

PRODUCT SPECIFICATIONS

OPERATING AND MAINTENANCE INSTRUCTIONS

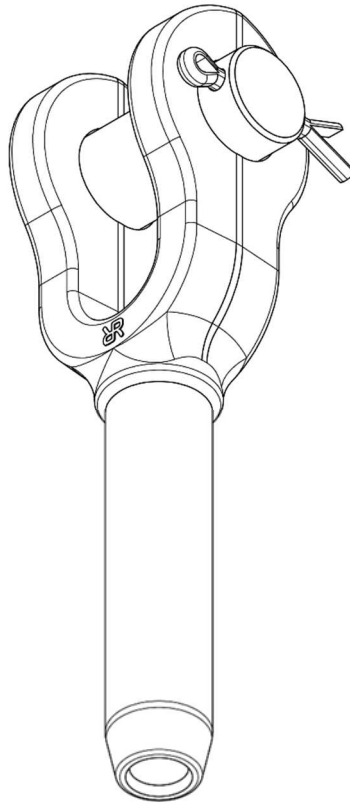
Technical Specifications

Operating Conditions and Limits

Operator's Instructions

Residual Risks

How and how often periodical fitness inspections should be conducted



OPEN SWAGE SOCKET
ITEM 8709

1) TECHNICAL SPECIFICATIONS OF ACCESSORY

Material / Reference Standard: Acciaio al carbonio - UNI EN 10083-2

Heat treatment: Spheroidal annealing

Surface treatment: **8709N:**
Self-coloured (untreated), just as forged and mechanically worked.

8709Z:
Hot dip galvanized.

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

DIMENSIONAL SPECIFICATIONS:

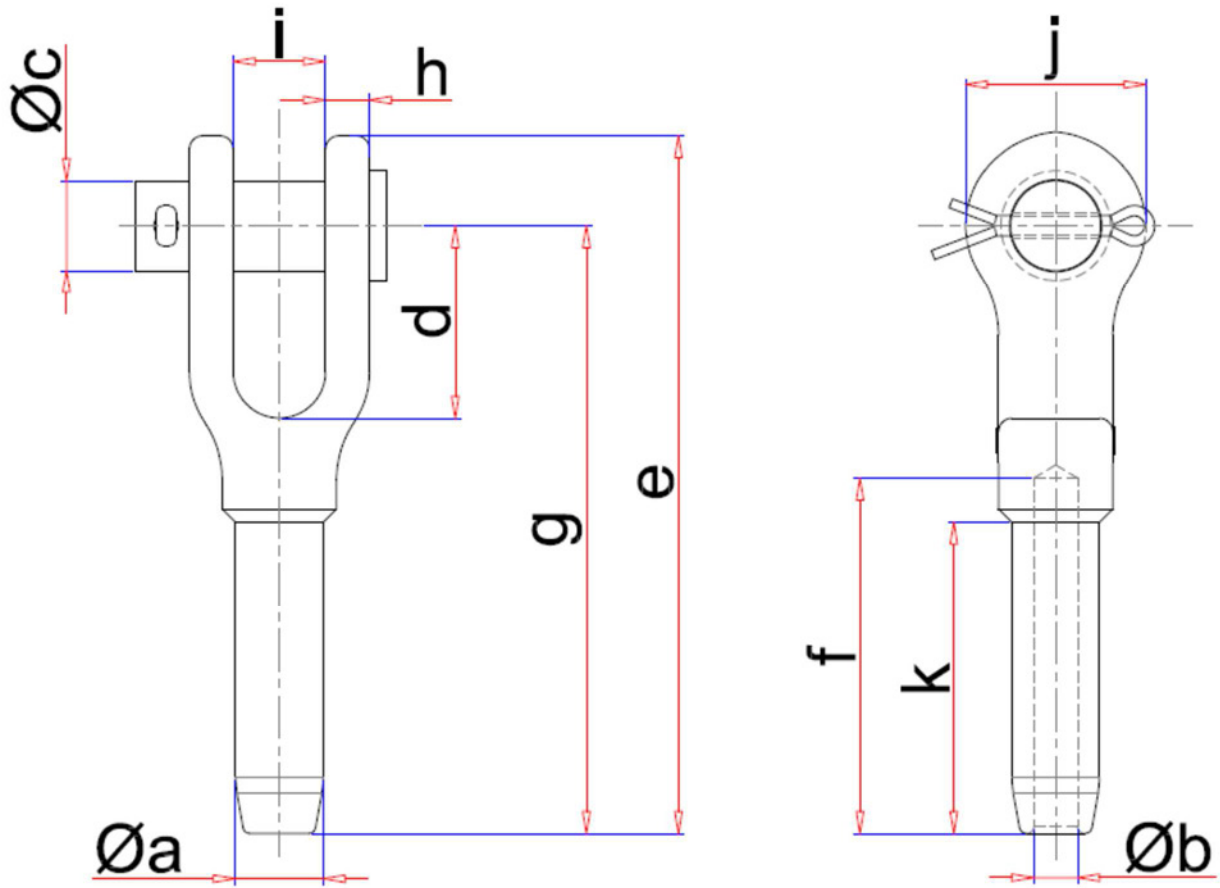



TABLE "A"

ROPE SIZE Inches - mm	Before swage Øa	After swage		Øb	Øc	d	e	f	g	h	i	j	k	 g	CODE	
		min. Øa	max. Øa												Self-coloured (8709N)	Galvanized (8709Z)
		1/4 - 6	13												10.9	11.7
3/8 - 8	20	17.2	18.0	8.8	21	44	164	81	140	12	21	41	78	570	087090108	087090208
3/8 - 9	20	17.2	18.0	9.8	21	44	164	81	140	12	21	41	78	560	087090109	087090209
3/8 - 10	20	17.2	18.0	10.8	21	44	164	81	140	12	21	41	78	560	087090110	087090210
1/2 - 11	25	22.0	23.1	11.8	25	51	206	108	177	14	25	51	104	1110	087090111	087090211
1/2 - 12	25	22.0	23.1	12.8	25	51	206	108	177	14	25	51	104	1090	087090112	087090212
1/2 - 13	25	22.0	23.1	13.8	25	51	206	108	177	14	25	51	104	1090	087090113	087090213
5/8 - 14	32	28.3	29.5	14.8	30	57	250	135	213	16	32	63	128	2110	087090114	087090214
5/8 - 15	32	28.3	29.5	15.9	30	57	250	135	213	16	32	63	128	2110	087090115	087090215
5/8 - 16	32	28.3	29.5	17.0	30	57	250	135	213	16	32	63	128	2060	087090116	087090216
3/4 - 18	39	34.7	36.1	19.0	35	70	301	162	258	20	38	76	152	3680	087090118	087090218
3/4 - 19	39	34.7	36.1	20.0	35	70	301	162	258	20	38	76	152	3680	087090119	087090219
3/4 - 20	39	34.7	36.1	21.1	35	70	301	162	258	20	38	76	152	3680	087090120	087090220
7/8 - 22	43	37.8	39.4	23.2	41	83	353	189	302	23	44	86	183	5380	087090122	087090222
1" - 24	50	44.2	45.7	25.4	51	95	402	216	345	26	51	102	212	5450	087090124	087090224
1" - 25	50	44.2	45.7	26.4	51	95	402	216	345	26	51	102	212	5450	087090125	087090225
1" - 26	50	44.2	45.7	27.4	51	95	402	216	345	26	51	102	212	5450	087090126	087090226
1" 1/8 - 28	57	50.5	52.1	29.5	57	108	453	243	390	30	57	114	234	12000	087090128	087090228
1" 1/4 - 32	64	56.9	58.4	33.8	64	121	506	270	431	30	63	127	263	16200	087090132	087090232

All measurements are expressed in mm.

Definitions:

- **Part:** part of either a component or a subsystem. Parts include ropes, straps, connecting parts, accessories and anchorage lines.
- **Inspection:** visual testing of the state of the terminal, 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 terminal.
- **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 swage sockets have been tensile tested according to the standard EN 13411-8, and using 6x36+IWRC, grade 1960 N/mm² steel wire ropes.

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 manufacturing, mechanical working 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 Microstructural examination / hardness check

Making sure that the metallographic structure matches with a spheroidal annealed structure and making sure that the hardness value is acceptable for the material with the structure above.

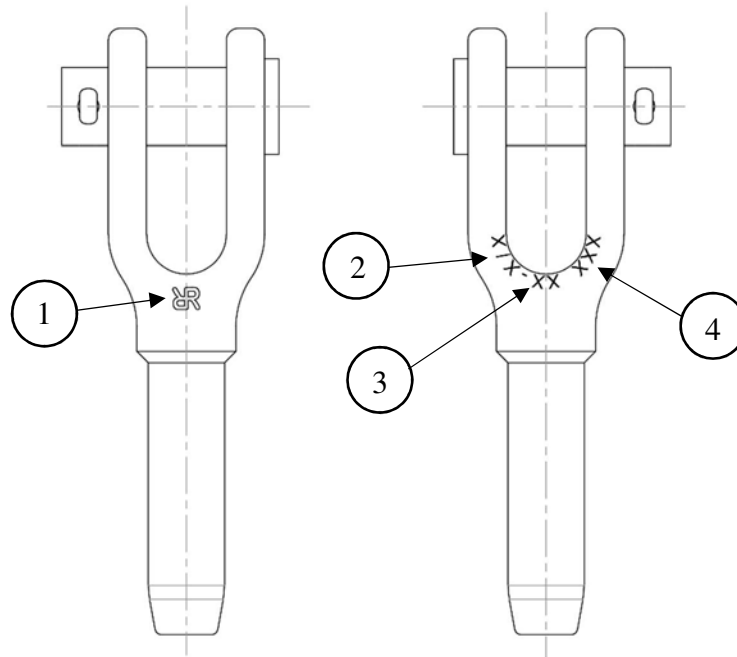
2.E Tensile test

Making sure that the swage socket comply with his minimum tensile requirements.

3) HOW TO READ MARKINGS

The accessory carries indelible marks and codes which identify the product and define the specifications and applications.

- 1) Manufacturer's mark (Robur)
- 2) Rope size, inches
- 3) Rope size, mm
- 4) Traceability code



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 S.P.A. 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 terminals 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 terminal:

5.A CONNECTING PART

Make sure that the connecting part suits the features of the terminal and has an adequate mechanical resistance to tensile forces.

5.B OPERATING TEMPERATURES

The permissible operating temperature should range between 0 °C and +200 °C.
The working force limit will not be guaranteed outside this range.

5.C LIFE AND FREQUENCY OF USE

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

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

6) NONPERMISSIBLE CONDITIONS

The terminals should not be operated under the following circumstances:

- when the terminals 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 terminal; 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, so that the accessory can be accurately identified according to the working force.

8) INSTALLATION – ASSEMBLY INSTRUCTIONS

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

The terminal is connected to the wire rope by cold pressing.

The end of the wire rope should be inserted into the hole of the terminal throughout the length of the latter. Apply the amount of pressure required to stop the wire rope to the stem of the terminal, so that it can remain tight and does not slip off under loading conditions.

9) USING ACCESSORY – GRIP AND HANDLING

The item is designed to be used in static situations.

Insert one connecting part for each terminal.

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

Particular attention must be paid to the type of the wire rope used, which must be compatible with the one indicated at paragraph 1. During use, the working load limit of the wire rope must never be exceeded.

It should be considered that using pressing terminals results in a 10% reduction of the tensile strength of the wire rope.

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 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. 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.
- 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		
Deformation	X		
Wear		X	
State of preservation			X

If the terminal 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, 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.