

Specification for

Coolant pumps for machine tools

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Ball and Roller Bearing Manufacturers' Association	University of Aston in Birmingham
Department of the Environment (PSA)	University of Manchester Institute of Science and Technology
Machine Tool Industry Research Association	
National Federation of Engineers' Tool Manufacturers	

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Foreword

This British Standard has been prepared under the direction of the Mechanical Engineering Standards Committee and is based on a draft prepared by the Machine Tool Trades Association.

It is a revision of BS 3766:1964 “*Machine tool motorized centrifugal type coolant pumps*”, which was in imperial units.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard specifies the dimensional requirements and performance of machine tool, a.c. motor-driven vertical spindle centrifugal coolant pumps of the immersed (stem or flange mounted) and side mounted types having capacities of 15 litres/min to 200 litres/min.

2 References

The titles of the publications referred to in this standard are listed on the inside back cover.

3 Minimum pump ratings

The minimum pump ratings shall be as given in Table 1 and shall apply when used with normal coolant of a viscosity not exceeding 9.5 centistokes¹⁾ at 21 °C. These values do not take into account the effect of frictional losses due to pipes and fittings external to the pump itself.

Table 1 — Minimum pump ratings

Design type		Basic pump size	Output	Total head
Flange mounted or stem mounted	B	1	litres/min 15	m 1.5
		2	25	2.0
		3	50	2.5
	T	3	50	2.5
		4	200	4.0
Side mounted	X	4	200	4.0
	Y	2	25	2.0
		3	50	2.5

NOTE 1 A graph showing typical minimum performance output/head for each size of pump is given in Figure 6.

NOTE 2 When the viscosity of the coolant exceeds 9.5 centistokes at 21 °C the performance of these pumps will vary and should be the subject of agreement between manufacturer and user.

4 Pump dimensions

The dimensions of pumps shall be as given in Figure 1 to Figure 4 and Table 2, Table 3 and Table 4.

5 Driving motor

The driving motor shall comply with the requirements of BS 5000-11 and shall be of the totally enclosed type (IP 44). Three-phase winding is preferred.

The six stator connections shall be brought out to a terminal block and the standard winding shall be 415 ± 6 % volts star connected and 240 ± 6 % volts delta connected, 50 hertz.

For single-phase winding the rating shown in Table 1 does not apply and it should be the subject of agreement between manufacturer and user.

The direction of rotation of the motor shall be marked on the motor casing.

A terminal box with clearly marked terminal block shall be provided and should preferably be at the top of the motor with two alternative horizontal conduit entry holes, tapped M20. All terminal boxes shall also be provided internally with a separate earthing terminal. See Figure 5 for arrangement of terminal box and cable entry.

6 Designation

Coolant pumps shall be designated by the number of this standard, the pump design type and the basic pump size. The designation shall be marked on the nameplate, e.g..

“BS 3766 Size B1” (or B2, B2A etc., as appropriate)

7 Materials (warning)

The use of synthetic cutting fluids places stringent requirements on the materials selected in the construction of coolant pumps. Where pumps are used with synthetic cutting fluids, yellow metals, zinc alloys, light alloys (e.g. aluminium) or other non-ferrous materials should not be used in the construction of those parts of the pumps which come into contact with the cutting fluid. Otherwise, pump damage or failure may result. Particular material requirements such as these are a matter for agreement between the pump manufacturer and the user.

¹⁾ 1 cSt = 1 mm²/s