

## 1. SCOPE

This part of EN755 specifies the tolerance on dimensions & form for aluminum & aluminum alloy extruded profile with cross section contained within a circumscribing circle not greater than 800 mm.(Fig 1).

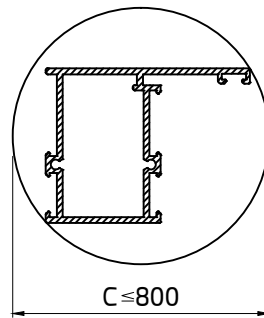


Fig 1-Circumscribing circle.

Note: This standard applies to extruded profiles for general engineering applications only.

## 2. ALLOY

EN AE-1050A, EN AW-1070A, EN AW-1200, EN AW-1350, EN AW-3003, EN AW-3103, EN AW-5005, EN AW-5005A, EN AW-6101A, EN AW-6101B, AN AW6005, EN AW-6005A, EN AW-6106, EN AW-6008, EN AW-6060, EN AW-6063, EN AW-6363A, EN AW-6463

## 3. TOLERANCES ON DIMENSIONS

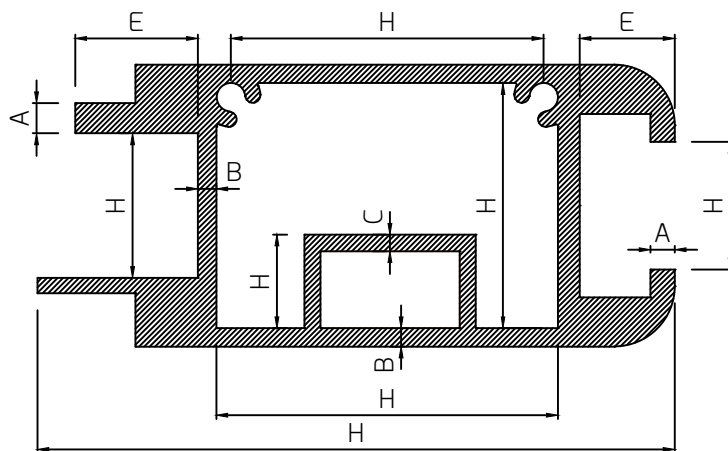


Fig 2- Definition of dimensions A,B,C,E,H specified on TABLES 1-4

### 3.1.1 Cross-sectional dimensions(Fig 2)

A: wall thickness except those enclosing the hollow spaces in the below profiles.

B: wall thickness enclosing the hollow spaces in hollow profiles except those between two spaces hollow spaces.

C: wall thickness between two hollow spaces in hollow profiles.

E: the length of the shorter leg of profiles with with open ends.

H: all dimensions except wall thickness.

### 3.1.2 Tolerances on dimensions other than wall thickness.

The tolerance on dimensions shall be as specified in table 1. for profiles with open ends(see Fig 3,4 & the relevant examples)the tolerance specified in table 2 shall be added to those of table 1 for dimensions H across open ended legs in order to obtain the tolerance on the gap between any opposite points on these ends.

TABLE 1: Tolerance on cross-sectional dimension of solid & hollow profiles.

Dimension H		Tolerances on H for circumscribing circle CD*		
Over	Up to & including	CD<100	100<CD ≤200	200<CD ≤300
-	10	± 0.25	± 0.30	± 0.35
10	25	± 0.30	± 0.40	± 0.50
25	50	± 0.50	± 0.60	± 0.80
50	100	± 0.70	± 0.90	± 1.10
100	150	-	± 1.10	± 1.30
150	200	-	± 1.30	± 1.50

\* These tolerances do not apply to tempers O & Tx510. for these tempers, the tolerances shall be subject to agreement between the supplier & the purchaser.

\*for Profiles with open ends, see Fig 3 & 4, tolerances for H in the area of open ends shall be increased by values specified in TABLE 2.

TABLE 2: Additions to the tolerance on cross-sectional dimension H of solid & hollow profiles with open ends.

Dimension E		Additions to the tolerances on H in tables 1 for dimensions across the ends of open ended profiles.
Over	Up to & including	
-	20	± -
20	30	± 0.15
30	40	± 0.25
40	60	± 0.40
60	80	± 0.50
80	100	± 0.60
100	125	± 0.80
125	150	± 1.00
150	180	± 1.20
180	210	± 1.40

Fig 3 below shows open end on hollow profiles. The determination on tolerance on cross sectional dimensions H is shown in the following calculation example.

Example of the tolerance across open ended profiles.

Example 1

Dimension H: 20mm

Dimension E: 100mm

Circumscribing circle CD 100mm to 200mm.

The tolerance on H according to table 1 is  $\pm 0.40\text{mm}$ ; plus the additional tolerance according to TABLE 2 which is  $\pm 0.60\text{mm}$ ; total tolerance on H is  $\pm 1.00\text{mm}$ .

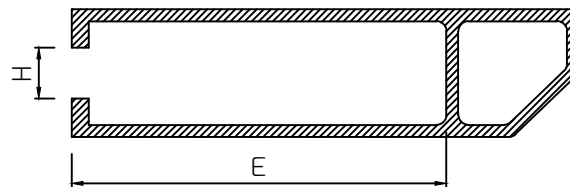


Fig 3-Hollow profile with open end

### 3.1.3 Tolerances on wall thickness of solid & hollow profiles

The tolerance on wall thickness of solid & hollow profiles shall be specified in table 3

TABLE 3: Tolerances on wall thickness for the profiles with a circumscribing circle up to & including 300mm

Nominal wall thickness A, B or C		Tolerances on wall thickness					
		Wall thickness A Circumscribing circle		Wall thickness B* Circumscribing circle		Wall thickness C Circumscribing circle	
Over	Up to & including	CD<100	100<CD ≤300	CD<100	100<CD ≤300	CD<100	100<CD ≤300
-	15	± 0.15	± 0.20	± 0.20	± 0.30	± 0.25	± 0.35
15	3	± 0.15	± 0.25	± 0.25	± 0.40	± 0.30	± 0.50
3	6	± 0.20	± 0.30	± 0.40	± 0.60	± 0.50	± 0.75
6	10	± 0.25	± 0.35	± 0.60	± 0.80	± 0.75	± 1.00
10	15	0.30	± 0.40	± 0.80	± 1.00	± 1.00	± 1.20
15	20	0.35	± 0.45	± 1.20	± 1.50	± 1.50	± 1.90
20	30	0.40	0.50	1.50	1.80	1.90	2.20
30	40	0.45	0.60	-	2.00	-	2.50
40	50	-	0.70	-	-	-	-

\* For seamless hollow profile the tolerance given for wall thickness B shall apply.

### 3.2 Length

TABLE 4: If fixed length are to be supplied, this should be stated on the order as specified on this TABLE

Circumscribing circle diameter CD		Tolerances on Fixed Length L				
Over	Up to & including	$L \leq 2000$	$2000 < L \leq 5000$	$5000 < L \leq 10000$	$10000 < L \leq 15000$	$15000 < L \leq 25000$
-	100	+5 0	+7 0	+10 0	+16 0	+22 0
100	200	+7 0	+9 0	+12 0	+18 0	+24 0

### 3.3 Squareness of cut ends

The squareness of the cut ends shall be within half of the fixed length tolerance range specified in TABLE 4 for both fixed & random length. e.g. for the fixed length tolerance of +10/0 mm. the squareness of the cut ends shall be within 5mm.

## 4. TOLERANCES ON FORMS

### 4.1 General

Tolerance on forms for O & Tx510 tempers shall be subject to agreement between purchaser & supplier.

### 4.2 Straightness

Deviation from straightness,  $h$  &  $h_1$  shall be measured as shown in Fig 4 with the profile placed on a horizontal base plate so its own mass decreases the deviation.

The straightness tolerance  $h$  shall not exceed 1.5 mm/m length. Local deviations  $H$  from the straightness shall not exceed 0.6mm/m length.

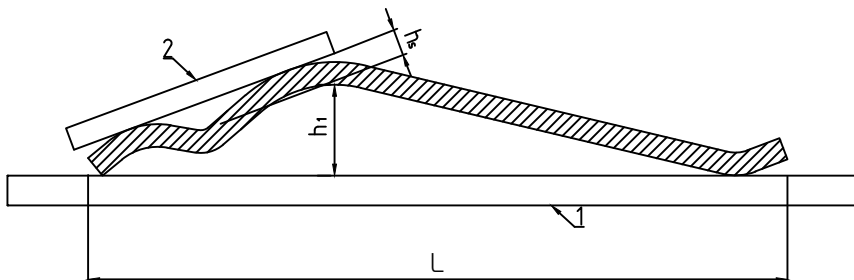


Fig 4-Measurement of deviation from straightness(1-Base plate, 2-Ruler)

### 4.3 Convexity-Concavity

The convexity-concavity shall be measured as shown in Fig 5 and 6. The maximum allowable deviation on convexity-concavity for solid & hollow profiles shall be as specified in TABLE 5 as a function of profile thickness width  $W$  & thickness  $t$ .

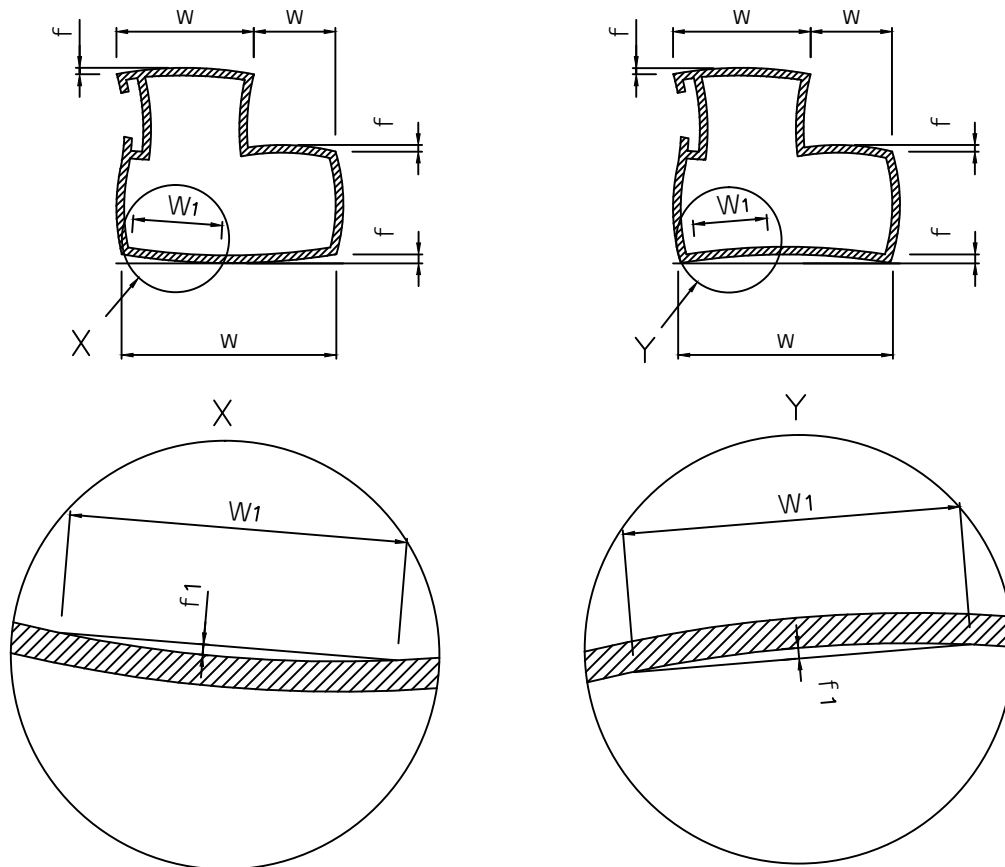


Fig 5-Measurement of convexity-concavity for hollow section

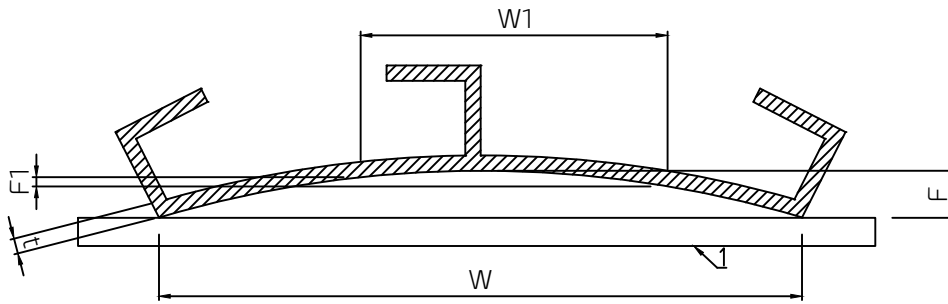


Fig 6-Measurement of convexity-concavity(1-Base plate)

TABLE 5: Convexity-concavity tolerance

Width W		Deviation F		
Over	Up to & including	Hollow Profiles		Solid profiles
		Wall Thickness $t \leq 5$	Wall Thickness $t > 5$	
-	30	0.30	0.20	0.20
30	60	0.40	0.30	0.30
60	100	0.60	0.40	0.40
100	150	0.90	0.60	0.60
150	200	1.20	0.80	0.80

\* If the profile has varying wall thickness in the measurement range, the thinnest wall shall be used.

In the case of solid & hollow profiles with a width W of at least 150 mm, the local deviation F, shall not exceed 0.7 mm for any 100 mm of width W.

#### 4.4 Contour

With any profiles with curved cross sections, the deviations at any point of the curved from the theoretically exact line as defined by the drawing, shall not be greater than the appropriate tolerance C specified in TABLE 6. Considering all points on the curve, a tolerance zero shall be defined as the zone between two envelopes running tangentially to all circles of diameter C which can be drawn with their centers lying along the theoretically exact line; this is shown in Fig 6(a&b).

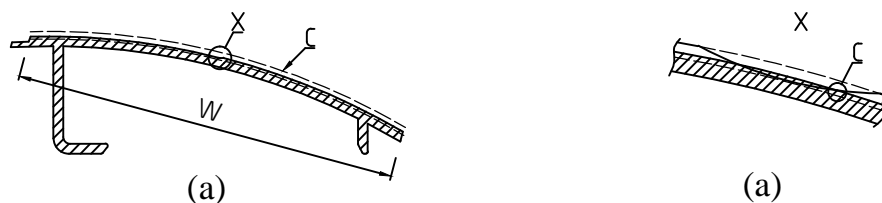


Fig 6-Definition of contour tolerances(TABLE 6)

TABLE 6: Contour tolerances

Width W of the contour		Contour tolerance = diameter C of the tolerance circle
Over	Up to & including	
-	30	0.30
30	60	0.50
60	90	0.70
90	120	1.00
120	150	1.20
150	200	1.50

#### 4.5 Twist

Twist shall be measured as shown in Fig 7 by placing the profile on a flat base plate the profile resting under own mass, & measuring the maximum distance at any point along the length between the bottom surface of the profile & the base plate surface. Tolerance shall be as specified in TABLE 7 as a function of the width W & the length L of the profile.

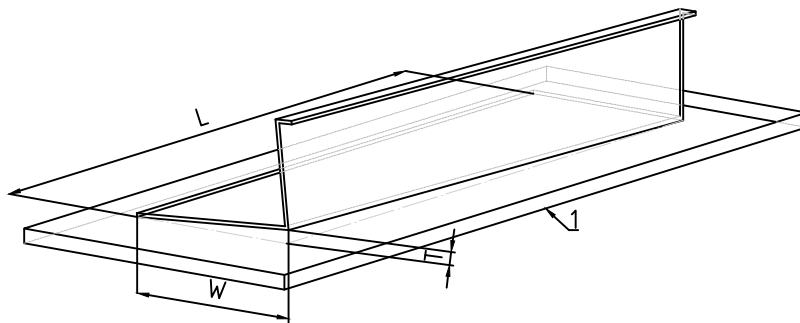


Fig 7-Twist tolerances (1-Base plate)

TABLE 7: Twist tolerance

Width W		Twist tolerance for length L		
Over	Up to & including	Per 1000 of length*	On total profile length L	
			Over 1000 & including 6000	Over 6000
-	30	1.2	2.5	3.0
30	50	1.5	3.0	4.0
50	100	2.0	3.5	5.0
100	200	2.5	5.0	7.0

\*Twist tolerance for length less than 1000 mm shall be subject to agreement between purchaser & supplier.

## 4.7 Corner & fillet radii

Sharp corners may be slightly rounded unless otherwise indicated on the drawing. The maximum allowable corners & fillet radii shall be as specified in the TABLE 9.

TABLE 9: Maximum allowable corner & fillet radii

Wall thickness A, B or C*	Maximum allowable radius
<5	0.6
>5	1.0

\*Where varying thickness were involve, the maximum allowable radius in the transition zone is a function of the greater wall thickness.

When a corner or fillet radius is specified, the maximum allowable deviation from the radius shall be as specified in TABLE 10.

TABLE 10: Maximum allowable deviation from specified corner & fillet radii

Specified Radius	Maximum allowable deviation from specified radius
<5	± 0.5
>5	± 10%



## 4.6 Angularity

The deviation from a specified angle shall be measured as shown in Fig 8 & 9. The angularity tolerance for right angles shall be as specified in TABLE 13 as a function of profile with W. The maximum allowable deviation  $\alpha$  in an angle other than right angle shall be  $\pm 1^\circ$ . in case of unequal side lengths the tolerance on angularity shall apply to the shorter side of the angle; i.e. it is measured starting from the longer side.

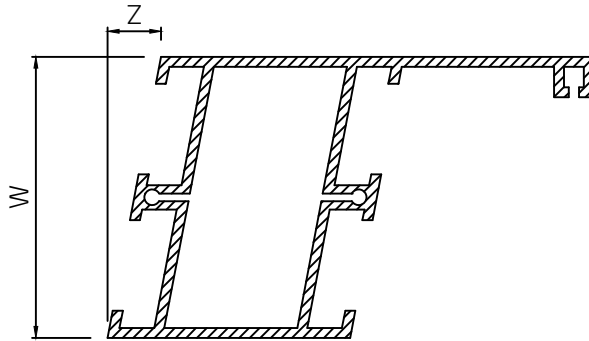


Fig 8-Measurement of angularity in a right angle

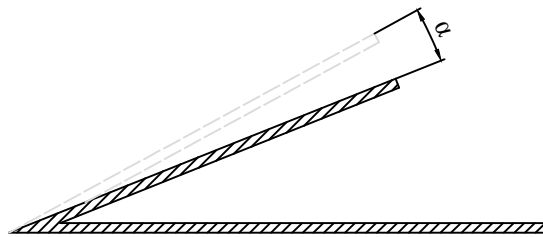


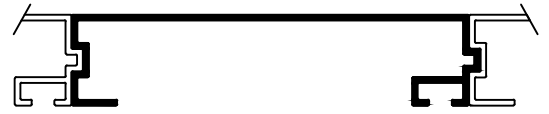
Fig 9-Measurement of angularity in a right angle

TABLE 8: Angularity tolerance for right angle

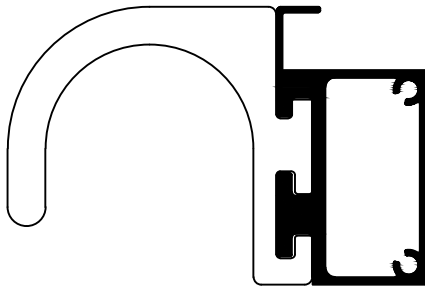
Width W		Maximum allowable deviation, Z from a right angle
Over	Up to & including	
-	30	0.4
30	50	0.7
50	80	1.0
80	120	1.4
120	180	2.0
180	240	2.6



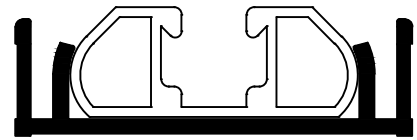
OVERLAP



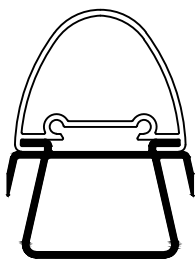
DOVE TAILING



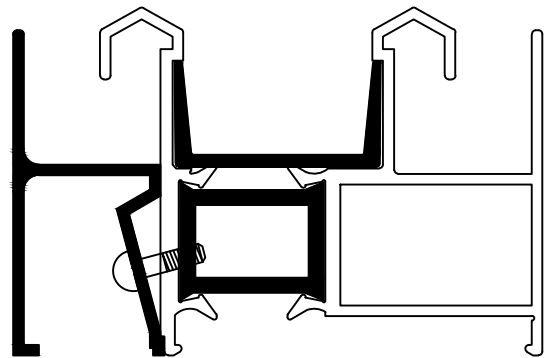
SLIDING COUPLING



SLIDING/CLIP

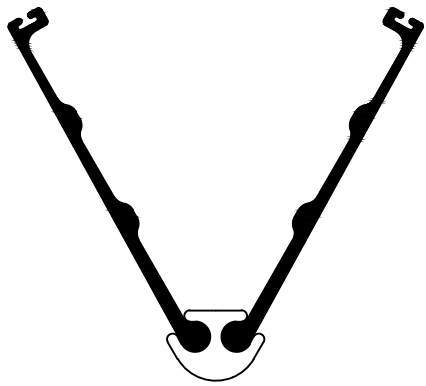


SLIDING COUPLING

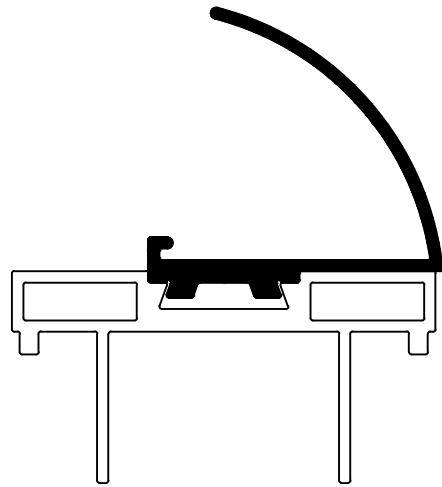


SCREWED

## JOINT RECOMMENDATIONS



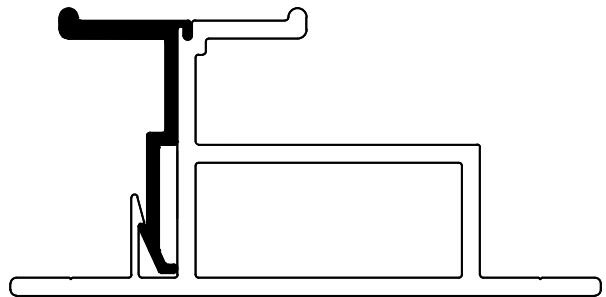
LIMITED  
ROTATION



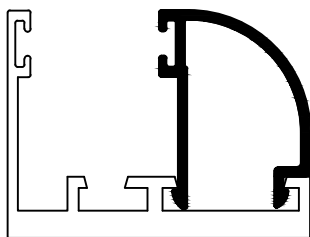
SLIDING COUPLING



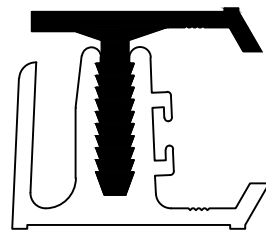
ROTARY



CLIPPING+FASTENING



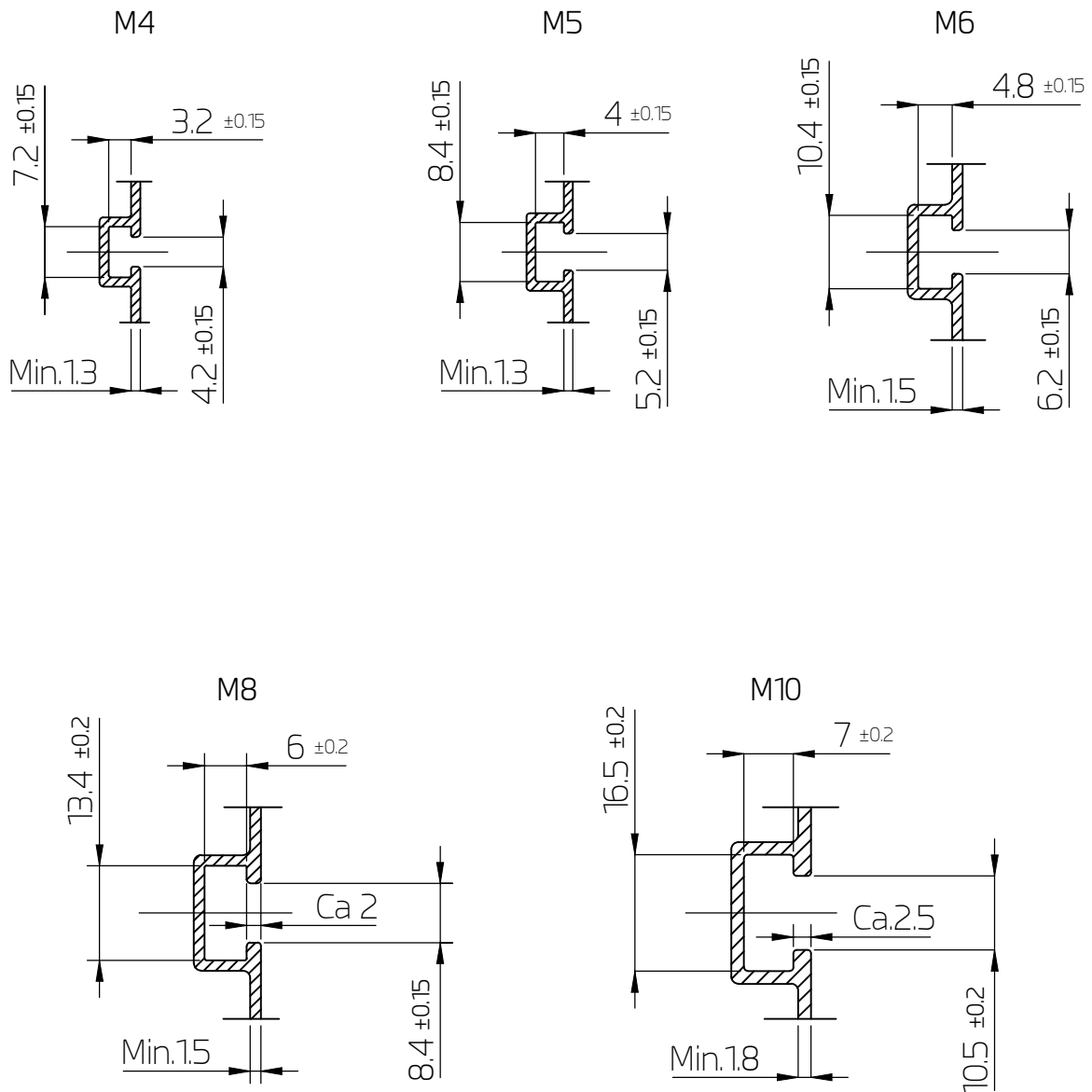
CLIPPING



IRREMOVABLE

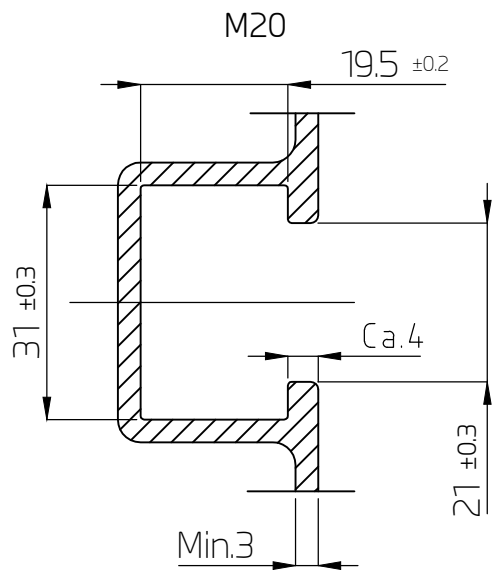
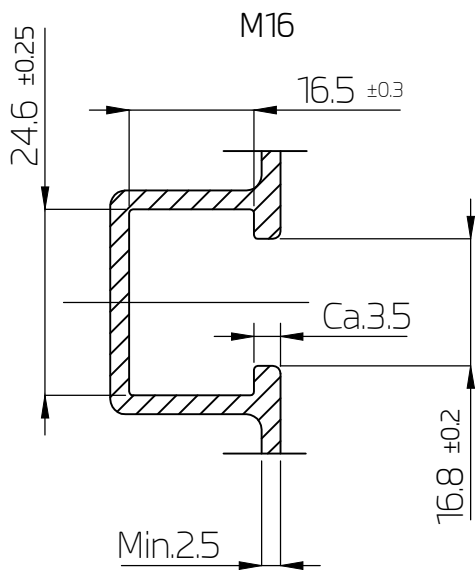
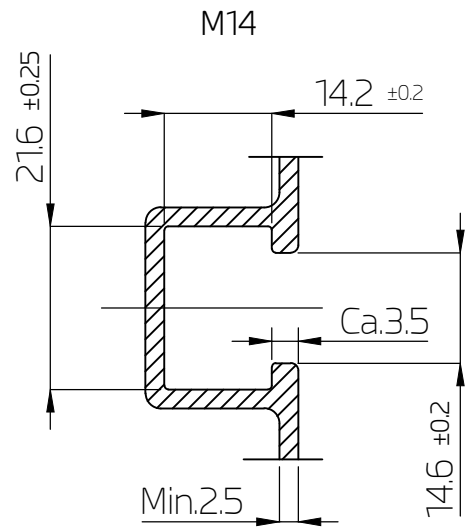
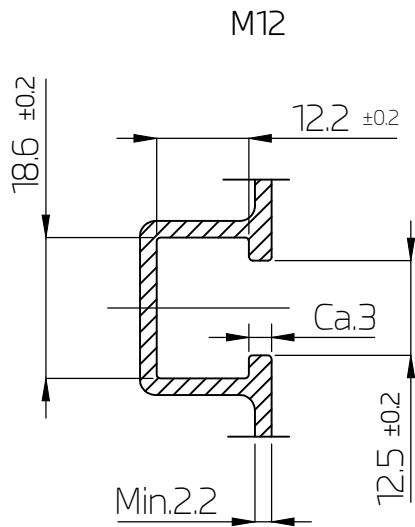
## JOINT RECOMMENDATIONS

Recommended dimensions for screw pockets that are designed for screw with dimensions and tolerances according to SS-ISO 4014/4017, DIN ISO 4014/4017.

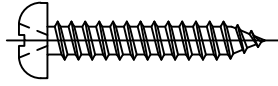


SCREW POCKETS RECOMMENDATIONS

Recommended dimensions for pockets that are designed for nuts with dimensions and tolerance according to SS-ISO 4032, DIN ISO 4032



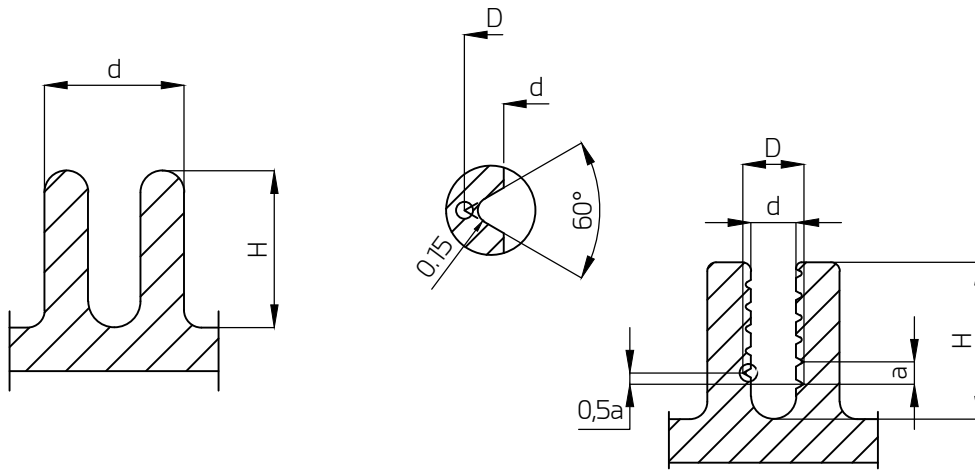
SCREW POCKETS RECOMMENDATIONS



Treadform acc. NS 1841. (ISO Recommended R 1478-1970)

Treaddepth  $> 2.5 \times \text{dia.}$

Wall thickness  $> 0.3 \times \text{dia.}$



Screw							
No.	Dia	d	H	D	d	a	H
2	2.2	1.8	5	2.2	1.6	0.79	5
4	2.9	2.4	7	2.9	2.2	1.06	7
6	3.5	2.8	8.5	3.5	2.6	1.27	8.5
7	3.9	3.2	9.5	3.9	2.9	1.34	9.5
8	4.2	3.4	10	4.2	3.0	1.41	10
10	4.8	4.0	11.5	4.8	3.5	1.59	11.5
12	5.5	4.6	13.5	5.5	4.1	1.81	13.5
14	6.3	5.3	16	6.3	4.8	1.81	16

## SCREW RECOMMENDATIONS