

Technical sheet No 123GM/KAR

1. Supplier name: **GÓRALMET Sp. z o.o.**

Supplier address: **ul. Krakowska 68, 32-860 Czchów, tel/fax 014 6635260**

2. Product name: **GMG type A aluminium ferrule EN 13411-3, for wire ropes up to 1960N/mm²**

3. Description and use: Aluminium ferrules for the ferrule-securing of eyes and endless loops. Applies to wire rope terminations formed either by a flemish eye or turnback eye. Designed for slings and assemblies using steel wire ropes for general lifting applications up to and including 48 mm diameter conforming to EN 12385-4, lift ropes conforming to EN 12385-5 and spiral strand ropes conforming to EN 12385-10. For use within technical parameters of aluminium ferrules given in point 5, and ferrule-secured systems designed and tested with minimum safety factor of 5, according to PN-EN 13411-3+A1:2009 norm and the Directive 2006/42/EC.

Matching wire rope to ferrule:

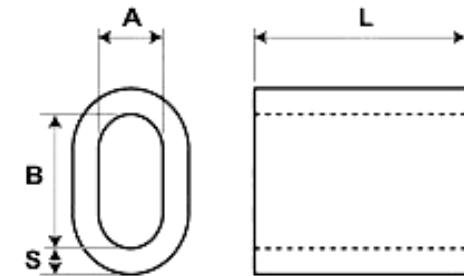
- For turnback eye and wire ropes up to 1960N/mm² listed in table A.2 of EN 13411-3+A1:2009 norm, depend of rope type and it's cross-sectional area ("C"), aluminium ferrule matching should be based on this table (according to A.6 point).
- For other wire ropes, ropes with different cross-sectional area and other loop types, aluminium ferrules should be matched conform to ferrule-secured system design, type tested, according to point 6 of EN 13411-3+A1:2009 norm.

4a. Matching wire rope to ferrule:

- Selection of the correct ferrule is to take account of measured rope diameter, rope type, core, and nominal metallic cross-sectional area factor of the rope.
- For turnback eye terminations and wire ropes up to 1960N/mm² described in table A.2 of EN 13411-3+A1:2009 norm, depend of wire rope type, core and metallic cross-sectional area factor, ferrule should be matched according to table A.2 and point A.6 of above norm.
- For other wire ropes, with the other nominal metallic cross-sectional area factor or other loop types, ferrule should be matched conform to ferrule-secured system design, type tested, according to point 6 of EN 13411-3+A1:2009 norm.

4b. Guidance for use:

- Positioning of the ferrule before pressing shall ensure that the distance after pressing provides clearance between thimble and ferrule, and the thimble is secured within the eye (secured against the possibility of rotation within the eye or rolling out of the eye).
- The ferrule is to be pressed only in a hydraulic or pneumatic press by means of cold working. The ferrule is to be positioned in the pressing tool in a stable horizontal position. Ferrule sizes 2,5 to 5 may also be pressed using hand tools. Tools used to press the ferrules should be clean, can not be damaged or deformed.
- The major axis of the oval ferrule cross-section shall align with the direction of pressing.
- On completion of the pressing operation the contact faces of the two parts of the pressing tools shall meet.
- The ferrule shall be pressed in one direction without turning.
- Any fins produced on the ferrule shall be removed without damage to the ferrule or the rope.
- The dimensions of ferrules on pressed assemblies are to comply with Table A.3 of EN 13411-3 norm.
- The temperature limits when used with rope with a fibre core is -40°C to +100°C, for wire ropes with a steel core, it's -40°C to +150°C.



5. Technical parameters:

No	Size [mm]	Dimensions + tolerances [mm]									Weight [kg/pc]	Material	Product code No
		A	A tol.	B	B tol.	S (nom)	S (avg)-S (nom)	U	L	L tol.			
1	2	3	4	5	6	7	8	9	11	10	11	12	13
1	1	1.2	+ 0,2 0	2.4	+ 0,2 0	0.65	± 0,03	0,07	5.0	+ 0,2 - 0,5	0.00009	Aluminium EN AW-5051A by EN 573-3:	1
2	1,5	1.7		3.4		0.75	± 0,03	0,08	6.0		0.00021		1,5
3	2	2.2		4.4		0.85	± 0,04	0,07	7.0		0.00038		2

4	2,5	2.7	+ 0,2 0	5.4	+ 0,2 0	1.05	± 0,04	0,09	9.0	+ 0,2 - 0,5	0.0005	<ul style="list-style-type: none"> hardness 38 to 45, 2,5/31,25 by Brinell tensile strength - R_m ≥ 145 N/mm² yeld strength 0,2% - R_p ≥ 50 N/mm² elongation - A₅ ≥ 20% temper designation - F, by EN 515 	2,5
5	3	3.3		6.6		1.25	± 0,04	0,12	11.0		0.0008		3
6	3,5	3.8		7.6		1.5	± 0,05	0,13	13.0		0.0013		3,5
7	4	4.4	+ 0,2 0	8.8	+ 0,2 0	1.7	± 0,05	0,15	14.0	+ 0,2	0.0018		4
8	5	5.5		11.0		2.1	± 0,06	0,19	18.0	- 0,5	0.0036		5
9	6	6.6	± 0,15	13.2	± 0,15	2.5	± 0,08	0,22	21.0	+ 0,2 - 0,5	0.0059		6
10	6,5	7.2		14.4		2.7	± 0,08	0,24	23.0		0.0076		6,5
11	7	7.8		15.6		2.9	± 0,09	0,26	25.0		0.0095		7
12	8	8.8	± 0,2	17.6	± 0,2	3.3	± 0,10	0,29	28.0	+ 0,5 - 1,0	0.0137		8
13	9	9.9		19.8		3.7	± 0,11	0,33	32.0		0.0198		9
14	10	10.9		21.8		4.1	± 0,12	0,37	35.0		0.0264	10	
15	11	12.1	± 0,3	24.2	± 0,3	4.5	± 0,13	0,41	39.0	+ 0,5 - 1,0	0.0358	11	
16	12	13.2		26.4		4.9	± 0,15	0,44	42.0		0.0458	12	
17	13	14.2		28.4		5.4	± 0,16	0,48	46.0		0.0597	13	
18	14	15.3	± 0,3	30.6	± 0,3	5.8	± 0,17	0,52	49.0	+ 0,5 - 1,0	0.0735	14	
19	16	17.5		35.0		6.7	± 0,20	0,57	56.0		0.1110	16	
20	18	19.6		39.2		7.6	± 0,23	0,61	63.0		0.1590	18	
21	20	21.7	± 0,3	43.4	± 0,3	8.4	± 0,25	0,64	70.0	+ 0,7 - 1,5	0.2170	20	
22	22	24.3	± 0,4	48.6	± 0,4	9.2	± 0,28	0,67	77.0		0.2920	22	
23	24	26.4		52.8		10.0	± 0,30	0,70	84.0		0.3760	24	
24	26	28.5	± 0,4	57.0	± 0,4	10.9	± 0,32	0,74	91.0	+ 0,7 - 1,5	0.4810	26	
25	28	31.0		62.0		11.7	± 0,33	0,77	98.0		0.6030	28	
26	30	33.1		66.2		12.5	± 0,35	0,82	105.0		0.7390	30	
27	32	35.2	± 0,4	70.4	± 0,4	13.4	± 0,37	0,87	112.0	+ 0,7 - 1,5	0.8970	32	
28	34	37.8		75.6		14.2	± 0,38	0,92	119.0		1.0770	34	
29	36	39.8		79.6		15.0	± 0,40	0,98	126.0		1.2750	36	
30	38	41.9	± 0,4	83.8	± 0,4	15.8	± 0,41	1,03	133.0	+ 0,7 - 1,5	1.5030	38	
31	40	44.0		88.0		16.6	± 0,43	1,08	140.0		1.7340	40	
32	42	46.2		92.6		17.5	± 0,45	1,15	147.0		2.0470	42	
33	44	48.4	± 0,4	96.8	± 0,5	18.3	± 0,46	1,19	154.0	+ 0,7 - 1,5	2.3140	44	
34	46	50.6		101.2		19.5	± 0,48	1,25	161.0		2.7060	46	
35	48	52.8		105.6		20.0	± 0,50	1,3	168.0		3.0100	48	

6. Additional informations:

- Manufacturer and product identification code: GMG
- Traceability code: a four-digit number by formula -YYMM (YY = year of production, MM = month of production)
- Markings (size 8mm and larger): traceability code; manufacturer and product identification code; product code No
- Additional informations – label: product name; product code No; manufacturer's data (website address).