

PRODUCT SPECIFICATIONS

OPERATING AND MAINTENANCE INSTRUCTIONS

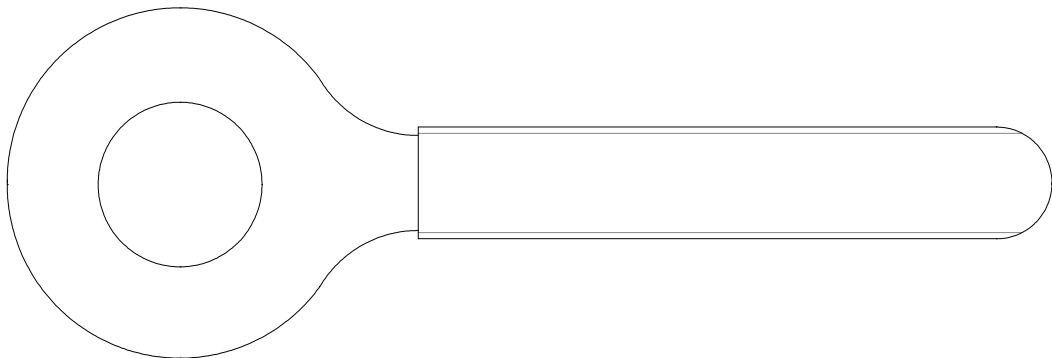
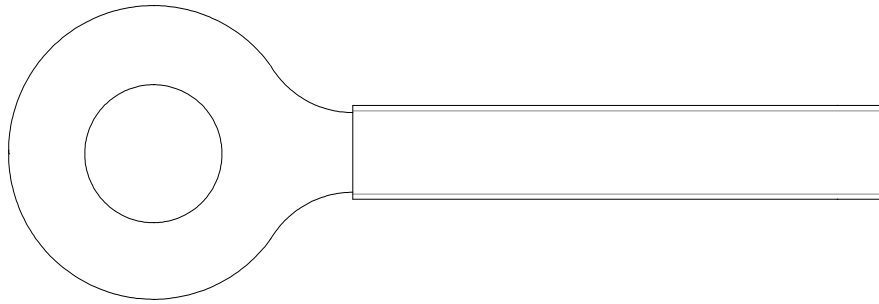
Technical Specifications

Operating Conditions and Limits

Operator's Instructions

Residual Risks

How and how often periodical fitness inspections should be conducted



**TURNBUCKLE EYES,
ITEM 8002Z**

The original language of this technical specification is Italian

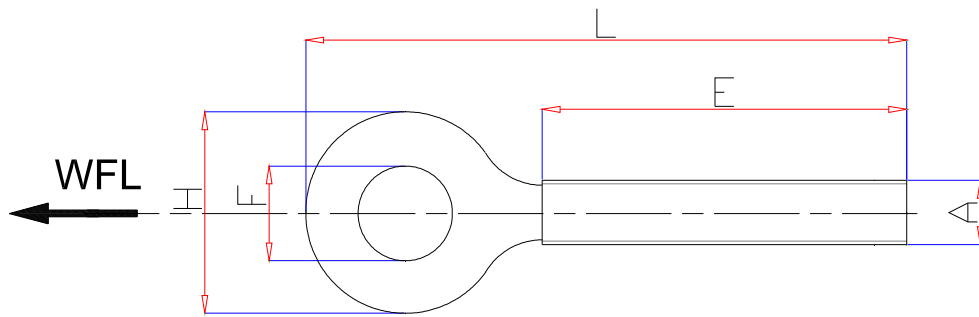
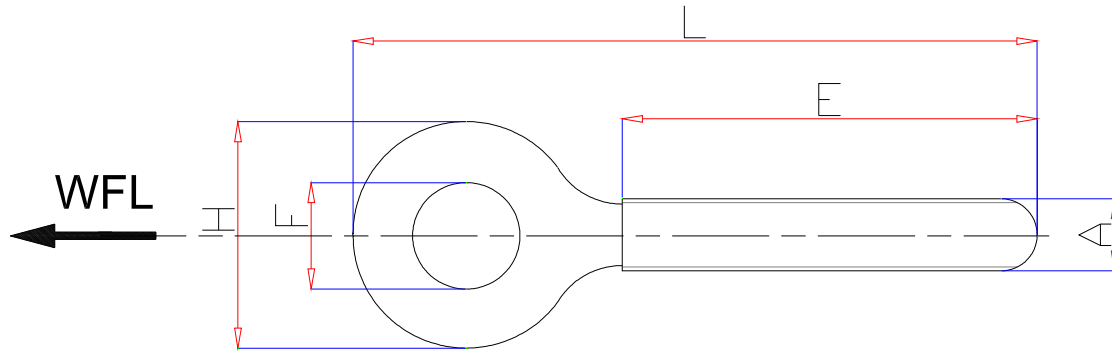
1) TECHNICAL SPECIFICATIONS OF ACCESSORY

Material / Reference Standard: Steel CB 4 FF UNI 7356 (from size M5 to M12)
Steel S235JR - UNI EN 10025-2 (from size M14 to M39)


Heat Treatment: /

Surface Treatment: Galvanized A2E EN ISO 4042

The test is performed on the basis of in-house specifications and rules in accordance with UNI EN ISO 9001.

DIMENSIONAL SPECIFICATIONS:**Cold pressed eyes, sizes from M5 to M12****Hot forged eyes , sizes from M14 to M39****TABLE "A"**

All measurements are expressed in mm.

A (Size)	A "	E	F	H	L	 g	ROPE Ø min	WFL kg	ITEM NUMBER	
									RIGHT THREAD	LEFT THREAD
M5 x 0.8	3/16	40	8	16	61	8	2.0	115	080020105	080020305A0
M6 x 1	1/4	40	10	20	65	15	2.5	160	080020106	080020306A0
M8 x 1.25	5/16	52	11	22	79	27	2.5	300	080020108	080020308A0
M10 x 1.5	3/8	60	14	27	96	52	3.5	470	080020110	080020310A0
M11 x 1.5	7/16	65	15	29	103	71	3.5	580	080020111	080020311A0
M12 x 1.75	1/2	72	17	33	113	90	4.0	690	080020112	080020312A0
M14 x 2	9/16	85	18	36	129	145	4.0	940	080020114	080020314A0
M16 x 2	5/8	95	25	49	153	235	6.0	1290	080020116	080020316A0
M18 x 2.5	11/16	103	28	59	179	400	7.0	1660	080020118	080020318A0
M20 x 2.5	3/4	110	28	59	179	440	7.5	2130	080020120	080020320A0
M22 x 2.5	7/8	120	34	70	200	660	9.0	2630	080020122	080020322A0
M24 x 3	1"	130	36	76	218	850	10.0	3060	080020124	080020324A0
M27 x 3	1"1/8	135	38	82	237	1200	11.0	4000	080020127	080020327A0
M30 x 3.5	1"3/16	140	40	86	249	1400	11.5	4860	080020130	080020330A0
M33 x 3.5	1"1/4	150	41	89	258	1600	12.0	6040	080020133	080020333A0
M36 x 4	1"3/8	150	43	95	266	2000	13.0	6500	080020198	080020398A0
M39 x 4	1"1/2	150	45	102	272	2300	14.0	7900	080020199	080020399A0

WFL = WORKING FORCE LIMIT

ROPE = MINIMUM USABLE DIAMETER

SAFETY COEFFICIENT: 4

Definitions:

- **WFL** (working force limit): the maximum force the item can support (along the main axis, if not otherwise specified) under operating conditions.
- **Safety coefficient:** guaranteed minimum breaking force to working force limit ratio.
- **Inspection:** visual testing of the state of the item, to check for clear damage or wear which may affect its use.
- **Accurate examination:** visual inspection performed by a trained person, supported, if need be, by any other instruments, including non-destructive testing, to check for damage or wear which may affect the use of the item.
- **Trained person:** a designated, suitably trained person who has proper know-how and practical expertise and has been given the instructions needed to perform any required tests and examinations.

CAUTION: The safety coefficient is only provided by way of example, in relation to product safety. The working force limits (WFL) shown in the table should never be exceeded.

2) TESTING SPECIFICATIONS

The accessory is subjected to several stringent spot checks for serviceability, performance and compliance with specifications.

The number of samples and the related sampling plans are chosen according to the characteristic to test under UNI ISO 2859/1, and the results are filed in the quality department of the factory in Sulmona.

2.A Dimensional test

Making sure that the dimensions of the item meet such tolerances as established in in-house working drawings.

2.B Visual test

Testing for defects resulting from forming, mechanical working, surface coating and correspondence between the marking and in-house drawings.

2.C Chemical analysis

Making sure that the chemical composition of the material complies with the limits established under the relevant standards.

2.D Tensile stress tests

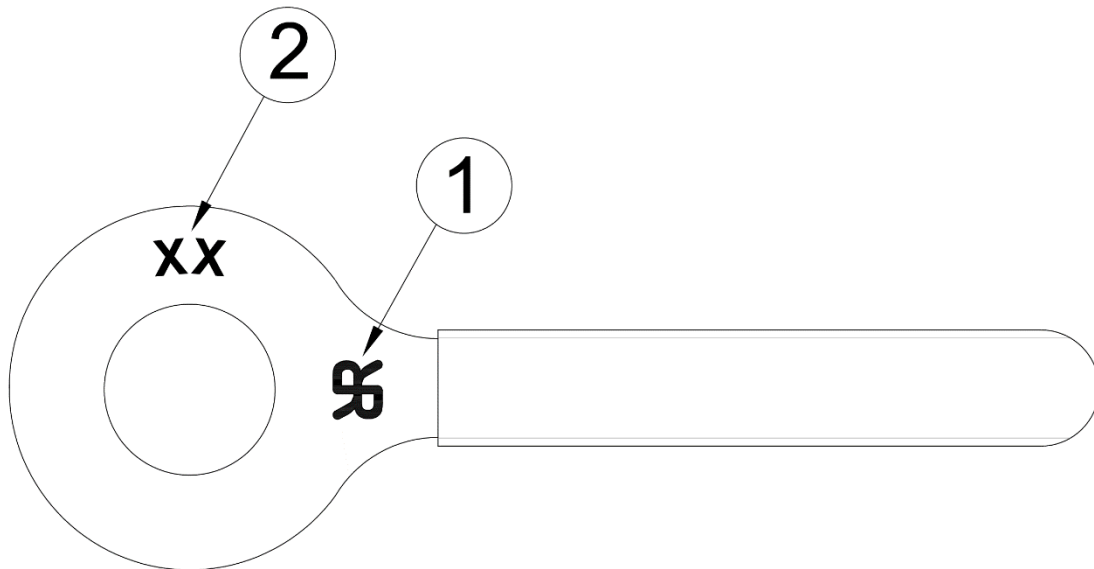
Making sure that the accessory subjected to tensile stress will break, after the applied force has at least exceeded the working load as multiplied by the safety coefficient.

The test is performed in accordance with UNI 10002/1.

3) HOW TO READ MARKINGS

On hot forged eyes (size from M14 to M39) are stamped indelible marks as reflected below:

- 1) Manufacturer's mark (ROBUR)
- 2) Traceability code



Note: Cold pressed eyes (size from M5 to M12) don't show any marks.

4) GENERAL WARNINGS

The manual must be kept by the person in charge in a suitable place and readily available for consultation, in optimal conditions.

The constructor retains all material and intellectual rights on the manual, and restricts its modification, albeit partial, for any commercial use.

As regards the information provided in these operating instructions, BETA UTENSILI SPA will accept no responsibility in the event of:

- any use of the accessories other than the uses under national safety and accident prevention laws;
- mistaken choice or arrangement of the apparatus they are going to be connected to;
- failure to comply with, or properly follow, the operating instructions;
- changes to the accessories;
- misuse or failure to carry out routine maintenance jobs;
- use with noncompliant accessories.

!CAUTION: The marking data should not be removed by grinding or abrasion (whether accidental or not – any items that do not carry any identification references should be made unusable and scrapped).

No characters other than the manufacturer's may be affixed.

5) SELECTION CRITERIA

The following parameters should be carefully considered in choosing the turnbuckle eye:

5.A WORKING FORCE LIMIT

The tensile stress exerted on the turnbuckle eye **should be lower than or equal to** the working force limit (WFL) recommended for the item being considered, and shown in Table “A”.

5.B CONNECTING PART

Make sure that the connecting part suits the load capacity of the turnbuckle eye.

The wire rope or any other component part being used should be of a suitable size (see Table “A”), to prevent cuts.

5.C LIFE AND FREQUENCY OF USE

The accessory is perfectly serviceable as long as its geometric and physical characteristics remain unchanged.

Hence the turnbuckle eye should be replaced in case of reduced section, deformation, corrosion or connecting instability.

6) NONPERMISSIBLE CONDITIONS

The turnbuckle eyes should not be operated under the following circumstances:

- when the applied force exceeds the permissible “WFL”;
- when dynamic stresses or swinging loads may result;
- when the turnbuckle eyes are operated under any temperatures other than the permissible temperatures;
- when the directrix of forces does not develop along the main axis.

7) PRELIMINARY TESTS

Before the accessories are operated and/or assembled, they should be tested by a suitably trained person.

- Check the state of the turnbuckle eye; in particular make sure that it is free from cuts, bends, indentations, abrasions, cracks, irregular threads, corrosions, sharp burrs, wear or defects resulting from improper storage.
- Measure and record the dimensions according to **Table “A”**.
- Check the state of all the parts of the marking.
- Make sure that the threads fit.

8) INSTALLATION – ASSEMBLY INSTRUCTIONS

During the installation of the accessory please use adequate Personal Protective Equipment: gloves, safety shoes, helmet, etc.

Screw the turnbuckle eyes onto the turnbuckle body, so that maximum opening can be achieved, and connect them to the parts to pull.

Insert one rope or one part for each terminal.

Exert tensile stress through the main body, making sure that, after the operating condition has been reached, the turnbuckle eyes have been inserted into the body at least throughout the length of its thread.

While exerting tensile stress, make sure that the turnbuckle can freely move and position itself; hence no forcing or interference should occur, to prevent any lateral force components from being produced.

Tensile stress should be checked after a short period, to make up for any system adjustments.

Particular attention is required while tensioning, to prevent the working force limit (WFL, see Table “A”) from being exceeded, which would result in permanent deformation, especially if any levers or mechanical means are used.

9) USING ACCESSORY – GRIP AND HANDLING

The turnbuckle eye is designed to be used in static situations; periodically check tensile stress, the state of preservation of the parts and their connection, according to the Table “Maintenance jobs and inspections”.

10) NONPERMISSIBLE USE

Using the accessory for any purposes other than the purposes it has been designed for, using it under extremely dangerous conditions and performing poor maintenance may pose **a severe hazard to the safety of the people being exposed** and cause severe damage to the working environment, while affecting the actual serviceability and safety of the product. The precautions mentioned below, which, obviously enough, cannot cover the whole spectrum of potential “**misuses**” of the accessory, should be “reasonably” deemed to be the most common steps to take. Therefore:

- DO NOT connect the accessory to any apparatus which does not match its specifications in terms of size, temperature, hook-up point and shape;
- DO NOT use the accessory for lifting purposes;
- DO NOT stretch any apparatus that may change its static configuration, centre of gravity or chemical and physical state;
- DO NOT use the accessory to lift or carry people or animals;
- DO NOT use the accessory to pull restrained loads;
- DO NOT work in areas where any explosion/spark-proof parts are expected to be used or in the presence of big magnetic fields;
- DO NOT weld any metal parts to the accessory; do not use any filling welds; do not use the accessory as mass for any welder.

11) FITNESS FOR USE

The accessory was subjected to spot check in order to test serviceability and performance at the manufacturer’s. The certificate supplied with it states that the tests were passed. However, before starting working, the user should test the installed accessory for serviceability and performance, to prove the entire system is fit for use.

12) INSPECTION AND MAINTENANCE

Inspections and maintenance jobs should be carried out by trained personnel, who should perform accurate tests during operation.

Below is a list of tests to perform at such intervals as stated in the table “**Maintenance jobs and inspections**”.

- **VISUAL TEST:** making sure that the accessory is free from surface defects, including cracks, indentations, cuts, fissures and abrasions.
- **THREAD TEST:** making sure that the thread is free from wear, deformation and dents, that its fit is accurate and stable, and that there is not too much clearance.
- **DEFORMATION TEST:** making sure that the accessory has not got deformed, using a gauge to measure such critical dimensions as shown in **Table “A”**. **NO DEFORMATIONS** will be tolerated compared to the measurements made when the accessory was **first put into operation**.
- **WEAR TEST:** making sure that the points of contact are not worn, using a gauge to measure such critical dimensions as shown in **Table “A”**.
- **PRESERVATION TEST:** making sure that the accessory is free from oxidation and corrosion, especially in case of outdoor use; using suitable methods (e.g. liquid penetrants) to make sure that it is free from cracks.

The results of the above-mentioned tests should be stored.

Maintenance jobs and inspections			
Type of inspection	Whenever used	Month	Year
General visual inspection	X		
Thread state	X		
Deformation	X		
Wear		X	
State of preservation			X

If the item has been used for heavy-duty jobs, both wear and the state of preservation should be tested for more frequently.

13) SCRAPPING ACCESSORY

The accessory should be scrapped by cutting, so that it can no longer be used, whether at the end of its expected lifetime or if:

- it is permanently worn compared to the original size;
- any cracks or distortions are shown, and/or the sections have become small compared to the original size;
- the state of the thread is such that the parts do not fit perfectly, any threads are worn, deformed, irregular etc.