

PIPE CLAMPS AND ANCILLARIES — LOAD GROUP BASIS

This section covers components that have been designed with standardized load carrying capacities that are compatible with metric hanger rods. The components in this section are assigned to load groups; this simplifies selection and leads to cost-effective designs. For example, if all components in the load chain are selected as load group 5, the load carrying capacity of each item, and therefore of the whole assembly, will be 2280kgf; the load carrying capacity of an M24 hanger rod. Riser clamps and spreader beams are designed to sustain the standard load capacities on each rod.

SELECTION OF COMPONENTS

The selection of beam attachments, hanger rods and rod attachments, spreader beams and other items which are not within the pipework's thermal insulation (lagging) and are therefore not exposed to the pipe temperature is achieved simply by referring to the load capacity for each load group and selecting the component accordingly. Load capacities for standard rod sizes are given below:

Load Group	Rod Size	Load Capacity	
		kgf	kN
0	M8	230	2.3
1	M10	360	3.5
2	M12	530	5.3
3	M16	1010	9.9
4	M20	1580	15.5
5	M24	2280	22.4
6	M30	3650	35.8
7	M36	5340	52.4
8	M42	7400	72.6
9	M48	9650	94.6
10	M56	13350	130.9
11	M64	18000	176.5
12	M72	23025	225.8
13	M80	28125	275.8

The three bolt pipe clamps, riser clamps, and pipe bases are given a part number, which incorporates both the load group and the design temperature of the item concerned.

For example:

Part number:	PC3 – 200 – 5 – 560
PC3	— Three Bolt Pipe Clamp
200	— 200mm Pipe Size
5	— Load Group 5
560	— 560°C Design Temperature

Because the pipe clamp is made from standard components, the load capacity at design temperature is likely to be slightly greater than the standard load capacity for the given load group. In the above example, the load capacity at 560°C is 2410kgf, whereas the standard load capacity is 2280kgf. Note also that load capacities are also given at temperatures above and below the design temperature for the clamp. Load capacities at intermediate temperatures can be obtained by interpolation. Do not select items for use at a temperature above the maximum temperature for which a load capacity is quoted for the item in question.

It is important to note that in order to make the most efficient and cost effective selection of pipe clamp, riser clamp or pipe base, it may be necessary to consider several possible selections. If the design temperature of

the clamp is in between the standard design temperatures, it may be possible to make a more cost effective selection either by considering the clamp for a lower load group or a lower temperature

e.g. Pipe size = 250 N.B., Load = 1700kgf, Pipe temperature = 540°C

Consider the following three bolt pipe clamps:

PC3-250-4-530	Load capacity = 1673kgf (by interpolation)	No good
PC3-250-4-560	Load capacity = 1830kgf	OK
PC3-250-5-530	Load capacity = 2226kgf (by interpolation)	OK
PC3-250-5-560	Load capacity = 2720kgf	OK

Any of the last three clamps is an acceptable selection. If you simply select a clamp where the standard clamp design temperature exceeds the pipe temperature and the standard load group load capacity exceeds the actual load, you will select PC3-250-5-560, but this is not the most economic selection. In this example either PC3-250-4-560 or PC3-250-5-530 is a more efficient selection than PC3-250-5-560.

So when selecting components to make a pipe support assembly, you can choose a pipe clamp which has a different load group to the hanger rod. This situation may also arise when using variable effort supports, which have standard rod sizes to suit the maximum load on the spring.

In designing and developing this range of pipe clamps and ancillary items, we at Pipe Supports Limited have paid particular attention to compatibility of components across load groups. On the tabulations for pipe clamps and riser clamps, the compatible rod sizes are given. This is based on use with our standard pattern weldless eye nut, (or standard pattern clevis for flat plate type riser clamps).

All Pipe Supports Limited's standard pipe clamps and ancillaries are designed to withstand an increased short term load, such as occurs during hydrostatic test, up to twice the quoted load capacity for the item.

When using high temperature pipe chairs in conjunction with spreader beams, it may be desirable to specify load bearing insulation between the chair and the beam. Provided that the beam is not within the lagging, the temperature drop to the beam should mean that the beam itself will not be hot enough to significantly reduce its strength, but for reasons of personnel protection or thermal efficiency, load bearing insulation may be judged to be necessary.

Certain sizes of carbon steel pipe clamps are kept in stock to enable us to supply these items on very short lead times. The part numbers for these items are shown in bold in the tabulations.

STANDARDS

The pipe clamps and riser clamps included in this section have been designed in accordance with ASME B31.1/MSS-SP58. Load capacities for metric hanger rods have been taken from BS3974. Most of the other components are BS3974 standard items; stress levels also complying with ASME B31.1/MSS-SP58. Where components are not BS3974 standard items, they have been designed in accordance with ASME B31.1/MSS-SP58.

PIPE CLAMPS AND ANCILLARIES — LOAD GROUP BASIS

MATERIALS

Pipe Supports Limited manufactures at a number of sites worldwide. Materials are selected from the following equivalent or similar specifications suiting availability at the site of manufacture:

Carbon Steel Items manufactured from Plate or sections,
Pipe Clamps to 400°C

Euro BS EN10025: S275JR
ASTM ASTM A36
IS IS:2062
JIS JIS G3101 SS400

Carbon Steel Hanger Rods
Euro BS EN10025: S275JR/S355JR
ASTM ASTM A36
IS IS: 2062
JIS JIS G3101 SS400

Carbon Steel for Forgings
Euro BS 970 Grade 080A27
ASTM ASTM A105
IS IS: 1875 Gr. 2
JIS JIS G3202 SFVC2A

Alloy Steel Plate for clamps with design temperature
401°C to 530°C
Euro BS EN10028-2 Grade 13CrMo4-5
ASTM ASTM A387 Grade 12 Class 2/Grade 11 Class 2

Alloy Steel Plate for clamps with design temperature
531°C to 600°C
Euro BS EN10028-2 Grade 10CrMo9-10
ASTM ASTM A387 Grade 22 Class 2

Carbon Steel bolts and nuts
Euro BS 4190/DIN 601 Gr. 4.6 and BS 4190/DIN 555 Gr. 4
IS IS: 1367 (Part III) Gr. 4.6 and IS: 1367 (Part VI) Gr. 4
ASTM ASTM A307 Gr.B

Bolts and nuts for pipe clamps above 400°C
Euro BS 4882 Grade B16/Grade 4
ASTM ASTM A193 Grade B16/A194 Grade 4
JIS JIS G4107 SNB 16

We also design and manufacture pipe clamps and ancillaries in other materials to suit particular applications. Examples of this are:

Hanger rods and ancillaries in alloy steel for boiler integral pipework.

Low temperature carbon steel grades.

Austenitic stainless steel for corrosion resistance, cryogenic or high temperature service.

Nickel alloys.



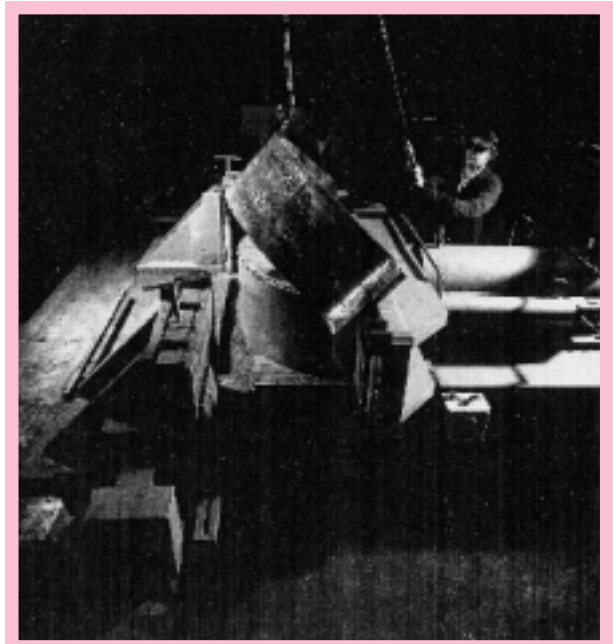
FINISH

The standard finish for pipe clamps and ancillary items is self colour. Other available finishes are:

Hot dip galvanised
Zinc plated
Zinc phosphate primer
Zinc silicate primer
Corrosion resistant paint finishes to customer specifications.

THREAD FORM

All threaded components are supplied ISO metric coarse unless otherwise stated. Other thread forms can be supplied at extra cost.



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