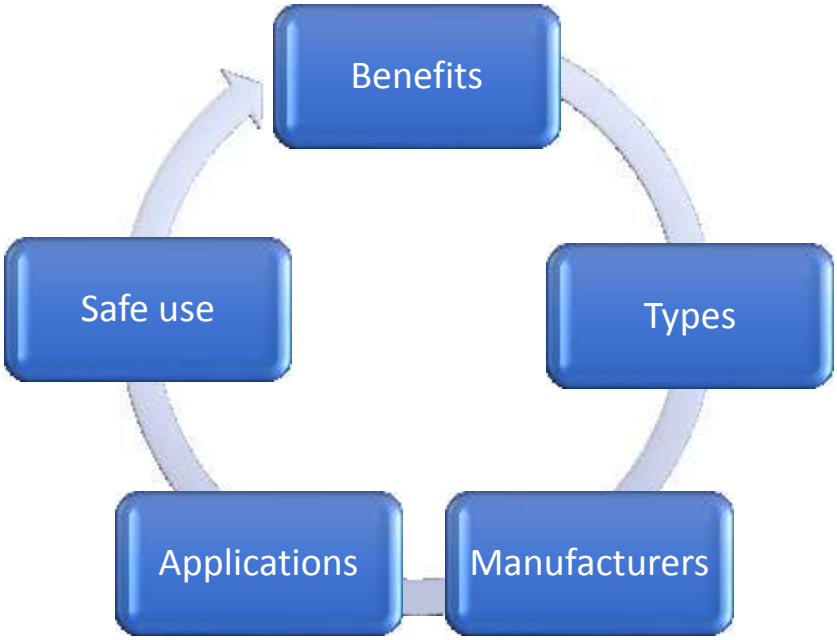
DLH ONLINE

A GUIDE TO STANDARD EYE BOLTS, LIFTING POINTS AND HOIST RINGS FOR LIFTING PURPOSES



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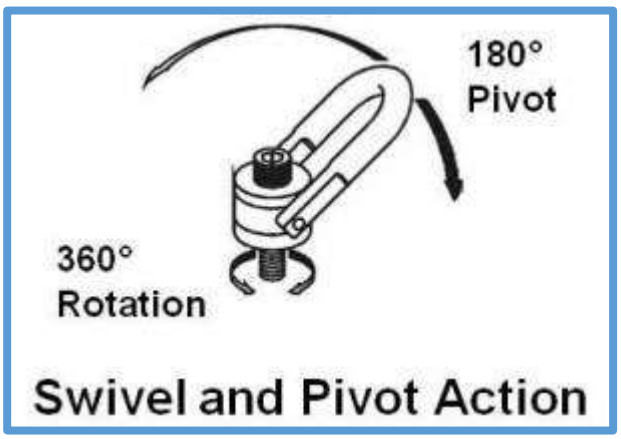
1. Overview

Eyebolts, one of the most commonly used items of lifting gear, have severe limitations in usage and a high level of accidents occur as the result of misuse.
Eyebolts are used in a wide variety of applications to provide lifting points on loads. Sometimes the hole they are screwed into is there specifically for the eyebolt. Alternatively a hole which is primarily intended for some other purpose, such as a stud, can be utilised.

Traditionally **eyebolts** were often fitted to their load and left in place for life, being regarded as part of the load. However modern practice is to treat detachable lifting points as lifting accessories. As such most countries require that they are periodically inspected or thoroughly examined. Therefore good practice is to remove eyebolts, plug the holes and put the eyebolts into storage until needed. This often considerably reduces the quantity required and opens up other options.

In general, the best alternative to eyebolts are the **modern lifting points**, **swivel links and hoist rings**. Although there is not a specific standard for these, several reputable manufacturers including **Crosby**, **RUD** and **Yoke**, who make them to their own designs. These new generation lifting points offer advanced engineering and increased load capacities over standard eyebolts.



The designs vary but the real advantage is essentially that they all offer types which incorporate a link large enough to accept a comparable hook, connected through a bearing to a bolt which screws into the load. These have bearings which allows for 360° rotation which removes any alignment problems and the link will tilt to the line of force. Some have a latch to lock the bolt to the link thereby allowing the link to be used as a lever to tighten or slacken the bolt when fitting. They are a portable lifting accessory designed to be easily fitted and removed.

These new links are considerably more expensive than traditional eyebolts but their advantages can easily outweigh their initial cost which is, in any case, often low compared to the value of the machinery they are to lift.

The table on the following page shows the benefits in strength and usability.

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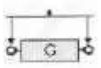
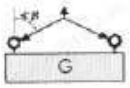
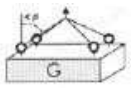
1.1 This table illustrates the advantages of using Lifting Points and Hoist Rings over standard eye bolts at various loadings and the ability to turn loads over, which is not allowed with standard eyebolts

Comparison loads for M12 metric thread standard length		Mode										
		Number of legs	1	2	1	2	2	2	2	3 - 4	3 - 4	3 - 4
		Load Direction	0°	0°	90°	90°	0-30°	30-60°	unsym.	0-30°	30-60°	unsym
Image	Type / Page link	Standard	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
	Dynamo	BS4278 table 3	0.32	0.64	X	X	X	X	X	X	X	X
	Collar	BS4278 table 1	0.40	0.80	X	0.20	0.50	0.32	0.20	0.75	0.48	0.30
	Eyebolt with link	BS4278 table 2 (Non-std.)	0.20	0.4	X	0.252	0.40	0.32	0.20	0.80	0.48	0.30
	Collar eyebolt with welded link	Based on BS4278 table 1	0.4	0.8	X	0.20	0.50	0.32	0.20	0.75	0.48	0.30
	Eyebolt	DIN 580	0.34	0.64	X	0.24	0-45° 0.40		0.24	0-45° 0.60		0.36
	RUD	RS	1.60	3.20	0.40	RUD recommend using VRS-F for multi-point lifts at angles						
	RUD	VRS-F	2.00	4.00	0.75	1.50	1.05	0.75	0.75	1.575	1.125	0.75
	RUD	INOX Star	1.20	2.40	0.50	1.00	0.70	0.50	0.50	1.05	0.75	0.50
	RUD	VWBG-V	1.20	2.40	0.60	1.20	0.84	0.60	0.60	1.26	0.90	0.60
	RUD	VLBG	1.00	2.00	1.00	2.00	1.40	1.00	1.00	2.10	1.50	1.00
	Crosby	HR-125M	1.05	2.10	1.05	2.10	1.47	1.05	1.05	2.20	1.575	1.05
	Crosby	HR-1200M	1.00	2.00	1.00	2.00	1.40	1.00	1.00	2.10	1.50	1.00
	Crosby	SS-125M	0.525	1.05	0.525	1.05	0.735	0.525	0.525	1.10	0.787	0.525
	Yoke	G.100 Lifting Point	1.0	2.00	1.00	2.00	1.40	1.00	1.00	2.10	1.50	1.00
	Yoke	Swivel Hoist Ring	1.30	2.60	1.30	2.60	1.82	1.30	1.30	2.73	1.93	1.30

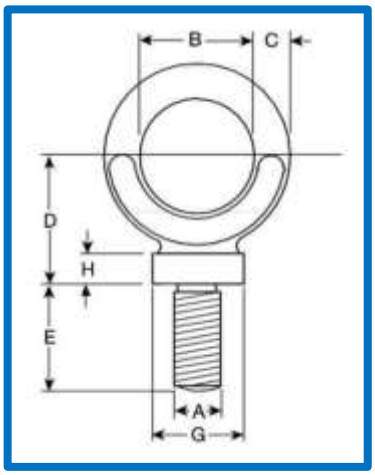
2. Types

Dynamo Eye bolts 2.1

Perhaps the most common application is an eyebolt located centrally in the top casing of an electric motor. These eyebolts usually have an eye large enough to engage with a hook of similar capacity thereby providing an easy connection to a small hoist or a single leg sling. They are designed for axial loading only, for example, along the axis of the screw thread. They usually have a small diameter collar between the eye and the screw thread. However this is not sufficient to support the eye if it is loaded at an angle to the thread axis. They are called dynamo eyebolts, which reflects their original application in early power generators.

Prior to the introduction of a British Standard, dynamo eyebolts were manufactured to a wide range of 'commercial' patterns of varying quality. However their typical applications were such that they were usually only used a few times during the lifetime of the equipment they were screwed into. As such cost was a more important consideration than performance characteristics like fatigue life.

Find out more or request a quote



Dynamo Eyebolts - metric coarse thread - For Axial loads only (NOT TO BE USED FOR ANGLED LIFTS)
• Material : B S970-080A27 hardened and tempered • Safety Factor : MBL equals 5 x SWL
• Standard : B.S. 4278 - table 3 - 1984
• Finish : self colour, electro-galvanised upon request
• Certificates : this product is supplied with a works certificate as standard
Note : upon request a basic raw material and/or EC Declaration of Conformity is available

W.L.L (tonnes)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	G (mm)	H (mm)	Weight (kgs/each
0.10	6	22	9	27	18	17	5	0.07
0.15	8	22	9	27	18.5	17	5	0.07
0.25	10	22	9	27	18.5	17	5	0.07
0.32	12	22	9	27	18.5	17	5	0.07
0.63	16	29	11	34	23.5	23	6	0.14
1.25	20	40	15	47	33	32	9	0.40
2.00	24	51	19	60	41	40	12	0.80
3.20	30	64	24	76	51	51	14	1.72

Dynamo eyebolts are also available in **Metric coarse thread long shank** **BSW Thread standard** shank **BSW Thread long** shank

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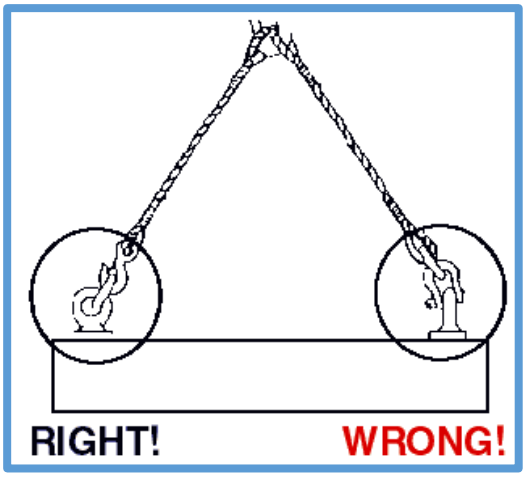
Collar Eyebolts 2.2

Although dynamo eyebolts are a relatively low cost item, the limitation on axial loading is obviously a considerable disadvantage as, for many applications, two or more lifting points are required.
The answer is an eyebolt with a large collar between the eye and the screw thread. With the collar screwed firmly down onto a machined face, it can support the eye and prevent any bending of the screw thread.

By also reducing the size of the eye, it keeps the leverage to a minimum. This design is called a collar eyebolt and can be considered as the general purpose eyebolt.
The underside of a collar eyebolt has a thread run-out at the top of the screw thread and an undercut of the collar. Small radius curves blend the transitions between the screw thread, plain shank, undercut and collar. These avoid unnecessary stress concentrations which can lead to fatigue failure and the undercut ensures that the collar can sit fully down onto a machined face.



Although a collar eyebolt is designed for angular use it is nevertheless necessary to align the eye to the line of pull. A tolerance of ±5º is acceptable but it is a matter of luck whether this will be achieved when first screwed in because the eyebolt manufacturer has no control over the start point of the threaded hole. Therefore it is permissible to shim up to half the screw pitch to achieve the correct orientation.

This brings us to some details about the screw thread itself. The current British Standard for eyebolts is BS 4278 and it specifies coarse series metric threads. Eyebolts are made from higher tensile steel and, if screwed into the same strength material, would need only to engage for a length equal to that of a full nut.
However it is possible and even likely that the material they are screwed into will be considerably weaker. The screwed length is therefore extended to compensate. Also the eyebolt manufacturer has no control over the tolerances of the screwed hole, hence the restriction to coarse series threads.

The screw thread required for a particular application is of course dictated by the threaded hole. New eyebolts are required to fit old equipment which may have imperial threads. Standard eyebolts can have other screw threads and BS 4278 does allow for imperial threads for replacement purposes.

If the hole is not specifically for an eyebolt, its primary purpose will dictate the thread used which may, for example, be a fine series thread. If the tolerances between the eyebolt and hole are not tight enough, a fine thread may not be strong enough. So, whilst this does not rule out the use of fine threads, it does place greater responsibility on the user to ensure a good fit.

A final point for the user to check is that the thread forms of the eyebolt and hole are the same. Unfortunately, certain sizes of metric, UNC and Whitworth threads will engage with each other and appear to be compatible. – *continued next page*

Collar Eyebolts 2.2 continued.

However they are, in effect, hanging on by their fingertips and not strong enough to take the load. When the current British Standard was written, an exercise was carried out to identify these possible mismatches and they were eliminated from the standard range of sizes.
Unfortunately the standard cannot control this problem entirely and certainly not when special sizes and thread forms are specified.

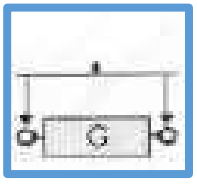
Stresses

When used at an angle, the working load of a collar eyebolt must be reduced to take account of the different stresses imposed. For the BS 4278 collar eyebolt, the reduction factors are: 0.63 for angles up to 30º to the vertical; 0.4 for angles up to 60º; 0.25 for angles up to 90º. These reductions are considerably more than those which apply to slings.

The logic behind them is that the force on an eyebolt increases due to two factors: the geometry as in a sling, and the additional effect of loading it at an angle to its axis. These reduction factors are now being challenged by a new standard which has just been approved jointly by ISO and CEN.

Whereas the current British Standard is fully dimensioned, the new standard is a performance standard with a limited dimensional envelope for compatibility purposes only. It allows manufacturers to design eyebolts capable of working to the same angle factors as used for slings.

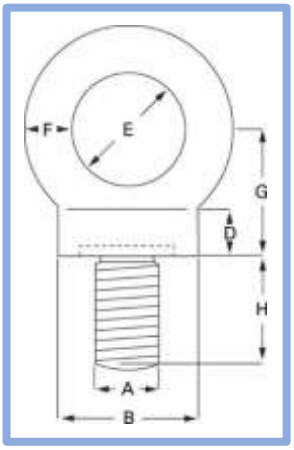
As this standard is very new and not yet implemented into national standards, it remains to be seen how many manufacturers will take advantage of it. It is hoped many do as it is a significant step forward. Meanwhile, for the foreseeable future, products to the current standard are likely to be the most widely available.



Collar eyebolts can be used as trunnions, that is when the load is applied at right angles to the thread axis. Typically the eyebolt is screwed into the side of the load rather than the top. The eye must be aligned with the line of pull, as explained above, and the rating is reduced to 0.25 of the marked working load.

Details of Collar eyebolt sizes available on the following page…

Collar Eye Bolts 2.2 continued



Collared Eyebolts - metric coarse thread
- Material : BS970-080A27 hardened and tempered
- Safety Factor : MBL equals 5 x SWL
- Standard : B.S. 4278 - table 1 - 1984
- Finish : self colour, electro-galvanised upon request
- Certificates : this product is supplied with a works certificate as standard
- Note : upon request a basic raw material and/or EC Declaration of Conformity is available

Capacities and Dimensions

W.L.L	A	B	C	E	F	G	H	Weight
tonnes	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kgs/each
0.15	8	22	7	15	9	20	18	0.06
0.25	10	22	7	15	9	20	18	0.06
0.40	12	22	7	15	9	20	18	0.06
0.50	14	29	10	20	12	26	23	0.15
0.80	16	29	10	20	12	26	23	0.15
1.00	18	36	12	24	14	32	28	0.27
1.60	20	40	14	27	16	36	32	0.3
1.60	22	45	15	30	18	40	35	0.54
2.50	24	52	17	35	21	46	40	0.85
2.50	27	58	20	39	23	52	46	1.13
4.00	30	65	22	44	26	58	51	1.62
4.00	33	72	24	48	28	64	56	2.37
6.30	36	81	27	54	32	72	63	3.12

Find out more or request a quote

Capacity - (rating eyebolts for angular loading) reduce the WWL by the following factors when using eyebolts with two leg slings:

Included angle of sling legs	0° - 30°	30° - 60°	60° - 90°
Reduction factor	0.63	0.4	0.25

Collar eyebolts are also available in Metric coarse thread long **shank BSW Thread standard** shank **BSW Thread long** shank
Also available with UNC, BSF and UNF threads on request

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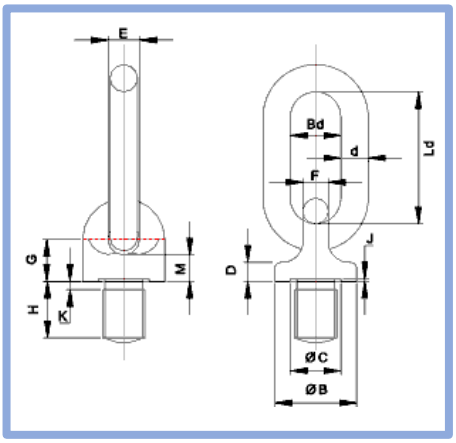
Eye bolts with links 2.3

The eye of a collar eyebolt is too small to accept a hook so a shackle is always needed as the first item of any connection. However BS 4278 does offer a third option and that is the eyebolt with link.

The origin of this eyebolt is the swivels which were once widely used in traditional ships' derrick rigs. One of the two forgings used to make the swivel is, in effect, a very compact form of collar eyebolt. The eye is just large enough to accept a link of comparable grade and strength. The link can articulate in any direction within the eye. In combination with the very compact eye, this allows it to be loaded in any direction, removing the need to align the eye to the line of pull. For a given thread size the axial working load is less than that of a collar eyebolt but the reduction factors for angular use are better. They can be used up to 15º to the vertical without any reduction and the other factors are 0.8 for angles up to 60º and 0.63 for angles up to 90º. Unfortunately, because of their origin, they are only available in a small range of sizes.

Find out more or request a quote



Eyebolts With Oval Link - metric coarse thread
- Material : BS970-080A27 hardened and tempered
- Standard : B.S. 4278 - table 2 – 1984
- Safety Factor : MBL equals 5 x SWL
- Finish : self colour
- Certificates : this product is supplied with a works certificate as standard
- Note : upon request a basic raw material and/or EC Declaration of Conformity is available

SWL (tonnes)	A (mm)	B (mm)	F (mm)	G (mm)	H (mm)	d (mm)	Bd (mm)	Ld (mm)	Weight Each (kg)
1.00	20 (M20)	39	12	20	27	13	24	53	0.50
1.60	24 (M24)	47	14	23	32	15	29	63	0.80
2.50	30 (M30)	60	18	30	41	19	37	80	1.50
4.00	36 (M36)	75	23	38	52	24	46	102	3.00
6.30	48 (M48)	94	29	47	65	30	58	126	5.50

Other sizes are available proportional to the standard.

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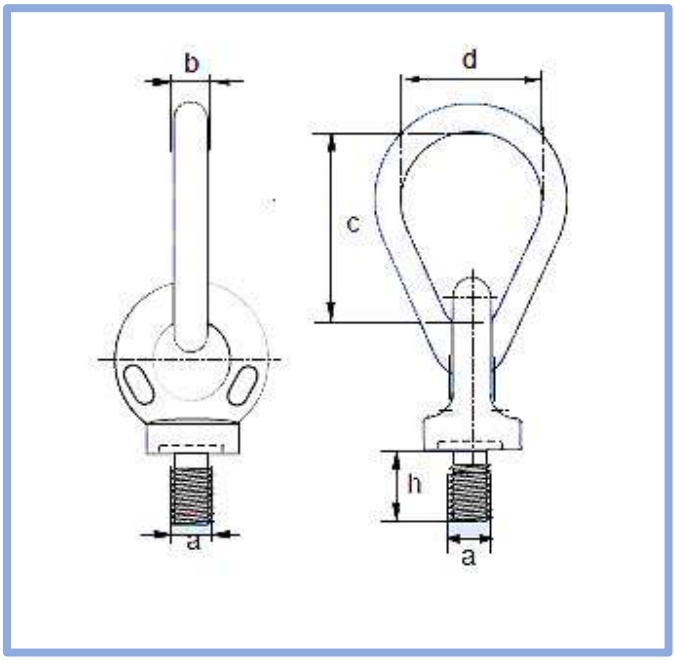
Collar Eyebolts with Welded Link 2.4

These are collar eyebolts permanently fitted with a welded link. Properly done, this is an acceptable alternative to using a shackle.
However they should not be confused with the standard eyebolt with link. Their rating and the alignment requirements are still those of a collar eyebolt.

Find out more or request a quote



- Material :: Eyebolt: BS970-080A27 hardened and tempered.: Link:: high tensile steel
- Safety Factor MBL equals 5 x SWL
- Finish: self colour
- Certificate: this product is supplied with a works certificate as standard

Note: for safe working load when used at angles please refer to safety instructions.

For eyebolt dimensions refer to BS 4278 tables 1 & 4

Safe Working Load	Diameter Thread	Diameter Link	Link Inside Length	Link Inside Width	Thread Length	Weight Each
Tonnes	**a (mm)**	**b (mm)**	**c (mm)**	**d (mm)**	**h (mm)**	**kg**
.0.15	8	11	70	35	18	0.22
.0.25	10	11	70	35	18	0.22
0.40	12	11	70	35	18	0.23
0.80	16	16	100	50	23	0.62
1.60	20	19	120	55	32	1.17
2.50	24	25	152	76	40	2.66

Also available with BSW threads - Capacity - (rating eyebolts for angular loading) reduce the WWL by the following factors when using eyebolts with two leg slings:

Included angle of sling legs	0° - 30°	30° - 60°	60° - 90°
Reduction factor	0.63	0.4	0.25

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Eye bolts to DIN 580 2.5

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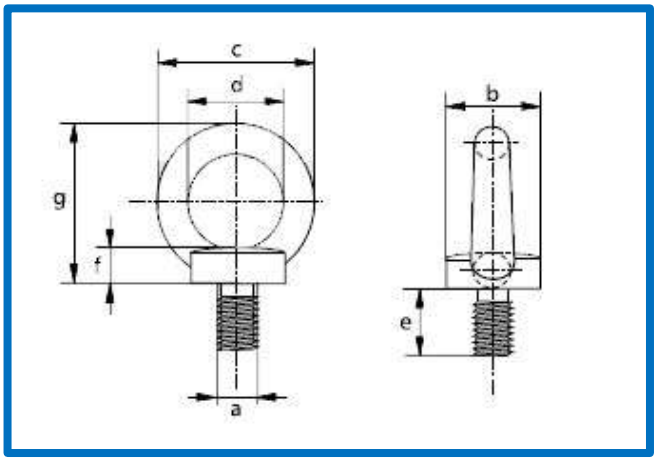
Find out more or request a quote

DIN 580 (Foreign) standard eye bolts made of steel and of stainless steel. This standard specifies the characteristics of eye bolts made of steel and stainless steel and provides information for their correct use in hoist operations (as part of slings and as a load suspension device). Use CAUTION when lifting. Any angle beyond vertical (axial lift) will reduce the rating capacity refer to load charts. Eye bolts conforming to this standard are suitable for use at temperatures ranging from -20 °C to +200 °C without a reduction in their lifting capacity. Material identification symbol: C15 or C15E.



- Material: Carbon steel C15.
- Minimum breaking load 4 x W.L.L.
- Generally to DIN 580.
- Self coloured and electro galvanised finish.
- Tested and certified.

W.L.L 0°	W.L.L 45°	a	b	c	d	e	f	g	Weight
kg For 1	Kg For 2	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kgs/100)
70	50	M 6	20	36	20	13	6	36	3
140	95	M 8	20	36	20	13	6	36	6
230	170	M 10	25	45	25	17	8	45	10.3
340	240	M 12	30	54	30	20.5	10	53	17.7
490	340	M 14	35	63	35	27	12	60	27.7
700	500	M 16	35	63	35	27	12	62	28
1200	830	M 20	40	72	40	30	14	71	42.4
1500	1050	M 22	45	81	45	35	14	80	67.3
1800	1270	M 24	50	90	50	36	18	90	83.4
2500	1650	M 27	50	90	50	36	18	90	122
3600	2600	M 30	65	108	60	45	22	109	166
4300	3200	M 33	65	108	60	45	22	110	216
5100	3700	M 36	75	126	70	54	26	128	265
7000	5000	M 39	75	126	70	54	26	130	334
8000	5500	M 42	85	144	80	63	30	147	403
8600	6100	M 45	85	144	80	63	35	150	521
9900	7300	M 48	100	166	90	68	35	168	632
11500	8300	M 56	110	184	100	78	38	187	880
16000	11000	M 64	120	206	110	90	42	208	1240

Female Eye Nuts and Bow Nuts 2.6

Before we go on to the new generation of modern lifting points, swivel links and hoist rings. There are another two traditional lifting eyes you will see. These are the eye nut and bow nut.
Essentially they are the same thing except for the shape of the eye, one being circular and the other more elongated similar to a bow shackle. They are in effect female dynamo eyebolts although they are designed for pipe hanger and similar applications rather than lifting. There was a British Standard for them but it is now withdrawn.
The standard specified mild steel although other grades may be commercially available. It would be better to avoid using them, although it is acknowledged that there may be applications where there is no better alternative. If they are used, they should only be loaded axially and clearly the stud they are screwed onto is a critical component in the connection. For angular loadings see RUD VRM

High Tensile Steel Normalised Eye Nuts 2.7

Axial loads only (NOT TO BE USED FOR ANGLED LIFTS
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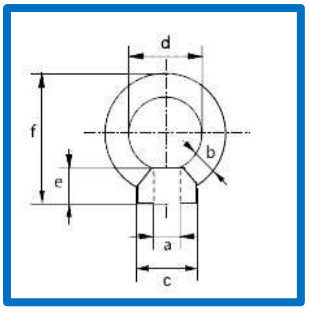


Eyenuts - metric coarse (BSW thread available)

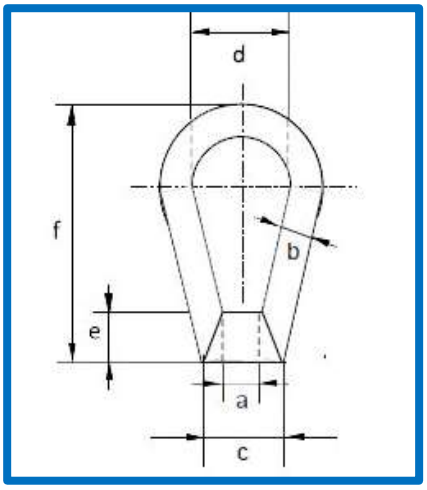
- Material: high tensile steel
- Safety Factor: MBL equals 5 x SWL
- Finish: self colour, electro-galvanised upon request
- Certificates: this product is supplied with a works certificate as standard

Find out more or request a quote

SWL	Thread Size	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight (kg)
200kg	M8 (8mm)	13	29	19	44	78	22	0.3
300kg	M10 (10mm)	13	29	19	44	78	22	0.3
500kg	M12 (12mm)	13	29	19	44	78	22	0.3
500kg	M14 (14mm)	13	29	19	44	78	22	0.3
800kg	M16 (16mm)	13	29	19	44	78	22	0.3
1000kg	M18 (18mm)	16	38	29	48	86	26	0.4
1200kg	M20 (20mm)	16	38	29	48	86	26	0.4
1600kg	M22 (22mm)	16	38	29	48	86	26	0.4
2200kg	M24 (24mm)	19	44	35	54	105	38	0.8

High Tensile Steel Normalised Bow Nuts 2.8

For Axial loads only (NOT TO BE USED FOR ANGLED LIFTS)



Find out more or request a quote

Bownuts - metric coarse (BSW thread available)
- Material: high tensile steel
- Safety Factor: MBL equals 5 x SWL
- Standard: generally to B.S. 3974 - Part 1 - 1974
- Finish: self colour, electro-galvanised upon request
- Certificates: this product is supplied with a works certificate as standard

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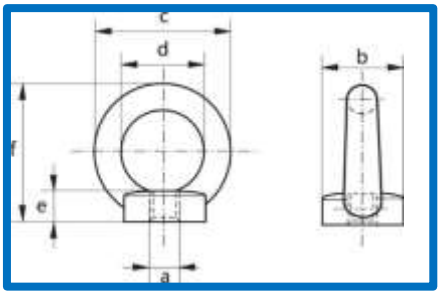
SWL	Thread Size	B (min) (mm)	C (mm)	F (min) (mm)	K (mm)	M (mm)	D (mm)	Weight Each (kg)
230kg	M8 (8mm)	6	32	12	16	64	25	0.2
360kg	M10 (10mm)	7	32	14	16	64	25	0.2
530kg	M12 (12mm)	9	38	16	18	73	30	0.3
600kg	M14 (14mm)	9	38	16	18	73	30	0.3
1010kg	M16 (16mm)	12	38	20	18	73	30	0.3
1000kg	M18 (18mm)	14	45	24	25	102	40	0.6
1580kg	M20 (20mm)	14	45	24	25	102	40	0.6
1600kg	M22 (22mm)	14	45	24	25	102	40	0.6
2280kg	M24 (24mm)	17	50	28	28	124	50	0.9
3650kg	M30 (30mm)	21	70	34	38	146	75	2.4
5340kg	M36 (36mm)	26	70	40	38	146	75	2.4
7400kg	M42 (42mm)	30	80	46	45	180	100	4.0

Eye Nuts to DIN 582 2.9

There are also DIN582 (Foreign) standard eye nuts with the same properties and angle reductions as DIN 580 Eyebolts. Material identification symbol: C15 or C15E.

Find out more or request a quote



- Material : carbon steel, C15
- Safety factor : MBL equals 4 x WLL
- Standard : generally to DIN 582
- Finish : self colour or electro-galvanised
- Certification : this product is supplied with a works certificate as standard

W.L.L 0°	W.L.L 45°	a	b	c	d	e	f	g	Weight
kg For 1	Kg For 2	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kgs/100)
70	50	M 6	20	36	20	13	6	36	3
140	95	M 8	20	36	20	13	6	36	6
230	170	M 10	25	45	25	17	8	45	10.3
340	240	M 12	30	54	30	20.5	10	53	17.7
490	340	M 14	35	63	35	27	12	60	27.7
700	500	M 16	35	63	35	27	12	62	28
1200	830	M 20	40	72	40	30	14	71	42.4
1500	1050	M 22	45	81	45	35	14	80	67.3
1800	1270	M 24	50	90	50	36	18	90	83.4
2500	1650	M 27	50	90	50	36	18	90	122
3600	2600	M 30	65	108	60	45	22	109	166
4300	3200	M 33	65	108	60	45	22	110	216
5100	3700	M 36	75	126	70	54	26	128	265
7000	5000	M 39	75	126	70	54	26	130	334
8000	5500	M 42	85	144	80	63	30	147	403
8600	6100	M 45	85	144	80	63	35	150	521
9900	7300	M 48	100	166	90	68	35	168	632
11500	8300	M 56	110	184	100	78	38	187	880
16000	11000	M 64	120	206	110	90	42	208	124

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RUD RS EYEBOLTS 2.10

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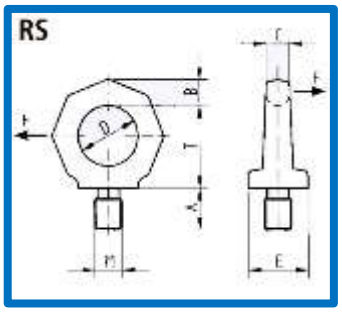
High-tensile eye bolts - Higher WLL than DIN 580 or BS Eyebolts

Find out more or request a quote

Forged, tempered and 100% crack detected.
Fool-proof compared with common DIN eye bolts by:
Shape: Octagonal means quality class 8
Identification: Distinct indication of WLL for the most unfavourable case (lateral load - not allowed with DIN 580).
Ensure the eye bolt is bolted down flush to the surface! Avoid twisting movements during transport.
Complies with the machinery directives 2006/42/EG



Also available in imperial and special threads.
Before lifting check the tightness of the eye bolt and nut!
▲ Avoid rotating movement during transport.
Assure a plane bolting surface.

Attention: Refer to RUD user instruction!

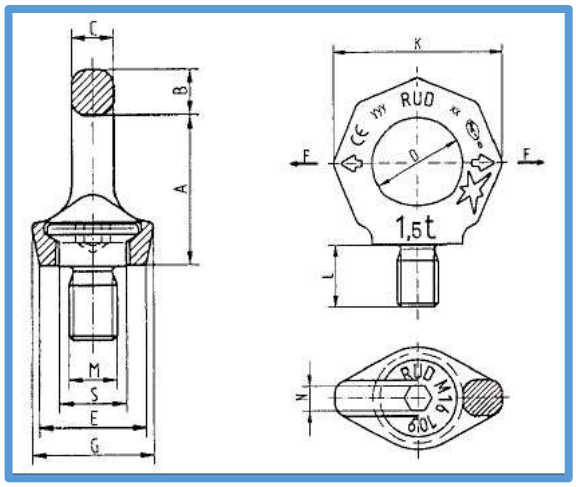
Type	WLL F (t)	A	B	C	D	E	F	M	T	Weight kg	RS No.
RS – M 6	0.1	12	11	10	25	25	11	6	35	0.1	61401
RS – M 8	0.2	12	11	10	25	25	11	8	35	0.1	61402
RS – M 10	0.25	15	11	10	25	25	11	10	35	0.1	56397
RS – M 12	0.4	18	13	12	30	30	12	12	41	0.2	56398
RS – M 14	0.75	21	15	14	35	35	13	14	48	0.25	56403
RS – M 16	1	24	15	14	35	35	13	16	48	0.3	56404
RS – M 20	1.5	30	17	16	40	40	16	20	55	0.45	56407
RS – M 24	2	36	21	20	50	50	20	24	70	0.7	56408
RS – M 30	3	45	26	24	60	60	25	30	85	1.6	56409
RS – M 36	4	54	43	38	90	100	37	36	130	6.0	56954
RS – M 42	6	63	43	38	90	100	37	42	130	6.2	56955
RS – M 48	8	67	43	38	90	100	37	48	130	6.4	56956

RUD RM Eye Nuts are also available
Higher WLL than compared with DIN 582 eye nuts.
Forged, tempered and 100% crack detected. Fool-proof compared with common DIN eye nuts by:**Shape:** Octagonal means quality class 8 **Identification:** Distinct indication of WLL for the most unfavourable case (lateral load - not allowed with DIN 582).In order to guarantee the WLL, the thread connection must at least consist of quality 8.8. Eyenut must be bolted tight during use. Avoid twisting movements during transport.
■ The given WLL is only valid in connection with threaded bolts of at least quality class 10.9.

RUD STARPOINT VRS EYEBOLTS 2.11 (Back to table of contents)

See video showing the advantages

Find out more or request a quote



Vario-Starpoint VRS with star key
Star shaped design, a clear distinction from the DIN 580 eye bolt.

Colour: striking fluorescent pink powder coating.

Identification: Clear WLL **90°**indication for the most unfavourable load direction (not permissible for DIN 580).

Forged material 1.6541, high tensile and annealed, 100% electromagnetic crack detected according to EN 1677-1 and with a 4 :1 design factor.

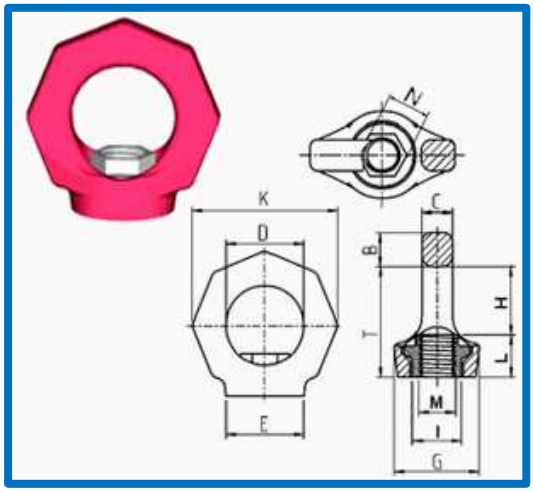
If the VRS permanently to remain at the point of force introduction, it must be tightened with a torque of 5 Nm.

Complies with the machinery directives 2006/42/EG

Type	WLL F (t)	Weight (kg)	A	B	C	D	E	G	K	L	M	N	S	Ref.-No. VRS-F
VRS-M 6	0.1	0.06	27	9	7	20	23	28	37	9	6	6	13	79 00 906
VRS-M 8	0.3	0.1	34	11	8.5	25	25	32	47	12	8	6	16	85 00 911
VRS-M10	0.4	0.1	34	11	8.5	25	25	32	47	15	10	6	16	71 04 029
VRS-M12	0.75	0.2	42	13	10	30	30	34	56	18	12	8	20	71 01 313
VRS-M16	1.5	0.3	49	15	14	35	35	40	65	24	16	10	23.5	71 01 314
VRS-M20	2.3	0.5	57	17	16	40	42	50	75	30	20	12	29	71 01 315
VRS-M24	3.2	0.9	70	21	19	48	50	60	90	36	24	14	35	71 01 316
VRS-M30	4.5	1.7	86	26	24	60	60	75	112	45	30	17	44	71 01 317
VRS-M36	7	2.9	103	32	29	72	75	90	135	54	36	22	53	79 84 201
VRS-M42	9	4.6	120	38	34	82	85	105	158	63	42	24	61.5	79 84 202
VRS-M48	12	7.0	137	43	38	94	100	120	180	72	48	27	70.5	79 84 203

RUD VRM EYE NUT 2.11

Find out more or request a quote



Complies with the machinery directives 2006/42/EG

■ The body of the STARPOINT nut must be turnable 360° in bolted condition. Adjust in pull direction before attaching the sling means.
■ A plane bolting surface has to be assured. The nut thread must be engaged to 100 % with the bolt thread. The thread pin mounted must
allow a perfect seat of the surface of the eye nut to the bolting surface.
■ Sizes of VRM - see drawing VRS-StarPoint.
Size „L“ corresponds with the minimum length of the bolt thread.
■ In case of flipping fixtures dies and molds, under full load, we recommend to use our double ball bearing power point collection.
■ The given WLL for **90°** is only valid in connection with threaded bolts of at least quality class 10.9.

Type	WLL (t)	Weight (kg)	A	B	C	D	E	G	H	K	L	M	Rmax	S	SW	Ref.-No.
VRM-M6	0.1	0.06	28	9	7	20	23	28	16	37	11	6	16	13	9	7900786
VRM-M8	0.3	0.1	34	11	8.5	25	25	28	20	47	14	8	20	16	12	7992989
VRM-M10	0.4	0.1	34	11	8.5	25	25	28	20	47	14	10	20	16	12	7990311
VRM-M12	0.75	0.2	42	13	10	30	30	34	25	56	17	12	24	20	14	7990312
VRM-M16	1.5	0.3	51	15	14	35	35.5	40	30	65	21	16	30	22	19	7990314
VRM-M20	2.3	0.5	57	17	16	40	40	50	34	75	23	20	37	29	24	7990315
VRM-M24	3.2	0.9	69	21	19	48	50	60	40	90	29	24	45	35	30	7990316
VRM-M30	4.5	1.5	86	26	24	60	60	75	52	112	34	30	56	44	36	7993008

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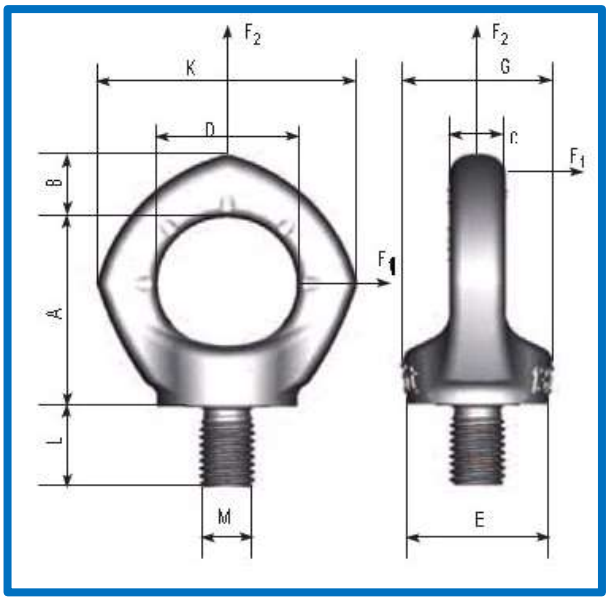
RUD INOX STAR EYEBOLT 2.12

Find out more or request a quote



Complies with the machinery directives 2006/42/EG INOX-STAR eyebolt
– stainless – 50 % more than DIN with no directional restrictions!

- Pentagonal shape – significantly different to the DIN 580 eyebolt.
- Turns through 360°. Can be set in the direction of the load.
- Clear statement of rated load **90°**for the unfavourable load range. Safety factor 4 : 1.
- Forged eye body.
- Material of eye body and screw: 1.4462, duplex steel (high durability in sea water and in environments with high chlorine ion concentrations).
- 100 % crack-tested
- Captive mounted bolt.
- Patented wear marks on the eye body.
- Tighten hand-tight when mounting with hexagonal wrench or adapter piece. Do not use an extension.
- The INOX-STAR must be able to be turned through 360° when screwed in.
- Set in the direction of force before loading.
- Component protected under patent law: European patent EP 654611.

Type	Rated Load		A	B	C	D	E	G	K	L	M	SW	Weight	Ref.-No.
	F1 (t)	F2 (t)	mm	mm	mm	mm	mm	mm	mm	mm			kg	
INOX-STAR M12	0.5	1.2	43	14	10	30	30	32	56	18	M12	8	0.2	7993835
INOX-STAR M16	1.0	2.4	50	16	14	35	35.5	38	65	24	M16	10	0.3	7993836
INOX-STAR M20	2.0	3.6	57	19	16	40	41	46.5	74	30	M20	12	0.5	7993837
INOX-STAR M24	2.5	5.2	70	24	19	48	50	56	92	36	M24	14	0.9	7993838

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RUD VWBG-V– 360° swivelling/180° pivoting Lifting Points

2.13

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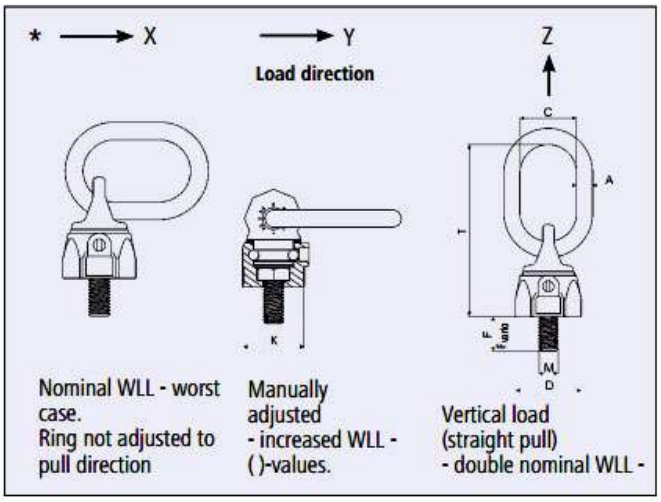


Swivelling lifting point:

- Loadable in any direction. Safety factor 4 : 1.
- Turnable under load in vertical direction.
- Not suitable for permanent swivelling under full load, especially in 90° direction.
- Simple installation, just a thread hole is required.
- Variable lengths (Vario) available.
- Can also be used for through holes.
- Bolts 100 % magnetic crack detected! Surface protection CORRUD-DT (20 times better than zinc plating).
- High tensile, approved suspension ring acc. EN 1677-4.
- Surface: Ring pink powder coating, housing zinc plated.
- Type Vario with washer and 100 % crack detected nut.
- VWBG-V and VWBG are also available with Imperial thread.
- Turning without jerk due to additional bush bearing washer.
- Wear marks in the main load directions 45°, 60° and 90°.

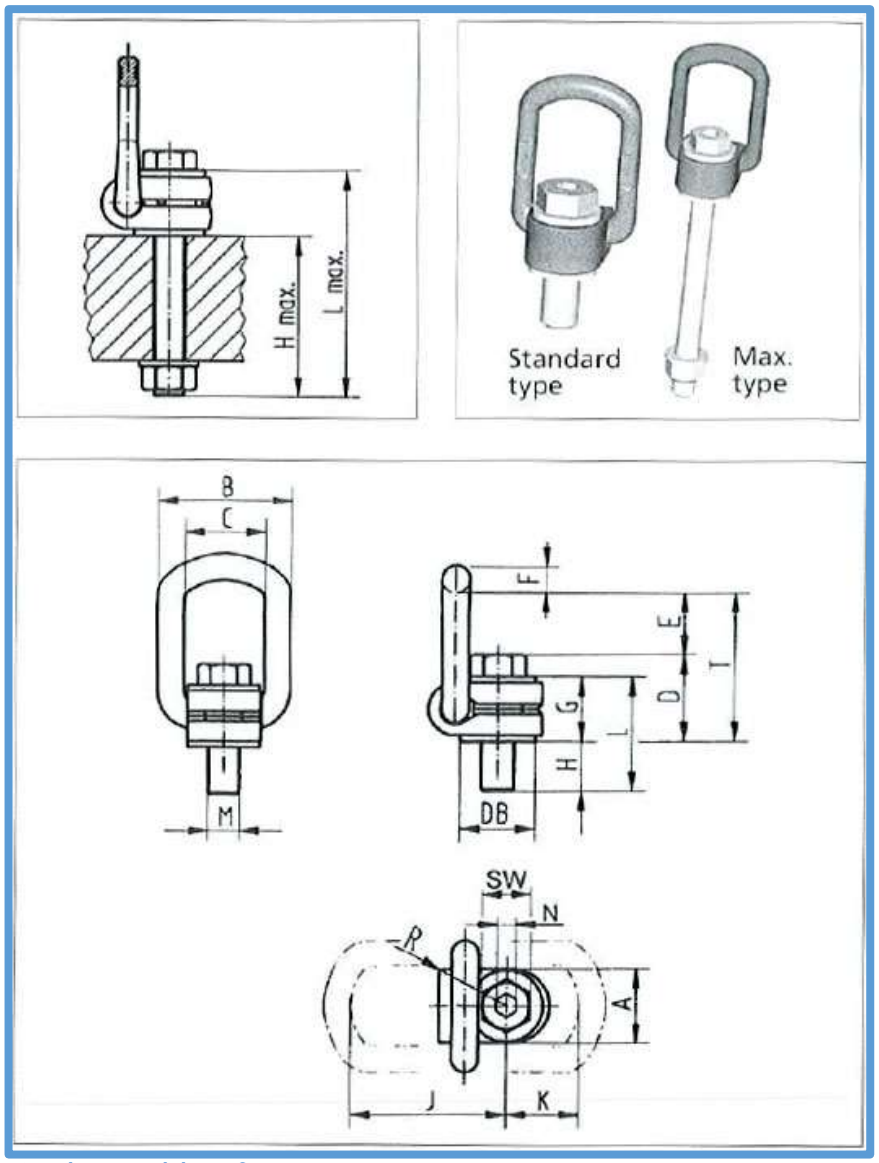
Type	WLL (t)	A (mm)	C (mm)	D (mm)	Fstand. (mm)	Fvario (mm)	K (mm)	M (mm)	T (mm)	X	Ref.-No. Stand.	Ref.-No. Vario
												with washer and nut
VWBG-V 0.3 M8	0.3(0.4)	8	29	30	13	8-102	28	8	76	18	7103720	8600330
VWBG-V 0.45 M10	0.45(0.6)	8	29	36	17	10-122	30	10	78	19	7103715	8600331
VWBG-V 0.6 M12	0.6(0.7)	10	35	42	21	12-140	36	12	107	19	7100180	8600332
VWBG-V 1.0 M14	1.0(1.25)	13	38	48	21	14-65	41	14	113	–	–	8600337
VWBG-V 1.3 M16	1.3(1.5)	13	38	48	25	16-180	41	16	113	28	7100430	8600333
VWBG-V 1.8 M18	1.8(2.0)	13	35	64	27	18-83	55	18	137	–	–	8600338
VWBG-V 2.0 M20	2.0(2.5)	13	35	64	33	20-223	55	20	137	30	7100800	8600334
VWBG-V 2.0 M22	2.0(4.0)	13	35	62	33	22-94	55	22	137	–	–	8600334
VWBG-V 3.5 M24	3.5(4.0)	18	40	81	40	24-255	70	24	173	25	7100640	8600335
VWBG-V 3.5 M27	3.5(4.0)	18	40	81	40	27-92	70	27	173	–	–	8600339
VWBG-V 5.0 M30	5.0(6.0)	22	50	99	50	30-330	85	30	221	32	7100650	8600336

RUD VLBG Load Ring 2.14

VLBG Load Ring will turn 360°, adjustable in pull direction. Load ring foldable, full WLL in any load direction, surface pink powder coated.
The max. lengths of the RUD - bolts are adjusted in such a way that if a hex-head-shaped nut (DIN EN ISO 7042) is used, assemblies of material thickness of approximately 8 *M
(for M8 - M30) and 5 *M for (M36 - M48) can be realised respectively.

In case of flipping fixtures dies and molds, under full load **90°**, we recommend to use our double ball bearing power point collection

Complies with the machinery directives 2006/42/EG



Find out more or request a quote

Due to page size restrictions the loadings and dimensional chart has been excluded.

You can view this on line Click Here
Sizes M8 to M48

Also Stainless steel – contact us and
UNC sizes available online

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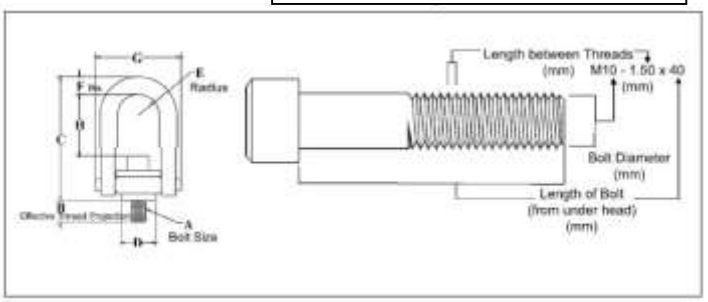
CROSBY HR-125M METRIC SWIVEL HOIST RINGS 2.15

Find out more or request a quote

Also available in Stainless steel

Click here to view



- Metric threads available in sizes from 400kg to 16,900kg and dual rated in both a 4 to 1 and 5 to 1 design factor.
- All Components are Alloy Steel - Quenched and Tempered.
- Rated at 100% at 90° angle.
- 100% individually proof tested to 2-1/2 times the Working Load Limit with certification and Statistically Magnetic Particle inspected.
- 360° swivel and 180° pivot action.
- Bolt is secured with E-clip, threads are grooved. This method allows for easy disassembly and assembly of hoist ring for thorough examination of all components. Replacement kits are available.
- Bolts are individually Proof Tested.
- Multiple Bolt length available to meet specific application requirements.
- Zinc Plated (Yellow Chromate) finish for increased corrosion protection

	Working Load Limit (kg)			Dimensions (mm)								
HR-125M Stock No.	At a 5:1 Design Factor †	At a 4:1 Design Factor †	Torque in Nm*	Bolt Size (A) †	Effective Thread Length (B)	C	D	Radius E	Diameter F	G	H	Weight Each (kg)
1016602	400	500	10	M8X 1.25 X 40	16.9	68.1	25.4	11.8	8.5	42.9	28.2	.19
1016613	450	550	16	M10 X 1.50 X 40	16.9	68.1	25.4	11.8	8.5	42.9	27.69	.19
1016624	1050	1300	38	M12 X 1.75 X 50	17.2	124.5	50.8	22.3	17.5	82.7	58.17	1.13
1016635	1900	2400	81	M16 X 2.00 X 60	27.2	124.5	50.8	22.3	17.5	82.7	56.13	1.22
1016644	2150	2700	136	M20 X 2.50 X 65	31.2	124.5	50.8	22.3	17.5	82.7	52.07	1.36
1016657	3000	3750	136	M20 X 2.50 X 75	28.1	167.0	76.2	34.7	25.4	120.1	75.69	3.18
1016668	4200	5250	312	M24 X 3.00 X 80	33.1	167.0	76.2	34.7	25.4	120.1	74.93	3.18
1016679	7000	8750	637	M30 X 3.50 X 120	65.1	220.0	95.3	44.5	30.5	152.4	102.0	6.70
1016690	11000	13750	1005	M36 X 4.00 X 150	60.6	315.3	120.7	57.2	44.5	203.2	124.2	14.95
1016701	12500	15600	1005	M42 X 4.50 X 160	70.6	315.3	120.7	57.2	44.5	203.2	150.6	16.33
1016712	13500	16900	1350	M48 X 5.00 X 160	70.6	315.3	120.7	57.2	44.5	203.2	137.9	16.33

*The tightening torque values shown are based upon threads being clean, dry and free of lubrication.
† Individually proof loaded to 2-1/2 times the Working Load Limit based on the 4:1 design factor.
‡ Bolt specification is a Grade 12.9 Alloy socket head cap screw to Din 912. All threads are metric (ASME/ANSI B18.3.1m).

Also available in UNC threads - For more information Click Here

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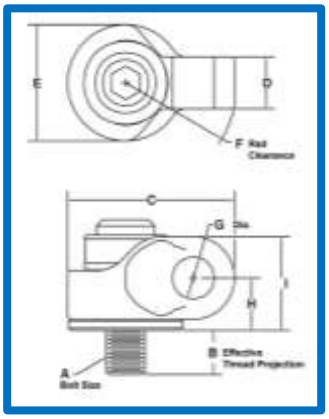
CROSBY HR-1200M Metric - Side Pull Hoist Rings 2.16



Find out more or request a quote

- Wide range of capacities available:
Also available with UNC thread.
- Metric sizes from 300 kg. to 13.000 kg.
- Body components are Alloy Steel - Quenched and Tempered.
- Rated at 100% of Working Load Limit for angles up to 90 degrees.
- Each product is stamped with a Product Identification Code (PIC), for material traceability, along with a Working Load Limit, and the name Crosby or "CG".
- Utilize standard Crosby Red Pin® Shackles to connect to wire rope or synthetic slings. (sold separately)
- Multiple bolt lengths available to meet specific application requirements.
- All sizes are **RFID EQUIPPED**

Weight Each (kg.)	Working Load Limit (kg)*	HR-1200M Stock No.	Hoist Ring Bolt Torque (Nm.)	(A) Bolt Size (mm)	(B) Eff. Thread Proj. (mm)	Dimensions (mm)							Recommended Shackles			
						C	D	E	F	G	H	I	Red Pin® Shackles 209,210,213, 215,2130,2150		Red Pin Web Shackles S-281	
													Nominal Size (in.)	WLL (t)	Web Size (mm)	WLL (t)
.18	300	1067803	10	M8x1.25x40	16.9	49.0	18.3	25.4	39.6	20.3	21.6	36.3	1/2, 5/8	2, 3-1/4	50	2.95
.18	400	1067807	16	M10x1.50x40	16.9	49.0	18.3	25.4	39.6	20.3	21.6	36.3	1/2, 5/8	2, 3-1/4	50	2.95
.63	1000	1067811	38	M12x1.75x50	17.2	75.4	24.6	50.8	54.1	23.6	27.2	45.5	5/8, 3/4	3-1/4, 4-3/4	50, 35	2.95, 4.08
.68	1400	1067815	81	M16x2.0x60	27.2	75.4	24.6	50.8	54.1	23.6	27.2	45.5	5/8, 3/4	3-1/4, 4-3/4	50, 35	2.95, 4.08
2.0	2250	1067823	136	M20x2.5x75	28.1	110	34.0	76.2	76.2	27.2	34.4	61.5	7/8	6-1/2	50	5.67
2.2	3500	1067827	312	M24x3.0x80	33.1	110	34.0	76.2	76.2	27.2	34.4	61.5	7/8	6-1/2	50	5.67
4.5	6250	1067831	637	M30x3.5x120	65.1	142	39.9	95.3	99.3	37.3	48.8	86.9	1, 1-1/8,1-1/4	8-1/2, 9-1/2, 12	75	7.70
10.4	7750	1067835	1005	M36x4.0x150	60.6	186	52.3	121	132	53.6	61.2	109	1-3/8, 1-1/2,1-3/4	13-1/2, 17, 25	-	-
10.7	10000	1067839	1005	M42x4.5x160	70.6	186	52.3	121	132	53.6	61.2	109	1-3/8, 1-1/2,1-3/4	13-1/2, 17, 25	-	-
11.0	13000	1067843	1350	M48x5.0x160	70.6	186	52.3	121	132	53.6	61.2	109	1-3/8, 1-1/2,1-3/4	13-1/2, 17, 25	-	-

*Ultimate Load is 5 times the Working Load Limit.

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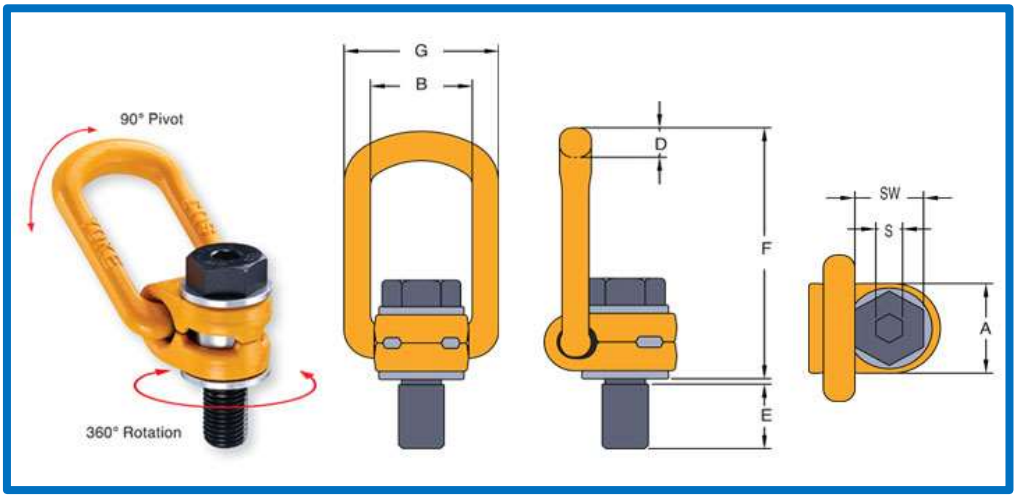
YOKE Grade 100 Swivel Lifting Point Metric Thread 2.17

- Grade 100 Lifting Points are 360degrotation with a 90deg pivot function
- Bolts are metric thread (ASME/ANSI B18.3.1M), specification is a grade 10.9 alloy socket head screw per DIN EN ISO 4762
- Proof Load individually to 2.5 times Working Load Limit and certified
- Rated at 100% at 90deg angle
- 100% magnaflux crack detection
- Long shank bolts available on request



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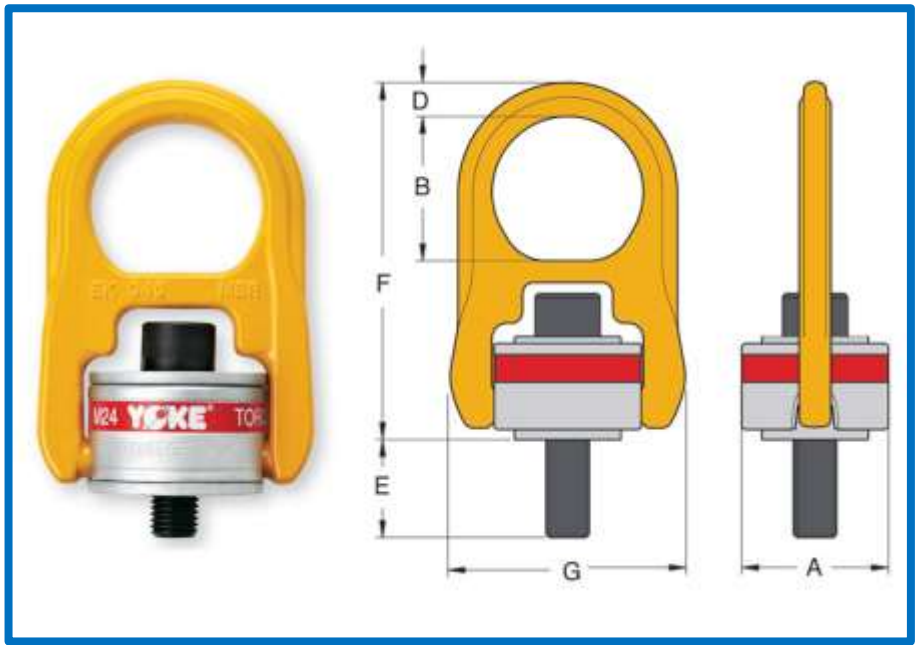
Find out more or request a quote

Also available with UNC threads – Click Here

Part Code	WLL tonnes	Torque In Nm	Bolt Size	B mm	E standard mm	E extended mm	A mm	G mm	D mm	F mm	S mm	SW mm	N.W. Kg
8-211-003	0.3	30	M8 x 1 x 1.25 x 45	35	16	76	30	55	10.0	85	6	13	0.2
8-211-006	0.63	60	M10 x 1.50 x50	35	18	96	30	55	10.0	85	8	17	0.3
8-211-010	1.0	100	M12 x 1.75 x 60	37	21	114	33	57	13.5	98	8	19	0.5
8-211-012	1.2	120	M14 x 2.00 x 60	37	21	-	33	57	13.5	98	10	24	0.5
8-211-015	1.5	150	M16 x 2.00 x 65	37	25	149	33	57	13.5	98	10	24	0.5
8-211-020	2.0	200	M18 x 2.00 x 75	54	28	-	50	82	16.5	140	12	30	1.3
8-211-025	2.5	250	M20 x 2.50 x 80	54	32	186	50	82	16.5	140	12	30	1.3
8-211-040	4.0	400	M24 x 3.00 x 85	54	37	221	50	82	16.5	140	14	36	1.4
8-211-042	4.0	400	M27 x 3.00 x 110	65	44	-	60	99	22.5	170	17	41	2.8
8-211-050	5.0	500	M30 x 3.50 x 115	65	49	278	60	99	22.5	170	17	46	3.1
8-211-070	7.0	700	M36 x 4.00 x 125	65	56	-	60	99	22.5	178	22	55	3.3
8-211-080	8.0	800	M36 x 4.00 x 140	85	57	222	77	124	26.5	225	22	55	5.8
8-211-100	10.0	1000	M42 x 4.50 x 150	85	66	272	77	124	26.5	225	24	65	6.3
8-211-150	15.0	1500	M42 x 4.50 x 160	104	63	264	95	158	36.0	261	24	65	10.9
8-211-200	20.0	2000	M48 x 5.00 x 170	104	73	295	95	158	36.0	261	27	75	11.6

Yoke Swivel Hoist Ring with metric thread 2.18

- Yoke Hoist Rings will turn 360° and pivot 180° allowing the adjustment in pull direction
- Yoke Hoist Rings retain 100% of the rated capacity @ 90°
- Extended shank length available on request



Find out more or request a quote

Also available with UNC threads – Click Here

Part Code	WLL	Bolt Size	E mm	A mm	B mm	D mm	F mm	G mm	Mass Kg
8-203-004	0.50	M8x1.25x50	17.0	40	41	9	102	65	0.4
8-203-005	0.55	M10x1.50x45	11.0	40	41	9	102	65	0.5
8-203-010	1.30	M12x1.75x60	15.0	65	64	15	158	105	1.7
8-203-019	2.40	M16x2.00x65	20.0	65	64	15	158	105	1.8
8-203-021	2.70	M20x2.50x70	25.0	65	64	15	158	105	1.9
8-203-042	5.25	M24x3.00x80	26.0	85	79	19	204	134	4.2
8-203-070	8.75	M30x3.50x135	81.0	100	100	25	241	160	6.7
8-203-110	13.75	M36x4.00x160	76.0	120	111	30	286	194	15.5
8-203-125	15.60	M42x4.50x175	95.0	120	111	30	286	194	16.5
8-203-135	16.90	M48x5.00x190	105.0	120	111	30	286	194	16.8

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3. Manufacturers

RUD sling and lashing systems guarantee safety when lifting and moving loads. Over 340 different innovative tested lifting/lashing points (welded or bolted), in conjunction with the RUD VIP and ICE lifting chains meet the highest demands in all areas of application of future-oriented lashing and lifting equipment.

RUD lifting point parts are either 100% crack detected and proof loaded according to EN 1677. and are in accordance with DIN EN 818 and 1677. 360° adjustable in pull direction. Load ring foldable, Marked with full 100% WLL in any load direction. Safety factor 4:1.

Crosby hoists rings are rated at 100% at 90° angle. 100% individually proof tested. WLL and the name Crosby or "CG" stamped into it. Meets or exceeds all the requirements of ASME B30.26 (US) 360° swivel and 180° pivot action.

All YOKE G-100 Lifting Point meet or exceed all the requirement of ASME B30.26
Each forged parts and cap screw with Batch code links to Test Certificate.
G-100 Lifting Point Bail are designed by forged alloy steel, quenched and tempered.
G-100 Lifting Point are 360° rotation with 90° pivot function.

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4. Safe Use and Maintenance

Inspection

In the UK, the Lifting Operations & Lifting Equipment Regulations (LOLER) make it clear that all eyebolts and indeed shackles (See our information specifically on shackles) used for lifting purposes are lifting accessories. They should therefore be subject to a thorough examination by a competent person at least every six months. Regardless of the prevailing legislation, the Lifting Equipment Engineers Association (LEEA) strongly recommends that this policy is adopted by all those with responsibility for ensuring the safe condition of lifting equipment.

Safe Use and Maintenance

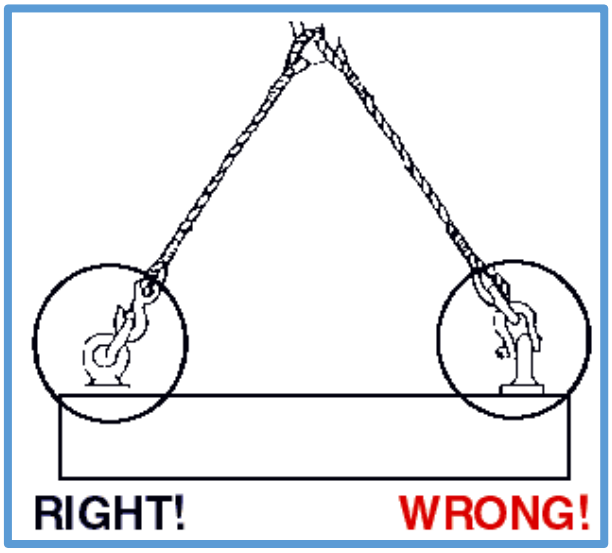
Loads may slip or fall if proper eyebolt assembly and lifting procedures are not used. A falling load can cause serious injury or kill.
Follow all eyebolt safety information supplied.
Always inspect eyebolt before use. It should be marked with a Working Load Limit valid for in-line pull, thread diameter, material identification symbol, manufacturer's symbol and CE mark.
Make sure all markings are legible. Unmarked eyebolts should be immediately removed from use
Never use eyebolt that shows signs of wear, nicks, gouges or cracks.
Never use eyebolt if eye or shank is bent or elongated.
Always be sure threads on shank and receiving holes are clean.
Never repair or reshape an eye bolt or eye nut by welding, heating or bending as this may affect the Working Load Limit;
Never machine, grind, or cut an eyebolt.
Never exceed load limits specified.
Never use dynamo eyebolts for angular lifts.
Always use collar eyebolts (or machinery eyebolts) for angular lifts.
Never undercut an eye bolt to seat shoulder against the load.
Always countersink receiving hole or use washers to seat shoulder.
Always screw eyebolt down completely for proper seating.
Always tighten nuts securely against the load.
When using collar eyebolts for angular lifts, please refer to the standards for eyebolts BS4278 & DIN 580, or DIN 582 for eye nuts.

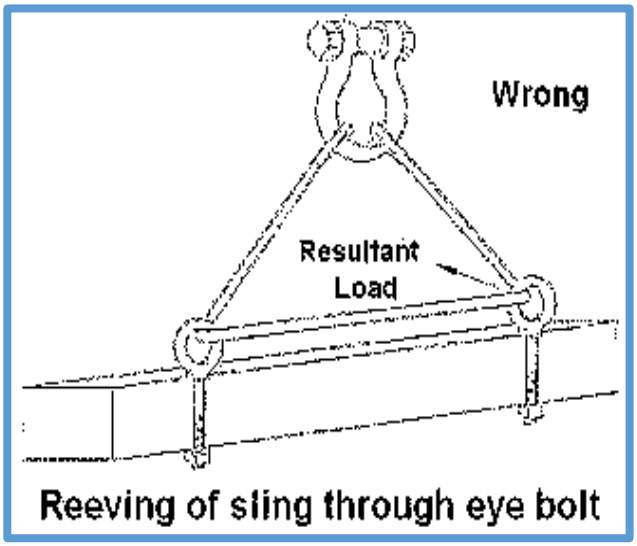
It is required that the products are regularly inspected and that the inspection should take place in accordance with the safety standards given in the country of use. This is required because the products in use may be affected by wear, misuse, overloading etc. with a consequence of deformation and alteration of the material structure.

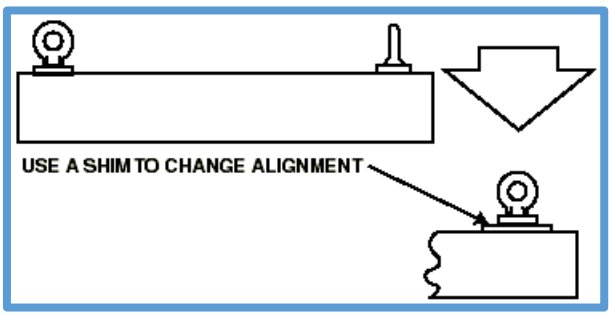
Inspection should take place at least every six months and even more frequently when the products are used in severe operating conditions.

Read, understand, and follow information in diagrams and charts relevant to eyebolt types before use. If in doubt seek expert advice - Do Not Attempt Lift. – *Continued next page*

4.Safe Use and Maintenance continued







Instructions for the safe use and maintenance – PDF download

Safe use and maintenance of eyebolts

For safe use instructions of other lifting equipment available from us Click Here

Storage

Eyebolts need to be stored correctly to prolong usability. It is accepted practice to wrap threads in insulating tape or similar. However, it may better to obtain matching nuts which will protect the thread end and when given a few turns will assure the rigger or inspector that the thread is in good condition and ready for use.

Our experience with customers tackle storage facilities is in the extreme. A gold star goes to one tackle store keeper who carefully wrapped the threads, strung them in sets hung on a board which was clearly marked with thread type, WLL and the inspection period colour code information. We would suggest a P45 for another store man who chucked all his eyebolts into an open metal box. Which, obviously damaged the threads and made them extremely difficult to find. But, to cap that, as the tackle store shed roof leaked the eyebolts at the bottom of the box were underwater!

For more information please refer to the tables provided in the Lifting Eye bolts, Eye nuts and Bolted Load Rings section of this website.

For further advice contact our sales team on: 0161 223 1990 or by email: mailto:sales@dale-lifting.co.uk?subject=Ref:Guide-to-Eyebolts-and-Lifting-points (Back to table of contents)

5. Contacting us

For more advice or to purchase the right equipment for your application you can contact our sales team at:

DLH ONLINE

DALE

Lifting and Handling Specialists
2 Kelbrook Road
Manchester
M11 2QA
UK. 0845 270 2919
Intl. 00 44 161 230 1990
fax. 0161 223 6767
email sales@dale-lifting.co.uk
Website www.dlhonline.co.uk
VAT No. 145 5891 42

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