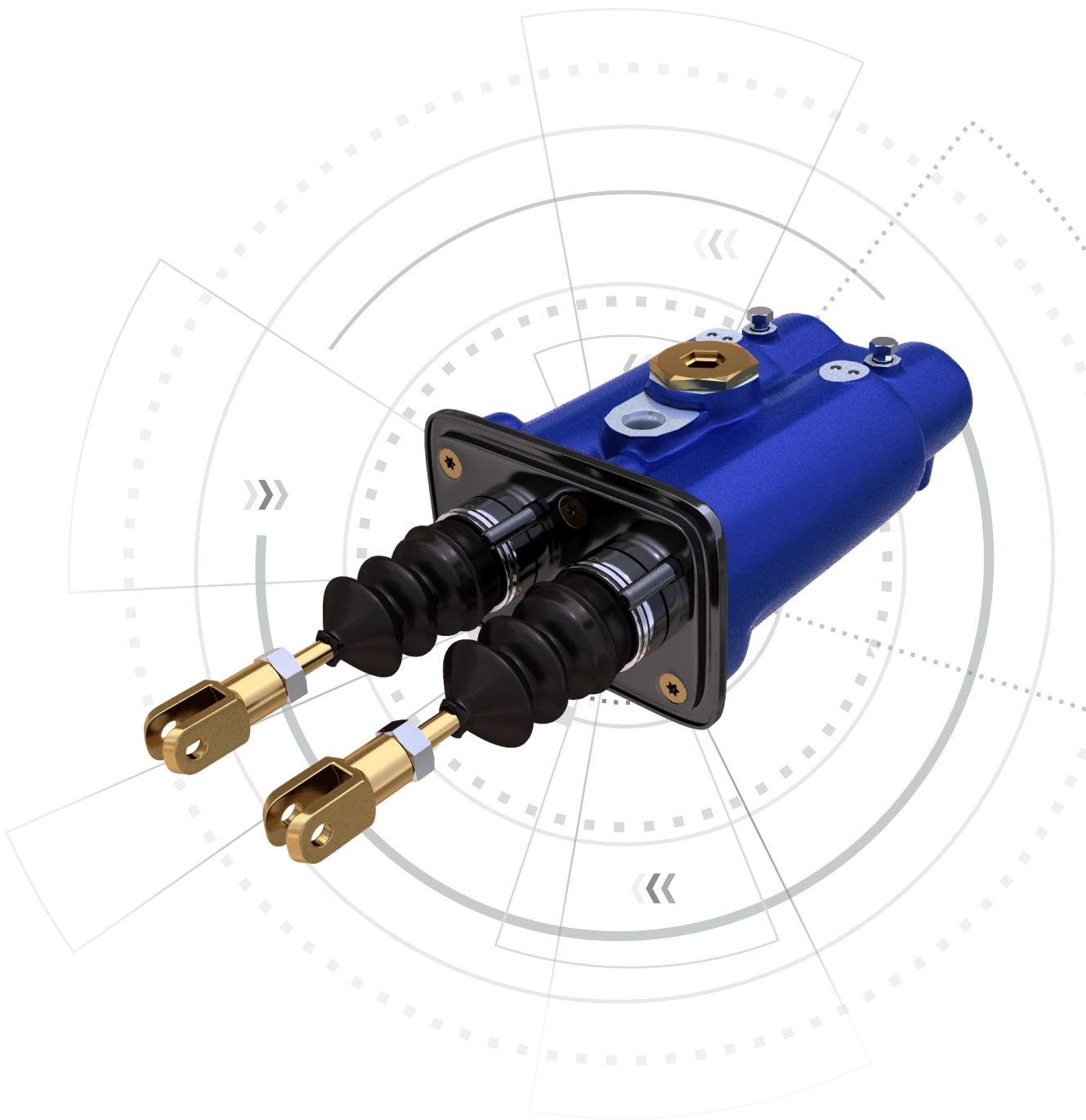


TWIN QUICKFILL BOOSTED MASTER CYLINDER

TECHNICAL DATA



TWIN QUICKFILL BOOSTED MASTER CYLINDER

PRODUCT OVERVIEW

The Carlisle Twin QuickFill Boosted Master Cylinder utilizes Carlisle's patented QuickFill Technology to deliver significantly more oil volume to a vehicle's brake system than can be achieved with a traditional Boosted Master Cylinder. This enables Carlisle's proven *Boosted Master Cylinder Technology* to be extended to larger and heavier vehicle classes than was previously possible enabling them to benefit from Carlisle's best in class pedal effort and pedal feel.

Vehicle manufacturers can leverage this additional available oil volume in different ways to provide benefits to their customers; in-axle wet brake running clearances can be increased, reducing parasitic brake drag and reducing vehicle fuel costs; pedal travel and pedal effort can be reduced, reducing driver fatigue and improving driver comfort to enhance the driving experience, brake output pressures can be increased enabling secondary braking requirements to be achieved without the need for system accumulators generating free space in engine compartment and reducing system complexity and cost.

The Twin QuickFill Boosted Master Cylinder is available with a wide range of master cylinder diameters and boost ratios enabling the on-vehicle performance to be specifically tailored to suit the demands of each OEM and vehicle model enabling a best in class driver experience to be achieved across an entire vehicle range.

BENEFITS

- 94% increase in available brake volume¹
- 62% reduction in brake pedal travel¹
- 36% reduction in brake pedal effort for a given brake line pressure²
- 56% increase in output pressure simplifies compliance with secondary braking regulations²
- 50% reduction in initial dead-band for faster brake system response¹

¹When compared to a 31.75mm diameter Carlisle Boosted Master Cylinder

²Increased brake volume enables the use of a smaller master cylinder diameter resulting in higher output pressure

FEATURES

- Progressive and controllable braking response
- Self-bleeding design prevents air accumulation in the brake system
- Wide range of master cylinder diameters and boost ratios available
- Improved life through use of PTFE sealing technology (2,000,000 cycles)
- Low pressure boost supply requirements enables operation from vehicle transmission pump
- Interchangeable form factor with current CBF boosters
- Reduced input flow requirement enables lower hydraulic system demand
- Minimized oil consumption through closed center design

TYPICAL APPLICATIONS



TWIN QUICKFILL BOOSTED MASTER CYLINDER

TECHNICAL OVERVIEW

FUNCTIONAL DESCRIPTION

The Carlisle Twin QuickFill Hydraulic Boosted Master Cylinder is a dual push-rod operated boosted master cylinder with an additional integrated primary supply chamber to provide higher volumetric displacement per mm of push-rod stroke than can be delivered by a Standard Twin Boosted Master Cylinder.

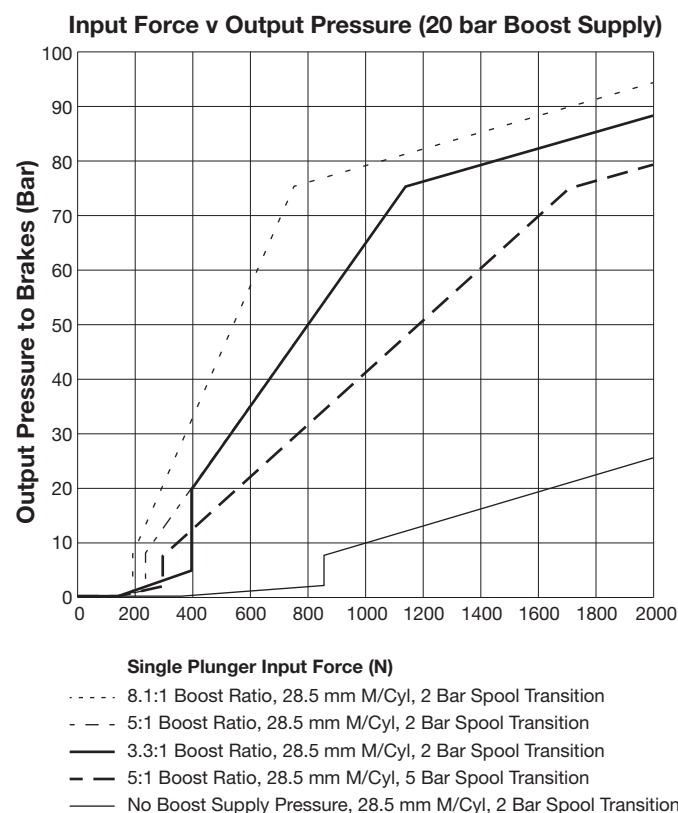
Throughout its operation the Twin QuickFill Boosted Master Cylinder regulates the hydraulic input supply from the vehicle to boost the drivers input force to greatly increase the drivers input force to reduce operational pedal efforts for the driver.

During the initial phase of the pedal application the large diameter "primary" master cylinder provides oil to fill the vehicles brake circuit oil before the QuickFill Boosted Master Cylinder transitions to its smaller diameter "secondary" master cylinder which then generates the pressure required to stop the vehicle.

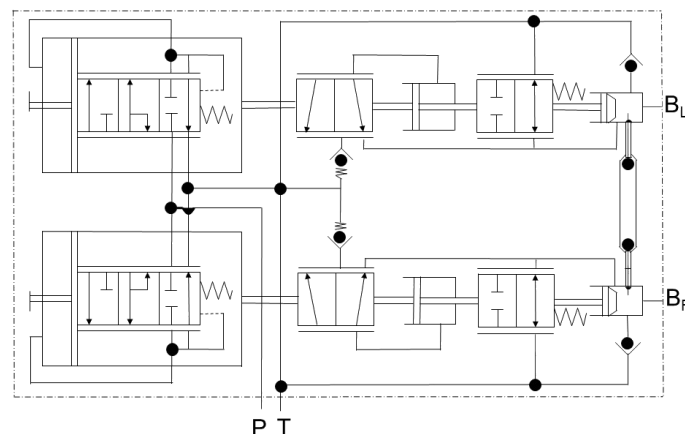
The switching pressure between the primary and secondary chambers is accurately controlled using the internal pressure spool and this in combination with the master cylinder diameter and input boost ratio enables Carlisle to optimise both the fluid volume delivered to the brake circuit and the force required to generate pressure enabling true optimisation of the brake system feeling on the vehicle.

Carlisle's proven mechanical compensation technology is used to ensure that during twin pedal applications the brake pressure is balanced between both master cylinder chambers ensuring straight line braking performance is always achieved.

PERFORMANCE CHART



HYDRAULIC SCHEMATIC



TWIN QUICKFILL BOOSTED MASTER CYLINDER

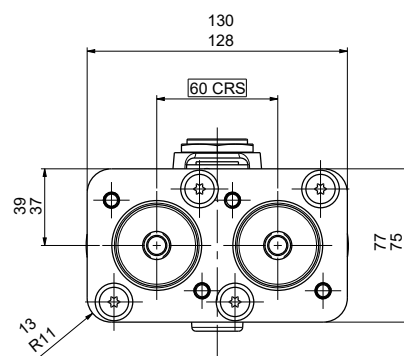
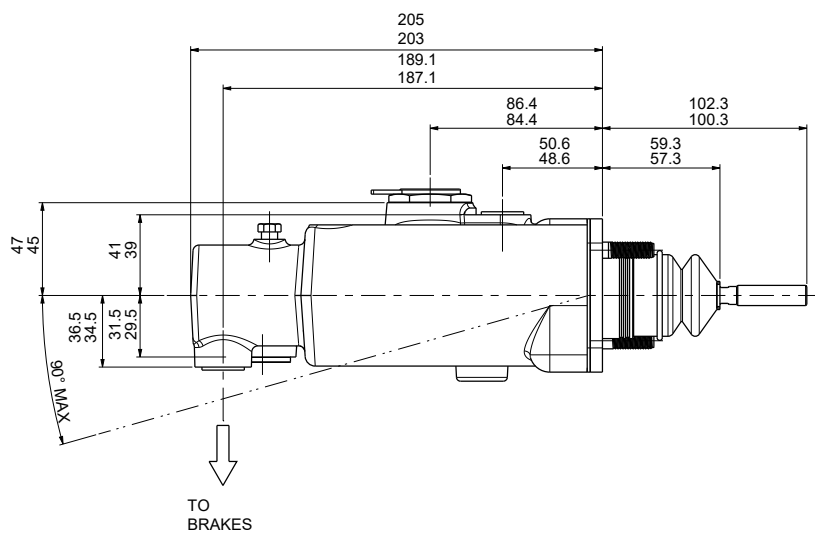
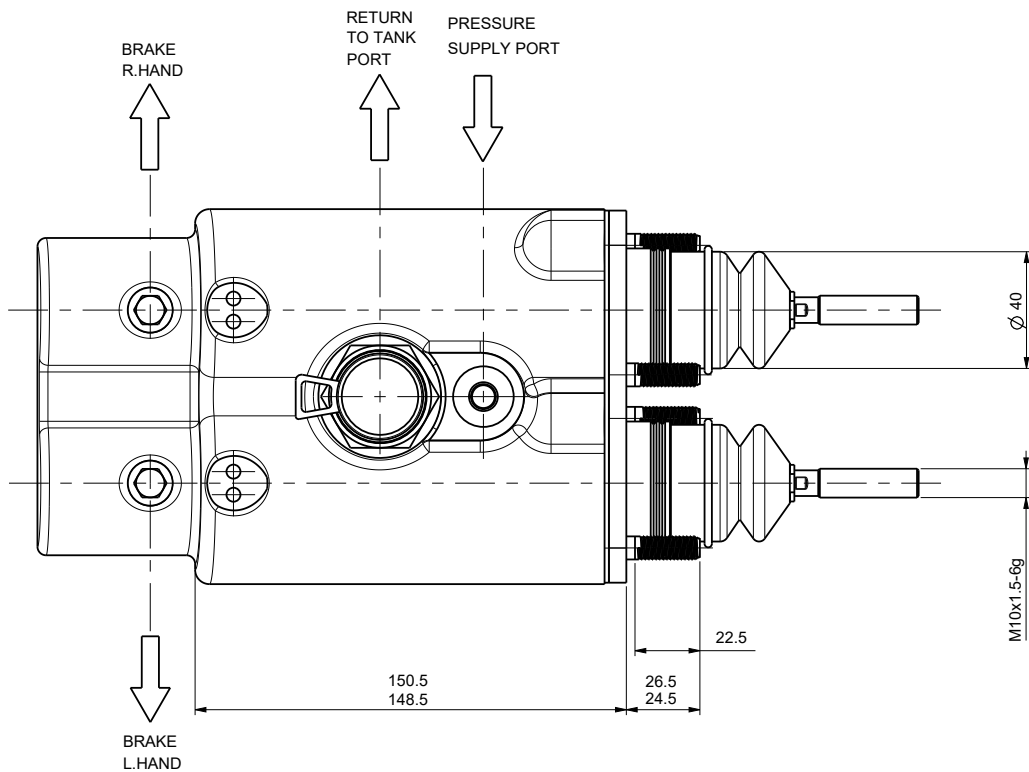
TECHNICAL SPECIFICATIONS

	Value					Units
Master Cylinder Stroke (maximum)	28					mm
Push Rod Stroke (maximum)	32					mm
Boost Cylinder Diameter	57.05					mm
Primary Chamber Diameter (QuickFill)	57.05					mm
Secondary Chamber Diameter (Master Cylinder)	25.4	28.57	31.75	35.0	38.0	mm
Volumetric displacement (Min)	14.1	17.9	22.2	26.9	31.8	cc
Volumetric displacement (Nom)	40.0	41.5	43.2	45.1	47	
Volumetric displacement (Max)	71.5	71.5	71.5	71.5	71.5	
Boost Ratio	3.3:1, 4:1, 5:1, 6.2:1, 8.1:1					-
Boost Supply Pressure (Min / Max)	15 - 40					bar
Boost Supply Oil Type	Mineral Oil ⁽¹⁾					-
Brake Supply Oil Type	Mineral Oil ⁽¹⁾					-
Boost Supply Flow Rate (Min)	15					L / Min
Maximum Operating Pressure	105					bar
Spool Transition Pressure (Application Specific)	2.0 - 10.0					bar
Oil Temperature Range (Standard/ High)	-30 to 105 / -20 to 120					°C
Ports	Metric, SAE, JIS ⁽¹⁾					-
Body Material	Ductile Cast Iron					°C
Weight	7.8					kg

⁽¹⁾Contact Carlisle for details

TWIN QUICKFILL BOOSTED MASTER CYLINDER

INSTALLATION DRAWINGS



TWIN QUICKFILL BOOSTED MASTER CYLINDER

MODEL CODE

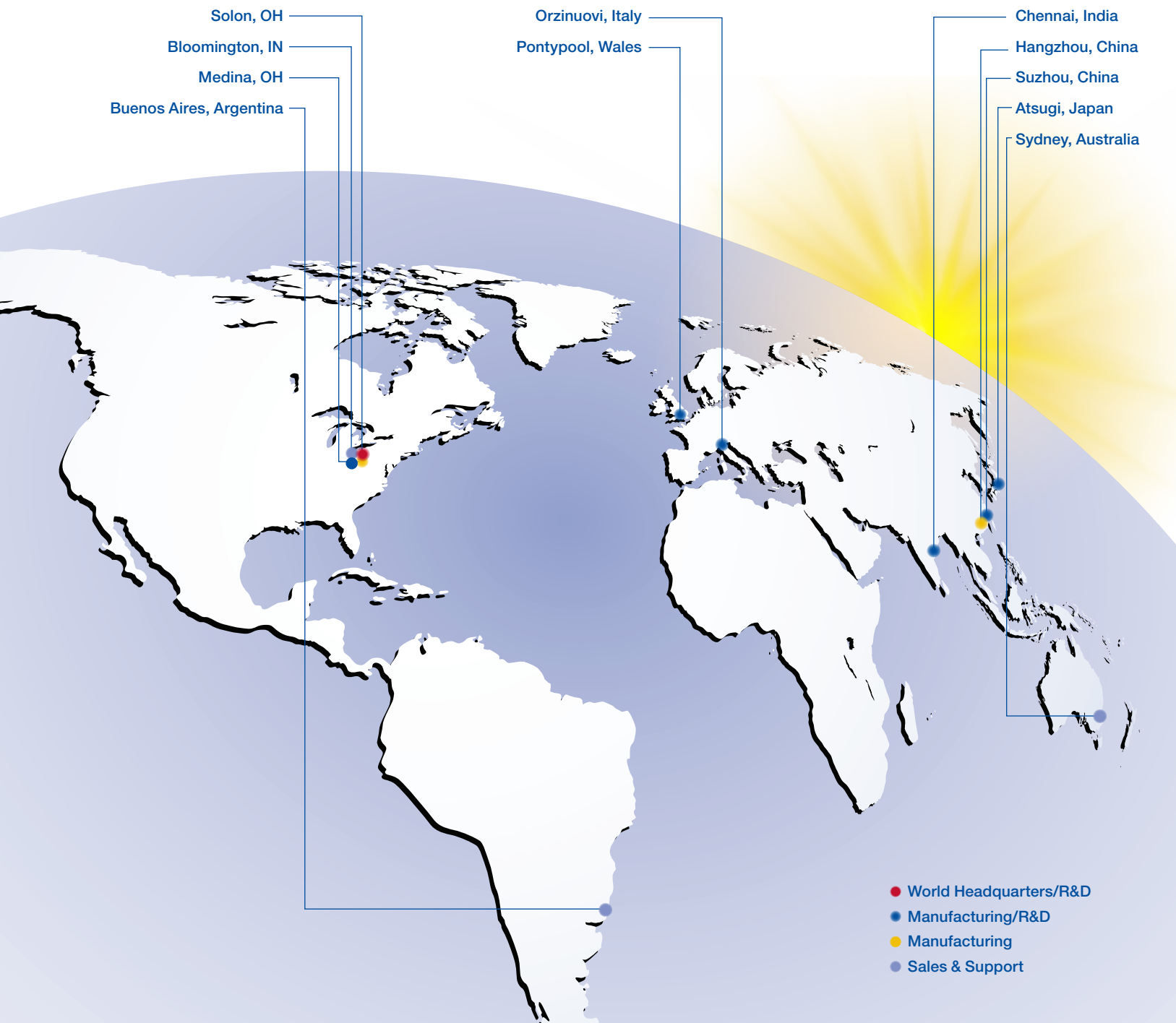
Product Family	Part Type	Inputs	Oil Type	Primary Diameter (mm)	Secondary Diameter (mm)	Boost Ratio	Ports	Temperature Range (C)	Spool Transition Pressure (bar)	Push Rod Length (mm) ⁽¹⁾
BMC	- QF	- 2	- Min	- 57	-	-	-	-	-	-
					25.4	3.3 : 1	M (Metric)	Standard (-30 to 105°C)	2	XXX
					28.5	4.1 : 1	S (SAE)	High (-20 to 120°C)	2.5	
					31.7	5.1 : 1	J (JIS)		3	
					35.0	6.2 : 1			3.5	
					38.0	8.1 : 1			4	
									4.5	
									5	
									6	
									7.5	
									10	

⁽¹⁾Measured from booster mounting face to clevis center

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BRAKE & FRICTION



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