

Bonfiglioli **Riduttori**

BSR series

Synchronous Reluctance Motors



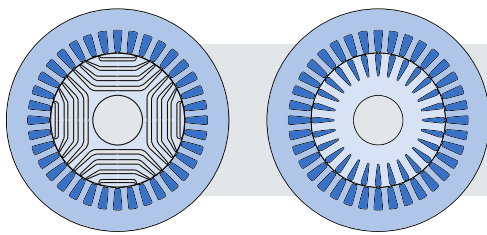
PRODUCT

 **Bonfiglioli**
Forever Forward

BSR series

Synchronous Reluctance Technology

The Synchronous Reluctance Motor is an electric motor that combines a conventional three phase induction motor stator with an innovative rotor. The peculiarity of this rotor is the magnetic anisotropy obtained by means of suitably shaped holes. Thanks to the anisotropy, it is possible to exploit the reluctance principle for the electromagnetic energy conversion without using permanent magnets or rotor windings. The rotor design, thanks to the holes in the lamination, yields a lower inertia and better dynamics with respect to a same-size induction motor.



On the left, a section of Bonfiglioli Reluctance motor to compare with the Induction one on the right: it is possible to see the specific geometry.

The lack of rotor Joule losses allows an increase of motor ratings with respect to an induction motor in terms of both efficiency and power density. Taking the advantage of this essential feature, Bonfiglioli is able to offer two distinctive versions in their BSR Synchronous Reluctance motor series. The High Efficiency (E) version is characterized by a Super Premium IE4 Efficiency Class level at the rated operating point, but also especially in the partial load range. The High Output (O) version allows to reduce the motor size with respect to a same-size induction motor, maintaining an efficiency level equal or higher than the IE2 Efficiency Class. When compared to high efficiency induction motors, the dynamic is up to two times higher, thanks to the significantly lower rotor inertia. When comparing the Synchronous Reluctance motor technology and the Induction Motor technology, the main advantages, for variable speed converter fed applications, according to the two packages proposed by Bonfiglioli are:

- **High Efficiency Package:** better efficiency class, up to IE4, for same power and frame size of IM



BSR 90L E 15 - 1.5 kW IE4 Efficiency Class

Same size
-24% Rotor inertia
+5.4% Efficiency



BE 90LA 4 - 1.5 kW IE2 Efficiency Class

- **High Output Package:** smaller frame for same output power and efficiency class of IM



BSR 80C O 15 - 1.5 kW IE2 Efficiency Class

1 Size less
-35% Rotor inertia
Same efficiency



BE 90LA 4 - 1.5 kW IE2 Efficiency Class

This is why when efficiency or having one or two size less are a must, or ensuring the same output power is something relevant for your application, Bonfiglioli Synchronous Reluctance Motor is the best choice.

Designation

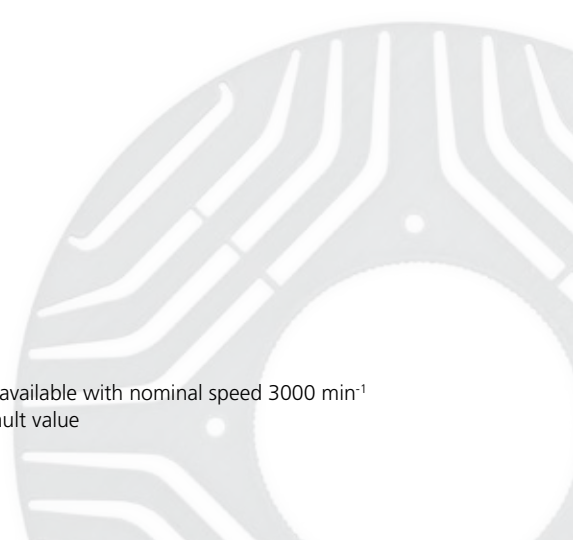
BSR	80B	E	15	40	55	F	B5	...																		
								<p>Options</p> <table border="1"> <tr> <td>K1</td> <td>Thermal protective devices</td> <td>Silicon sensor KTY 84-130 Thermistor PTC 150 Platinum sensor PT1000</td> </tr> <tr> <td>U1</td> <td>Forced ventilation</td> <td>Power supply 1~230V (71-100), 3~400V Y (112-132)</td> </tr> <tr> <td>H1</td> <td>Anti-condensate heaters</td> <td>Power supply 1~230V</td> </tr> <tr> <td>PS</td> <td>Double-extended shaft</td> <td>Not compatible with TC or U1 option</td> </tr> <tr> <td>TC</td> <td>External mechanical protection</td> <td>Not compatible with PS option</td> </tr> <tr> <td>RV</td> <td>Rotor balancing grade B</td> <td>-</td> </tr> </table> <p>Motor mounting B3 = IM B3, IM B6, IM B7, IM B8, IM V5, IM V6 B5 = IM B5, IM V1, IM V3 B14 = IM B14, IM V18, IM V19</p> <p>Insulation class F = Class F⁽²⁾ H = Class H</p> <p>Degree of protection 55 = IP 55⁽²⁾ 56 = IP 56</p> <p>Nominal line voltage 40 = 400V (Y connection)</p> <p>Nominal speed 15 = 1500 min⁻¹ 30 = 3000 min⁻¹</p> <p>Motor rating E = High Efficiency⁽¹⁾ O = High Output</p> <p>Motor size 71C ... 132MB (IEC Motor)</p>	K1	Thermal protective devices	Silicon sensor KTY 84-130 Thermistor PTC 150 Platinum sensor PT1000	U1	Forced ventilation	Power supply 1~230V (71-100), 3~400V Y (112-132)	H1	Anti-condensate heaters	Power supply 1~230V	PS	Double-extended shaft	Not compatible with TC or U1 option	TC	External mechanical protection	Not compatible with PS option	RV	Rotor balancing grade B	-
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Motor type

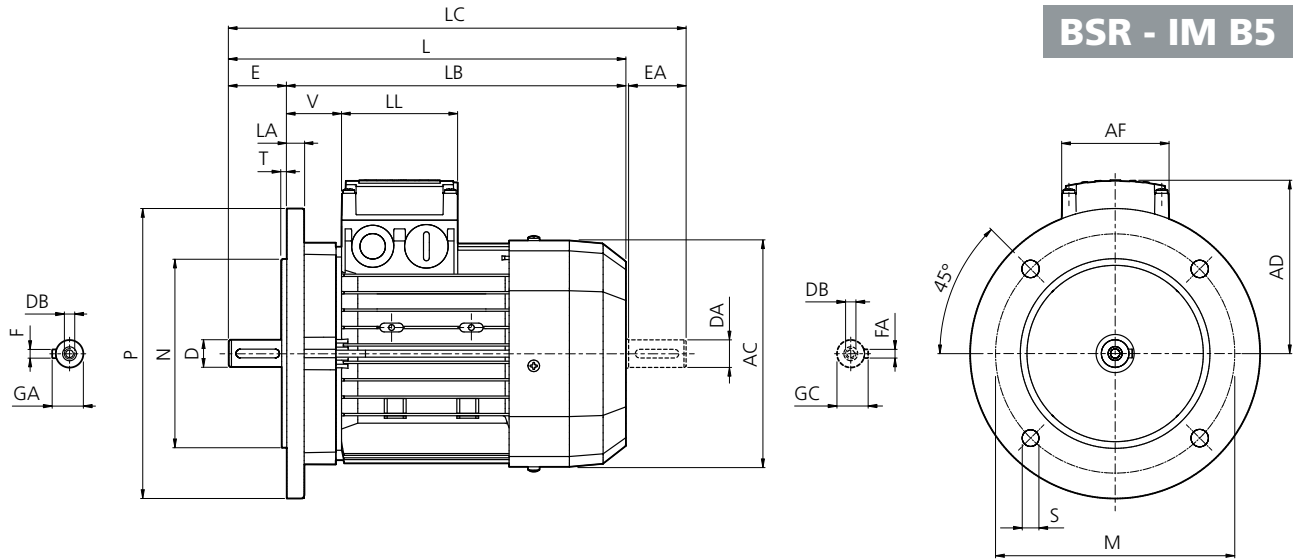
BSR = IEC 3-Phase Synchronous Reluctance Motor

Notes

- (1) Not available with nominal speed 3000 min⁻¹
- (2) Default value



Dimensions



Flange B5

	M	N	P	S	T	LA
BSR 71	130	110	160	9.5	3.5	10
BSR 80	165	130	200	11.5		11.5
BSR 90						
BSR 100	215	180	250	14	4	14
BSR 112						15
BSR 132						20

Motor

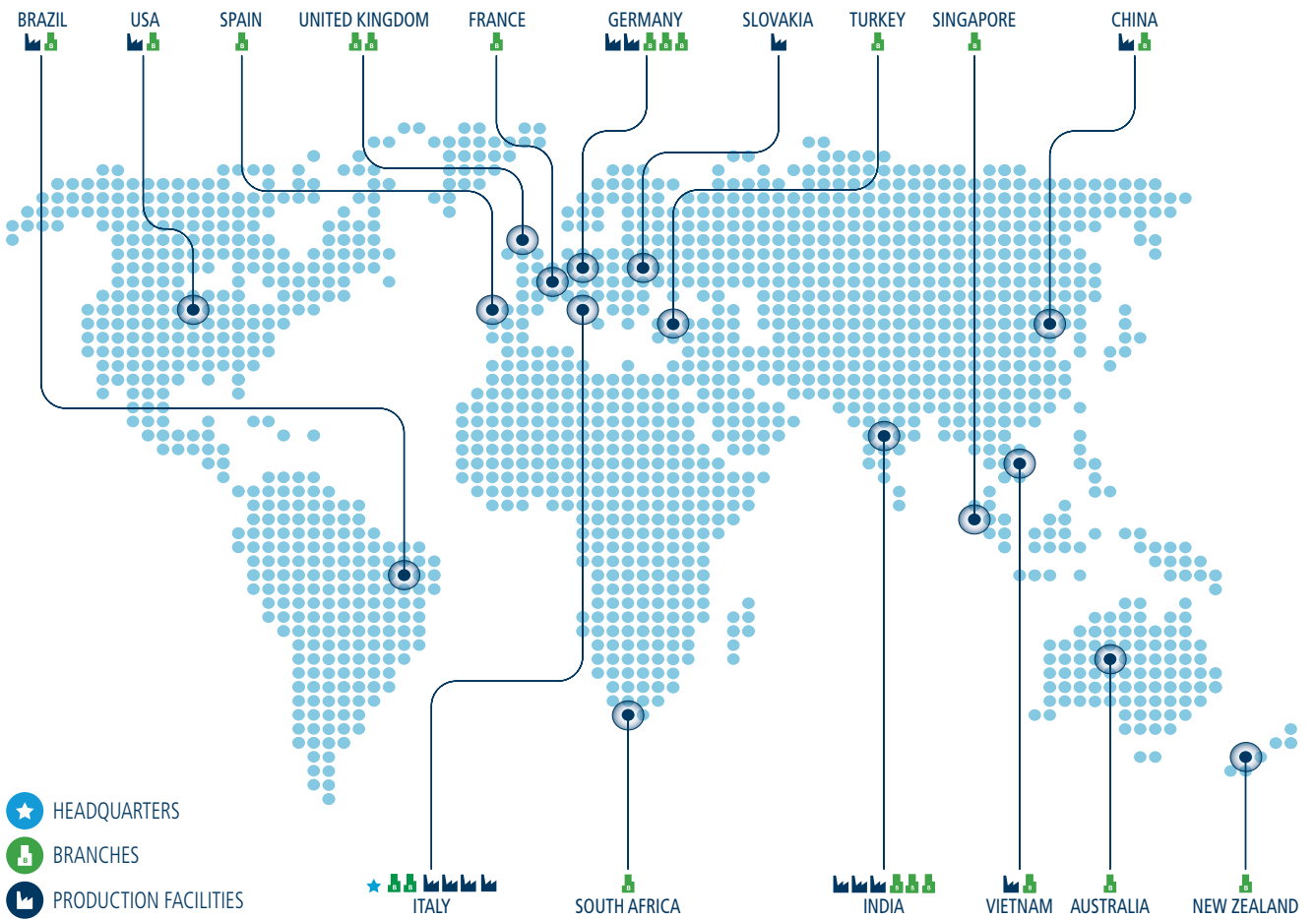
	AC	L	LB	LC	AD	AF	LL	V
BSR 71	138	249	219	281	108	74	80	37
BSR 80	156	274	234	315	119			38
BSR 90	176	326	276	378	133			44
BSR 100	195	367	307	429	142	98	98	50
BSR 112	219	385	325	448	157			52
BSR 132	258	493	413	576	193			58

Shaft

	D DA	E EA	DB	GA GC	F FA
BSR 71	14	30	M5	16	5
BSR 80	19	40	M6	21.5	6
BSR 90	24	50	M8	27	8
BSR 100	28	60	M10	31	
BSR 112					
BSR 132	38	80	M12	41	10

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