

ALUMASA®
ALUMÍNIO E PLÁSTICO



PREMIUM
LINHA 25





A qualidade de nossos processos garante produtos de excelência e o respeito pelas pessoas faz de nossa fábrica um ambiente de satisfação para clientes e profissionais. Possuímos as mais prestigiadas certificações do mercado e nossos mais de **50 mil metros quadrados** comportam uma capacidade produtiva para atender empresas de relevo nacional e internacional.

Investimos constantemente no desenvolvimento de nossos produtos, por isso utilizamos **matéria-prima de qualidade, maquinário moderno e profissionais altamente qualificados**, tendo como objetivo oferecer às pessoas, de forma sustentável, o que existe de melhor em produtos derivados de alumínio e plástico.

MAIS DE 50.000 M²
DE ÁREA PRODUTIVA





Almoxarifado

Pintura

Extrusão

Refusão

Uma das maiores indústrias
de alumínio do Brasil.



MAQUINÁRIO MODERNO

Investimos pesado em tecnologia, pois sabemos da responsabilidade em produzir para grandes clientes que exigem produtos de excelência.

ATENDIMENTO NACIONAL E INTERNACIONAL

Atendemos os segmentos de varejo, indústria e construção civil em 24 estados do Brasil. Nossos produtos também estão presentes em países da América Latina como Argentina, Uruguai e Paraguai.

24 Estados
do Brasil

4 Países da
América Latina



ISO 9001

Nossos setores de refusão, extrusão e montagem de escadas possuem a certificação que garante uma gestão de qualidade.



PPAP - Programa de Aprovação de Peça de Produção

É um programa dos setores de refusão e extrusão que estabelece padrões entre a empresa e seus fornecedores de peças e componentes, bem como padronização de processos de produção.

Utilizamos este programa para garantir a melhoria no controle de qualidade de seus processos, tornando um fator diferencial dos nossos produtos.

TODOS OS PROCESSOS SÃO INTERNOS, PROPORCIONANDO MAIS AUTONOMIA, CONTROLE DE QUALIDADE, AGILIDADE DE PRODUÇÃO E ENTREGA.

Entenda como funcionam os nossos processos:



PARA ATENDER NOSSOS CLIENTES COM O MÁXIMO DE AUTONOMIA!

REFUSÃO

Ligas especiais de alumínio

Somos uma das poucas indústrias que consegue desenvolver diferentes ligas de alumínio, criando soluções diferenciadas para nossos clientes.

Também é no processo de refusão que produzimos, tarugos de 4 a 8 polegadas



EXTRUSÃO

Garantia no padrão de produção

A extrusão própria de perfis garante o padrão de qualidade dos nossos produtos.



FERRAMENTARIA INTERNA

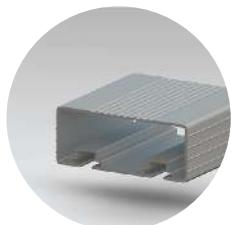
Produção de matrizes

Nosso setor de ferramentaria produz matrizes personalizadas de acordo com a necessidade do seu projeto e estrutura do perfil. Isso garante agilidade na entrega e no processo de reposição.



PERFIS INDUSTRIALIS

Possuímos diversas ligas especiais para as mais diversas aplicações de perfis industriais. Confira a diferença entre as ligas:



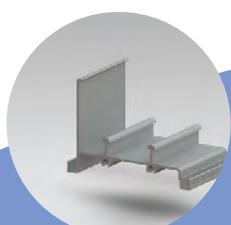
LIGA 6005

Aplicada em carrocerias e implemento rodoviário.



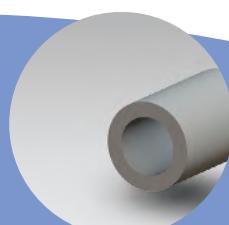
LIGA 6005A

Aplicada em conectores automotivos, membros estruturais, tubos para corrimão, tubos sem costura e estruturas de escadas.



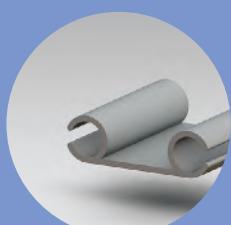
LIGA 6060

Aplicada em janelas, portas e outras aplicações em arquitetura e construção civil, divisórias, tubos para irrigação, dissipadores de calor, móveis, iluminação, ornamentos e outras.



LIGA 6061

Aplicada em acessórios e conectores elétricos, ferragens decorativas e miscelâneas, acoplamento hidráulico, componentes de freios, corpos de válvulas, componentes para uso comercial, industrial, automotiva e aeroespacial.



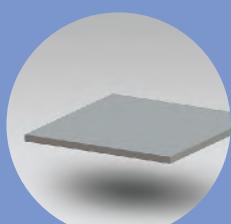
LIGA 6351

Aplicada em estruturas, carrocerias, embarcações, construção naval, veículos, equipamentos e outras.



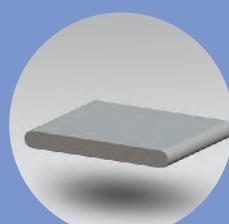
LIGA 6463

Aplicada em painéis e frisos para eletrodomésticos, automóveis, eletrônicos, móveis, entre outros.



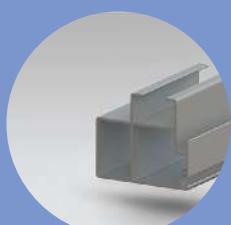
LIGA 1050

Aplicada em equipamentos para processos químicos, containers para indústria alimentícia, pólvora pirotécnica, refletores de lâmpadas e revestimentos de cabos.



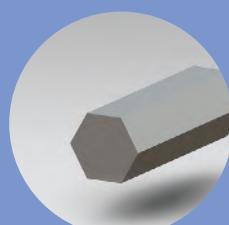
LIGA 1350

Aplicada em condutores elétricos, indústria química e alimentícia, e trocadores de calor.



LIGA 6063

Aplicada em fabricação arquitetônica, fachadas, caixilhos de janelas e portas, tubos e tubulações e móveis de alumínio.



LIGA 6262E

Aplicada em válvulas de transmissão automotiva, pistão de freio e aplicações em ar condicionado. Outras típicas aplicações incluem conectores CATV, pinos de dobradiças, peças de câmera, equipamentos de televisão e tripé, acoplamentos, acessórios marinhos, puxadores e ferragens decorativas, peças magnéticas, peças de skate, peças de ferro a vapor, válvulas e componentes da válvula.

PERFIS PARA CONSTRUÇÃO CIVIL E ARQUITETURA

Nossos perfis são amplamente reconhecidos e utilizados na construção civil e arquitetura em soluções comerciais e residenciais. Nossas linhas de perfis podem ser adaptadas aos mais diversos tipos de projetos: baixo, médio, alto e padrões premium. Conheça nossas soluções de perfis:

SISTEMA CONSTRUTIVOS PARA ESQUADRIAS

Linhos 16, 20, 25, 30, 32, 42 e 45

FACHADAS

COMPLEMENTOS ARQUITETÔNICOS



PAINEL FOTOVOLTAICO

É um material mais resistente e seguro.

Utilizado para fixação do painel em telhas mecânicas, metálicas, de fibrocimento e lajes planas.



IMPLEMENTOS RODOVIÁRIOS

Utilizado para fabricação de carrocerias, os perfis de alumínio deixam os implementos muito mais leves, facilitam a conservação e manutenção, agregam maior valor de revenda e possibilitam a reciclagem do alumínio no fim da vida útil do equipamento.

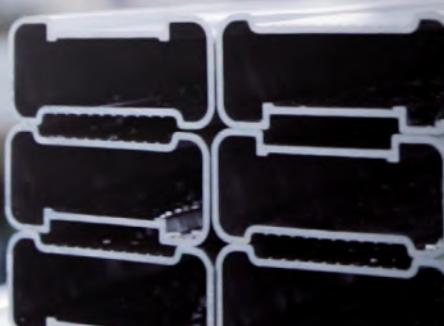
INDÚSTRIA MOVELEIRA

A utilização de perfis de alumínio para o setor moveleiro unem beleza, resistência e durabilidade na produção de móveis, acessórios, ferramentas, revestimentos, acabamentos, peças de decoração e luminárias.



INDÚSTRIA METAL MECÂNICA

Esse tipo de perfil é utilizado em setores automobilístico, naval e aeronáutico; empresas que produzem motores, painéis elétricos e transformadores; no segmento hospitalar e de instrumentos musicais.



Alguns dos produtos oferecidos nas linhas abertas padrão são: barras chatas, arremates, conexões, corrimões, divisórias, toldos e coberturas, forros e fachadas.

Efeito Madeira

O aconchego da madeira com os
benefícios do alumínio.

O Efeito Madeira nos perfis de alumínio
reproduz **cor** e **textura** da madeira,
dando um acabamento refinado e
aconchegante ao seu projeto.

Sinta nas mãos a textura da madeira,
imprima em seu projeto a beleza que só o
amadeirado provoca.

Linhas dos perfis que podem receber o Efeito
Madeira: 20, 25, 30, 32, 42, 45 e Perfis para
Construção Civil e Arquitetura.



Noz
Cód. Interno:
Noz B04

Noz
Cód. Interno:
Noz B02

Cerejeira
Cód. Interno:
Cerejeira A01

Cerejeira
Cód. Interno:
Cerejeira A02

Pinheiro
Cód. Interno:
Pinheiro A05

Carvalho
Cód. Interno:
Carvalho A03

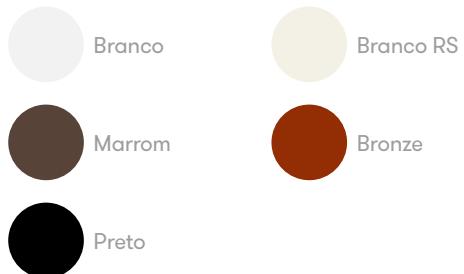
Carvalho
Cód. Interno:
Carvalho A02

PINTURA

Variedade de cores e texturas

Possuímos tipologias de 5 cores e 7 tipologias de texturas*.

Cores:



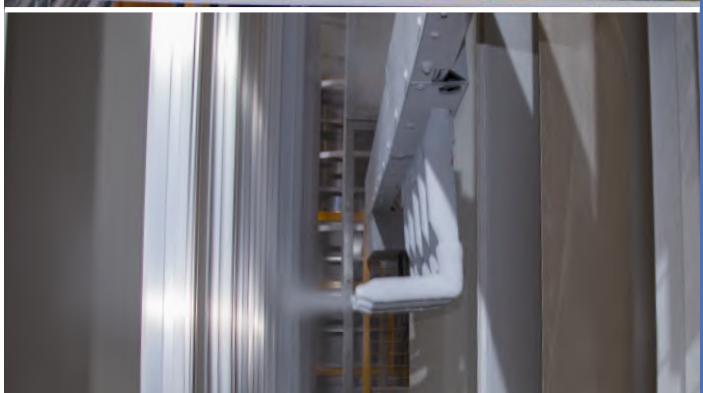
Texturas:



TOTALMENTE PERSONALIZÁVEL

Se você possui um projeto e precisa de uma cor ou textura especial, fale com a gente que solucionamos para você.

*Cores e texturas podem haver diferenças no produto final.





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LIGAS

de extrusão

Características Específicas

Liga	Resistência à Corrosão	Anodização Decorativa	Anodização Protetora	Solda MIG	Solda TIG	Usinagem	Deform. à frio	Brasagem	Outras
1050	A	A	A	A	A	E	A	A	
1350	A	A	A	A	A	E	A	A	
6463	A	A	A	A	A	D	B	A	
6351	A	D	A	A	A	C	C	C	
6262	B	C	A	A	A	B	C	A	
6063	A	A	A	A	A	D	B	A	
6061	A	D	A	A	A	C	B	B	
6060	A	A	A	A	A	C	C	A	
6005A	A	D	A	A	A	C	B	B	

Propriedades Físicas Típicas

Liga	Peso Específico (g/cm³)	Módulo de Elasticidade (MPa)	Módulo de Rrigidez (MPa)	Temperatura de Fusão (°C)	Calor Específico (0-100 °C) (Cal./g°C)	Coeficiente de Expansão Linear (L/°C)	Condutibilidade Térmica (25°) (Cal./cm°C)	Condutibilidade Elétrica (AICS)%
1050	2,7	70000	26500	650-660	0,22	24×10 ⁶	0,50	60,0
1350	2,7	70000	26500	650-660	0,22	23×10 ⁶	0,54	62,0
6463	2,71	70000	26500	600-650	0,21	23×10 ⁶	0,48	52,0
6351	2,71	70000	26500	555-650	0,21	24×10 ⁶	0,44	46,0
6262	2,71	70000	26700	582-652	0,21	23×10 ⁶	0,37	44,0
6063	2,71	70000	26500	600-650	0,21	23×10 ⁶	0,48	52,0
6061	2,71	70000	26500	580-650	0,22	24×10 ⁶	0,37	43,0
6060	2,71	70000	26500	600-650	0,21	23×10 ⁶	0,48	52,0
6005A	2,71	70000	26000	570-655	0,22	23×10 ⁶	0,44	48,5

Limites de composição Química (% em peso)

Liga	Al	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Outras ADA	TOTAL
1050	99,50	0,25	0,40	0,05	0,05	0,05	-	0,05	0,03	0,03	-
1350	99,50	0,10	0,40	0,05	0,01	-	0,01	0,05	-	0,03	0,10
6460	Rem.	0,30 - 0,70	0,15	0,20	0,20	0,20 - 0,60	0,05	0,05	0,10	0,05	0,15
6463	Rem.	0,20 - 0,60	0,15	0,20	0,05	0,45 - 0,90	-	0,05	-	0,05	0,15
6351	Rem.	0,70 - 1,30	0,50	0,10	0,40 - 0,80	0,40 - 0,80	-	0,20	0,20	0,05	0,15
6262	Rem.	0,40	-	0,15	-	0,80	0,04	-	-	-	-
6063	Rem.	0,20 - 0,60	0,35	0,10	0,10	0,45 - 0,90	0,10	0,10	0,10	0,05	0,15
6061	Rem.	0,40 - 0,80	0,70	0,10 - 0,40	0,15	0,80 - 1,20	0,04 - 0,35	0,25	0,15	0,05	0,15
6060	Rem.	0,40 - 0,80	0,15 - 0,30	0,10	0,03 - 0,20	0,30 - 0,60	0,05	0,10	0,10	0,05	0,15
6005A	Rem.	0,50 - 0,90	0,35	0,30	0,50	0,40 - 0,70	0,30	0,20	0,10	0,05	0,15

Propriedades Mecânicas

Liga e Têmpera	Limite de Resistência à Tração (MPa)		Limite Convencional de Escoamento (MPa)		Alongamento Mínimo	
	Mínimo	Máximo	Mínimo	Máximo	50 mm	5D(5,65 √A)
1050 - O	65	105	20	-	27	24
1350 - O	60	95	20	60	25	22
1350 - F	60	115	-	-	10	-
6460 T4	120	-	60	-	16	14
6460 T5	150	-	110	-	8	6
6460 T6	190	-	150	-	8	6
6463 T5	150	-	110	-	8	7
6463 T6	250	-	170	-	8	-9
6351 T4	220	-	130	-	16	14
6351 T5	260	-	140	-	8	-
6351 T6	290	-	255	-	10	9
6262 T6	289	-	251	-	10	9
6063 T4	130	-	70	-	14	12
6063 T5	150	-	110	-	8	7
6063 T6	205	-	170	-	8	-
6061 T4	180	-	110	-	16	14
6061 T5	240	-	205	-	8	7
6061 T6	260	-	240	-	8	-
6060 T4	120	-	60	-	16	14
6060 T5	150	-	110	-	8	6
6060 T6	190	-	150	-	8	6
6005A T4	180	-	90	-	15	13
6005A T5	260	-	215	-	8	-
6005A T6	270	-	225	-	8	6

Propriedades Físicas Típicas

Liga	Características	Aplicações Típicas
1050	Baixa resistência mecânica, alta resistência à corrosão, boa conformabilidade, fácil de soldar, apropriada para anodização decorativa.	Utensílios domésticos, refrigeração (trocadores de calor no geral), indústria química, farmacêutica e alimentícia.
1350	Alta condutividade elétrica, boa conformabilidade.	Ligas especiais para condutores elétricos.
6463	Média resistência mecânica, boa resistência à corrosão, boa conformabilidade. Apropriada para anodização decorativa de alto brilho.	Painéis e frisos para eletrodomésticos, automóveis e armários.
6351	Boa resistência mecânica, alta resistência à corrosão, boa conformabilidade e média usinabilidade.	Engenharia estrutural, construção de navios, veículos e equipamentos, peças usinadas em tornos.
6262	Alta resistência mecânica, alta resistência à corrosão. Ótima usinabilidade. Apropriada para anodização decorativa.	Peças usinadas em torno automático. Excelente alternativa para o latão de corte livre.
6063	Média resistência mecânica, alta resistência à corrosão, boa conformabilidade. Apropriada para anodização decorativa fosca.	Perfis para construção civil, caixilharia em geral, tubos de irrigação, móveis e iluminação.
6061	Média resistência mecânica, boa resistência à corrosão, boa conformabilidade, média usinabilidade, melhor soldabilidade.	Estruturas, construção naval, veículos, indústria moveleira e rebites.
6060	Média resistência mecânica, alta resistência à corrosão, boa conformabilidade. Apropriada para anodização decorativa fosca.	Perfis para construção civil, caixilharia em geral, tubos de irrigação, móveis e iluminação.
6005A	Boa resistência mecânica, boa resistência à corrosão, boa conformabilidade e média usinabilidade.	Carrocerias de veículos, estruturas e equipamentos.

TOLE RÂNCIA

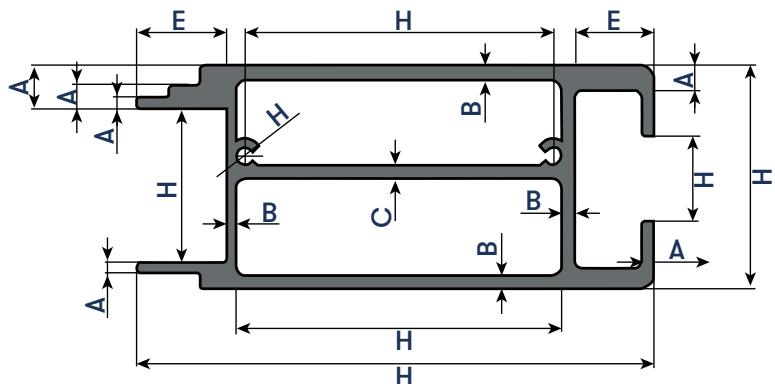
de dimensões

Grupo de Ligas	Ligas
I	1050, 1070, 1100, 1200, 1350 3003, 3004, 3102, 3103 5005 3101, 6005, 6106, 6008, 6010, 6023, 6060, 6360, 6460, 6063, 6463
II	2007, 2011, 2014, 2017, 2618, 2024, 2030 4032 5019, 5049, 5051, 5251, 5052, 5154, 5454, 5754, 5083, 5086 6012, 6013, 6014, 6018, 6026, 6042, 6351, 6061, 6261, 6262, 6064, 6065, 6081, 6082, 6182 7003, 7004, 7005, 7108, 7012, 7020, 7021, 7022, 7049, 7075

Tolerância na seção Transversal do Perfil

Para os produtos extrudados são adotadas as tolerâncias contidas na norma ABNT NBR 8116 - alumínio e suas ligas - que é baseada na ASTM (ANSI H35,2 - M). Dadas as necessidades de constante atualização da norma NBR 8116, devido aos avanços das indústrias produtoras de alumínio e as necessidades cada vez maiores das indústrias usuárias de perfis extrudados, os valores constantes desta tabela estão sujeitos a mudanças. Neste material, apresentamos apenas a tabela mais usual, sendo que informações complementares poderão ser obtidas com os técnicos da Alumasa.

A tabela apresenta as tolerâncias padronizadas. Quando nenhuma tolerância é mostrada deve ser estabelecida de comum acordo entre o comprador e fornecedor.



Adições para as tolerâncias na dimensão H em perfis sólidos e tubulares com extremidades abertas - Grupo de Ligas I e II

Dimensão E		Adicionais para as tolerâncias de H para as extremidades abertas de perfis.
Acima de	Até (inclusive)	
5	20	$\pm 0,10$
20	30	$\pm 0,20$
30	40	$\pm 0,30$
40	60	$\pm 0,50$
60	80	$\pm 0,70$
80	100	$\pm 0,80$
100	125	$\pm 1,00$
125	150	$\pm 1,20$
150	180	$\pm 1,40$
180	210	$\pm 1,60$
210	250	$\pm 1,80$
250	-	$\pm 2,00$

Dimensões em milímetros

Tolerância dimensionais para perfis sólidos e tubulares - Grupo de Ligas I

Dimensão H		Tolerâncias de H para o diâmetro do círculo circunscrito (DCC) ^{a b c}				
Acima de	Até (inclusive)	DCC ≤ 100	100 < DCC ≤ 200	200 < DCC ≤ 300	300 < DCC ≤ 500	500 < DCC ≤ 800
-	10	± 0,20	± 0,25	± 0,30	± 0,40	± 0,50
10	25	± 0,25	± 0,30	± 0,40	± 0,50	± 0,70
25	50	± 0,40	± 0,50	± 0,60	± 0,70	± 1,00
50	100	± 0,60	± 0,70	± 0,90	± 1,10	± 1,50
100	150	-	± 0,90	± 1,10	± 1,30	± 1,70
150	200	-	± 1,10	± 1,30	± 1,50	± 2,00
200	300	-	-	± 1,50	± 1,90	± 2,40
300	450	-	-	-	± 2,60	± 3,00
450	600	-	-	-	± 3,40	± 4,20
600	800	-	-	-	-	± 5,00

Dimensões em milímetros

^a Estas tolerâncias não são aplicadas à témpera O. Para estas têmperas, as tolerâncias devem ser especificadas em contrato entre fornecedor e comprador.

^b Para perfis com extremidades abertas as tolerâncias para H na área da abertura devem ser somadas aos valores específicos

^c Tolerâncias de massa para perfis tubulares, utilizar tolerância de planicidade ára controlar o vazio.

Tolerância dimensionais para perfis sólidos e tubulares - Grupo de Ligas II

Dimensão H		Tolerâncias de H para o diâmetro do círculo circunscrito (DCC) ^{a b c}				
Acima de	Até (inclusive)	DCC ≤ 100	100 < DCC ≤ 200	200 < DCC ≤ 300	300 < DCC ≤ 500	500 < DCC ≤ 800
-	10	± 0,30	± 0,40	± 0,50	± 0,60	± 0,70
10	25	± 0,40	± 0,60	± 0,70	± 0,80	± 1,10
25	50	± 0,60	± 0,80	± 0,80	± 1,00	± 1,30
50	100	± 0,80	± 1,00	± 1,20	± 1,40	± 1,80
100	150	-	± 1,20	± 1,50	± 1,70	± 2,00
150	200	-	± 1,60	± 1,90	± 2,10	± 2,70
200	300	-	-	± 2,20	± 2,50	± 3,10
300	450	-	-	-	± 3,00	± 3,80
450	600	-	-	-	± 4,00	± 5,00
600	800	-	-	-	-	± 6,00

Dimensões em milímetros

^a Estas tolerâncias não são aplicadas à témpera O. Para estas têmperas, as tolerâncias devem ser especificadas em contrato entre fornecedor e comprador.

^b Para perfis com extremidades abertas as tolerâncias para H na área da abertura devem ser somadas aos valores específicos

^c Tolerâncias de massa para perfis tubulares, utilizar tolerância de planicidade ára controlar o vazio.

TOLERÂNCIA

de dimensões

Espessura da Parede A B C

Tolerância dimensionais para perfis sólidos e tubulares - Grupo de Ligas I

Espessura de parede nominal para A,B ou C		Tolerâncias de espessura de parede					
		Espessura da parede A		Espessura da parede B		Espessura da parede C	
Acima de	Até (inclusive)	DCC \leq 100	100 $<$ DCC \leq 300	DCC \leq 100	100 $<$ DCC \leq 300	DCC \leq 100	100 $<$ DCC \leq 300
-	1,5	$\pm 0,12$	$\pm 0,16$	$\pm 0,16$	$\pm 0,24$	$\pm 0,21$	$\pm 0,30$
1,5	3,0	$\pm 0,12$	$\pm 0,20$	$\pm 0,20$	$\pm 0,32$	$\pm 0,26$	$\pm 0,43$
3,0	6,0	$\pm 0,16$	$\pm 0,24$	$\pm 0,32$	$\pm 0,48$	$\pm 0,43$	$\pm 0,64$
6,0	10,0	$\pm 0,20$	$\pm 0,28$	$\pm 0,48$	$\pm 0,64$	$\pm 0,64$	$\pm 0,85$
10,0	15,0	$\pm 0,24$	$\pm 0,32$	$\pm 0,64$	$\pm 0,80$	$\pm 0,85$	$\pm 1,02$
15,0	20,0	$\pm 0,28$	$\pm 0,36$	$\pm 0,96$	$\pm 1,20$	$\pm 1,28$	$\pm 1,62$
20,0	30,0	$\pm 0,32$	$\pm 0,40$	$\pm 1,20$	$\pm 1,44$	$\pm 1,62$	$\pm 1,87$
30,0	40,0	$\pm 0,36$	$\pm 0,48$	-	$\pm 1,60$	-	$\pm 2,13$
40,0	50,0	-	$\pm 0,56$	-	-	-	-

Dimensões em milímetros

^a Para perfis tubulares sem costura, a tolerância apresentada para espessura de parede C deve ser utilizada.

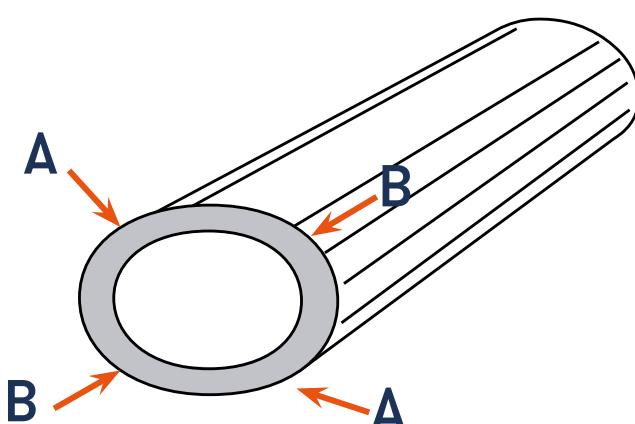
Tolerância nas espessuras dos perfis com DCC \leq 300 - Grupo de Ligas II

Espessura de parede nominal para A,B ou C		Tolerâncias de espessura de parede					
		Espessura da parede A		Espessura da parede B		Espessura da parede C	
Acima de	Até (inclusive)	DCC \leq 100	100 $<$ DCC \leq 300	DCC \leq 100	100 $<$ DCC \leq 300	DCC \leq 100	100 $<$ DCC \leq 300
-	1,5	$\pm 0,15$	$\pm 0,20$	$\pm 0,20$	$\pm 0,30$	$\pm 0,25$	$\pm 0,35$
1,5	3,0	$\pm 0,15$	$\pm 0,25$	$\pm 0,25$	$\pm 0,40$	$\pm 0,30$	$\pm 0,50$
3,0	6,0	$\pm 0,20$	$\pm 0,30$	$\pm 0,40$	$\pm 0,60$	$\pm 0,50$	$\pm 0,75$
6,0	10,0	$\pm 0,25$	$\pm 0,35$	$\pm 0,60$	$\pm 0,80$	$\pm 0,75$	$\pm 1,00$
10,0	15,0	$\pm 0,30$	$\pm 0,40$	$\pm 0,80$	$\pm 1,00$	$\pm 1,00$	$\pm 1,20$
15,0	20,0	$\pm 0,35$	$\pm 0,45$	$\pm 1,20$	$\pm 1,50$	$\pm 1,50$	$\pm 1,90$
20,0	30,0	$\pm 0,40$	$\pm 0,50$	$\pm 1,50$	$\pm 1,80$	$\pm 1,90$	$\pm 2,20$
30,0	40,0	$\pm 0,45$	$\pm 0,60$	-	$\pm 2,00$	-	$\pm 2,50$
40,0	50,0	-	$\pm 0,70$	-	-	-	-

Dimensões em milímetros

^a Para perfis tubulares sem costura, a tolerância apresentada para espessura de parede C deve ser utilizada.

Diâmetros de tubos redondos



Dimensões AA e BB para diâmetro de tubos redondos.

Tolerância no diâmetro externo nominal de tubos somente extrudados.

Diâmetro nominal ^a		Tolerâncias para diâmetro externo ^b			
Acima de	Até (inclusive)	Desvio permitível entre os diâmetros médio e nominal - Diferença entre $1/2 [AA+BB]^d$ e o diâmetro nominal.		Desvio permitível entre o diâmetro em qualquer ponto e o diâmetro nominal - Diferença entre AA^d ou BB^d e o diâmetro nominal ^c .	
		Grupo de Ligas I	Grupo de Ligas II	Grupo de Ligas I	Grupo de Ligas II
6,00	12,5	± 0,15	± 0,23	± 0,30	± 0,46
12,5	25,0	± 0,19	± 0,29	± 0,38	± 0,57
25,0	50,0	± 0,23	± 0,35	± 0,48	± 0,72
50,0	100,0	± 0,29	± 0,44	± 0,57	± 0,86
100,0	150,0	± 0,48	± 0,72	± 0,94	± 1,43
150,0	200,0	± 0,66	± 1,01	± 1,43	± 2,14
200,0	250,0	± 0,86	± 1,31	± 1,91	± 2,85
250,0	300,0	± 1,05	± 1,58	± 2,40	± 3,60
300,0	350,0	± 1,24	± 1,88	± 2,85	± 4,28
350,0	400,0	± 1,43	± 2,14	± 3,34	± 5,03
400,0	450,0	± 1,61	± 2,44	± 3,83	± 5,70

Dimensões em milímetros

^a Se forem especificados o diâmetro externo, o diâmetro interno e a espessura da parede, as tolerâncias podem ser aplicadas a duas destas dimensões, mas não a todas as três. Se forem especificados os diâmetros esterno e interno, ou o diâmetro interno e a espessura da parede, a tolerância aplicável ao diâmetro esterno especificado ou calculado aplica-se ao diâmetro interno.

^b Se uma tolerância dimensional especificada não for simétrica, o valor da tolerância-padrão é o mesmo que seria aplicado à medida das dimensões máxima e mínima permitíveis pela tolerância inicialmente especificada.

^c Não se aplica aos tubos recozidos (têmpera O) nem aos tubos cuja espessura de parede seja inferior a 2,5% do diâmetro externo.

Comprimento de corte

Tolerâncias para comprimentos de corte

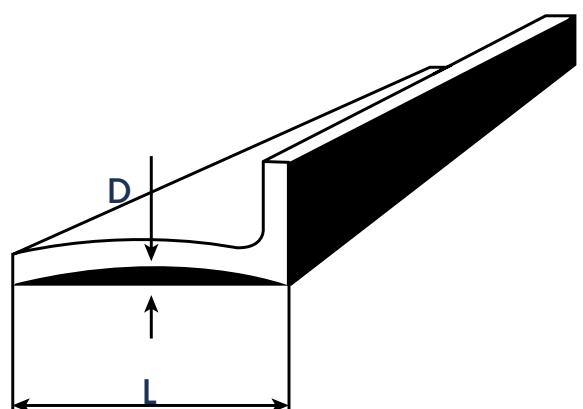
Diâmetro do círculo circunscrito		Tolerâncias para comprimento, C				
Acima de	Até (inclusive)	$C \le 200$	$2.000 < C \le 5.000$	$5.000 < C \le 10.000$	$10.000 < C \le 15.000$	$15.000 < C \le 25.000$
-	100	+ 4	+ 5	+ 7	+ 10	+ 22
100	200	+ 6	+ 7	+ 9	+ 12	+ 24
200	450	+ 7	+ 9	+ 12	+ 15	+ 25
450	800	+ 9	+ 14	+ 16	+ 22	+ 30

Dimensões em milímetros

Planicidade

Desvio de planicidade para perfis, barras e tubos extrudados, exceto redondos.

Fator de tolerância para cálculo do desvio máximo de planicidade de perfis, barras e tubos extrudados, exceto redondos.



TOLERÂNCIA

de dimensões

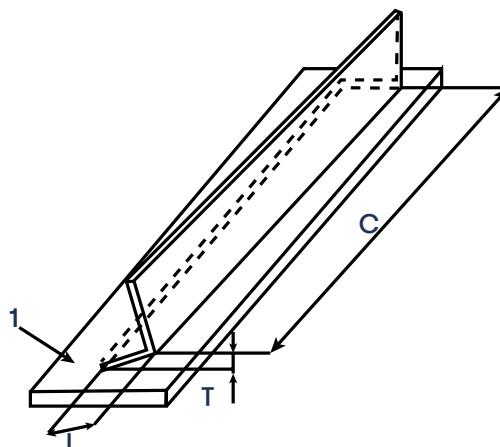
Espessura mínima (e)		Fator de tolerância (F) em função da largura (L)					
Acima de	Até (inclusivo)	L ≤ 200	200 < L ≤ 250	250 < L ≤ 300	300 < L ≤ 350	350 < L ≤ 450	L > 450
-	3,20	0,004	0,006	0,008	0,009	0,010	-
3,20	4,00	0,004	0,006	0,008	0,008	0,009	0,010
4,00	5,00	0,004	0,006	0,007	0,008	0,008	0,008
5,00	6,30	0,004	0,004	0,007	0,008	0,008	0,008
6,30	8,00	0,004	0,004	0,006	0,008	0,008	0,008
8,00	12,50	0,004	0,004	0,006	0,006	0,006	0,006
12,50	25,00	0,004	0,004	0,004	0,006	0,006	0,006
25,00	40,00	0,004	0,004	0,004	0,004	0,006	0,006
40,00	-	0,004	0,004	0,004	0,004	0,004	0,004

Dimensões em milímetros

Torção

Legenda

- 1 Mesa de desempenho
- L Largura
- T Torção
- C Comprimento



Medição da torção

Tolerâncias de torção para vergalhões quadrado, retangular e hexagonal

Largura (L)		Tolerância de torção	
Acima de	Até (inclusivo)	Por 1.000 mm de comprimento	No comprimento total
6	10	1,0	2,5
10	30	1,2	3,0
30	50	1,5	4,0
50	120	2,0	5,0
120	240	3,0	8,0
240	350	4,0	10,0
350	450	5,0	12,0
450	600	6,0	14,0

Dimensões em milímetros

Tolerâncias de torção para perfis com secção transversal diferente de vergalhões quadrado, retangular e hexagonal

Largura (L)		Tolerância de torção		
Acima de	Até (inclusive)	Por 1.000 mm de comprimento ^a	No comprimento total, C	
			C ≤ 6.000	C > 6.000
10	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
200	350	2,5	6,0	8,0
350	450	3,0	8,0	1,5 × L (L em metros)
450	600	3,5	9,5	
600	800	4,5	10,0	

Dimensões em milímetros

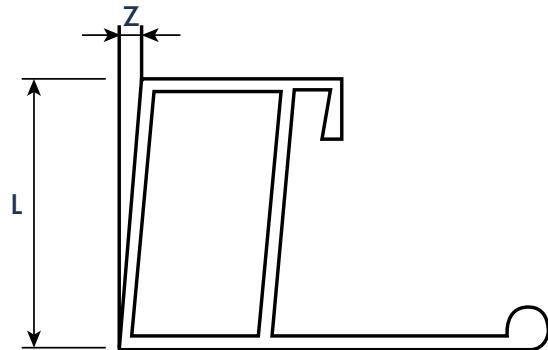
^a Tolerâncias de torção para comprimentos menores que 1.000 mm devem ser acordadas entre fornecedor e comprador.

Angularidade

Legenda

Z Desvio máx. permitido para um ângulo reto

L Largura



Tolerâncias de angularidade para ângulos retos em vergalhões quadrado e retangular

Acima de	Largura (L)	Desvio máximo permitido (Z) de um ângulo reto
	Até (inclusive)	
2	10	0,1
10	100	0,01 × largura
100	180	1,0
180	220	1,5

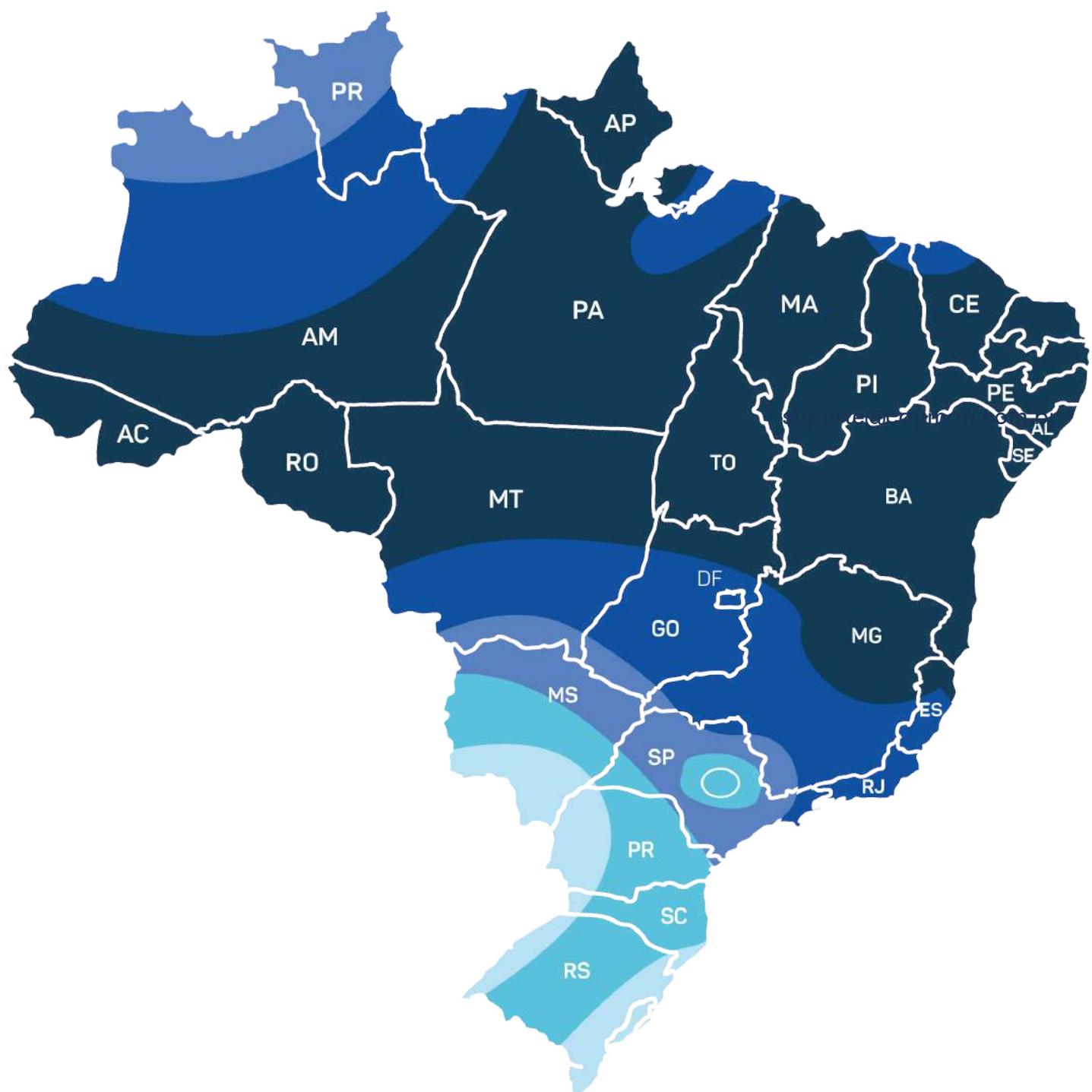
Dimensões em milímetros

Tolerâncias de angularidade para ângulos retos em perfis

Acima de	Largura (L)	Desvio máximo permitido (Z) de um ângulo reto
	Até (inclusive)	
-	30	0,4
30	50	0,7
50	80	1,0
80	120	1,4
120	180	2,0
180	240	2,6
240	300	3,1
300	400	3,5

Dimensões em milímetros

ISOLETA DOS VENTOS



Região 1 até 30 m/s até 108 km/h

Região 2 30 - 35 m/s 108 - 126 km/h

Região 3 35 - 40 m/s 126 - 144 km/h

Região 4 40 - 45 m/s 144 - 162 km/h

Região 5 45 - 50 m/s 162 - 180 km/h

Velocidade dos ventos por região conforme Norma NBR-10821.

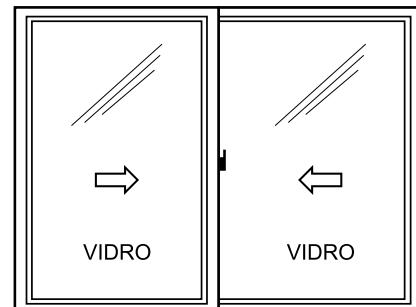
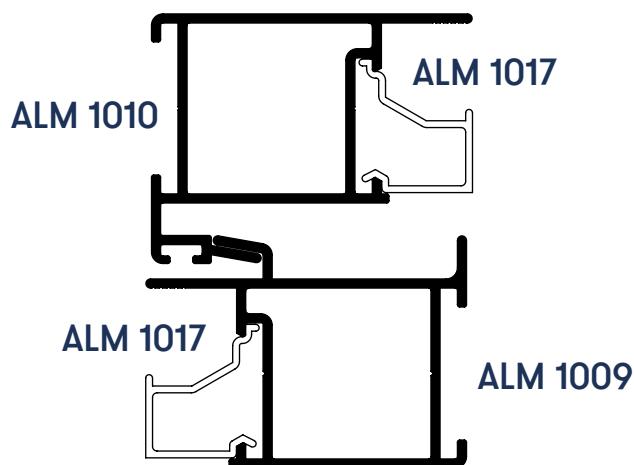
Tabela 1 (ABNT NBR 10821-2:2016) - Valores de pressão de vento conforme a região do país e o número de pavimentos da edificação.

Quantidade de Pavimentos	Altura Máxima (m)	Região do País	Pressão de Ensaio (Pa)	Pressão de Segurança (Pa)	Pressão de Água (Pa)
			$P_e = P_p \times 1,2$	$P_s = P_e \times 1,5$	$P_a = P_p \times 0,20$
02	06	I	350	520	60
		II	470	700	80
		III	610	920	100
		IV	770	1160	130
		V	950	1430	160
05	15	I	420	640	70
		II	580	860	100
		III	750	1130	130
		IV	950	1430	160
		V	1180	1760	200
10	30	I	500	750	80
		II	680	1030	110
		III	890	1340	150
		IV	1130	1700	190
		V	1400	2090	230
20	60	I	600	900	100
		II	815	1220	140
		III	1060	1600	180
		IV	1350	2020	220
		V	1660	2500	280
30	90	I	660	980	110
		II	890	1340	150
		III	1170	1750	200
		IV	1480	2210	250
		V	1820	2730	300



TIPOLOGIAS

Janela de Correr 2 Folhas

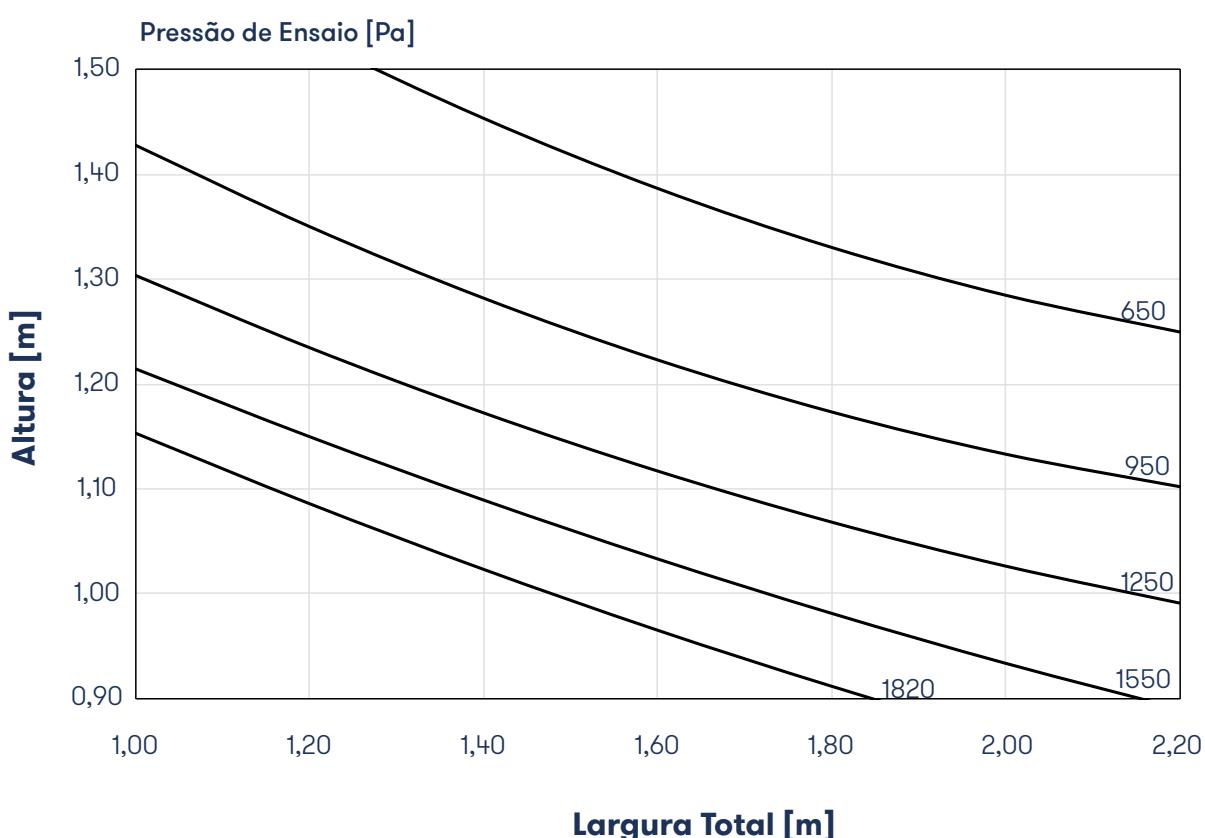


ALM 1009

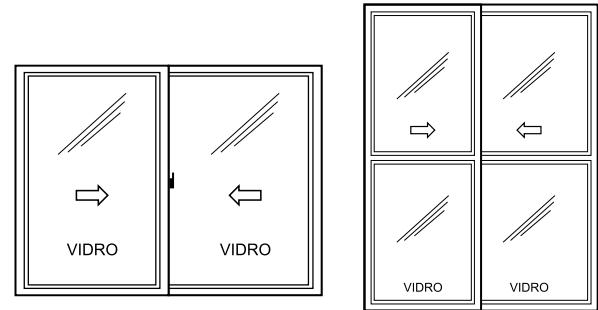
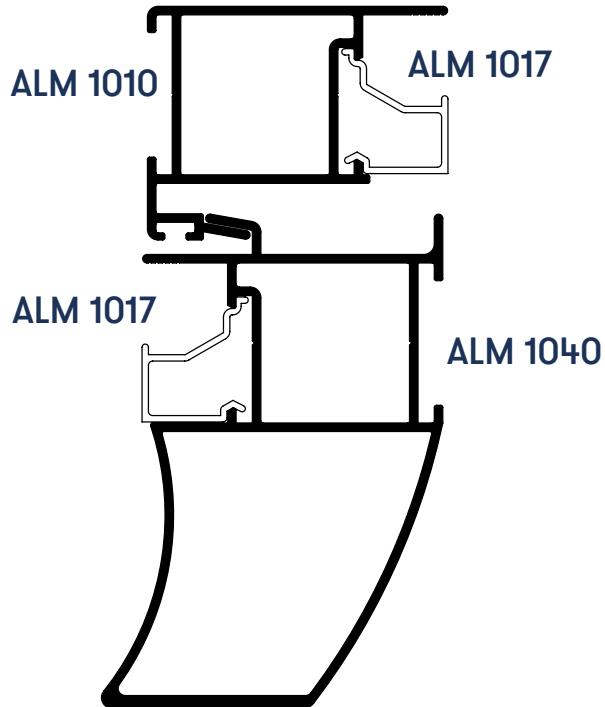
Descrição	S.I.	Valor
Momento de Inércia	I _{xx}	19.569,43 mm ⁴
Momento Polar	W _{xx}	1.279,05 mm ³

ALM 1010

Descrição	S.I.	Valor
Momento de Inércia	I _{xx}	25.024,32 mm ⁴
Momento Polar	W _{xx}	1.357,07 mm ³

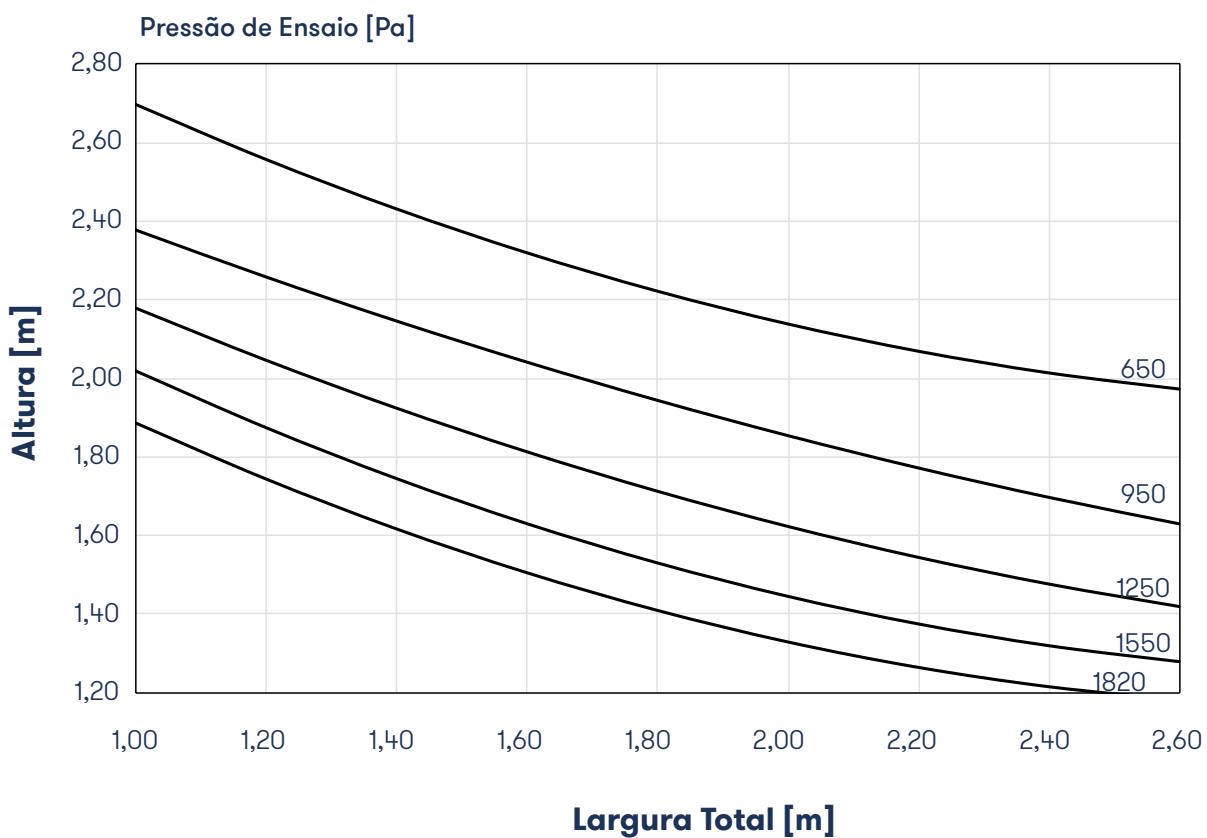


Porta/Janela de Correr 2 Folhas

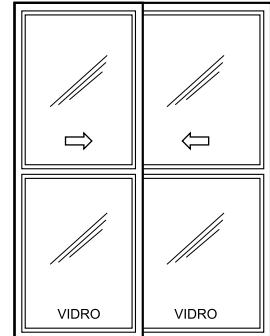
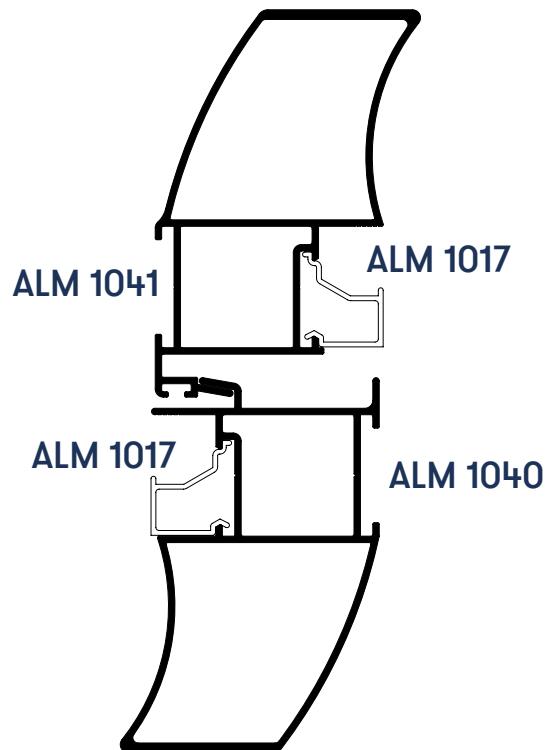


ALM 1010		S.I.	Valor
Descrição			
Momento de Inércia	I _{xx}	25.024,32 mm ⁴	
Momento Polar	W _{xx}	1.357,07 mm ³	

ALM 1040		S.I.	
Descrição			
Momento de Inércia	I _{xx}	183.044,53 mm ⁴	
Momento Polar	W _{xx}	5.166,37 mm ³	



Porta de Correr 2 Folhas

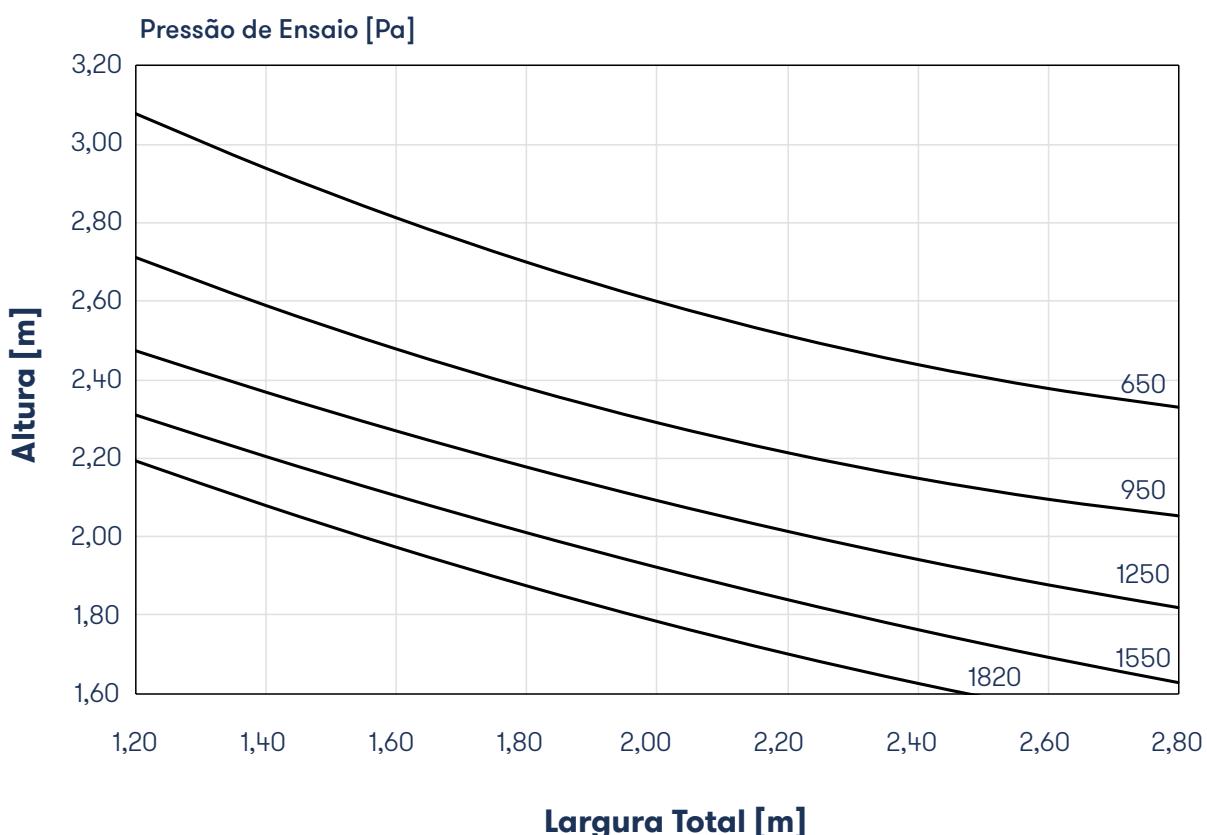


ALM 1041

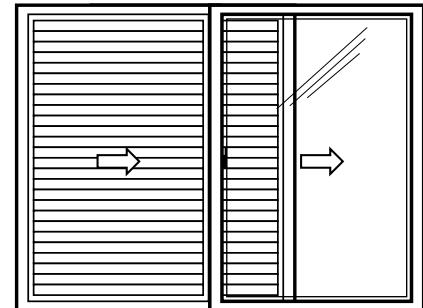
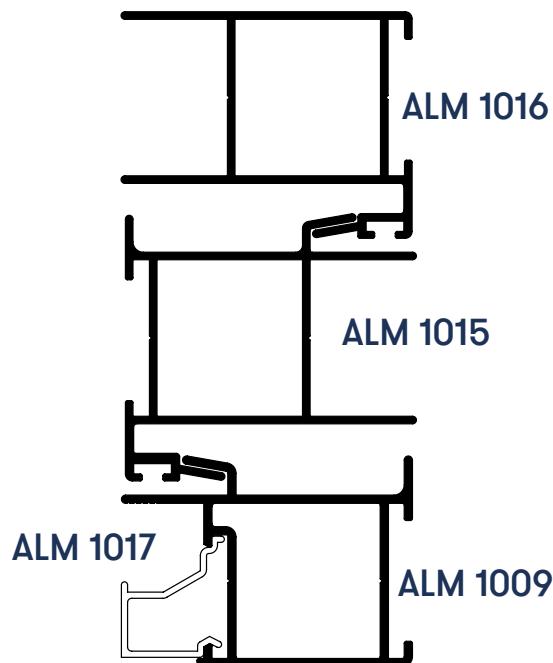
Descrição	S.I.	Valor
Momento de Inércia	I _{xx}	186.914,28 mm ⁴
Momento Polar	W _{xx}	5.217,13 mm ³

ALM 1040

Descrição	S.I.	Valor
Momento de Inércia	I _{xx}	183.044,53 mm ⁴
Momento Polar	W _{xx}	5.166,37 mm ³



Janela de Correr 3 Folhas

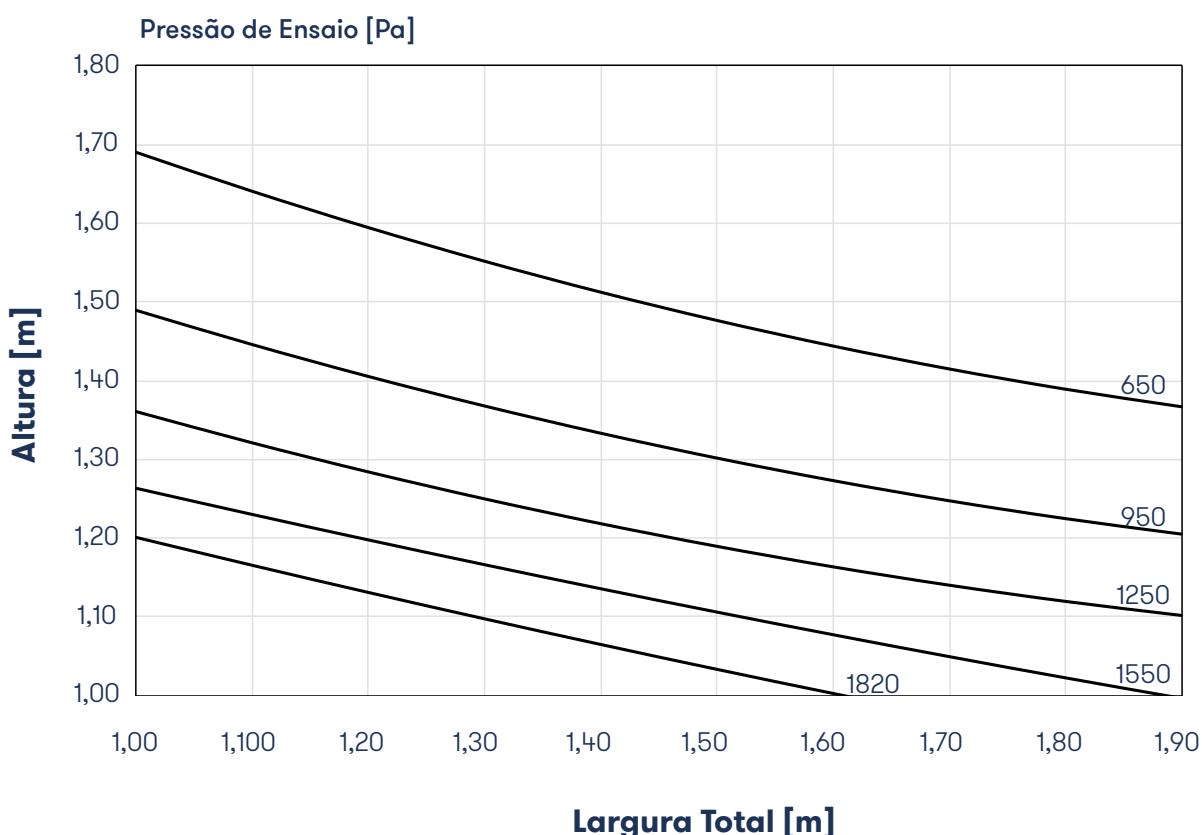


ALM 1016

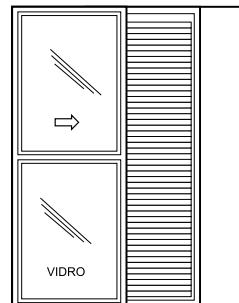
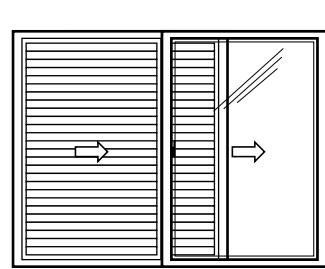
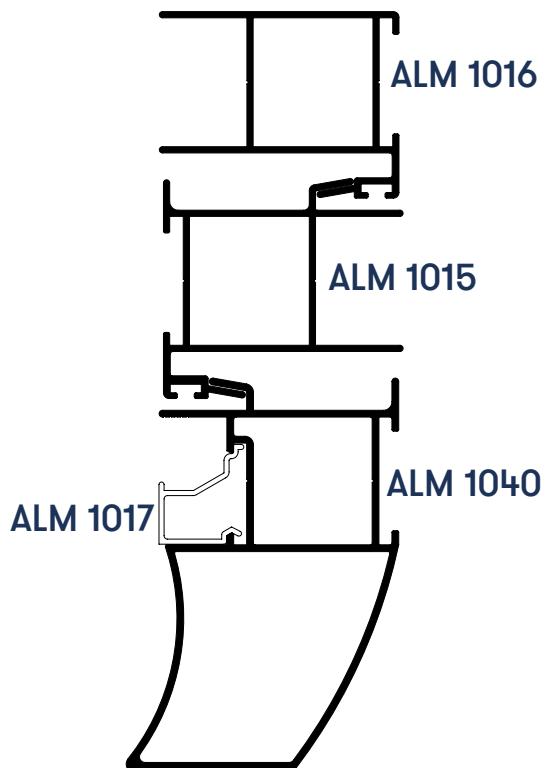
Descrição	S.I.	Valor
Momento de Inércia	I _{xx}	24.072,68 mm ⁴
Momento Polar	W _{xx}	1.317,66 mm ³

ALM 1015

Descrição	S.I.	
Momento de Inércia	I _{xx}	31.038,64 mm ⁴
Momento Polar	W _{xx}	1.604,89 mm ³



Porta/Janela de Correr 3 Folhas

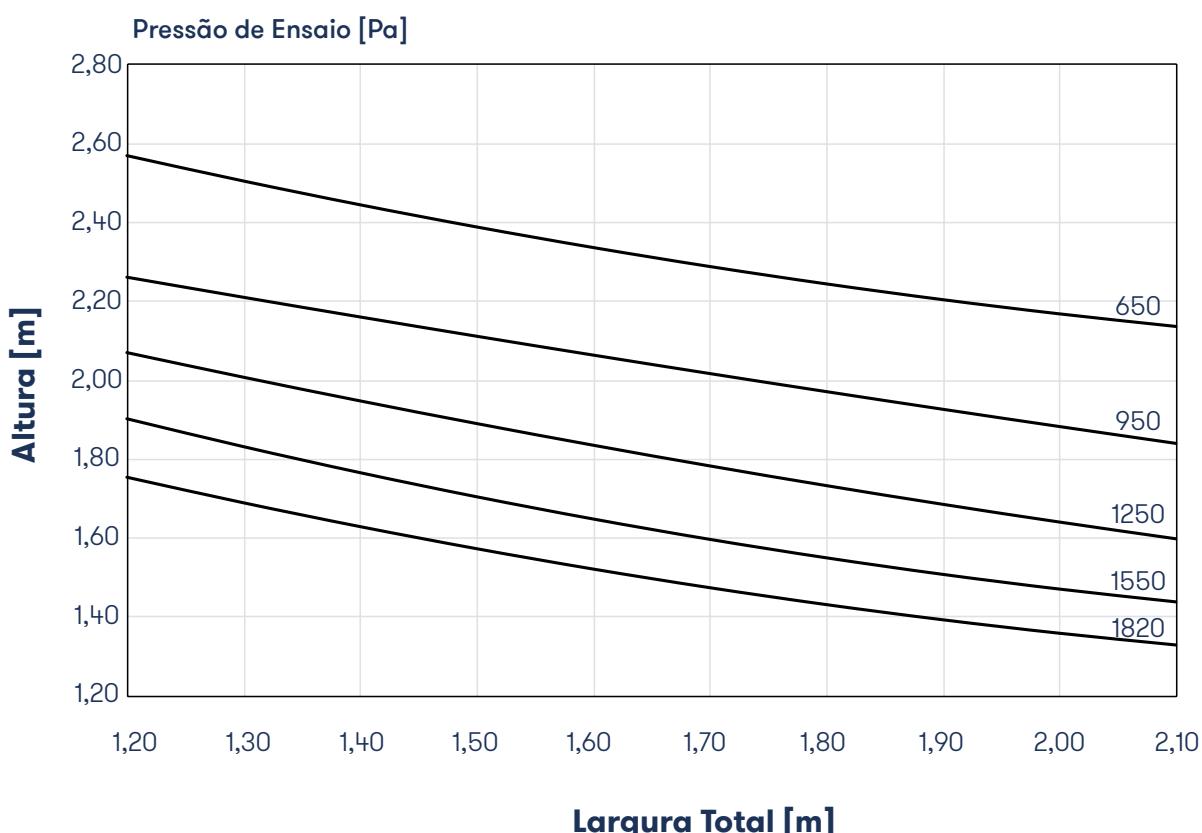


ALM 1015

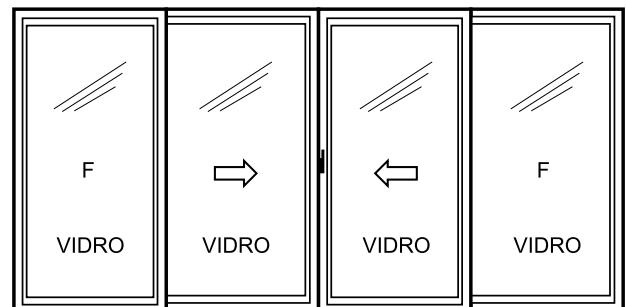
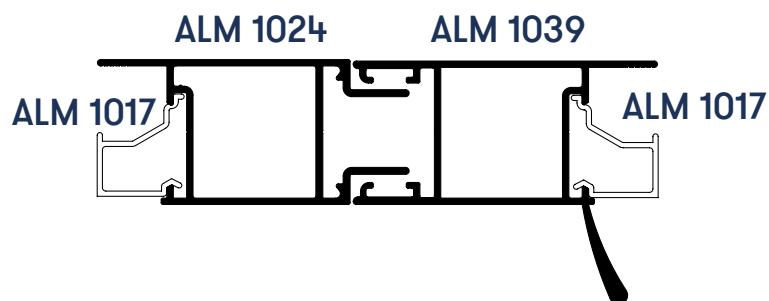
Descrição	S.I.	Valor
Momento de Inércia	I _{xx}	31.038,64 mm ⁴
Momento Polar	W _{xx}	1.604,89 mm ³

ALM 1040

Descrição	S.I.	Valor
Momento de Inércia	I _{xx}	183.044,53 mm ⁴
Momento Polar	W _{xx}	5.166,37 mm ³



Janela de Correr 4 Folhas

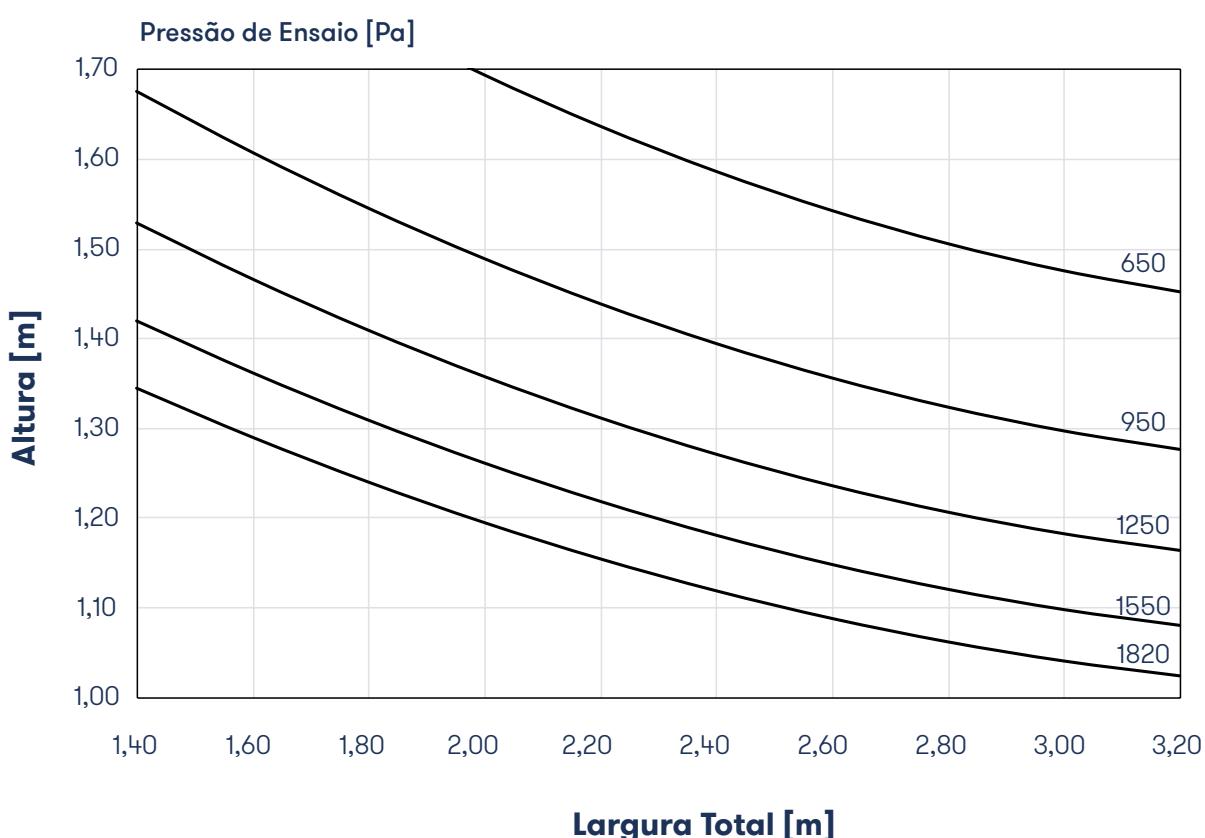


ALM 1024

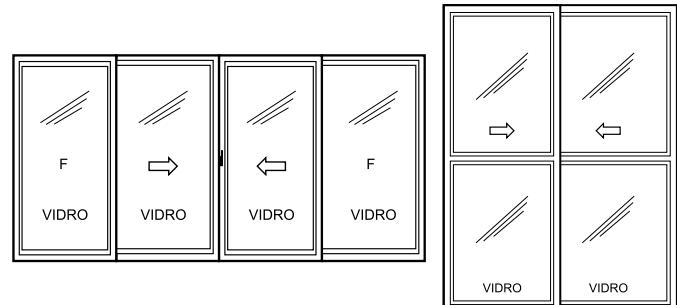
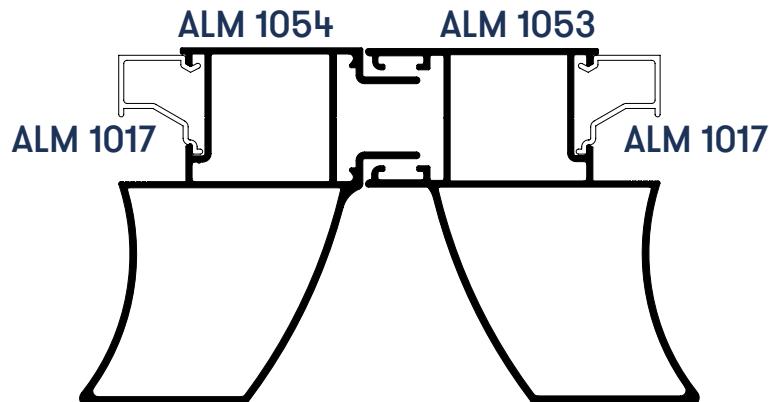
Descrição	S.I.	Valor
Momento de Inércia	I _{xx}	17.025,84 mm ⁴
Momento Polar	W _{xx}	1.275,34 mm ³

ALM 1039

Descrição	S.I.	
Momento de Inércia	I _{xx}	36.399,27 mm ⁴
Momento Polar	W _{xx}	3.935,06 mm ³



Porta/Janela de Correr 4 Folhas

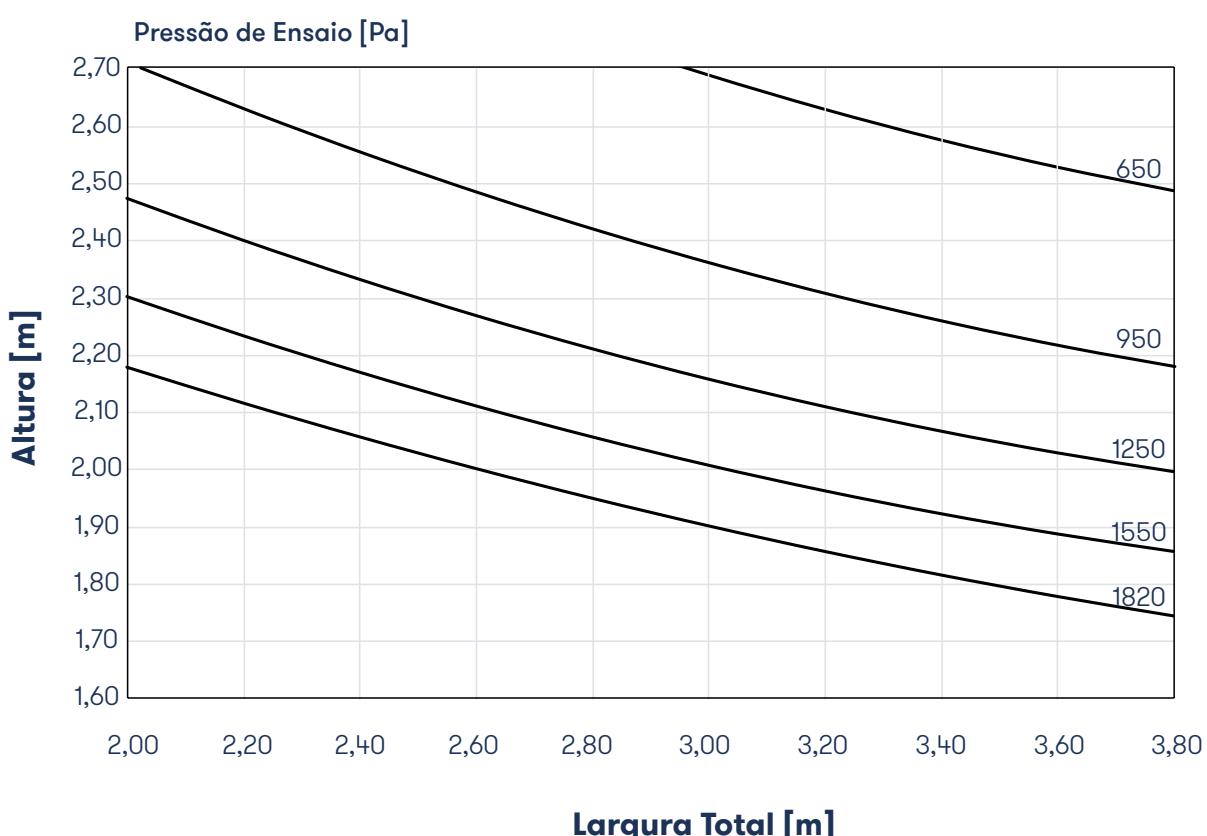


ALM 1054

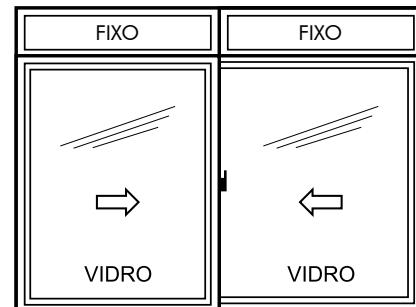
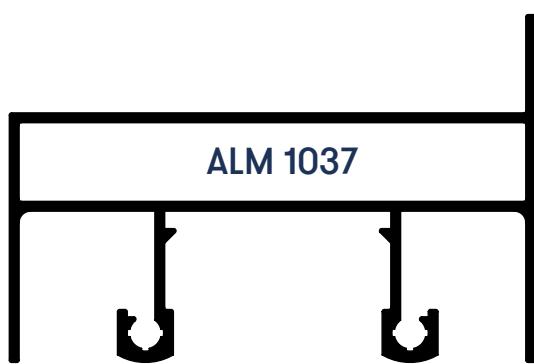
Descrição	S.I.	Valor
Momento de Inércia	I _{xx}	159.054,73 mm ⁴
Momento Polar	W _{xx}	4.714,13 mm ³

ALM 1053

Descrição	S.I.	Valor
Momento de Inércia	I _{xx}	158.738,92 mm ⁴
Momento Polar	W _{xx}	4.748,40 mm ³

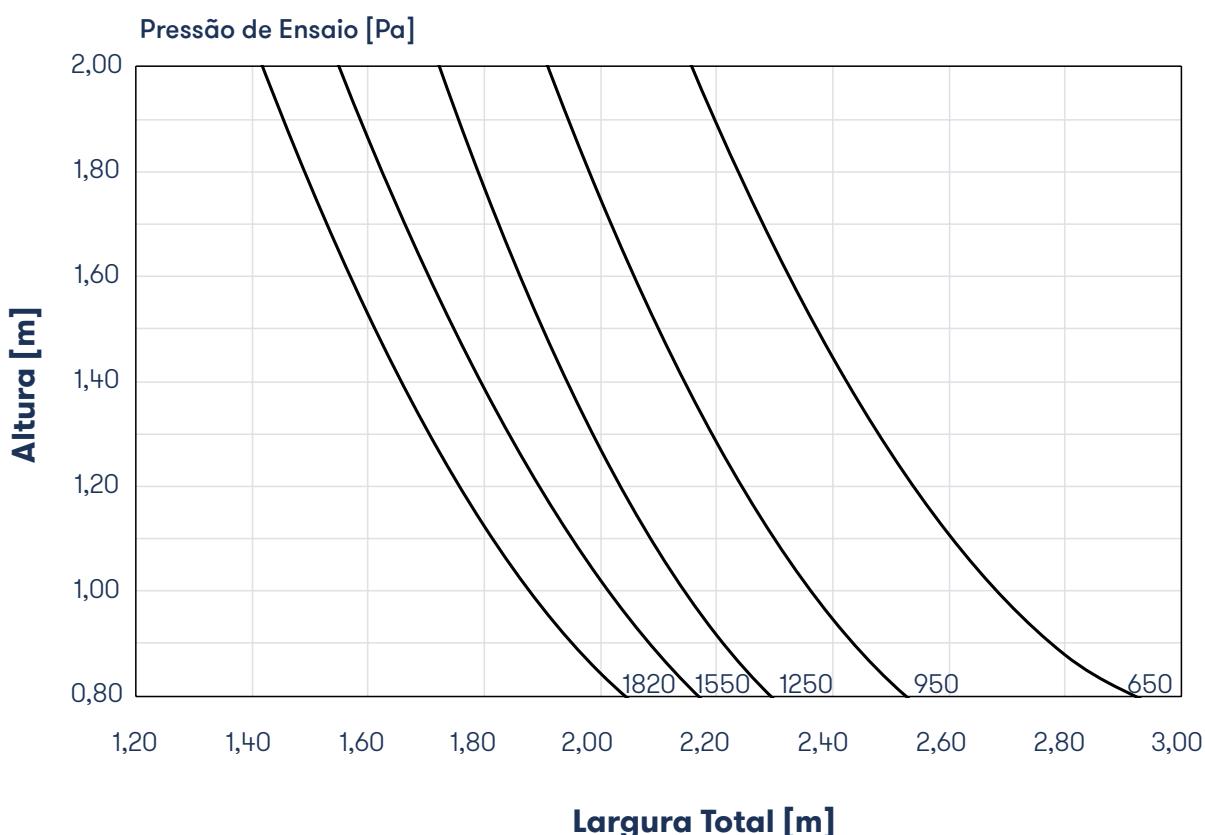


Janela de Correr com Fixo Superior

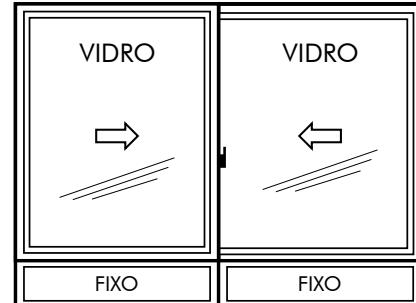
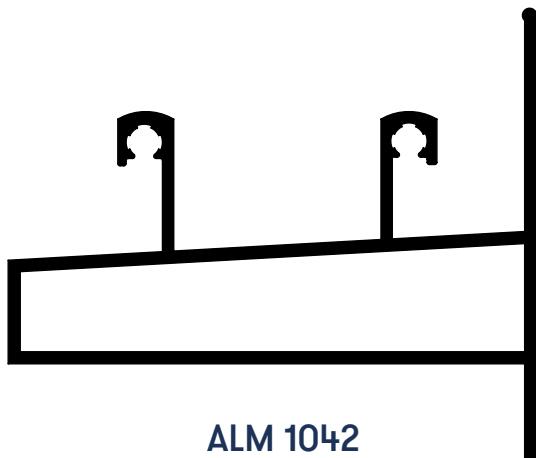


ALM 1037

Descrição	S.I.	Valor
Momento de Inércia	I _{xx}	212.850,53 mm ⁴
Momento Polar	W _{xx}	6.433,83 mm ³

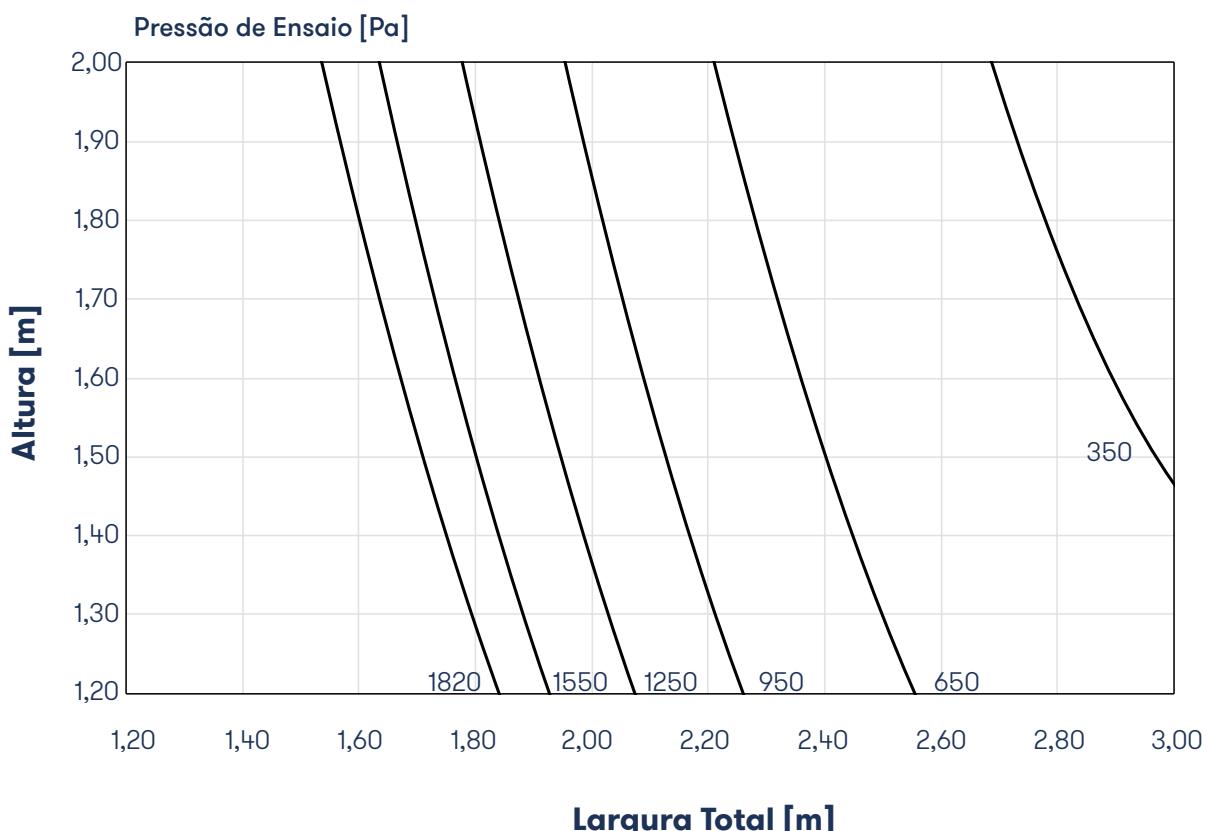


Janela de Correr com Fixo Inferior

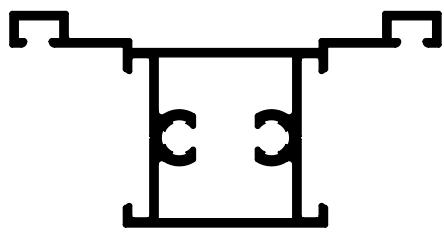


ALM 1042

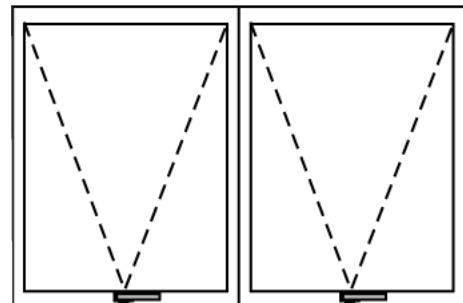
Descrição	S.I.	Valor
Momento de Inércia	I _{xx}	226.196,06 mm ⁴
Momento Polar	W _{xx}	7.818,74 mm ³



ALM 1035

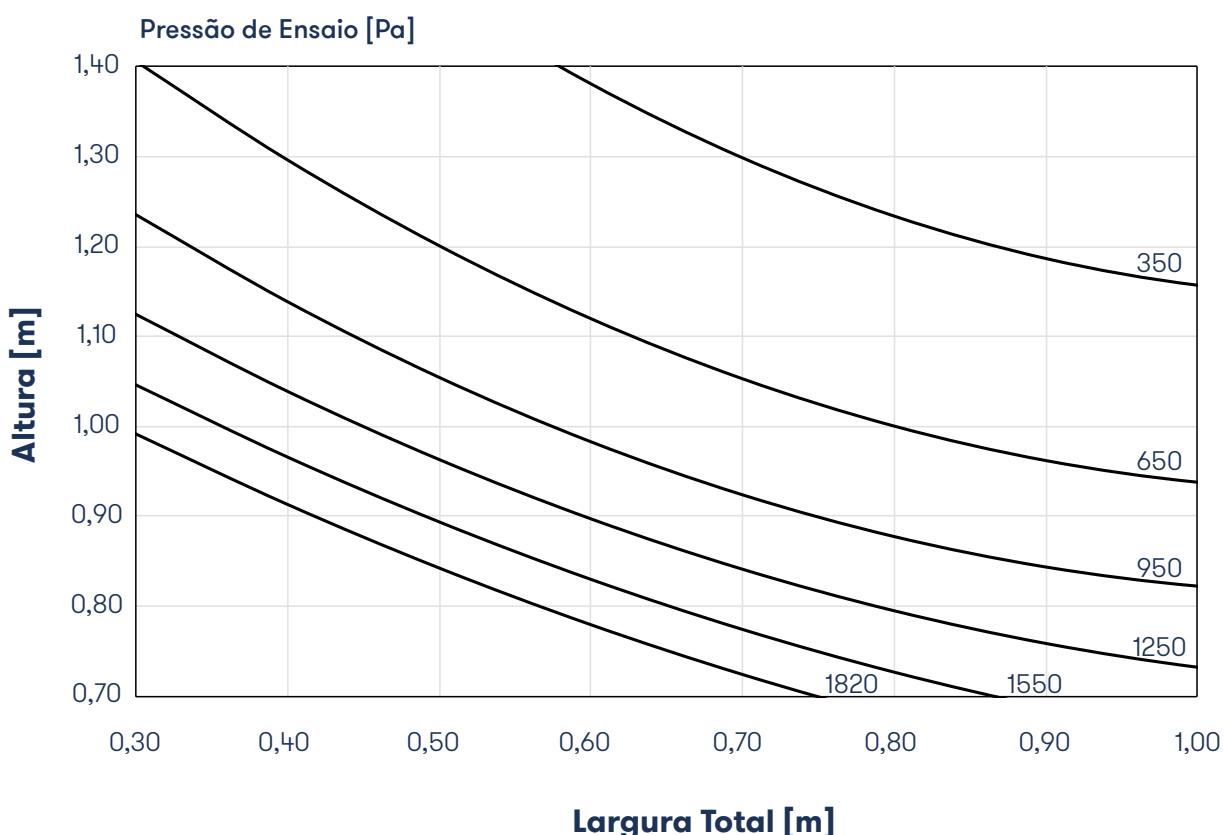


ALM 1035

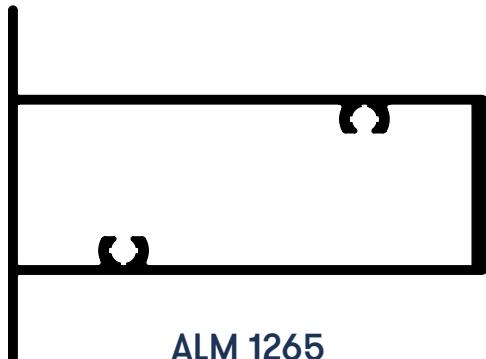


ALM 1035

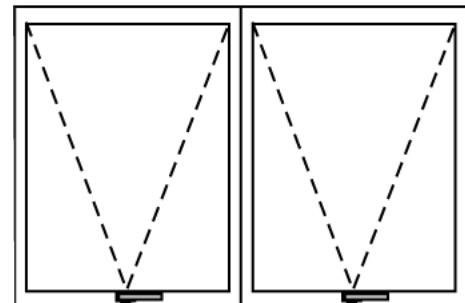
Descrição	S.I.	Valor
Momento de Inércia	I _{xx}	18.632,50 mm ⁴
Momento Polar	W _{xx}	1.192,86 mm ³



ALM 1265

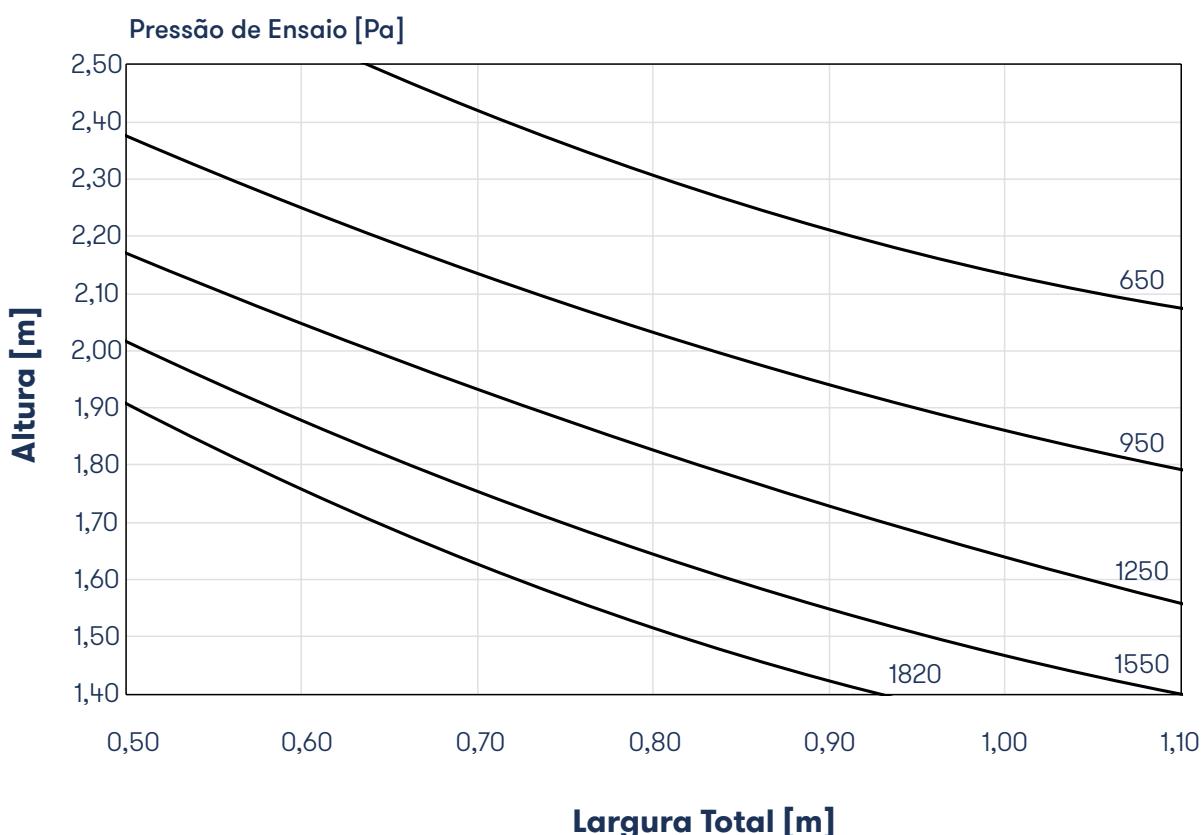


ALM 1265

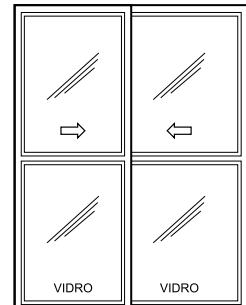
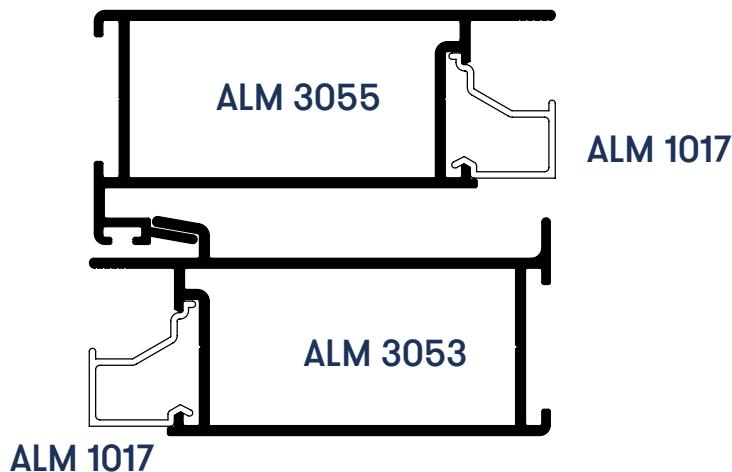


ALM 1265

Descrição	S.I.	Valor
Momento de Inércia	I_{xx}	214.518,00 mm^4
Momento Polar	W_{xx}	6.005,63 mm^3



Porta de Correr 2 Folhas

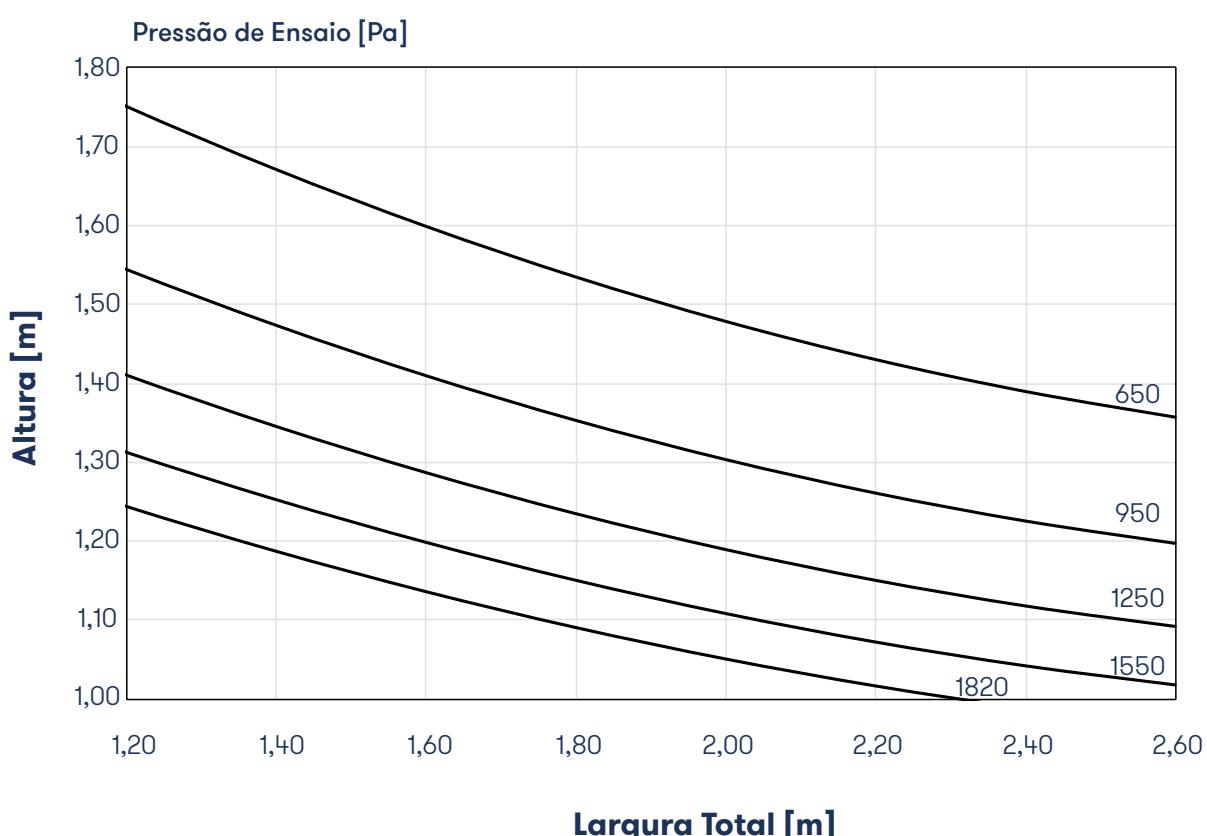


ALM 3053

Descrição	S.I.	Valor
Momento de Inércia	I_{xx}	31.238,70 mm^4
Momento Polar	W_{xx}	1.946,34 mm^3

ALM 3055

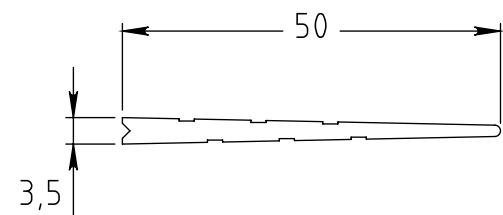
Descrição	S.I.	Valor
Momento de Inércia	I_{xx}	36.349,39 mm^4
Momento Polar	W_{xx}	2.628,30 mm^3





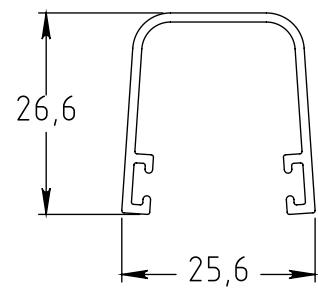
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ALM 0576	69	ALM 0898	63	ALM 1042.....	47	ALM 1096.....	52
ALM 0579	76	ALM 1001	75	ALM 1043.....	47	ALM 1097.....	53
ALM 0583	77	ALM 1002.....	74	ALM 1044.....	70	ALM 1098	52
ALM 0590.....	76	ALM 1003	46	ALM 1045	74	ALM 1099.....	54
ALM 0592.....	76	ALM 1004	47	ALM 1049.....	74	ALM 1100	53
ALM 0596.....	46	ALM 1005	48	ALM 1051	58	ALM 1101	73
ALM 0630.....	70	ALM 1008	54	ALM 1052	67	ALM 1102	73
ALM 0631.....	67	ALM 1009	55	ALM 1053	56	ALM 1103	70
ALM 0632.....	71	ALM 1010	55	ALM 1054	56	ALM 1104	70
ALM 0633.....	68	ALM 1011	55	ALM 1055	67	ALM 1105	44
ALM 0634.....	71	ALM 1012	55	ALM 1057.....	60	ALM 1106	69
ALM 0635.....	70	ALM 1013	57	ALM 1058	59	ALM 1107	78
ALM 0636.....	73	ALM 1014	57	ALM 1059	60	ALM 1108	68
ALM 0637	69	ALM 1015	57	ALM 1060	59	ALM 1109	78
ALM 0638.....	72	ALM 1016	57	ALM 1061	60	ALM 1219.....	76
ALM 0640.....	71	ALM 1017.....	74	ALM 1062.....	62	ALM 1256.....	45
ALM 0641.....	71	ALM 1018	74	ALM 1063.....	62	ALM 1264.....	66
ALM 0642.....	68	ALM 1020.....	51	ALM 1068	62	ALM 1265.....	66
ALM 0643.....	68	ALM 1022.....	58	ALM 1069	62	ALM 2209	50
ALM 0644.....	65	ALM 1023.....	57	ALM 1070	62	ALM 2228	78
ALM 0645.....	67	ALM 1024.....	57	ALM 1072	48	ALM 3035	72
ALM 0646.....	67	ALM 1025	46	ALM 1073	59	ALM 3036.....	72
ALM 0647	69	ALM 1026.....	58	ALM 1075.....	46	ALM 3041.....	68
ALM 0681	65	ALM 1027	58	ALM 1078	52	ALM 3042.....	75
ALM 0685	75	ALM 1028.....	46	ALM 1079	53	ALM 3045.....	65
ALM 0687	45	ALM 1029.....	48	ALM 1080	54	ALM 3047	65
ALM 0688	45	ALM 1030	77	ALM 1081	54	ALM 3053	56
ALM 0689.....	70	ALM 1031	46	ALM 1082.....	52	ALM 3054.....	56
ALM 0690.....	69	ALM 1032.....	72	ALM 1083	53	ALM 3055	56
ALM 0695.....	75	ALM 1033	73	ALM 1084	77	ALM 3606.....	77
ALM 0697	44	ALM 1034.....	73	ALM 1088	74	ALM 3607	53
ALM 0699	71	ALM 1035	72	ALM 1089	69	ALM 3608.....	76
ALM 0701.....	45	ALM 1036.....	73	ALM 1090	67	ALM 3609.....	54
ALM 0710	44	ALM 1037	47	ALM 1091	61	ALM 4010	44
ALM 0711	45	ALM 1038	47	ALM 1092	61	ALM 4020	76
ALM 0714	44	ALM 1039	56	ALM 1093	61	ALM 4021	45
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ALM 0890.....	63	ALM 1041	55	ALM 1095	53		



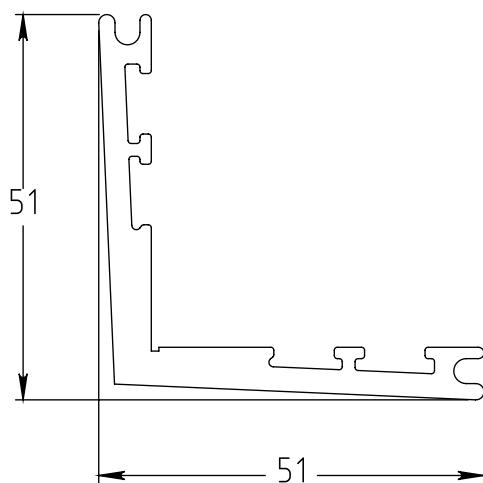
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0,324 Kg/m



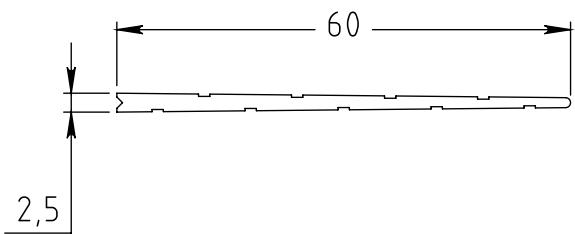
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0,271 Kg/m



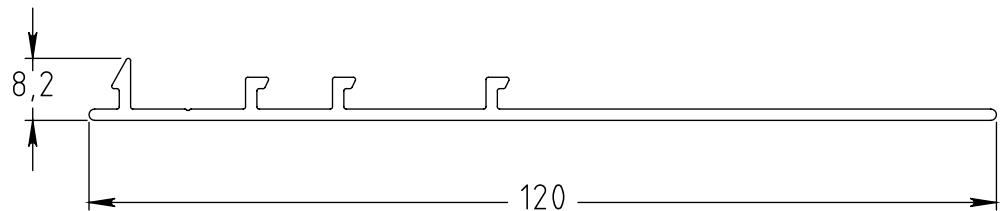
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1,138 Kg/m



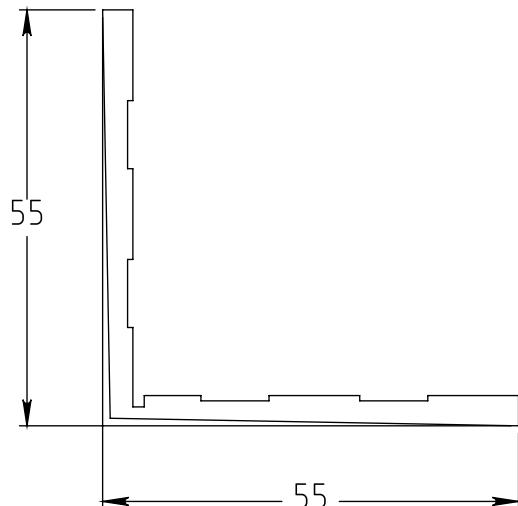
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ALM 0710
0,296 Kg/m



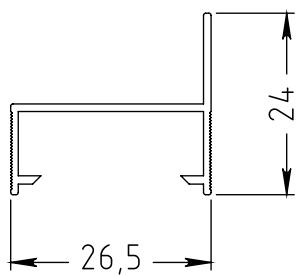
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ALM 4010
0,582 Kg/m



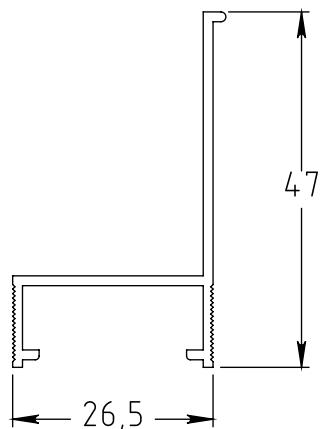
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ALM 0701
0,926 Kg/m



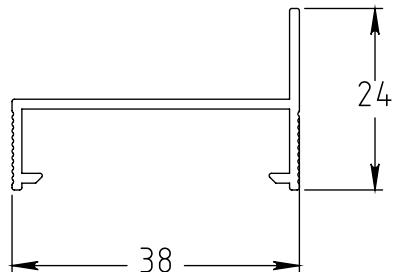
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ALM 0687
0,173 Kg/m



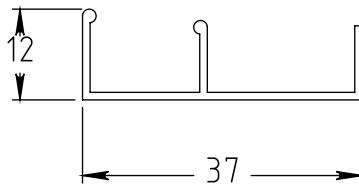
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ALM 0688
0,304 Kg/m



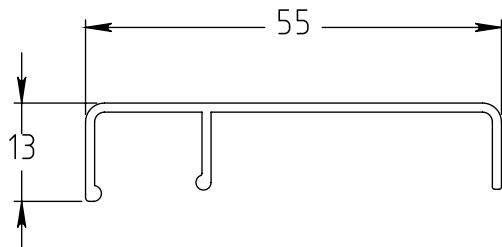
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ALM 1256
0,262 Kg/m



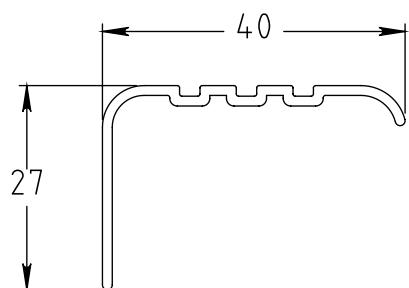
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ALM 0711
0,185 Kg/m



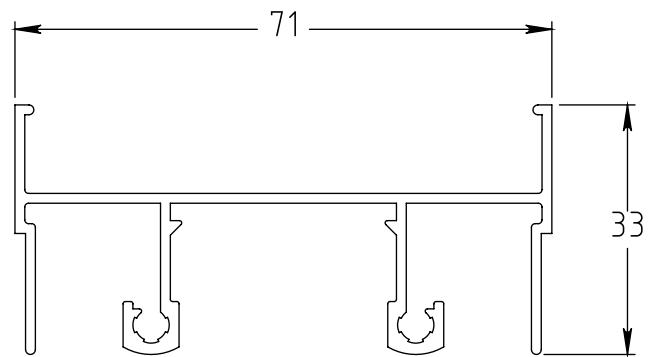
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ALM 4021
0,285 Kg/m



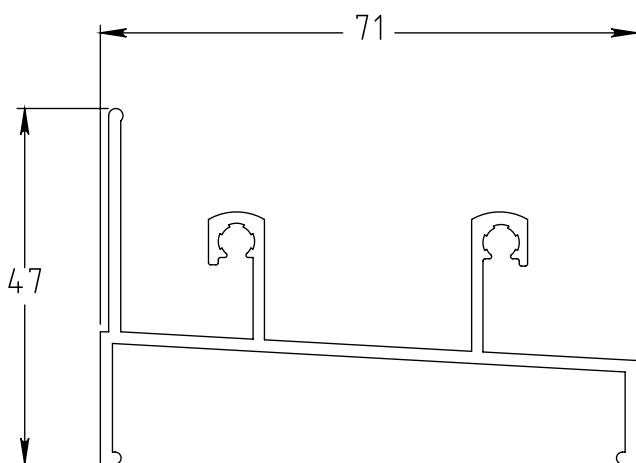
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ALM 0596
0,256 Kg/m



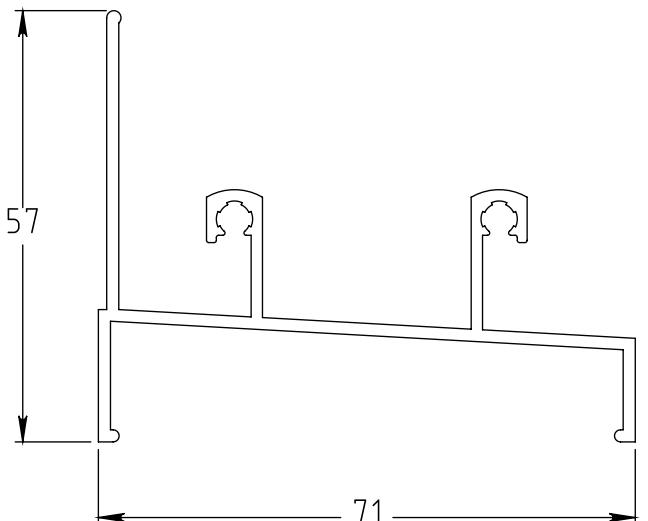
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ALM 1003
0,753 Kg/m



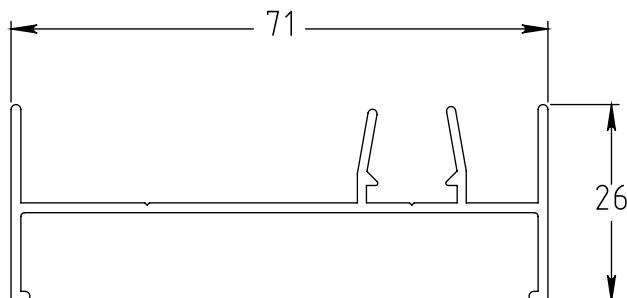
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ALM 1025
0,812 Kg/m



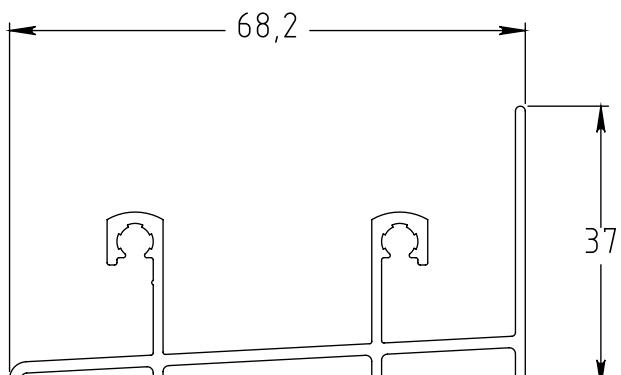
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0,855 Kg/m



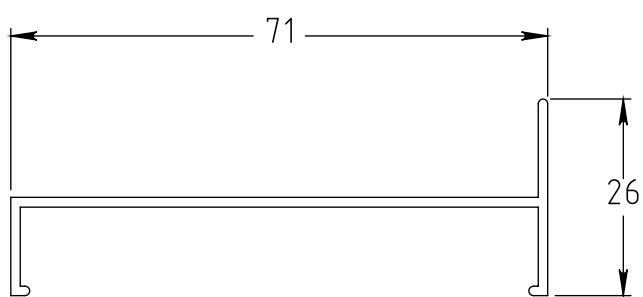
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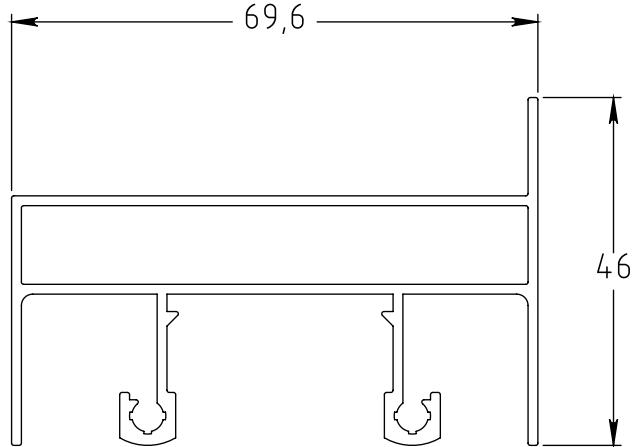
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ALM 1028
0,665 Kg/m



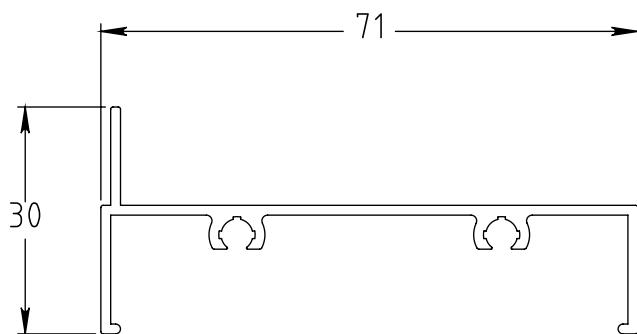
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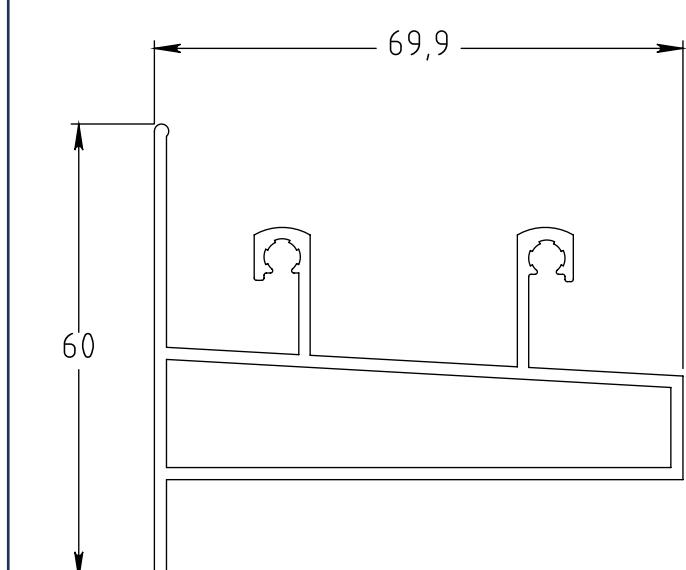
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ALM 1037
1,020 Kg/m



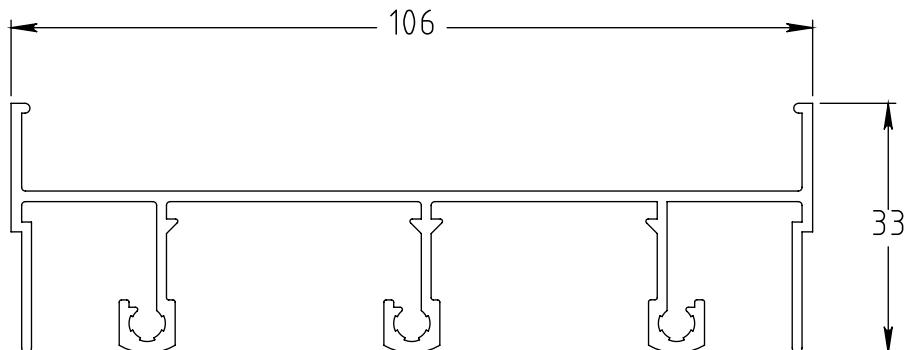
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ALM 1038
0,507 Kg/m



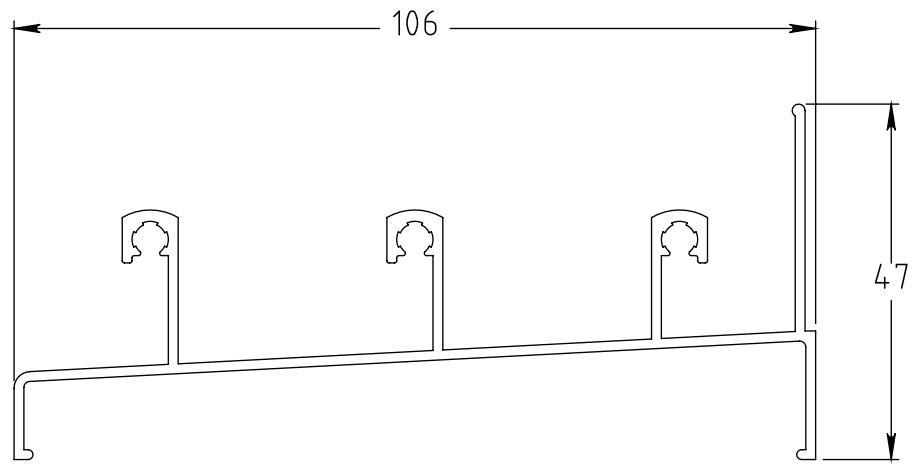
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ALM 1042
1,144 Kg/m



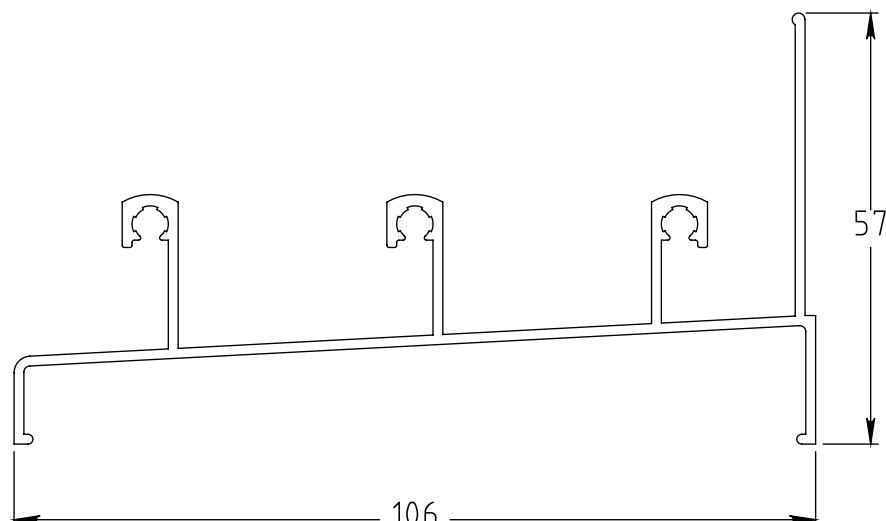
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1,047 Kg/m



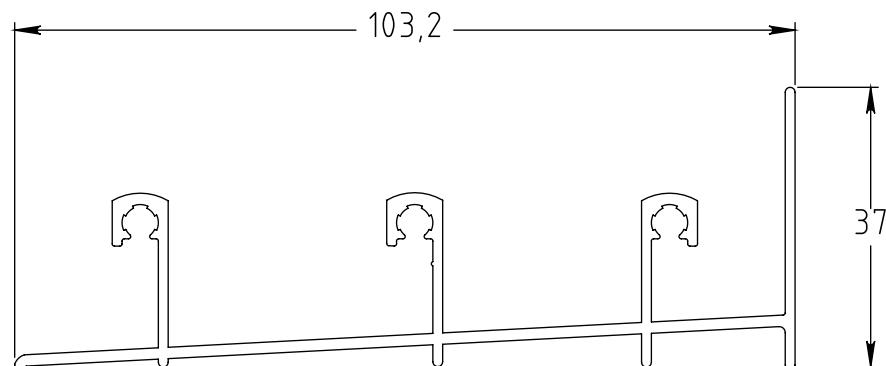
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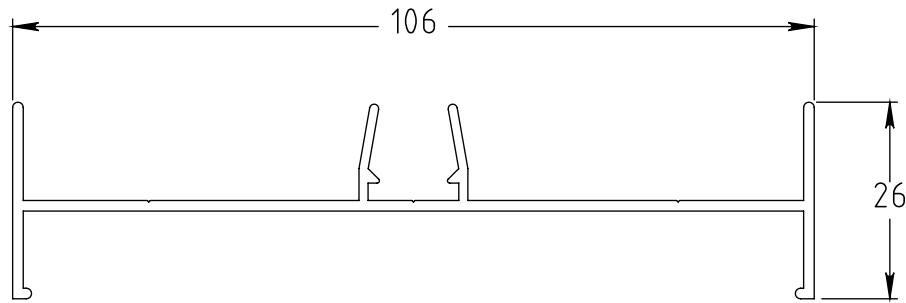
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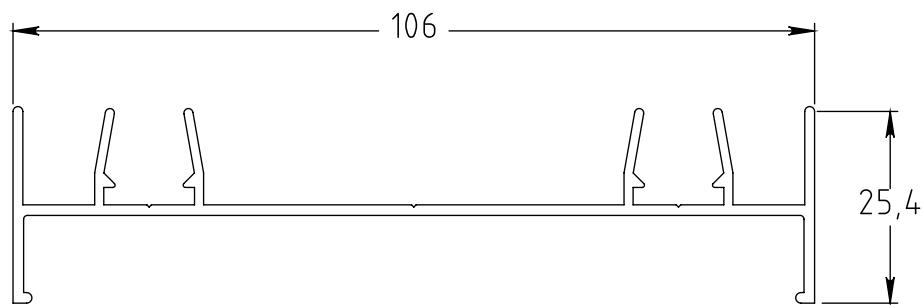
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ALM 1029
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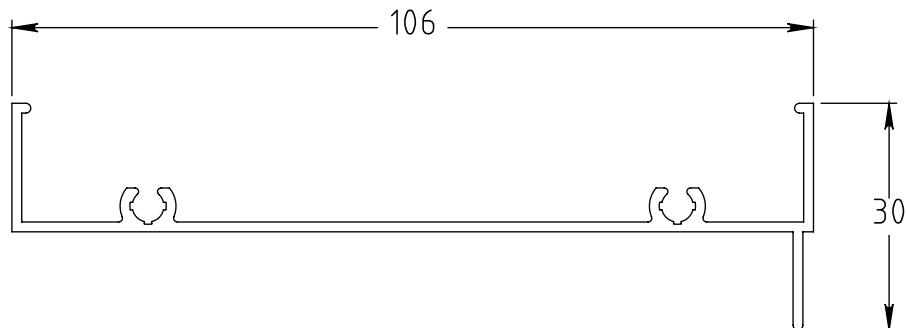
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0,687 Kg/m



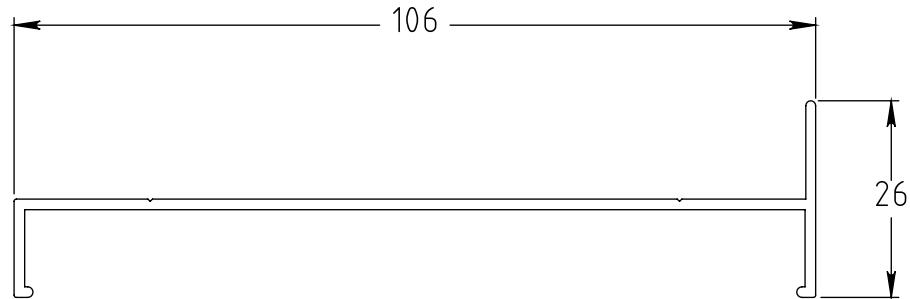
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0,772 Kg/m



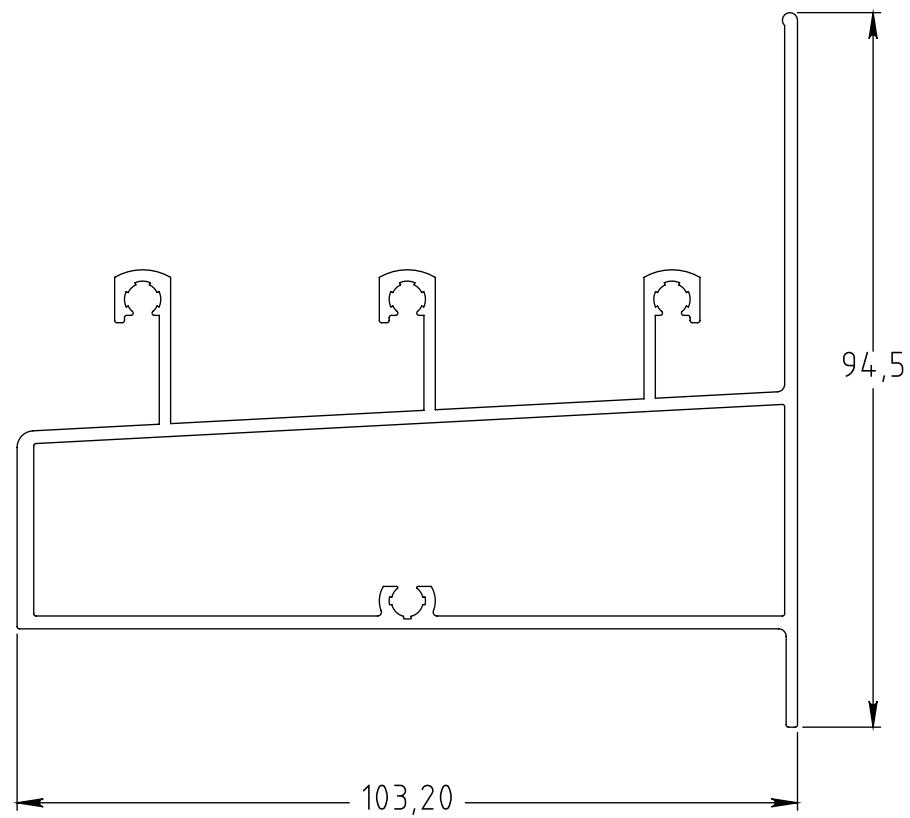
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0,620 Kg/m



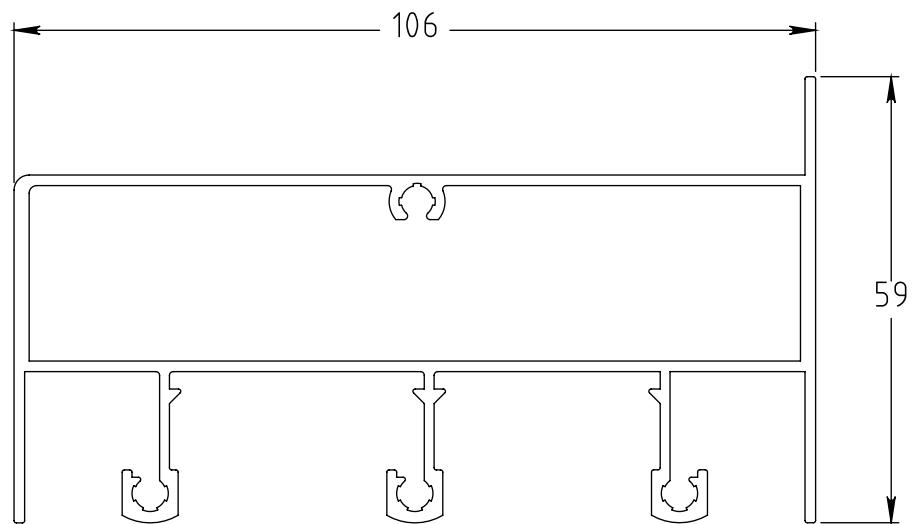
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ALM 1056
0,542 Kg/m



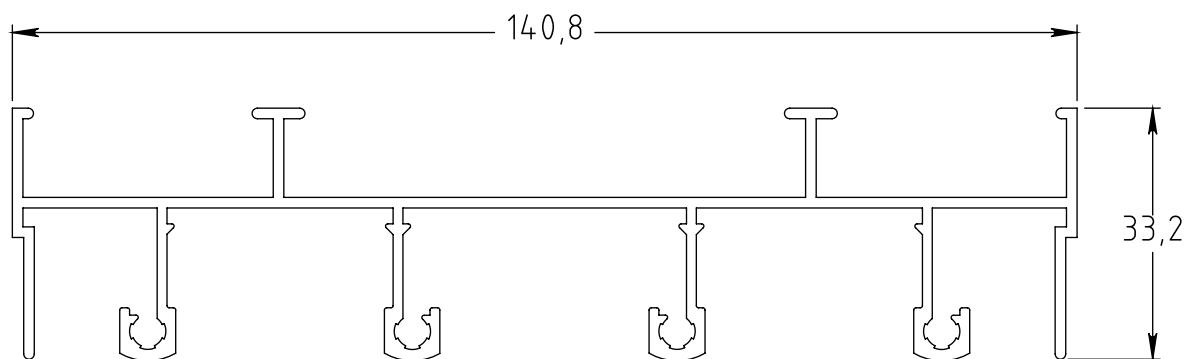
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ALM 2209
1,911 Kg/m



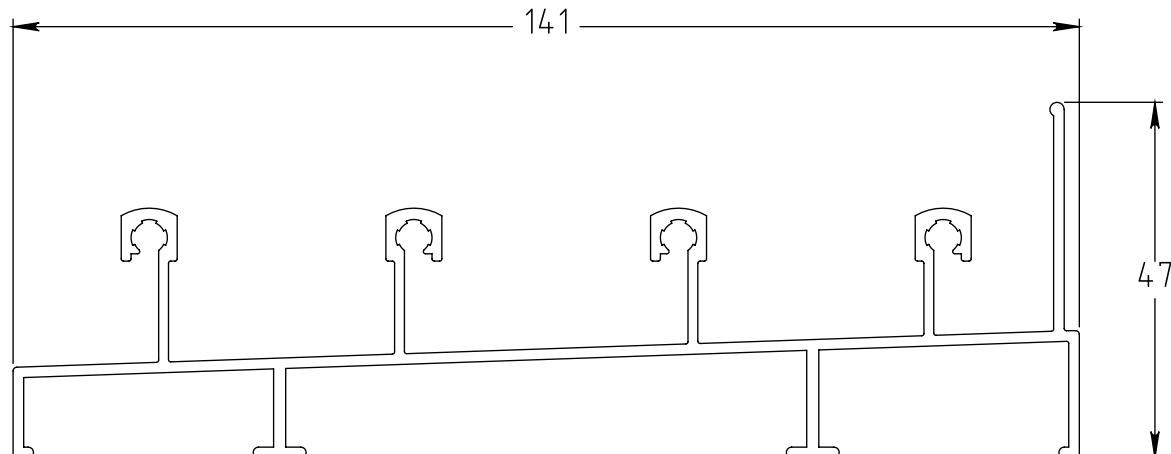
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ALM 1047
1,695 Kg/m



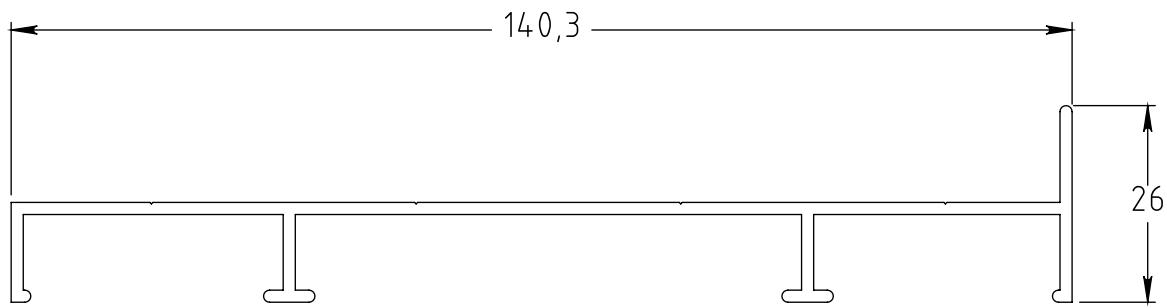
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ALM 1019
1,447 Kg/m



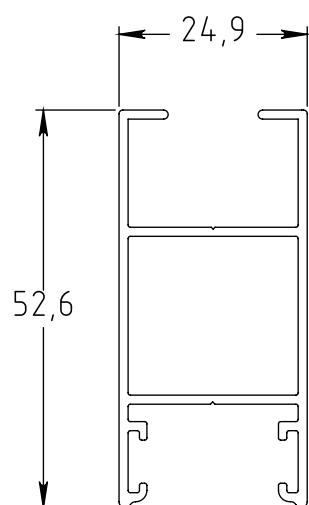
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ALM 1020
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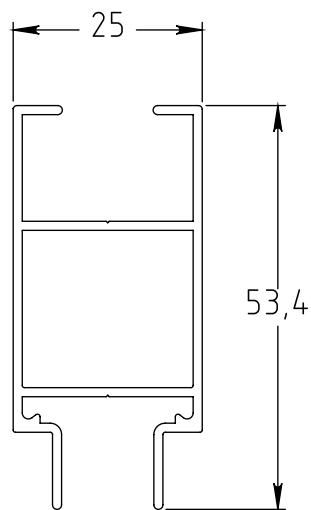


Qnt. Pacote
04

ALM 1021
0,913 Kg/m

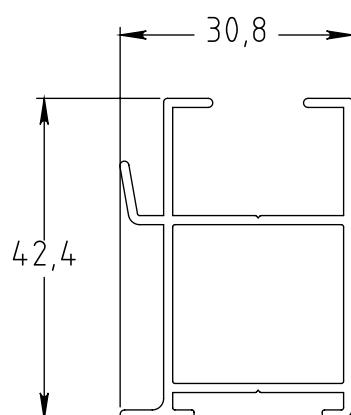


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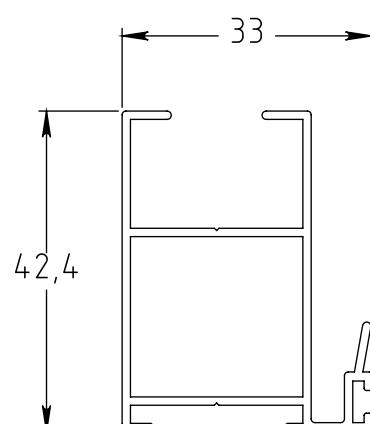
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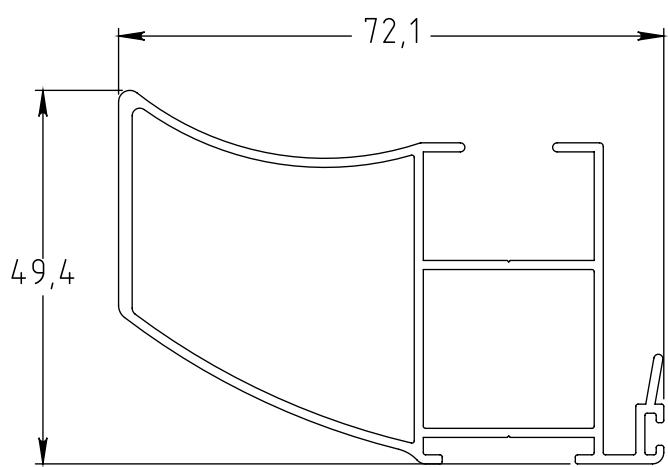
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0,530 Kg/m

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06



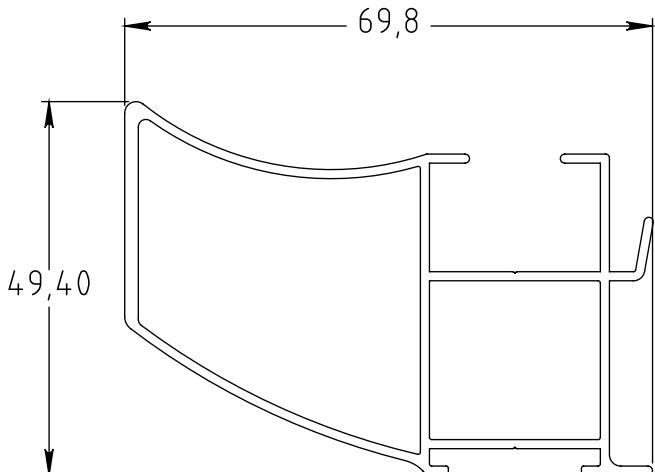
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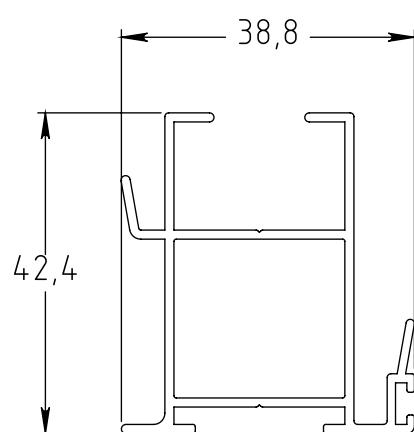
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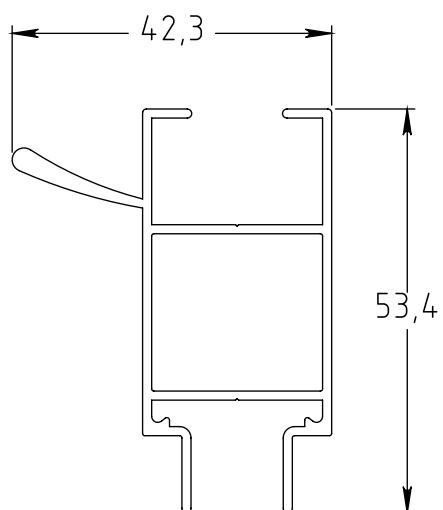
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0,940 Kg/m



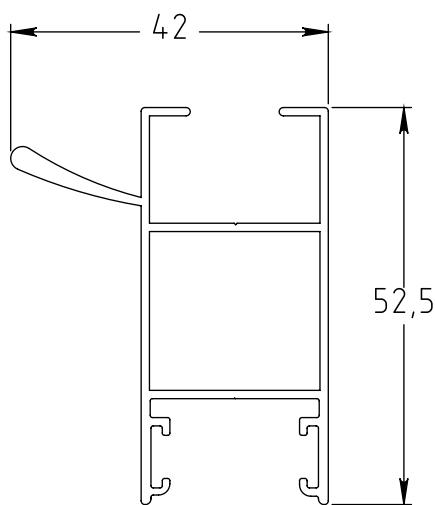
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0,613 Kg/m



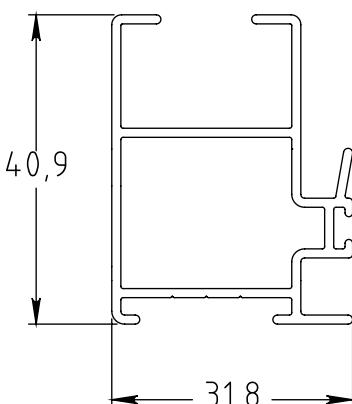
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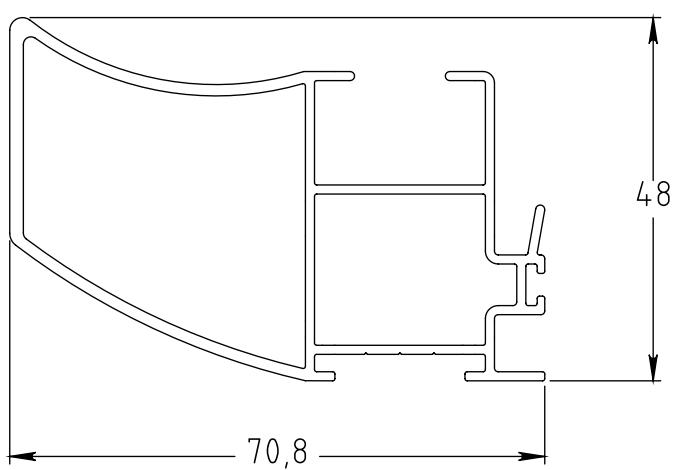
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0,632 Kg/m



Qnt. Pacote
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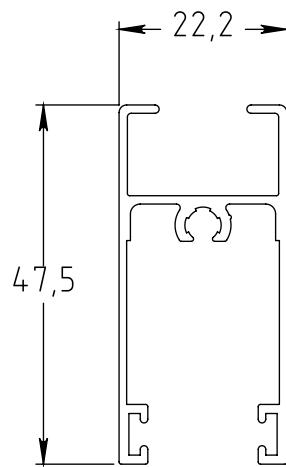
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Qnt. Pacote

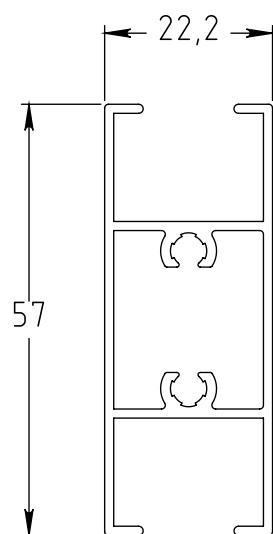
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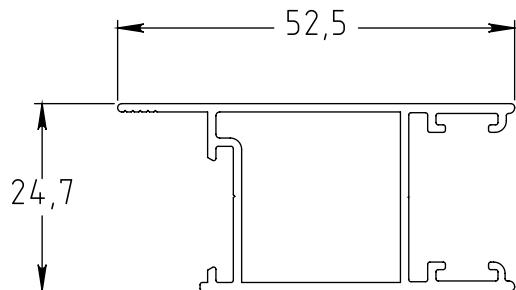
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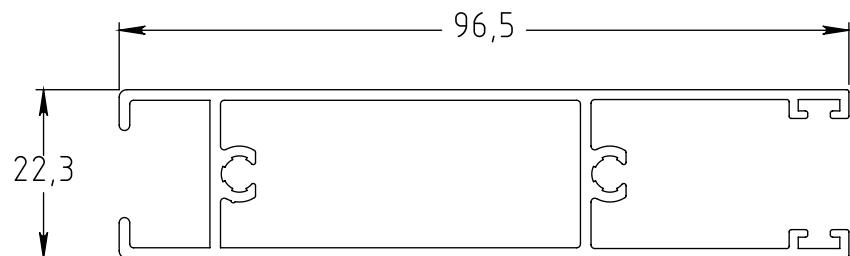
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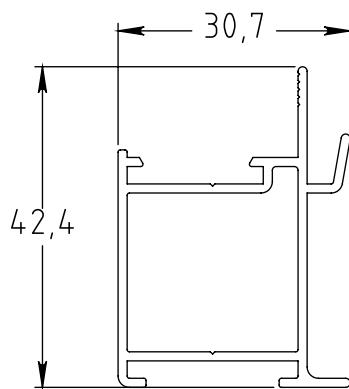
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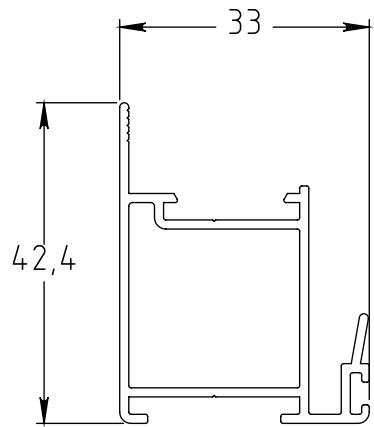
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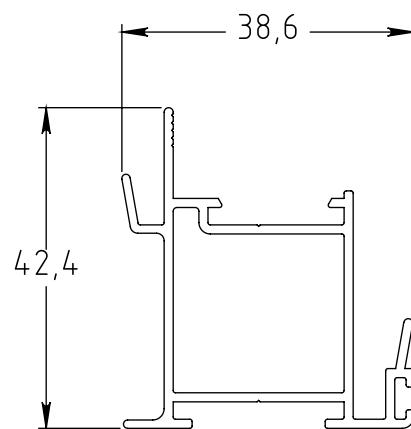
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0,477 Kg/m



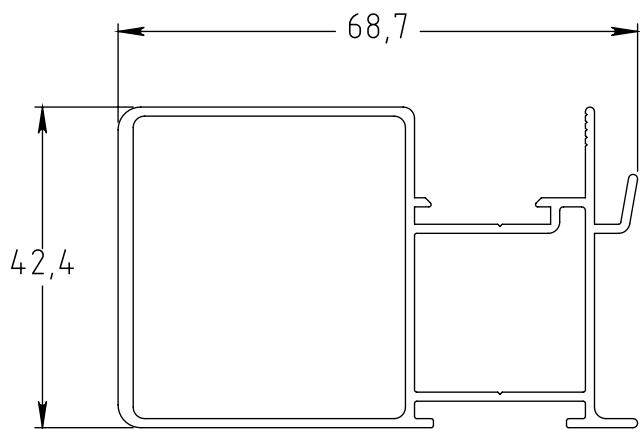
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0,505 Kg/m



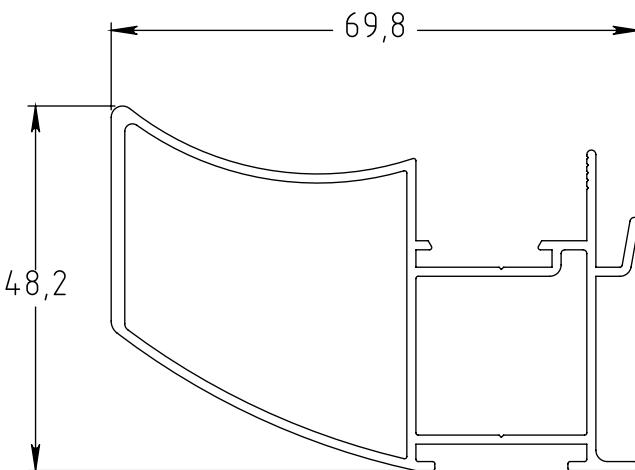
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0,557 Kg/m



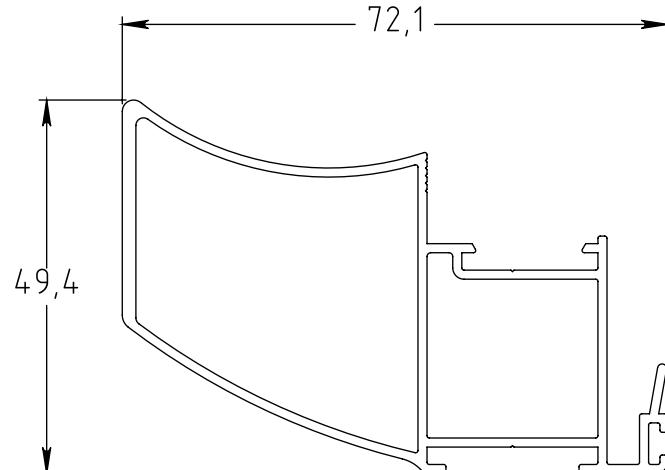
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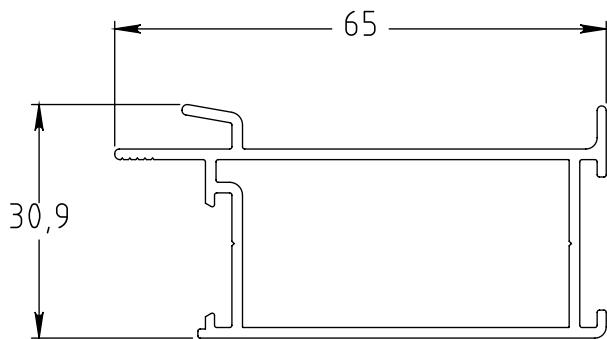
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0,921 Kg/m



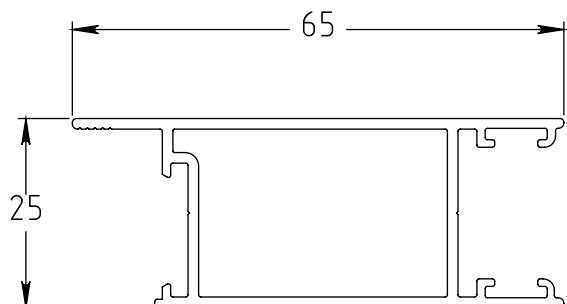
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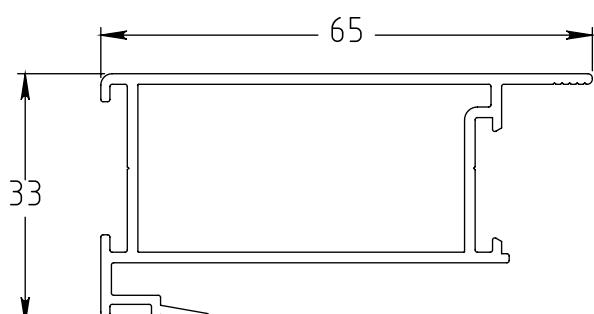
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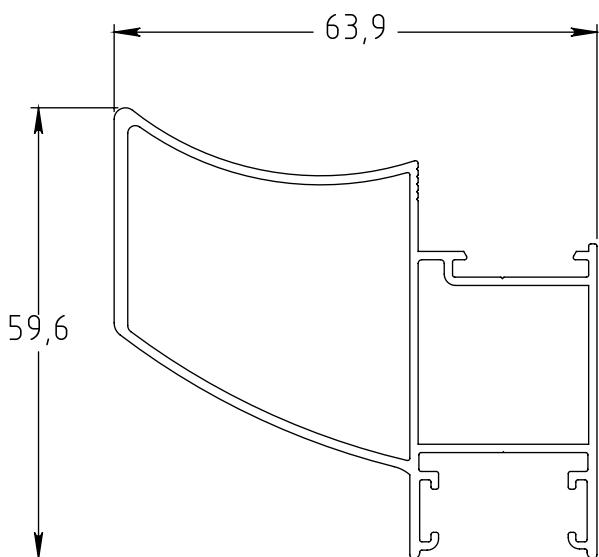
Qnt. Pacote
06

ALM 3054
0,672 Kg/m



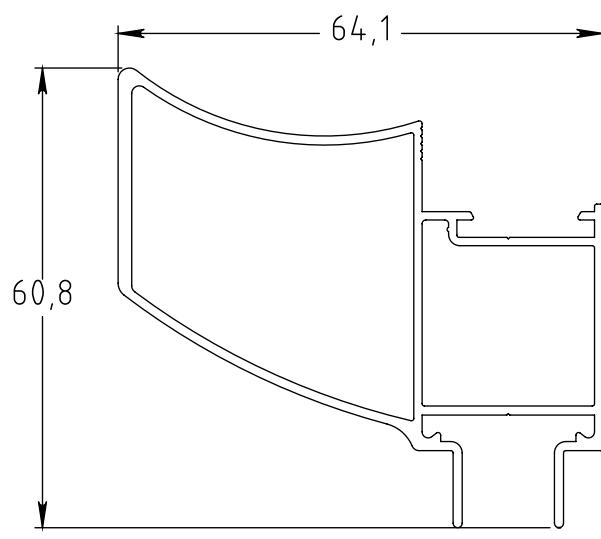
Qnt. Pacote
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ALM 3055
0,739 Kg/m



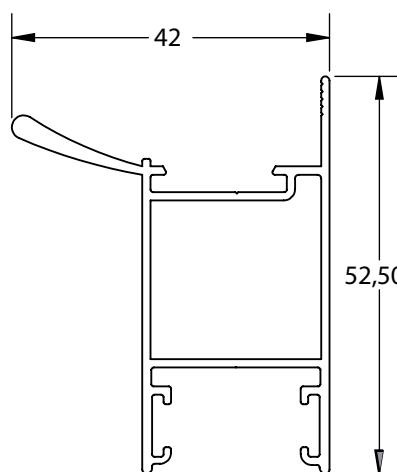
Qnt. Pacote
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ALM 1053
0,889 Kg/m



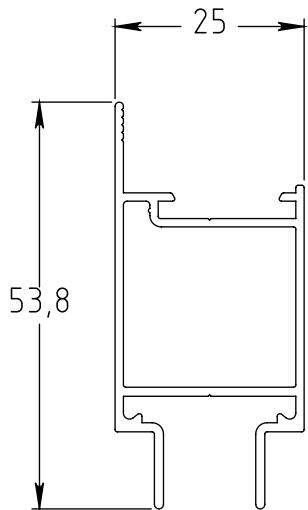
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ALM 1054
0,915 Kg/m



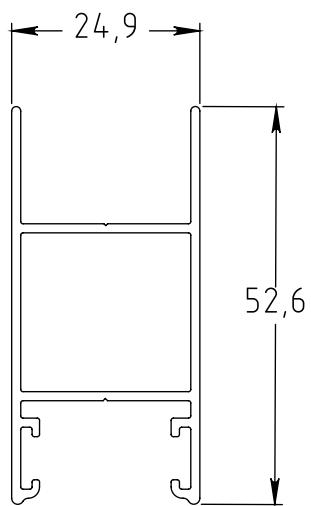
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ALM 1039
0,587 Kg/m



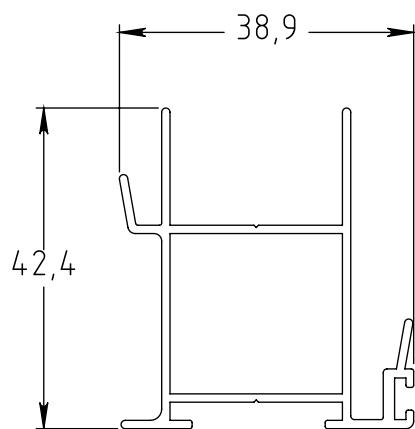
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ALM 1024
0,498 Kg/m



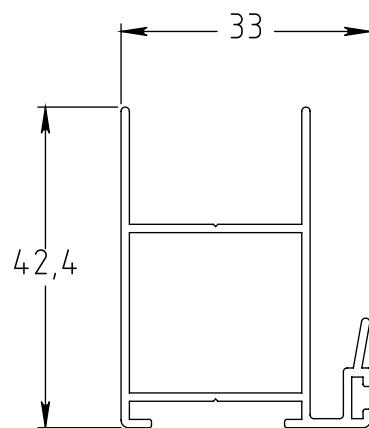
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ALM 1014
0,533 Kg/m



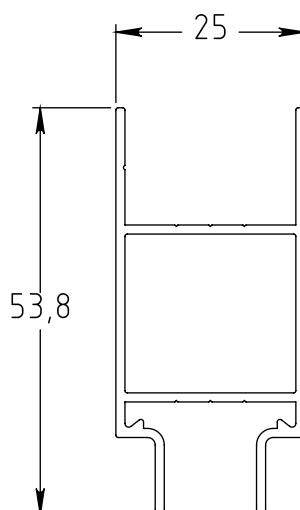
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ALM 1015
0,541 Kg/m



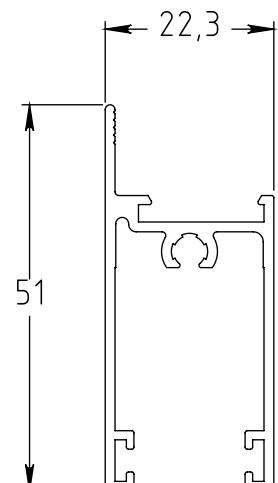
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ALM 1016
0,482 Kg/m



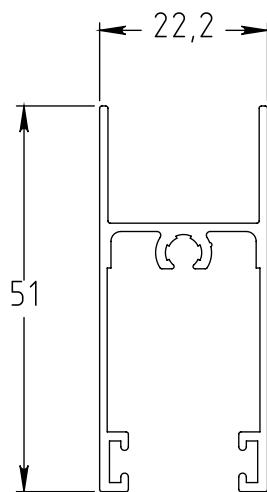
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ALM 1023
0,533 Kg/m



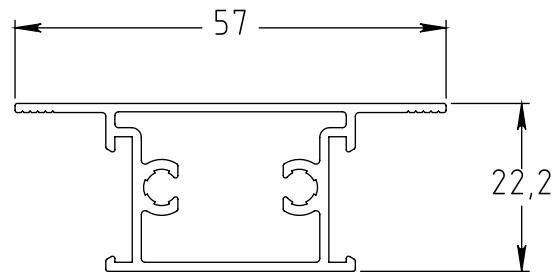
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ALM 1013
0,508 Kg/m



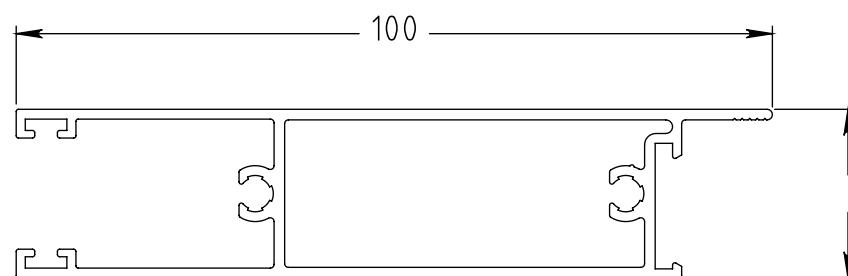
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ALM 1022
0,466 Kg/m



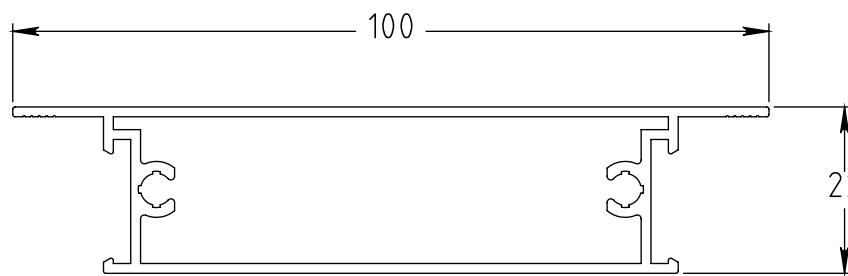
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ALM 1027
0,543 Kg/m



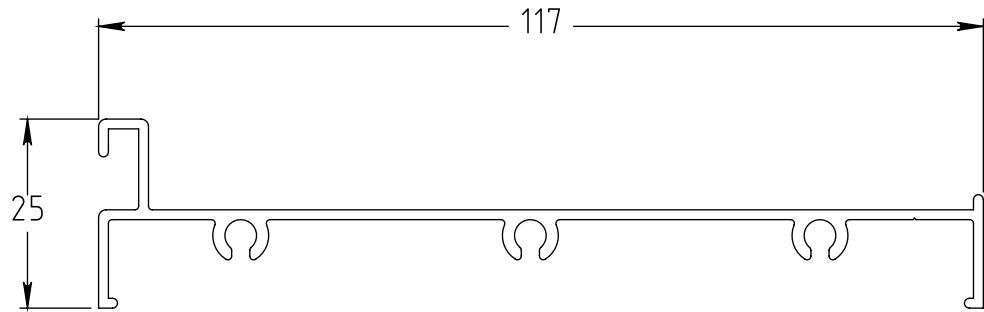
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ALM 1026
0,993 Kg/m



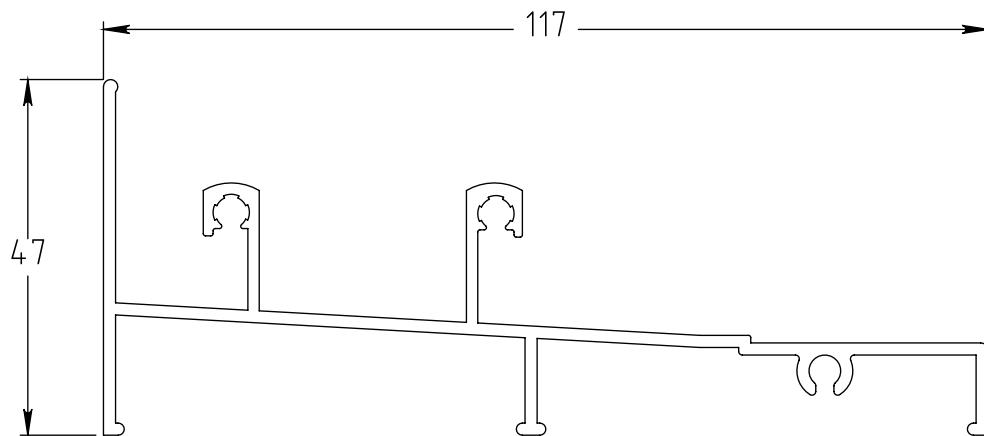
Qnt. Pacote
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ALM 1051
0,882 Kg/m



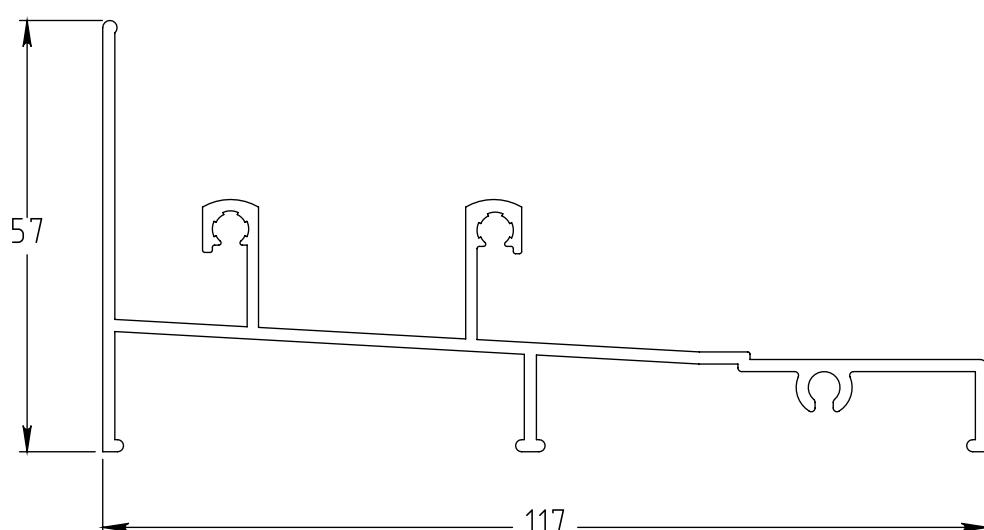
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ALM 1060
0,730 Kg/m



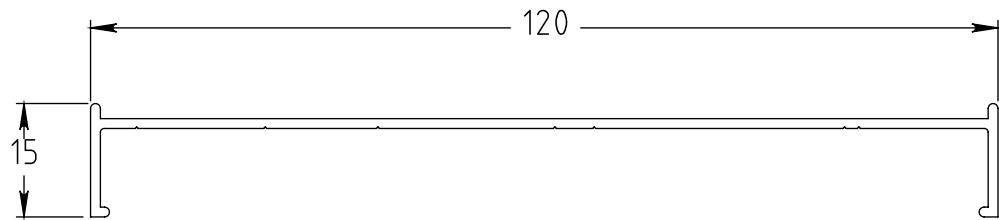
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ALM 1058
1,122 Kg/m



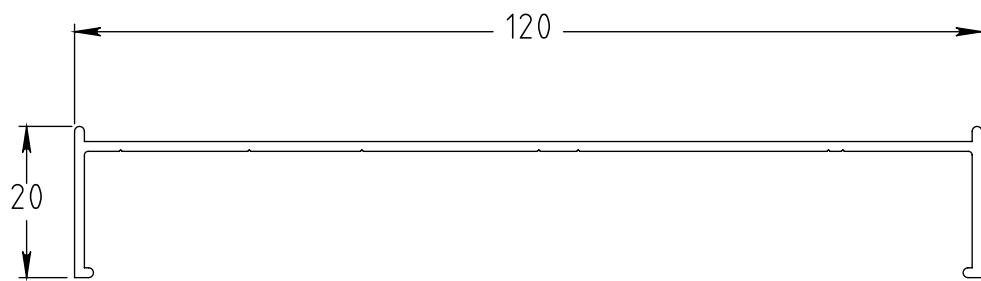
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ALM 1073
1,165 Kg/m



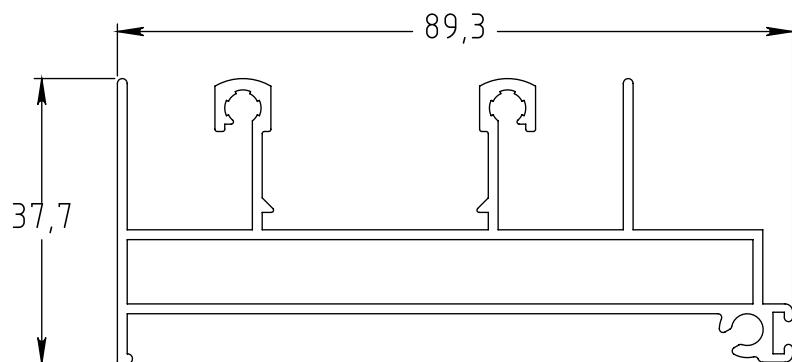
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ALM 1061
0,252 Kg/m



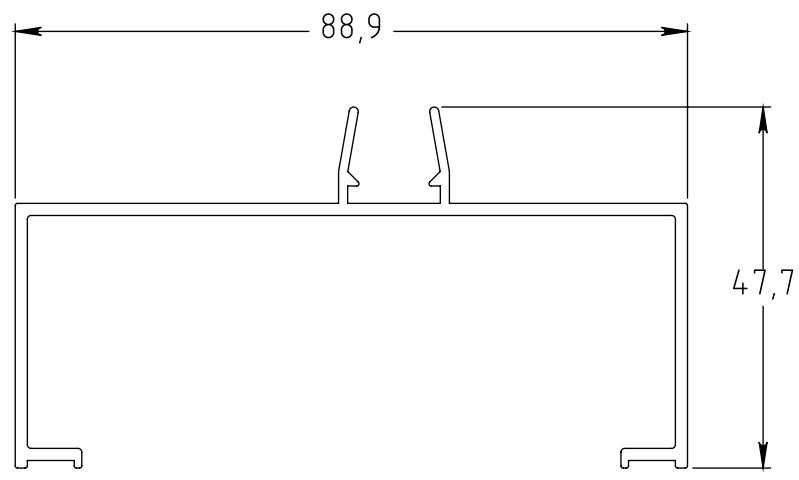
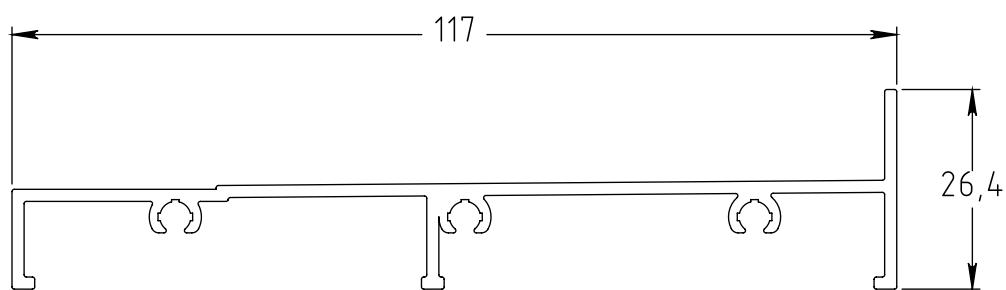
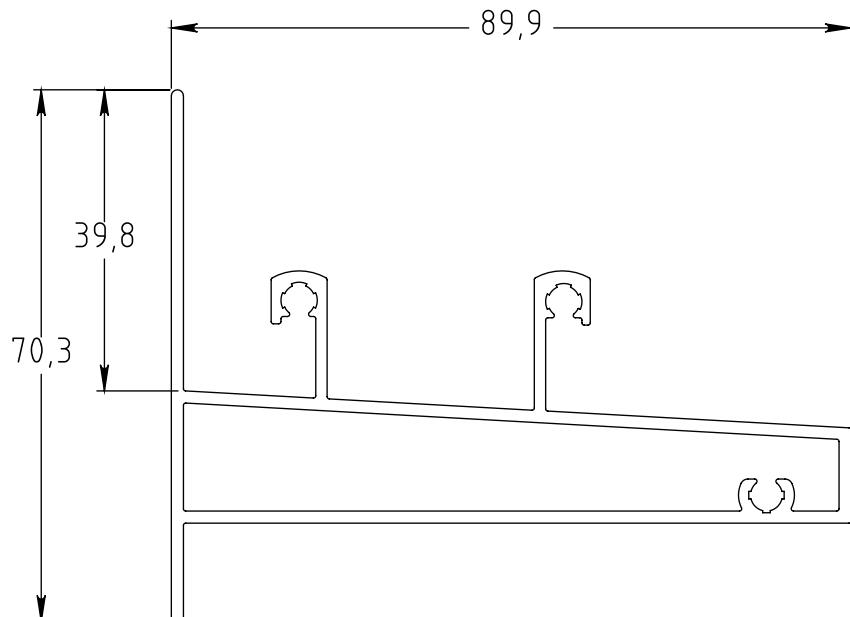
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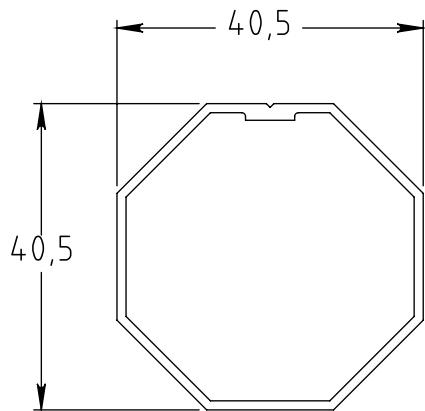
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0,560 Kg/m



Qnt. Pacote
04

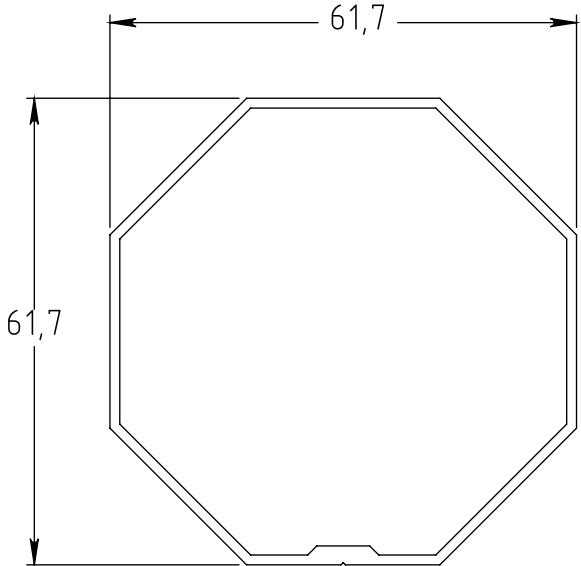
ALM 1059
1,171 Kg/m





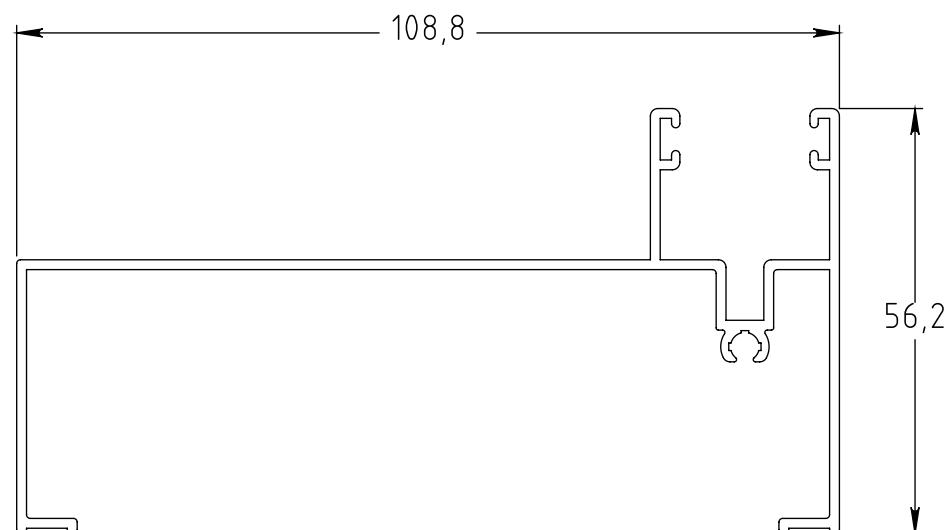
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04

ALM 1070
0,441 Kg/m



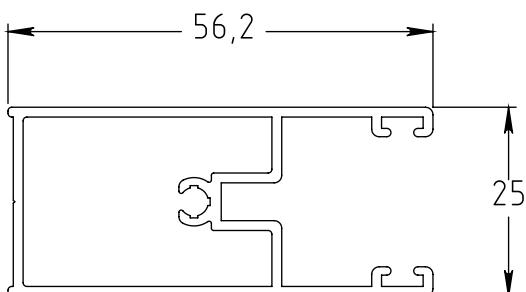
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ALM 1068
0,732 Kg/m



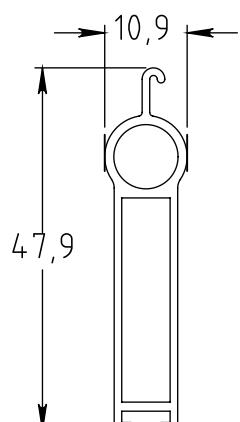
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04

ALM 1062
0,983 Kg/m



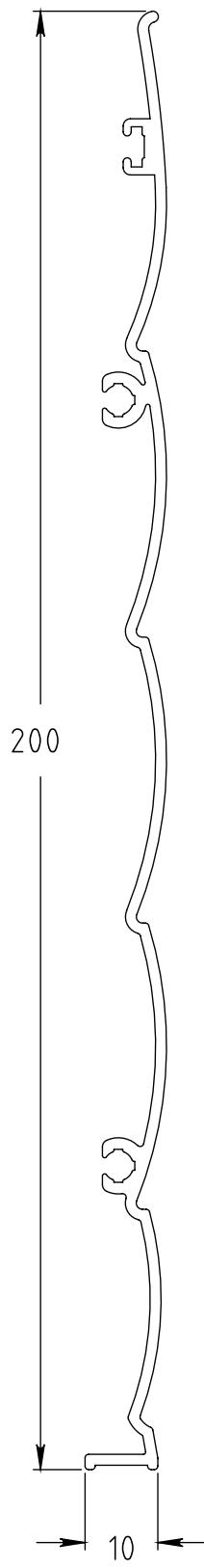
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02

ALM 1063
0,670 Kg/m



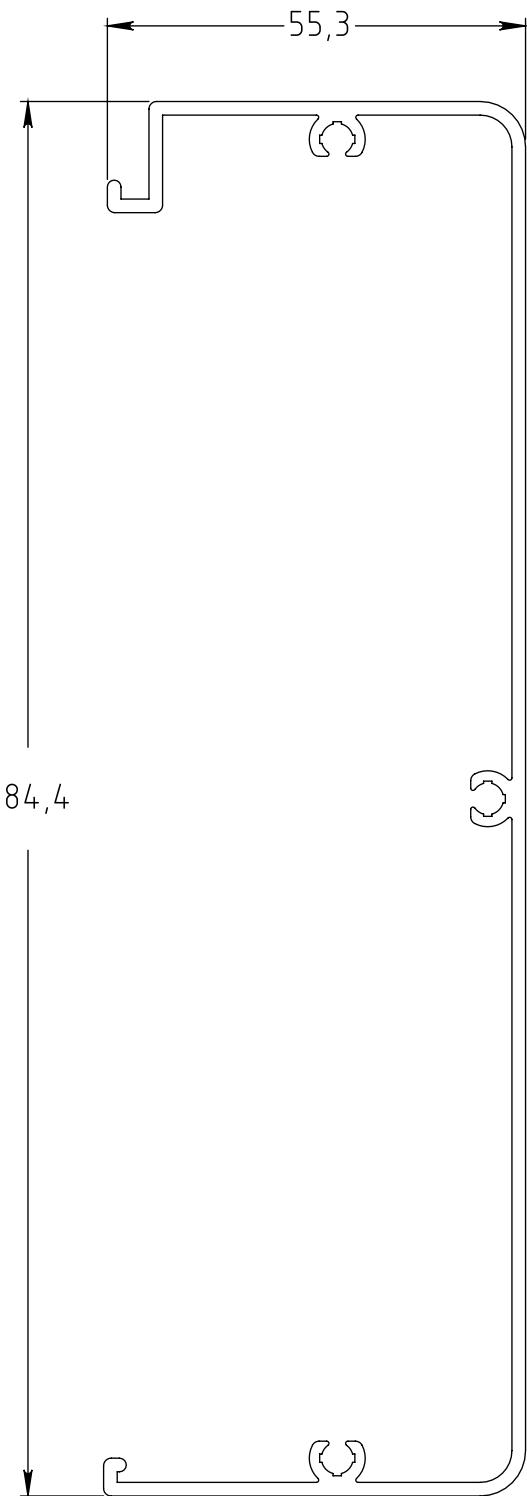
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ALM 1069
0,331 Kg/m



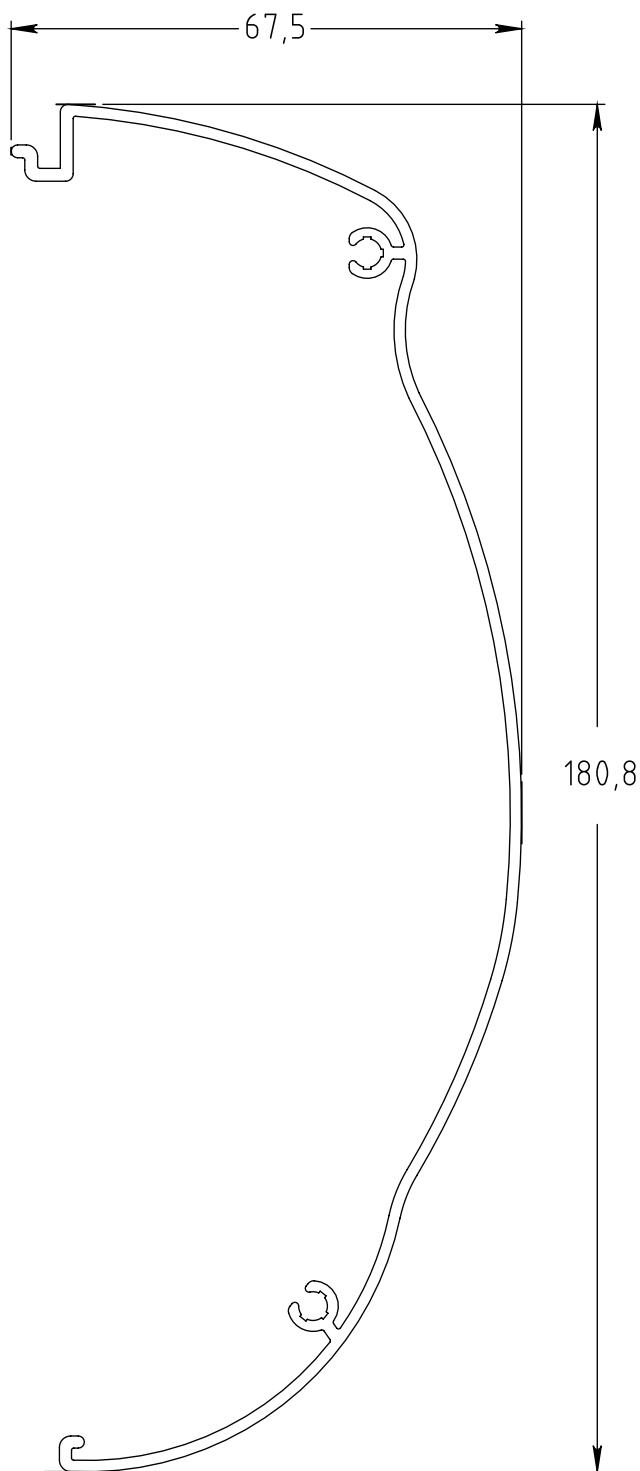
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02

ALM 0890
1,056 Kg/m



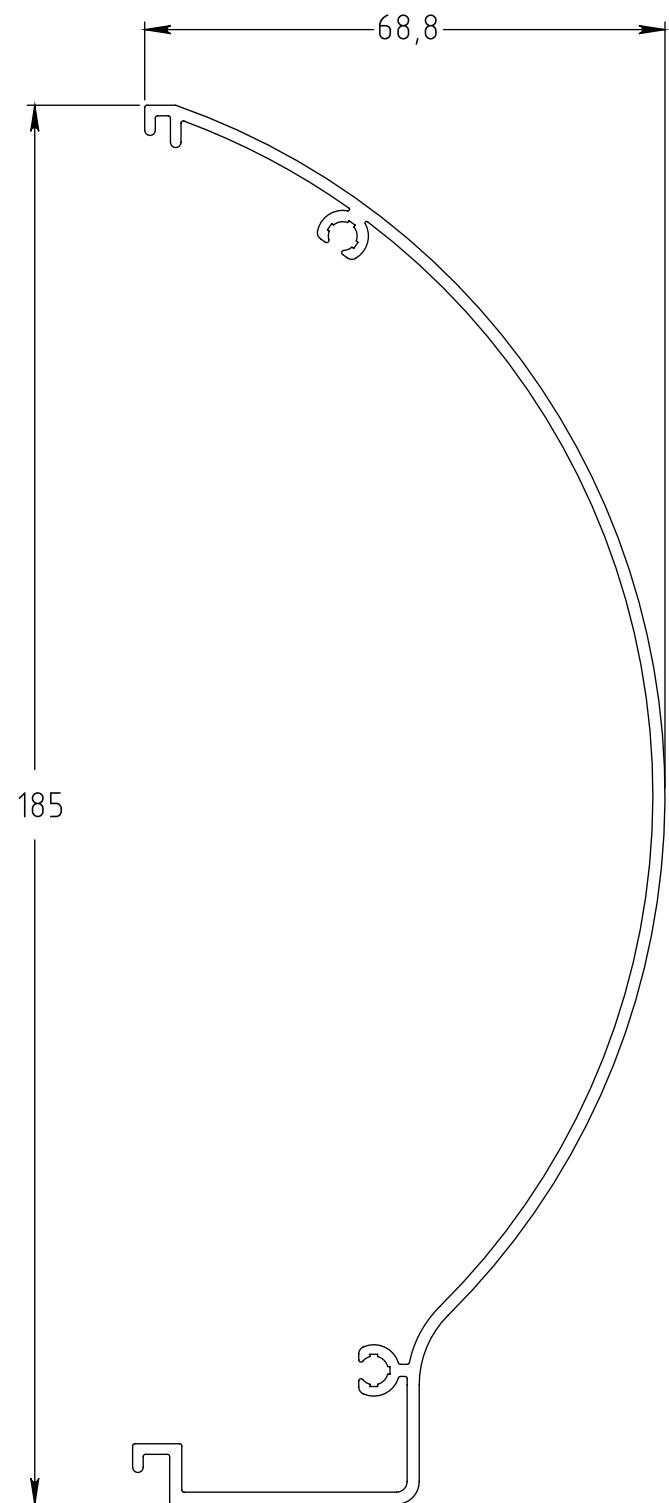
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02

ALM 0898
1,162 Kg/m



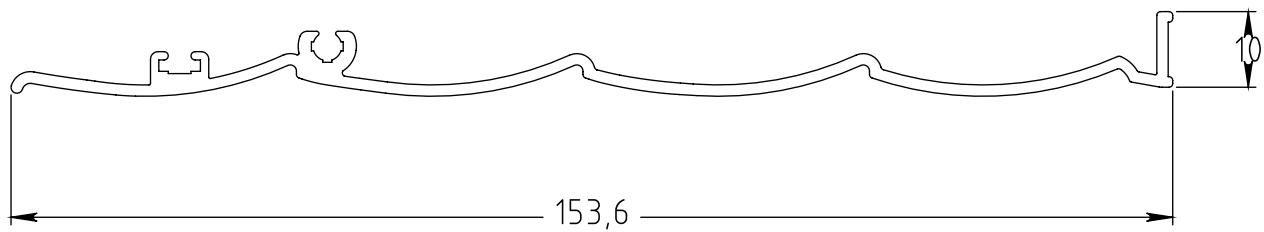
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02

1,214 Kg/m



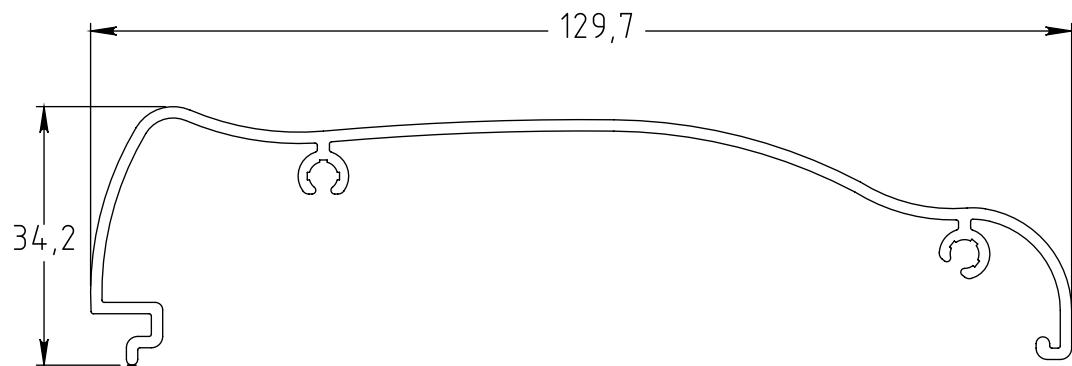
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02

1,287 Kg/m



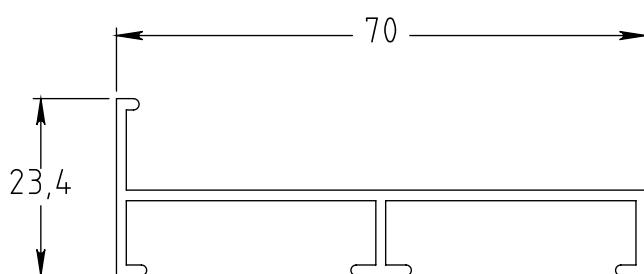
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ALM 3047
0,918 Kg/m



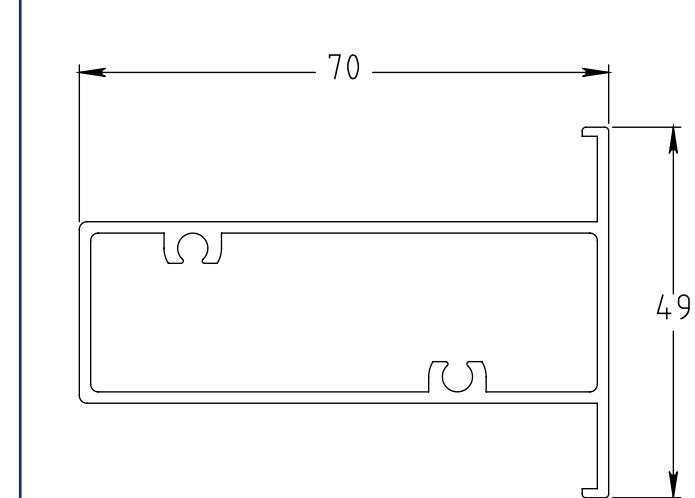
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ALM 3045
0,868 Kg/m



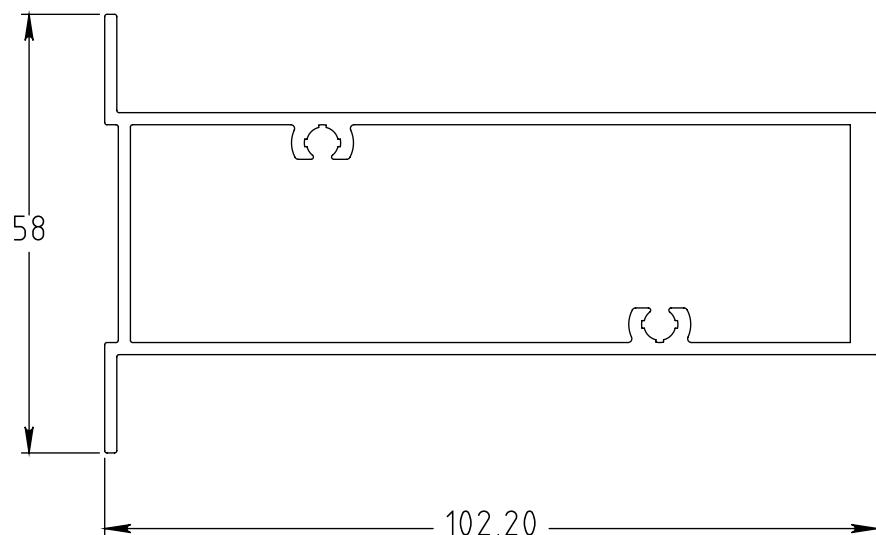
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ALM 0644
0,462 Kg/m



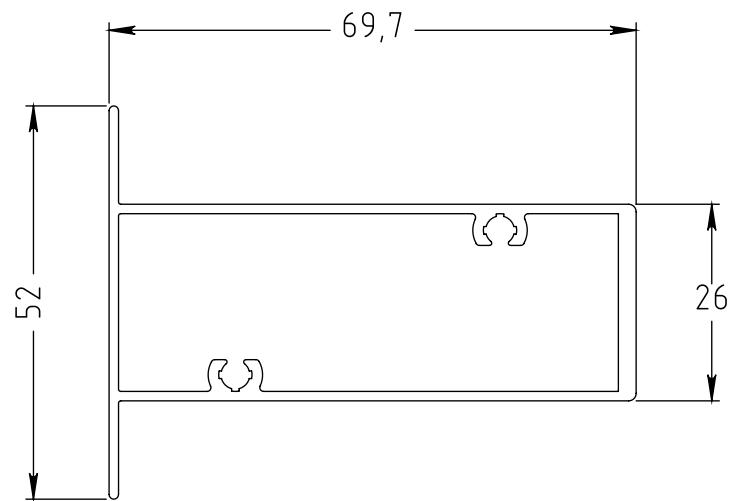
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ALM 0681
0,946 Kg/m



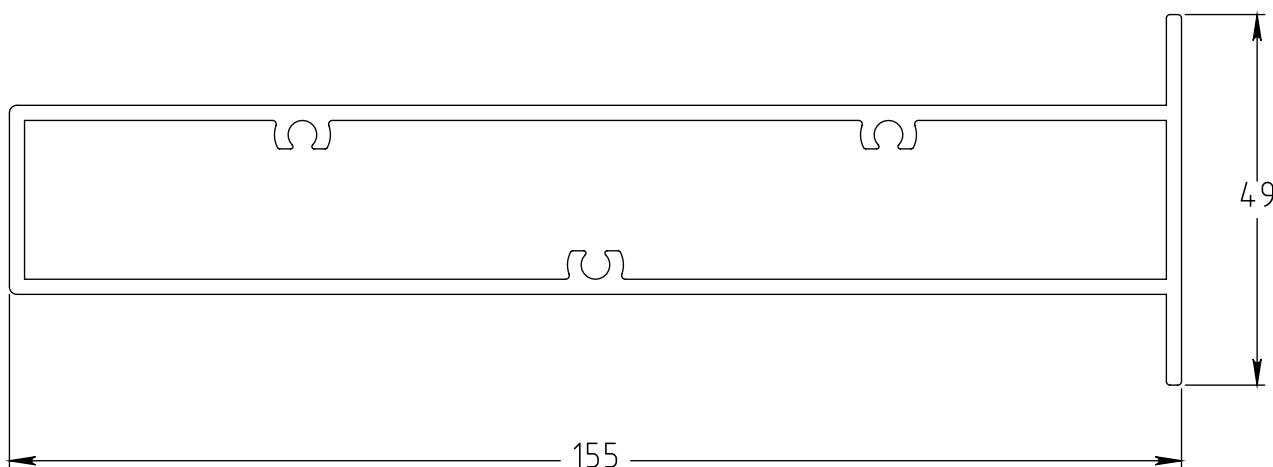
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02

ALM 1264
1,516 Kg/m



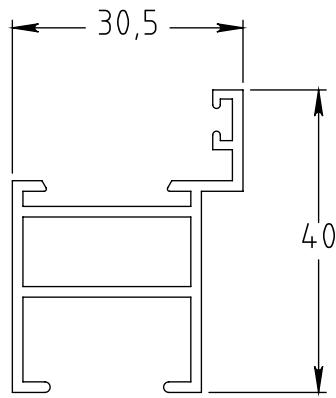
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ALM 1265
0,874 Kg/m



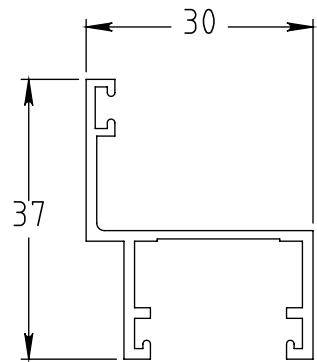
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ALM 4514
2,159 Kg/m



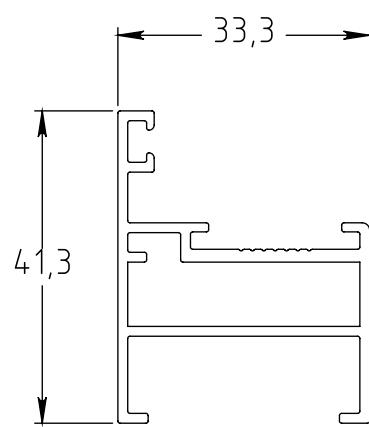
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ALM 0645
0,518 Kg/m



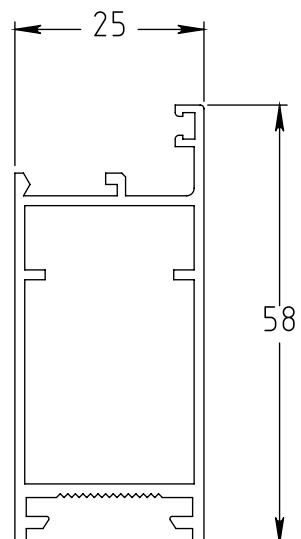
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ALM 0631
0,349 Kg/m



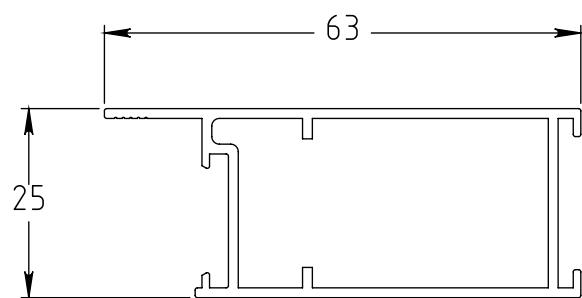
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ALM 1090
0,565 Kg/m



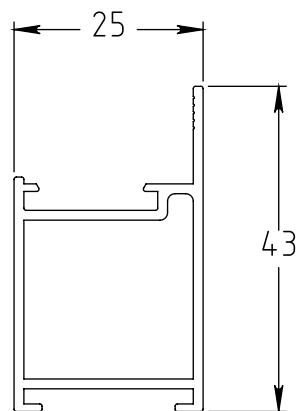
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ALM 0646
0,635 Kg/m



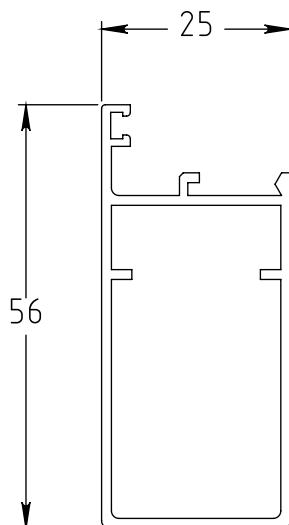
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ALM 1052
0,613 Kg/m



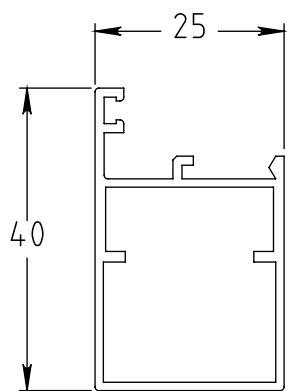
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ALM 1055
0,453 Kg/m



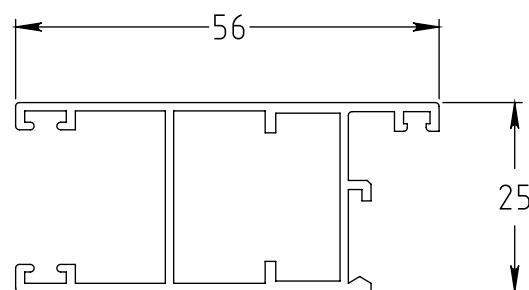
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0,571 Kg/m



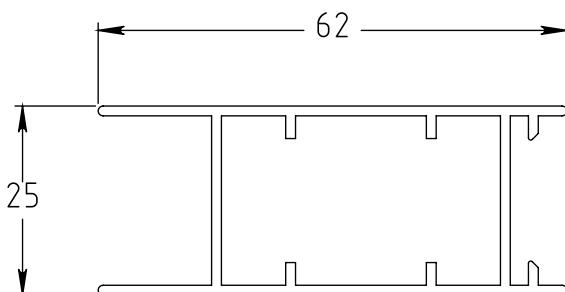
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ALM 0633
0,424 Kg/m



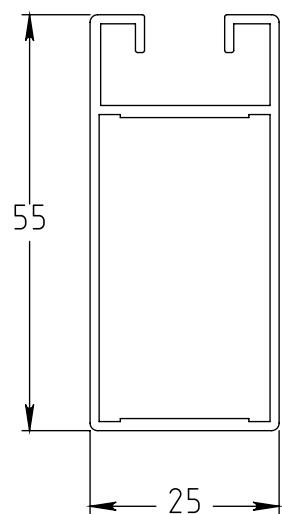
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ALM 0642
0,563 Kg/m



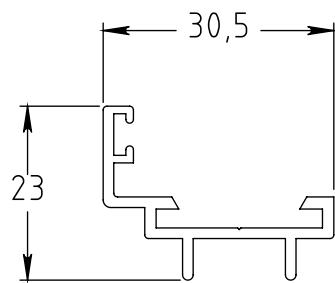
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ALM 3041
0,655 Kg/m



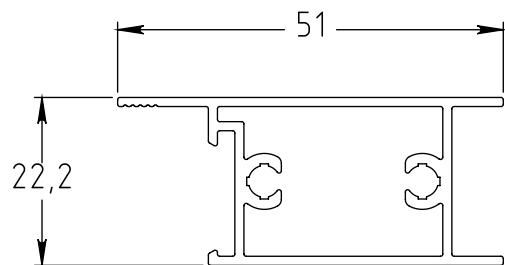
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ALM 1108
0,609 Kg/m



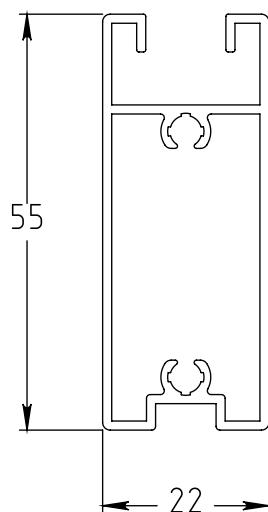
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0,276 Kg/m



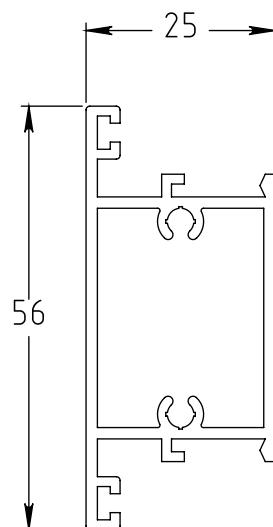
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ALM 1089
0,539 Kg/m



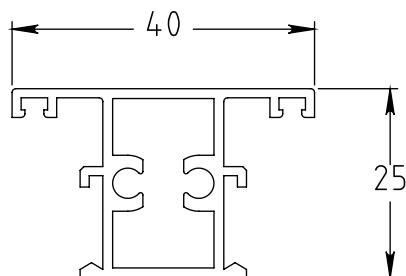
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-

ALM 1106
0,625 Kg/m



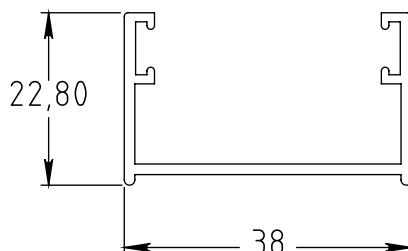
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ALM 0576
0,713 Kg/m



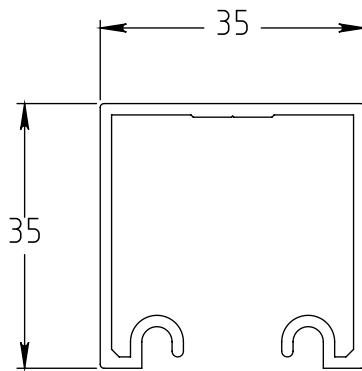
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ALM 0637
0,527 Kg/m



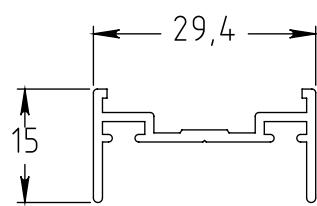
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ALM 0690
0,352 Kg/m



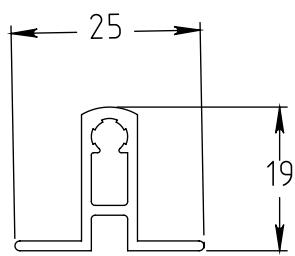
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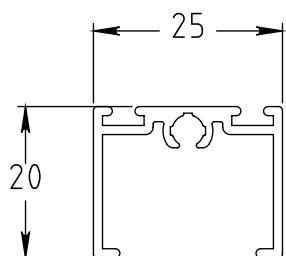
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ALM 0635
0,225 Kg/m



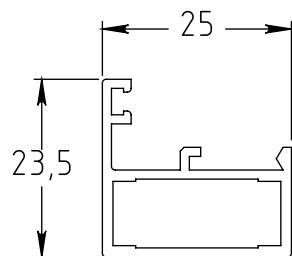
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0,241 Kg/m



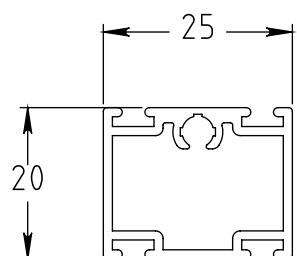
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ALM 1103
0,283 Kg/m



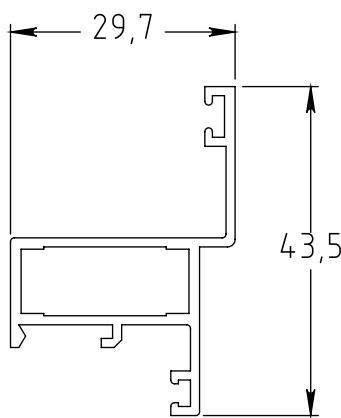
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ALM 0630
0,326 Kg/m



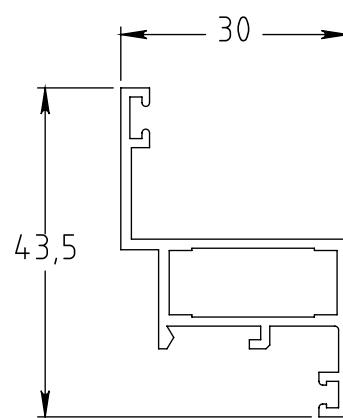
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ALM 1104
0,372 Kg/m



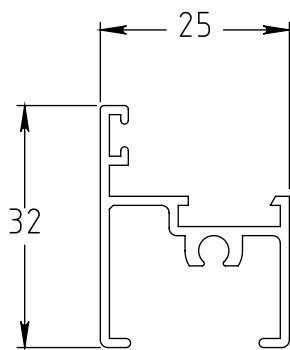
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ALM 0632
0,433 Kg/m



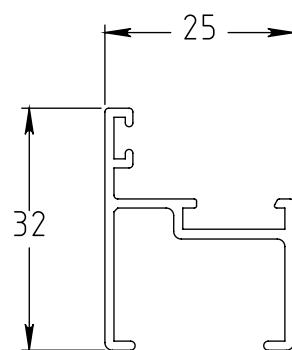
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0,440 Kg/m



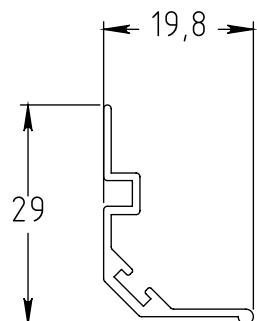
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ALM 0641
0,347 Kg/m



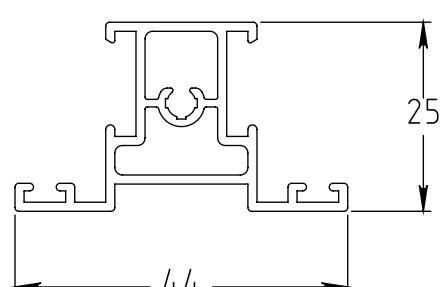
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ALM 0640
0,308 Kg/m



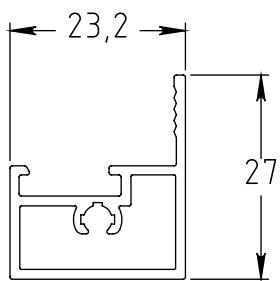
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16

ALM 0886
0,178 Kg/m



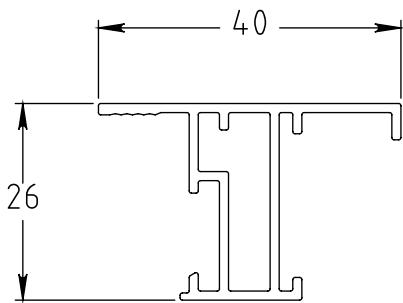
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ALM 0699
0,481 Kg/m



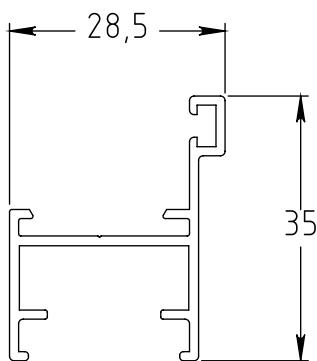
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ALM 3035
0,339 Kg/m



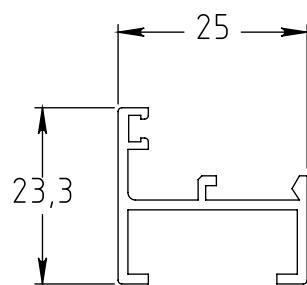
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ALM 3036
0,400 Kg/m



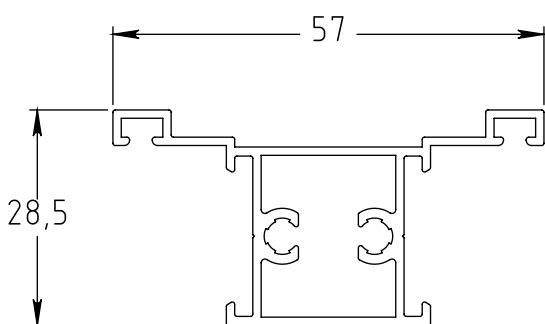
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0,341 Kg/m



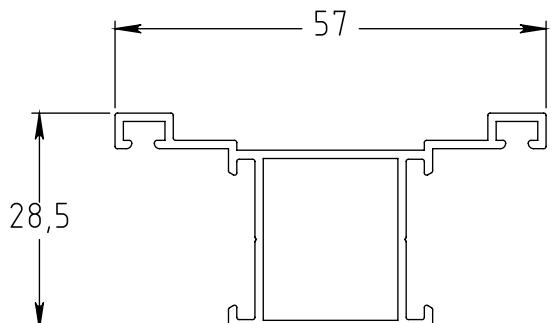
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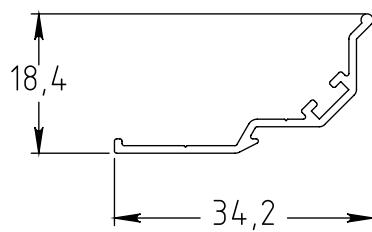
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ALM 1035
0,564 Kg/m



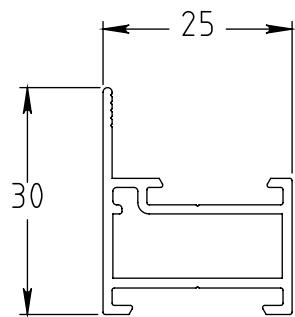
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ALM 1094
0,468 Kg/m



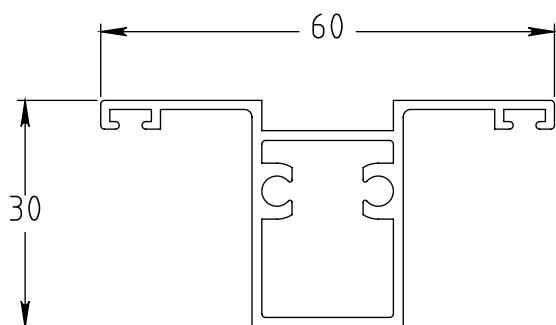
Qnt. Pacote
20

ALM 1034
0,150 Kg/m



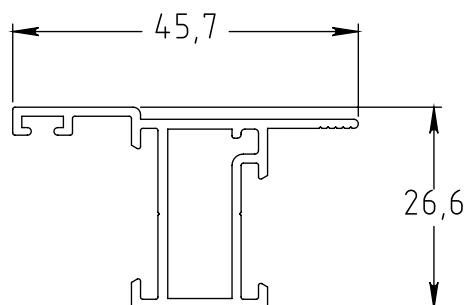
Qnt. Pacote
12

ALM 1033
0,357 Kg/m



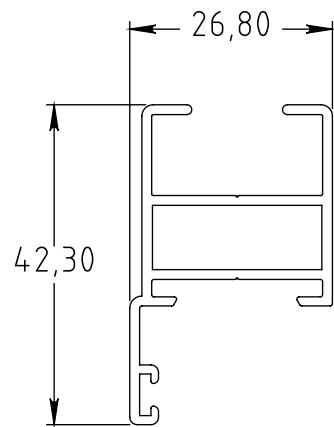
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ALM 0636
0,598 Kg/m



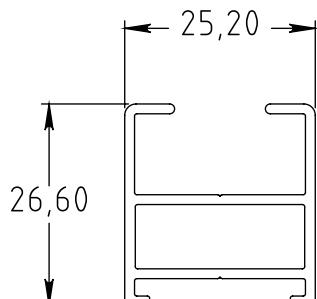
Qnt. Pacote
08

ALM 1036
0,435 Kg/m



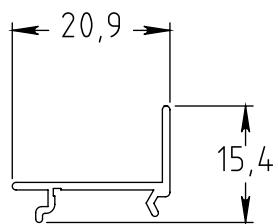
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ALM 1101
0,486 Kg/m



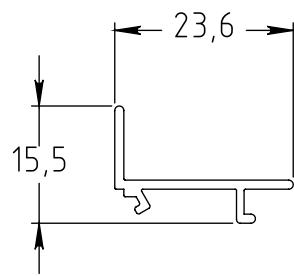
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ALM 1102
0,397 Kg/m



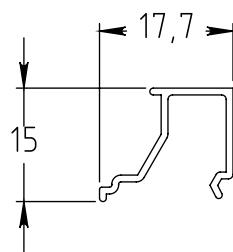
Qnt. Pacote
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ALM 1045
0,108 Kg/m



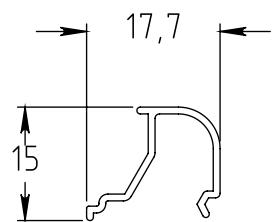
Qnt. Pacote
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ALM 1049
0,139 Kg/m



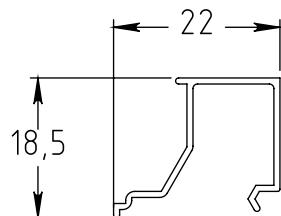
Qnt. Pacote
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ALM 1017
0,110 Kg/m



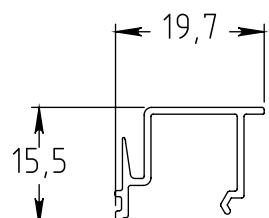
Qnt. Pacote
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ALM 1088
0,105 Kg/m



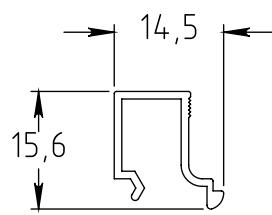
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ALM 1018
0,124 Kg/m



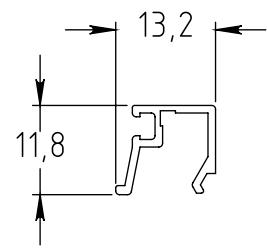
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ALM 1002
0,130 Kg/m



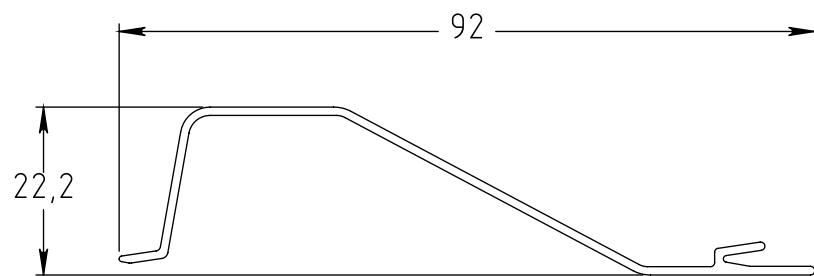
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ALM 0695
0,121 Kg/m



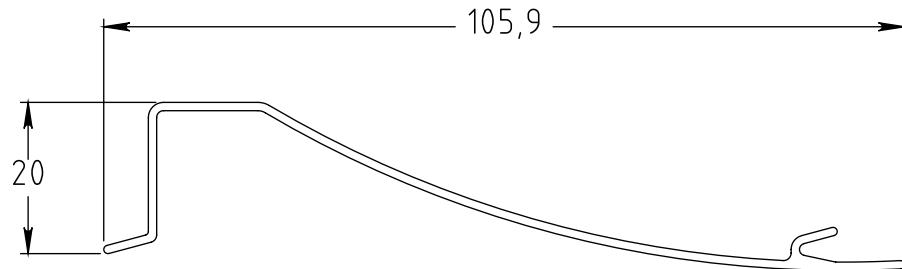
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ALM 0685
0,104 Kg/m



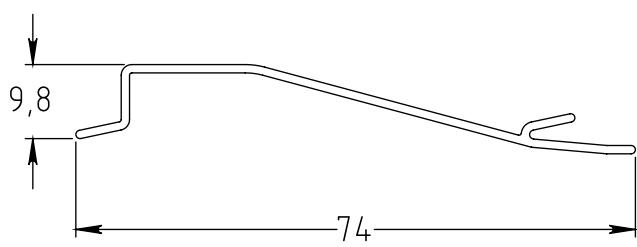
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ALM 1001
0,361 Kg/m



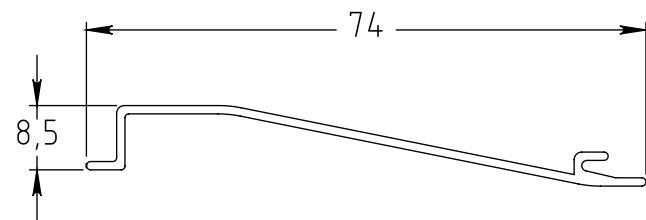
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ALM 3042
0,407 Kg/m



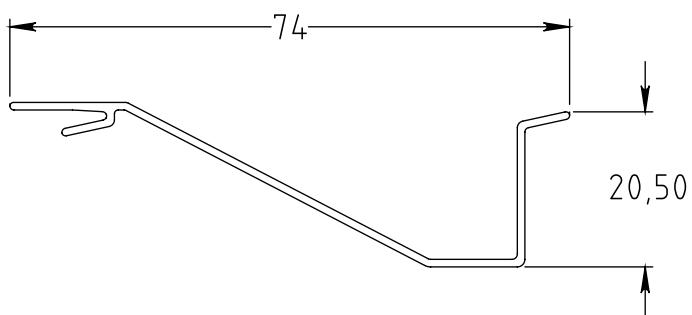
Qnt. Pacote
-

ALM 3608
0,267 Kg/m



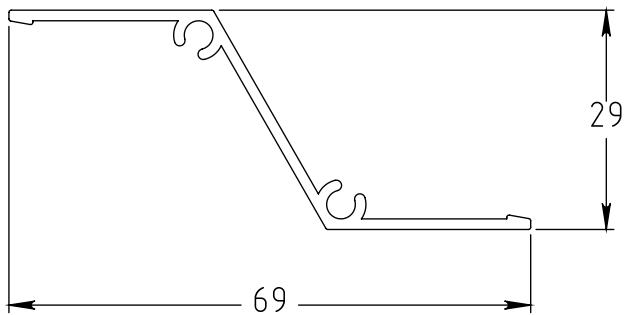
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ALM 0590
0,268 Kg/m



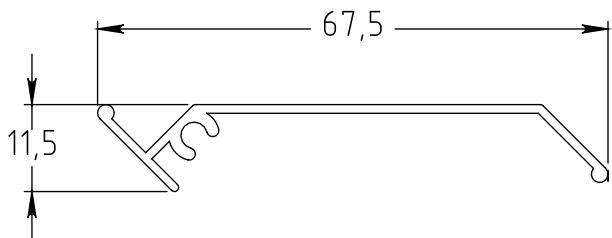
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ALM 1219
0,286 Kg/m



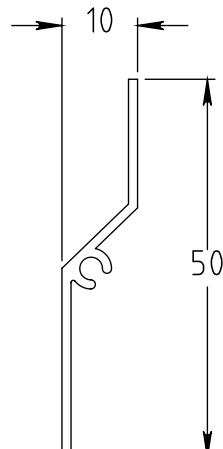
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ALM 4020
0,381 Kg/m



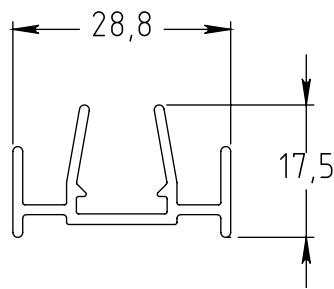
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ALM 0592
0,296 Kg/m



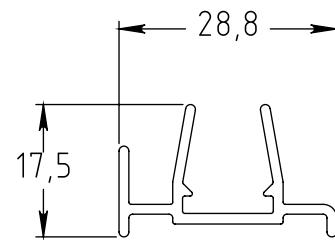
Qnt. Pacote
16

ALM 0579
0,200 Kg/m



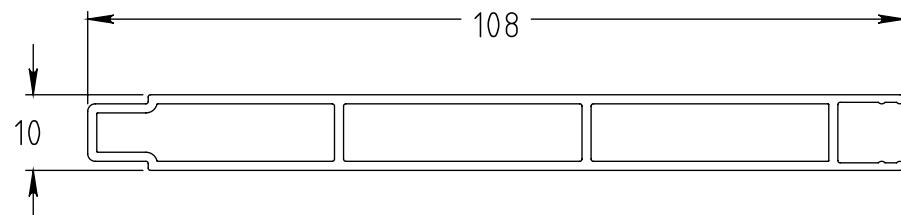
Qnt. Pacote
16

ALM 1030
0,288 Kg/m



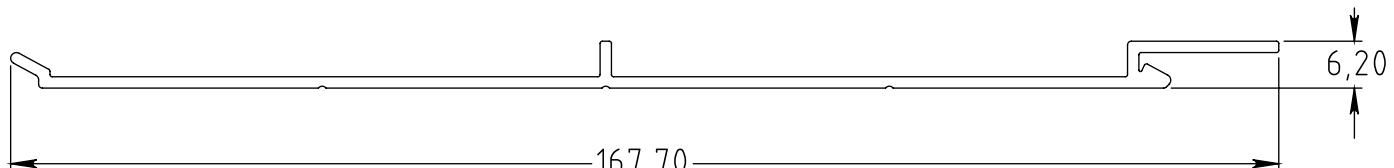
Qnt. Pacote
18

ALM 1084
0,260 Kg/m



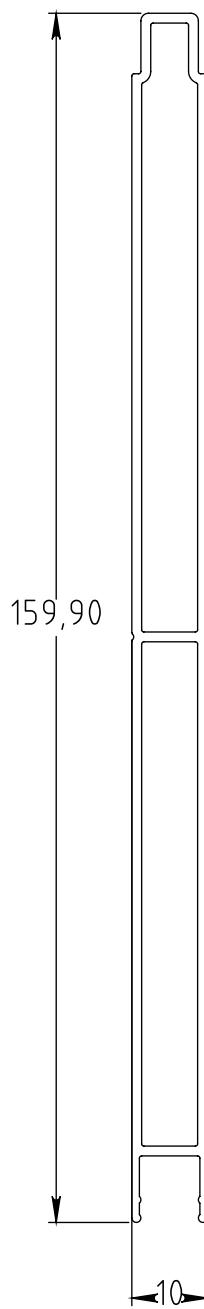
Qnt. Pacote
05

ALM 3606
0,789 Kg/m



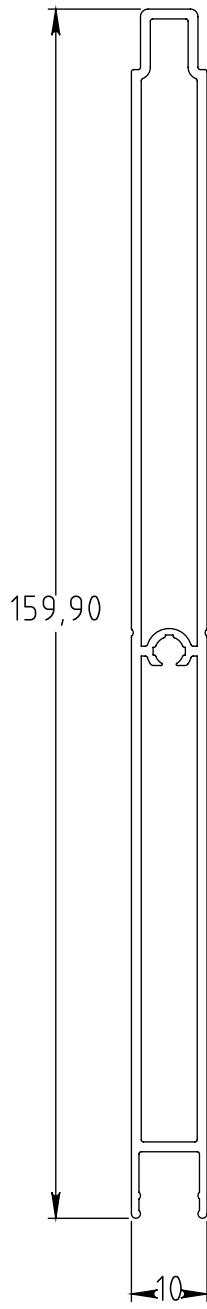
Qnt. Pacote
04

ALM 0583
0,752 Kg/m



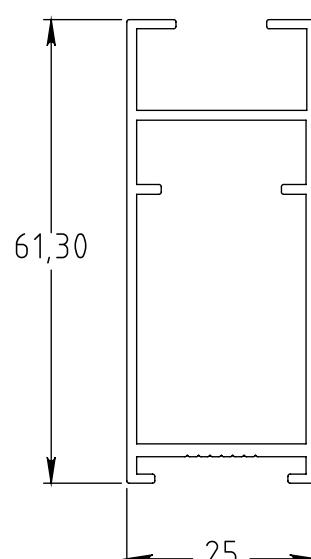
ALM 1107
1,187 Kg/m

Qnt. Pacote



ALM 1109
1,200 Kg/m

Qnt. Pacote



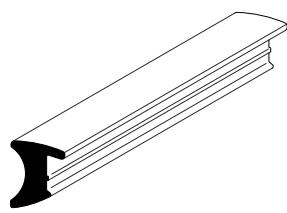
ALM 2228
0,682 Kg/m

Qnt. Pacote

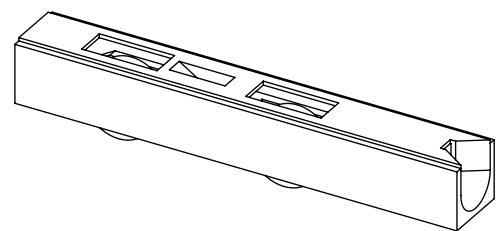


ACESSÓRIOS

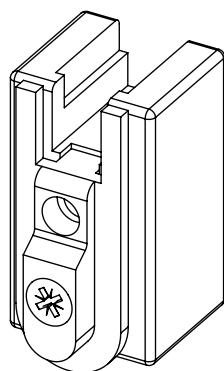
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NYL-383	Acabamento para ALM 0898	85
NYL-468	Acabamento para ALM 3044	85
NYL-469	Acabamento para ALM 3045	85
TPA-450	Acabamento para ALM 3046	85
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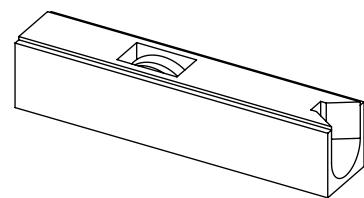
Guarnição Cunha
GUA-039



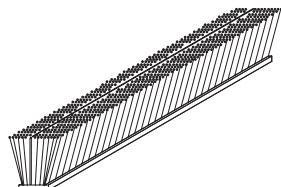
Roldana Porta de Correr
ROL-439R



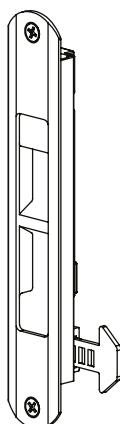
Guia Deslizante
NYL-250



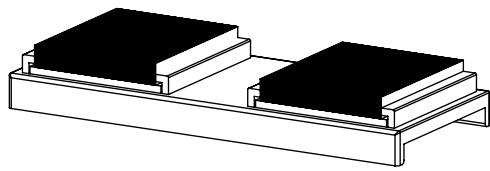
Roldana Janela de Correr
ROL-440R



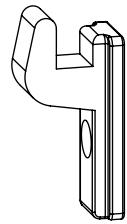
Escova de Vedação 5x5
FS-48500



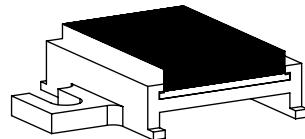
Fecho Concha com Travamento Automático
FEC-634A



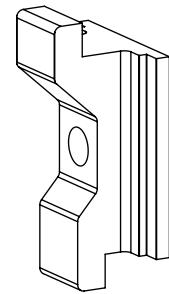
Caixa de Dreno
VED-3011



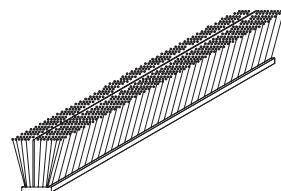
Contra Fecho
CON-370



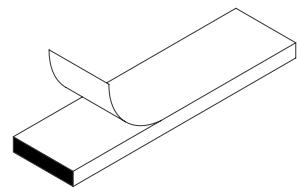
Escova de Vedaçāo
NYL-335



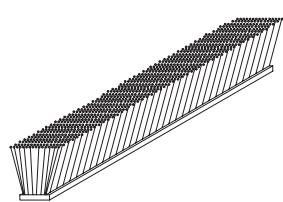
Contra Fecho para 4 Folhas
FEC-055



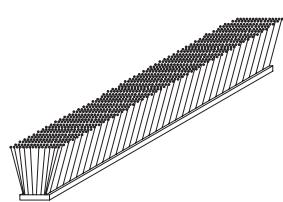
Escova de Vedaçāo 5x7 FS
FS-48700



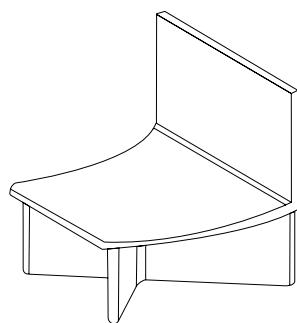
Manta Adesiva
MAN-13X2



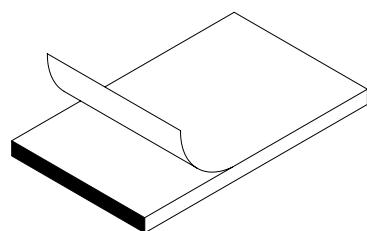
Escova de Vedação 7,5×6
FIT-756



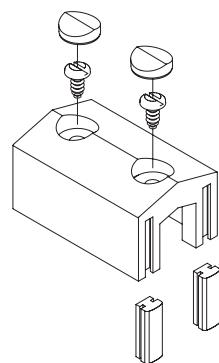
Escova de Vedação 5×7
FIT-57



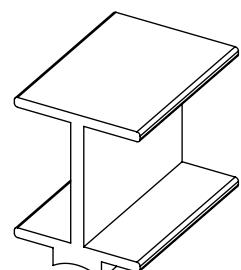
Tampa para Montante
TMM32-012



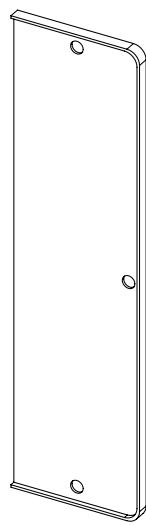
Manta Adesiva
MAN-22X4



Batedeira
NYL-414



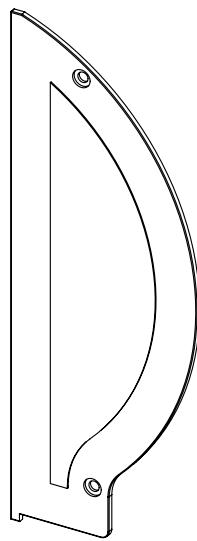
Calço da Folha Fixa
CAL-948



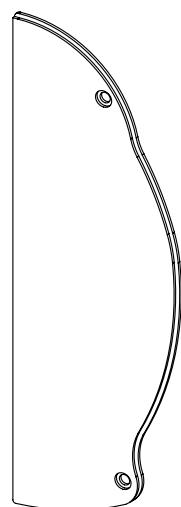
Acabamento para ALM 0898
NYL-383



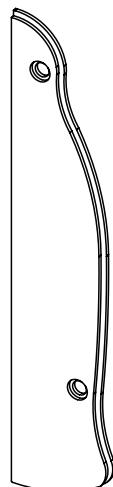
Acabamento para ALM 0896
NYL-382



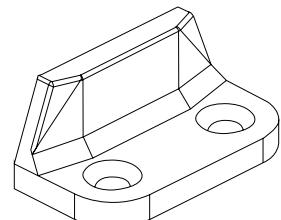
Acabamento para ALM 3046
TPA-450



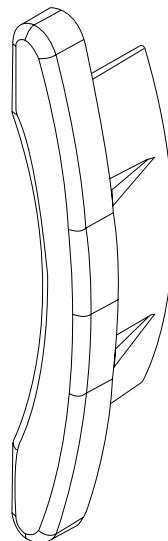
Acabamento para ALM 3044
NYL-468



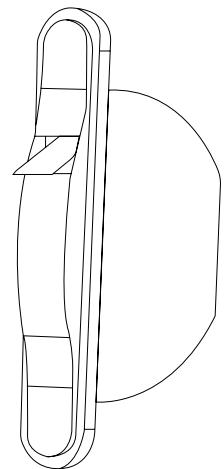
Acabamento para ALM 3045
NYL-469



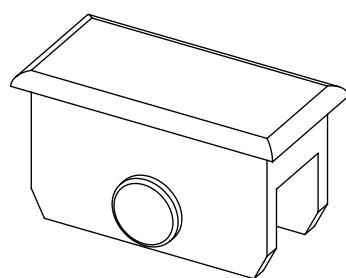
Limitador de Abertura Jan. Integrada
NYL-738



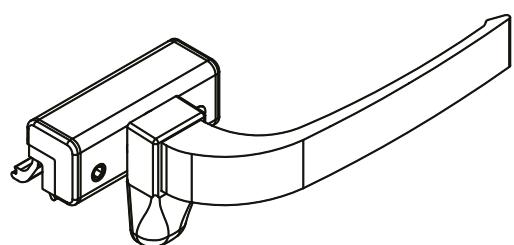
Tampa para Palheta
UDIAL-41



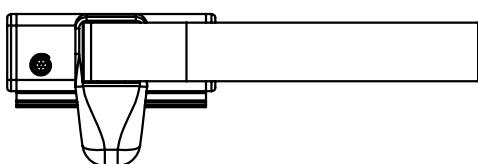
Recolhedor para Esquadria Integrada
REC - 8118



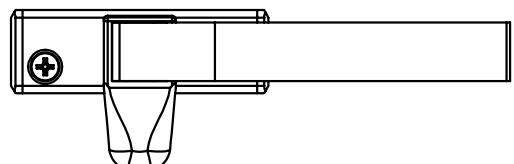
Tampa Maxim-ar
NYL-355



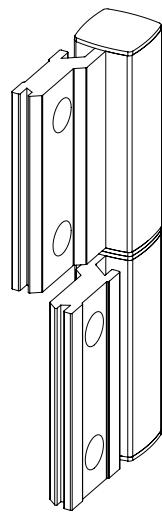
Fecho Maxim-Ar 45°
FEC-009



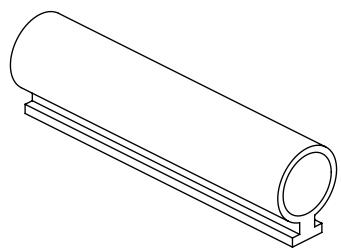
Fecho Maxim-Ar 90°
FEC-125



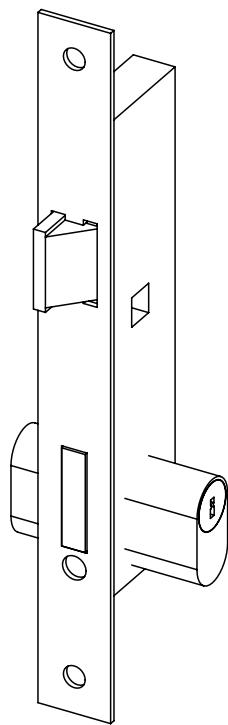
Fecho Maxim-Ar sem Baguete
FEC - 1014



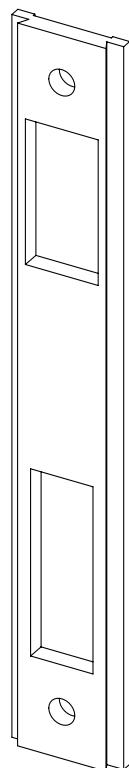
Dobradiça para Porta de Giro
DOB-837



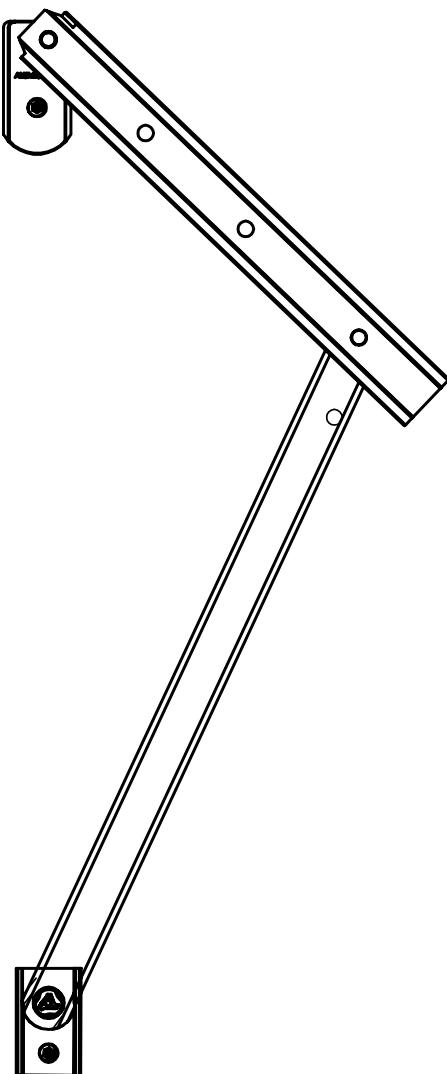
Guarnição
GUA-007



Fechadura
FRA-822



Contra Fecho para Porta de Giro
CON-295



Braços de Maxim-ar

UDINESE	
comprimento	código
180 mm	9102637
250 mm	9101440
400 mm	9101506
500 mm	9101441
750 mm	9101442
810 mm	9101782

WALPLAS	
comprimento	código
250 mm	BRA 705
500 mm	BRA 702
750 mm	BRA 703

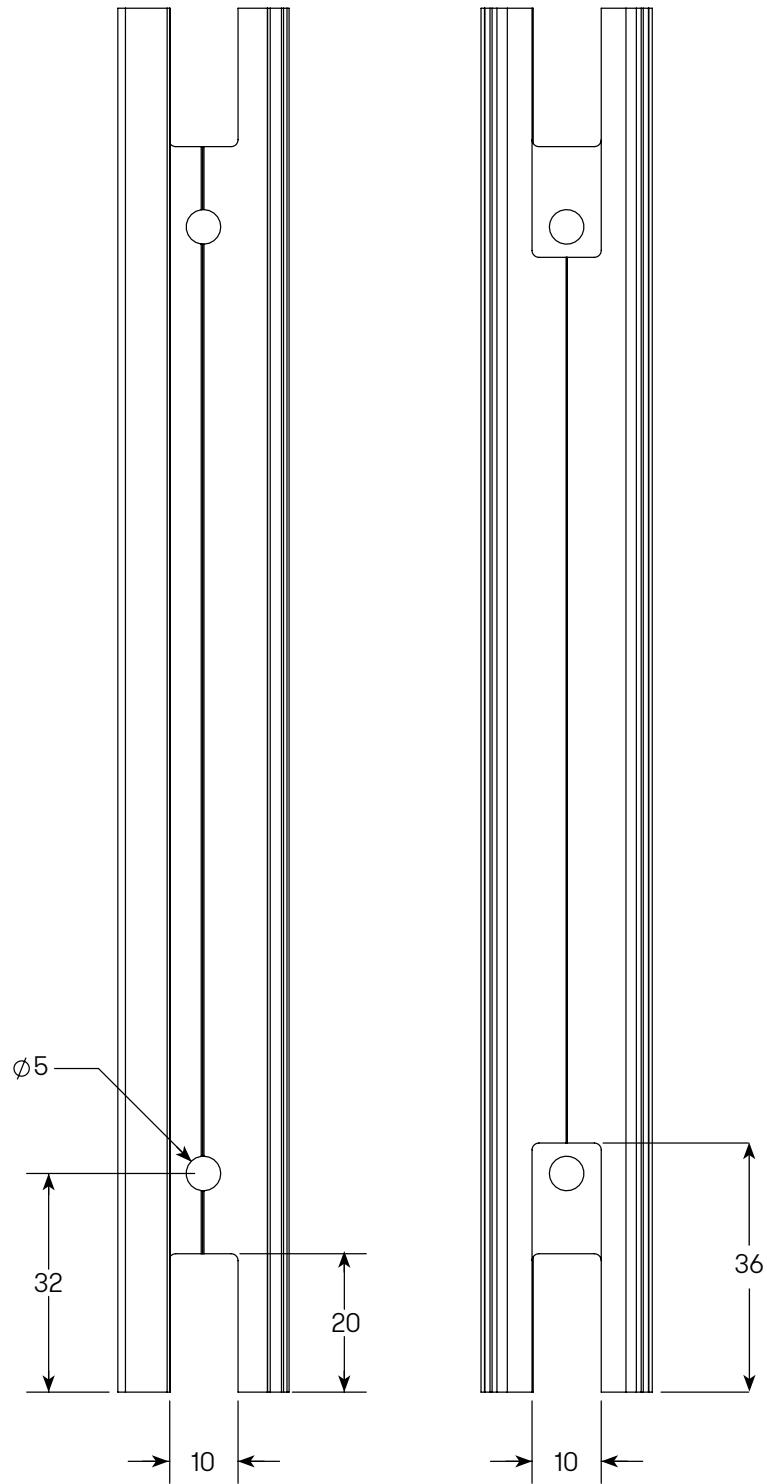
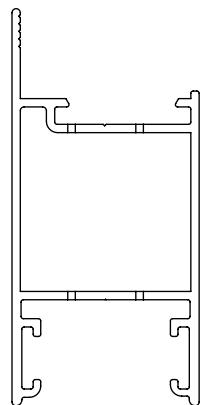
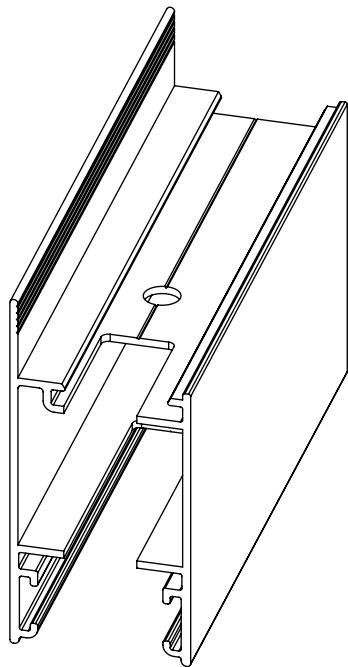
FERMAX	
comprimento	código
200 mm	APR 35
250 mm	APR 28
400 mm	APR 31
515 mm	APR 29
750 mm	APR 30
810 mm	APR 32



USINAGEM

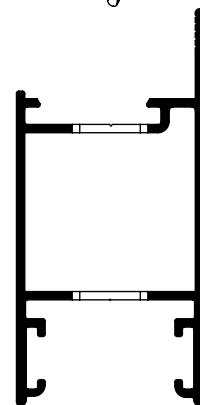
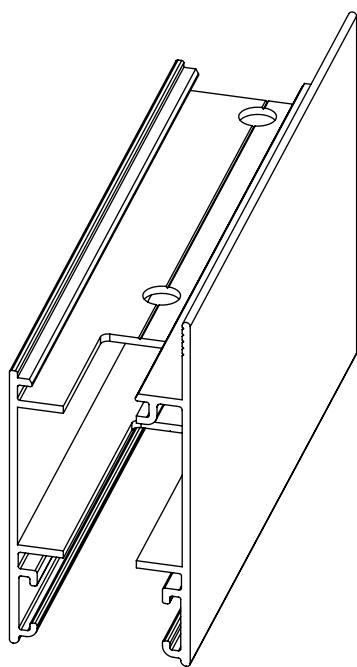
Altura - Janela

ALM 1008
ALM 1009
ALM 1010
ALM 1011
ALM 1012
ALM 1014
ALM 1015
ALM 1016
ALM 1023
ALM 1024
ALM 1039
ALM 1040
ALM 1041
ALM 1053
ALM 1054
ALM 3053
ALM 3054
ALM 3055

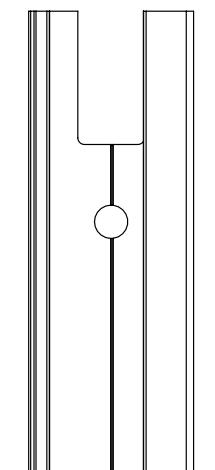


Altura - Porta de Correr

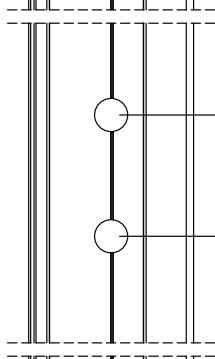
ALM 1008
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 ALM 1011
 ALM 1012
 ALM 1014
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 ALM 1023
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 ALM 3053
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 ALM 3055



Extremidade superior

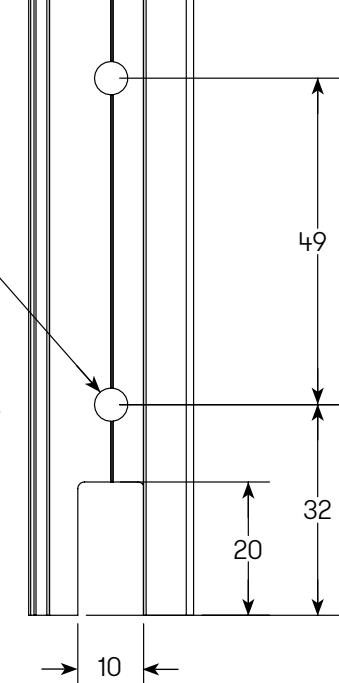


18



49

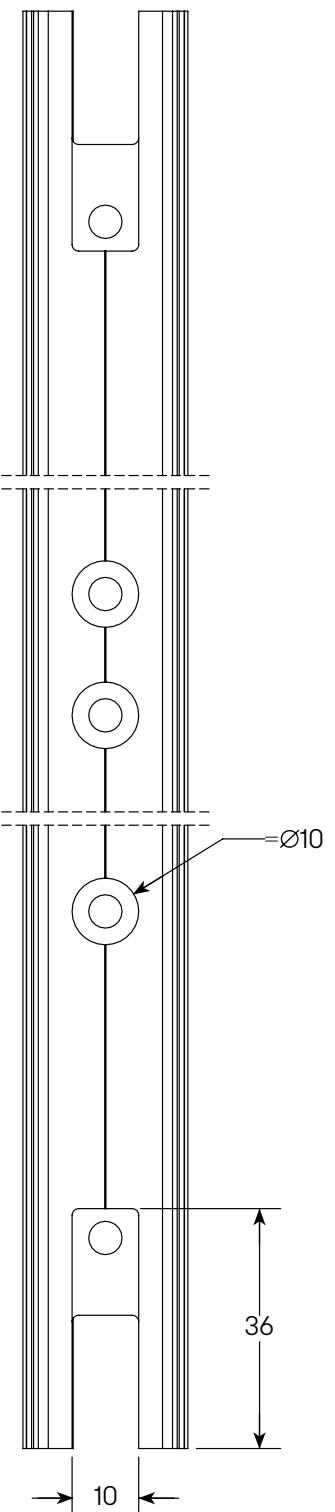
Extremidade inferior
Ø5



20

32

10



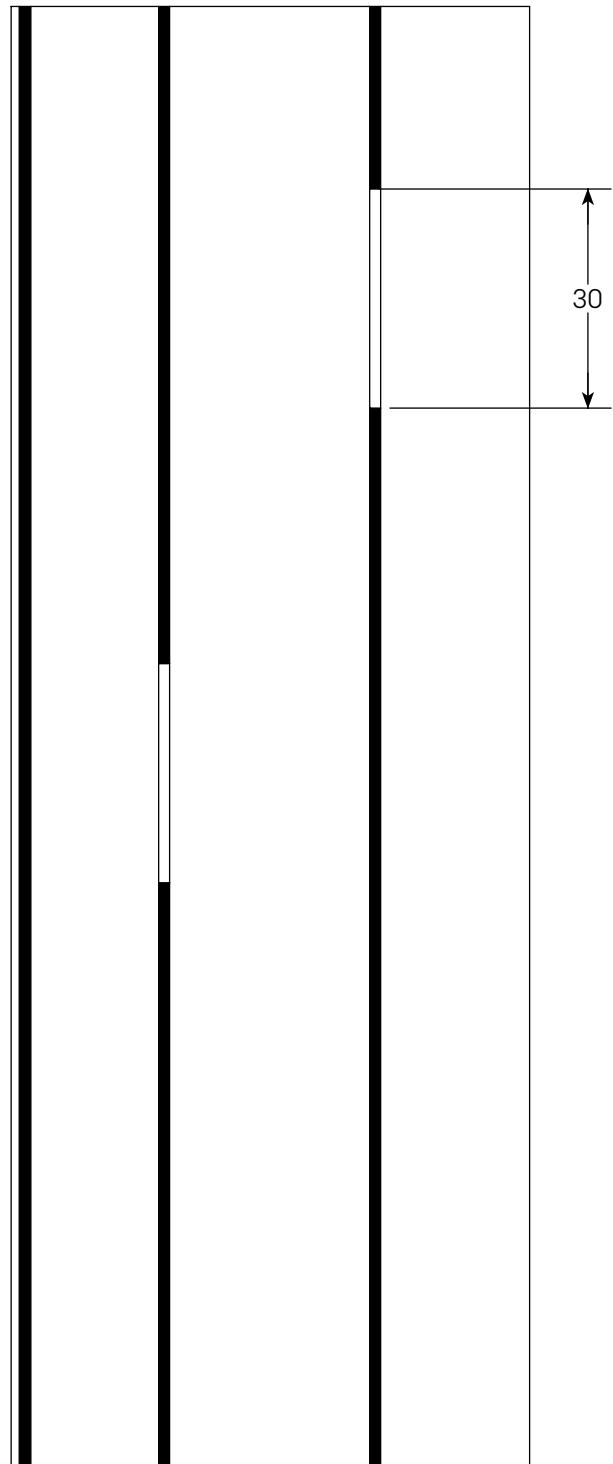
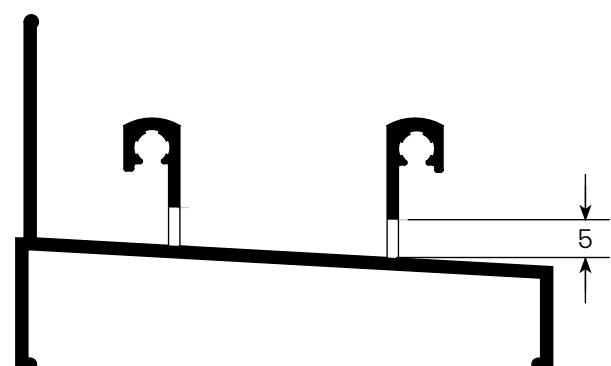
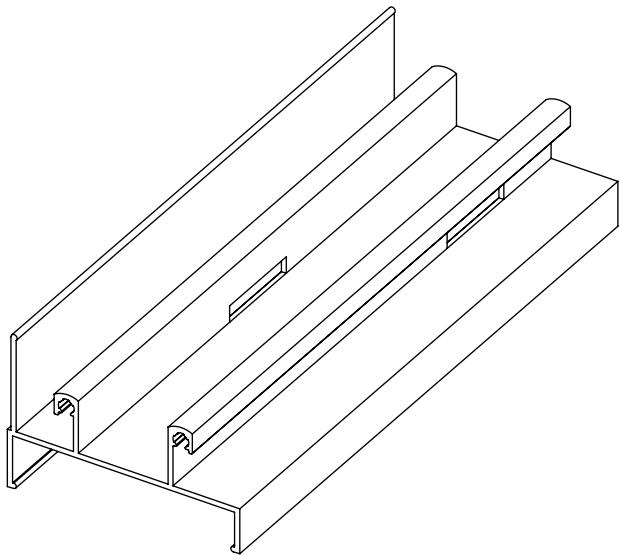
36

10

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Trilho

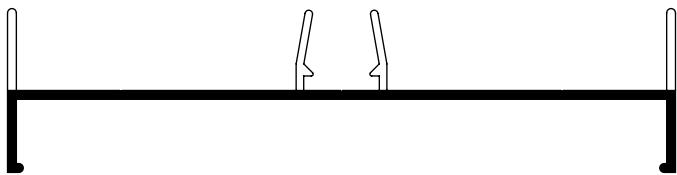
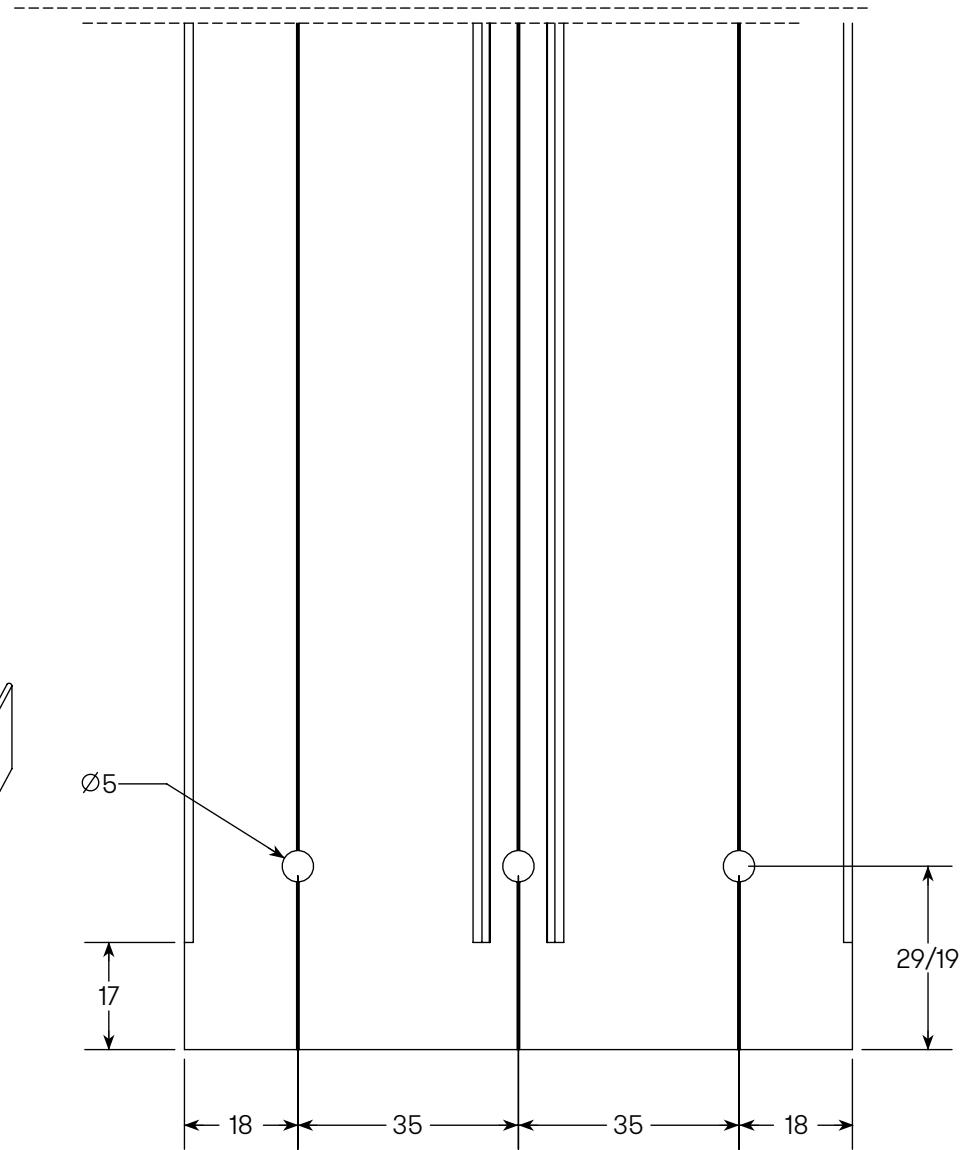
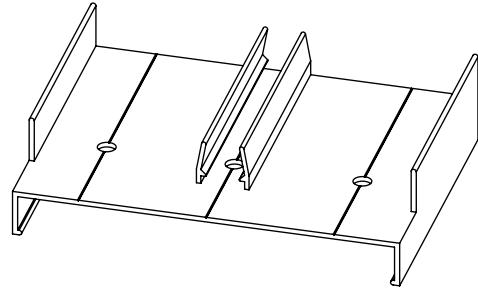
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USINAGEM

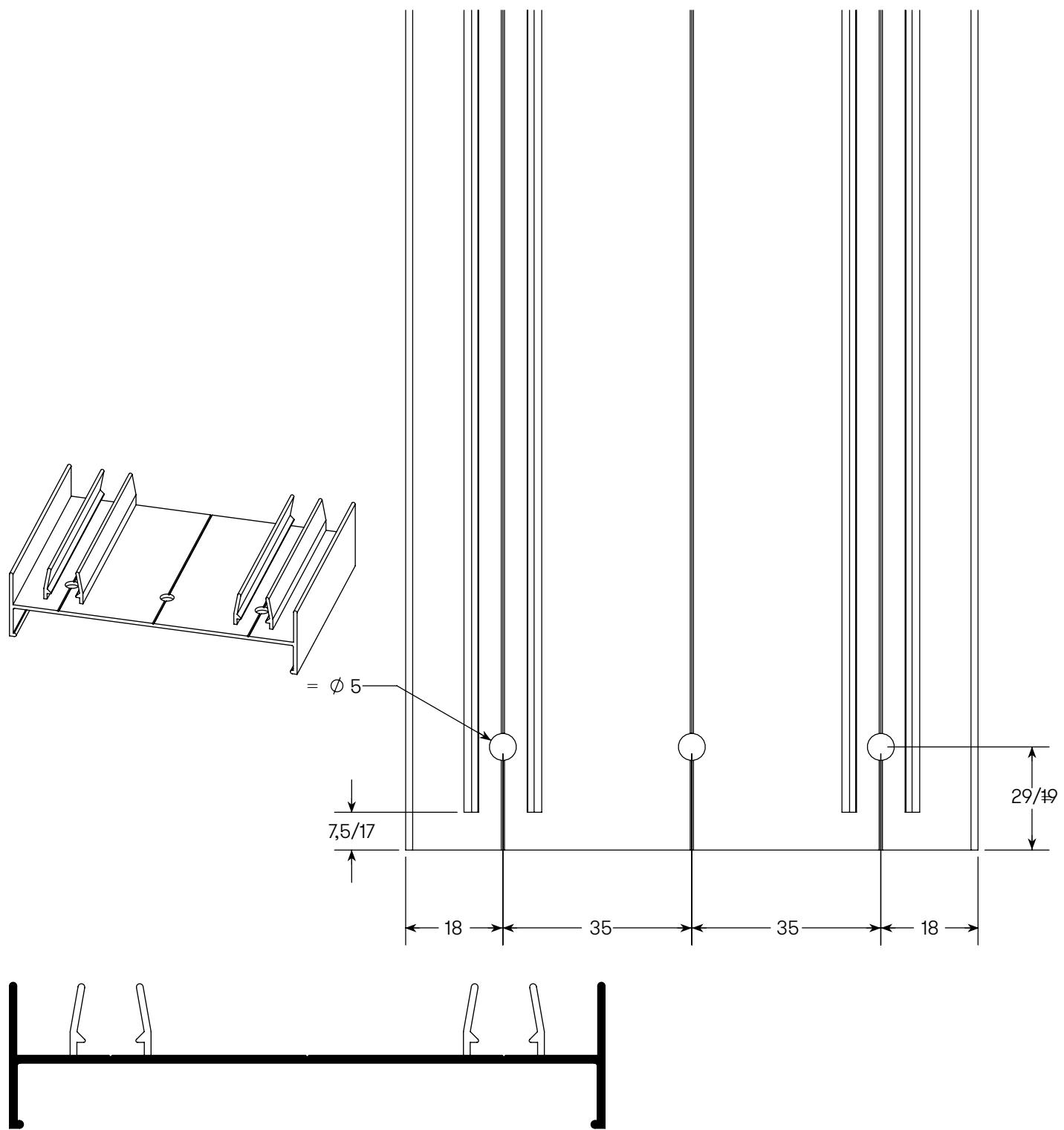
Lateral

ALM 1006
ALM 1007
ALM 1031



Lateral

ALM 1006
ALM 1031



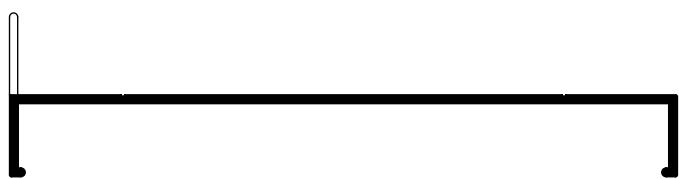
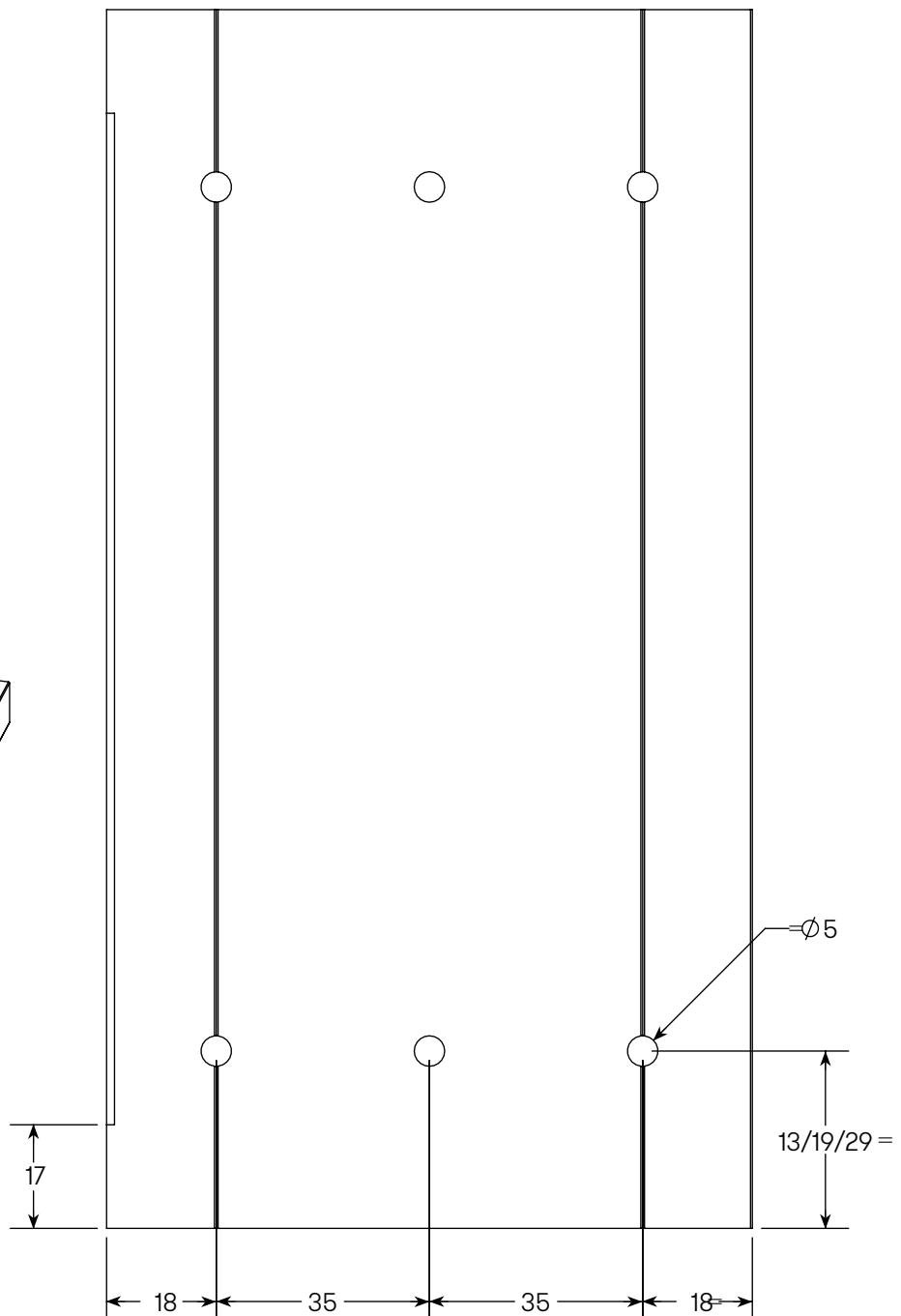
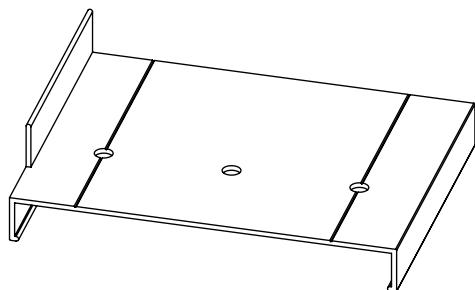
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Lateral

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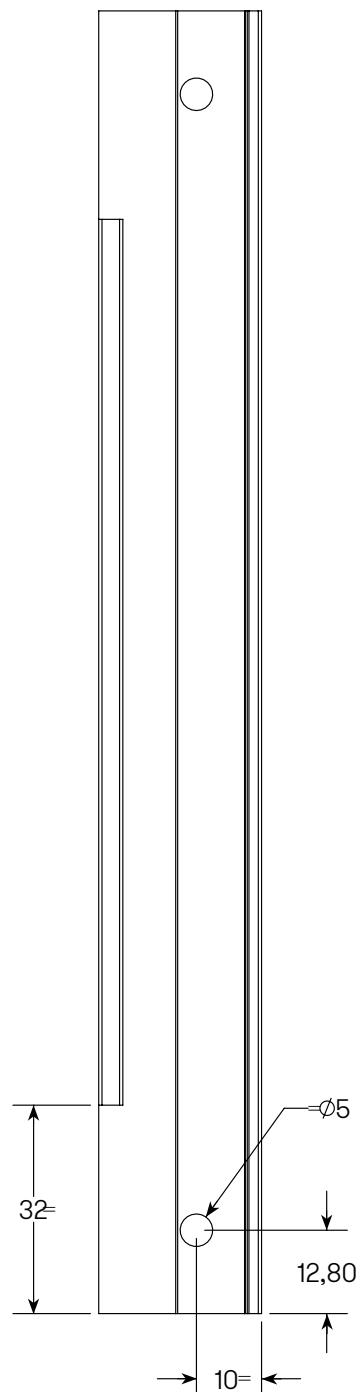
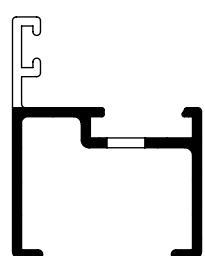
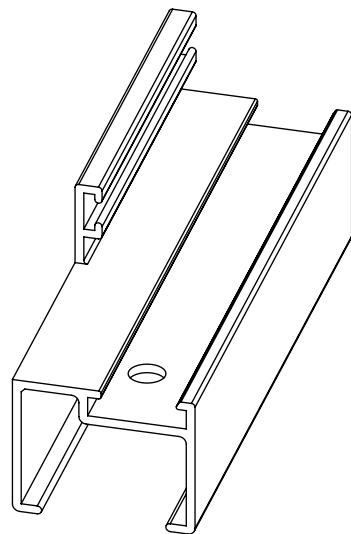
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ALM 1056



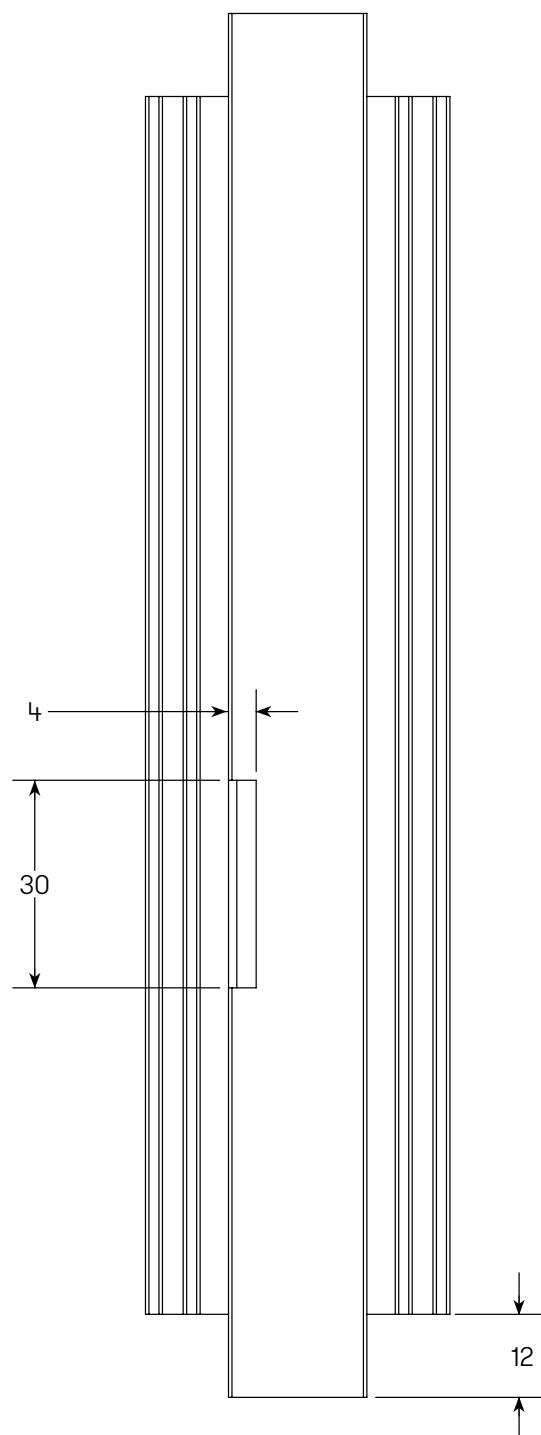
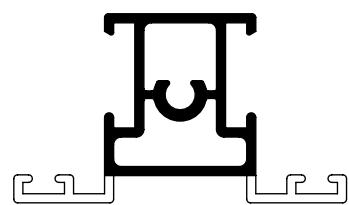
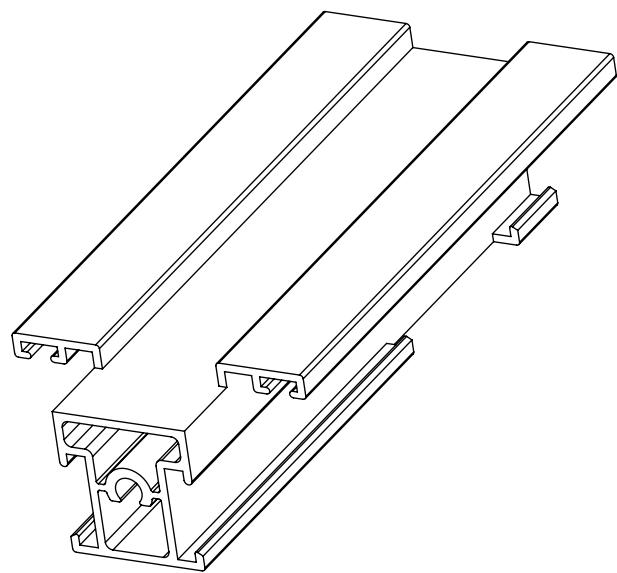
Quadro Maxim-ar 90°

ALM 0640



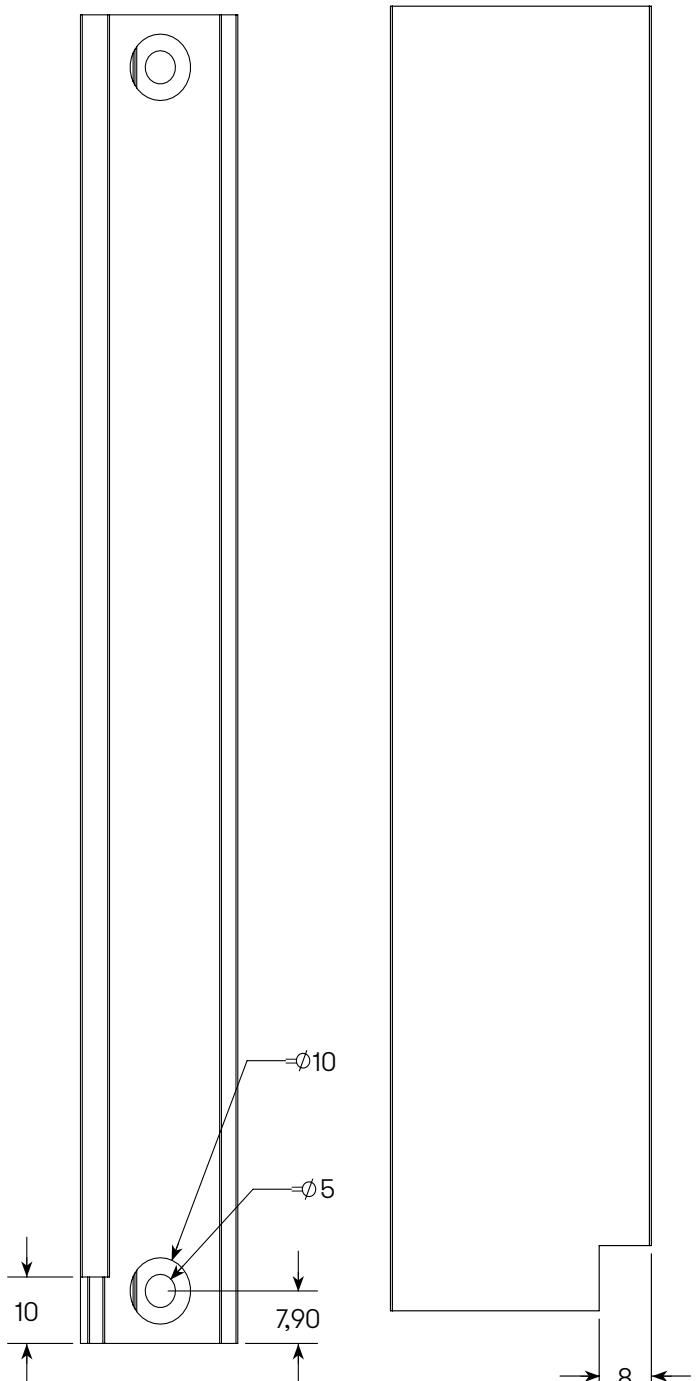
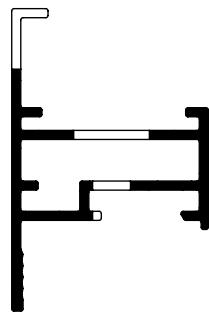
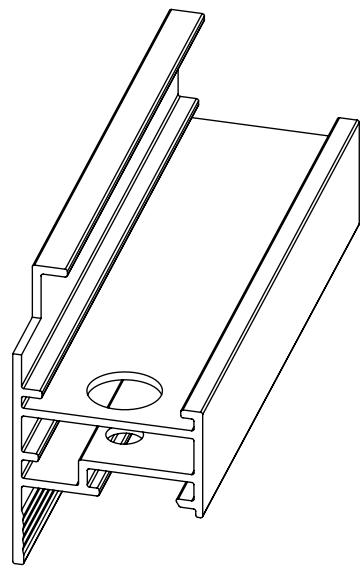
Travessa Maxim-ar

ALM 0699



Montante Maxim-ar

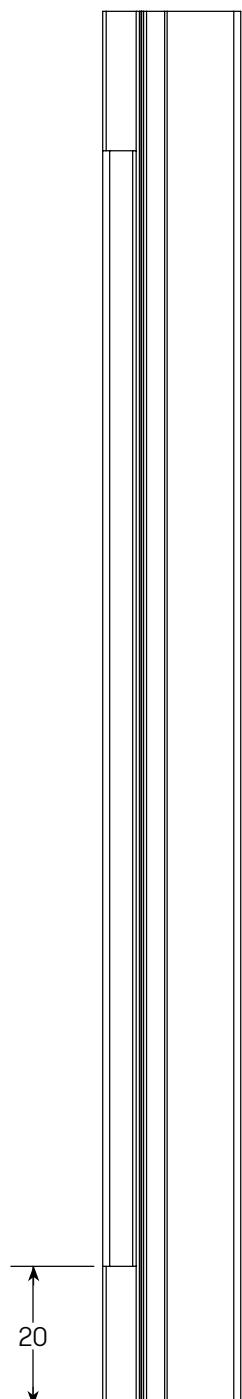
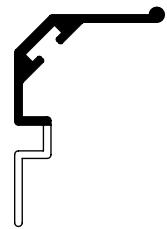
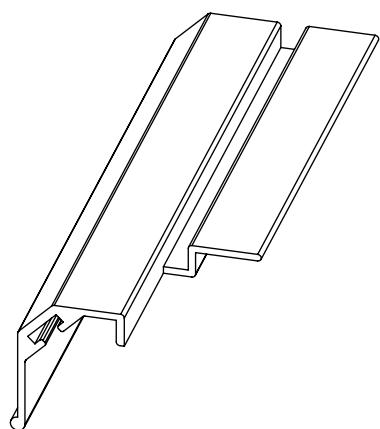
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USINAGEM

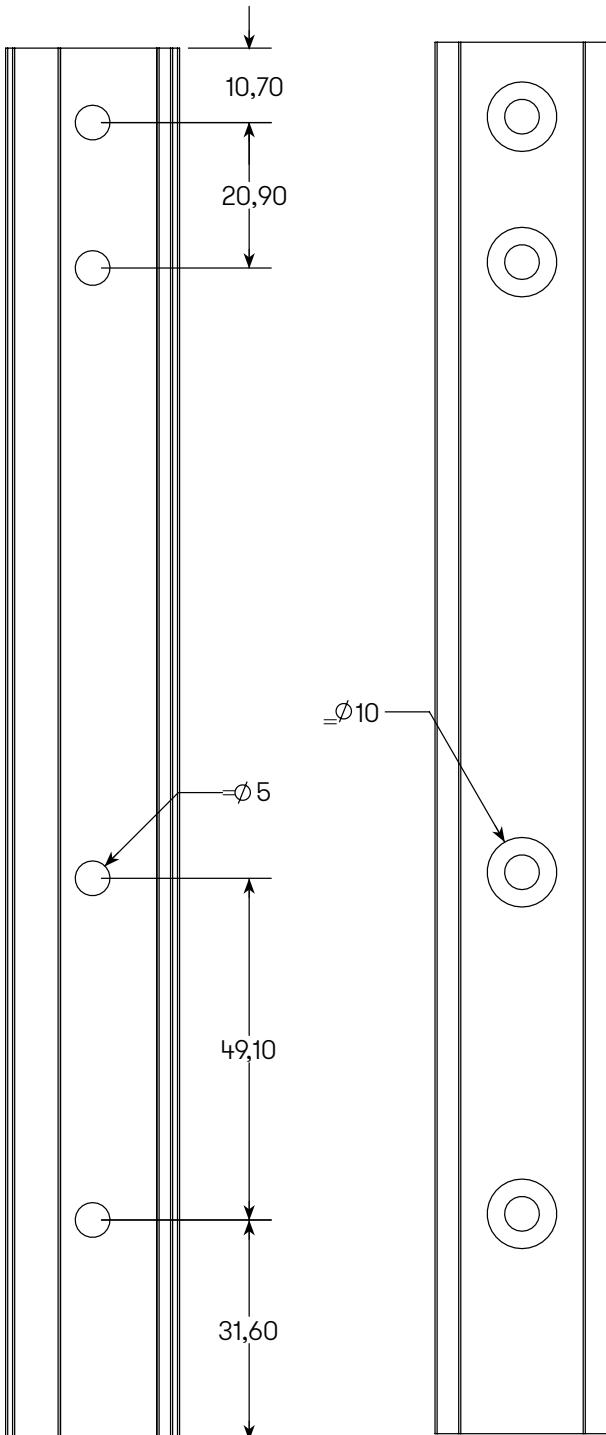
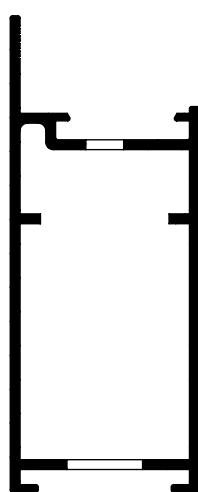
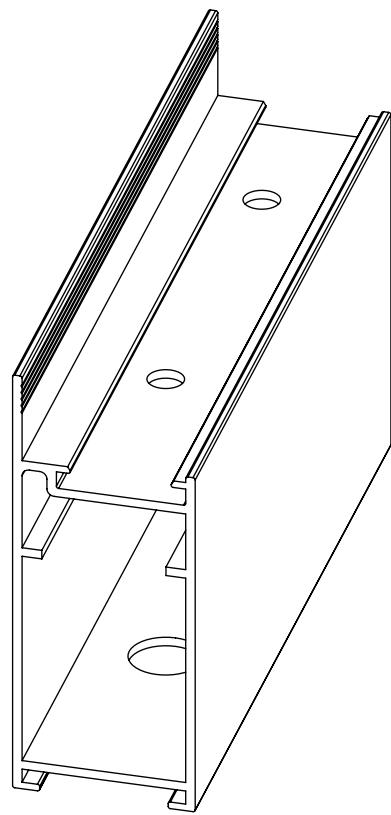
Pingadeira

ALM 0886



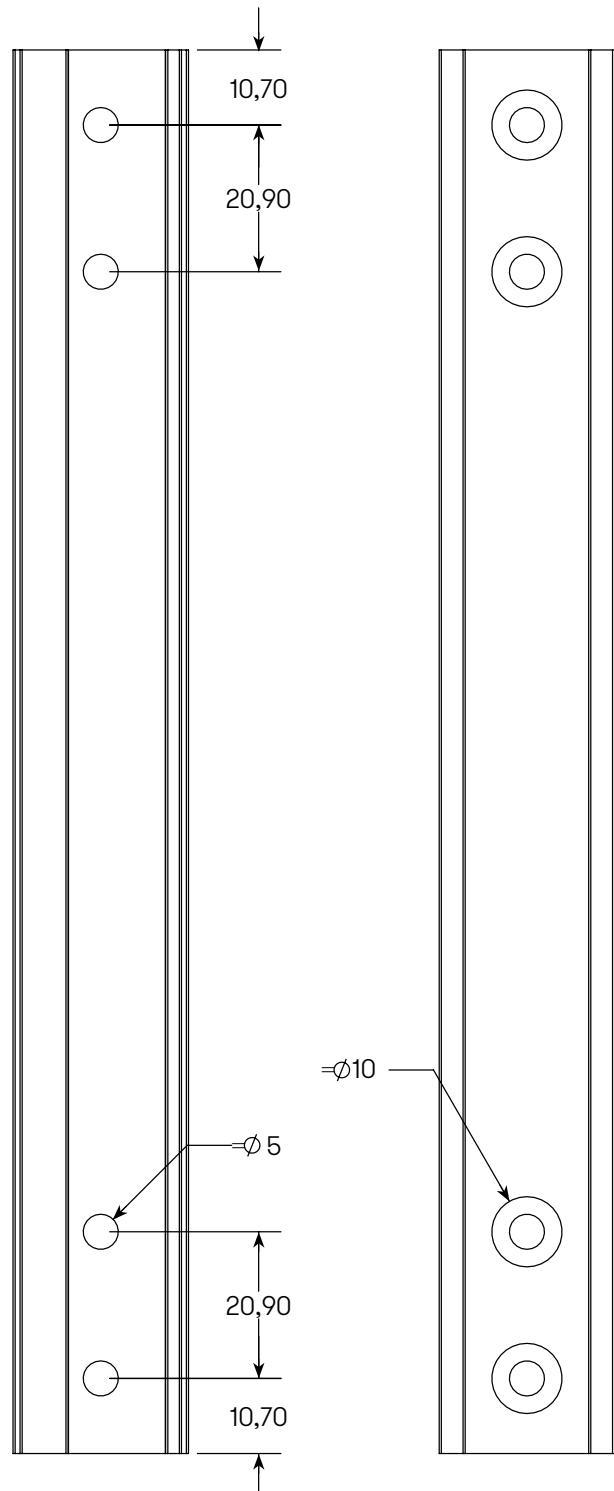
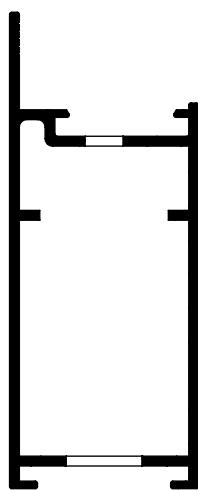
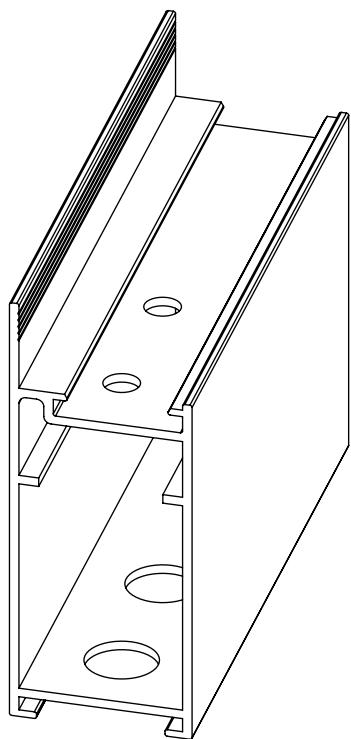
Altura Porta de Giro

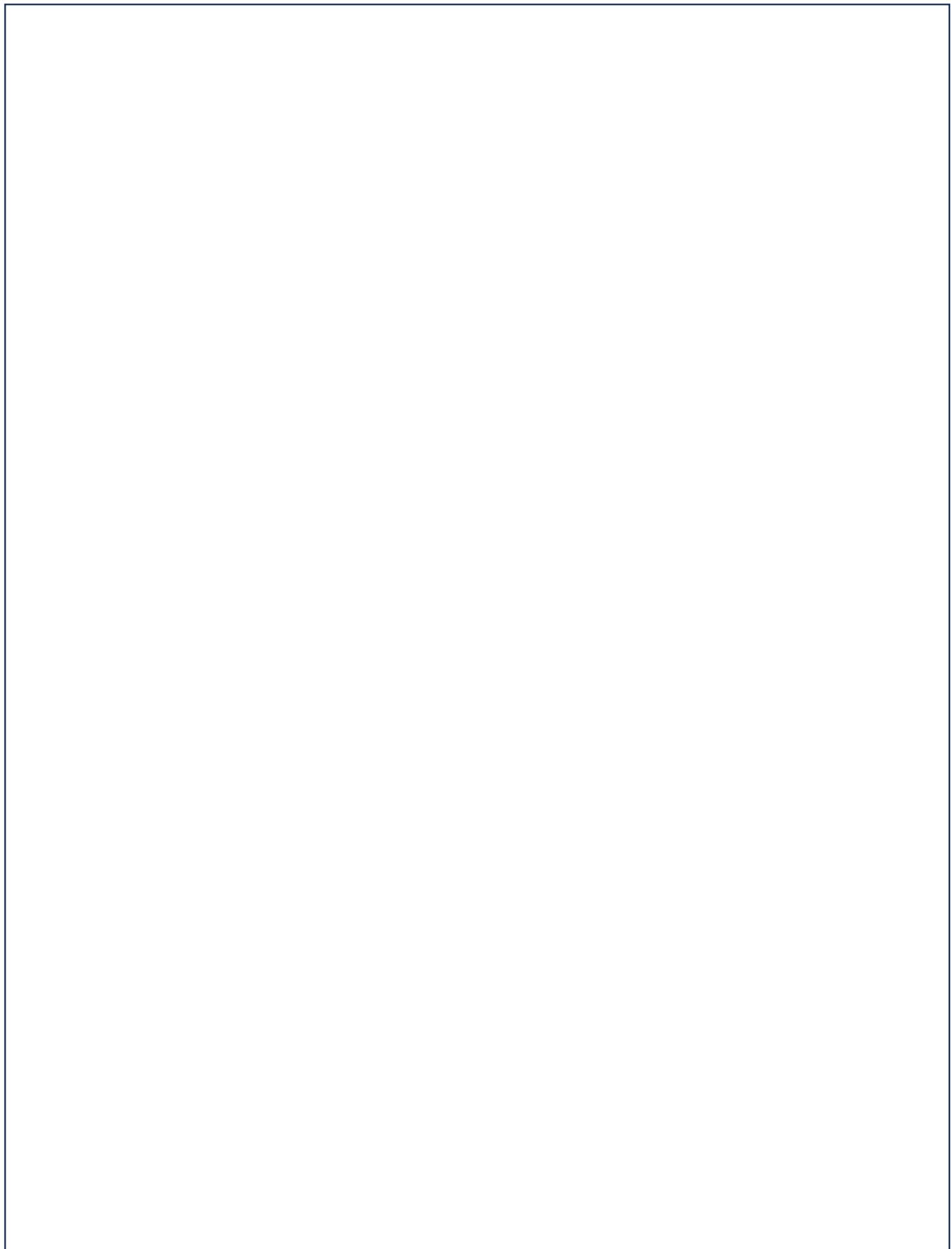
ALM 1052



Altura Porta de Giro

ALM 1052





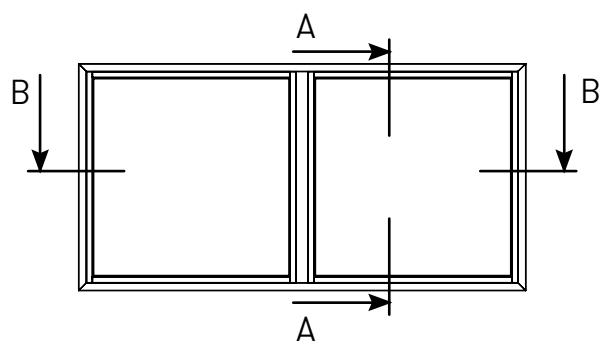


MONTA**G**ENS

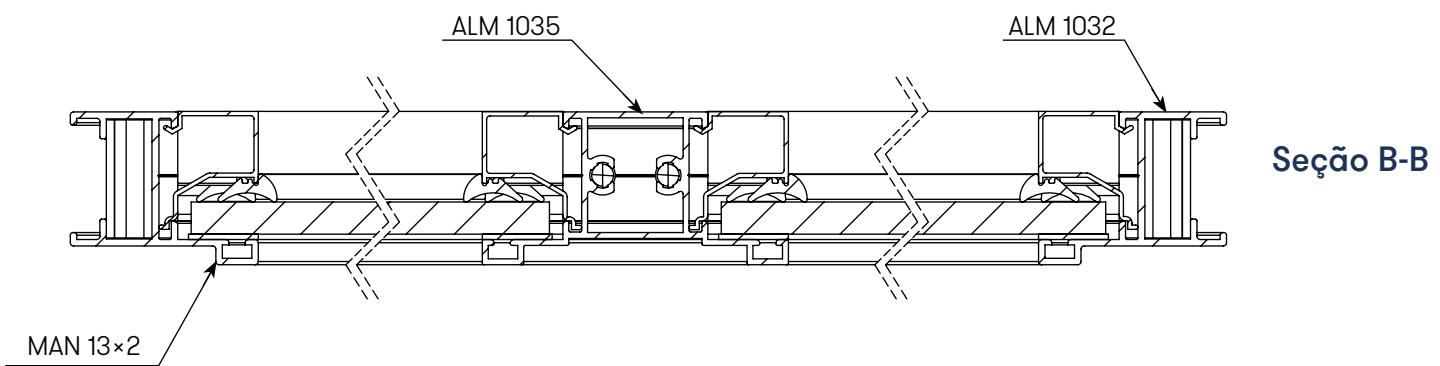
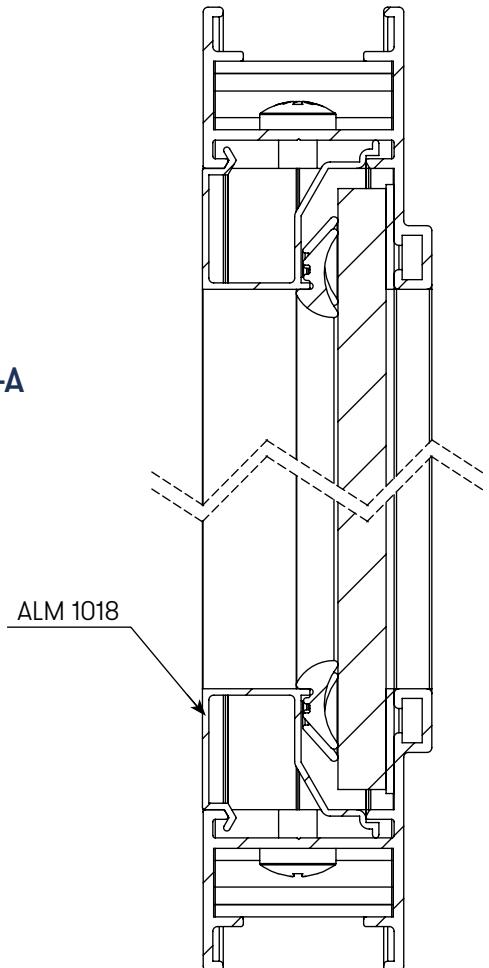
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MONTAGEM

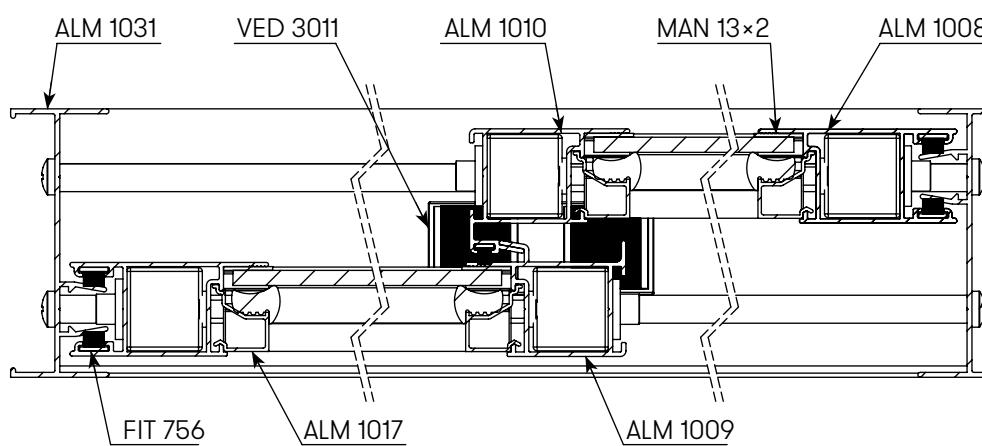
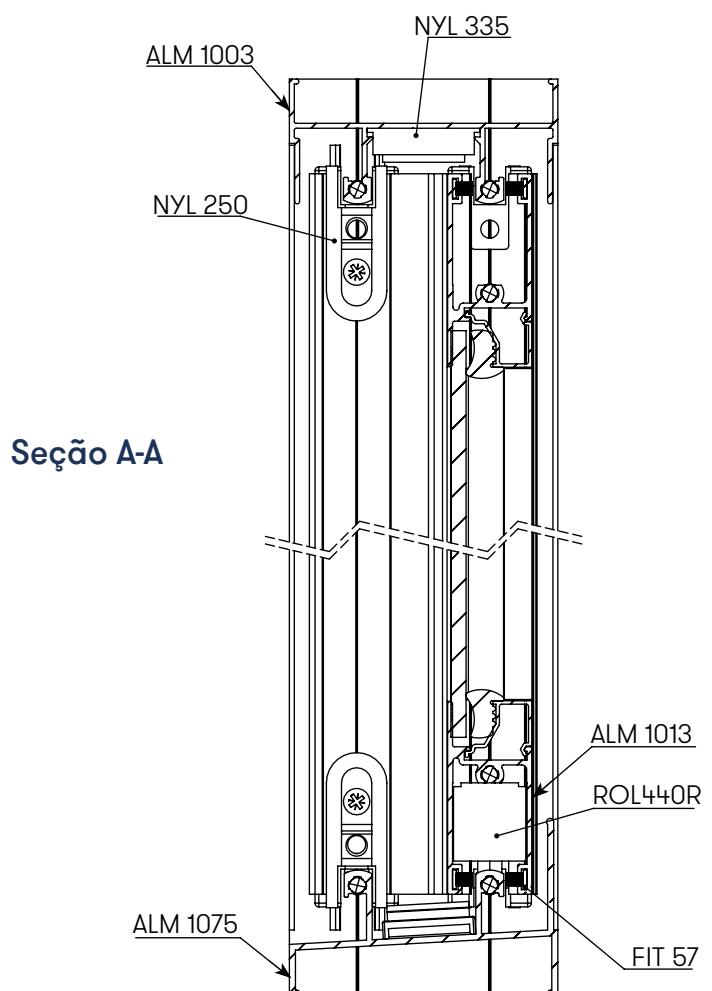
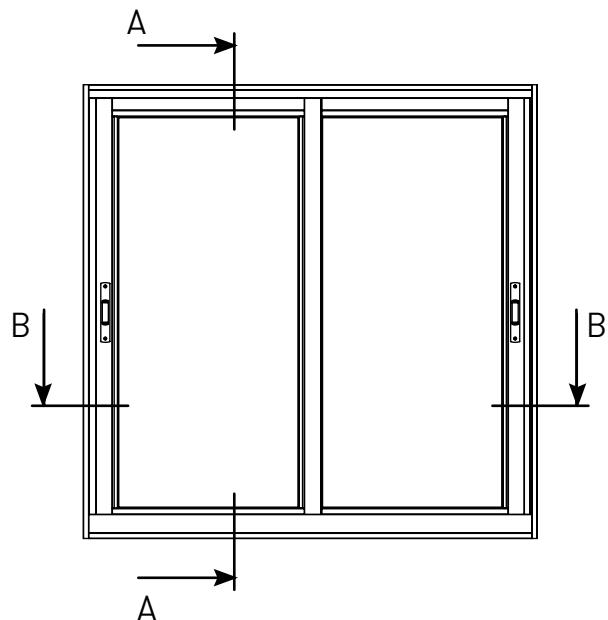
Fixo de Vidro 2 Folhas Horizontal



Seção A-A

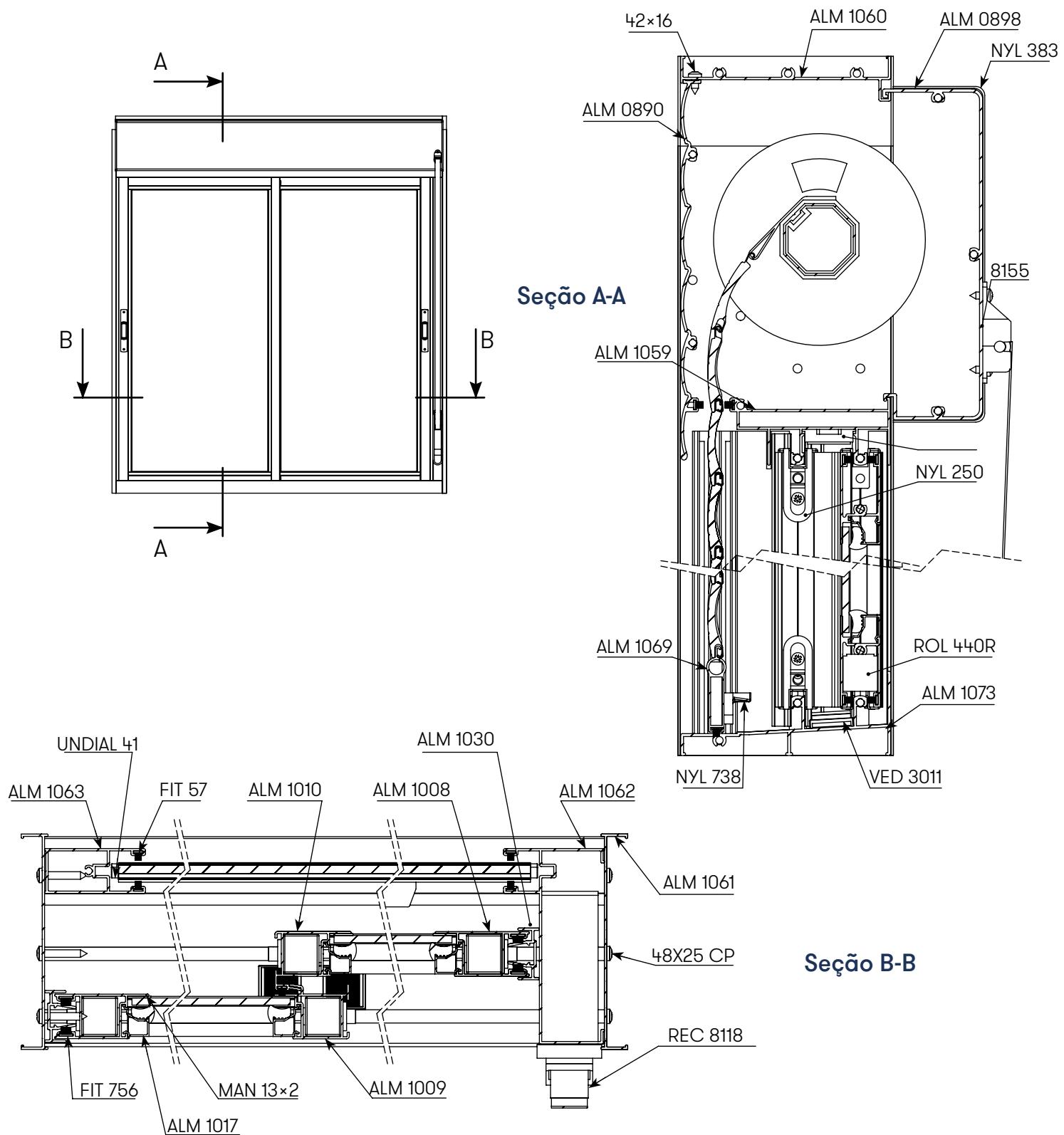


Janela de Correr 2 Folhas

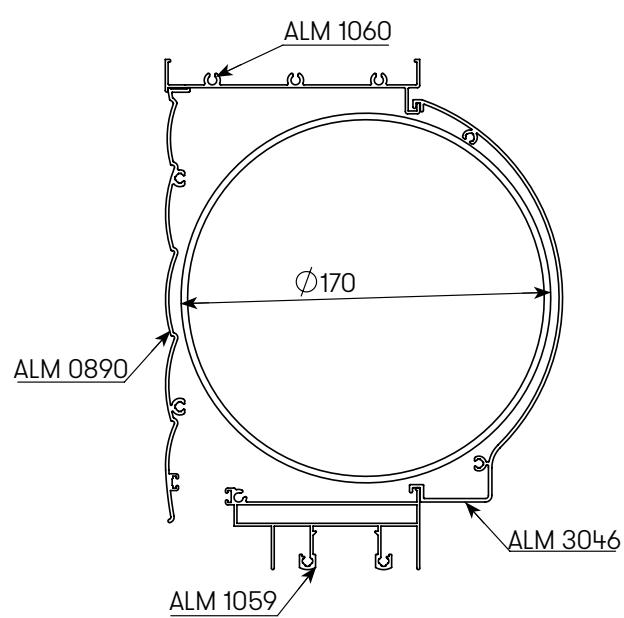
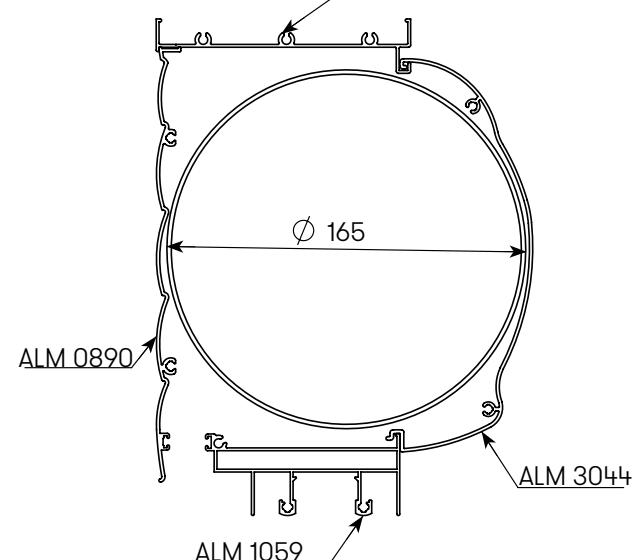
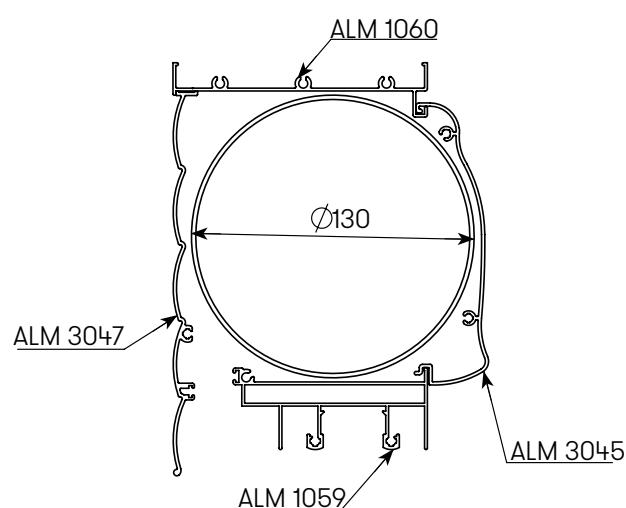
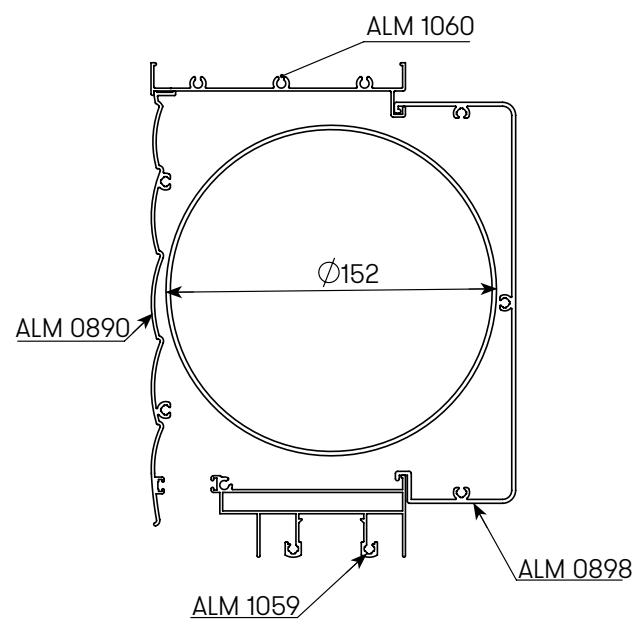
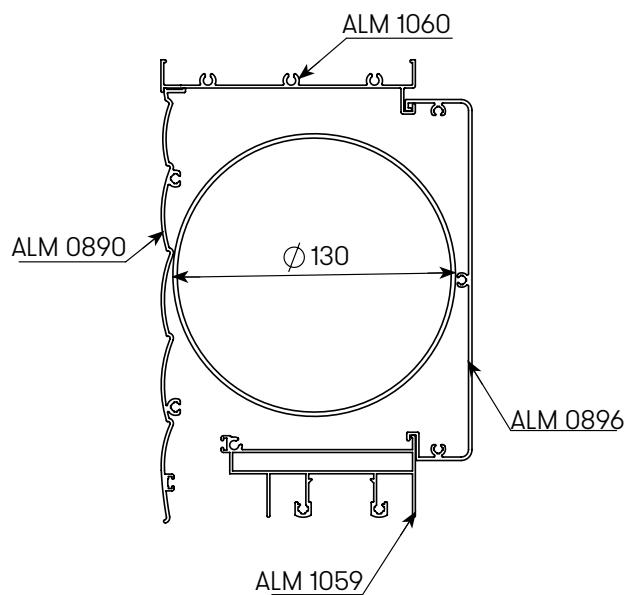


MONTAGEM

Janela de Correr 2 Folhas Integrada

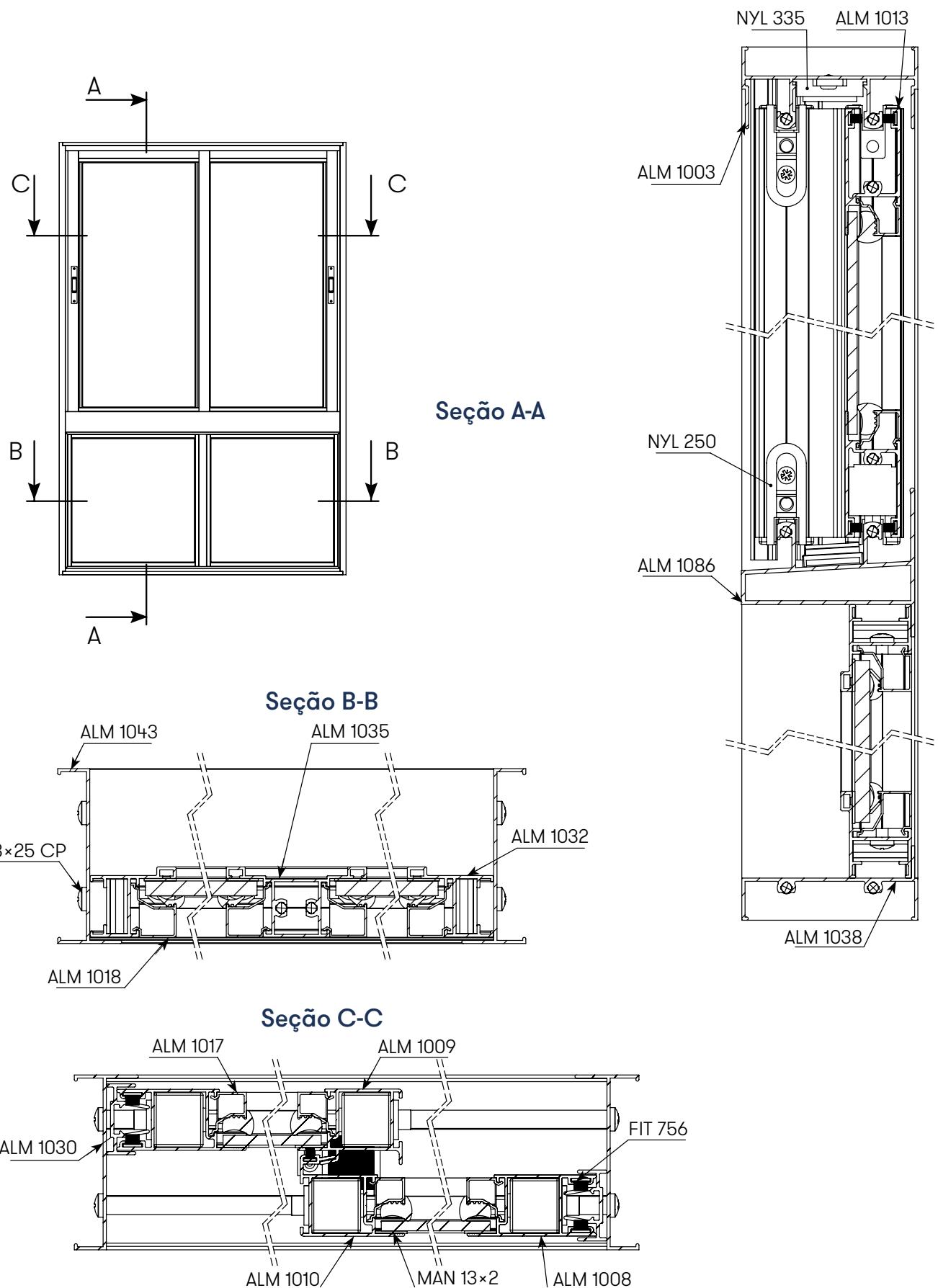


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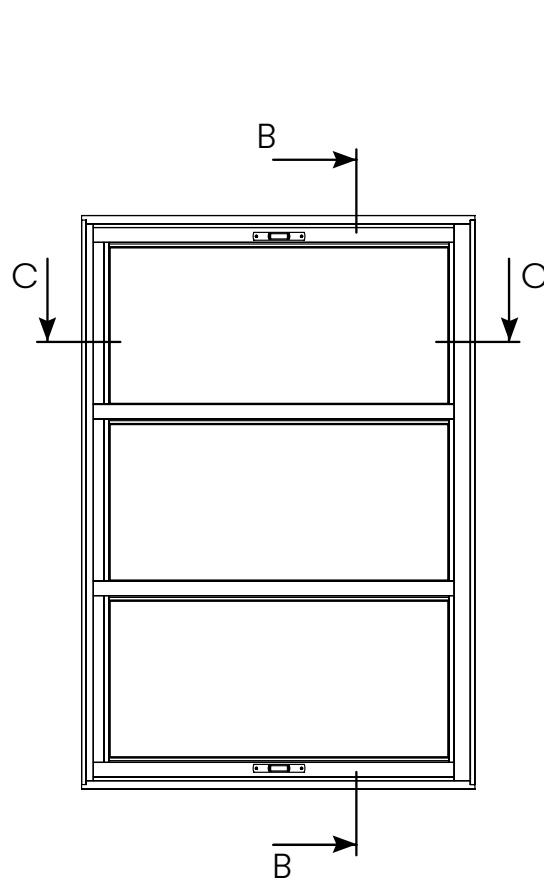


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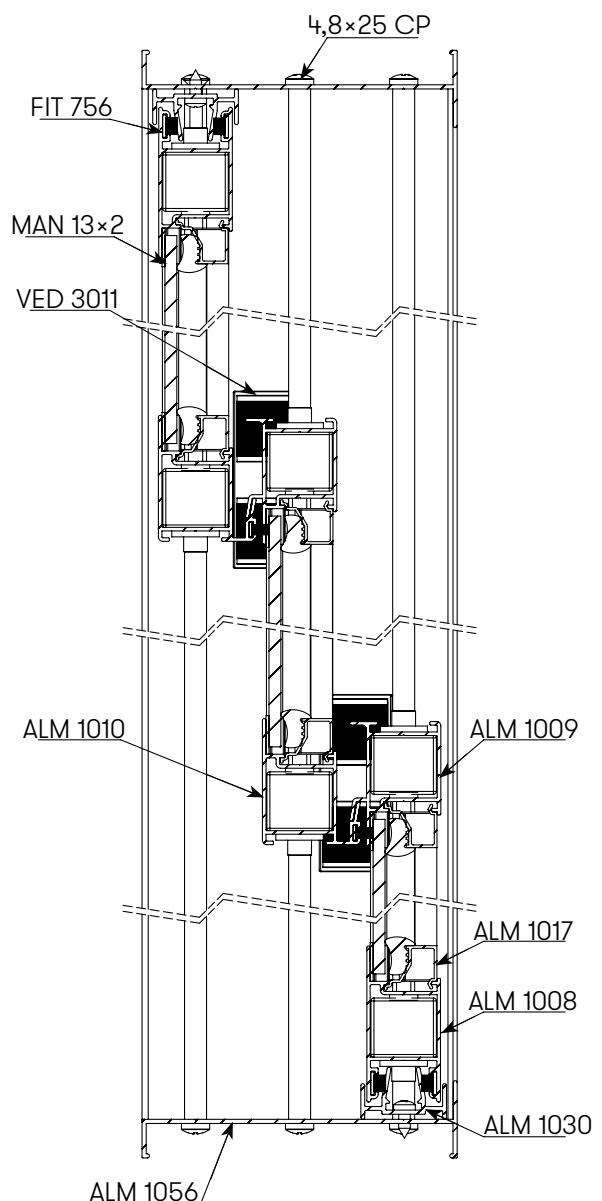
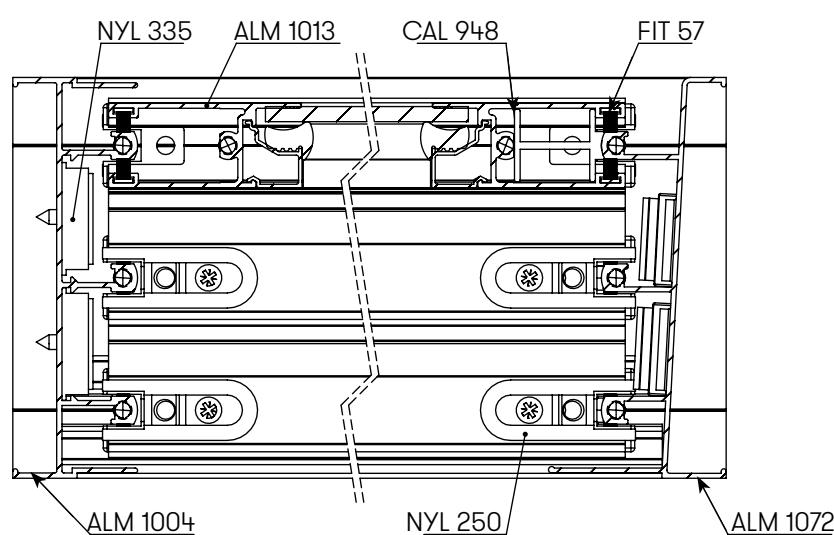
Janela de Correr 2 Folhas com Fixo Inferior



Janela de Correr 3 Folhas



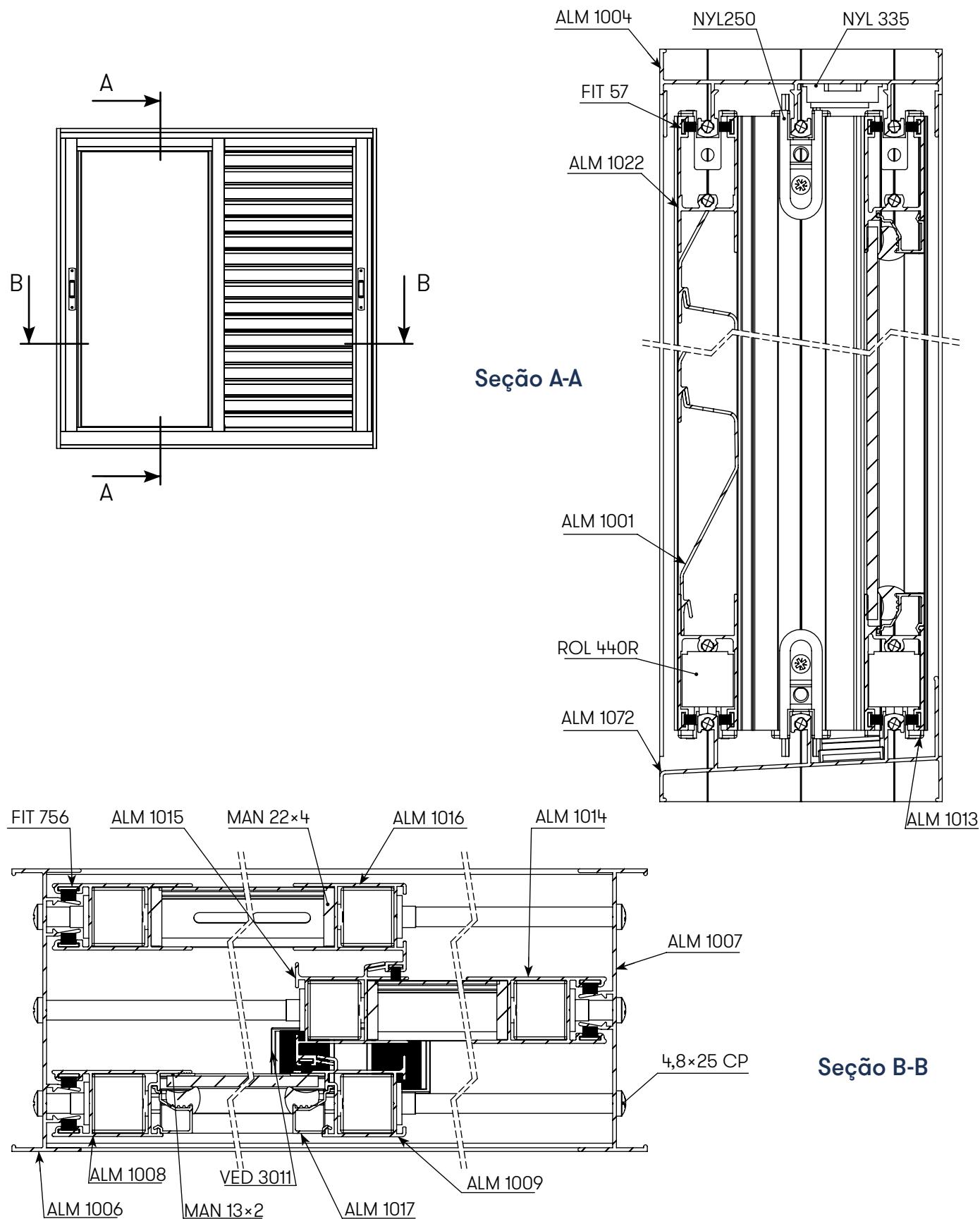
Seção B-B



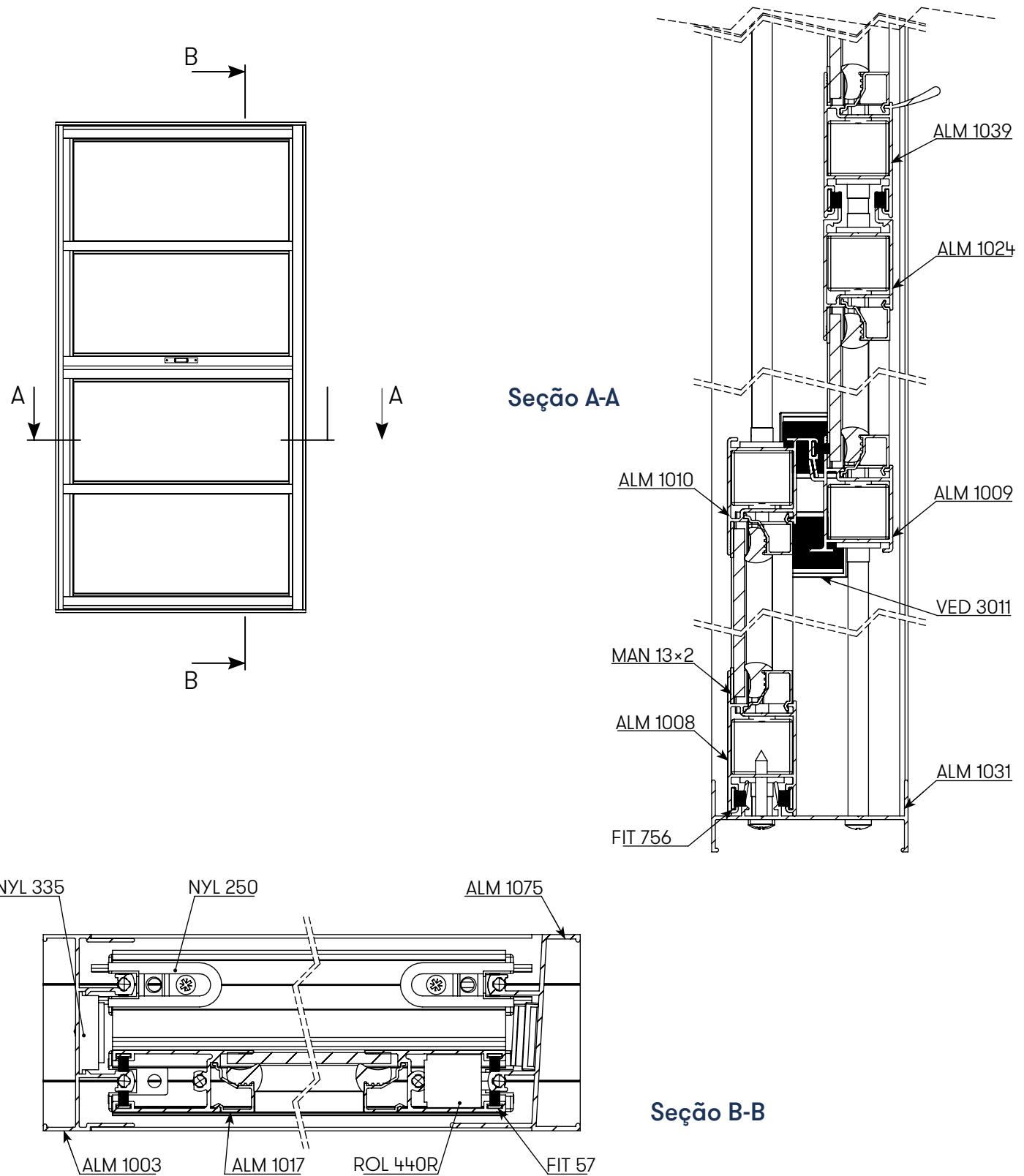
Seção C-C

MONTAGEM

Janela de Correr 3 Folhas com Veneziana

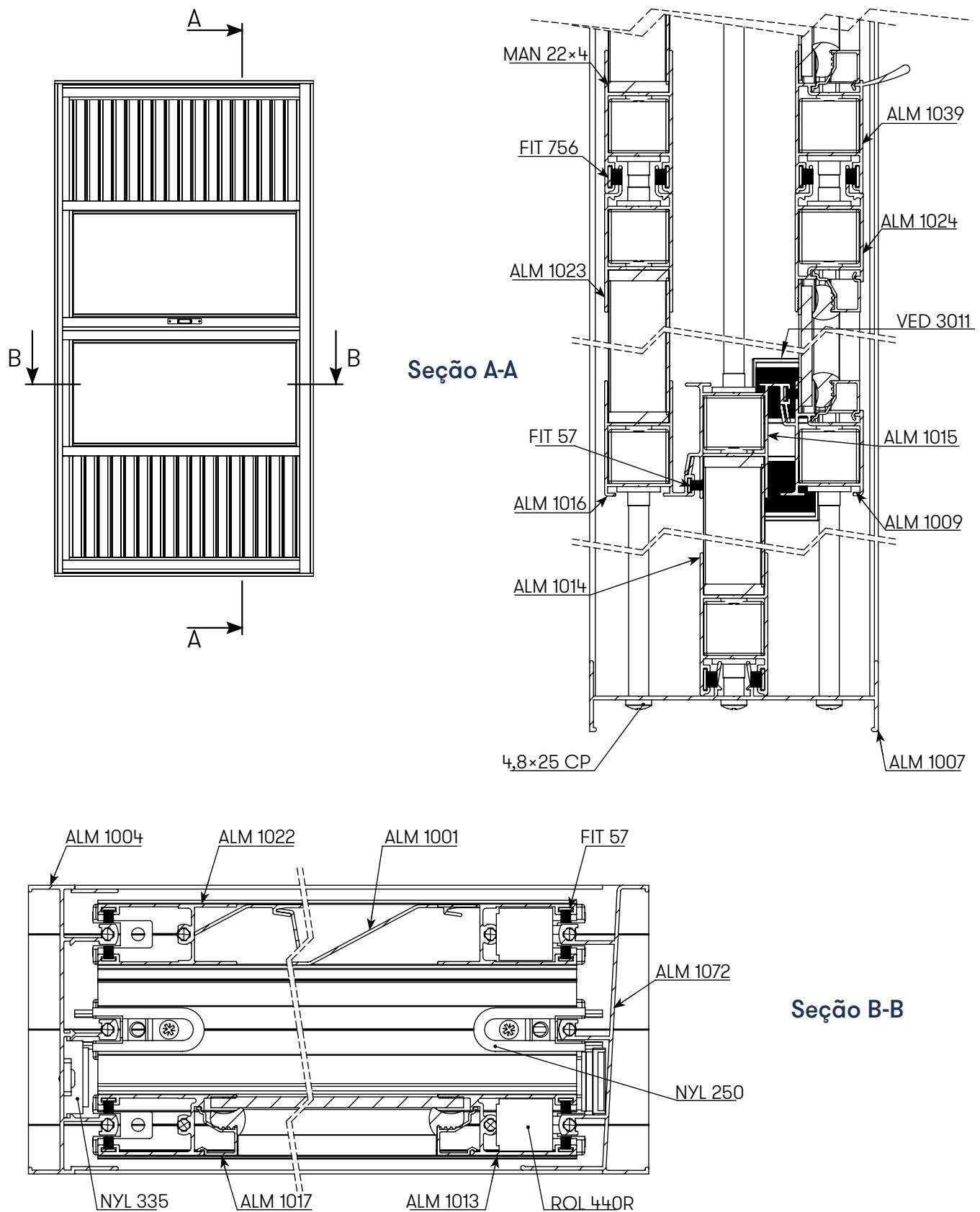


Janela de Correr 4 Folhas

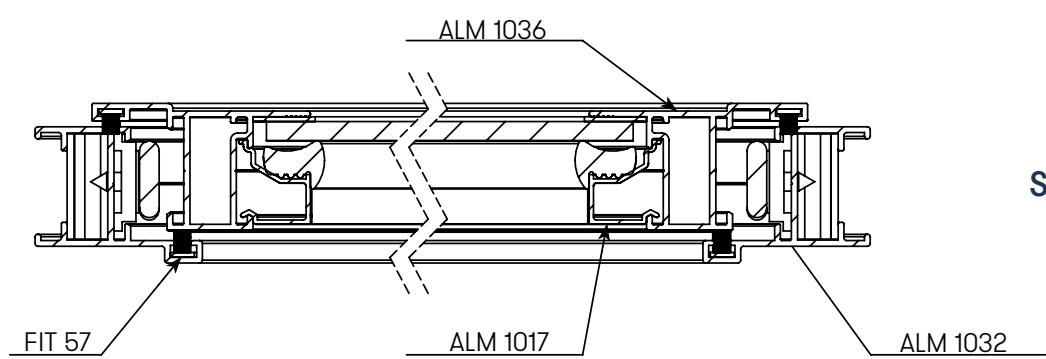
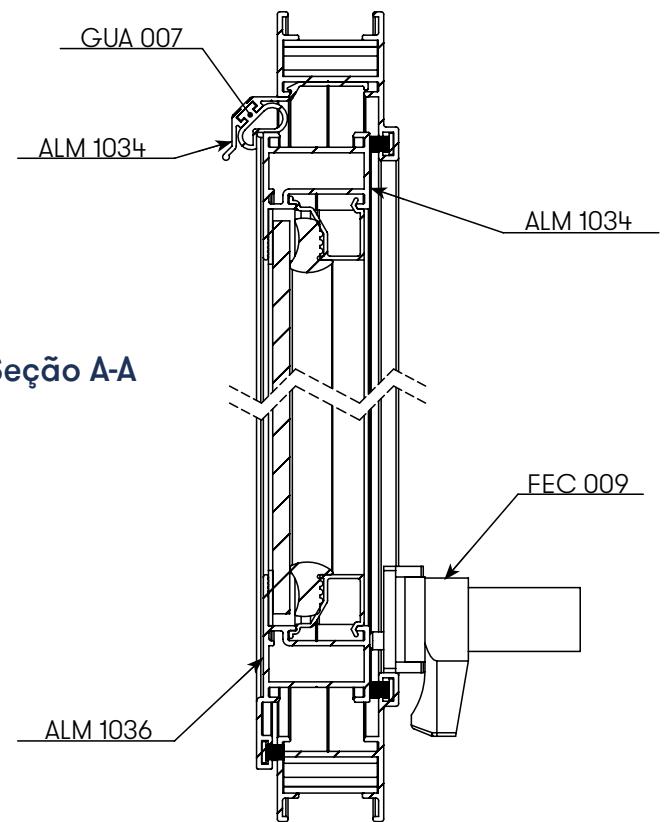
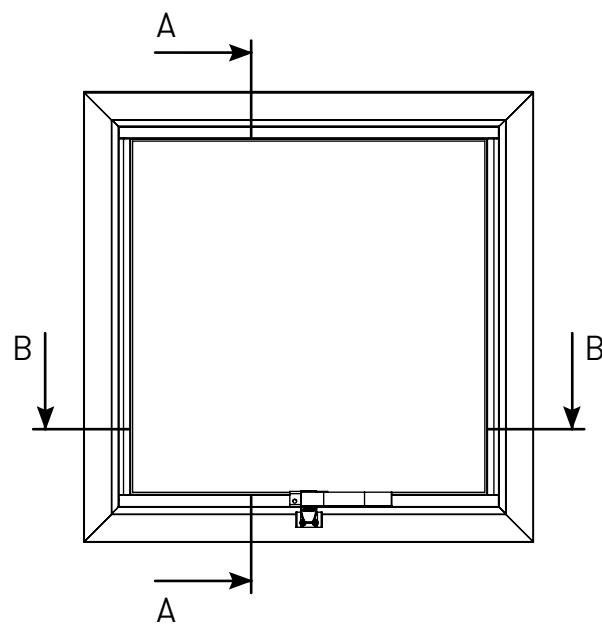


MONTAGEM

Janela de Correr 6 Folhas com Veneziana

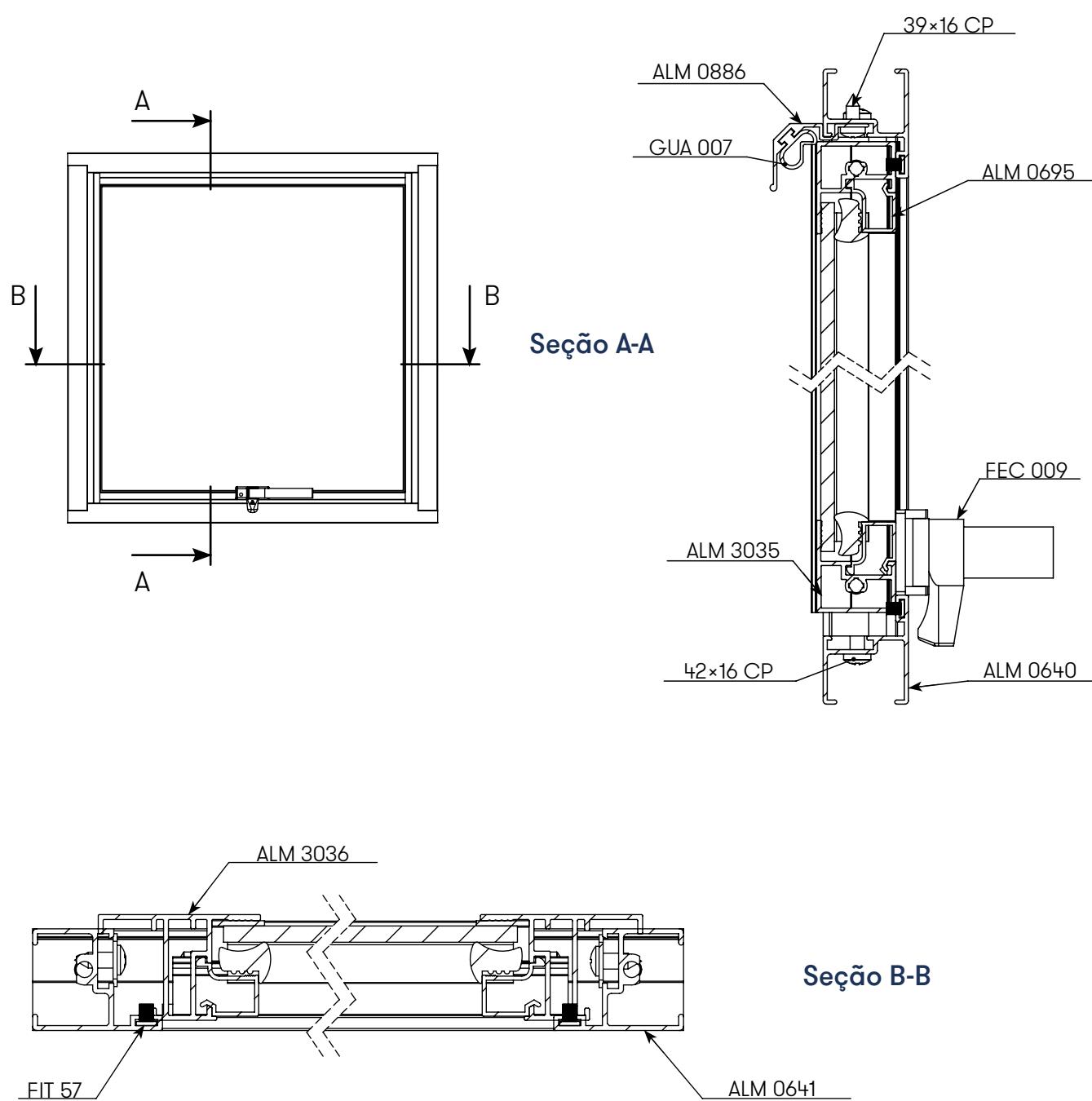


Maxim-ar com Montagem em 45°

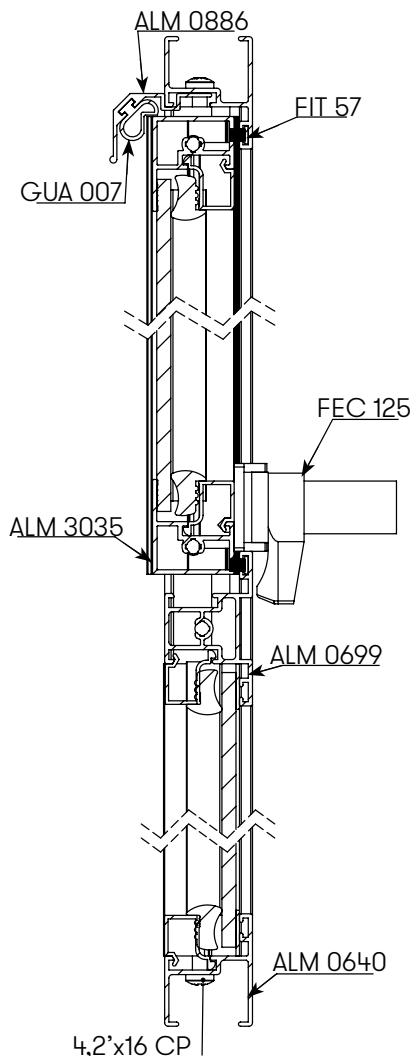
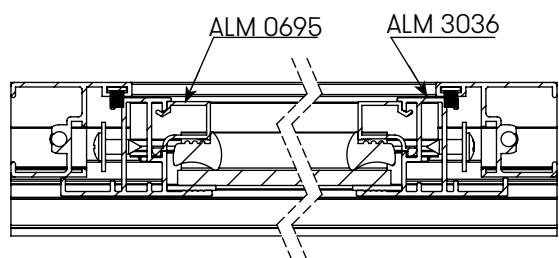
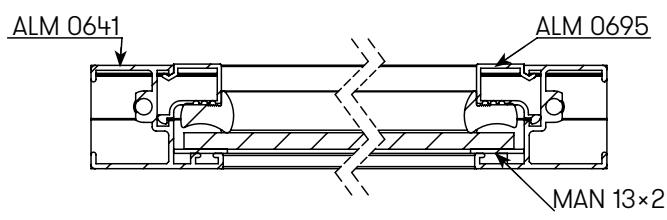
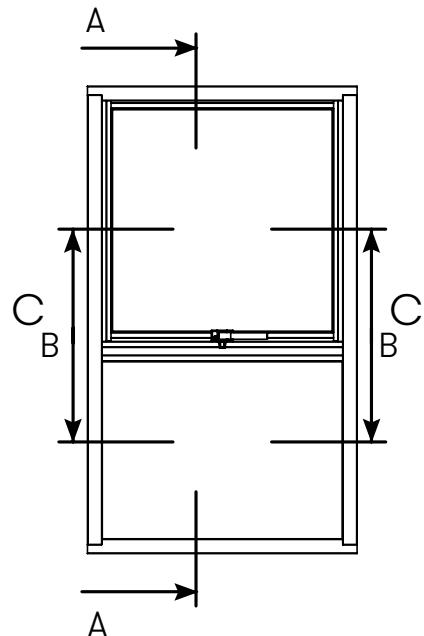


MONTAGEM

Maxim-ar com Montagem em 90°

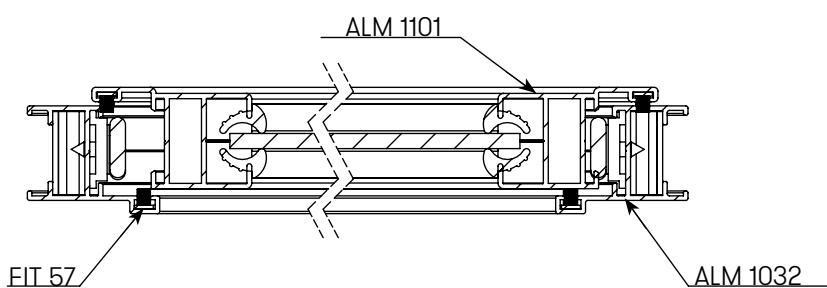
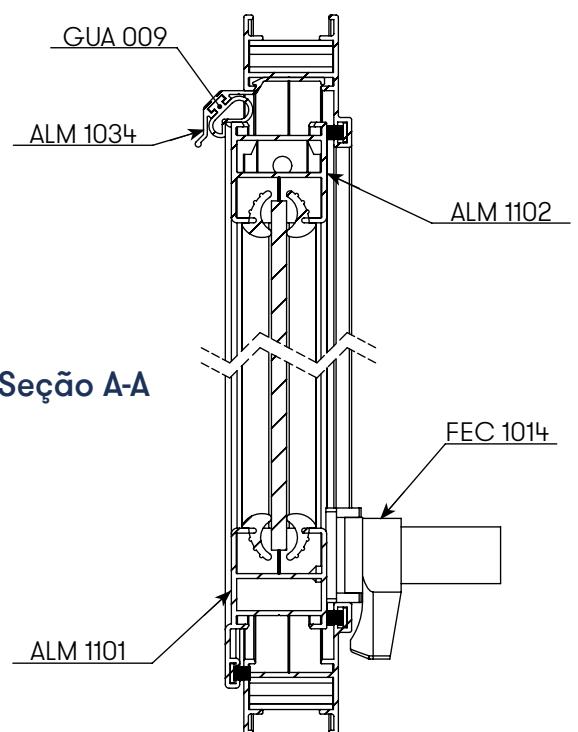
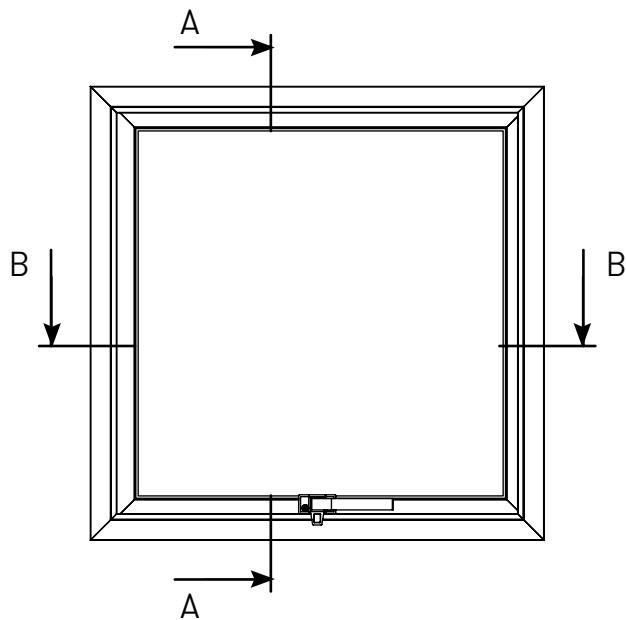


Maxim-ar com Montagem em 90° com Fixo Inferior

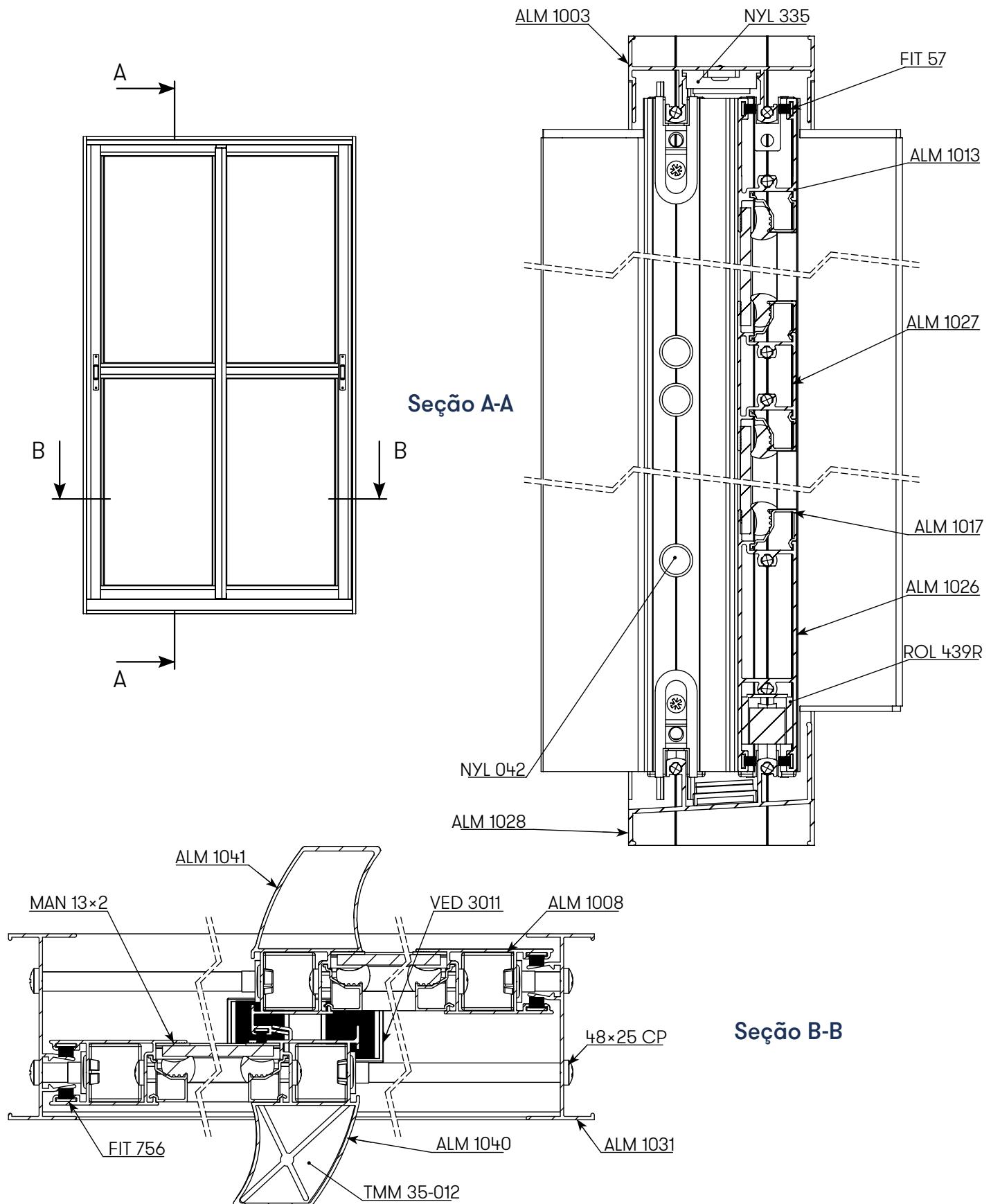


MONTAGEM

Maxim-ar com Montagem em 45° sem Baguete

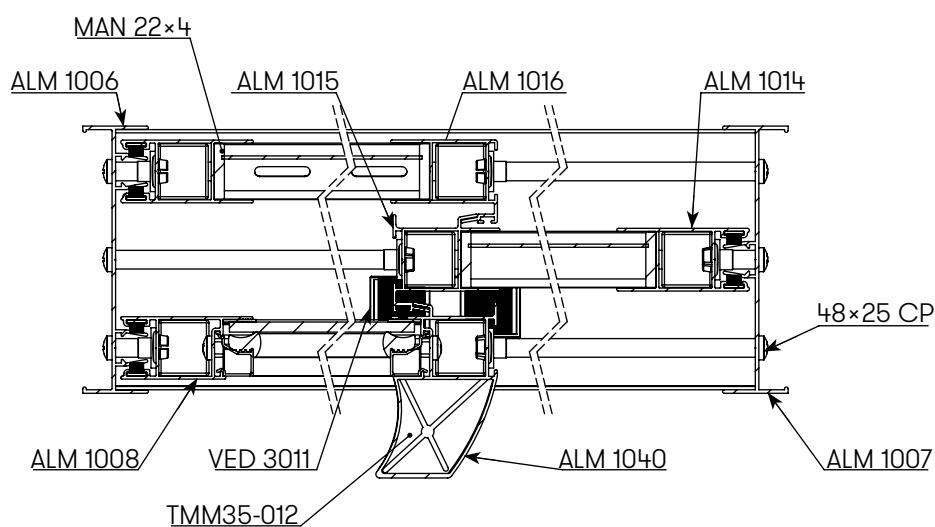
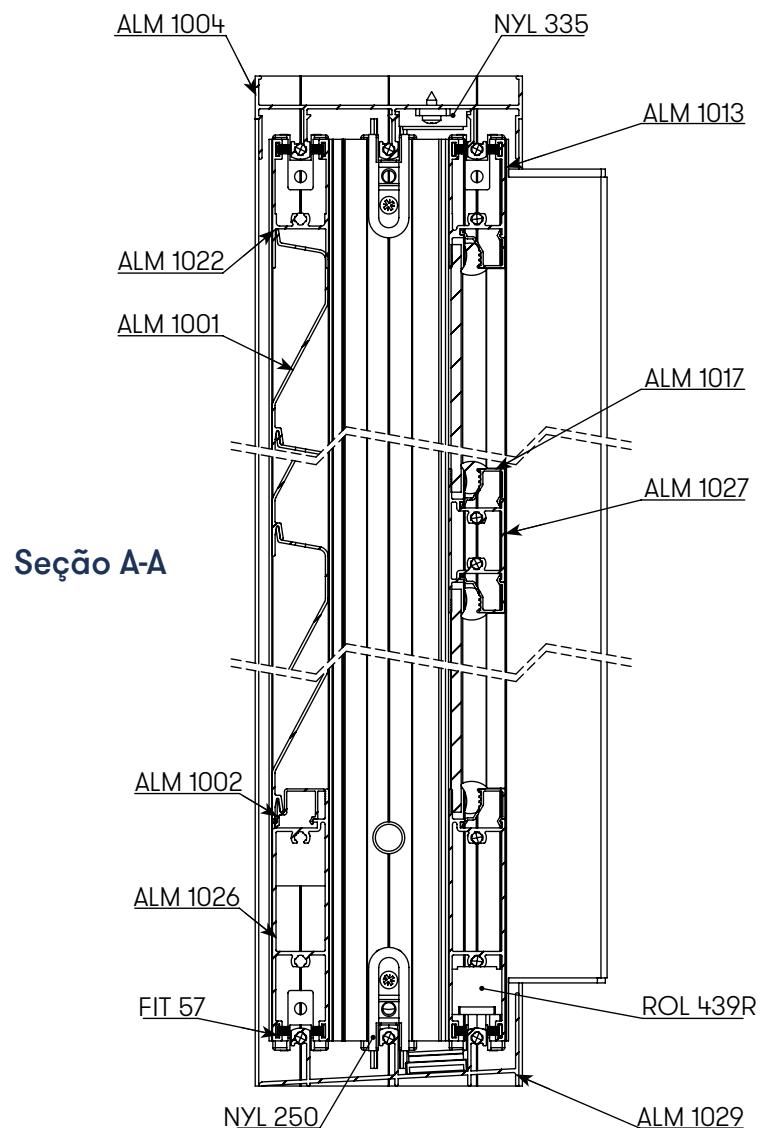
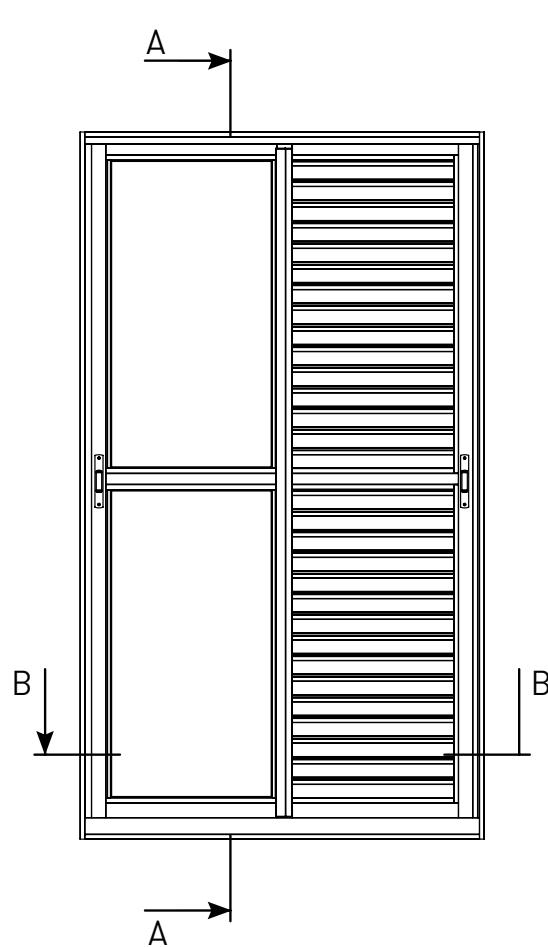


Porta de Correr 2 Folhas

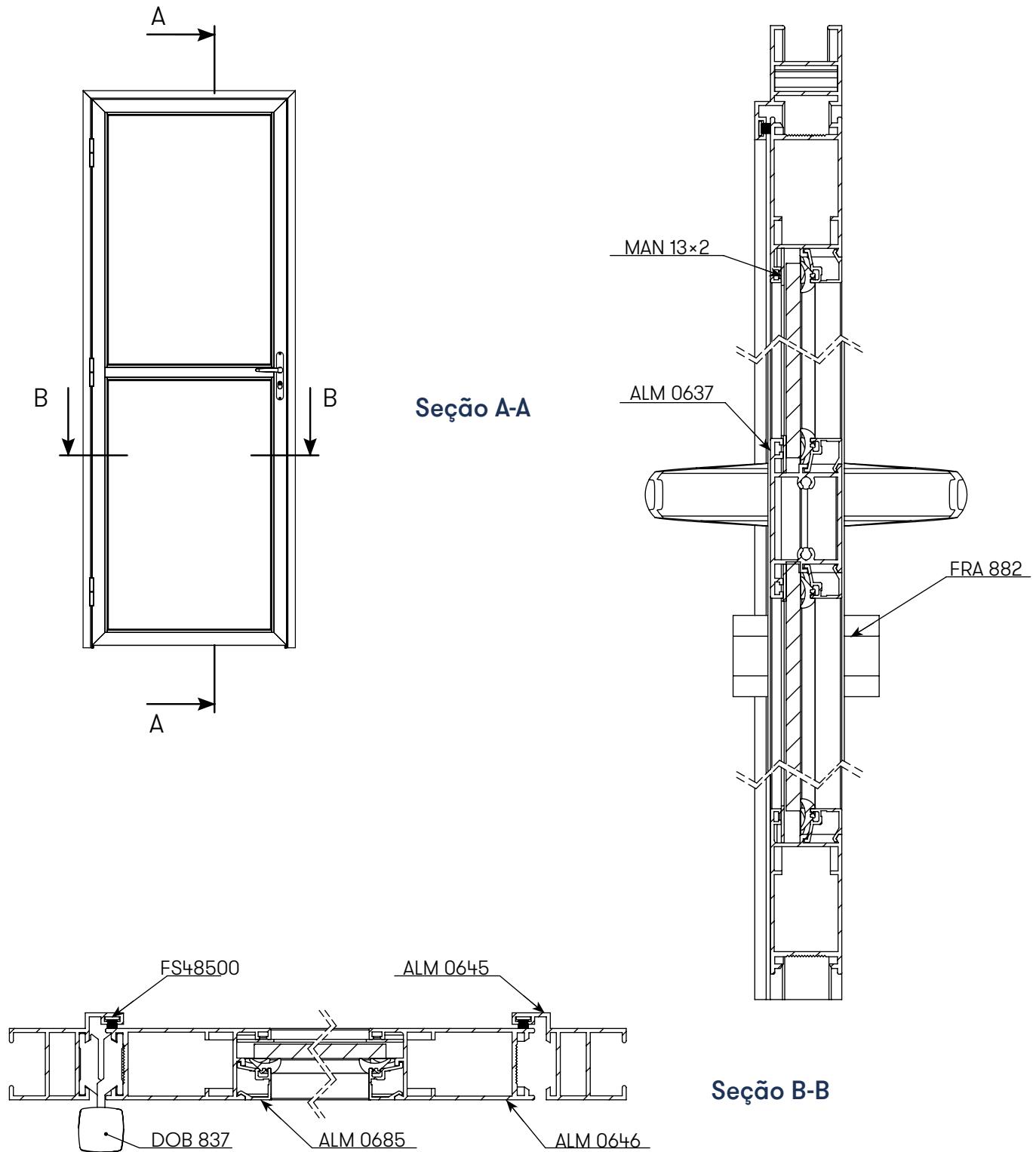


MONTAGEM

Porta de Correr 3 Folhas com Veneziana

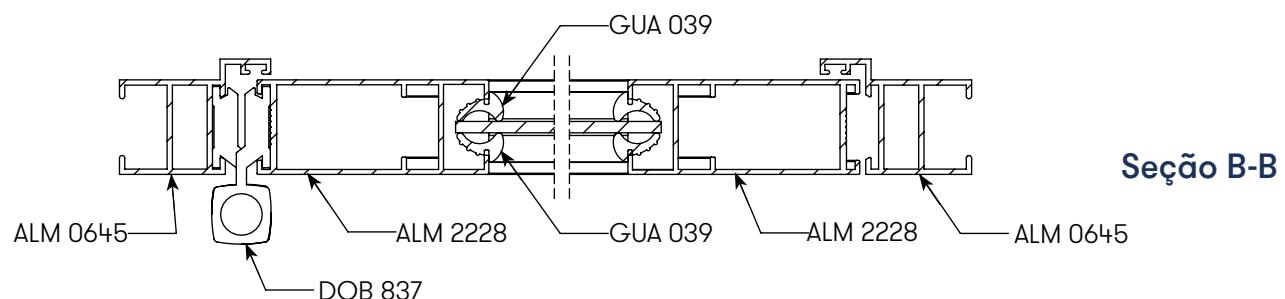
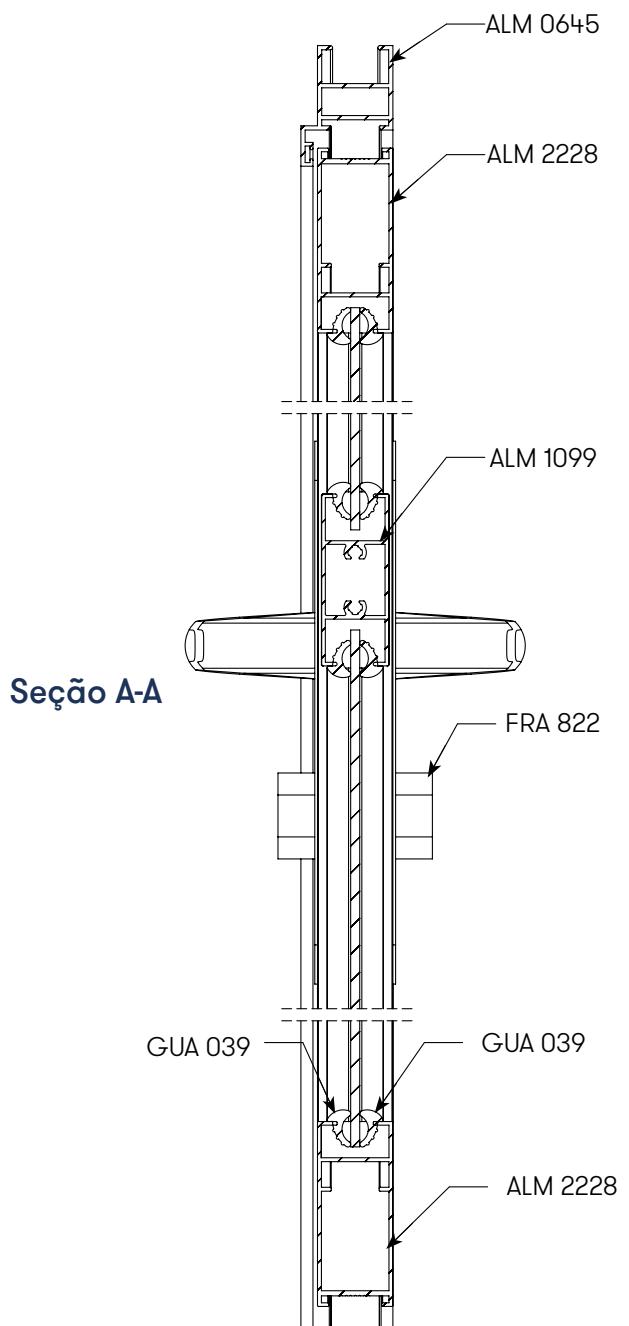
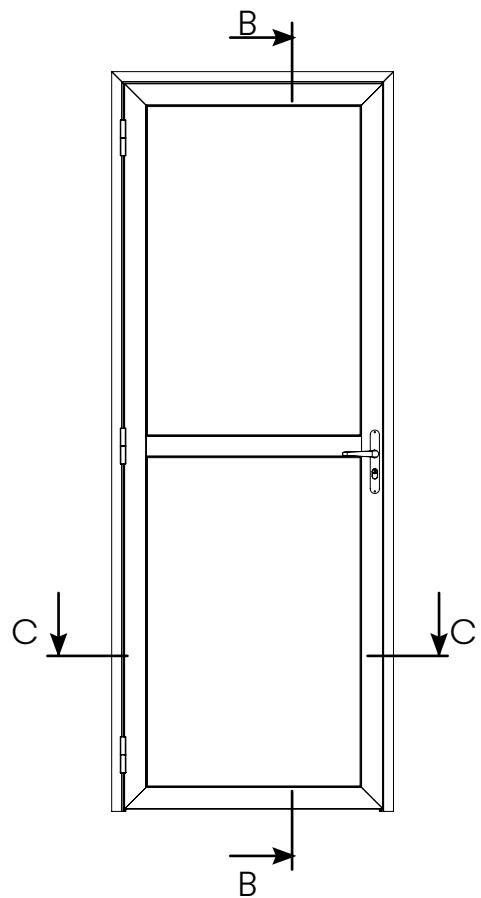


Porta de Giro 45°

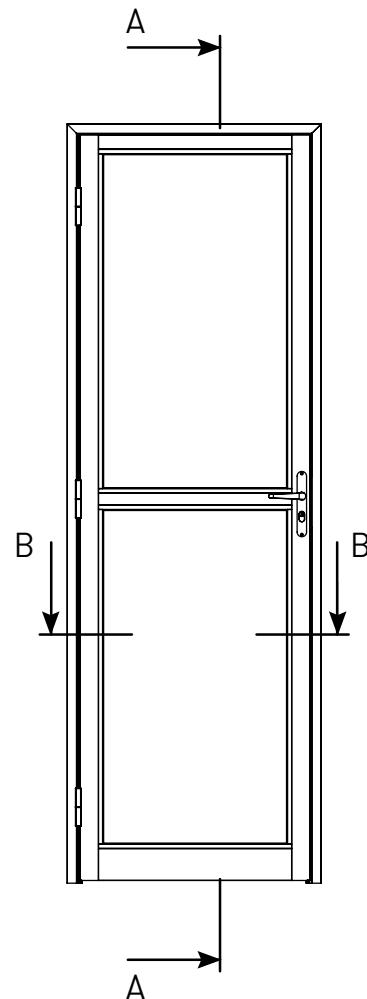


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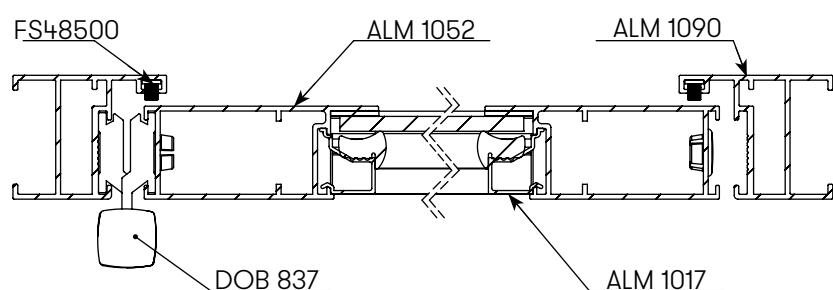
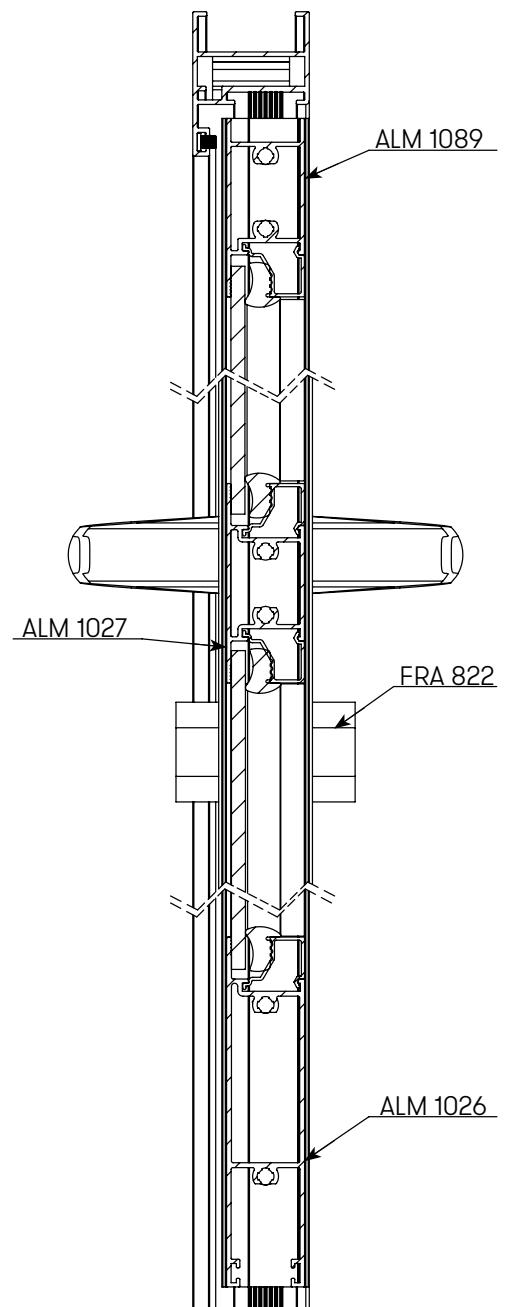
Porta de Giro 45° sem Baguete



Porta de Giro 90°



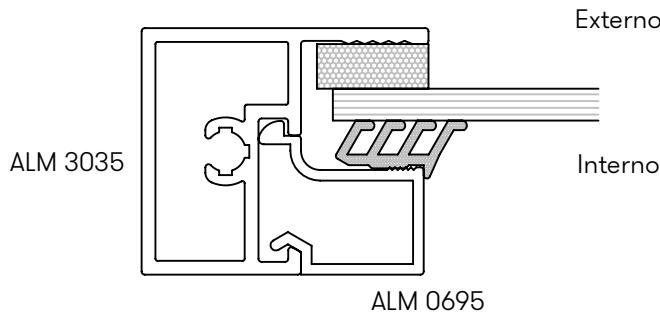
Seção A-A



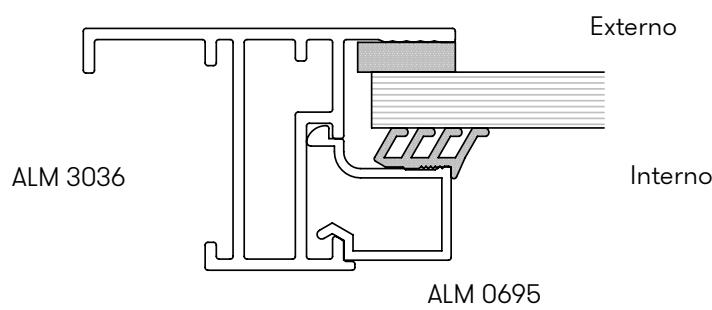
Seção B-B

ALTERNATIVAS CONSTRUTIVAS

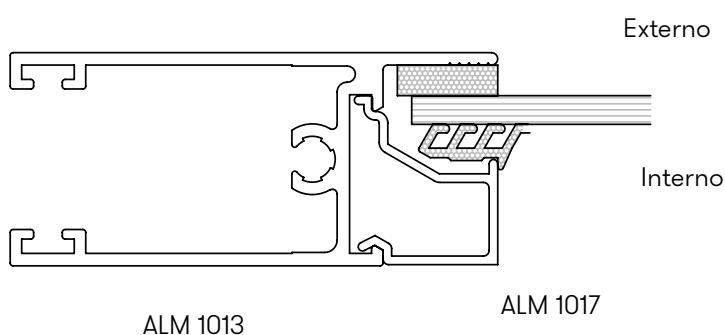
guarnições para vidros



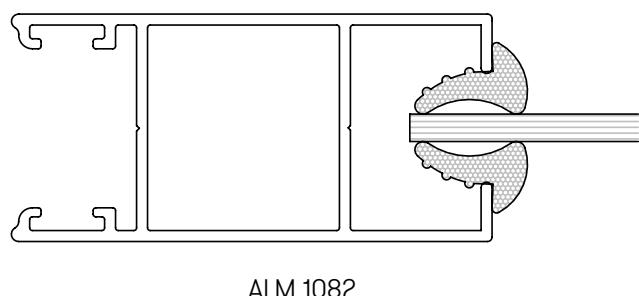
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4	GUA256	GUA258
6	GUA259	GUA157



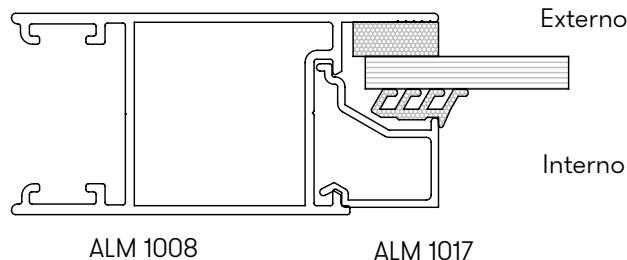
Espessura do vidro	Guarnição interna	Guarnição externa
3	GUA256	GUA157
4	GUA256	GUA157
6	GUA259	GUA157



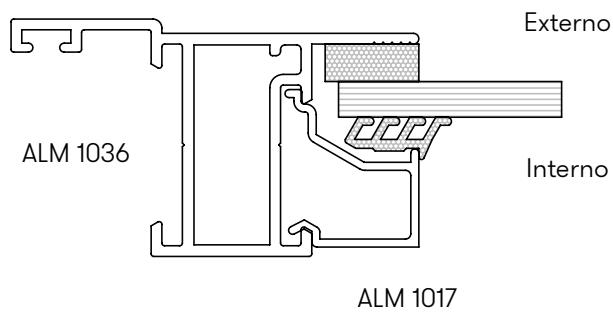
Espessura do vidro	Guarnição interna	Guarnição externa
4	GUA256	GUA258
6	GUA259	GUA171



Espessura do vidro	Guarnição interna	Guarnição externa
3	GUA039NM	GUA039NM
4	GUA039NM	GUA039NM
6	GUA211B	GUA211B



Espessura do vidro	Guarnição interna	Guarnição externa
4	GUA256	GUA157
6	GUA259	GUA258



Espessura do vidro	Guarnição interna	Guarnição externa
3	GUA256	GUA157
4	GUA256	GUA157
6	GUA259	GUA157



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