

**Black  
Bruin**  
HYDRAULIC MOTORS



**The Freewheeling Motor**



**Power on Demand**



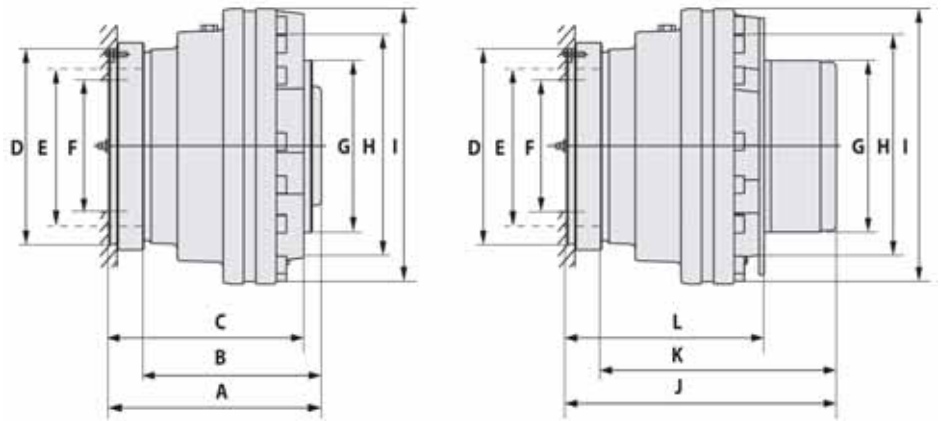
**Customer Driven Solutions**



# Black Bruin BBC Motor

## Radial Piston Motor with Superior Performance

Black Bruin BBC radial piston motor provides excellent efficiency up to max speeds. Multi-speed BBC motor is not restricted by preferred rotational direction and thus provides the same top performance in wide speed range to both clockwise and counter-clockwise directions. The fail-safe mechanical freewheeling with in-built freewheeling valve or 4-speed function are just couple of the many features that can be added into the versatile BBC package.



Dimensions:

Model	Weight without brake kg	A mm	Rotating part B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	J mm	Rotating part K mm	L mm	Weight with brake kg
BBC 01	41	234	193	210	172	140 12 x M12	117	175,8	225 5 x M22 x 1,5	263	299	258	213	47
BBC 02	62	254	212	233	200	160 8 x M16	135	175,8	225 5 x M22 x 1,5	282	322	280	236	71
BBC 03	80	267,5	223	241	216	175 10 x M16	150	220,8	275 8 x M20 x 1,5	315	331	286,5	241	92
BBC 04	103	281	234	246	216	175 12 x M16	150	220,8	275 8 x M22 x 1,5	343	350	303,5	251	118
BBC 05	138	298	254	259	240	200 12 x M20 x 1,5	166	280,8	335 10 x M22 x 1,5	376	383	339	263	159
BBC 06	180	328	279,5	290	262	215 12 x M20 x 1,5	185	280,8	335 10 x M22 x 1,5	420	423	374,5	295	215
BBC 07	300	387	332,5	338	310	260 12 x M20 x 1,5	220	370,8	425 10 x M22 x 1,5	492	535	480,5	338	400

## Performance data

Motor class size		BBC 01					BBC 02					BBC 03				
<b>Percentual displacement</b>	%	90	100	110	120	130	90	100	110	120	130	90	100	110	120	130
<b>Displacement</b>	ccm	462	513	564	615	667	705	783	862	940	1018	909	1010	1111	1212	1313
<b>Peak pressure</b>	bar	450	450	450	425	400	450	450	450	425	400	450	450	450	425	400
- Peak torque	Nm	3045	3380	3715	3830	3910	4645	5160	5680	5850	5965	5990	6655	7320	7545	7690
<b>Intermittent* pressure</b>	bar	400	400	400	375	350	400	400	400	375	350	400	400	400	375	350
- Intermittent torque	Nm	2710	3005	3305	3380	3420	4130	4585	5050	5165	5220	5325	5915	6510	6655	6730
<b>Power</b>																
- Max. displacement	kW			32					42					50		
- 1/2 displacement	kW			21					28					33		
<b>Max. speed</b>																
- Working	rpm	260	234	213	195	180	223	201	182	167	154	206	186	169	155	143
- 1/2 displacement	rpm	364	328	298	278	252	318	286	260	238	220	290	261	238	218	201
- Freewheeling	rpm			600					600					600		
<b>Brake (multi-disc)</b>																
- Brake torque	Nm			4300					6560					8470		
- Releasing pressure	bar			16					16					16		
- Max. brake pressure	bar			30					30					30		

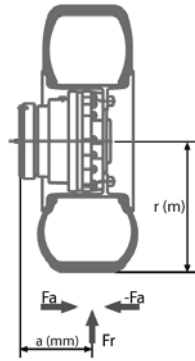
Motor class size		BBC 04					BBC 05				
<b>Percentual displacement</b>	%	90	100	110	120	130	90	100	110	120	130
<b>Displacement</b>	ccm	1170	1300	1430	1560	1690	1572	1747	1922	2096	2271
<b>Peak pressure</b>	bar	450	450	450	425	400	450	450	450	425	400
- Peak torque	Nm	7710	8670	9425	9710	9900	10360	11515	12670	13045	13305
<b>Intermittent* pressure</b>	bar	400	400	400	375	350	400	400	400	375	350
- Intermittent torque	Nm	6855	7615	8380	8570	8665	9210	10235	11260	11510	11640
<b>Power</b>											
- Max. displacement	kW			59					72		
- 1/4, 1/2, 3/4 displacement	kW			26/39/49					32/48/60		
<b>Max. speed</b>											
- Working	rpm	189	170	155	142	131	172	155	141	129	119
- 3/4 displacement	rpm	225	202	184	169	156	205	185	168	154	142
- 1/2 displacement	rpm	267	240	218	200	185	244	220	200	183	169
- 1/4 displacement	rpm	356	320	291	267	246	326	293	266	244	226
- Freewheeling	rpm			500					500		
<b>Brake (multi-disc)</b>											
- Brake torque	Nm			10900					20600		
- Releasing pressure	bar			16					16		
- Max. brake pressure	bar			30					30		

Motor class size		BBC 06					BBC 07				
<b>Percentual displacement</b>	%	90	100	110	120	130	90	100	110	120	130
<b>Displacement</b>	ccm	2214	2460	2706	2952	3198	3825	4250	4675	5100	5525
<b>Peak pressure</b>	bar	450	450	450	425	400	450	450	450	425	400
- Peak torque	Nm	14590	16215	17835	18375	18735	25200	28000	30800	31740	32360
<b>Intermittent* pressure</b>	bar	400	400	400	375	350	400	400	400	375	350
- Intermittent torque	Nm	12970	14410	15855	16215	16395	22400	24890	27380	28000	28310
<b>Power</b>											
- Max. displacement	kW			91					125		
- 1/4, 1/2, 3/4 displacement	kW			40/60/76					54/81/104		
<b>Max. speed</b>											
- Working	rpm	154	139	126	116	107	123	110	100	92	85
- 3/4 displacement	rpm	183	165	150	137	127	136	122	111	102	94
- 1/2 displacement	rpm	217	195	177	163	150	170	153	139	127	117
- 1/4 displacement	rpm	289	260	237	217	200	226	203	185	170	156
- Freewheeling	rpm			400					325		
<b>Brake (multi-disc)</b>											
- Brake torque	Nm			20600					42000		
- Releasing pressure	bar			16					16		
- Max. brake pressure	bar			30					30		

\* Intermittent operation: Permissible values for max. 10 % of every minute.

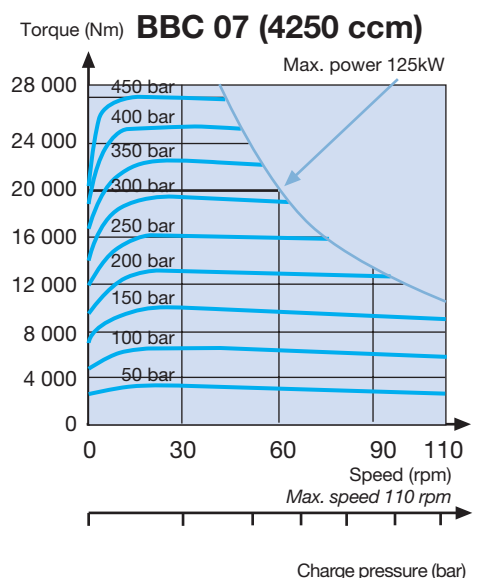
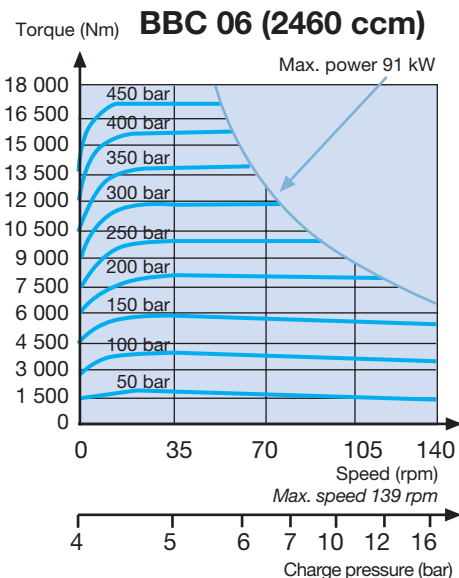
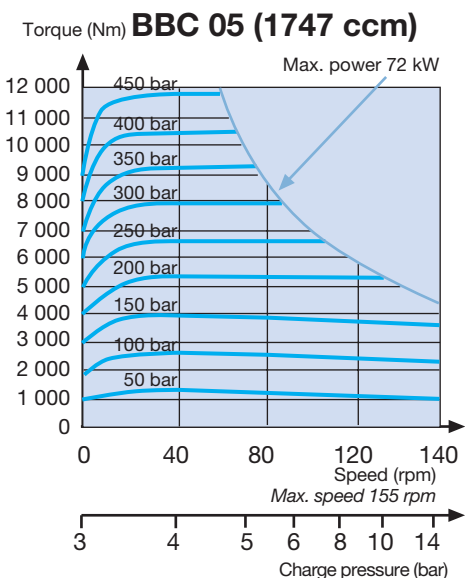
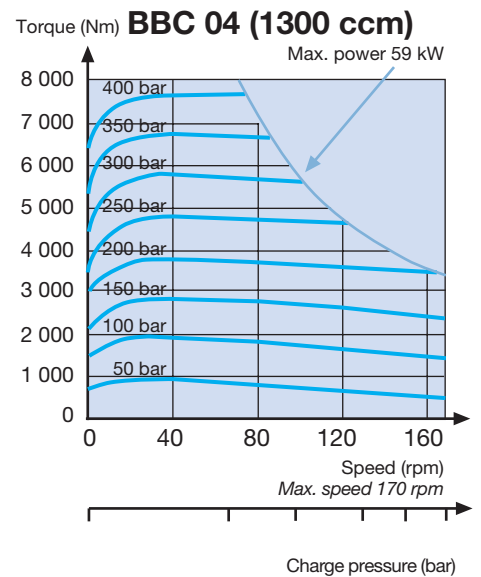
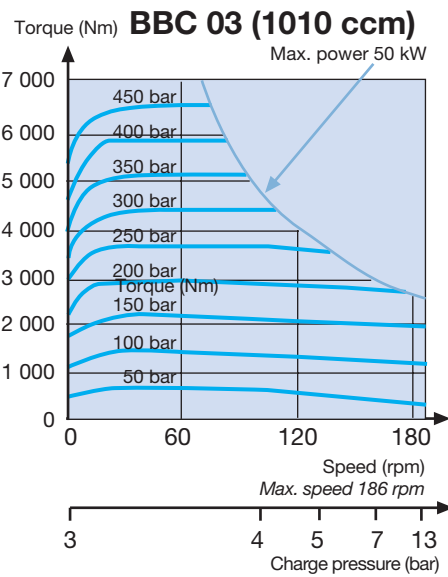
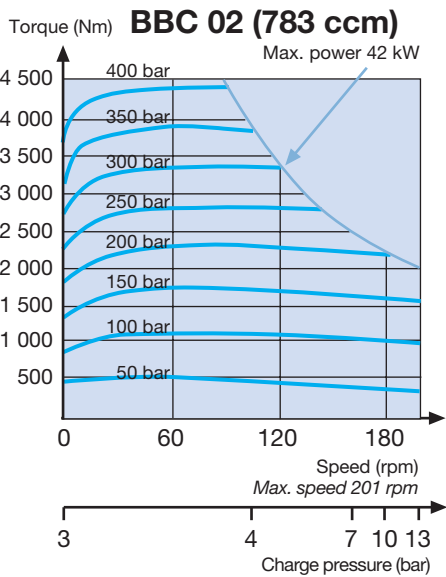
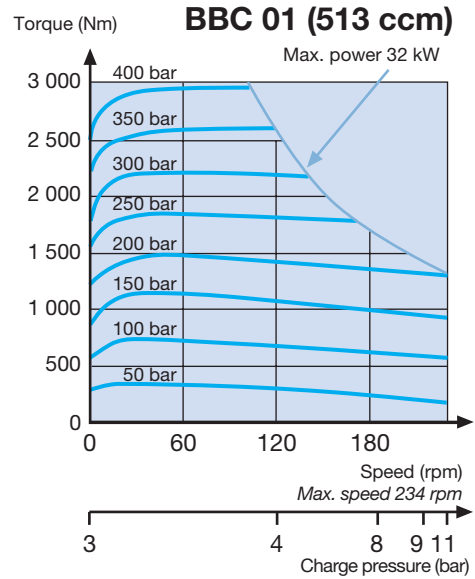
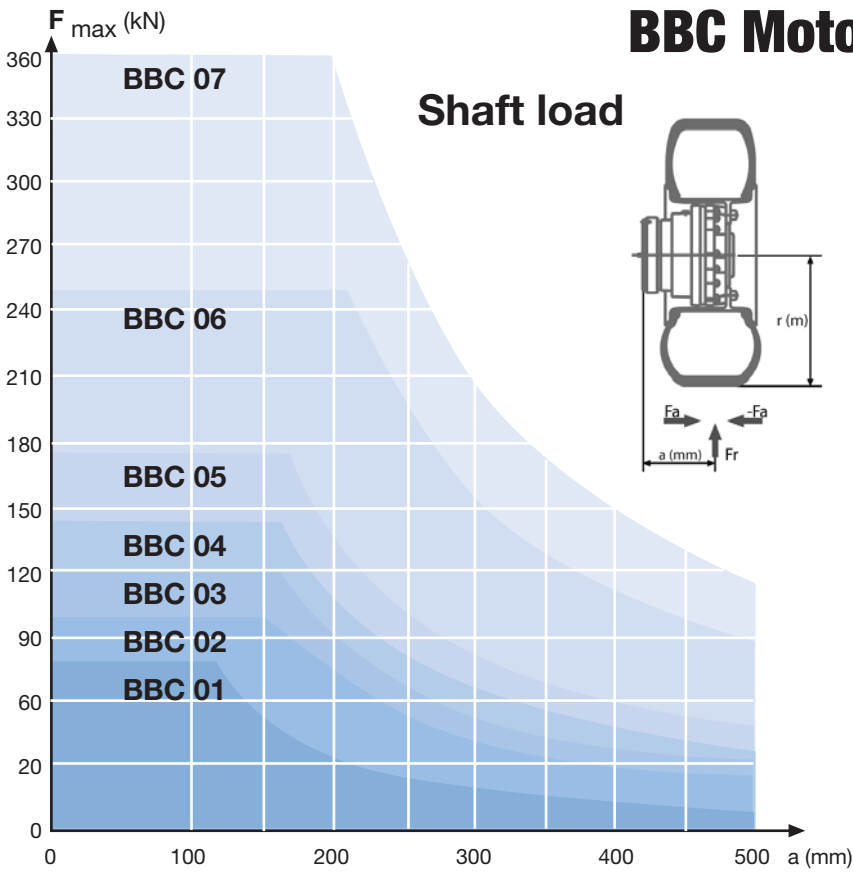
# BBC Motors

## Shaft load



## Performance curves

Nominal displacement (100%) of each frame size shown below. 90, 110, 120 and 130% displacements are also available. Please contact us for more information.

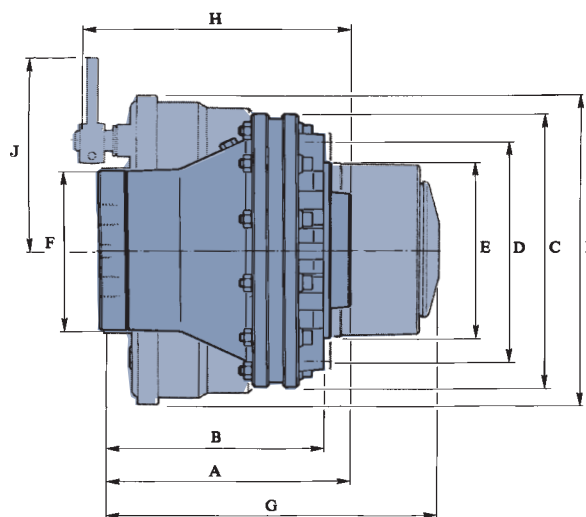




# Black Bruin BB Motor

## The Original Freewheeling Low Speed High Torque Motor

Smooth start and excellent low speed operating characteristics in compact size. Caliber-, drum- and several multi-disc brake options. Mechanical freewheeling. Flexible engineering. A solid selection for a variety of applications.



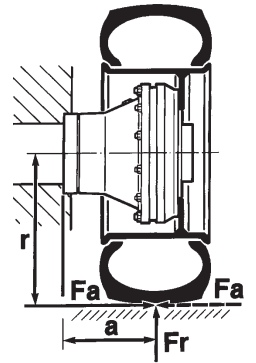
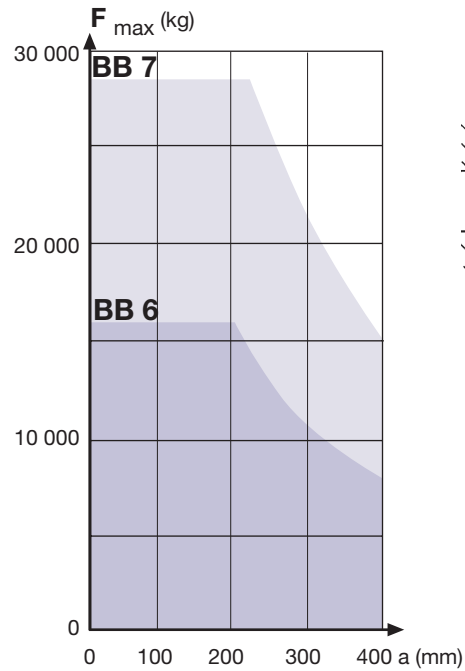
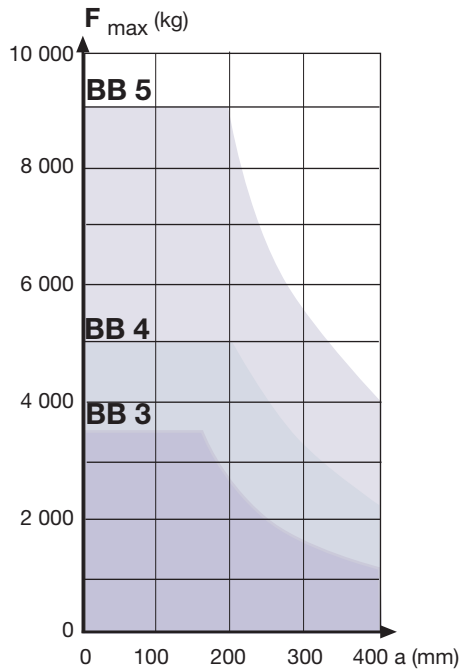
Dimensions:

Model	Weight without brake kg	Min. rim size (mm)	A mm	Without brake B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	J Max. (mm)
BB 3	32	279,4	243	227	ø 234	ø170 6 x M16 x 1,5	ø 129,9	ø 150	364	243	ø 275	279
BB 4	50	330,2	280	262	ø 282	ø 205 6 x M18 x 1,5	ø 160,8	ø 165	420	280	ø 334	300
BB 5	85	381	312	279	ø 343	ø 275 8 x M20 x 1,5	ø 220,8	ø 200	469	342	ø 395	243
BB 6	145	457,2	336	317	ø 416	ø 335 10 x M22 x 1,5	ø 280,8	ø 240	480	-	-	-
BB 7	270	-	402	377	ø 520	ø 425 12 x M22 x 1,5	ø 370,8	ø 300	550	-	-	-

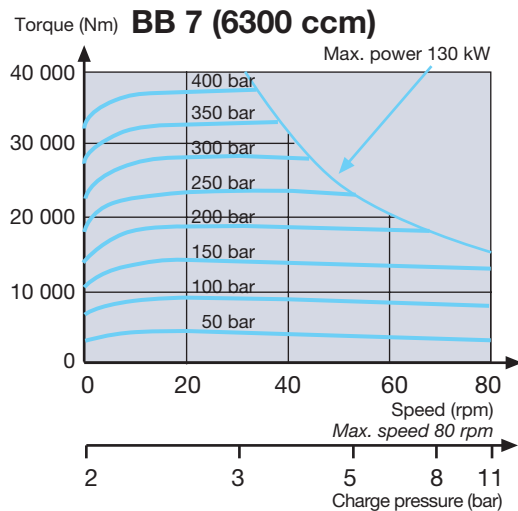
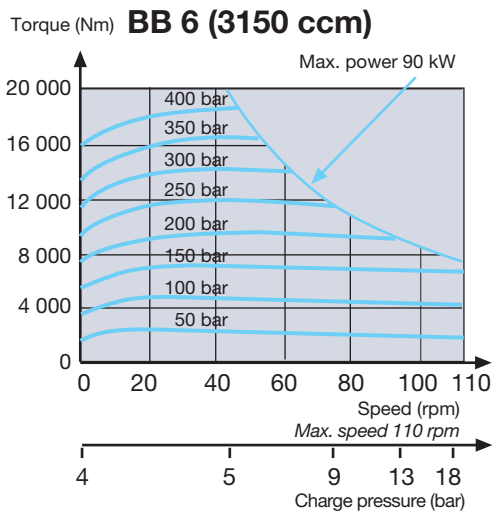
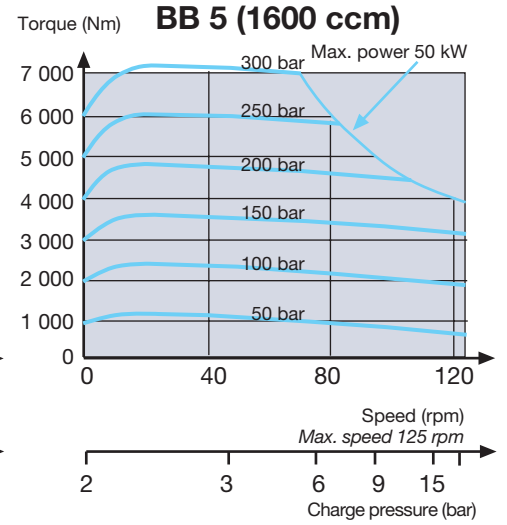
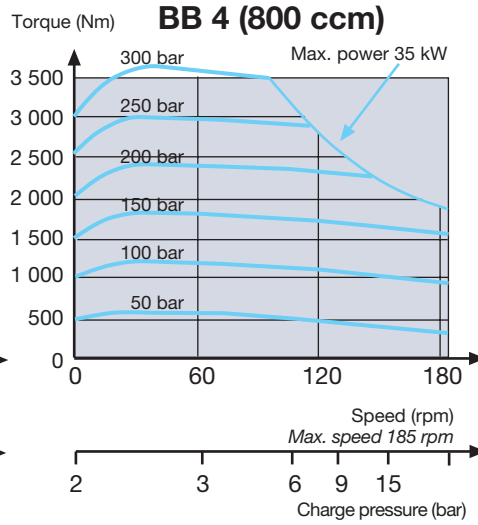
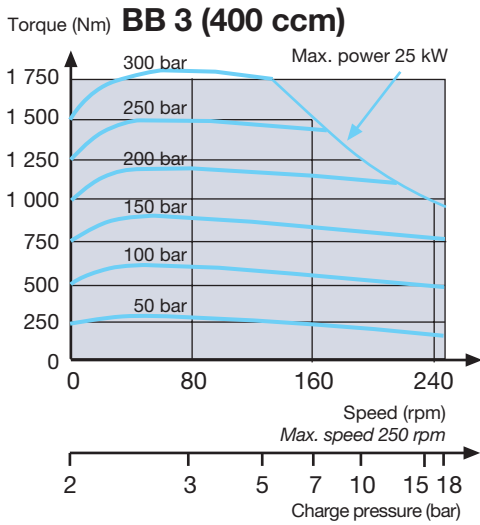
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# BB Motors

## Shaft load



## Performance curves



## Performance data

Motor class size		BB 3			BB 4			BB 5		
<b>Displacement</b>	ccm	250	315	400	500	630	800	1000	1250	1600
<b>Peak pressure</b>	bar	350	350	350	350	350	350	350	350	350
- Peak torque	Nm	1310	1650	2090	2620	3300	4190	5240	6540	8380
<b>Intermittent* pressure</b>	bar	300	300	300	300	300	300	300	300	300
- Intermittent torque	Nm	1120	1415	1790	2245	2825	3590	4490	5610	7180
<b>Power</b>										
- Max. displacement	kW	25	25	25	35	35	35	50	50	50
- 1/2 displacement	kW	13	13	13	21	21	21	30	30	30
<b>Max. speed</b>										
Working	rpm	400	320	250	300	240	185	200	160	125
- 1/2 displacement	rpm	600	450	375	450	360	275	300	240	185
- Freewheeling	rpm	600	600	600	600	600	600	600	600	600
<b>Brake (multi disc)</b>										
- Brake torque	Nm	2000	2000	2000	3700	3700	3700	8000	8000	8000
- Releasing pressure	bar	75	75	75	70	70	70	86	86	86
- Max brake pressure	bar	300	300	300	300	300	300	300	300	300

Motor class size		BB 6			BB 7		
<b>Displacement</b>	ccm	2000	2500	3150	4000	5000	6300
<b>Peak pressure</b>	bar	450	450	450	450	450	450
- Peak torque	Nm	13440	16810	21170	26890	33530	42300
<b>Intermittent* pressure</b>	bar	400	400	400	400	400	400
- Intermittent torque	Nm	11950	14940	18820	23900	29800	37600
<b>Power</b>							
- Max. displacement	kW	90	90	90	130	130	130
- 1/2 displacement		54	54	54	80	80	80
<b>Max. speed</b>							
Working	rpm	175	140	110	125	100	80
- 1/2 displacement	rpm	220	180	145	160	130	105
- Freewheeling	rpm	500	500	500	375	375	375
<b>Brake (multi disc)</b>							
- Brake torque	Nm	20000	20000	20000	40000	40000	40000
- Releasing pressure	bar	52	52	52	63	63	63
- Max brake pressure	bar	250	250	250	250	250	250

## The Black Bruin Motors

Black Bruin LSHT radial piston motor line offers two series of motors:  
**the classic BB and advanced BBC.**

### The Freewheeling Motor

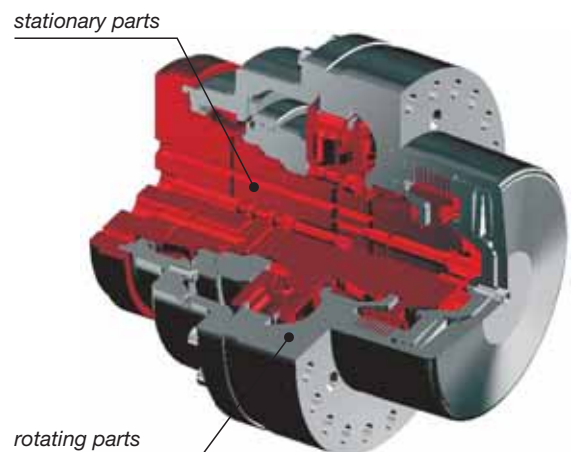
Both models feature the unmatched mechanical freewheeling. This superb feature makes the Black Bruin the option to choose for any drive application requiring high freewheel speeds.

### Compact Wheel Hub Motor

Being descended from a radial piston motor originally designed to be a wheel hub, Black Bruin motor is a perfect and compact fit to any wheel. Equipped with a caliber disc brake, Black Bruin offers the shortest wheel drive package with a brake in the marketplace.

### Customer Driven Motors - from engineering to end users

Let our product line grow to meet Your needs: if You can not find the exact fit from our existing line of motors, bring the challenge to us and we will give our best to provide a solution for You.



# Customer Driven Solutions

Sampo Hydraulics Ltd. is one of the leading manufacturers of low speed high torque hydraulic motors (LSHT-motors). Over 50 years of experience in development and manufacturing of hydraulic motors guarantees the excellence of Black Bruin Motors.

**Black Bruin**  
HYDRAULIC MOTORS



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