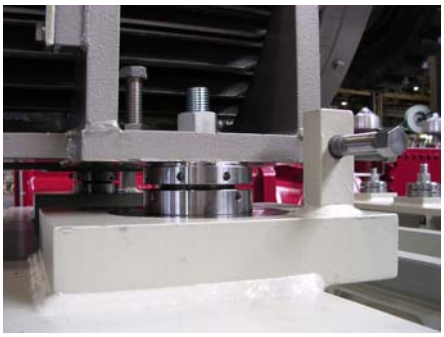
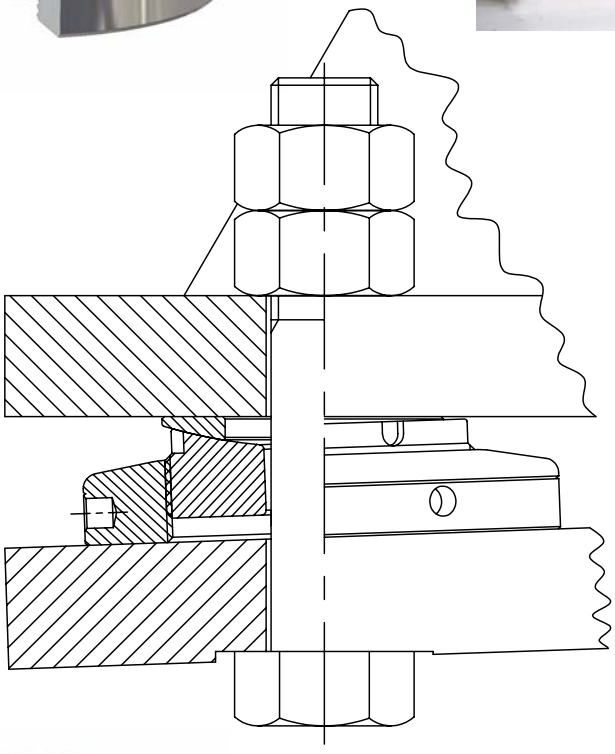
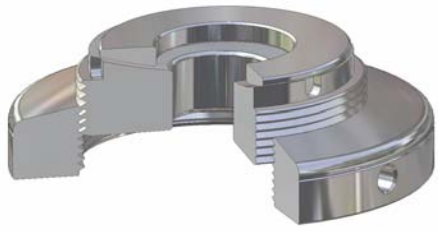
MACHINE SUPPORT
Laser Alignment, Mounting Services and Products

How to order Vibracon® chocks







2 How to order Vibracon® chocks

2.1 How to select the right Vibracon® chock size?

To get an indication which size of Vibracon® should be used, the following parameters will give you an impression:

- What is the size of the bolthole in the component bed plate?
- What is the minimum distance (pitch) between two adjacent holes?

The type indication of Vibracon® is related to the foundation bolts for which they can be used. For instance the Vibracon® SM30 is developed to be used in combination with a hexagonal bolt M30 but it is also possible to use one size of bolt diameter bigger, in this example a bolt M33.

2.2 How to get a Vibracon® chocking proposal free of charge?

As a part of our service, Machine Support offers you a free of charge calculation proposal for the mounting of your component. To prepare this calculation we need information concerning the component, the available chocking height and some information concerning the foundation.

The fastest way to receive a chocking proposal for your application is to fill out one of the appropriate datasheets (APPENDIX 1). The datasheets can also be downloaded from our website www.machinesupport.com we ask you to send the completed datasheets by e-mail to:

info@machinesupport.com

The used calculation software is approved by the Classification Societies involved for marine applications. On request Machine Support will make contact with the OEM to support you with getting an agreement on the chocking proposal.

Normally you will receive, within one day, a calculation as mentioned in APPENDIX 2.

A full proposal consists of four sheets:

- Report of all information related to the selection of the chock, including operating forces on the chocks plus foundation hardware information;
- Illustration of the top view of the component that shows the location of the chocks, the position of the positioning and / or collision chocks and the fitted bolts (if required);
- Illustration of the cross section of the foundation bolt in which the clamping length and foundation bolt are specified;
- Illustration of the cross section of the fitted bolt, if required, in which the clamping length and fitted bolt are specified.

Machine Support, upon request, will submit our report to the involved Classification Society for approval. Costs for this service are on an as negotiated and per event basis.

2.3 How to order Vibracon® chocks?

In the Vibracon® brochure (see chapter 1) you will find an overview of the standard elements. If you have a specific component which has to be chocked and the standard elements will not fit, please don't hesitate to send in your demands and we will find out if we can provide you a proper solution.

Based on the unique article numbers the chocks can be ordered by fax, mail or e-mail. As soon as we have received your order we will send you an order conformation in reply.

Vibracon® chocks are always on stock at Machine Support in the Netherlands. However, it is recommended to check the delivery time before ordering. Our local dealers of the elements also have some elements on stock.

A list of all distributors is available on the website from Machine Support:

www.machinesupport.com

2.3.1 The Original

Vibracon® SM chocks are machinery mounting chocks that are easily and accurately adjusted. The chocks accommodate up to a 4° angular difference between machine and the mounting base without expensive machining of the base or extra work of installing epoxy resin chocks.
The self levelling capability combined with the height adjustment feature eliminates the possibility of a soft foot in the production line and for the life cycle of the machinery.

Figure 2.3.1 Vibracon® Original

2.3.1.1 Article numbers Vibracon® Original chocks

The article numbers of the different sizes of chocks are as follows:

Material DIN 1.1191	*Material DIN 1.4404 (AISI 316L)*
SM12CS	**SM12SS**
SM16CS	**SM16SS**
SM20CS	**SM20SS**
SM24CS	**SM24SS**
SM30CS	**SM30SS**
SM36CS	**SM36SS**
SM42CS	**SM42SS**
SM48CS	**SM48SS**
SM56CS	**SM56SS**
SM64CS	**SM64SS**

Figure 2.3.1.1 Article numbers Original Vibracon® chocks

2.3.2 The Low Profile

The Low Profile chocks offer an economic solution for repair projects or fixed design systems where expensive milled chocks, shims or epoxy resins were applied. The Vibracon® SM Low Profile configuration addresses those applications where the chock height between the foundation and component has been established by the previous design. Most of the other chocking methods are time consuming and do not support the life cycle needs of the machine owners and installation activities on a tight schedule. A variety of adjustment tools for confined installation spaces is available.

Figure 2.3.2 Vibracon® Low Profile

2.3.2.1 Article numbers Vibracon® Low Profile chocks

The article numbers of the different sizes of chocks are as follows:

Material DIN 1.7225 (other materials on request)
SM12LP
SM16LP
SM20LP
SM24LP
SM30LP
SM36LP
SM42LP

Figure 2.3.2.1 Article numbers Vibracon® Low Profile chocks

2.3.3 The extended Vibracon® Original and Low Profile

It can happen that the maximum element height is not sufficient to fill up the gap between the foundation top plate and the bed plate of the component. In that situation it is possible to introduce a so called additional bottom ring to extend the maximum height of the Vibracon® Original and Low Profile chocks. This ring will be mounted between the base plate of the chock and the top plate of the foundation. As an alternative for the additional bottom ring Machine Support can also provide Vibracon® extended bottom rings.
As a rule of thumb, the height of the chocks should not exceed the diameter of the elements. For instance the maximum height of a Vibracon® SM30, with a diameter of 140 mm, should not exceed a chock height of 140 mm.

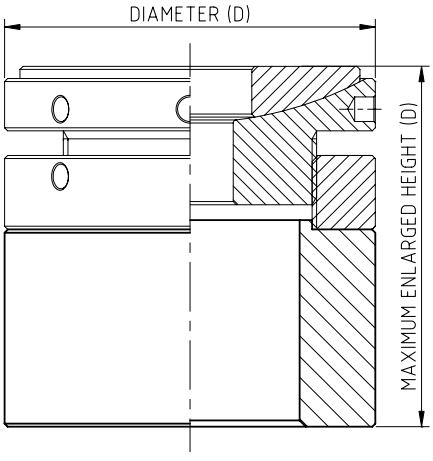


Figure 2.3.3.1 SM element with additional bottom ring

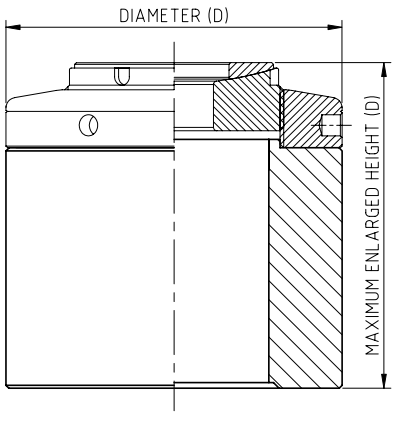


Figure 2.3.3.2 SM - LP element with additional bottom ring

2.3.3.1 Article numbers Vibracon® additional bottom rings

The article numbers of the additional bottom rings are as follows:

Material: DIN 1.0570 / 1.1191

Article no.	*Height additional ring*	*Max. extended height (D) SM element*	*Max. extended height (D) SM - LP element*
SM12EV	22 mm	60 mm	Not available
SM16EV	35 mm	80 mm	65 mm
SM20EV	50 mm	100 mm	80 mm
SM24EV	63 mm	120 mm	93 mm
SM30EV	78 mm	140 mm	108 mm
SM36EV	93 mm	160 mm	133 mm
SM42EV	118 mm	190 mm	163 mm
SM48EV	135 mm	220 mm	Not available
SM56EV	140 mm	230 mm	Not available
SM64EV	155 mm	250 mm	Not available

Figure 2.3.3.1 Article numbers Vibracon® additional bottom rings

APPENDIX 1

DATASHEET FOR VIBRACON CALCULATION

Machine Support B.V., The Netherlands
Phone : +31 (0)180 483828
Fax : +31 (0)180 483829
Website : www.machinesupport.com
E-mail : info@machinesupport.com

Selection of Vibracon SM element for Diesel/Gas/Turbine Engines

Please insert data into coloured cells

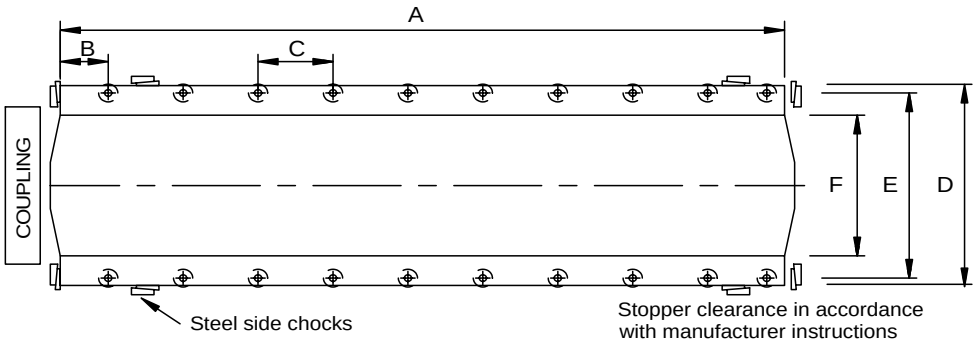
Shipyard / Customer	:	
Shipname / Project	:	
Classification society	:	
Object	:	
Make / type	:	

Engine

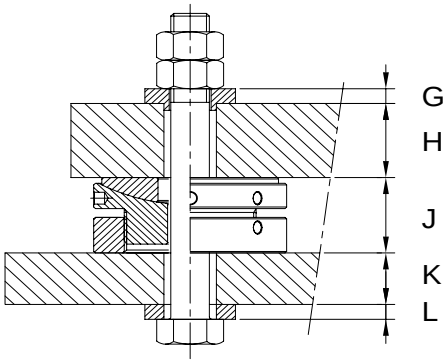
Mass	:		(kg)
Power	:		(kW)
Revolutions	:		(rpm)
Number of elements	:		(-)
Foundation bolthole diameter	:		(mm)
Fitted bolthole diameter	:		(mm)

Top View of engine

				LEGEND
Total length of the component	:		(mm)	**A**
Location first hole (seen from coupling)	:		(mm)	**B**
Pitch between other holes (on one side)	:		(mm)	**C**
Total width of the component	:		(mm)	**D**
Pitch of boltholes (left to right)	:		(mm)	**E**
Foundation width (inside)	:		(mm)	**F**



Cross section of mounting detail



LEGEND

Top sleeve length	:		(mm)	**G**
Bed plate thickness	:		(mm)	**H**
Chock height	:		(mm)	**J**
Top plate thickness	:		(mm)	**K**
Bottom sleeve length	:		(mm)	**L**

Remarks:

Address information

Company	:	
Contact	:	
Phone	:	
Fax	:	
E-mail	:	

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Website : www.machinesupport.com
E-mail : info@machinesupport.com

Selection of Vibracon SM element for (Marine) Gearboxes

Please insert data into coloured cells

Shipyard / Customer	:	
Shipname / Project	:	
Classification society	:	
Object	:	
Make / type	:	

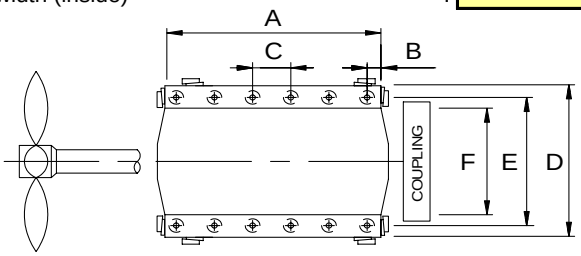
Gearbox

Mass	:		(kg)
Power	:		(kW)
Revolutions	:		(rpm)
Number of elements	:		(-)
Foundation bolthole diameter	:		(mm)
Fitted bolthole diameter	:		(mm)
Reduction rate	:		(-)
Average distance of boltholes	:		(mm)
Distance between centre line of shaft and top plate	:		(mm)
Propulsion efficiency	:		(N/kW)

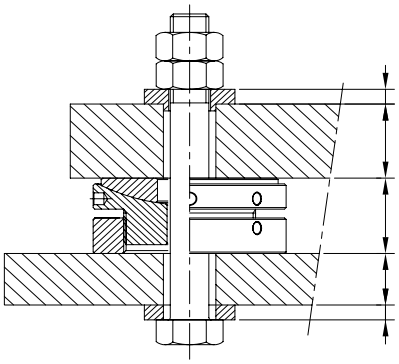
(For and aft chocks capable of transmitting 3 times nominal propeller thrust must be installed)

Top View of gearbox

				LEGEND
Total length of gearbox	:		(mm)	**A**
Location first hole (seen from coupling)	:		(mm)	**B**
Pitch between other holes (on one side)	:		(mm)	**C**
Total width of gearbox	:		(mm)	**D**
Pitch of boltholes (left to right)	:		(mm)	**E**
Foundation width (inside)	:		(mm)	**F**



Cross section of mounting detail



				LEGEND
Top sleeve length	:		(mm)	**G**
Bed plate thickness	:		(mm)	**H**
Chock height	:		(mm)	**J**
Top plate thickness	:		(mm)	**K**
Bottom sleeve length	:		(mm)	**L**

Remarks:

Address information

Company	:	
Contact	:	
Phone	:	
Fax	:	
E-mail	:	

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Selection of Vibracon SM element for Generators/E-motors/Pumps/Comp.

Please insert data into the coloured cells

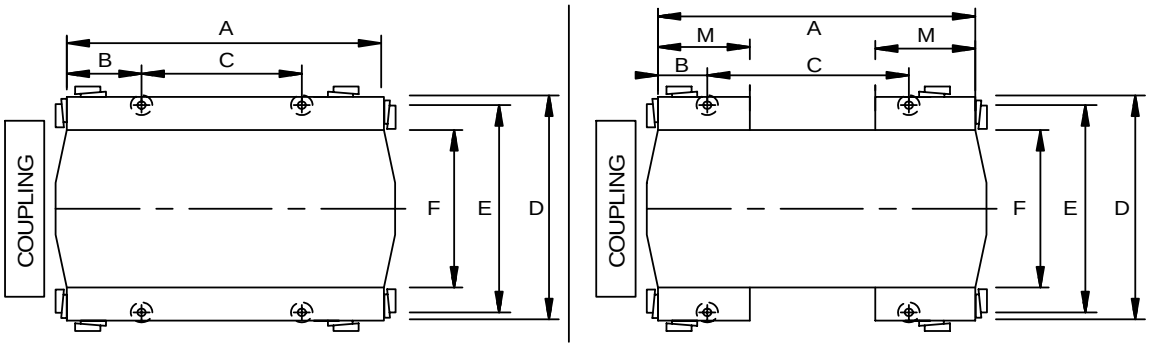
Shipyard / Customer	
Shipname / Project	
Classification society	
Object	
Make / type	

Generator

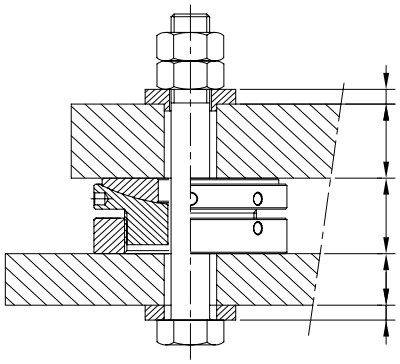
Mass		(kg)
Power		(kW)
Revolutions		(rpm)
Number of elements		(-)
Foundation bolthole diameter		(mm)
Fitted bolthole diameter		(mm)

Top View of generator

Total length of generator		(mm)	**A**
Location first hole (seen from coupling)		(mm)	**B**
Pitch between other holes (on one side)		(mm)	**C**
Total width of the component		(mm)	**D**
Pitch of boltholes (left to right)		(mm)	**E**
Foundation width (inside)		(mm)	**F**
Foot length		(mm)	**M**



Cross section of mounting detail



Top sleeve length		(mm)	**G**
Bed plate thickness		(mm)	**H**
Chock height		(mm)	**J**
Top plate thickness		(mm)	**K**
Bottom sleeve length		(mm)	**L**

Remarks:

Address information

Company	
Contact	
Phone	
Fax	
E-mail	

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APPENDIX 2

EXAMPLE OF CHOCKING PROPOSAL

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Shipyard / Customer	:	Slippstödin ehf
Shipname / Project	:	Baldvin NC-100
Classification society	:	Det Norske Veritas
Object	:	Piston engine
Make / type	:	MaK 6M32

Selection of Vibracon SM element

Machine

Mass (if engine with water +oil)	:	37500	(kg)
Power	:	2880	(kW)
Revolutions	:	600	(rpm)
Foundation width (bolt distance)	:	1400	(mm)
Number of elements	:	18	(-)
Bolthole diameter	:	35	(mm)

Correction / Safety factor	:	2	(-)
Minimum required Vibracon SM element	:	30	(-)
Advised Vibracon SM element	:	**30**	(-)
Element load (maximum)	:	24,05	(kN)
Element load (minimum)	:	16,78	(kN)
Machine load	:	48,11	(kN)

Calculation of holding down bolts' torque

Foundation bolt

Foundation bolts	:	14 * M30 (L =420 mm)	(-)
Material	:	grade 8.8	(-)
E-modul	:	207000	(N/mm²)
Yield strength	:	630	(N/mm²)
Elongation foundation bolt	:	0,62	(mm)
Tension per bolt	:	243,3	(kN)
Tensile stress	:	468,7	(N/mm²)
Disposable yield strength	:	74	(%)
Equivalent stress	:	552,0	(N/mm²)
Disposable yield strength < 90 %	:	88	(%)
Tightening torque	**:**	**1460**	**(Nm)**

Fitted stud bolt

Fitted bolts	:	4 * M30 (L =462 mm)	(-)
Material	:	42 CrMo 4	(-)
E-modul	:	207000	(N/mm²)
Yield strength	:	750	(N/mm²)
Elongation of fitted bolt	:	0,57	(mm)
Tension per bolt	:	243,3	(kN)
Tensile stress	:	468,7	(N/mm²)
Disposable yield strength	:	62	(%)
Equivalent stress	:	552,0	(N/mm²)
Disposable yield strength < 90%	:	74	(%)
Tightening torque	**:**	**1460**	**(Nm)**

MS REF. NUMBER : NE-04-0155-01-PW

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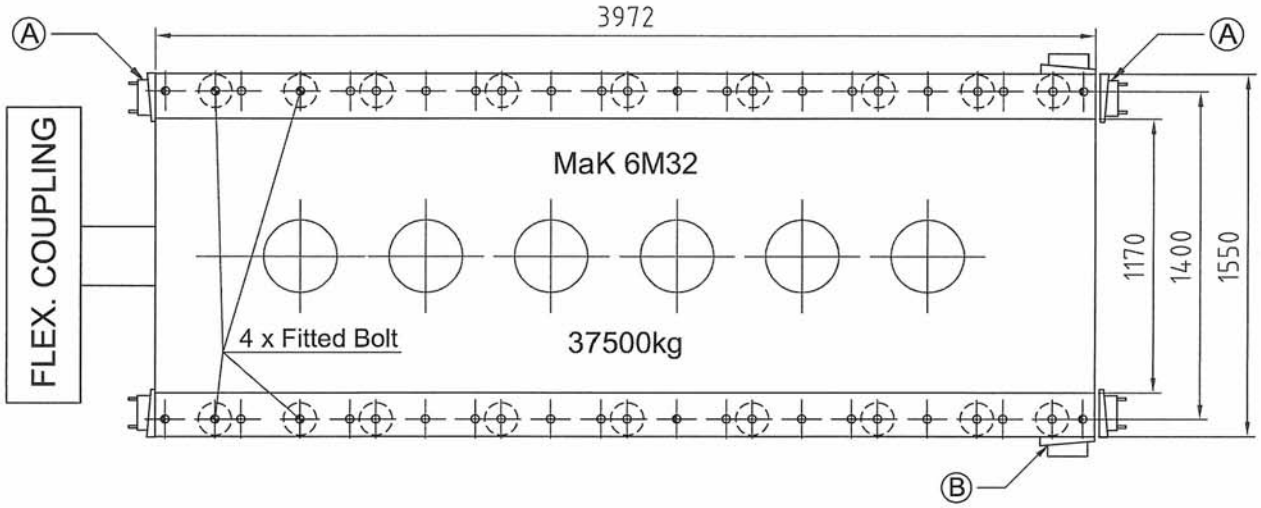

MS REF. NUMBER: NE-04-0155-01-PW

PROJECT DATA

Shipyard / customer : Slippstödin ehf
Shipname / project : Baldvin NC-100
Classification society : Det Norske Veritas
Object : Piston Engine
Make / type : MaK 6M32

Ⓐ - Collision stopper (with wedge shaped chocks)
Ⓑ - Steel side stopper (with wedge shaped chocks)
Stopper clearances in accordance with manufacturer instructions

VIBRACON DATA

Vibracon Type : SM30
Standard Bottom Ring (H = 26 mm)

Maximum adjustment : 12 mm
Minimum height : 50 mm
Maximum height : 62 mm

APPROVAL

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E-mail info@machinesupport.com

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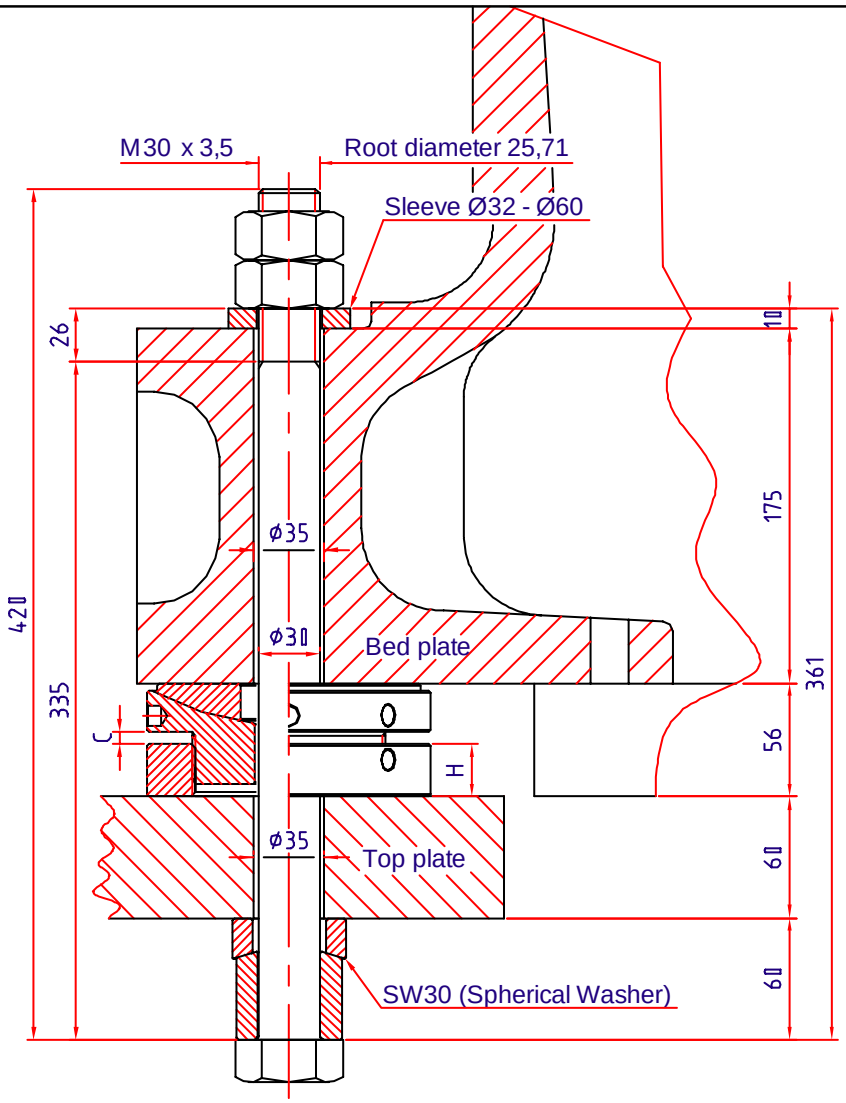

MS REF. NUMBER: NE-04-0155-01-PW

FOUNDATION BOLT

Bolt material	: grade 8.8
Yield strength	: 630 N/mm²
Size of foundation bolt	: M 30 x 3,5 L = 420 mm
Stretch	: 0,62 mm
Tightening torque	: 1460 Nm
Shipyard / customer	: Slippstödin ehf
Shipname / project	: Baldvin NC-100
Classification society	: Det Norske Veritas
Object	: Piston Engine
Make / type	: MaK 6M32

Calculations are valid for bolts with ISO Metric screw thread and coarse pitch, minimum material grade 8.8, yield strength > 630 N/mm², oil lubricated thread courses and nut mating surfaces without slide additives.

APPROVAL

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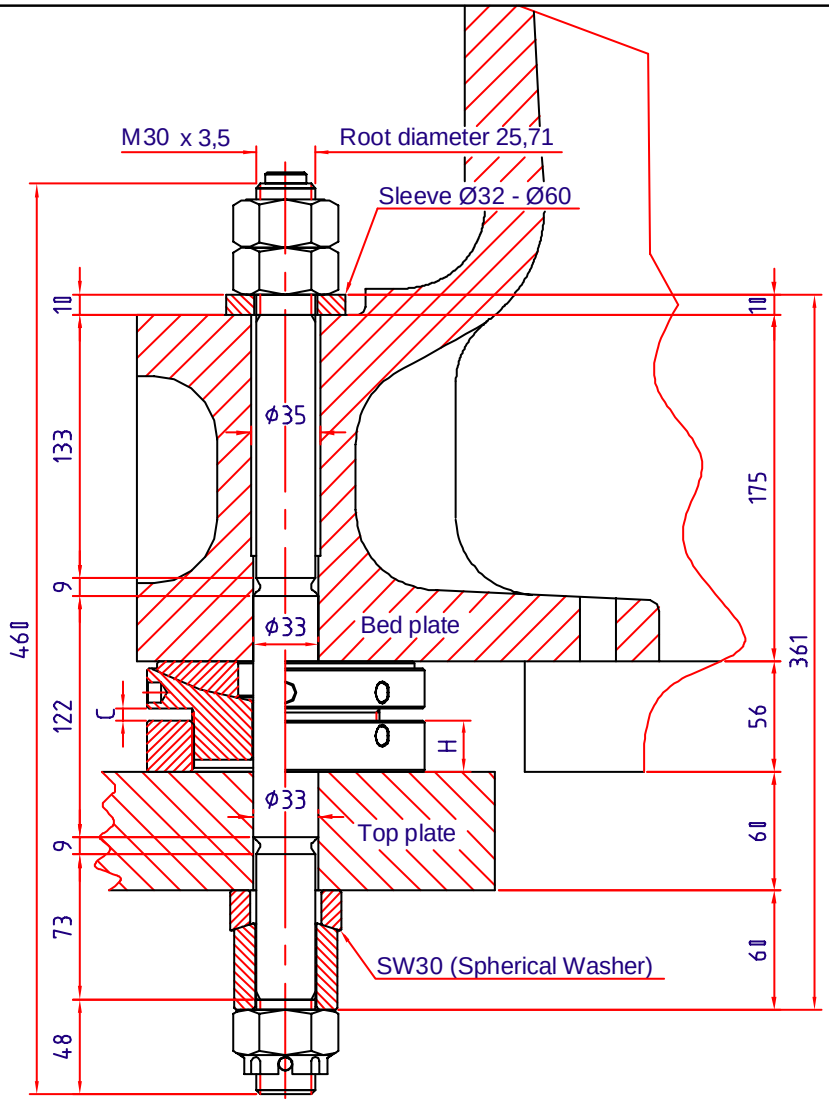

MS REF. NUMBER: NE-04-0155-01-PW

FITTED BOLT

Bolt material	: 42 CrMo 4
Yield strength	: 750 N/mm²
Size of fitted bolt	: M 30 x 3,5 L = 460 mm
Stretch	: 0,57 mm
Tightening torque	: 1460 Nm
Shipyard / customer	: Slippstödin ehf
Shipname / project	: Baldvin NC-100
Classification society	: Det Norske Veritas
Object	: Piston Engine
Make / type	: MaK 6M32

APPROVAL

Calculations are valid for bolts with ISO Metric screw thread and coarse pitch, minimum material grade 8.8, yield strength > 630 N/mm², oil lubricated thread courses and nut mating surfaces without slide additives