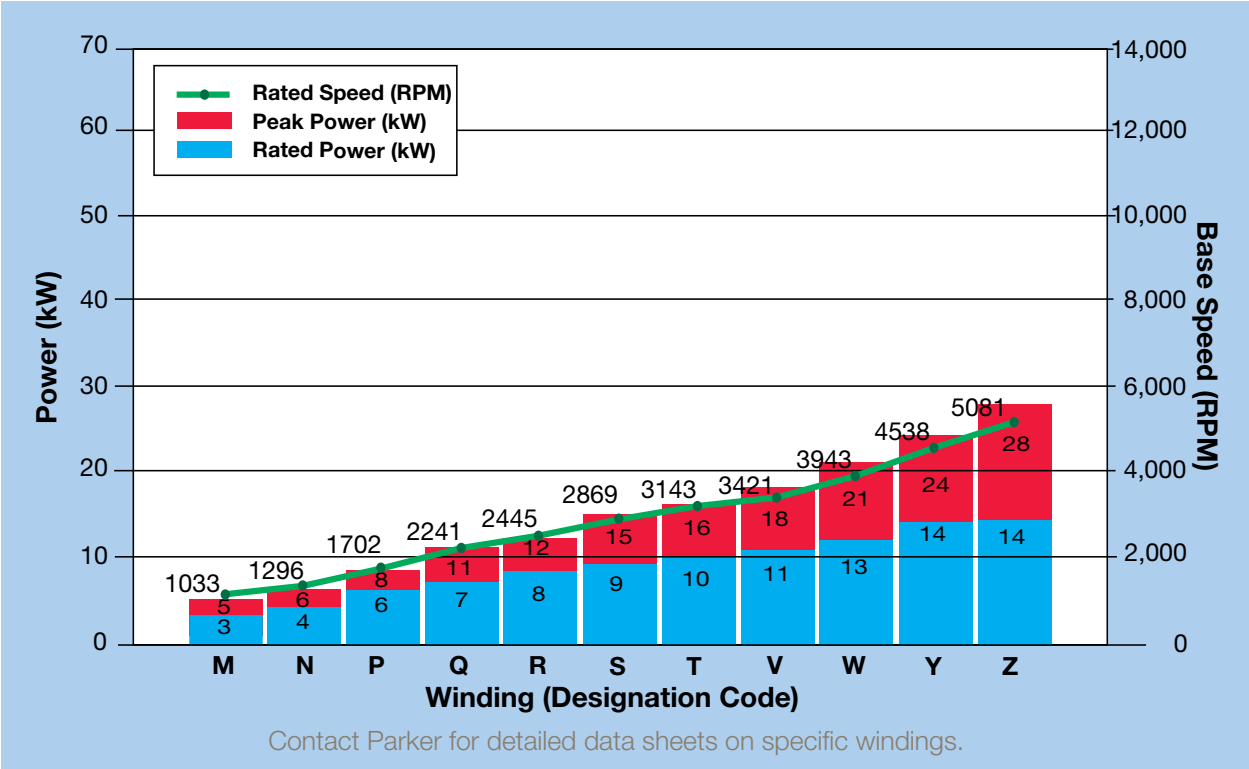
Parameter		GVM142-100T	GVM142-100V	GVM142-100W	GVM142-100Y	GVM142-100Z
Peak Torque (Nm)		67	67	67	67	66
Peak Power (kW)		16	18	21	24	28
Stall Torque Continuous (Nm)		36	36	36	33	29
Rated Torque (Nm)	Liquid Cooled*	31	32	31	29	26
	Air Cooled	23	22	22	22	21
Rated Speed (RPM)	Liquid Cooled*	3,143	3,421	3,943	4,538	5,081
	Air Cooled	2,985	3,299	3,645	4,158	4,754
Rated Shaft Output Power (kW)						
Liquid Cooled*		10	11	13	14	14
Air Cooled		7	8	9	9	10
Max Continuous Speed (RPM)						
Liquid Cooled*		4,400	4,864	5,437	6,163	7,113
Air Cooled		4,115	4,548	5,026	5,565	6,270
Stall Current Peak (Amp RMS)		402	448	502	565	643
Stall Current Continuous (Amp RMS)		201	224	251	260	260
Coolant Temperature (°C)*		60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	133	119
Rotor Inertia (kg-m²)		0.000355927	0.000355927	0.000355927	0.000355927	0.000355927
Motor Weight (kg)		15.7	15.7	15.7	15.7	15.7

* 50/50 water/glycol mixture, consult Parker Engineering for other coolants
** With 5 m/sec airflow

Contact Parker for compatible inverter recommendations

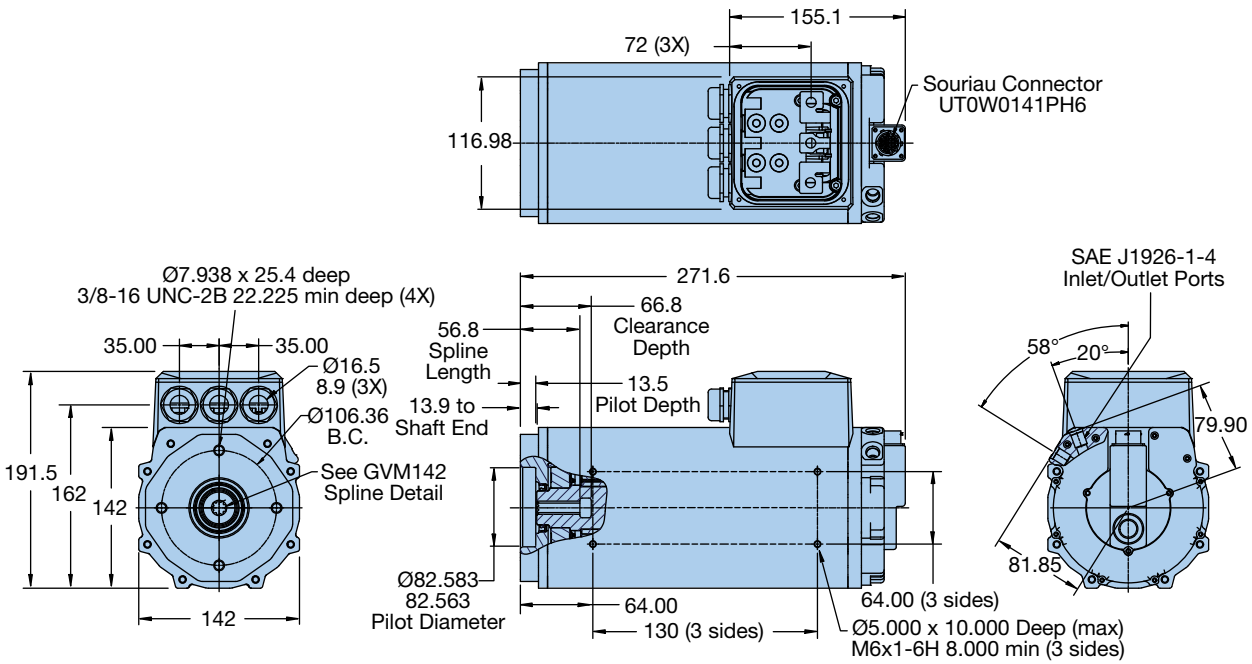
GVM142-100 Winding Performance & Selection @ 48 VDC

(Liquid Cooled Models Shown)



Contact Parker for detailed data sheets on specific windings.

GVM142-100 Dimensions



GVM142 Accessory Motors & Generators

GVM142-100 Performance @ 96 VDC

Parameter		GVM142-100J	GVM142-100K	GVM142-100L	GVM142-100M	GVM142-100N	GVM142-100P
Peak Torque (Nm)		66	66	66	66	67	67
Peak Power (kW)		5	6	8	11	14	19
Stall Torque Continuous (Nm)		35	35	35	35	36	35
Rated Torque (Nm)	Liquid Cooled*	30	30	30	31	31	30
	Air Cooled	23	23	23	23	23	22
Rated Speed (RPM)	Liquid Cooled*	1,043	1,362	1,753	2,245	2,809	3,624
	Air Cooled	1,032	1,324	1,677	2,157	2,657	3,350
Rated Shaft Output Power (kW)							
Liquid Cooled*		3	4	6	7	9	12
Air Cooled		2	3	4	5	6	8
Max Continuous Speed (RPM)							
Liquid Cooled*		1,636	2,031	2,532	3,242	3,932	4,997
Air Cooled		1,565	1,943	2,422	3,067	3,719	4,619
Stall Current Peak (Amp RMS)		73	91	114	145	179	226
Stall Current Continuous (Amp RMS)		36	45	57	72	90	113
Coolant Temperature (°C)*		60	60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140	140	140
Rotor Inertia (kg-m²)		0.000355927	0.000355927	0.000355927	0.000355927	0.000355927	0.000355927
Motor Weight (kg)		15.7	15.7	15.7	15.7	15.7	15.7

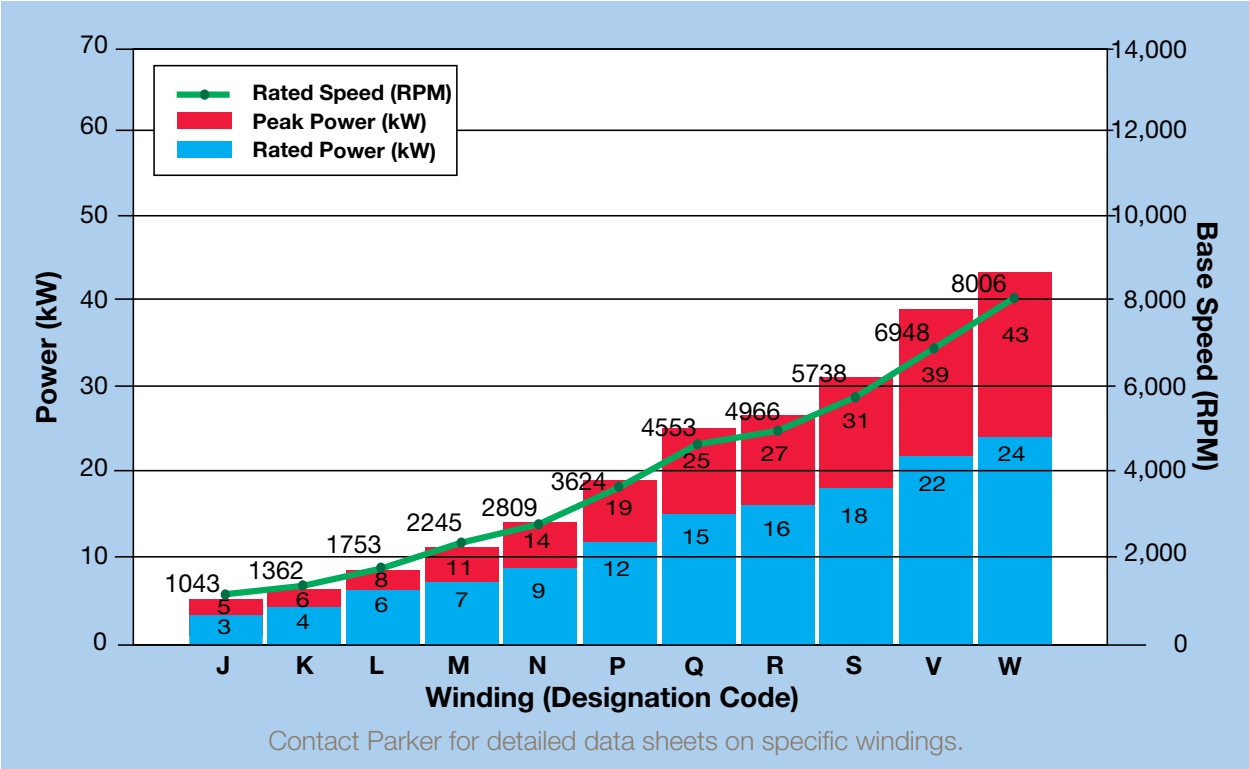
Parameter		GVM142-100Q	GVM142-100R	GVM142-100S	GVM142-100V	GVM142-100W
Peak Torque (Nm)		66	67	66	67	67
Peak Power (kW)		25	27	31	39	43
Stall Torque Continuous (Nm)		35	36	35	35	32
Rated Torque (Nm)	Liquid Cooled*	31	31	30	30	28
	Air Cooled	21	21	20	18	18
Rated Speed (RPM)	Liquid Cooled*	4,553	4,966	5,738	6,948	8,006
	Air Cooled	4,315	4,565	5,314	6,374	6,469
Rated Shaft Output Power (kW)						
Liquid Cooled*		15	16	18	22	24
Air Cooled		9	10	11	12	12
Max Continuous Speed (RPM)						
Liquid Cooled*		6,374	6,847	8,033	9,727	10,874
Air Cooled		5,691	6,108	6,908	7,946	8,532
Stall Current Peak (Amp RMS)		287	316	362	448	502
Stall Current Continuous (Amp RMS)		144	158	181	220	220
Coolant Temperature (°C)*		60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140	136
Rotor Inertia (kg-m²)		0.000355927	0.000355927	0.000355927	0.000355927	0.000355927
Motor Weight (kg)		15.7	15.7	15.7	15.7	15.7

* 50/50 water/glycol mixture, consult Parker Engineering for other coolants
** With 5 m/sec airflow

Contact Parker for compatible inverter recommendations

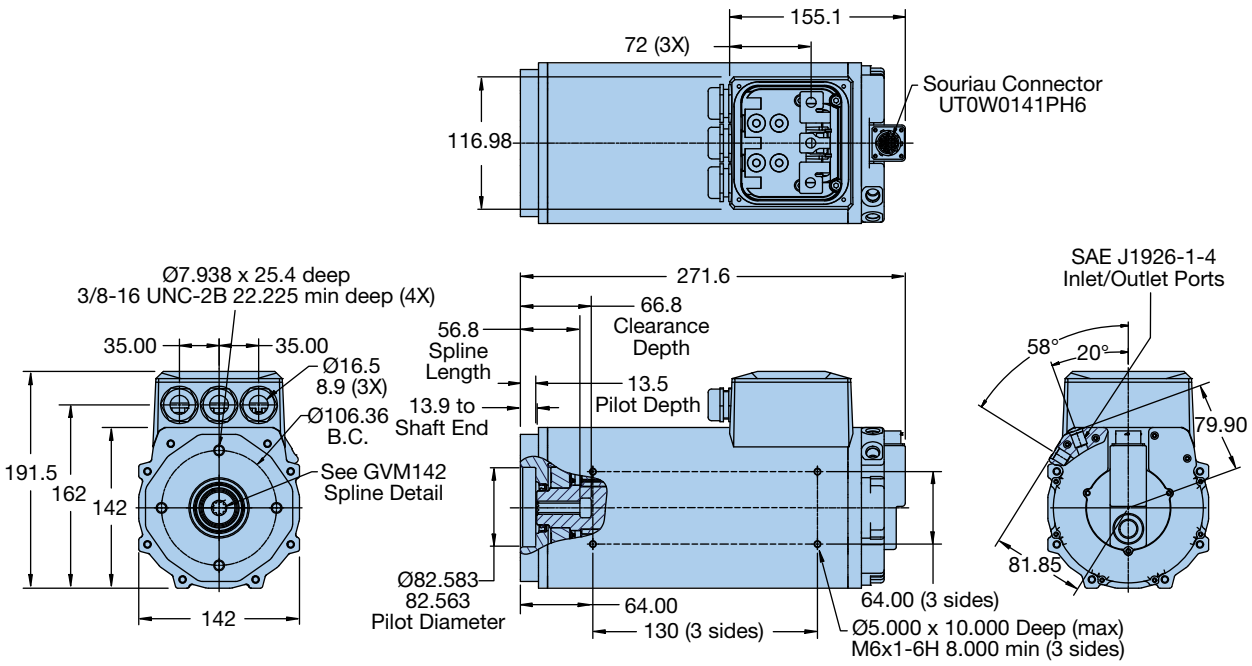
GVM142-100 Winding Performance & Selection @ 96 VDC

(Liquid Cooled Models Shown)



Contact Parker for detailed data sheets on specific windings.

GVM142-100 Dimensions



GVM142 Accessory Motors & Generators

GVM142-100 Performance @ 350 VDC

Parameter		GVM142-100D	GVM142-100F	GVM142-100G	GVM142-100H	GVM142-100J
Peak Torque (Nm)		64	65	65	65	66
Peak Power (kW)		6	11	14	18	23
Stall Torque Continuous (Nm)		34	34	34	35	35
Rated Torque (Nm)	Liquid Cooled*	30	30	31	30	30
	Air Cooled	22	22	22	22	21
Rated Speed (RPM)	Liquid Cooled*	1,267	2,096	2,666	3,361	4,260
	Air Cooled	1,281	2,047	2,572	3,204	4,024
Rated Shaft Output Power (kW)						
Liquid Cooled*		4	7	9	11	14
Air Cooled		3	5	6	7	9
Max Continuous Speed (RPM)						
Liquid Cooled*		1,988	3,077	3,851	4,779	5,964
Air Cooled		1,880	2,911	3,601	4,418	5,384
Stall Current Peak (Amp RMS)		23	37	46	58	73
Stall Current Continuous (Amp RMS)		12	18	23	29	36
Coolant Temperature (°C)*		60	60	60	60	60
Ambient Temperature (°C)**		45	45	45	45	45
Max Winding Temperature (°C)		180	180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140	140
Rotor Inertia (kg-m^2)		0.000355927	0.000355927	0.000355927	0.000355927	0.000355927
Motor Weight (kg)		15.7	15.7	15.7	15.7	15.7

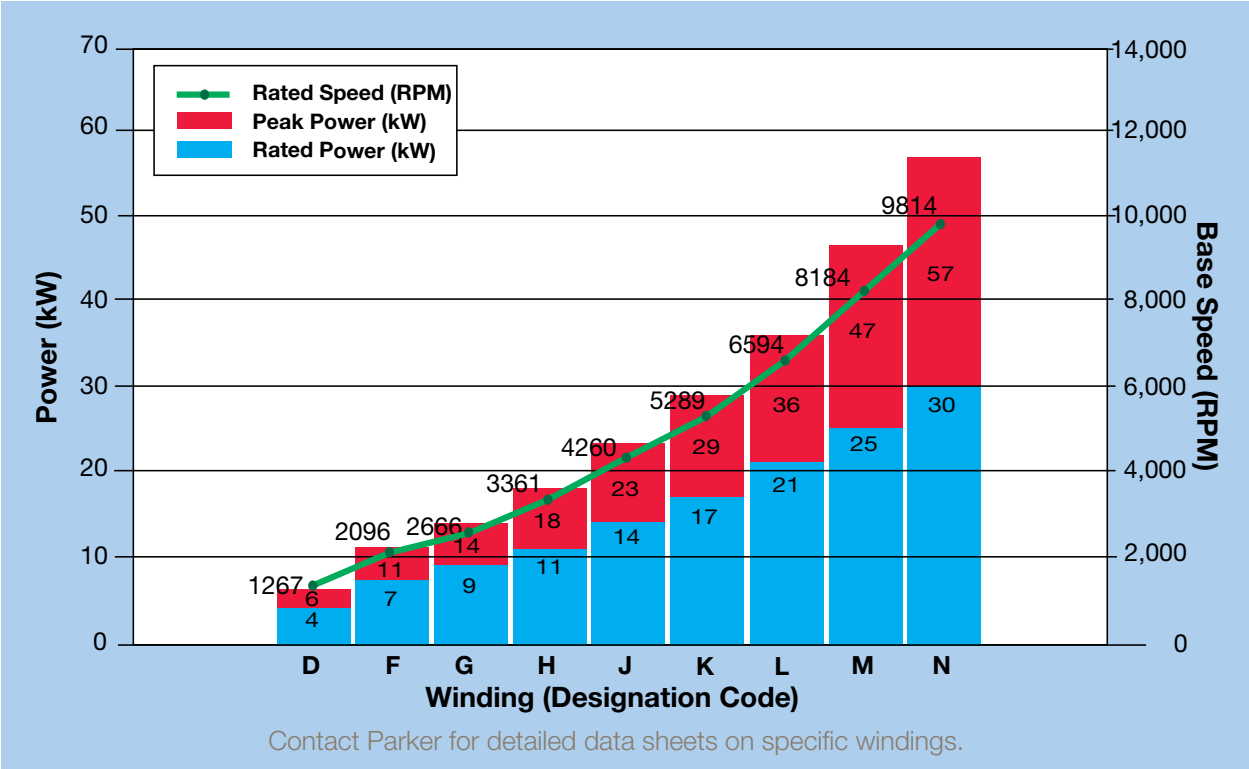
Parameter		GVM142-100K	GVM142-100L	GVM142-100M	GVM142-100N
Peak Torque (Nm)		66	66	66	61
Peak Power (kW)		29	36	47	57
Stall Torque Continuous (Nm)		35	35	35	32
Rated Torque (Nm)	Liquid Cooled*	30	30	30	29
	Air Cooled	20	18	17	17
Rated Speed (RPM)	Liquid Cooled*	5,289	6,594	8,184	9,814
	Air Cooled	4,959	6,046	6,470	6,467
Rated Shaft Output Power (kW)					
Liquid Cooled*		17	21	25	30
Air Cooled		10	11	12	12
Max Continuous Speed (RPM)					
Liquid Cooled*		7,405	9,232	11,821	14,176
Air Cooled		6,447	7,641	8,921	9,341
Stall Current Peak (Amp RMS)		91	114	145	160
Stall Current Continuous (Amp RMS)		45	57	72	80
Coolant Temperature (°C)*		60	60	60	60
Ambient Temperature (°C)**		45	45	45	45
Max Winding Temperature (°C)		180	180	180	180
Winding Temperature at Rating (°C)		140	140	140	140
Rotor Inertia (kg-m^2)		0.000355927	0.000355927	0.000355927	0.000355927
Motor Weight (kg)		15.7	15.7	15.7	15.7

* 50/50 water/glycol mixture, consult Parker Engineering for other coolants
** With 5 m/sec airflow

Contact Parker for compatible inverter recommendations

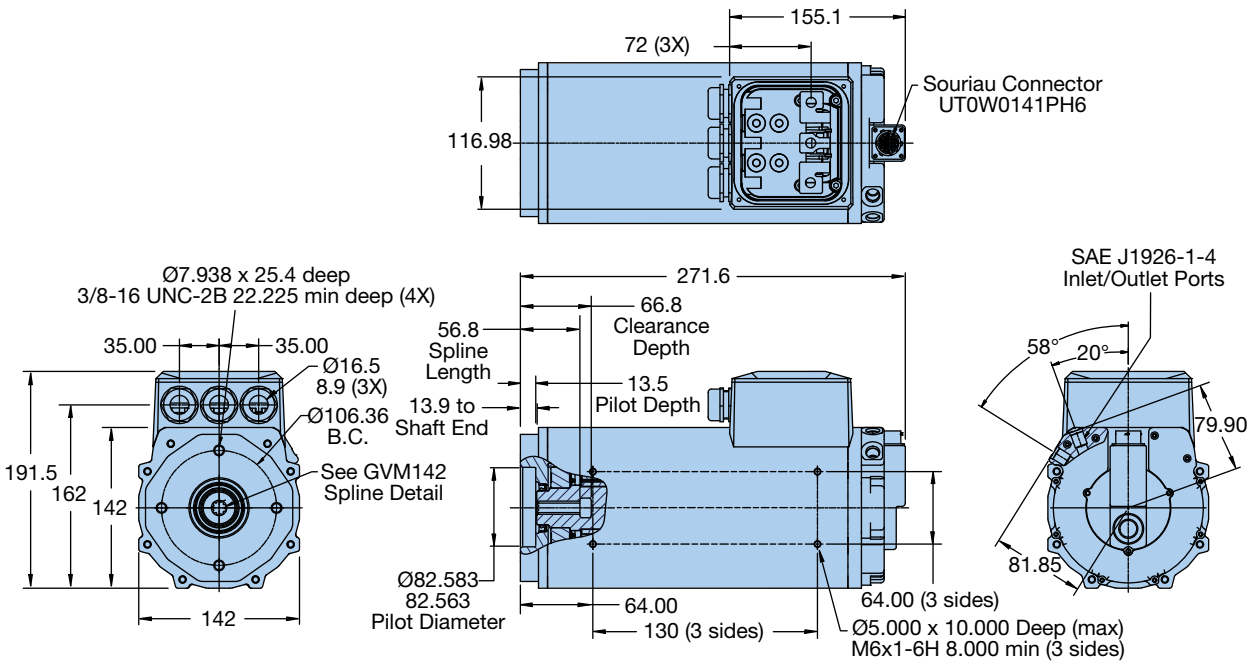
GVM142-100 Winding Performance & Selection @ 350 VDC

(Liquid Cooled Models Shown)



Contact Parker for detailed data sheets on specific windings.

GVM142-100 Dimensions



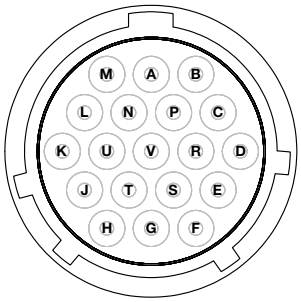
GVM142 Accessory Motors & Generators

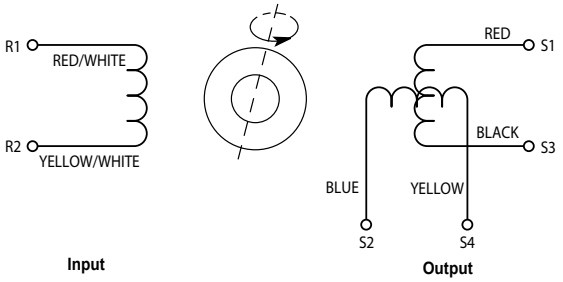
GVM142 Feedback and Thermal Connector (all motor sizes)

The Feedback and Thermal Connector option for GVM motors feature a high-quality circular, right-angle, bayonet style connector mounted to the motor body. It is made of zinc coated brass and is rated to IP68/IP69K. It also features a long internal back shell for high vibration resistance meeting SAE J1455 shock/vibe requirements.

The connector provides access to the resolver and thermal signals.

Mating cables are specified and ordered separately.





Resolver Feedback and Thermal Connector Pin Assignment

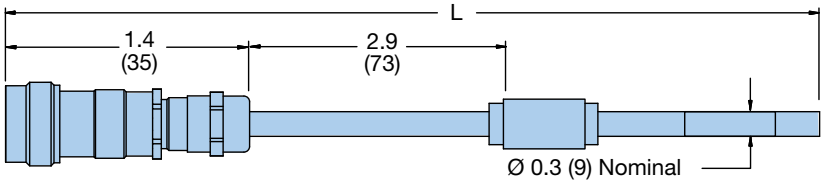
Pin Assignment	Function	Wire Color	From
A	Sin+ S2	Yellow	Resolver
B	Sin– S4	Blue	Resolver
J	Ref+ R1	White	Resolver
K	Ref– R2	Green	Resolver
E	Cos+ S1	Red	Resolver
F	Cos– S3	Black	Resolver
C	Thermistor	Pink	Thermik SNM140 PTC
D	Thermistor	Grey	Thermik SNM140 PTC
G	Thermistor	Red/White (+)	Omega 44008
H	Thermistor	Yellow/White (–)	Omega 44008

Resolver Alignment Specifications (Direction Viewed from Output Shaft)

Parameter	Value
Resolver 0° lock rotor setting	B & C+, A–
Increase feedback angle	Clockwise
Commutation direction (A-B-C)	Clockwise
Resolver poles	6 (3 pole pairs)
Input voltage	AC 7 V_{rms} 10 kHz
Primary	R1–R2
Transformation ratio	0.286 ±10%
Electrical error (mechanical angle)	± 45° maximum
Impedance Z_{ro}	120 ohms ±20%
Impedance Z_{ss} (at theta = 0°)	335 ohms nominal
Dielectric strength (60/50 Hz)	AC 500 V_{rms} 1 minute
Insulation resistance (DC 500 V)	1000 Megaohms minimum

GVM142 Feedback Cable

The GVM feedback cable uses environmentally tested and validated cable jacket and connector. It contains all of the low voltage feedback signals. One required per motor.

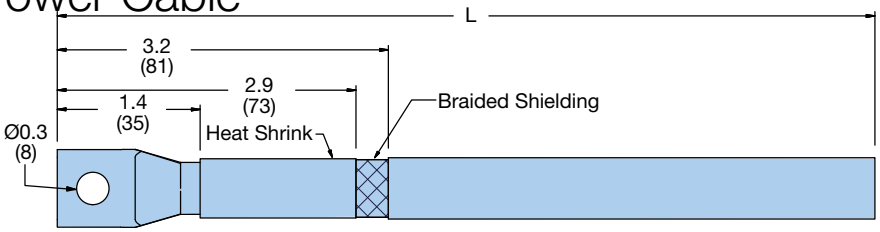


Feedback Cable

Cable Part Number	Description	Length "L" in (m)
170-00506-01	1 m Cable	39.4 (1 m)
170-00506-02	2 m Cable	78.7 (2 m)
170-00506-03	3 m Cable	118.1 (3 m)
170-00506-04	4 m Cable	157.5 (4 m)

GVM142 Phase Power Cable

The GVM power cable uses environmentally tested and validated cable jacket. One cable is required per phase, three per motor. These cables can be field installed and replaced.



Phase Power Cable

Cable Part Number	Description	Length "L" in (m)
180-00530-01	1 m Cable	43.4 (1.1 m)
180-00530-02	2 m Cable	82.8 (2.1 m)
180-00530-03	3 m Cable	122.1 (3.1 m)
180-00530-04	4 m Cable	161.5 (4.1 m)

GVM142 Cooling

Motor Size	Voltage VDC	Min. Required Flow Rate Gal/Min (L/Min)	Expected Pressure Drop @ Min. Flow Rate psi (bar)
GVM142-050P	48	0.50 (1.90)	0.09 (0.006)
GVM142-075S	48	0.75 (2.84)	0.25 (0.016)
GVM142-1000W	48	0.85 (3.22)	0.30 (0.020)

Recommended Parker Fittings

ID Hose Size in (mm)	Straight Barb Fitting	90° Barb Fitting
0.25 (6.35 mm)	685HB-4-4	—
0.325 (9.525 mm)	685HB-6-4	1695HB-6-4

Please visit www.parkerstore.com to order fittings.

Notes:

1. The maximum allowable cooling system pressure is 60 psi.

2. To achieve continuous operation outlined for listed winding, inlet temperature held to 60 °C, 50/50 mix of water/ethylene glycol.

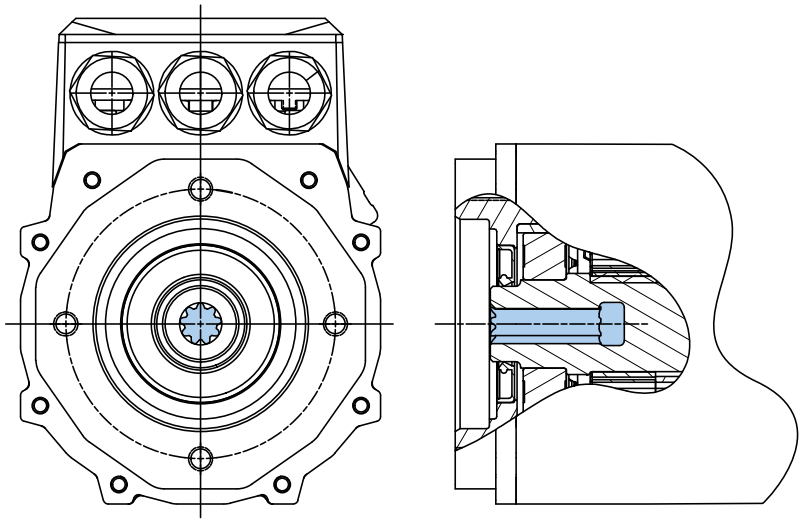
3. Flow rate changes with operating point and winding.

Pressure drop changes with flow rate and fluid type.

Contact Parker for specific flow and pressure requirements for the winding and operation point selected.

GVM142 Accessory Motors & Generators

GVM142 Spline Detail



Spline Info —Dimensions in Inches (mm)	P2
GVM142 Motor Frame Size	050 – 100
Involute Spline	ANSI B92.1 Flat Root Class 5
Number of Teeth	9
Spline Pitch	16/32
Pressure Angle	30.0°
Pitch Diameter (ref)	0.5625 in (14.288 mm)
Base Diameter (ref)	0.4871 in (12.373 mm)
Major Diameter	0.6469 in (16.431 mm)
Minor Diameter	0.5000 (12.700 mm)
Form Diameter (max)	0.6290 in (15.977 mm)
Circular Space Width Max Actual	0.1008 in (2.560 mm)
Circular Space Width Min Actual	0.0995 in (2.527 mm)
Pin Diameter (ref)	0.1080 in (2.7432 mm)
Measurement Between Pins (min)	0.3796 in (9.642 mm)/0.3845 in (9.766 mm)

GVM142 Ordering Information

Fill in an order code from each of the numbered fields to create a complete model order code.

Order Example:

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
GVM	142	100	M	6	W	R	A	A	P2	1	G

① **Series**
GVM Global Vehicle Motor

② **Frame**
142

③ **Rotor Length**
050 50 mm rotor
075 75 mm rotor
100 100 mm rotor

④ **Winding Letter Code***
* Select based on appropriate performance characteristics, see specific motor size winding charts, pages 4 – 27))

⑤ **Winding Numeric Code**
6

⑥ **Cooling Configuration**
W Water cooling

⑦ **Feedback**
R Resolver
S Sine cosine

⑧ **Thermal Switch**
A PTC

⑨ **Thermal Sensor**
A Omega 44008
B KTY84

⑩ **Output Shaft Configuration**
P2 SAE A 2 Bolt, SAE16-9T Female

⑪ **Power Connection**
1 Terminal box

⑫ **Option**
G Global

Cables Options

Description	Phase Power Cable*	Feedback Cable
1 m Cable	180-00530-01	170-00506-01
2 m Cable	180-00530-02	170-00506-02
3 m Cable	180-00530-03	170-00506-03
4 m Cable	180-00530-04	170-00506-04

* 3 separate phase cables required per GVM Motor

EM Sales Offices

Australia

Parker Hannifin (Australia) Pty Ltd.
9 Carrington Road
Castle Hill NSW 2154
Australia
Tel: +61 (0) 2 9634-7777
Fax: +61 (0) 2 9634 3749

Brazil

Parker Hannifin Ind. Com Ltda.
Av. Lucas Nogueira Garcez 2181
Esperança
12325-900 Jacareí, SP
Tel: 12 3954 5100
Fax: 12 3954 5262
Email: automation.brazil@parker.com

Canada

Parker Hannifin (Canada) Inc.
160 Chisholm Dr
Milton, Ontario L9T 3G9
Tel: 905-693-3000
Fax: 905-876-1958
Email: miltoncustservice@parker.com

China

Parker Hannifin Motion & Control
(Shanghai) Co., Ltd
280 Yunqiao Rd. Jin Qiao Export
Processing Zone
Shanghai 201206, China
Tel: (86-21) 50312525
Fax: (86-21) 64459717

France

Parker SSD Parvex
8 avenue du Lac
B.P. 249
F-21007 Dijon Cedex
Tel: +33 (0) 3 80 42 41 40
Fax: +33 (0) 3 80 42 41 23

Germany

Electromechanical Europe
Parker Hannifin GmbH & Co KG
Robert-Bosch-Strasse 22
D-77656 Offenburg
Germany
Tel: +49 (0) 781 509 0
Fax: +49 (0) 781 509 98176
Email: em-motion@parker.com

India

Parker Hannifin India Pvt. Ltd
Automation Group-SSD Drives Div.
133 & 151 Developed Plots Estate
Perungudi, Chennai 600 096
Tel: 044-4391-0799
Fax: 044-4391-0700

Italy

Parker Hannifin SpA
Via Gounod 1
20092 Cinsello Balsamo
Milano, Italy
Tel: +39 02 361081
Fax: +39 02 36108400
Email: em-motion@parker.com

Korea

Parker Hannifin Korea
9th Floor KAMCO Yangjae Tower
949-3 Dogok 1-dong Gangnam-gu
Seoul 135-860, Korea
Tel: 82-2-559-0454
Fax: 82-2-556-8187

Mexico

Parker Hannifin de Mexico
Eje uno Norte No.100
Parque Industrial Toluca 2000
Toluca, CP 50100 México
Tel: 52-722-275-4200
Fax: 52-722-279-0316

Singapore

Parker Hannifin Singapore Pte Ltd
11, Fourth Chin Bee Road
Singapore 619702
Tel: (65) 6887 6300
Fax: (65) 6265 5125/6261 4929

Taiwan

Parker Hannifin Taiwan Co., Ltd
No. 40, Wuchiuan 3rd Road
Wuku Industrial Park
Taipei County, Taiwan 248
ROC
Tel: 886 2 2298 8987
Fax: 886 2 2298 8982

Thailand

Parker Hannifin (Thailand) Co., Ltd.
1265 Rama 9 Road
Suanluang, Bangkok 10250
Thailand
Tel: (66) 2 186 7000
Fax: (66) 2 374 1645

UK

Parker Hannifin Ltd.
Tachbrook Park Drive
Tachbrook Park
Warwick CV34 6TU
Tel: +44 (0) 1926 317970
Fax: +44 (0) 1926 317980

USA

Parker Hannifin Electromechanical
Automation Division Main Office
5500 Business Park Drive
Rohnert Park, CA 94928 USA
Tel: 707-584-7558
800-358-9070
Fax: 707-584-8015
Email: emn_support@parker.com

Made in the USA

88-032356-01 Rev D

Issue Date 10/2022

Parker Hannifin Corporation
Hydraulic Pump and Power Systems
14249 Industrial Pkwy.
Marysville, OH 43040
phone 937 644 3915
www.parker.com/hps