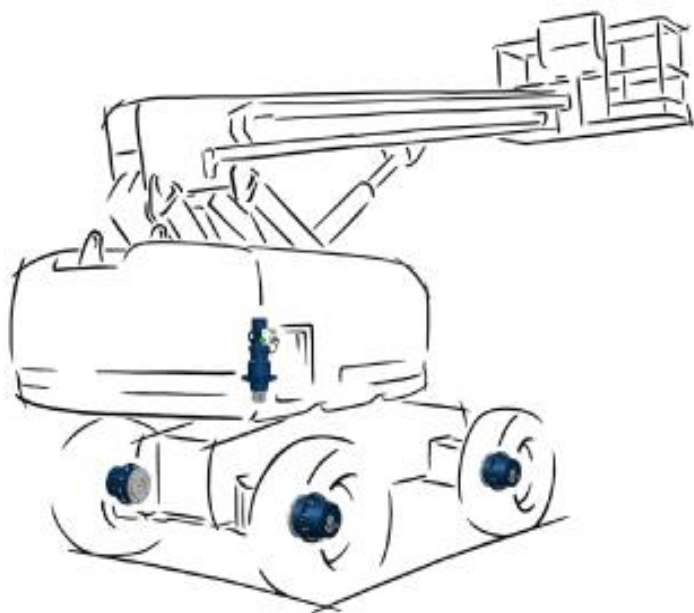




OMNI GEAR®

Catalog

WHEEL DRIVE UNIT



VB

series

22 OCT 2018 REV. A





## VB04 Wheel Drive Single Reduction

VB04 Wheel Drive Single Reduction						
Max. Continuous torque <sup>1)</sup>		17,702 in-lbf		2,000 Nm		
Max. intermittent torque		34,404 in-lbf		4,000 Nm		
Max. input speed		1,000 RPM				
Approximate weight		71 lbs		32 kg		
Approximate oil capacity		17 fl oz		0.5 L		
Feature Chart						
Feature	Description				Code	Sample
GEAR RATIO	6.15				06	VB0406
INPUT <sup>2)</sup>	Motor Pilot	Motor Mount	Spindle Pilot	Spindle Mount		VB0406S1
	Ø4.00"	4X M12X1.5 Ø5.00" B.C.	Ø6.30"	8X M10X1.5 Ø7.09" B.C.	S1	
MOTOR COUPLING	Teeth		Pitch			VB0406S112
	12T		12/24		12	
HUB	Wheel Pilot Dia.	Flange Thk.	Bolt Pattern			VB0406S112H1
	7.48"	0.591"	9X0.60"on Ø9.5" B.C.		H1	
STUDS	Size & Pitch		Stud			VB0406S112H1BE
	No Stud		-		NS	
	9/16"-18 UNF		1.87"(47.6)		BE	
BRAKE RATING	lb-in		Nm			VB0406S112H1BE-30
	3037		343		30	
	2158		244		21	
	X		X		X	

<sup>1)</sup> Continuous unit rating is dependent on life requirements, duty cycle and ambient surroundings affecting heat dissipation. Customer testing for specific applications is strongly recommended.

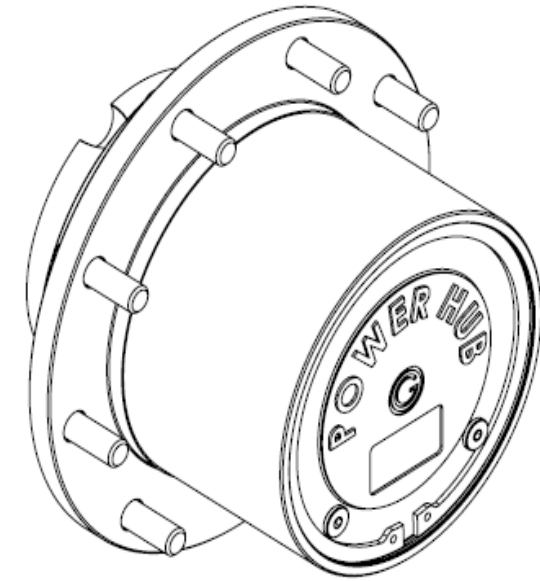
<sup>2)</sup> O-rings for motor/brake port interface not included

<sup>3)</sup> Length under stud head to end of thread equals usable stud length plus housing flange thickness

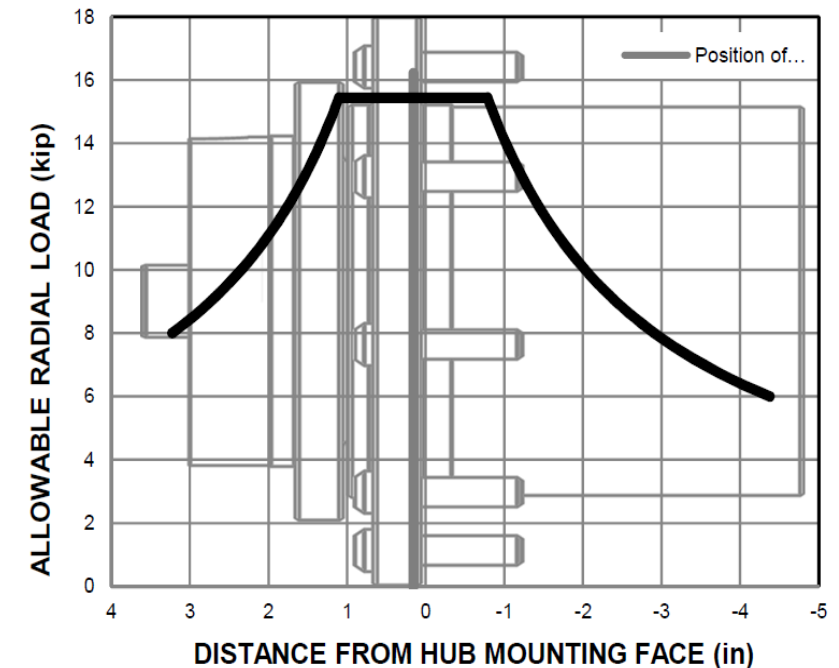
<sup>1)</sup> Continuous unit rating is dependent on life requirements, duty cycle and ambient surroundings affecting heat dissipation. Customer testing for specific applications is strongly recommended.

<sup>2)</sup> O-rings for motor/brake port interface not included

<sup>3)</sup> Length under stud head to end of thread equals usable stud length plus housing flange thickness



VB04 Bearing Life Curve: 3,000 hrs @ 100 rpm



Note: These bearing curves are supplied for design purposes only relating to radial load. They illustrate the importance of maintaining load properly over the bearing center.

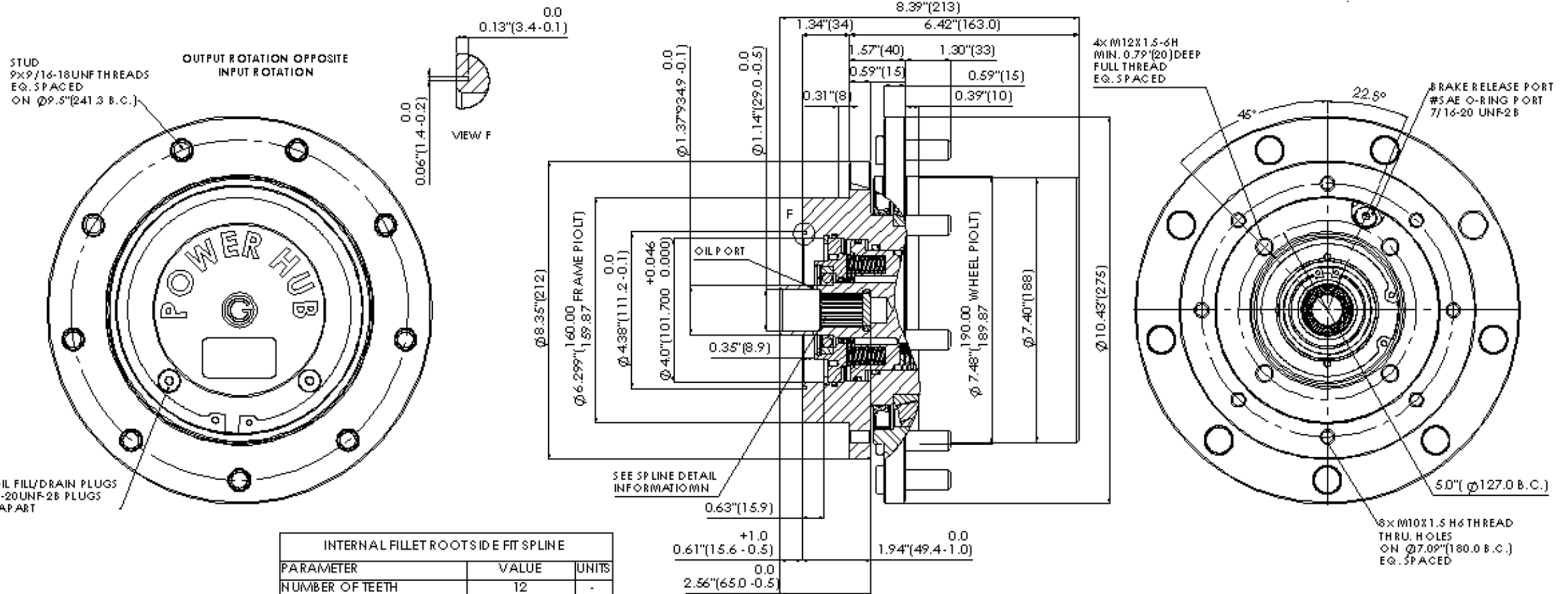
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# VB04 Wheel Drive Single Reduction



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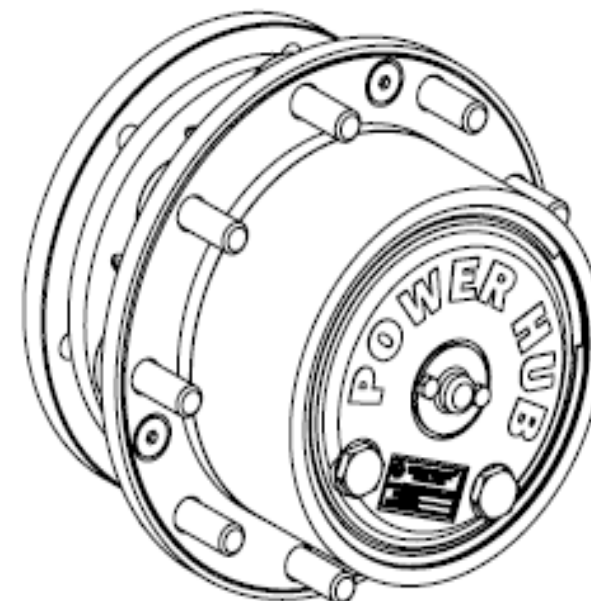
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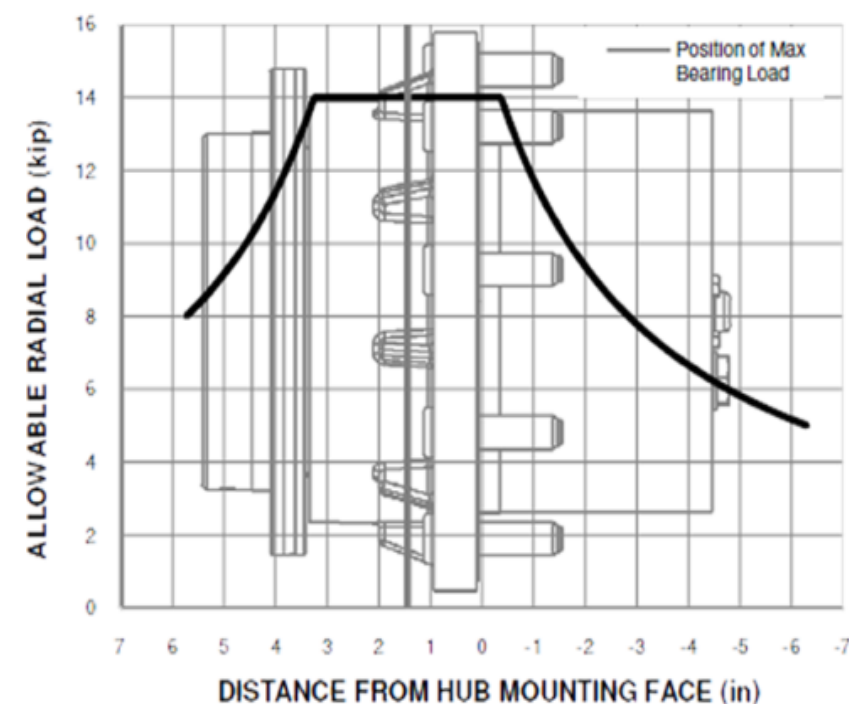
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## VB07 Wheel Drive Double Reduction — Cartridge Input



VB07 Bearing Life Curve: 3,000 hrs @ 100 rpm



Note: These bearing curves are supplied for design purposes only relating to radial load. They illustrate the importance of maintaining load properly over the bearing center.

VB07 Wheel Drive Double Reduction: Cartridge Input						
Max. Continuous torque <sup>1)</sup>	30,975 in-lbf		3,500 Nm			
Max. intermittent torque	61,950 in-lbf		7,000 Nm			
Max. input speed	5,000 RPM					
Approximate weight	100 lbs		45.5 kg			
Approximate oil capacity	23 fl oz		0.68 L			
Feature Chart						
Feature	Description				Code	Sample
GEAR RATIO	18.78				19	VB0758
	24.92				25	
	35.92				36	
	47.60				48	
	57.49				58	
	64.08				64	
CARTRIDGE INPUT <sup>2)</sup>	Motor Pilot	Motor Mount	Spindle Pilot	Spindle Mount		VB0758R1
	Ø5.31"	2X 7/16"-14UNC-2B Ø6.10" B.C.	Ø7.00"	6X 5/8"-11 UNC on Ø8.25" B.C.	R1	
	Ø5.31"	2X 7/16"-14UNC-2B Ø6.22" B.C.	Ø7.00"	6X 5/8"-11 UNC on Ø8.25" B.C.	R2	
	Ø5.31"	4X M12X1.5 Ø6.22" B.C.	Ø7.00"	6X M16-2.0 on Ø8.25" B.C.	R3	
MOTOR COUPLING	Teeth		Pitch			VB0758R113
	15T		16/32		15	
	13T		16/32		13	
HUB	Wheel Pilot Dia.	Flange Thk.	Bolt Pattern			VB0758R113H1
	7.885"	0.906"	9X Ø.681 on Ø9.5" B.C.		H1	
STUDS	Size & Pitch		Stud Length <sup>3)</sup>			VB0758R113H1CJ
	No Stud		—		NS	
	1/2"-20 UNF-2A		2.23"(56.6)	2.43"(61.7)	AA / AJ	
	9/16"-18UNF-2A		2.23"(56.6)	2.43"(61.7)	BA / BJ	
	5/8"-11 UNC-2A		2.23"(56.6)	2.43"(61.7)	CA / CJ	
	M16X1.5-6g		2.23"(56.6)	2.43"(61.7)	EA / EJ	
BRAKE RATING	in-lbf		Nm			VB0758R113H1CJ-13
	—		—		Blank	
	1100		124		11	
	1300		147		13	
	1600		181		16	
	2000		248		22	

<sup>1)</sup> Continuous unit rating is dependent on life requirements, duty cycle and ambient surroundings affecting heat dissipation. Customer testing for specific applications is strongly recommended.

<sup>2)</sup> O-rings for motor/brake port interface not included

<sup>3)</sup> Length under stud head to end of thread equals usable stud length plus housing flange thickness

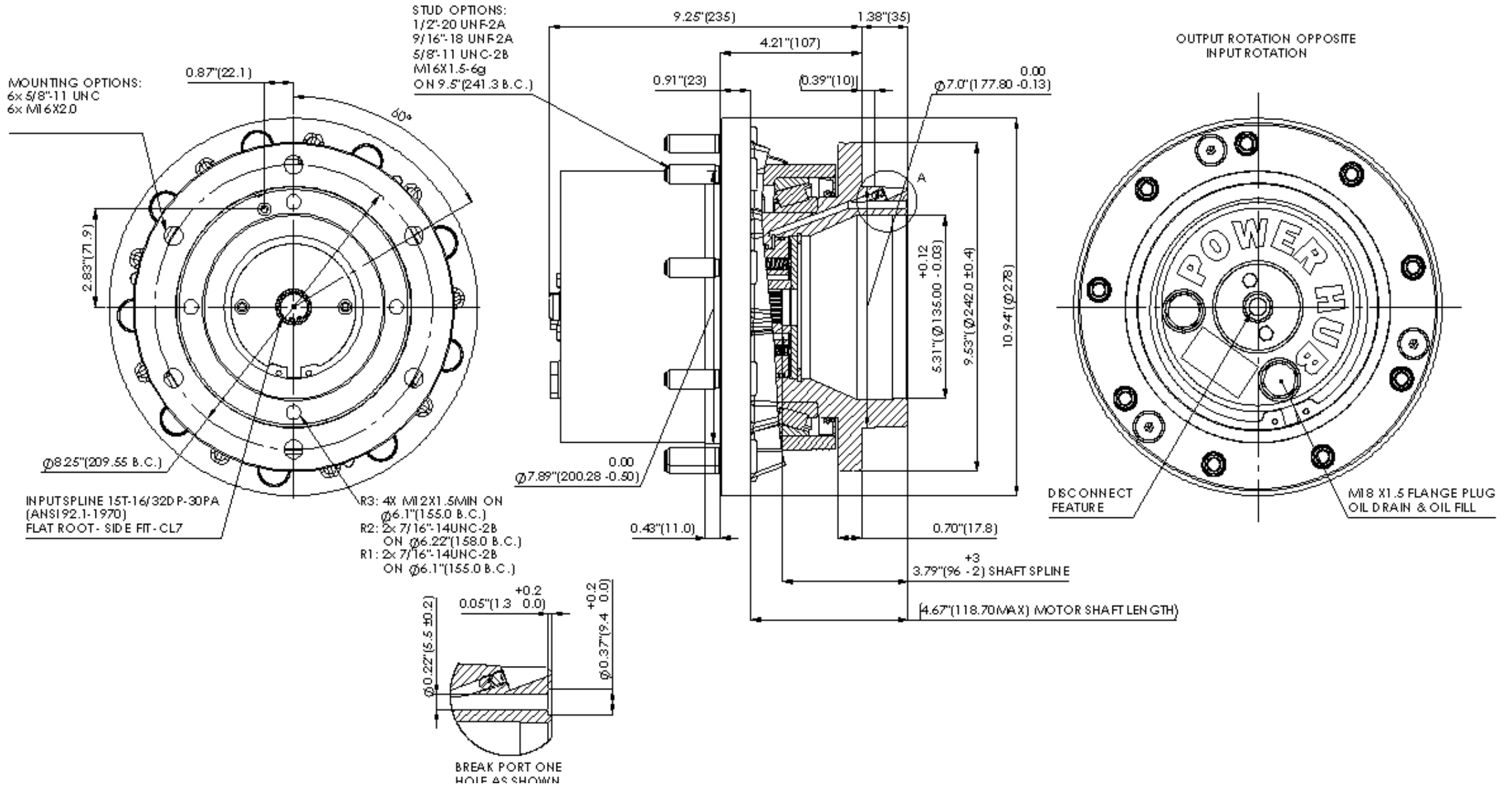
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# VB07 Wheel Drive Double Reduction — Cartridge Input



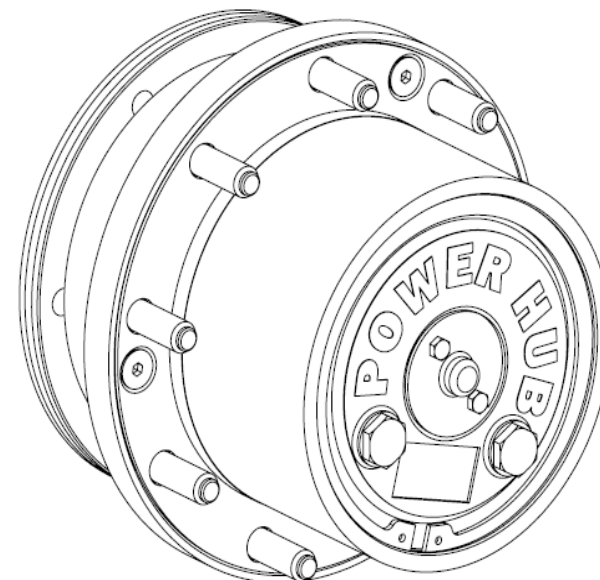
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## VB07 Wheel Drive Double Reduction —SAE Input



### VB07 Wheel Drive Double Reduction: SAE Input

Max. Continuous torque <sup>1)</sup>	30,975 in-lbf	3,500 Nm
Max. intermittent torque	61,950 in-lbf	7,000 Nm
Max. input speed	5,000 RPM	
Approximate weight	100 lbs	45.5 kg
Approximate oil capacity	23 fl oz	0.68 L

### Feature Chart

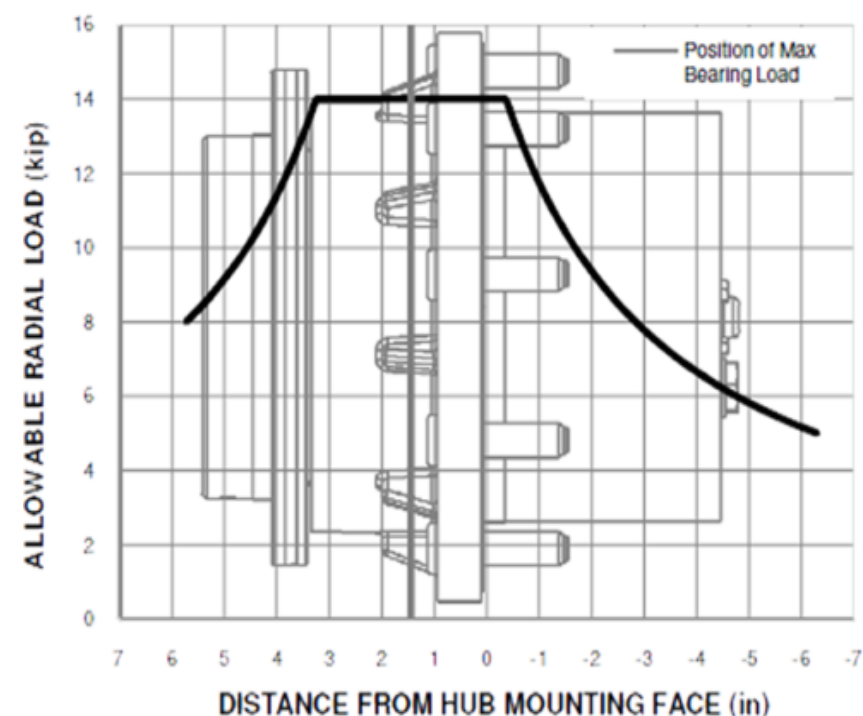
Feature	Description				Code	Sample
GEAR RATIO	18.78				19	VB0758
	24.92				25	
	35.92				36	
	47.60				48	
	57.49				58	
	64.08				64	
SAE INPUT <sup>2)</sup>	Motor Pilot	Motor Mount	Spindle Pilot	Spindle Mount		VB0758B1
	SAE A- $\phi$ 4.00"	2x M12X1.75 $\phi$ 5.75" B.C.	$\phi$ 7.00"	6x M16X2.0 $\phi$ 8.25" B.C.	B1	
	SAE A- $\phi$ 4.00	4x 1/2"-13 UNC $\phi$ 5.75" B.C.	$\phi$ 7.00"	6x M16X2.0 $\phi$ 8.25" B.C.	B2	
MOTOR COUPLING	Teeth		Pitch			VB0758B113
	15T		16/32		15	
	13T		16/32		13	
HUB	Wheel Pilot Dia.	Flange Thk.	Bolt Pattern			VB0758B113H1
	7.885"	0.906"	9X $\phi$ 6.81 on $\phi$ 9.5" B.C.		H1	
STUDS	Size & Pitch		Stud Length <sup>3)</sup>			VB0758R113H1EA
	No Stud		—		NS	
	1/2"-20 UNF-2A		2.23"(56.6)	2.43"(61.7)	AA / AJ	
	9/16"-18UNF-2A		2.23"(56.6)	2.43"(61.7)	BA / BJ	
	5/8"-11 UNC-2A		2.23"(56.6)	2.43"(61.7)	CA / CJ	
	M16X1.5-6g		2.23"(56.6)	2.43"(61.7)	EA / EJ	
BRAKE RATING	in-lbf		Nm			VB0758R113H1EA-13
	—		—		Blank	
	1100		124		11	
	1300		147		13	
	1600		181		16	
	2000		248		22	

<sup>1)</sup> Continuous unit rating is dependent on life requirements, duty cycle and ambient surroundings affecting heat dissipation. Customer testing for specific applications is strongly recommended.

<sup>2)</sup> O-rings for motor/brake port interface not included

<sup>3)</sup> Length under stud head to end of thread equals usable stud length plus housing flange thickness

VB07 Bearing Life Curve: 3,000 hrs @ 100 rpm



Note: These bearing curves are supplied for design purposes only relating to radial load. They illustrate the importance of maintaining load properly over the bearing center.

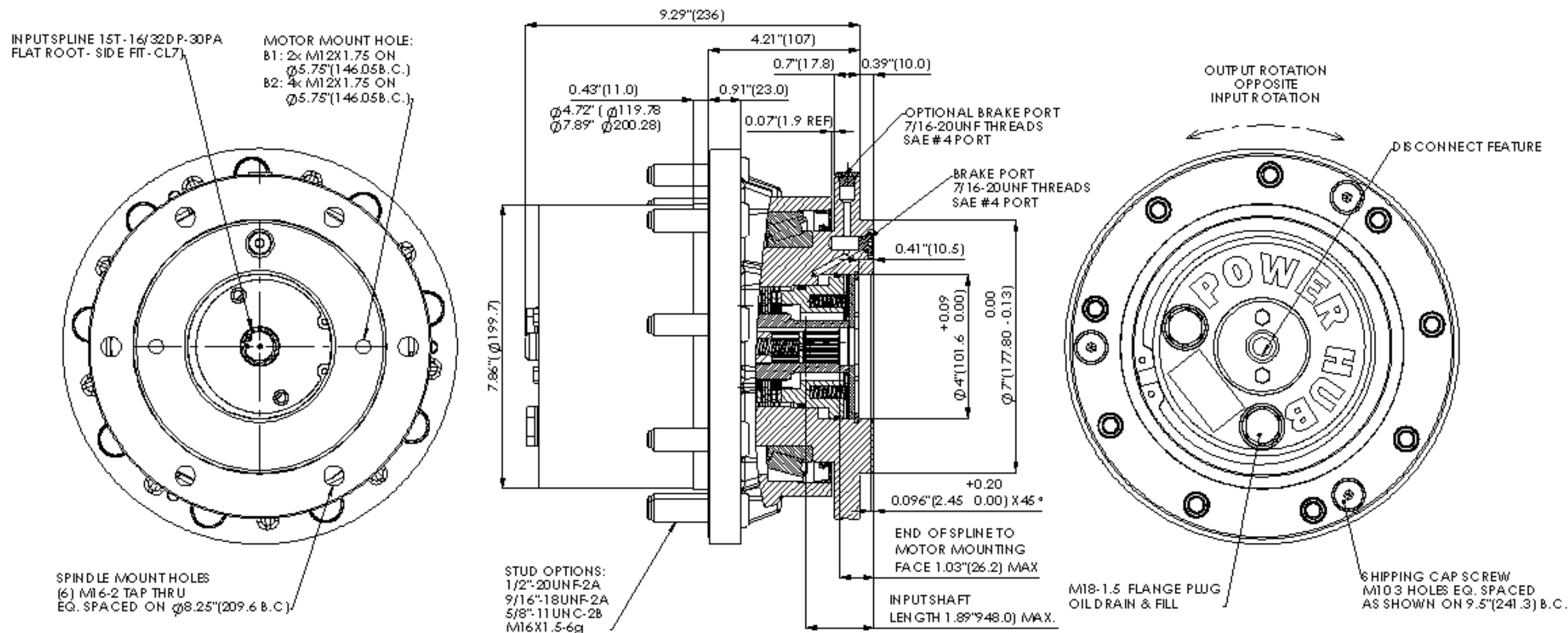
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# VB07 Wheel Drive Double Reduction —SAE Input



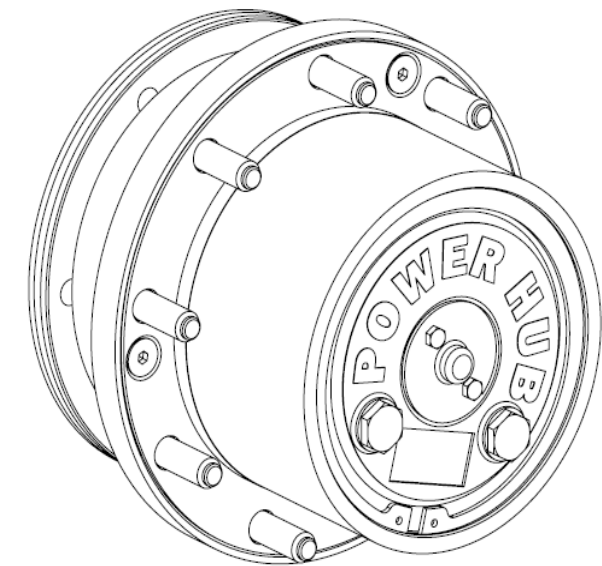
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## VB09 Wheel Drive Double Reduction — Cartridge Input



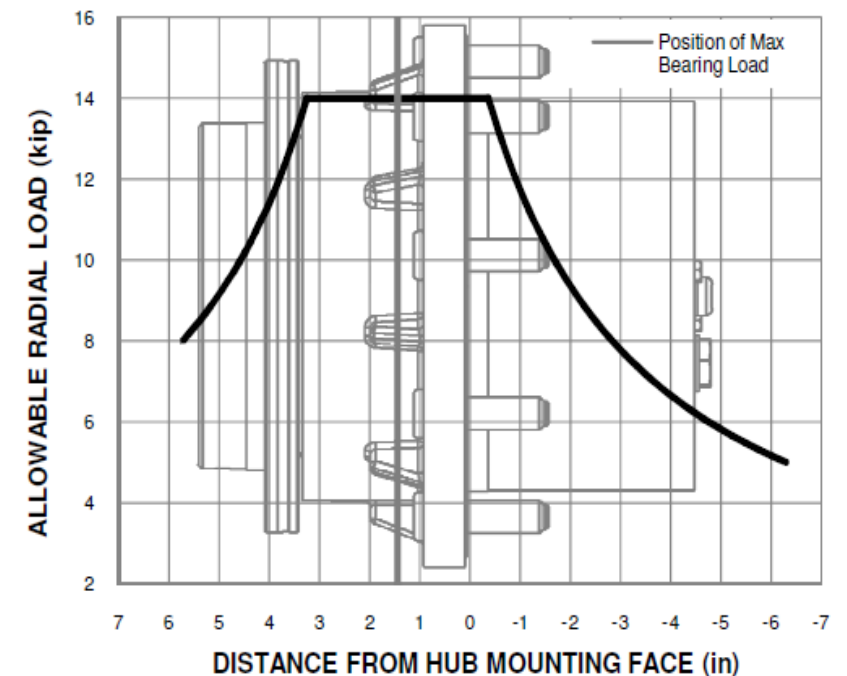
VB09 Wheel Drive Double & Triple Reduction: Cartridge Input						
Max. Continuous torque <sup>1)</sup>		39,825 in-lbf		4,500Nm		
Max. intermittent torque		79,650 in-lbf		9,000Nm		
Max. input speed		5,000 RPM				
Approximate weight		110 lbs		50kg		
Approximate oil capacity		24 fl oz		0.7 L		
Feature Chart						
Feature	Description				Code	Sample
GEAR RATIO	21.60				22	VB0970
	30.27				30	
	42.72				43	
	58.48				58	
	70.04				70	
	81.88				82	
	89.93				90	
	100.18				100	
	113.66				114	
	132.20				132	
	159.30				159	
	CARTRIDGE INPUT <sup>2)</sup>	Motor Pilot	Motor Mount	Spindle Pilot	Spindle Mount	
Ø5.31"		2X 7/16"-14UNC-2B Ø6.10" B.C.	Ø7.00"	6X 5/8-11UNC on Ø8.25" B.C	R1	
Ø5.31"		2X 7/16"-14UNC-2B Ø6.22" B.C.	Ø7.00"	6X 5/8-11UNC on Ø8.25" B.C	R2	
Ø5.31"		4X M12X1.5 Ø6.10" B.C.	Ø7.00"	6X M16X2.0 on Ø8.25" B.C.	R3	
MOTOR COUPLING	Teeth		Pitch			VB0970R115
	13T		16/32		13	
	15T		16/32		15	
HUB	Wheel Pilot Dia.	Flange Thk.	Bolt Pattern			VB0970R115H1
	7.86"	0.906"	9X 0.681"on Ø9.5" B.C.		H1	
STUDS	Size & Pitch		Stud Length <sup>3)</sup>			VB0970R115H1CJ
	No Stud		—	—	NS	
	1/2"-20 UNF-2A		1.32 [33.6]	1.52 [38.7]	AA / AJ	
	9/16"-18 UNF-2A		1.32 [33.6]	1.52 [38.7]	BA / BJ	
	5/8"-11 UNC-2B		1.32 [33.6]	1.52 [38.7]	CA / CJ	
	M16X1.5		1.32 [33.6]	1.52 [38.7]	EA / EJ	
BRAKE RATING	in-lbf		Nm			VB0970R115H1CJ-13
	—		—		Blank	
	1100		124		11	
	1300		147		13	
	1600		181		16	
	2200		248		22	

<sup>1)</sup> Continuous unit rating is dependent on life requirements, duty cycle and ambient surroundings affecting heat dissipation. Customer testing for specific applications is strongly recommended.

<sup>2)</sup> O-rings for motor/brake port interface not included

<sup>3)</sup> Usable length equals stud length less housing flange thickness ALL DIMENSIONS NOMINAL & SUBJECT TO CHANGE WITHOUT NOTICE

VB09 Bearing Life Curve: 3,000 hrs @ 100 rpm



Note: These bearing curves are supplied for design purposes only relating to radial load. They illustrate the importance of maintaining load properly over the bearing center.

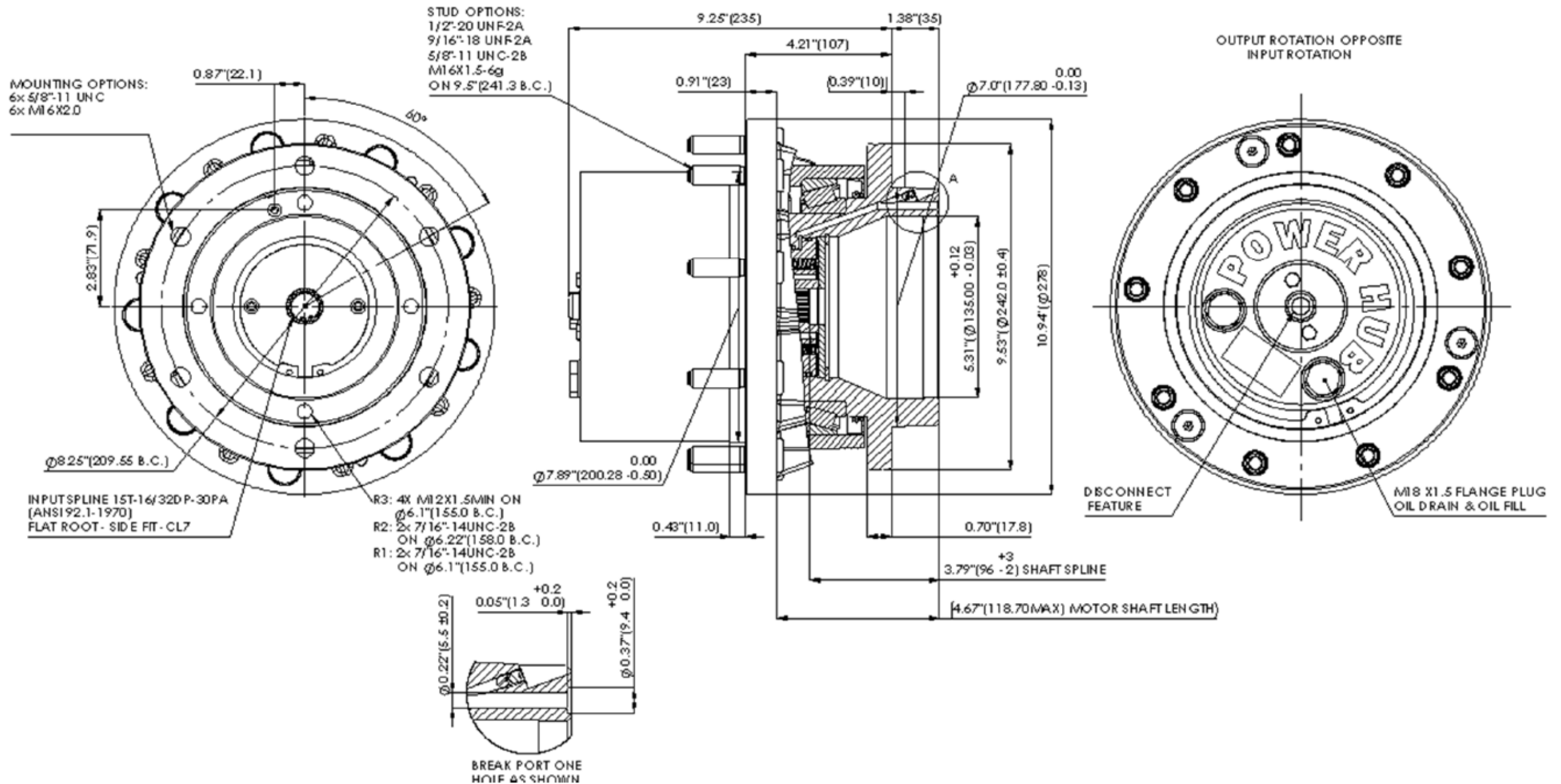
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# VB09 Wheel Drive Double Reduction — Cartridge Input



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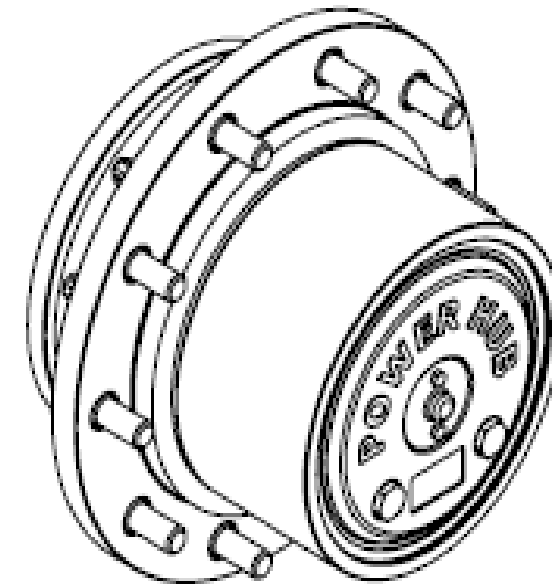
## VB11 Wheel Drive Double & Triple Reduction

VB11 Wheel Drive Double & Triple Reduction: Cartridge Input						
Max. Continuous torque <sup>1)</sup>	48,675 in-lbf		5,500 Nm			
Max. intermittent torque	97,350 in-lbf		11,000 Nm			
Max. input speed	5,000 RPM					
Approximate weight	209 lbs		95 kg			
Approximate oil capacity	40 fl oz		1.5 L			
Feature Chart						
Feature	Description			Code	Sample	
GEAR RATIO	14.88			15	VB1157	
	17.97			18		
	21.14			21		
	25.79			26		
	28.40			28		
	31.71			32		
	35.92			36		
	40.84			41		
	47.60			48		
	57.49			57		
	71.52			72		
	73.30			73		
	85.62			86		
	100.05			100		
	122.36			122		
CARTRIDGE INPUT <sup>2)</sup>	Motor Pilot	Motor Mount	Spindle Pilot	Spindle Mount	VB1157R2	
	Ø5.31"	2X 7/16"-14UNC Ø6.1" B.C.	Ø8"	8X5/8"-11UNC Ø9.5" B.C.		R1
	Ø5.31"	2X M12X1.75 Ø6.299" B.C.	Ø8"	12XM16X2 Ø9.5" B.C.		R2
	Ø5.31"	2X1/2"-13 Ø6.299" B.C.	Ø9.45"	18X5/8"-11UNC Ø10.83" B.C.		R3
MOTOR COUPLING	Teeth		Pitch		VB1157R215	
	15T		16/32			15
	13T		16/32			13
HUB	Wheel Pilot Dia.	Flange Thk.	Bolt Pattern		VB1157R215H3	
	11.02"	0.96"	10X Ø.944 on Ø13.187" B.C.			H3
	11.02"	0.96"	11X Ø.944 on Ø13.187" B.C.			H4
	9.45"	0.7"	9X Ø.683 on Ø11.125" B.C.			HJ
STUDS	Size & Pitch		Stud Length <sup>3)</sup>		VB1157R215H3DL	
	No Stud		--			NS
	M22X1.5		2.93"[74.3]			FK
	5/8"-18 UNF		2.41"[61.1]			CJ
	3/4-16 UNC		2.53"[64.3]			DL
BRAKE RATING	in-lbf		Nm		VB1157R215H3DL-25	
	--		--			Blank
	1000		113			10
	1500		170			15
	2000		226			20
	2500		282			25
SEALS	Seal Type				VB1157R215H3DL-25L	
	Seal Boot			B		
	Face Seal			F		
	2pcs Lip (Standard)			L		
	2pcs Lip Seal and Seal Boot			Z		

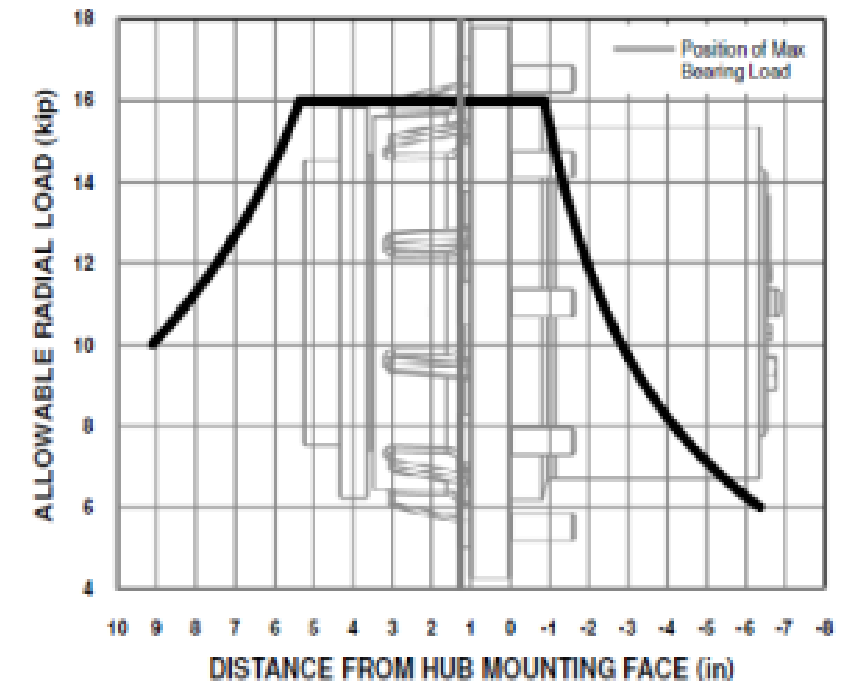
<sup>1)</sup> Continuous unit rating is dependent on life requirements, duty cycle and ambient surroundings affecting heat dissipation. Customer testing for specific applications is strongly recommended.

<sup>2)</sup> O-rings for motor/brake port interface not included

<sup>3)</sup> Length under stud head to end of thread equals usable stud length plus housing flange thickness



VB11 Bearing Life Curve: 3,000 hrs @ 100 rpm



Note: These bearing curves are supplied for design purposes only relating to radial load. They illustrate the importance of maintaining load properly over the bearing center.

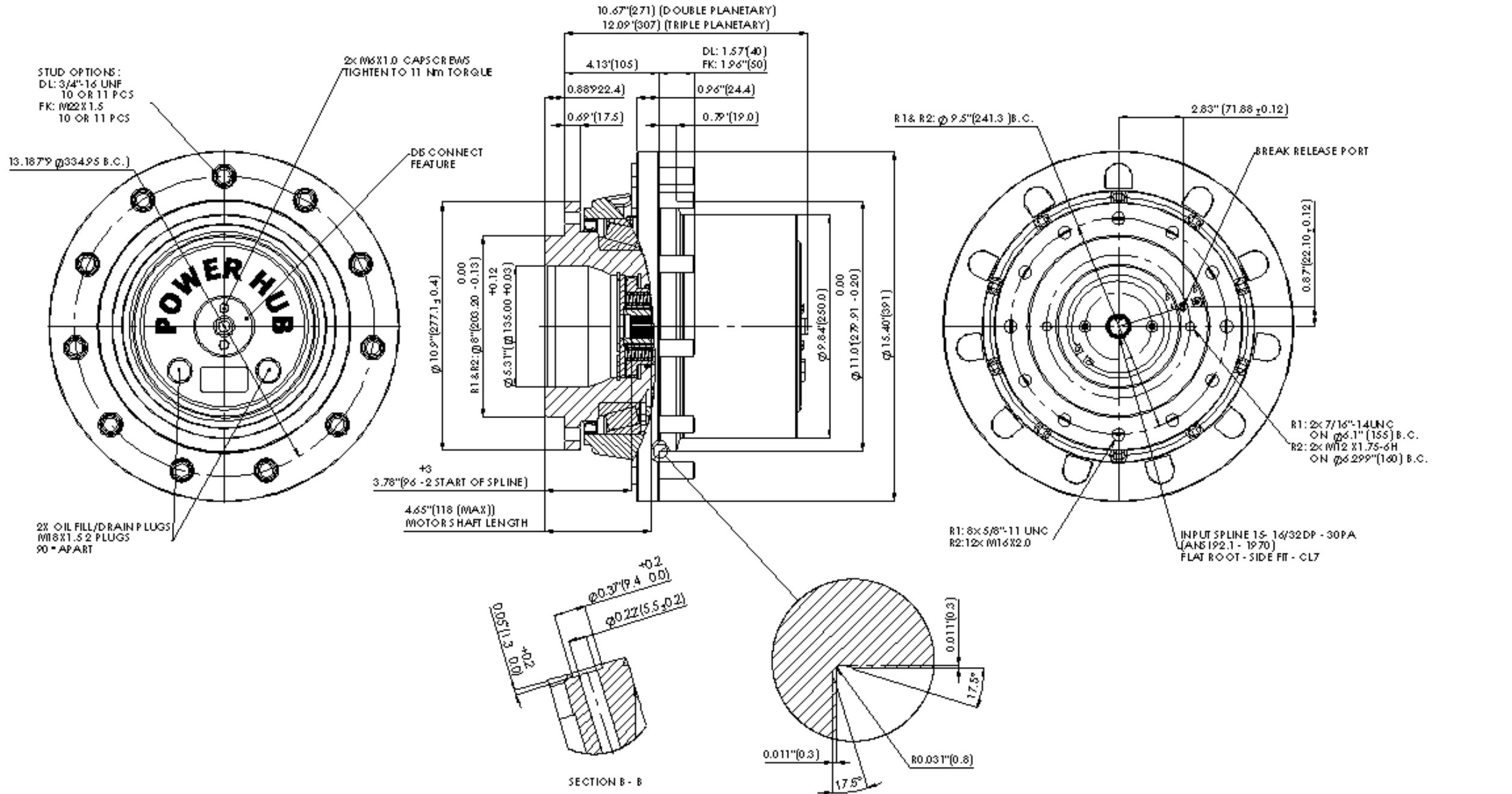
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# VB11 Wheel Drive Double & Triple Reduction



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# VB13 Wheel Drive Double & Triple Reduction

VB13 Wheel Drive Double & Triple Reduction: Cartridge Input					
Max. Continuous torque <sup>1)</sup>	58,500 in-lbf		6,600 Nm		
Max. intermittent torque	117,000 in-lbf		13,000 Nm		
Max. input speed	5,000 RPM				
Approximate weight	220 lbs		100 kg		
Approximate oil capacity	68 fl oz		2 L		
Feature Chart					
Feature	Description			Code	Sample
GEAR RATIO	18.83			19	VB1387
	27.70			28	
	30.27			30	
	35.33			35	
	42.72			43	
	69.34			69	
	76.80			77	
	86.74			87	
	100.66			101	
	110.06			110	
	122.05			122	
	137.88			138	
CARTRIDGE INPUT <sup>2)</sup>	Motor Pilot	Motor Mount	Spindle Pilot	Spindle Mount	VB1387R2
	Ø5.31"	2X M12X1.75 Ø6.293" B.C.	Ø8"	12XM16X2 Ø9.5" B.C.	
MOTOR COUPLING	Teeth		Pitch		VB1387R215
	15T		16/32		
	13T		16/32		
HUB	Wheel Pilot Dia	Flange Thk.	Bolt Pattern		VB1387R215H4
	11.02"	0.96"	10X Ø.944 on Ø13.187" B.C.		
	11.02"	0.96"	11X Ø.944 on Ø13.187" B.C.		
STUDS	Size & Pitch		Stud Length <sup>3)</sup>		VB1387R215H4DL
	No Stud		--		
	M22X1.5		2.93"[74.3]		
	3/4-16 UNC		2.53"[64.3]		
BRAKE RATING	in-lbf		Nm		VB1387R215H4DL-22
	--		Blank		
	1000		113		
	1500		170		
	2200		248		
	2500		282		
SEALS	Seal Type				VB1387R215H4DL-22L
	Seal Boot			B	
	Face Seal			F	
	2pcs Lip (Standard)			L	
	2pcs Lip Seal and Seal Boot			Z	

<sup>1)</sup> Continuous unit rating is dependent on life requirements, duty cycle and ambient surroundings affecting heat dissipation. Customer testing for specific applications is strongly recommended.

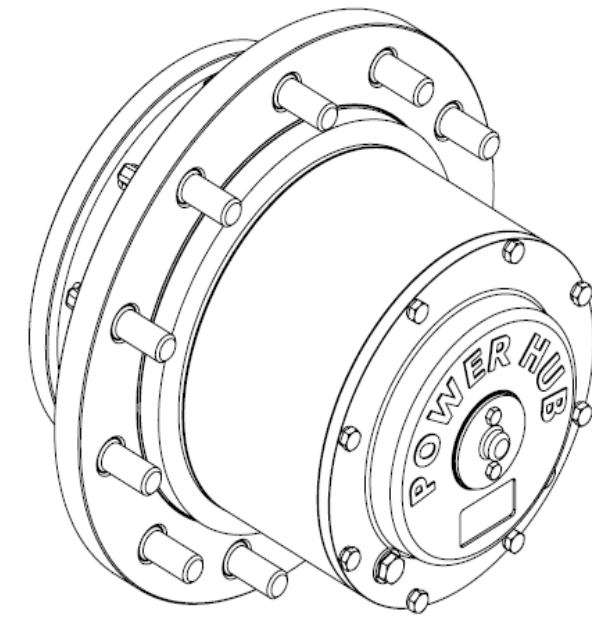
<sup>2)</sup> O-rings for motor/brake port interface not included

<sup>3)</sup> Length under stud head to end of thread equals usable stud length plus housing flange thickness

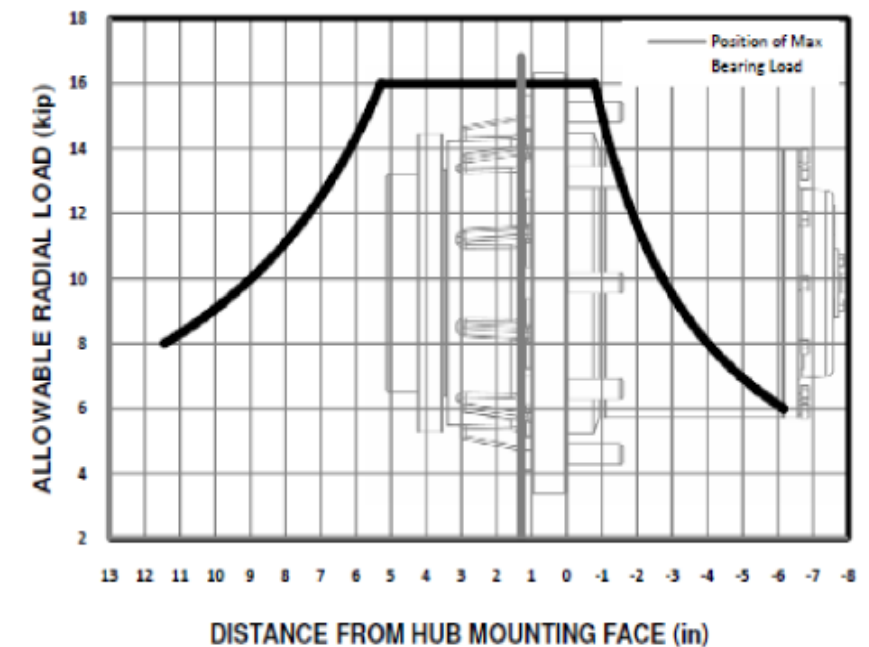
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<sup>2)</sup> O-rings for motor/brake port interface not included

<sup>3)</sup> Length under stud head to end of thread equals usable stud length plus housing flange thickness



VB13 Bearing Life Curve: 3,000 hrs @ 100 rpm



Note: These bearing curves are supplied for design purposes only relating to radial load. They illustrate the importance of maintaining load properly over the bearing center.

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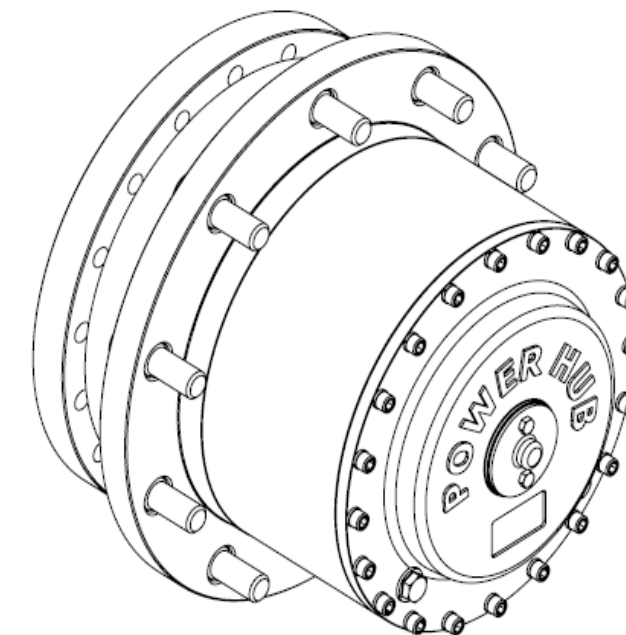
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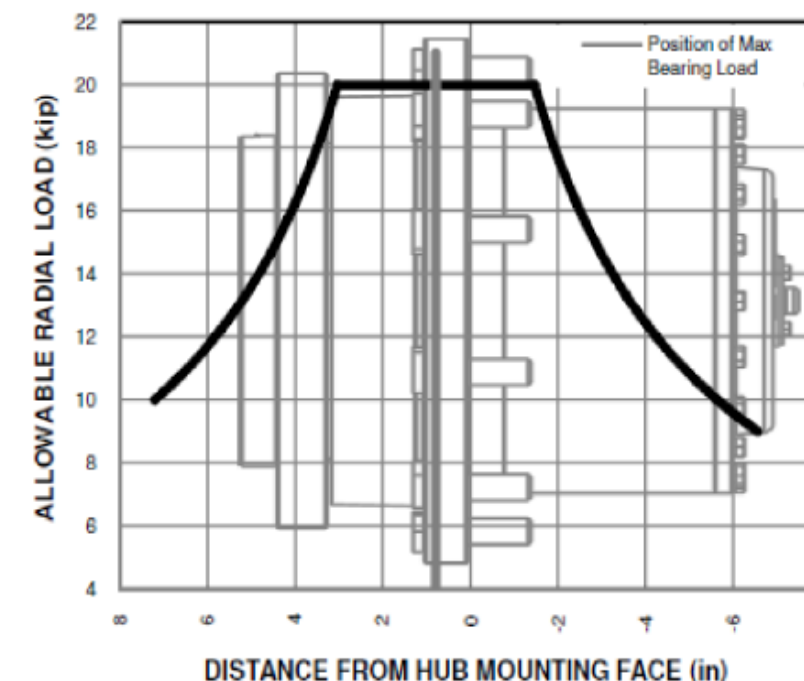




# VB18 Wheel Drive Double & Triple Reduction



VB18 Bearing Life Curve: 3,000 hrs @ 100 rpm



Note: These bearing curves are supplied for design purposes only relating to radial load. They illustrate the importance of maintaining load properly over the bearing center.

VB18 Wheel Drive Double & Triple Reduction: Cartridge Input						
Max. Continuous torque <sup>1)</sup>	79,650 in-lbf		9,000 Nm			
Max. intermittent torque	159,300 in-lbf		18,000 Nm			
Max. input speed	5,000 RPM					
Approximate weight	264 lbs		120 kg			
Approximate oil capacity	78 fl oz		2.3 L			
Feature Chart						
Feature	Description				Code	Sample
GEAR RATIO	27.00				27	VB18113
	32.68				33	
	55.54				56	
	62.08				62	
	69.76				70	
	76.41				76	
	85.05				85	
	96.75				97	
	113.46				113	
	123.09				123	
	139.28				139	
	162.28				162	
CARTRIDGE INPUT <sup>2)</sup>	Motor Pilot	Motor Mount	Spindle Pilot	Spindle Mount		VB18113C1
	Ø5.31"	2X 1/2"-13UNC Ø6.299" B.C.	Ø10.63"	18X M16X2 Ø11.81" B.C.	C1	
MOTOR COUPLING	Teeth		Pitch			VB18113C115
	15T		16/32		15	
	13T		16/32		13	
HUB	Wheel Pilot Dia	Flange Thk.	Bolt Pattern			VB18113C115H1
	11.02"	1.02"	10X Ø.944 on Ø13.187" B.C.		H1	
STUDS	Size & Pitch		Stud Length <sup>3)</sup>			VB18113C115H1DL
	No Stud		--		NS	
	M22X1.5		2.93"[74.3]		FK	
	3/4-16 UNC		2.53"[64.3]		DL	
BRAKE RATING	in-lbf		Nm			VB18113C115H1DL-25
	--		--		Blank	
	1000		113		10	
	1500		170		15	
	2000		226		20	
	2500		282		25	
SEALS	Seal Type					VB18113C115H1DL-25L
	Seal Boot				B	
	Face Seal				F	
	2pcs Lip (Standard)				L	
	2pcs Lip Seal and Seal Boot				Z	

<sup>1)</sup> Continuous unit rating is dependent on life requirements, duty cycle and ambient surroundings affecting heat dissipation. Customer testing for specific applications is strongly recommended.

<sup>2)</sup> O-rings for motor/brake port interface not included

<sup>3)</sup> Length under stud head to end of thread equals usable stud length plus housing flange thickness

<sup>1)</sup> Continuous unit rating is dependent on life requirements, duty cycle and ambient surroundings affecting heat dissipation. Customer testing for specific applications is strongly recommended.

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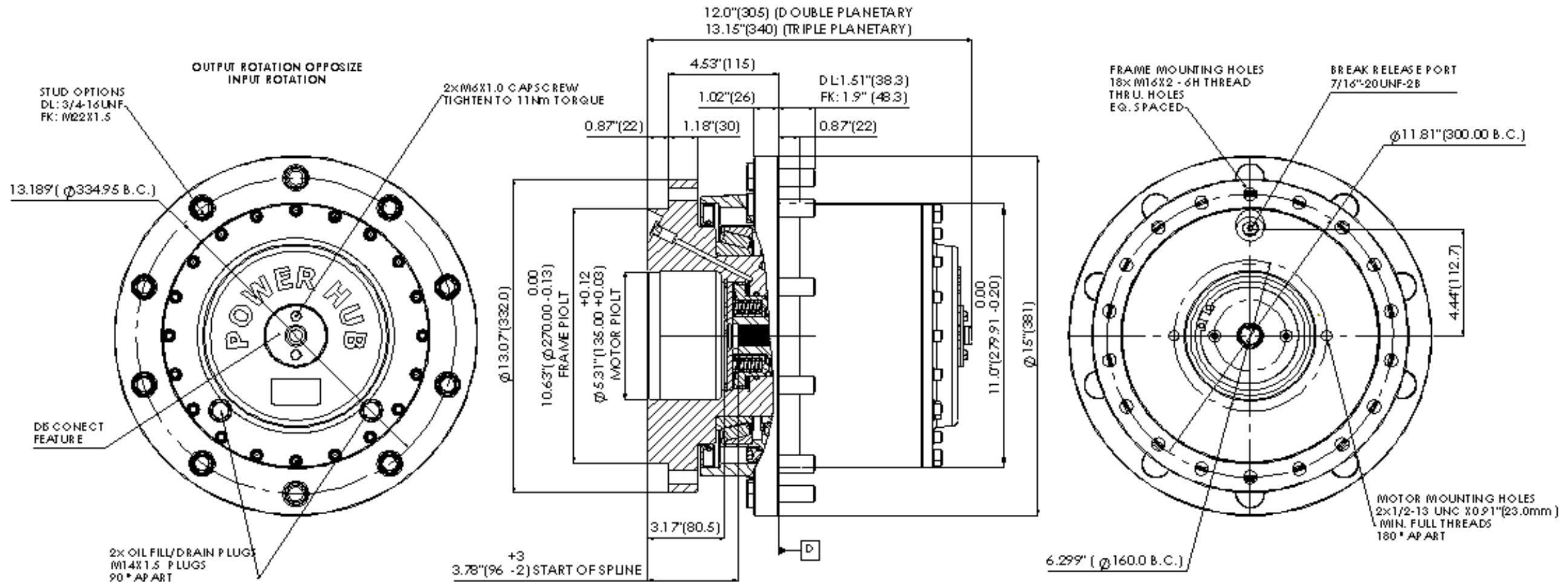
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# VB18 Wheel Drive Double & Triple Reduction



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## Appendix: Application Instruction

To adjust life for loads and speeds other than shown on the curve

Life Factor (LF) =

$$\frac{SF \times R}{R'}$$

R = Allowable resultant load for a given location from the mounting flange

R' = Anticipated load at location from mounting flange

SF = Speed factor from table

Speed Factors		Bearing Life	
Output Speed		Life Factor	
(RPM)	SF	(LF)	Hours
5	2.456	0.584	500
10	1.944	0.719	1000
20	1.620	0.812	1500
30	1.435	0.886	2000
40	1.316	0.947	2500
50	1.231	1.000	3000
60	1.165	1.047	3500
70	1.113	1.090	4000
80	1.069	1.130	4500
90	1.032	1.116	5000
100	1.000	1.231	6000
200	0.812	1.289	7000
300	0.719	1.342	8000
400	0.659	1.390	9000
500	0.617	1.435	10000

1) Continuous unit rating is dependent on life requirements, duty cycle and ambient surroundings affecting heat dissipation. Customer testing for specific applications is strongly recommended.

2) O-rings for motor/brake port interface not included

3) Length under stud head to end of thread equals usable stud length plus housing flange thickness

CAUTION: The same torsional load parameters used in calculating the driving mode must be used in the braking mode!

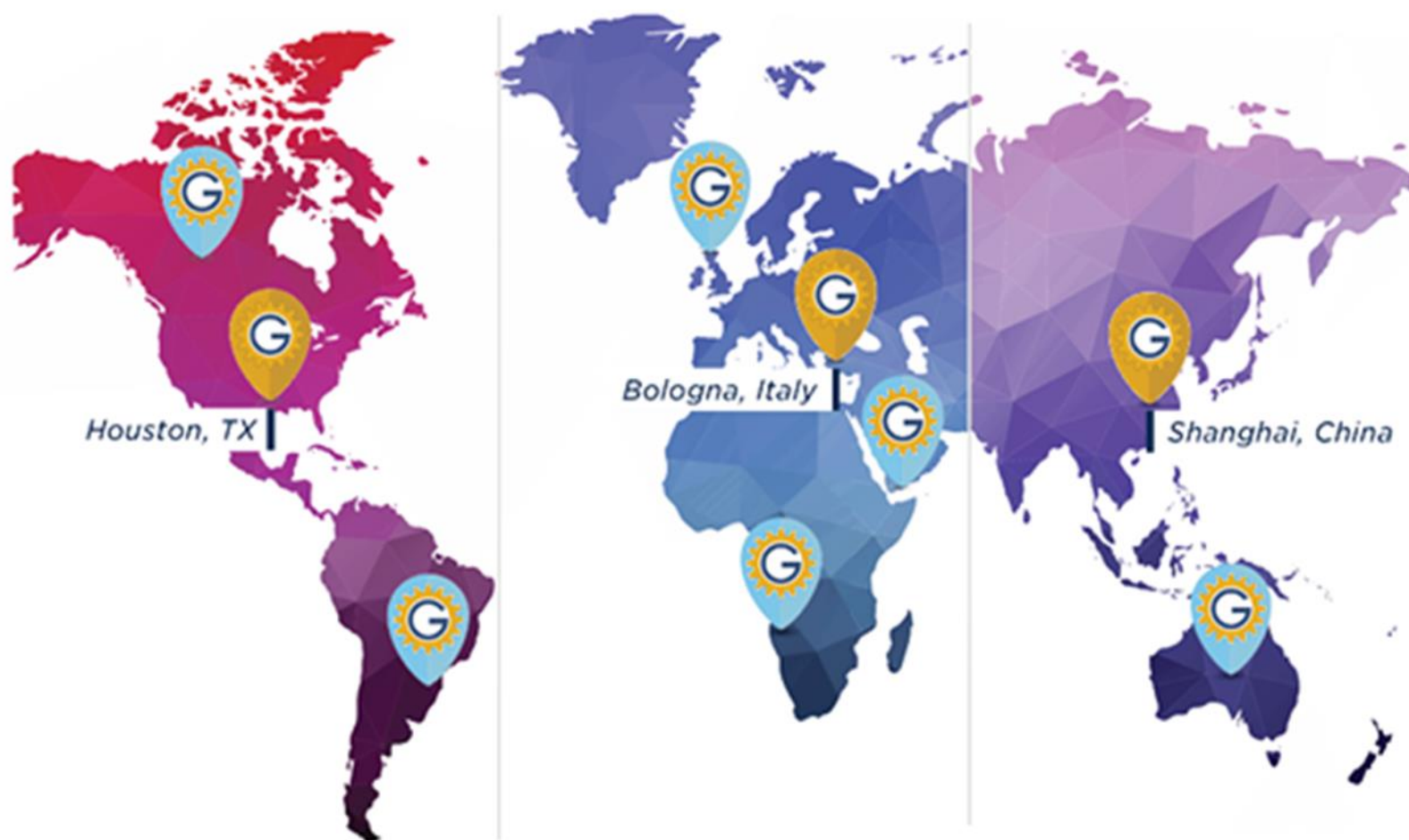
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