

A close-up photograph of a Black Bruin hydraulic motor. The motor is a heavy-duty, black-painted metal component with a circular flange on the front. The flange has several hexagonal bolts around its perimeter. A hydraulic hose is connected to the side of the motor. The background is dark and out of focus, showing a large circular component with the words "Black Bruin" embossed on it.

BLACK BRUIN HYDRAULIC MOTORS
ON-DEMAND WHEEL DRIVES

**Black
Bruin**
No power like it.



No power like it.

Black Bruin Hydraulic Motors can be found in multitude of mobile and industrial applications. The motors are based on Sampo Hydraulics' extensive research and development work and over 50 years of experience in the field of radial piston-cam lobe motors – a foundation the world's leading companies in the industry can rely on.



Black Bruin **On-Demand** Wheel Drives

How is it possible for a light vehicle to haul a heavy trailer without a loss of overall performance?

The answer is the **Black Bruin On-Demand Wheel Drives**. A lighter vehicle can act as a tractor if the trailer wheels also are driven. This means that dead weight is no longer hauled, because the whole mass of a vehicle is deployed to ensure the driving capability of the driven wheels.

MORE TRACTIVE EFFORT

A non-driven wheel resists the movement. But Black Bruin puts its high torque just where it is most needed – under the cargo! More pulling power is generated when needed or motors can be used continuously as a primary transmission. The trailer can maintain a high ground clearance and due to optimum grip, there is also less ground damage.

SUPERIOR OFF-ROAD PERFORMANCE

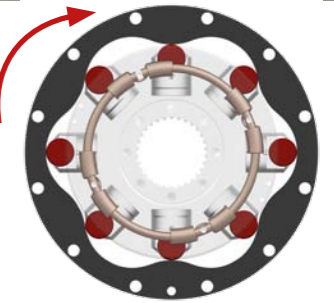
Black Bruin On-Demand Wheel Drives are a practical and simple way to generate more pulling power for trailers or any pull behind equipment. They are extremely well suited to agricultural, forestry and earth-moving applications.

With **Black Bruin** driven wheels you are able to drive through harsh conditions when others get stuck!

For road speeds, **Black Bruin** can be easily freewheeled. See page 10 for more details.



HIGH TORQUE
WHERE IT IS NEEDED



Get more work done **with greater efficiency**

Why today's tractors are 4WD? Why a combine owner, once owning a 4WD combine, never goes back to 2WD?

To be effective, agricultural machinery must maintain its mobility even under harsh conditions. On soft, sloping fields trailers, grain carts and cultivators require sufficient pulling power to maintain constant speed. Without driven wheels, vehicle easily bogs down and excavates deep ruts into a soft field.

With the aid of the **Black Bruin On-Demand Wheel Drives** the control, load capacity and reaction of the vehicle to steep inclines can all be significantly improved. The Prime Mover can be lighter saving power and fuel, while still able to haul larger implements.

Black Bruin is an investment in greater productivity and profitability. The less down-time a machine needs to keep working, the more profitable it is as an investment and the better it retains its value.

LOW COST OF MAINTENANCE WITH FEWER COMPONENTS

In most cases, tractors have sufficient hydraulics to keep **Black Bruin** running well and no additional hydraulics driven by tractor PTO is needed.

LESS TRACTOR POWER NEEDED



Superior torque with radial piston- cam lobe design

POWER AND TORQUE

Black Bruin Hydraulic Motors provide a high ripple-free output torque from close to zero speed. **Black Bruin's** smooth and powerful operation, even at low speeds, ensures precise control of your machine.

HIGH LOAD CARRYING CAPACITY

The **Black Bruin** motor is the driving and load bearing unit all in one assembly. The rotating case design allows long distance between the two tapered roller bearings, thus giving a very wide range for the maximum load capacity.

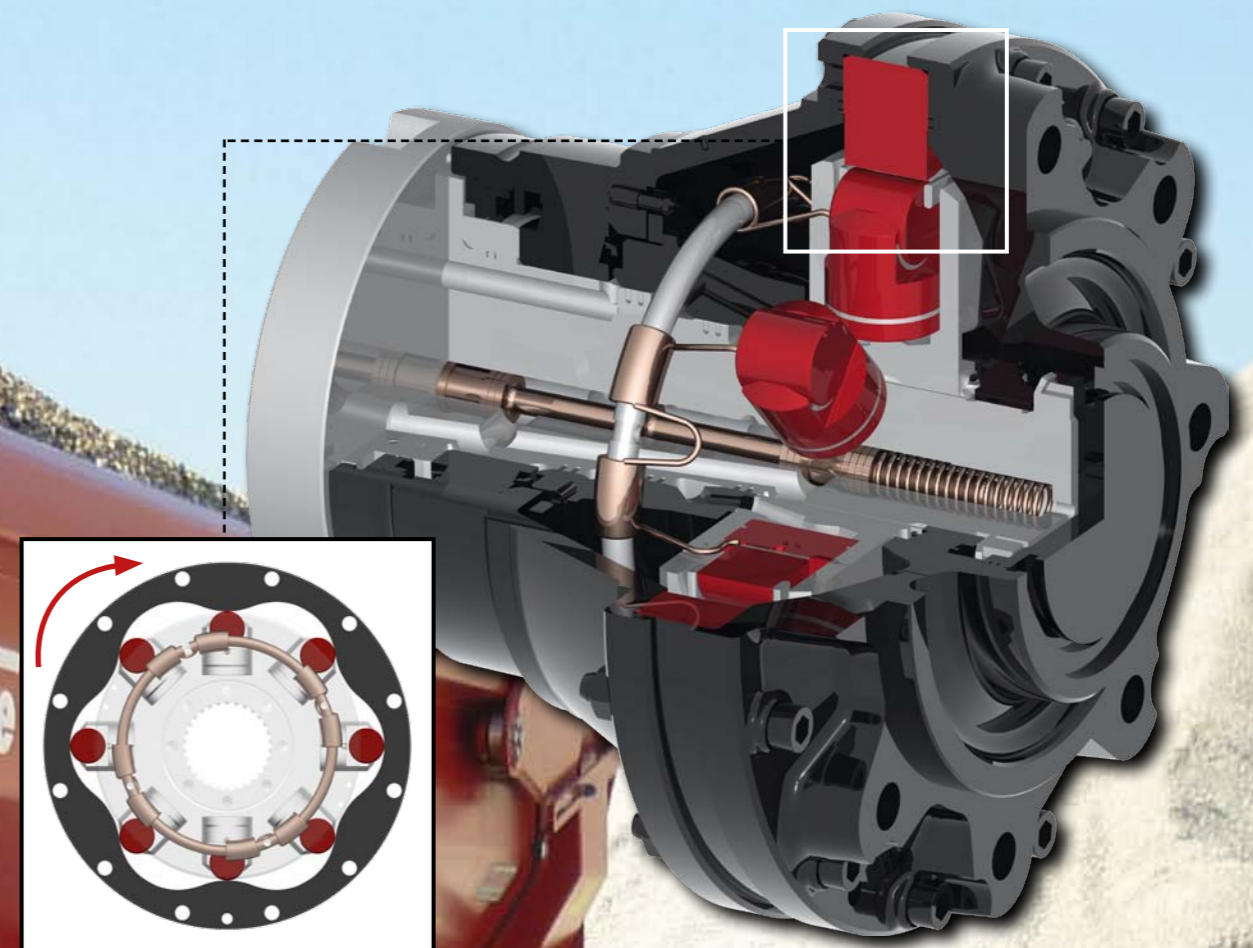
WIDE OPERATING SPEED RANGE

The use of multi-speed **Black Bruin** motors in pull behind equipment gives a wider operating speed range.

COMPACT ALL-IN-ONE CONSTRUCTION

Any fully hydrostatic drive can bring the freedom of design to the table, but with **Black Bruin**, the freedom comes in the most compact package in the marketplace.

Installation ready and lightweight wheel motor adapts easily into the driven wheel. With **Black Bruin**, you'll get lighter overall construction and can transport greater loads.



MORE TOWING CAPACITY
TRANSPORT HEAVIER LOADS

Unique mechanical freewheeling without hydraulic power

When off-road vehicle is driven on-road, it is essential that the motors can be freewheeled securely. When the **Black Bruins'** tractive effort is not required the motors switch to freewheeling mode without external power.

SAFE AND RELIABLE

Due to its mechanical freewheel springs, the **Black Bruin** motor is the only LSHT motor for mobile application that can freewheel without active hydraulics.

No hydraulic pressure is needed to keep the **Black Bruin** running in neutral, radial pistons are mechanically disconnected within the motor. Driving at road speeds without the need for specific hydraulics leads to considerable savings on the control system and fuel consumption.

INTERNAL FREEWHEELING VALVE

The internal freewheeling valve in a **Black Bruin** motor means simplified circuit, minimal system losses and improved durability. Equipped with mechanical freewheel springs, the internal freewheeling valve enables smooth shifting on the fly and secure freewheeling without external power source.

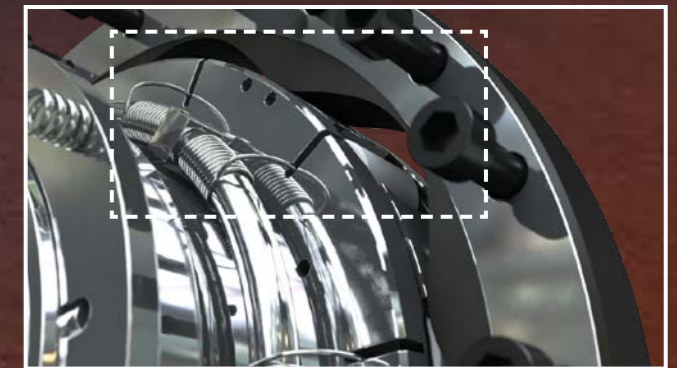
Optional automatic shift to freewheel prevents wheel motor damage when Prime Mover pulls the driven wheel faster than allowed.



EASY TO FREEWHEEL
TOW AT ROAD SPEEDS



WORK MODE



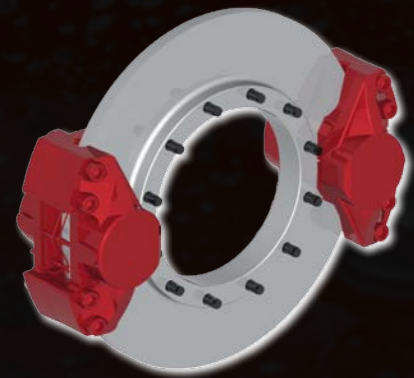
FREEWHEELING

Strong and reliable brakes



DRUM BRAKE

- natural fit around the motor case, minimal length addition
- dynamic and parking brake functions
- mechanically operated
- certified models for selected motor frames
- can be used with a static multi-disc brake



CALIPER DISC BRAKE

- optimal fit for the rotating case motor
- shortest brake motor in the LSHT marketplace
- dynamic and static brake calipers
- can be used with a static multi-disc brake
- pressure operated brake calipers

COMPACT DESIGN

OPTIMAL FIT

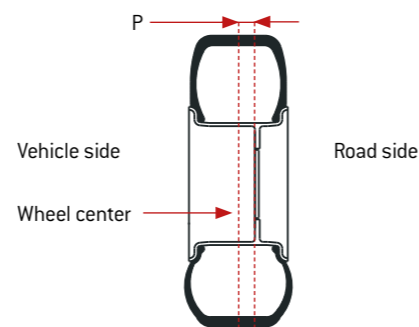
Technical details – Motors



MOTOR TYPE	BB4	BB5	BB6
Displacement [ccm]	500 / 630 / 800	1000 / 1250 / 1600	2000 / 2500 / 3150
Max. rotating speed [rpm]			
Full displacement	300 / 240 / 185	200 / 160 / 125	175 / 140 / 110
1/2 displacement	450 / 360 / 275	300 / 240 / 185	220 / 180 / 145
Freewheeling	600	500	400
Freewheeling			
Hydraulic – Case pressurization	1 or 2 speed	1 or 2 speed	1 or 2 speed
Mechanical springs – Case depressurization	1 or 2 speed	1 or 2 speed	1 or 2 speed
Mechanical springs – Internal pilot valve	1-speed motor only	1-speed motor only	1-speed motor only
Mechanical springs – Automatic pilot valve	1-speed motor only	1-speed motor only	1-speed motor only
Max. torque [Nm]			
Intermittent pressure ¹⁾	2245 / 2825 / 3590	4490 / 5610 / 7180	11950 / 14940 / 18820
Peak pressure	2620 / 3300 / 4190	5240 / 6540 / 8380	13440 / 16810 / 21170
Max. working pressure [bar]			
Intermittent pressure ¹⁾	300	300	400
Peak pressure	350	350	450
Max. output power [kW]			
Full displacement	35	50	90
1/2 displacement	21	30	54
Weight [kg]	51	90	142
Max. shaft load [t] ²⁾			
Wheel offset P0	1,6	2,6	4,7
Wheel offset P50	2,1	3,4	5,9
Wheel offset P100	3,6	4,9	7,6
Wheel offset P150	3,6	4,9	11,4

1) Intermittent operation: permissible values for max. 10 % of every minute.

2) Load values are indicative for one wheel motor (axial load 15 % of radial load with wheel radius 500 mm). Specific calculation has to be done for every application.



Technical details – Brakes



DRUM BRAKE	BB4 – Drum brake	BB5 – Drum brake	BB6 – Drum brake
Certification ¹⁾	TÜV / UTAC / Cemagref	TÜV / UTAC / Cemagref	TÜV / UTAC / Cemagref
Operation	Mechanically operated	Mechanically operated	Mechanically operated
Max. brake torque [Nm] ²⁾	8600	13500	20100
Max. actuation torque [Nm] ²⁾	1350	1590	2800
Lever actuation direction	bidirectional	bidirectional	CW or CCW
Weight [kg]	36	62	120

1) Meets certification requirements under certain circumstances.

2) Values are given only for information, specific brake calculation has to be done for every application.

Contact manufacturer for more details



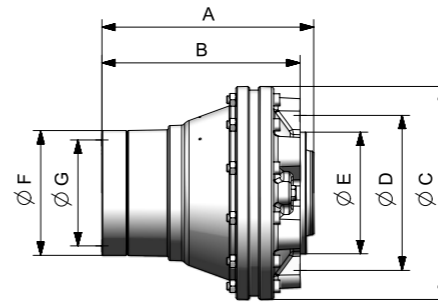
CALIPER DISC BRAKE	BB4 – Caliper disc brake	BB5 – Caliper disc brake	BB6 – Caliper disc brake
Operation	–	Pressure operated	Pressure operated
Max. brake torque [Nm]	–	10400	11000
Max. brake pressure [bar]	–	150	150
Weight [kg]	–	33	32

Technical information contained in this publication is subject to change at any time without prior notice. For the latest information visit our website or contact Sampo Hydraulics Ltd. or its representative.

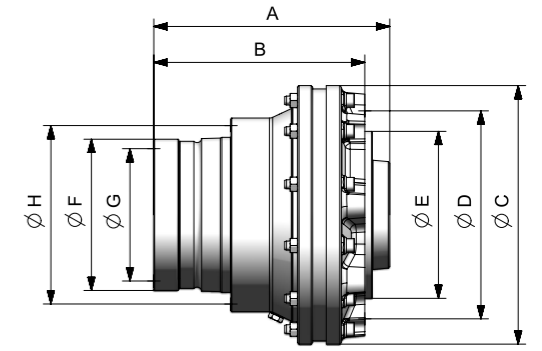
Main dimensions

DIMENSION	BB4	BB5	BB6	BB4 with drum brake	BB5 with drum brake	BB6 with drum brake	BB5 w/caliper disc brake	BB6 w/ caliper disc brake
A [mm]	280	312	336	294,5	328	470	312	336
B [mm]	262	279	317	276,5	295	451	279	317
C [mm]	282	343	416	282	343	416	343	416
D [mm]	205	275	335	205	275	335	275	335
Hub interface ¹⁾	6xM18x1.5	8xM20x1.5	10xM22x1.5	6xM18x1.5	8xM20x1.5	10xM22x1.5	8xM20x1.5	10xM22x1.5
E [mm]	160.8	220.8	280.8	160.8	220.8	280.8	220.8	280.8
F [mm]	165	200	240	182	225	235	200	240
G [mm]	140	175	200	140	175	200	175	200
Shaft interface	6xM16x2.0	8xM16x2.0	12xM20x1.5	6xM16x2.0	8xM16x2.0	12xM20x1.5	8xM16x2.0	12xM20x1.5
H [mm]	-	236	260	-	-	-	-	-
Disc interface	-	12xM12x1.75	32xM10x1.5	-	-	-	-	-
I [mm]	-	-	-	72,5	85,5	154	-	-
Lever distance	-	-	-	-	-	-	-	-
J [mm]	-	-	-	-	-	-	482	504
Ø w/ brake calipers	-	-	-	-	-	-	-	-

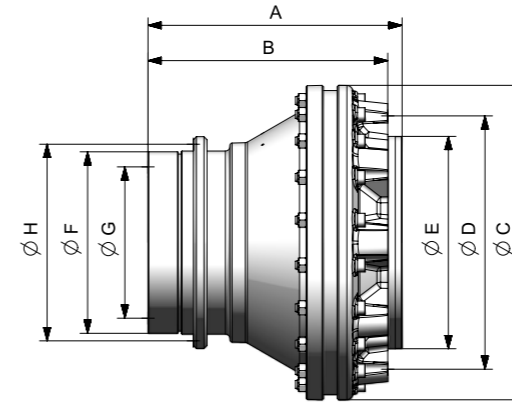
1) Contact manufacturer for alternative hub interfaces.



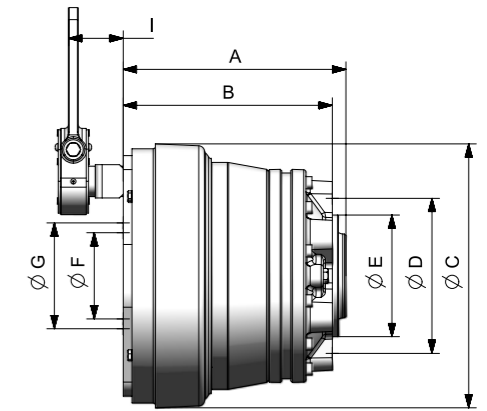
BB4 hydraulic motor



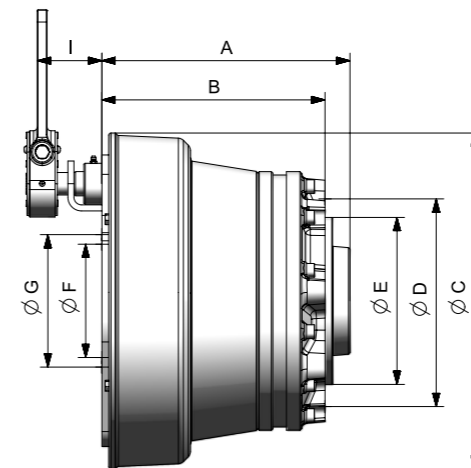
BB5 hydraulic motor



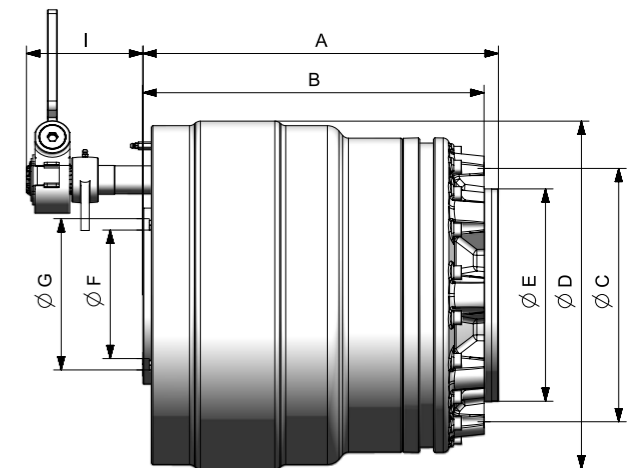
BB6 hydraulic motor



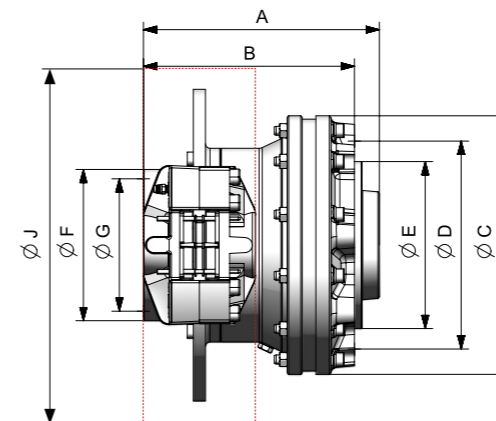
BB4 with drum brake



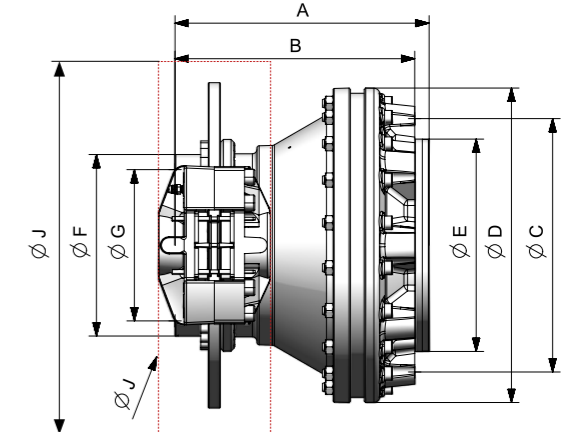
BB5 with drum brake



BB6 with drum brake (CW)



BB5 with caliper disc brake



BB6 with caliper disc brake

More technical details, datasheets and 3D models are available by request. Please contact sales@blackbruin.com or your local Black Bruin representative.

Read more about Black Bruin Hydraulic Motors

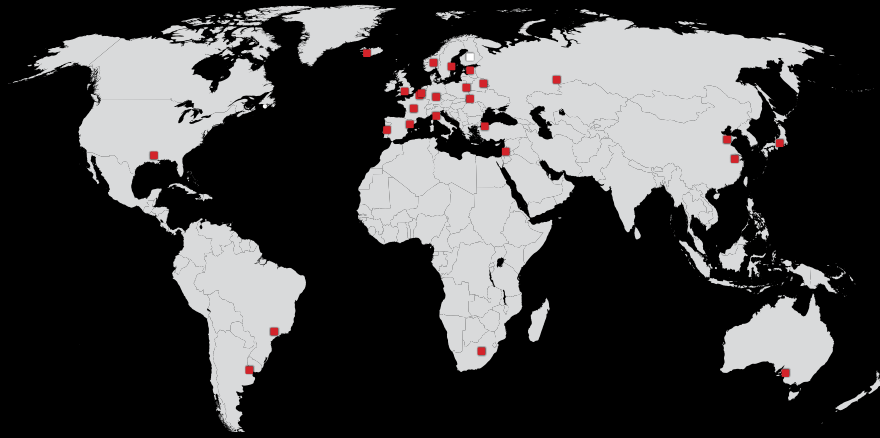


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■ Manufacturing

■ Distributor



INNOVATIVE HYDROSTATIC TRANSMISSION AND ROTATION SOLUTIONS

Sampo Hydraulics Ltd. is one of the world's leading suppliers of radial piston hydraulic motors and rotators. Our trade mark Black Bruin offers a high quality solution for agriculture, construction and mining, road building and forestry equipment applications. As an international operator located in Jyväskylä, Central Finland, we employ more than 100 fully trained professionals and have a distribution network which covers over 25 countries.

Sampo Hydraulics Ltd. is part of the Sampo Rosenlew Group.

Your local Black Bruin distributor: