SAHM SPLICE

The SAHM® ferrule
– the safe connection

FERRULES | SWAGING MACHINES | ANNEALING MACHINES | TEST BEDS


Aluminium
ZEN® Ferrule
DIN EN 13411-3, Form A
Copper
Ferrule
Aluminium
ZEN® Ferrule
DIN EN 13411-3, Form C
Aluminium
Round
Ferrule
Flemish Eye
Sleeve
Stainless Steel
Ferrule
Steel Ferrule

SAHM®-Ferrules

We have more than six decades of knowledge and experience in techniques for the mechanical splicing of wire ropes; therefore we are able to offer an extensive range of ferrules for rope terminations.

Safety is a major focus, with this in mind our ferrules are strictly produced from seamless materials.

A wide range of materials allows specific splicing applications, with our extensive knowledge and flexibility we can support customers to find solutions for any specialised project. We can even offer packing to customer's specifications.

Beyond lifting we can support you to find the right solution for your application, with ferrules produced to meet your requirements.

ZEN® Form A
DIN EN 13411-3
(Size 2,5 – 60)

ZEN® Form C
DIN EN 13411-3
(Size 8 – 52)

Aluminium
Round
(Size 1,5 – 40)

Aluminium Type S
(Size 7 – 40)

Aluminium Type
XL-Z
(Size 52 – 102)

Aluminium Syngrip
(Size 8 – 12)

Copper Type Z
(Size 1 – 28)

Copper Round
(Size 2 – 8)

Stainless Steel
Type Z
(Size 1 – 28)

Steel Type Z
(Size 5 – 18)

Steel Type ST
(Size ST 28 – ST 68)

Steel Flemish Eye
(Size ¼" – 6")

ZEN® Ferrule

Form A + B • according to EN 13411-3

Rope Ø mm nominal	Rope Ø mm measured min.	Rope Ø mm measured max.	Ferrules according to EN 13411-3			
			single layer round strand ropes with fibre core and cable laid ropes	single layer round strand ropes with IWRC and rotation-resistant round strand ropes		spiral strands (2 ferrules)
			metallic cross sectional area factor C min. 0,283	C up to 0,487	C greater 0,487 up to 0,613	C max 0,613
2,5	2,5	2,7	2,5	3	-	-
3	2,8	3,2	3	3,5	-	-
3,5	3,3	3,7	3,5	4	-	-
4	3,8	4,3	4	4,5	-	5
4,5	4,4	4,8	4,5	5	-	6
5	4,9	5,4	5	6	-	6,5
- 6	5,5 6,0	5,9 6,4	6	6,5	- 7	7
6,5	6,5	6,9	6,5	7	8	8
7	7,0	7,4	7	8	9	9
- 8	7,5 8,0	7,9 8,4	8	9	9 10	10
- 9	8,5 9,0	8,9 9,5	9	10	10 11	11
- 10	9,6 10,0	9,9 10,5	10	11	11 12	12
- 11	10,6 11,0	10,9 11,6	11	12	12 13	13
- 12	11,7 12,0	11,9 12,6	12	13	13 14	14
- 13	12,7 13,0	12,9 13,7	13	14	14 16	16
- 14	13,8 14,0	13,9 14,7	14	16	16 18	18
- 16	14,8 16,0	15,9 16,8	16	18	18 20	20
- 18	16,9 18,0	17,9 18,9	18	20	20 22	22
- 20	19,0 20,0	19,9 21,0	20	22	22 24	24
- 22	21,1 22,0	21,9 23,1	22	24	24 26	26
- 24	23,2 24,0	23,9 25,2	24	26	26 28	28
- 26	25,3 26,0	25,9 27,3	26	28	28 30	30
- 28	27,4 28,0	27,9 29,4	28	30	30 32	32
- 30	29,5 30,0	29,9 31,5	30	32	32 34	34
- 32	31,6 32,0	31,9 33,6	32	34	34 36	36
- 34	33,7 34,0	33,9 35,7	34	36	36 38	38
- 36	35,8 36,0	35,9 37,8	36	38	38 40	40
- 38	37,9 38,0	37,9 39,9	38	40	40 44	44
40	40,0	42,0	40	44	48	48
- 44	42,1 44,0	43,9 46,2	44	48	48 52	52
- 48	46,3 48,0	47,9 50,4	48	52	52 56	56
- 52	50,5 52,0	51,9 54,6	52	56	56 60	60
- 56	54,7 56,0	55,9 58,8	56	60	- -	-
- 60	58,9 60,0	59,9 63,0	60	-	- -	-

Remark: To convert fill factor f (DIN 3093) to metallic cross sectional area factor C (EN 13411-3) multiply f by 0,7854

Splicing instructions for our ZEN® ferrules (Form A +B) according to EN 13411-3

1. Allocation ferrule to wire rope

Select the appropriate ferrule according to our splicing table. Wire rope constructions with a metallic cross-sectional area factor of less than 0,283 should not be used. These splicing instructions work for wire rope constructions according to EN 12385-4. Wire rope constructions with a tensile grade above 1960 N/mm² should not be used.

2. Preparation of the rope end

Ensure that the rope remains in lay after cutting and that no impurities (adhesive tape, etc.) will be within the pressed ferrule.

3. Selection of swaging dies

ZEN® Form A should be swaged in our Cylindrical or Universal dies. ZEN® Form B should only be swaged in our specially marked rounded dies. Ensure that the ferrule code No. and the No. of your swaging die set correspond.

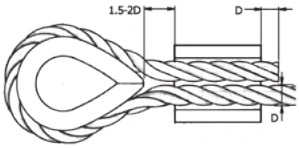
4. Installation and condition of the tooling

Swaging die faces with corresponding numbers need to be precisely aligned in the die pocket. Dies with worn out cutting edges do no longer assure an accurate swaging procedure according to EN 13411-3 and should be removed from service. Numbers must be on the same side and polished sides shall contact the die pocket.

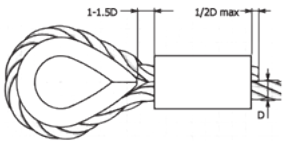
5. Swaging procedure

The procedure shall be carried out by a competent person trained in ferrule securing. Ferrules code ZEN® 4,5 and higher need to be swaged in hydraulic presses. Smaller sizes might as well be swaged with our hand swaging tools.

- Feed the wire rope through the ferrule in order to provide the required eye. Return the rope end and form the loop. If no thimble is fitted, the distance from the ferrule to the bearing-point should be at least 15 times the rope diameter.
- The rope diameter D should be the guide value of how far the dead end of the rope should protrude out of the ferrule before swaging. This needs to be checked after each swaging procedure and adjusted if necessary, according to the type of wire rope, tensile grade and diameter.
- For satisfactory results you need to first clean and then lubricate the die bore with mineral grease (no oil we suggest our Splice Glide grease) before each swaging procedure.
- Place the ferrule centered and ensure that it is truly vertical within the die bore.
- All ferrules shall be swaged in one step.
- Stop pressing immediately when the die faces meet. Do not re-press ‘flash’ back into splice.
- For thimbles without points the gap between the thimble end and the pressed ferrule should be about 1,5 time the wire rope diameter D. For thimbles with points the gap should be 1 time the wire rope diameter D.
- After swaging the rope ‘dead’end for form A + B should protrude from the pressed ferrule by up to half a rope diameter. For ropes that are severed by annealing process, ensure that the annealed rope portion remains outside the ferrule after pressing.



Before swaging



After swaging

6. Ferrules after Swaging

On completion of swaging operation, resultant ‘flash’ must be removed. Swaging dies in good condition permit to either break the ‘flash’ off by hand or with a small hammer. Any residual edge may be filed or otherwise smoothed.
Every pressed ferrule needs to be checked for correct dimensions and position of the ‘dead’ rope end.
The temperature limits when used with a fibre core wire rope are -40° to +100° C
The temperature limits when used with a steel core wire rope are -40° to +150° C

7. Marking the ferrule

If the Ferrule secured Eye Termination (FSET) forms part of a wire rope assembly other than a sling:

- the ferrule shall be legibly and indelibly marked with the FSET manufacturer’s name, symbol or mark.
- the assembly shall be legibly and durably marked with the trace-ability code identifying the assembly with the certificate in 7.2. of EN 13411-3.

For FSET forming part of a sling you will find further details in the standard EN 13414-1.

8. Remark

Our ferrule-secured system is in accordance with the type testing procedure of EN 13411-3 point 5.1.2. for steel wire ropes defined in EN 12385-4.
Ferrule secured eye terminations should be removed from service if badly distorted or if body is showing cracks or heavy wear.

Aluminium Ferrules outside of EN 13411-3 (Form A+B)

Ferrule No.	Rope Ø mm				Swaging Die No.	Pressed Ferrule Ø mm
	Fibre core		IWRC			
	min.	max.	min.	max.		
1	0,9	1	0,5	0,8	1	2
1,5	1,1	1,5	0,9	1,1	1,5	3
2	1,6	2	1,2	1,6	2	4

ZEN® Ferrules
Form C • according to EN 13411-3

Rope Ø mm nominal d	Rope Ø mm measured min.	Rope Ø mm measured max.	Ferrules according to EN 13411-3			
			single layer round strand ropes with fibre core and cable laid ropes	single layer round strand ropes with IWRC and rotation-resistant round strand ropes		spiral strands (2 ferrules)
			metallic cross sectional area factor C min. 0,283	C up to 0,487	C greater 0,487 up to 0,613	C max 0,613
6,5	6,5	6,9	-	-	8	8
7	7,0	7,4	-	8	9	9
-	7,5	7,9	8	9	9	10
8	8,0	8,4			10	
-	8,5	8,9	9	10	10	11
9	9,0	9,5			11	
-	9,6	9,9	10	11	11	12
10	10,0	10,5			12	
-	10,6	10,9	11	12	12	13
11	11,0	11,6			13	
-	11,7	11,9	12	13	13	14
12	12,0	12,6			14	
-	12,7	12,9	13	14	14	16
13	13,0	13,7			16	
-	13,8	13,9	14	16	16	18
14	14,0	14,7			18	
-	14,8	15,9	16	18	18	20
16	16,0	16,8			20	
-	16,9	17,9	18	20	20	22
18	18,0	18,9			22	
-	19,0	19,9	20	22	22	24
20	20,0	21,0			24	
-	21,1	21,9	22	24	24	26
22	22,0	23,1			26	
-	23,2	23,9	24	26	26	28
24	24,0	25,2			28	
-	25,3	25,9	26	28	28	30
26	26,0	27,3			30	
-	27,4	27,9	28	30	30	32
28	28,0	29,4			32	
-	29,5	29,9	30	32	32	34
30	30,0	31,5			34	
-	31,6	31,9	32	34	34	36
32	32,0	33,6			36	
-	33,7	33,9	34	36	36	38
34	34,0	35,7			38	
-	35,8	35,9	36	38	38	40
36	36,0	37,8			40	
-	37,9	37,9	38	40	40	44
38	38,0	39,9			44	
40	40,0	42,0	40	44	48	48
-	42,1	43,9	44	48	48	52
44	44,0	46,2			52	
-	46,3	47,9	48	52	52	-
48	48,0	50,4			-	
-	50,5	51,9	52	-	-	-
52	52,0	54,6			-	

Remark: To convert fill factor f (DIN 3093) to metallic cross sectional area factor C (EN 13411-3) multiply f by 0,7854

Splicing instructions for our ZEN® ferrules (Form C) according to EN 13411-3

1. Allocation ferrule to wire rope

Select the appropriate ferrule according to our splicing table. Wire rope constructions with a metallic cross-sectional area factor of less than 0,283 should not be used. These splicing instructions work for wire rope constructions according to EN 12385-4. Wire rope constructions with a tensile grade above 1960 N/mm² should not be used.

2. Preparation of the rope end

Ensure that the rope remains in lay after cutting and that no impurities (adhesive tape, etc.) will be within the pressed ferrule. Ropes that are severed by annealing process cannot be used with ZEN® Form C according to EN 13411-3.

3. Selection of swaging dies

Use only Universal Conical Swaging Dies to swage ZEN® Form C according to EN 13411-3.

4. Installation and condition of the tooling

Swaging die faces with corresponding numbers need to be precisely aligned in the die pocket. Dies with worn out cutting edges do no longer assure an accurate swaging procedure according to EN 13411-3 and should be removed from service.

5. Swaging procedure

The procedure shall be carried out by a competent person trained in ferrule securing. ZEN® Form C need to be swaged in hydraulic swaging presses. Handtools are not allowed.

- Feed the wire rope through the ferrule in order to provide the required eye. Return the rope end and form the loop. If no thimble is fitted, the distance from the ferrule to the bearing-point should be at least 15 times the rope diameter.
- Insert the end of the wire rope into the ferrule to fill at least 2/3 of the control hole.
- For satisfactory results you need to first clean and then lubricate the die bore with mineral grease (no oil we suggest our Splice Glide grease) before each swaging procedure.
- Place the ferrule to fit the conical part of the swaging die and- as shown in Pic 1- pull it slightly back (X) towards the cylindrical part of the swaging die. Ensure that the ferrule is truly vertical within the die bore when you start the swaging procedure.
- All ferrules shall be swaged in one step.
- Stop pressing immediately after the die faces meet. Do not re-press 'flash' back into splice.
- For thimbles without points the gap between the thimble end and the pressed ferrule should be about 1,5 time the wire rope diameter D. For thimbles with points the gap should be 1 time the wire rope diameter D.

6. Ferrules after swaging

On completion of swaging operation, resultant 'flash' must be removed. Swaging dies in good condition permit to either break the 'flash' off by hand or with a small hammer. Any residual edge may be filed or otherwise smoothed where required.
Every pressed ferrule needs to be checked for correct dimensions and position of the 'dead' rope end.

The temperature limits when used with a fibre core wire rope are -40° to +100° C
The temperature limits when used with a steel core wire rope are -40° to +150° C

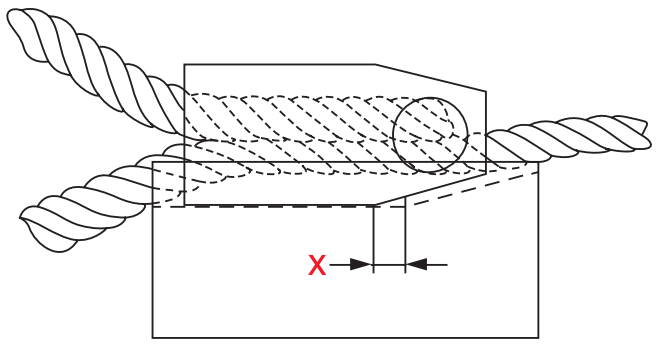
7. Marking the ferrule

If the Ferrule Secured Eye Termination (FSET) forms part of a wire rope assembly other than a sling:

- the ferrule shall be legibly and indelibly marked with the FSET manufacturer's name, symbol or mark; and
- the assembly shall be legibly and durably marked with the trace-ability code identifying the assembly with the certificate in 7.2. of EN 13411-3. For FSET forming part of a sling you will find further details in the standard EN 13414-1.

8. Remark

Our ferrule-secured system is in accordance with the type testing procedure of EN 13411-3 point 5.1.2. for steel wire ropes defined in EN 12385-4 Ferrule secured eye terminations should be removed from service if badly distorted or if body is reduced to 95 % of its original diameter.



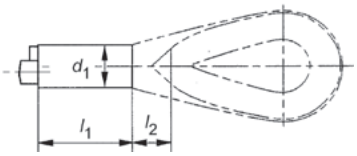
Pic.1

Distance X

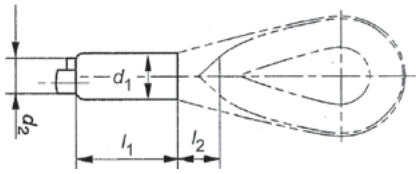
code ZEN® 8 - 14 approx. 5 mm
code ZEN® 16 - 24 approx. 8 mm
code ZEN® 26 onwards approx. 10 mm

ZEN®
Form A + B

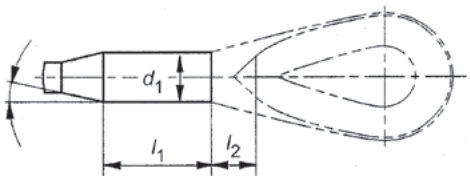
ZEN®
Form C



Form A



Form B



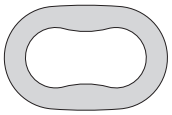
Form C

Pressed ferrule dimensions

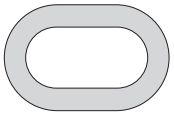
	Pressed ferrule dimensions					
ZEN Code No.	d_1 mm	tolerance in mm	d_2 min mm	L before swaging	l_1 mm*	l_2 mm*
2,5	5	+ 0,2 0	-	9	12	3,75
3	6		-	11	14	4,5
3,5	7		-	13	16	5,25
4	8		-	14	18	6
4,5	9		8	16	20	6,75
5	10		9	18	23	7,5
6	12	+ 0,4 0	11	21	27	9
6,5	13		12	23	29	9,75
7	14		13	25	32	10,5
8	16		14,5	28	36	12
9	18		16,5	32	40	13,5
10	20	+ 0,5 0	18	35	45	15
11	22		20	39	50	16,5
12	24		22	42	54	18
13	26		24	46	59	19,5
14	28	+ 0,7 0	25	49	63	21
16	32		29	56	72	24
18	36	+ 0,9 0	32	63	81	27
20	40		36	70	90	30
22	44		39	77	99	33
24	48	+ 1,1 0	43	84	108	36
26	52		46	91	117	39
28	56		50	98	126	42
30	60	+ 1,4 0	53	105	135	45
32	64		56	112	144	48
34	68		59	119	153	51
36	72	+ 1,6 0	63	126	162	54
38	76		66	133	171	57
40	80		69	140	180	60
44	88	+ 1,9	75	154	198	66
48	96		81	168	216	72
52	104	+ 2,1	87	182	234	78
56	112	+ 2,3	93	196	252	84
60	120	+ 2,4	99	210	270	90

* approx. dimensions

Aluminium Type XL-Z



Type XL



Type Z

Round strand rope with Steel core - metallic area C up to 0,487				Ferrules		
Rope Ø measured 1770 N/mm² grade		Rope Ø measured 1960 N/mm² grade		Ferrule No.	Pressed XL Ferrule Dimensions Ø mm	Tolerance mm
min.	max.	min.	max.			
46,3	50,7	45,6	48,9	XL 52	100	+2,1
50,8	54,3	49	51,5	XL 54	108	+2,3
54,4	58,2	51,6	55,8	XL 56	116	+2,4
58,3	61,9	55,9	59,2	XL 60	124	+2,5
62	65,8	59,3	63,4	XL 64	132	+2,6
65,9	69,7	63,5	66,9	XL 68	140	+2,8
69,8	73,6	67	71,2	XL 72	148	+3,0
73,7	77,4	71,3	74,5	XL 76	156	+3,2
77,5	81,3	74,6	78,8	XL 80	164	+3,3
81,4	85,2	78,9	82,1	XL 84	172	+3,5
89,2	93,1	86,6	90,1	XL 90	188	+3,8
		90,2	95,1	Z 94	190	+3,8
		95,2	101,5	Z 102	212	+3,8
		101,6	106,8	Z 102	214	+3,8

For accommodation of steel wire ropes with a higher tensile grade than 1960 N/mm² please refer to our technical department.

Aluminium Syngrip

Rope / Cable Ø mm	inner dim. Ø mm	Ferrule length / mm L	Ferrules		
			Ferrule No.	# SYNGRIP	Pressed Ferrule Dimensions Ø mm
8	9	23	8	8	13,9
10	11	28	10	10	15,9
12	14	36	12	12	18,7

Special SYNGRIP swaging dies (due to dimensions of the pressed ferrule)

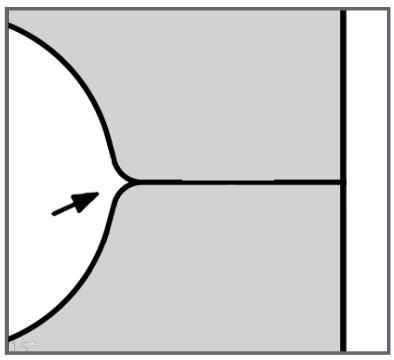
- The SYNGRIP ferrule folds in while swaged and thus no flash needs to be removed.
- Each rope and ferrule combination requires testing in order to satisfy the User of general splice efficiency.
- The range of different rope materials and constructions precludes a guarantee of specific splice efficiency.
- Typical efficiency may be 40 % of the MBL or greater.
- Using two ferrules or longer cut lengths will increase efficiency.

Swaging with a too small bore diameter will lead to breaking the rope inside the ferrule. Swaging with a too big bore diameter will lead to the rope slipping out of the ferrule. Following reasons might lead to breaking ropes within the ferrule:

- swaging dies too small
- rope diameter too big
- high density in prestreched rope

GENERAL:

- Ferrule material is not seamless and does not meet the requirements of EN 13411-3



SYNGRIP swaging dies with rounded edges without cutting edges

Aluminium Type S

Rope Ø mm				Ferrules		
fibre core		steel core		Ferrule No.	Swaging Die No.	Pressed Ferrule Ø mm
min.	max.	min.	max.			
6,7	7,2	6,1	6,5	7	6,5	13
7,3	8,2	6,6	7,2	8	7,5	15
8,3	9,2	7,3	8	9	8	16
9,3	10,2	8,1	9	10	9	18
10,3	11,2	9,1	10	11	10	20
11,3	12,2	10,1	11	12	11	22
12,3	13,2	11,1	12	13	12	24
13,3	14,2	12,1	13	14	13	26
14,3	16,2	13,1	15	16	15	30
16,3	18,2	15,1	17	18	17	34
18,3	20,2	17,1	19	20	18	36
20,3	22,3	19,1	21	22	20	40
22,4	24,3	21,1	23	24	22	44
24,4	26,3	23,1	25	26	24	48
26,4	28,3	25,1	27	28	26	52
28,4	30,3	27,1	29	30	28	56
30,4	32,3	29,1	31	32	30	60
32,4	34,3	31,1	33	34	32	64
34,4	36,3	33,1	35	36	34	68
36,4	38,3	35,1	37	38	36	72
38,4	40,3	37,1	39	40	38	76

Splicing instructions for our S Ferrules:

Select the appropriate ferrule according to our splicing table. Wire rope constructions with a metallic cross-sectional area factor of less than 0,283 should not be used. These splicing instructions work for wire rope constructions according to EN 12385-4. Wire rope constructions with a tensile grade above 1770 N/mm² should not be used.

Please refer to our instructions for ZEN® ferrules Form A-B.

Aluminium Round

Round ferrules are not to be used for lifting purposes.
A load test must be always performed to verify the strength of the ferrule secured termination. As a guideline you can anticipate a result reaching approximately 50 % of the MBL of the wire rope.

Rope Ø mm fibre and steel core		Ferrules		
min.	max.	Ferrule No.	Swaging Die No.	Pressed Ferrule Ø mm
1,5	1,6	1,5	1,5	3
2,0	2,2	2	2	4
3,0	3,2	3	3	6
4,0	4,2	4	4	8
5,0	5,3	5	5	10
6,0	6,3	6	6	12
6,5	6,8	6,5	6,5	13
7,0	7,4	7	7	14
8,0	8,3	8	8	16
9,0	9,4	9	9	18
10,0	10,5	10	10	20
11,0	11,5	11	11	22
12,0	12,6	12	12	24
13,0	13,5	13	13	26
14,0	14,7	14	14	28
16,0	16,8	16	16	32
18,0	18,9	18	18	36
20,0	21,0	20	20	40
22,0	23,1	22	22	44
24,0	25,2	24	24	48
26,0	27,3	26	26	52
28,0	29,4	28	28	56
30,0	31,5	30	30	60
32,0	33,4	32	32	64
36,0	37,8	36	36	72
40,0	40,9	40	40	80

Copper Round

Round ferrules are not to be used for lifting purposes.
A load test must be always performed to verify the strength of the ferrule secured termination. As a guideline you can anticipate a result reaching approximately 50 % of the MBL of the wire rope.

Rope Ø mm fibre and steel core		Ferrules		
min.	max.	Ferrule No.	Swaging Die No.	Pressed Ferrule Ø mm
2,0	2,2	2	2	4
3,0	3,2	3	3	6
4,0	4,2	4	4	8
5,0	5,3	5	5	10
6,0	6,3	6	6	12
6,5	6,8	6,5	6,5	13
7,0	7,4	7	7	14
8,0	8,3	8	8	16

Copper Type Z

Rope Ø mm nominal	Rope Ø mm measured		Ferrules	
	min.	max.	Fibre core ropes	Steel core ropes
1	0,5	1,0	1	1,5
1,5	1,1	1,5	1,5	2,0
2	1,6	2,0	2	2,5
2,5	2,5	2,7	2,5	3
3	2,8	3,2	3	3,5
3,5	3,3	3,7	3,5	4
4	3,8	4,3	4	4,5
4,5	4,4	4,8	4,5	5
5	4,9	5,4	5	6
6	5,5	6,4	6	6,5
6,5	6,5	6,9	6,5	7
7	7,0	7,4	7	8
8	7,5	8,4	8	9
9	8,5	9,5	9	10
10	9,6	10,5	10	11
11	10,6	11,6	11	12
12	11,7	12,6	12	13
13	12,7	13,7	13	14
14	13,8	14,7	14	16
16	14,8	16,8	16	18
18	16,9	18,9	18	20
20	19,0	21,0	20	22
22	21,1	23,1	22	24
24	23,2	25,2	24	26
26	25,3	27,3	26	28
28	27,4	29,4	28	

A widely used solution in combination with stainless steel wire ropes, where aluminium ferrules will cause galvanic corrosion, and stainless-steel ferrules might represent a budgetary concern. A load test must be always performed to verify the strength of the ferrule-secured termination. If performed according to the splicing instructions below, the strength of the sling can be expected to reach approximately 90 % of the MBL of the wire rope.

Please pay attention to the correct assignment of the ferrule and swaging dies. The swaging dies size always corresponds to the size of the ferrules.

The pressed outer diameter corresponds to the ferrule size x 2 in mm (e.g. size 8 x 2 = 16mm outer diameter).

Splicing instructions for our copper ferrules:

Select the appropriate ferrule according to our splicing table. Wire rope constructions with a metallic cross-sectional area factor of less than 0,283 should not be used.

These splicing instructions work for wire rope constructions according to EN 12385-4. Wire rope constructions with a tensile grade above 1770 N/mm^2 should not be used.

Please refer to our instructions for our ZEN® ferrules Form A - B

Stainless Steel

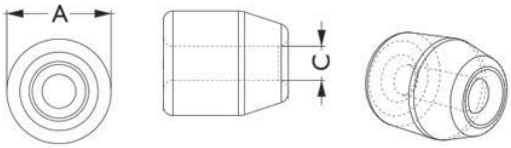
Rope Ø mm fibre and steel core		Ferrules		
		Ferrule No.	Swaging Die No.	Pressed Ferrule Ø mm
min.	max.			
1,0	1,1	1	1,5	3
1,5	1,6	1,5	1,5	3
2,0	2,1	2	2	4
2,5	2,6	2,5	2,5	5
3,0	3,2	3	3	6
3,5	3,7	3,5	3,5	7
4,0	4,2	4	4	8
4,5	4,7	4,5	4,5	9
5,0	5,2	5	5	10
6,0	6,3	6	6	12
7,0	7,3	7	7	14
8,0	8,3	8	8	16
10,0	10,4	10	10	20
12,0	12,4	12	12	24
14,0	14,4	14	14	28
16,0	16,5	16	16	32
18,0	18,5	18	18	36
20,0	20,5	20	20	40
22,0	23,0	22	22	44
24,0	25,0	24	24	48
26,0	27,0	26	26	52
28,0	29,0	28	28	56

Wire ropes with only one layer of wires per strand (such as 6 x 9 + 7fc., 6 x 12 + 7fc., 6 x 15 + 7fc., 6 x 18 + 7fc.)* are not suitable for swaging.
Use only CYLINDRICAL DIES WITHOUT CUTTING EDGES which are marked accordingly.
Ensure that ferrule and swaging die numbers correspond.
*fc. = “fibre core”

Proceed as follows:

- Select appropriate ferrule for the rope as per splicing table.
- Thread rope through ferrule and form a loop as required or over a thimble.
- Lubricate the bore of the swaging dies before each swaging operation.
- Place ferrule with rope in centre of the lower half of swaging die. Ensure during swaging operation that the ferrule is positioned in swaging die vertically and not tilted.
- Swaging is completed when swaging die faces make contact.
- Release swaging dies.

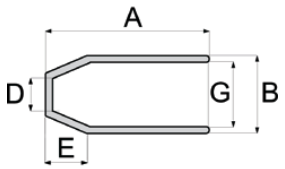
STEEL CHOKER



Rope Ø		Dimensions before swaging (mm)		after swaging (mm)
mm	inch	A	C	A
11	7/16 "	31,8	12,7	27,4
12, 13	1/2 "	31,8	13,5	27,4
14	9/16 "	31,8	15,1	27,4

Our Steel Choker Ferrule in use

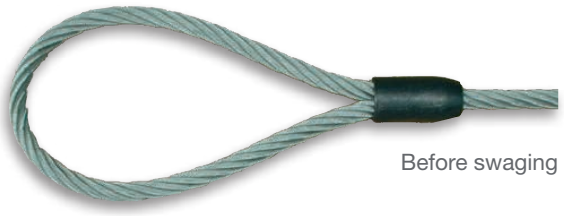
Steel Flemish Eye



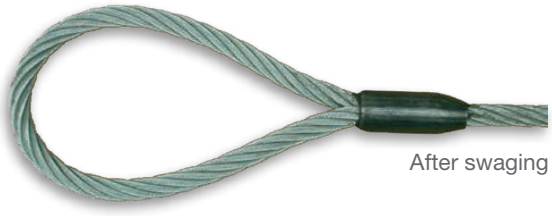
Ferrule dimensions

Ferrule No. inch	Rope Ø mm	Swaging Die No.	Nominal Ferrule-Dimensions mm					Max. Pressed Ferrule Ø mm
			A	B	G	D	E	
¼"	6	¼"	25	16,8	12,0	7,9	7,1	14,5
5/16"	8	⅜"	38	23,0	15,8	9,7	11,2	19,1
⅜"	9 - 10	⅜"	38	23,0	16,7	11,9	9,9	19,1
7/16"	11	½"	51	31,0	21,4	14,3	16,5	25,7
½"	12 - 13	½"	51	31,0	23,0	15,9	14,2	25,7
9/16"	14	⅝"	70	37,3	26,2	17,8	16,0	31,5
⅝"	16	⅝"	70	37,3	27,8	19,1	16,0	31,5
¾"	19	¾"	81	43,7	32,5	23,1	21,3	37,1
⅞"	22	⅞"	90	51,6	38,9	26,0	25,4	42,7
1"	25 - 26	1"	102	58,0	43,7	30,0	28,6	49,0
1⅛"	28	1⅛"	122	63,5	49,2	33,0	31,8	54,1
1¼"	32	1¼"	132	70,6	54,8	37,0	35,8	58,9
1⅜"	34 - 36	1⅜"	148	76,2	60,3	40,0	39,7	64,0
1½"	38	1½"	159	82,6	66,7	44,0	42,9	68,8
1¾"	44	1¾"	184	97,6	79,4	50,0	50,0	78,7
2"	50 - 52	2"	216	111,0	92,1	58,0	57,0	90,4
2¼"	56	2¼"	243	127,8	102,4	64,0	64,5	104,6
2½"	62 - 64	2½"	267	139,7	114,3	70,0	71,5	114,3
2¾"	68 - 70	2¾"	292	146,0	120,0	76,0	78,5	119,4
3"	76 - 77	3"	305	152,4	127,0	83,0	86,0	126,0
3¼"	82 - 84	3¼"	330	165,0	138,0	98,0	90,0	136,5
3½"	87 - 89	3½"	356	178,0	148,0	99,0	100,0	146,6
3¾"	93 - 96	3¾"	381	191,0	160,0	103,0	108,0	158,2
4"	100 - 105	4"	406	206,0	173,0	111,0	114,0	169,9
4½"	112 - 114	4½"	457	232,0	195,0	124,0	129,0	189,2
5"	126 - 128	5"	508	267,0	222,0	140,0	143,0	222,3
6"	152 - 156	6"	610	319,0	259,0	165,0	171,0	264,0

Dies 1/4" through to 1" are tapered dies.
Sleeves 1.1/8" and above require 1st and 2nd stage dies.
2nd stage dies for 1.1/8" through to 1.3/4" are tapered dies.
Both 1st and 2nd stage dies for sleeves from 2" and upwards are plain bore with no taper.



Before swaging



After swaging

Splicing instructions for our Flemish Eye ferrules

1. Allocation ferrule to wire rope

Select the appropriate ferrule according to our splicing table. Wire rope constructions with a metallic cross-sectional area factor of less than 0,283 should not be used. These splicing instructions work for wire rope constructions according to EN 12385-4. Wire rope constructions with a tensile grade above 1960 N/mm² should not be used.

2. Preparation of the rope

Slide the ferrule down the rope. Un-lay the wire rope. For IWRC rope 3 strands and core in one group and 3 strands in the other group. For FC rope un-lay with 3 strands in each group and cut away the fibre core. Cross and lay the one group of strands into the other group of strands forming a natural weave. Continue to reweave the group of strands together to form the eye. The remaining tails must be as long as the cylindrical part of the ferrule. At the end of the eye collect the tails around the outside of rope dispersing equally and slide the ferrule over the tails and as far up towards the eye as possible.

3. Installation and condition of the tooling

Swaging die faces with corresponding numbers need to be precisely aligned in the die pocket. Dies 1/4" through to 1" are tapered dies. Sleeves 1.1/8" and above require 1st and 2nd stage dies. 2nd stage dies for 1.1/8" through to 1.3/4" are tapered dies. Both 1st and 2nd stage dies for sleeves from 2" and upwards are plain bore with no taper.

4. Swaging procedure

A competent person, trained in ferrule securing shall carry out the procedure.

First stage dies

- Lubricate both die bores.
- Close dies until initial contact is made between ferrule and die (STEP 1).
- Swage down ½ the distance and then rotate the ferrule 45-90° (STEP 2).
- Repeat STEP 2 three times.
- Swage down until die faces meet with 5th pass.
- Rotate again ferrule 90° and swage down until die faces meet.
- Swap dies.

Second stage dies

- Lubricate both die bores.
- Carry out STEP 2 six times.
- Swage down until die faces meet with 7th pass.
- Rotate ferrule 90°.
- Swage down until die faces meet and ferrule is round.

5. Ferrules after swaging

The temperature limits when used with a steel core wire rope are -60° to +250° C

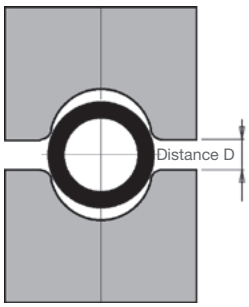
6. Marking the ferrule

If the Ferrule Secured Eye Termination (FSET) forms part of a wire rope assembly other than a sling:

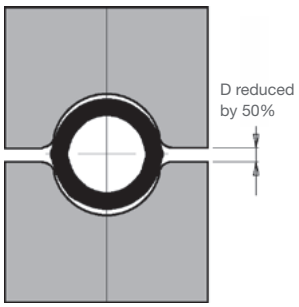
- the ferrule shall be legibly and indelibly marked with the FSET manufacturer's name, symbol or mark; and
- the assembly shall be legibly and durably marked with the traceability code identifying the assembly with the certificate in 7.2. of EN 13411-3.

For FSET forming part of a sling you will find further details in the standard EN 13414-1 ANY STAMPING should be carried out using rounded character stamps and to a maximum depth of 0,4mm.

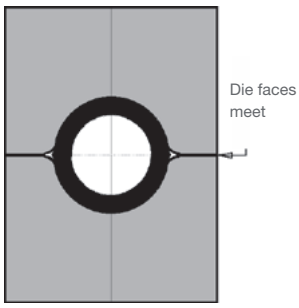
The area for stamping should be restricted to the sleeve surface along the plane of the eye. Stamped characters should start or finish a minimum of 6mm from either end of the sleeve.



STEP 1



STEP 2



FINAL STEP

Steel Type Z

Rope Ø mm	Ferrules			
	Ferrule No.	Swaging Die No.	Ferrule length / mm	Pressed Ferrule Ø mm
5	5	5	18	10
6	6	6	21	12
7	7	7	25	14
8	8	8	28	16
9	9	9	32	18
10	10	10	35	20
12	12	12	42	24
14	14	14	49	28
16	16	16	56	32
18	18	18	63	36

Steel Type ST

Rope Ø mm	Ferrules			
	Ferrule No.	Swaging Die No.	Ferrule length / mm	Pressed Ferrule Ø mm
16	28	14	52	28
17		15	52	30
18	32	16	58	32
19		17	58	34
20	34	17	63	34
21		18	63	36
22	38	19	68	38
23		20	68	40
24	42	21	83	42
25		21	83	42
26	44	22	86	44
27		22	86	44
28		23	86	46
29	48	24	96	48
30		24	96	48
31	52	26	100	52
32		26	100	52
33	56	28	107	56
34		28	107	56
35	60	30	113	60
36		30	113	60
39	68	34	127	68
40		34	127	68

Use only accordingly marked straight cylindrical swaging dies **without cutting edges**. Note that the ferrule and swaging dies number correspond to the above splicing table.

Swaging Machines

1.500 KN – One Column Swager

6.000 KN – One Column Swager

20.000 KN – Two Column Swager

8.000 KN - Two Column Swager

12.500 KN – Two Column Swager

CE

Machine Type	315 KN	415 KN	900 KN	1.500 KN	3.000 KN	4.500 KN	6.000 KN	8.000 KN	12.500 KN	20.000 KN	40.000 KN
Technical Data											
max. Aluminium Ferrule	7	8	12	16	24	32	34	40	52	XL64	Z94
max. Flemish Eye	-	-	-	¾"	1"	1 ¼"	1 ½"	1 ¾"	3"	4"	6"
max. Swaging Dies /mm	50 x 48	50 x 48	80 x 78	100 x 78	100 x 78	156 x 110	156 x 110	220 x 150	250 x 200	380 x 300	380 x 300
Working Height / mm	-	-	880–1.180	1.000	1.113	1.132	1.127	1.145	1.236	910	1.130
Height / mm	551	556	1.410	1.690	1.692	1.537	2.000	1.690	1.978	2.820	3.663
Length / mm	585	635	1.153	640	1.765	1.765	2.240	2.030	2.160	2.500	3.534
Width / mm	352	352	814	710	700	689	870	760	877	2.000	2.215
Weight / kg	158	185	570	620	2.160	1.970	4.030	4.100	7.530	15.300	32.000
Motor kW	3,2	3,2	4	3	11	7,5	18,5	11	22	37	55
Automatic Mode	semi-auto.	✓	✓	✓	✓	-	✓	-	✓	✓	✓
Rigging Arm (optional)									✓	✓	✓

250 KN – One Column Swaging Machine

This swaging machine with its 250 KN pressing capacity is capable of pressing aluminium ferrules up to:

ZEN® 6 (Form A, EN 13411-3)

Electro-Hydraulic Press 250 KN	
Technical Data	
Max. pressure capacity	250 KN
Max. piston stroke	20 mm
Max. oil pressure	400 bar
Dimensions (L x W x H)	280 x 156 x 315 mm
Weight swager	30 kg
Weight hydraulic	34 kg
Oil capacity	5 L
Max. swaging dies (W x H)	42 x 38 mm
Power supply	1,1 KW / 230 V / 50 Hz

We reserve the right to change technical data!

Also available as manual swager

CE

315 KN – One Column Swaging Machine

With its 315 KN pressing capacity it is capable of pressing aluminium ferrule up to:

ZEN® 7 (Form A, EN 13411-3)

Hydraulic Press 315 KN	
Technical Data	
Max. pressure capacity	315 KN
Max. piston stroke	25 mm
Max. oil pressure	400 bar
Dimensions (L x W x H)	585 x 352 x 551 mm
Weight	158 kg
Oil capacity	5 L
Max. swaging dies (W x H)	50 x 48 mm
Stroke speed	5 mm/s
Reversing speed	9 mm/s
Operating height	262 mm
Foot switch	included
Power supply	3,2 KW / 400 V / 50 Hz

Other voltages on request!
We reserve the right to change technical data!

CE

415 KN - One Column Swaging Machine

Our 40t Press is particularly suitable for use as a benchtop press for smaller components and stands out thanks to its high reliability and simple operation.

CE

It is capable of pressing aluminium ferrules in a single bite up to:

- ZEN® 8 (Form A, EN 13411-3)

Hydraulic Press 415 KN	
Technical Data	
Max. pressure capacity	415 KN
Max. piston stroke	26 mm
Max. oil pressure	400 bar
Dimensions (L x W x H)	635 x 352 x 556 mm
Weight	185 kg
Oil capacity	10 L
Max. swaging dies (W x H)	50 x 48 mm
Stroke speed	5,7 mm/s
Reversing speed	8,5 mm/s
Foot switch	✓
Power supply	3,2 KW / 400 V / 50 Hz

Other voltages on request!
We reserve the right to change technical data!

415 KN PLUS - One Column Swaging Machine

Our 40t Plus Press is particularly suitable for mass production swaging of smaller components and stands out thanks to its high speed, low noise and ergonomic work position.

CE

It is capable of pressing aluminium ferrules in a single bite up to:

- ZEN® 8 (Form A, EN 13411-3)

Hydraulic Press 415 KN PLUS	
Technical Data	
Max. pressure capacity	415 KN
Max. piston stroke	35 mm
Max. oil pressure	400 bar
Dimensions (L x W x H)	1.141 x 817 x 1.400 mm
Weight	385 kg
Oil capacity	38 L
Max. swaging dies (W x H)	50 x 48 mm
Stroke speed	8,3 mm/s
Reversing speed	21,5 mm/s
Operating height	1050 mm
Foot switch	✓
Power supply	4 KW / 400 V / 50 Hz
Automatic control	✓

Other voltages on request!
We reserve the right to change technical data!

900 KN - One Column Swaging Machine

This swaging machine with its 900 KN pressing capacity is capable of pressing:

- ZEN® 12 (Form A, EN 13411-3)

CE

Hydraulic Press 900 KN	
Technical Data	
Max. pressure capacity	900 KN
Max. piston stroke	40 mm
Max. oil pressure	448 bar
Dimensions (L x W x H)	1.153 x 814 x 1.410 - 1.660 mm (height adjustable)
Weight	570 kg
Oil capacity	40 L
Max. swaging dies (W x H)	80 x 78 mm
With angle packing (W x H)	50 x 48 mm
Unloaded stroke speed (up to 280 kN)	10 mm/s
Loaded stroke speed	3,5 mm/s
Reversing speed	22,5 mm/s
Operating height	880 - 1.180 mm
Stroke limit	smooth, electronic control
Automatic control	✓
Foot switch	✓
Power supply	4 KW / 400 V / 50 Hz

Other voltages on request!
We reserve the right to change technical data!

1.500 KN - One Column Swaging Machine

This swaging machine with its 1500 KN pressing capacity is capable of pressing ferrules up to:

- ZEN® 16 (Form A, EN 13411-3)
- Flemish Eye 18/20 (¾")

CE

Hydraulic Press 1.500 KN		
Technical Data	**Standard**	**Plus**
Max. pressure capacity	1.500 KN	1.500 KN
Max. piston stroke	39 mm	39 mm
Max. oil pressure	335 bar	335 bar
Dimensions (L x W x H)	640 x 710 x 1690 mm	1.183 x 730 x 1.637 mm
Weight	620 kg	670 kg
Oil capacity	65 L	65 L
Max. swaging dies (W x H)	100 x 78 mm	100 x 78 mm
With spacer plate / angle packing (W x H)	80 x 78 mm / 50 x 48 mm	80 x 78 mm / 50 x 48 mm
Unloaded stroke speed	10 mm/s (up to 370 kN)	10 mm/s (up to 450 kN)
Loaded stroke speed	1,5 mm/s	3 mm/s
Reversing speed	16 mm/s	19 mm/s
Operating height	1.000 mm	1.000 mm
Stroke limit	-	smooth, electronic control
Automatic control	-	✓
Foot switch	✓	✓
Power supply	3 KW / 400 V / 50 Hz	5,5 KW / 400 V / 50 Hz

Other voltages on request!
We reserve the right to change technical data!

3.000 KN – One Column Swaging Machine

This swaging machine with its 3.000 KN pressing capacity is capable of pressing ferrules up to:

- ZEN® 24 (Form A, EN 13411-3)
- Flemish Eye 24/26 (1")

CE

Hydraulic Press 3.000 KN	
Technical Data	
Max. pressure capacity	3.000 KN
Max. piston stroke	55 mm
Max. oil pressure	397 bar
Dimensions (L x W x H)	1.765 x 700 x 1.692 mm
Weight	2.160 kg
Oil capacity	150 L
Max. swaging dies (W x H)	100 x 78 mm
With spacer plate (W x H)	80 x 78 mm
Unloaded stroke speed (up to 950 kN)	10 mm/s
Loaded stroke speed	3,4 mm/s
Reversing speed	21,6 mm/s
Operating height	1.113 mm
Stroke limit	smooth, electronic control
Automatic control	✓
Foot switch	✓
Power supply	11 KW / 400 V / 50 Hz

Other voltages on request!
We reserve the right to change technical data!

4.500 KN – Two Column Swaging Machine

This swaging machine with its 4.500 KN pressing capacity is capable of pressing ferrules up to:

- ZEN® 32 (Form A, EN 13411-3), ZEN® 34 in Multi-bite
- Flemish Eye 32 (1 1/4")

Hydraulic Press 4.500 KN	
Technical Data	
Max. pressure capacity	4.500 KN
Max. piston stroke	65 mm
Max. oil pressure	397 bar
Dimensions (L x W x H)	1.765 x 689 x 1.537 mm
Weight	1.970 kg
Oil capacity	175 L
Max. swaging dies (W x H)	156 x 110 mm
With angle packing (W x H)	100 x 78 mm / 80 x 78 mm
Unloaded stroke speed (up to 1000 kN)	6,8 mm/s
Loaded stroke speed	1,4 mm/s
Reversing speed	10,7 mm/s
Operating height	1.132 mm
Stroke limit	-
Automatic control	-
Foot switch	✓
Power supply	7,5 KW / 400 V / 50 Hz

Other voltages on request!
We reserve the right to change technical data!

6.000 KN - One Column Swaging Machine

This swaging machine with its 6.000 KN pressing capacity is capable of pressing:

- ZEN® 34 (Form A, EN 13411-3), ZEN® 38 in Multi-bite
- Flemish Eye 38 (1 ½")

Hydraulic Press 6.000 KN	
Technical Data	
Max. pressure capacity	6.000 KN
Max. piston stroke	85 mm
Max. oil pressure	413 bar
Dimensions (L x W x H)	2.240 x 870 x 2.000 mm
Weight	4.030 kg
Oil capacity	250 L
Max. swaging dies (W x H)	156 x 110 mm
With angle packing (W x H)	100 x 78 mm / 80 x 78 mm
Unloaded stroke speed (up to 1520 kN)	9,5 mm/s
Loaded stroke speed	2,6 mm/s
Reversing speed	14,3 mm/s
Operating height	1.127 mm
Stroke limit	smooth, electronic control
Automatic control	✓
Foot switch	✓
Power supply	18,5 KW / 400 V / 50 Hz

Other voltages on request!
We reserve the right to change technical data!

8.000 KN - Two Column Swaging Machine

This swaging machine with its 8.000 KN pressing capacity is capable of pressing ferrules up to:

- ZEN® 40 (Form A, EN 13411-3), ZEN® 48 in Multi-bite
- Flemish Eye 44 (1 ¾")

CE

Hydraulic Press 8.000 KN	
Technical Data	
Max. pressure capacity	8.000 KN
Max. piston stroke	85 mm
Max. oil pressure	400 bar
Dimensions (L x W x H)	2.030 x 760 x 1.690 mm
Weight	4.100 kg
Oil capacity	250 L
Max. swaging dies (W x H)	220 x 150 mm
With angle packing (W x H)	156 x 110 mm
Unloaded stroke speed (up to 1900 kN)	5,3 mm/s
Loaded press speed	1,3 mm/s
Reversing speed	11 mm/s
Operating height	1.145 mm
Stroke limit	-
Automatic control	-
Foot switch	✓
Power supply	11 KW / 400 V / 50 Hz

Other voltages on request!
We reserve the right to change technical data!

12.500 KN – Ring Frame Swaging Machine

This swaging machine with its 12.500 KN pressing capacity is capable of pressing up to:

- ZEN® 52 (Form A, EN 13411-3), ZEN® 60 in Multi-bite
- Flemish Eye 76 (3")

Optional Rigging Arm. View Page 29.

Hydraulic Press 12.500 KN	
Technical Data	
Max. pressure capacity	12.500 KN
Max. piston stroke	100 mm
Max. oil pressure	370 bar
Dimensions (L x W x H)	2.160 x 877 x 1.978 mm
Weight	7.530 kg
Oil capacity	250 L
Max. swaging dies (W x H)	250 x 200 mm
With angle packing (W x H)	220 x 150 mm / 156 x 110 mm
Unloaded stroke speed (up to 2900 kN)	6,0 mm/s
Loaded stroke speed	1,65 mm/s
Reversing speed	9,7 mm/s
Operating height	1.236 mm
Stroke limit	smooth, electronic control
Automatic control	✓
Foot switch	✓
Power supply	22 KW / 400 V / 50 Hz

Other voltages on request!
We reserve the right to change technical data!

20.000 KN – Down Stroke Swaging Machine

This swaging machine with its 20.000 KN pressing capacity is capable of pressing ferrules up to:

- XL 64, XL 72 in Multi-bite
- Flemish Eye 102 (4")

Our 2000t Down Stroke Press sets itself apart thanks to its very good accessibility and the piston located on top. This means that the workpiece remains in position during swaging and is particularly simple to finish.

Optional Rigging Arm. View Page 29.

Hydraulic Press 20.000 KN	
Technical Data	
Max. pressure capacity	20.000 KN
Max. piston stroke	200 mm
Max. oil pressure	350 bar
Dimensions (L x W x H)	2.500 x 2.000 x 2.820 mm
Weight	15.300 kg
Oil capacity	500 L
Max. swaging dies (W x H)	380 x 300 mm
With angle packing (W x H)	300 x 250 mm / 250 x 200 mm
Unloaded stroke speed (up to 4500 kN)	6,5 mm/s
Loaded stroke speed	1,6 mm/s
Reversing speed	9,7 mm/s
Operating height	910 mm
Stroke limit	smooth, electronic control
Automatic control	✓
Foot switch	✓
Power supply	37 KW / 400 V / 50 Hz

Other voltages on request!
We reserve the right to change technical data!

40.000 KN – Down Stroke Swaging Machine

This swaging machine with its 40.000 KN pressing capacity is capable of pressing ferrules up to:

- XL 90 - Z 94, Z 102 in Multi-bite
- Flemish Eye 152 (6")

Our 4000t Down Stroke Press sets itself apart thanks to its very good accessibility and the piston located on top. This means that the workpiece remains in position during swaging and is particularly simple to finish.

Optional Rigging Arm. View Page 29.

Hydraulic Press 40.000 KN	
Technical Data	
Max. pressure capacity	40.000 KN
Max. piston stroke	260 mm
Max. oil pressure	525 bar
Dimensions (L x W x H)	3.534 x 2.215 x 3.663 mm
Weight	32.000 kg
Oil capacity	800 L
Max. swaging dies (W x H)	380 x 300 mm
With angle packing (W x H)	300 x 250 mm / 250 x 200 mm
Unloaded stroke speed (up to 3.140 kN)	6,3 mm/s
Loaded stroke speed	3,4 - 1,26 mm/s
Reversing speed	7,7 mm/s
Operating height	1.135 mm
Stroke limit	smooth, electronic control
Automatic control	✓
Foot switch	✓
Power supply	55 KW / 400 V / 50 Hz

Other voltages on request!
We reserve the right to change technical data!

Rigging Arm

Our rigging arms RA-1250 and RA-4000 aid the operator to produce a turn back hard- or soft eye easily and safely for wire rope diameters from 36 – 128 mm depending on the model.
The rigging arm is divided into two modules: the turn section, that forms the eye and the pull section, that sizes the eye. The operation is self-explaining and easily performed with two joy sticks. So even a single person is now able to produce a big diameter lifting sling safely and without any force. The rigging arm is recommended to be used with our swaging machines 12.500 kN, 20.000 kN and 40.000 kN.

Rigging Arm		
Technical Data		
Model	**RA-1250**	**RA-4000**
Swager	12.500kN	20.000kN / 40.000kN
Rope Ø	36 - 76 mm	52 - 128 mm
Joy Stick operated	✓	✓

We reserve the right to change technical data!

Test Beds

Our test beds are specifically designed for proof and destructive loading of steel wire ropes, synthetic ropes, chains, shackles etc. according to DIN ISO 2307 and EN 12385. The accuracy of our machines is higher than Class 1 according to EN ISO 7500-1. They are easy to use and are manufactured according to the current European machinery directive 2006/42/EG. We design and manufacture test beds with a capacity from 200kN to 30.000kN, to suit individual customer's requirements.

This picture shows
a 250t machine with options

You can benefit from our:

- In House Machine Building
- Worldwide Service
- Standard Machines or Custom Made
- Upgrade of Existing Machines
- Expert advice by our Experienced Personnel

CE MADE IN GERMANY

Technical Data									
Capacity (kN)	**500**	**1.000**	**1.500**	**2.000**	**2.500**	**3.000**	**5.000**	**6.000**	**7.500**
Breaks rope wire with a rated strength of 1.960 N/mm² to Ø	26 mm	38 mm	48 mm	54 mm	58 mm	64 mm	84 mm	90 mm	104 mm
Standard max. insertion length (mm)	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
Inside distance between main frames (mm)	500	1.000	1.000	1.000	1.000	1.000	1.400	1.400	1.600
Distance between carriage stops (mm)	500	500	500	500	500	500	500	500	750
Test bolts Ø (mm)	80	110	130	180	190	200	238	268	280
Jaw width (mm)	100	135	150	240	250	240	250	260	250
Cylinder stroke length (mm)	1.000	1.500	1.500	1.500	1.500	1.500	1.500	1.500	1.500 x 2
Cylinder fast approach speed (mm/sec)	10	10	10	10	10	10	10	10	10
Cylinder testing speed (mm/sec)	4	4	4	4	4	4	4	4	4
Motor output (kW)	3	5,5	7.5	11	11	15	22	30	55
Total weight (frame and cylinder) (kg)	4.200	12.500	13.500	17.500	18.500	19.000	20.800	23.800	29.700

These are standard dimensions for reference purposes. All machines are built to order and can be customised to fit your individual requirements.

Selection of some of our models


200kN

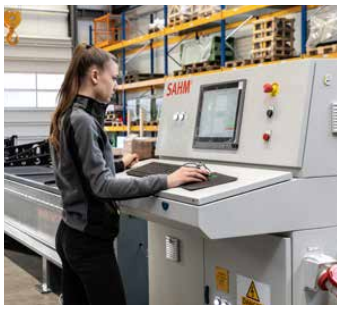

1000kN


3000kN


5000kN

Test Certificate

Operating units

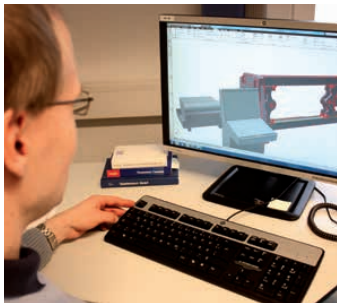


Touch screen control unit

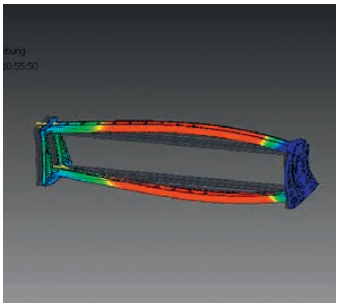

Manual control unit

Technical characteristics


Additional small cylinder


In house 3D design

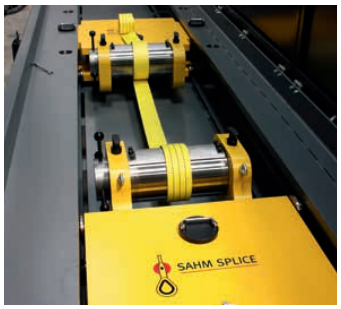

Custom-built model


FEM analysis

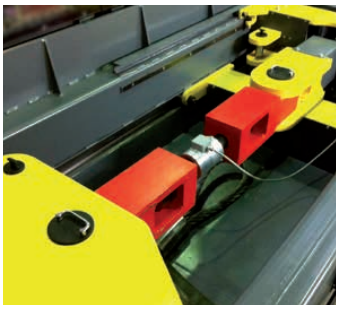
Test examples


Wire rope testing


Fibre rope testing



Webbing sling testing


Calibration service

Annealing & Tapering Machines

Based on experience we have developed Wire Rope Annealing and Cutting Machines. They are designed for cutting and annealing wire ropes from 1-60 mm.
Our models 1224, 1225, 1226 can produce tapered rope ends.

These machines 1224, 1225 and 1226 are equipped with a ventilation device and are easy to operate and maintain.

Our machines are produced in accordance with the CE machinery directive

Type SF-65

Type SF-140

Type 1224, 1225 and 1226

Type	SF-65	SF-140	1224	1225	1226
Technical Data					
Rope Ø	1–6,5 mm	5–14 mm	4–30 mm	8–40 mm	12–60 mm
Weight	17 kg	50 kg	320 kg	450 kg	580 kg
Width	170 mm	360 mm	630 mm	1.000 mm	1.200 mm
Length	250 mm	470 mm	550 mm	800 mm	900 mm
Working height	300 mm	360 mm	1.000 mm	1.000 mm	1.100 mm
Foot switch	○	○	●	●	●
Smoke extractor	-	-	○	○	○
Electrical Data					
Voltage (U prim)	230 V	230 V	400 V	400 V	400 V
Voltage Anneal (U sec)	2,5 V (2,2 V)	2,5 V (2,2 V)	1-2-3 V	1-2-3 V	1-2-3 V
Consumption (I prim)	6 A	11 A	55 A	85 A	160 A
Power	1 kVA	2 kVA	20 kVA	26 kVA	60 kVA
Frequency	50 / 60 Hz	50 / 60 Hz	50 Hz	50 Hz	50 Hz
Other voltage on request			○ optional	● installed	

Wire Rope Cutters

The optimum composition of the material for all prefabricated parts as well as their perfect thermal treatment guarantee durability and excellent quality of cut of all models. Wire ropes with a greater diameter than those mentioned can also be cut by separating the strands of the wire rope with a spike.
The triangular cutting system prevents crushing of the rope end.

Models	7	9	12	16
Maximum cutting capacities (ø mm)	7	9	12	16
Mild steel strands	7	9	12	16
Steel strands	5	7	8	14
Pre-stressing strands	4	6	6	7
Tempered steel strands and steel braids	3	5	5	6
Electric cables with steel core (aluminium, copper)	7	9	12	16
Rods (aluminium and copper)	5	9	10	14
Steel rods	4	7	8	10
Tempered spring wire	2,5	4	4	5
Length / mm	190	325	500	630
Weight / kg	0,3	0,7	1,5	2,3

In addition to the above standard cutters, we offer ratchet wire rope cutters. The advantage is less effort to cut the ropes thanks to the ratchet transmission. With these it is possible to cut flexible wire ropes up to Ø 30 mm.

Type	S18	Z20	Z30
Capacity: Flexible wire ropes	max. Ø 18 mm (max.1960 N / mm²)	max. Ø 20 mm (max.1960 N / mm²)	max. Ø 30 mm (max.1960 N / mm²)
Capacity: Stainless and high compressed wire ropes	max. Ø 15 mm (max.2160 N / mm²)	max. Ø 16 mm (max.2160 N / mm²)	max. Ø 25 mm (max.2160 N / mm²)
Length / mm	317	440	703
Weight / kg	1,7	1,9	5,3

Swaging Dies

We manufacture conical, cylindrical and rounded dies which are made of high quality steel and under close quality control. The die bores are polished and promote easy flow of material.

Our UNIVERSAL SWAGING DIES are suitable for cylindrical as well as for tapered conical splices.

We produce SPECIAL SWAGING DIES to meet your specific requirements.

Cylindrical Swaging Dies, Form A
DIN EN 13411-3

Universal Swaging Dies, Form C
DIN EN 13411-3

Swaging Dies for Steel Ferrules

Flemish Eye Swaging Dies

Hexagonal Swaging Dies

Terminal Swaging Dies

Choker Swaging Dies

Rounded Swaging Dies

Die Block Dimensions		
Width (mm)	**Height (mm)**	**Max. Size Ferrule**
42	38	ZEN® 6
50	48	ZEN® 8
80	78	ZEN® 22 - Fl. Eye 7/8"
100	78	ZEN® 24 - Fl. Eye 1"
156	110	ZEN® 36 - Fl. Eye 1.1/2"
220	150	ZEN® 44 - Fl. Eye 1.3/4"
250	200	ZEN® 56 - Fl. Eye 3"
300	250	ZEN® 60 - XL 64 – Fl. Eye 4"
380	300	ZEN® 102 - Fl. Eye 6"

Swaging Dies Lift

NEW PRODUCT

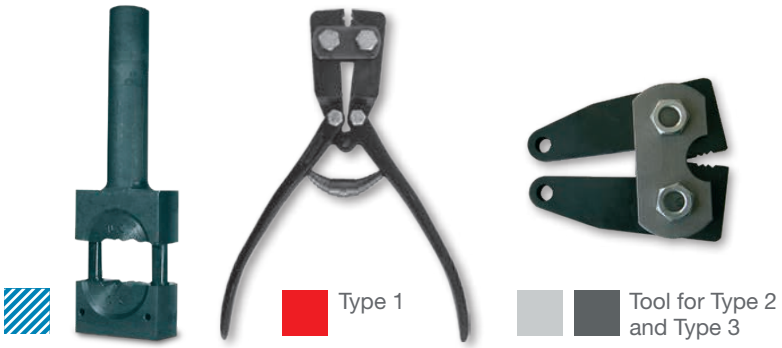
Depending on their size, installing the swaging dies can be a strenuous and challenging task, but certainly not with our SWAGING DIES LIFT! Developed for die tools from a block size of 250 x 200 mm to 300 x 250 mm, our Swaging Dies Lift enables you to easily bring your tools from the storage space of your dies directly in front of your machine. Placed on ball bearings, the dies can be pushed easily, which is of great help for the correct, almost effortless, and safe insertion of your dies into the die holder of your press.

With the SWAGING DIE LIFT, the swaging dies can be handled safely and ergonomically, even in tight spaces, thanks to the **swivel unit** with a rotation angle of 360° and the extremely variable height adjustment.

Hand-Swaging Tools

With these tools you meet the requirements for a EN 13411-3 conform swaging process.

Available in sizes: 1 / 1.5 / 2 / 2.5 / 3 / 3.5 / 4 / 4.5



Type 1

Tool for Type 2 and Type 3

Type 2

Type 3

Rope Ø mm fibre core	Rope Ø mm steel core	Tool No.	Pressed Ferrule Ø mm
min.	max.		
0,9 – 1,0	0,5 – 0,8	1	2
1,1 – 1,5	0,9 – 1,1	1,5	3
1,6 – 2,0	1,2 – 1,6	2	4
2,5 – 2,7	1,7 – 2,0	2,5	5
2,8 – 3,2	2,5 – 2,7	3	6
3,3 – 3,7	2,8 – 3,2	3,5	7
3,8 – 4,3	3,3 – 3,7	4	8
4,4 – 4,8	3,8 – 4,3	4,5	9

Marking System for swaged aluminium ferrules

- Cost saving
- Safe
- Easy to use
- Effective
- Quick delivery
- Wording to customer's requirements

Available sizes:
ZEN® 8
ZEN® 9 – 18
ZEN® 20 – 60

Please ask for a free marked sample!

Marking sample according to EN 13 414-1

SPLICE GLIDE

HEAVY DUTY SWAGING GREASE

BY SAHM SPLICE

To ensure that swaging dies reliably fulfill their function, sufficient lubrication is essential. The lubricant prevents direct contact between the ferrule and the die, it helps the material flow and reduces wear of the tooling. We recommend our Splice Glide heavy duty grease. For best results, clean the surface of the swaging dies before each swaging and then lubricate the die bores plus the cutting edges with our grease using a commercially available brush (not included).

Features / Benefits

- Lithium soap-based lubricant.
- Effective protection against rust and corrosion.
- Optimum material flow.
- Excellent wear protection.
- Temperature range: -20 ° C to +130° C

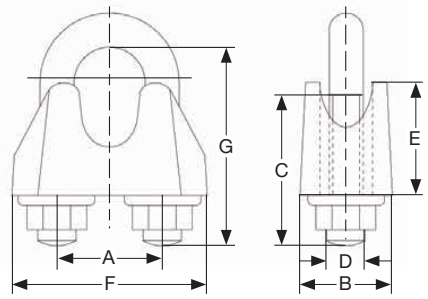
Health, Safety and the Environment

Based on available information, this product is not expected to present any health hazard if used as recommended and following the precautions mentioned in the safety data sheet, available upon request. This product should only be used for its intended purpose. The containers (tin can and plastic bucket) must be disposed of by the user in accordance with the local environmental regulations.

Wire Rope Grips

Grips are electro galvanized

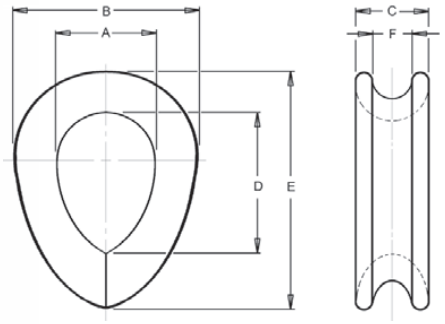
3 mm - 40 mm are commercial type to DIN 741



Rope diameter	A	B	C	D	E	F	G	Weight per 100
mm	mm	mm	mm	mm	mm	mm	mm	kg
3	9	10	12	4	10	21	16	1,4
5	11	11	13	5	10	23	19	1,5
6,5	13	12	15	5	11	26	23	2,1
8	16	14	19	6	15	30	28	4,1
10	19	18	22	8	17	34	34	6,8
13	24	23	30	10	21	42	45	13
16	29	26	33	12	26	50	51	21
19	32	29	38	12	30	54	63	28
22	37	33	44	14	34	61	71	40
26	41	35	45	14	37	65	81	44
30	48	37	50	16	43	74	94	66
34	52	42	55	16	50	80	104	85
40	58	45	60	16	55	88	124	104

Thimbles

Material: Low carbon mild steel
Finish: Hot-dip galvanised and comply with the requirement of EN 13411 – 1



Diameter		A	B	C (min)	D	E	F (min)	Weight per 100
mm	ins	mm	mm	mm	mm	mm	mm	kg
6	1/4	20	35	11.5	31	48	7.5	3.3
8	5/16	22	38	12.7	33	54	7.9	5.2
9/10	3/8	25	48	14.3	38	64	10.3	8.4
11	7/16	29	54	17.5	41	73	12.7	10.8
12/13	1/2	32	59	20.6	44	79	14.3	14.2
16	5/8	41	75	22.2	59	98	15.9	27.2
19/20	3/4	51	92	28.6	73	124	20.6	47
22	7/8	57	102	31.8	83	133	22.2	64
26	1	70	119	34.9	108	162	27	99
28	1-1/8	76	133	38.1	111	178	28.6	135
32	1-1/4	95	152	41.3	133	197	33.3	180
35	1-3/8	105	175	47.6	152	229	38.1	264
38	1-1/2	114	197	54	165	254	41.3	336
41	1-5/8	114	197	55.6	165	254	42.9	350
44	1-3/4	127	229	57.2	178	286	50.8	570
52	2	140	257	69.8	203	330	63.5	750

Service Safe, reliable, efficient

Our service covers your needs throughout the product life cycle. From installation to daily operation, maintenance, and support. Our experienced team will assist you with professional service solutions.

Training

We want our customers to meet the standard and that is why we are offering LEEA accredited training courses for the correct mechanical splicing of wire ropes according to EN 13411-3, as well as safe operation and preventive maintenance of swaging presses, test beds and cutting machines.

Calibration

We offer worldwide calibration service with our EN ISO 376 certified equipment. With our high accuracy load cells, we are in the position to calibrate your tensile test machines up to class 0,5 in the range up to 600t capacity to the regulations specified in EN ISO 7500-1.

Refurbishment / Upgrade / Repair

Has your test bed, annealing machine or swager seen better days, and are you considering purchasing a new model? An economically viable alternative may be for you to modernise your existing machine. At our factories in Germany and UK we have well occupied machine departments for all kinds of repairs. We also carry out repairs on site and we even offer rental machines during the time of repair.

Spare Parts

SAHM SPLICE genuine spare parts are tried and tested in the process and correspond fully to our specifications.This pays off by highest availability. Our service offers spare and wear parts for old and new systems. Our technical support is available to you with its competence and experience for the selection and consulting needed.

SAHM SPLICE
since 1961

SAHM SPLICE GmbH
Herwigstraße 38
D-27572 Bremerhaven

Telephone: +49 (0)4 71 - 931 59 0
Fax: +49 (0)4 71 - 333 28
E-Mail: info@sahm-splice.com

SAHM FRANCE
depuis 1951

SAHM France E.U.R.L.
Z.A. de la Couronne des Prés
550, av. de la Mauldre
F-78680 Épone

Telephone: +33(0)1 / 34929200
Fax: +33(0)1 / 30998199
E-Mail: contact@sahm.fr

SAHM SPLICE

SAHM SPLICE Ltd
Unit 1, Lincoln Way
Sherburn-In-Elmet
North Yorkshire
LS25 6PJ

Telephone: +44 (0)1977 - 680 680
Fax: +44 (0)1977 - 680 630
E-Mail: mail@sahm-splice.co.uk

Follow the link to our web page:
www.sahm-splice.com

Or scan this QR-code:

Version: 01/04/2021