

A 3D cutaway illustration of a complex bearing assembly, showing internal components like rollers and housing. The image is rendered in a monochromatic blue color scheme.

Osborne Engineering Limited

HC Vertical Thrust and Guide Bearing

General Description

The Osborne High Capacity (HC) Vertical Bearing is a comprehensive self contained standard assembly comprising a thrust collar, thrust and journal bearing pads, cooling mechanism and outer casing. Additional monitoring and ancillary features are incorporated to meet customer requirements. Radial and axial loads are transmitted through the thrust collar to the corresponding thrust and journal pads which support the load by generating and sustaining a hydrodynamic oil film. Preloaded journal pads are provided as standard to offer increased stability together with handed thrust pads to maximise on load carrying capacity. The internal components operate within an oil flooded chamber facilitating operation in demanding and otherwise corrosive environments. For applications which require electrical insulation, bearing assemblies can be supplied with an insulated thrust collar. Outer housings are supplied primed for weather resistance, ready for final coating. Customer specific paint requirements can also be accommodated.

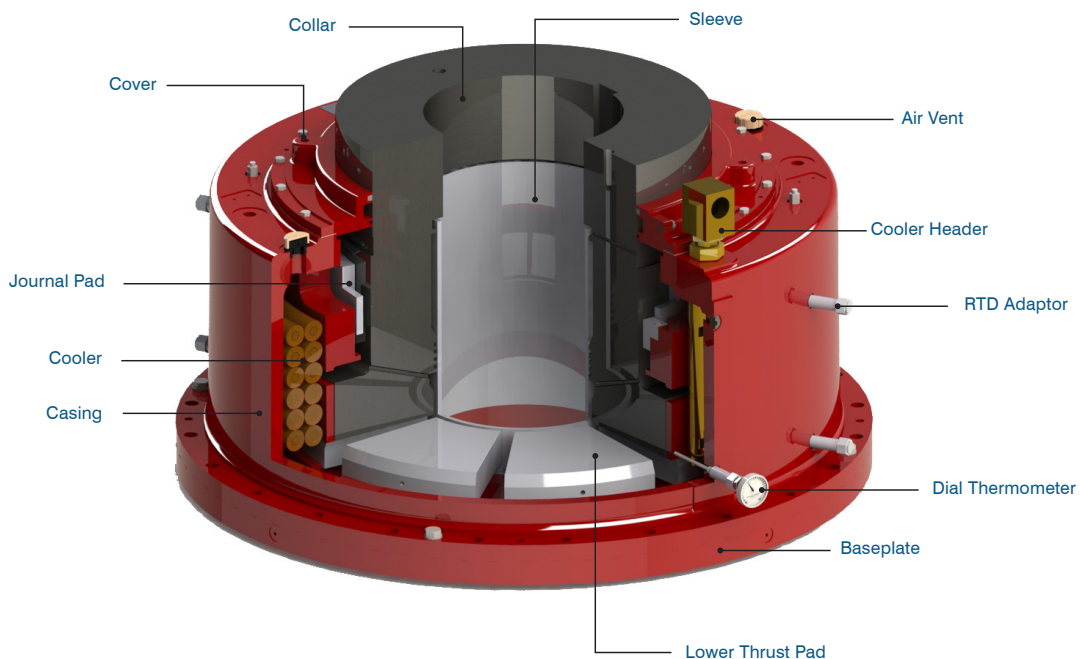
Typical Applications

Vertical pumps

Motors

Hydro generators

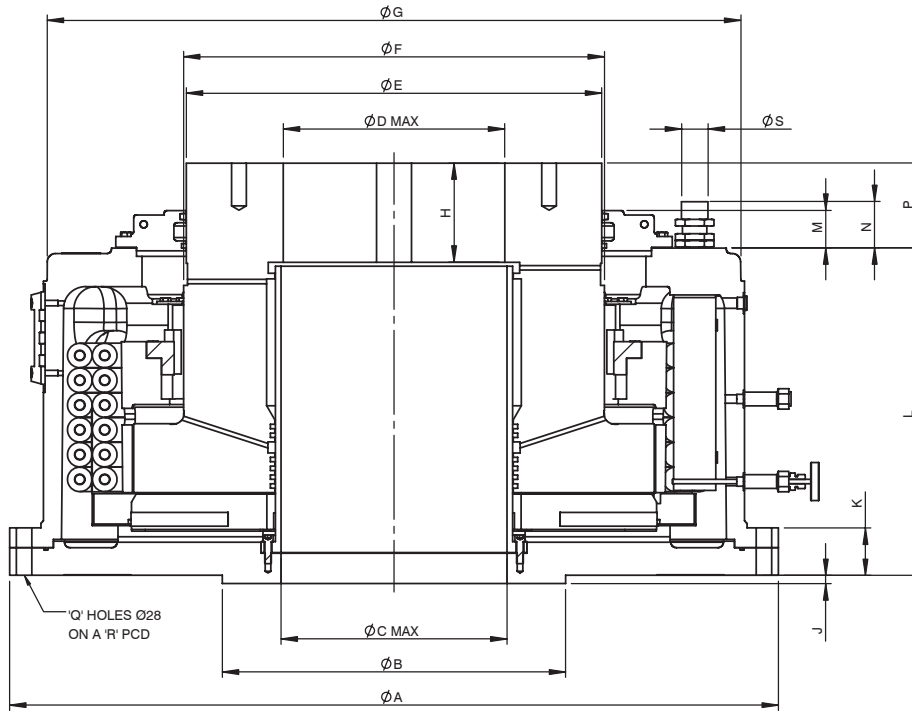
Hydro turbines



Vertical bearing selection guide

SIZE	Maximum Shaft			Maximum Downwards Startup Thrust Load (kN)			Maximum Downwards Running Thrust Load (kN)			Max Upward Startup Load (kN)	Max Upward Running Load (kN)	Approx Max Radial Load (kN)
	S	M	L	S	M	L	S	M	L	↑	↑	→
HC 1	299	346	388	583	514	457	1020	900	800	143	250	102
HC 2	341	404	452	763	669	597	1335	1170	1045	194	340	133.5
HC 3	396	467	523	989	868	773	1730	1519	1352	234	410	173
HC 4	447	544	597	1231	1046	914	2155	1830	1600	329	575	215.5

Maximum downward startup thrust values shown in the table above equate to a maximum starting thrust pressure of 2.4MPa. If actual starting pressures exceed this value provision for high pressure oil lift (jacking) can be provided. The maximum upward start up and running thrust load values will be supported by a tilting pad thrust bearing assembly. However if load and duration values are sufficiently low a whitemetal location face (bump) can be provided.



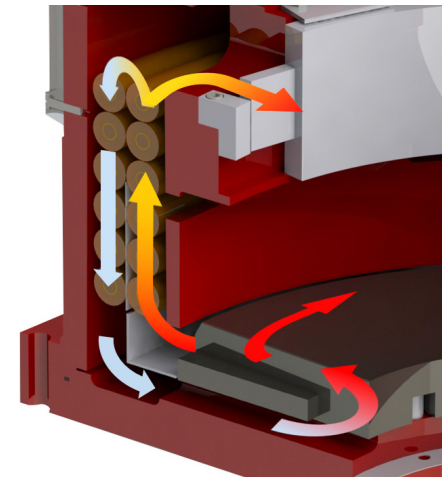
HC Vertical bearing standard dimensions

External and machine facing dimensions

CODES	A	B			C			D			E	F	G	H	J	K	L	M	N	P	Q	R	S
		S	M	L	S	M	L	S	M	L													
HC 1	1162	500	553	595	300	353	395	299	346	388	560	570	1040	150	15	78	458	68	96	133	16	1110	G1/2"
HC 2	1274	548	610	658	353	415	463	341	404	452	625	645	1150	160	15	82	522	68	96	140	18	1222	G1/2"
HC 3	1388	606	677	732	404	475	530	396	467	523	750	760	1264	180	15	86	594	68	96	154	24	1336	G3/4"
HC 4	1600	720	775	838	452	547	600	447	544	597	820	850	1420	180	15	101	615	80	96	182	24	1535	G1-1/2"

Lubrication Methods

The HC bearing range is designed for two types of cooling. Completely self contained water cooled or circulating oil cooled using an external lubrication system. Water cooling is provided using our standard Cupro-Nickel wire wound cooling tube, other materials can also be used depending upon specification requirements, such as titanium and stainless steel. Circulated oil cooling is utilised when cooling water is not available or cooling tubes are not desirable.



Temperature Measurement

Temperature measurement is the preferred condition monitoring tool for most bearing assemblies. HC bearing assemblies can be supplied with RTD's for accurate measurement of the thrust pad, journal pad & oil bath temperatures. Local dial thermometers can also be added for simple temperature reading. All of these instruments can be fitted with thermowells allowing removal without the need to drain oil from the bearing. Customer preferred instruments can be incorporated into our designs or details of our preferred standard instruments can be provided upon request.

Custom Design Vertical Bearings

OEL also offer vertical thrust and guide bearing designs which can accommodate shaft sizes and thrust loads above the values of the standard HC range. Vertical guide bearing assemblies can also be supplied, including split bearing assemblies for certain shaft configurations. Where thrust load verification during testing is required, load measuring capability can be provided via the use of load cells located in the lower thrust pads.

For information on these additional products please refer to our Standard Guide Bearing Catalogue or contact OEL directly.

Technical Documentation

With every order OEL engineers will provide a detailed arrangement drawing, operating and maintenance instruction manual and comprehensive bearing performance prediction calculation providing the following information;

- Oil bath temperature
- Required oil viscosity grade
- Bearing power loss
- Maximum operating pressure
- Minimum film thickness
- Cooling water requirements

Ordering Code

HC- Series - Thrust requirement - Shaft variant - Cooling method

Series = 1, 2, 3, 4

S = Single thrust, D = Double thrust

S = Small shaft, M = Medium shaft, L = Large shaft

W = Water cooled, C = Circulating oil cooled

Example 1 = HC-1-D-M-W

Example denotes an HC size 1 suited for double thrust loading with a medium sized shaft, water cooled.

Example 2 = HC-3-S-L-C

Example denotes an HC size 3 suited for single thrust loading with a large sized shaft, circulating oil cooled.



Osborne Engineering Ltd

Atley Way, North Nelson Industrial Estate,
Cramlington, Northumberland, England
NE23 1WA

T: +44 (0) 1670 737 077

F: +44 (0) 1670 736 127

E: info@oel-group.com

www.osborne-engineering.com

Osborne Engineering LLC

Oilfield Supply Centre, Unit 37 & 38,
PO BOX 30703, Jebel Ali, Dubai,
U.A.E.

T: +971 (4) 883 3310

F: +971 (4) 883 3538

E: info@osborne-engineering.ae

www.osborne-engineering.com

Osborne Engineering Sp. z.o.o.

ul.Rogowska 117a, 54-440 Wroclaw,
Poland

T: (+48) 71 795 50 00

F: (+48) 71 796 31 77

E: info@osborne-engineering.com.pl

www.osborne-engineering.com.pl

Osborne Bearing Technologies LLC

8525 West Monroe Rd, Houston,
TX 77061

T: (+001) 713 904 1234

F: (+001) 713 492 2126

E: info@oel-group.com

www.osborne-engineering.com