THE SMART EXTRUSION- AND FASTENING TECHNOLOGY

The key elements of the Modular Automation System are the unique Extrusion and Fastening Technologies. Extrusions, available in 40 mm and 50 mm size systems, are fully compatible due to a common 14 mm slot size.

In combination with a strong Fastening Technology, the system is unique in its stability and rigidity as well as in its enormous potential for time savings - from design to assembly.

One slot size fits all
- 13 profile shapes in 40 mm and 50 mm extrusion sizes simplify the application
- large, uniform 14 mm wide and 14mm deep T-slot
- same T-slot dimensions for all extrusions in the Modular Automation System
- Post insertion of heavy duty Drop-in Nuts up to M8 possible

Maximum stability
- worldwide unique play-free, accurate and centrally aligned connections
- single fastener provides up to 4 tons of tensile strength
- tubular honeycomb structure for outstanding torsion and load resistance
- maximum stability for all your applications

One fastener, double value
- two-sided fastener provides equal strength on both sides of the connection
- twice the strength for the price of one
- no additional connectors needed
- strength comparable to a welded connection

Any hole drilled is one hole too many
- all connections made without drilling or milling
- maximum wall thickness in key areas
- unlimited re-usability
- for required hole an integrated location groove guarantees precise and straight drilling

Stability increases with every turn
- every turn positions centering inserts tighter into the T-slot
- absolutely play-free, accurate and centrally aligned connection
- concave surface of extrusion guarantees durable vibration resistance
- low fastener height saves space in your design

Inserting the drop-in nut
- Simple and quick insertion of the drop-in nut into the 14 mm wide T-slot
- leaf spring assembly protects drop-in nut against unintended movement, guaranteed contact surface
- to position the the drop-in nut, just slide to stop position

Anything is possible - even post assembly
- simple post-assembly integration of struts without dismantling the frame
- easy repositioning of struts at any time
- no cutting of existing structures
- no surface treatment required

Save time, cut cost
- minimum assembly time required
- simple and quick selection of Extrusion and Fastening Technology
- no measuring of boreholes and no drawings necessary
- length of the extrusion is the only measurement needed
- labeled and tapped extrusions allow immediate assembly

The Smart Extrusion Technology

Extrusion, 40 mm Series

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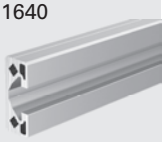
Extrusion 16x40
PIL 1640

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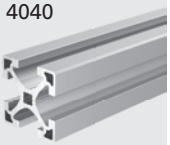
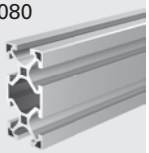
Extrusion 40x40
PIL 4040

P. 70

Extrusion 40x80
PIL 4080

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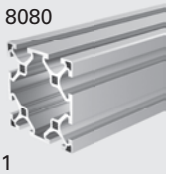
Extrusion 80x80
PIL 8080

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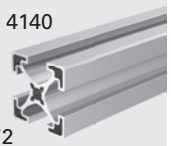
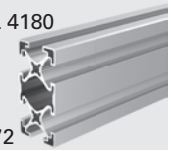
Lean Line Extrusion
40x40
PIL 4140

P. 72

Lean Line Extrusion
40x80
PIL 4180

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Extrusion 40x120
PIL 4012

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Extrusion, 50 mm Series

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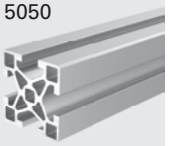
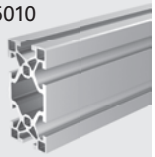
Extrusion 50x50
PIL 5050

P. 74

Extrusion 50x100
PIL 5010

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Extrusion 50x200
PIL 5020

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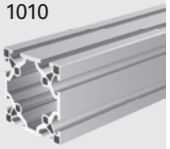
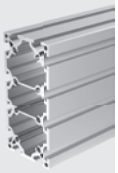
Extrusion 100x100
PIL 1010

P. 76

Extrusion 100x200
PIL 1020

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Extrusion 25x200
PIL 2520

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The Strong Fastening Technology

Fastening Technology 40 mm Series Page 78

Fastening Technology 50 mm Series Page 82

Fastening Technology 40 mm and 50 mm Series Page 87

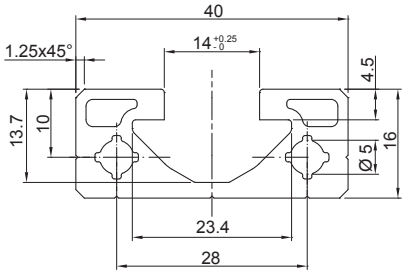
PIL 1640 Extrusion 16x40

Application
- Signs, shelves, racks
- Hand rails, guide rails
- MRO equipment
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus	W_x:	2.9 cm³
Section modulus	W_y:	1.0 cm³
Geometrical moment of inertia:		
against x	I_x:	5.8 cm⁴
against y	I_y:	0.8 cm⁴
against torsion	I_t:	0.6 cm⁴
Cross sectional area	A:	323.6 mm²

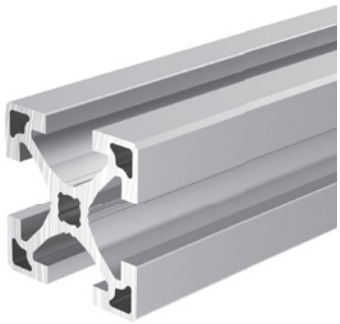


Tolerances and Deflection
see pages 198 to 199

Order Code

Description	Order Code[1] Length	Weight/Meter
Extrusion, cut to length, M6 tapped on both ends, 15 mm deep	PIL 1640 SNN ____	0.890 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 1640 NNN 6050	0.890 kg

PIL 4040 Extrusion 40x40

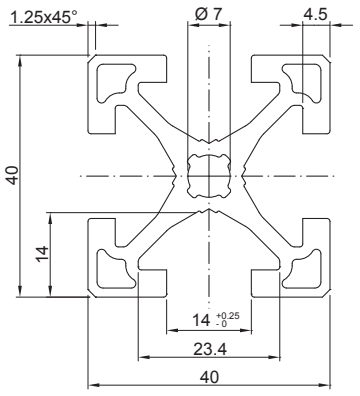


Application
- Machine guardings
- Enclosures
- Safety fence panels & doors
- Light weight machine frames
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus	$W_x = W_y$:	4.3 cm³
Geometrical moment of inertia:		
against x + y	$I_x = I_y$:	8.6 cm⁴
against torsion	I_t:	0.7 cm⁴
Cross sectional area	A:	554.6 mm²



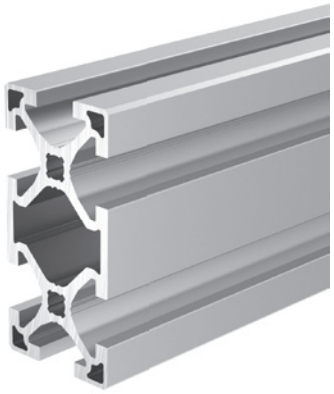
Tolerances and Deflection
see pages 198 to 199

Order Code

Description	Order Code[1] Length	Weight/Meter
Extrusion, cut to length, M8 tapped on both ends, 50 mm deep	PIL 4040 SNN ____	1.530 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 4040 NNN 6050	1.530 kg
Extrusions, 80 units, stock length 6050 mm (usable length 6000 mm)	PIL 4040 PAC 0080	1.530 kg

1) Please complete the order code by adding the desired length.
Drawing dimensions in mm

PIL 4080 Extrusion 40x80

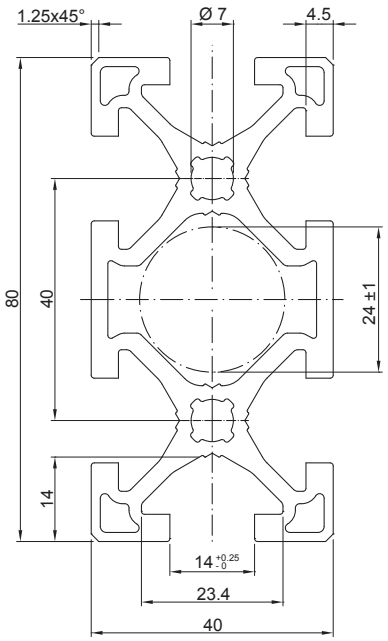


Application
- Machine guardings
- Enclosures
- Safety fence panels & doors
- Machine frames
- Workstations
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus	W_x:	15.4 cm³
Section modulus	W_y:	8.4 cm³
Geometrical moment of inertia:		
against x	I_x:	61.6 cm⁴
against y	I_y:	16.8 cm⁴
against torsion	I_t:	9.3 cm⁴
Cross sectional area	A:	1013.2 mm²

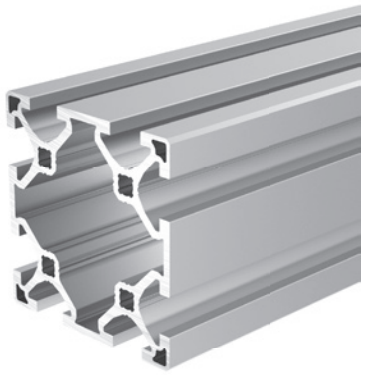


Tolerances and Deflection
see pages 198 to 199

Order Code

Description	Order Code[1] Length	Weight/Meter
Extrusion, cut to length, M8 tapped on both ends, 50 mm deep	PIL 4080 SNN ____	2.780 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 4080 NNN 6050	2.780 kg
Extrusions, 40 units, stock length 6050 mm (usable length 6000 mm)	PIL 4080 PAC 0040	2.780 kg

PIL 8080 Extrusion 80x80

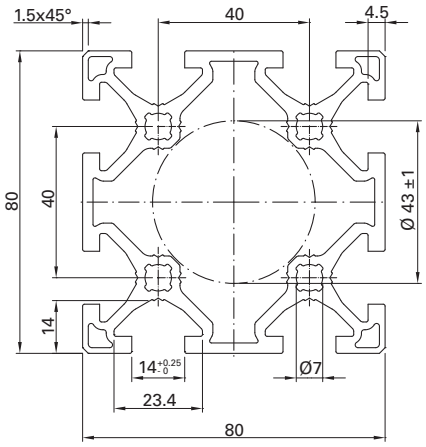


Application
- Machine frames
- Workstations
- Machine guardings
- Enclosures
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus	$W_x = W_y$:	28.0 cm³
Geometrical moment of inertia:		
against x + y	$I_x = I_y$:	112.0 cm⁴
against torsion	I_t:	59.5 cm⁴
Cross sectional area	A:	1547.0 mm²



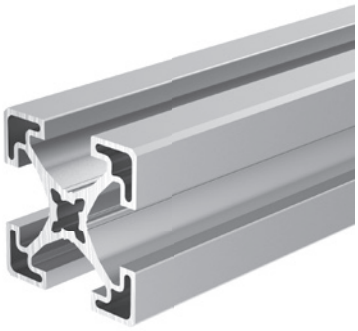
Tolerances and Deflection
see pages 198 to 199

Order Code

Description	Order Code[1] Length	Weight/Meter
Extrusion, cut to length, M8 tapped on both ends, 50 mm deep	PIL 8080 SNN ____	4.280 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 8080 NNN 6050	4.280 kg
Extrusions, 25 units, stock length 6050 mm (usable length 6000 mm)	PIL 8080 PAC 0025	4.280 kg

1) Please complete the order code by adding the desired length.
Drawing dimensions in mm

PIL 4140 Lean Line Extrusion 40x40

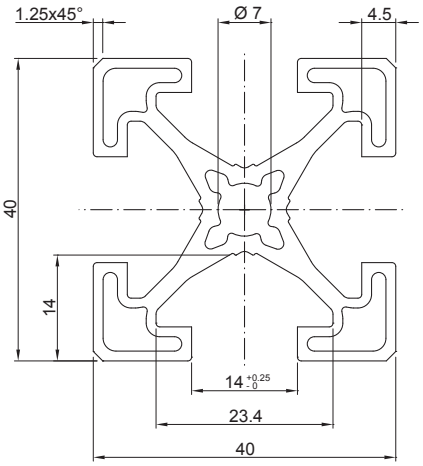


Application
- Machine guardings
- Enclosures
- Safety fence panels
- Light weight machine frames
- Workstations
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus	$W_x = W_y$:	3.3 cm³
Geometrical moment of inertia:		
against x + y	$I_x = I_y$:	6.5 cm⁴
against torsion	I_t:	0.6 cm⁴
Cross sectional area	A:	431.0 mm²

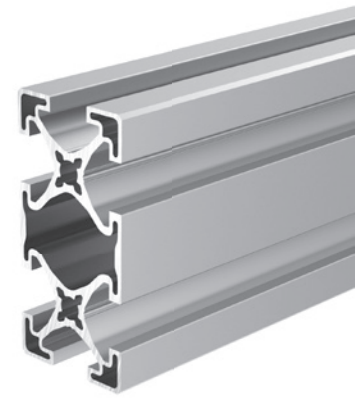


Tolerances and Deflection
see pages 198 to 199

Order Code

Description	Order Code[1] Length	Weight/Meter
Extrusion, cut to length, M8 tapped on both ends, 50 mm deep	PIL 4140 SNN ____	1.160 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 4140 NNN 6050	1.160 kg
Extrusions, 80 units, stock length 6050 mm (usable length 6000 mm)	PIL 4140 PAC 0080	1.160 kg

PIL 4180 Lean Line Extrusion 40x80

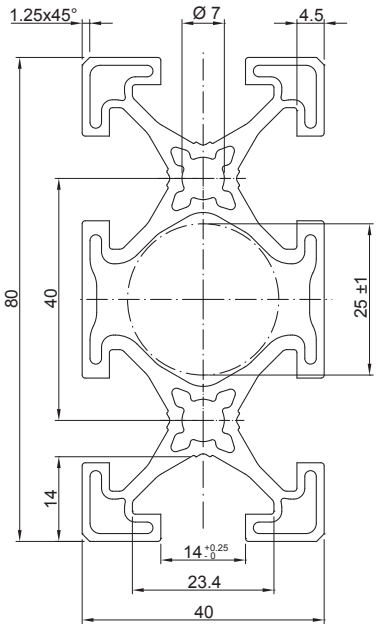


Application
- Machine guardings
- Enclosures
- Safety fence panels
- Light weight machine frames
- Workstations
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus	W_x:	11.9 cm³
Section modulus	W_y:	6.4 cm³
Geometrical moment of inertia:		
against x	I_x:	47.4 cm⁴
against y	I_y:	12.8 cm⁴
against torsion	I_t:	5.9 cm⁴
Cross sectional area	A:	790.8 mm²



Tolerances and Deflection
see pages 198 to 199

Order Code

Description	Order Code[1] Length	Weight/Meter
Extrusion, cut to length, M8 tapped on both ends, 50 mm deep	PIL 4180 SNN ____	2.140 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 4180 NNN 6050	2.140 kg
Extrusions, 40 units, stock length 6050 mm (usable length 6000 mm)	PIL 4180 PAC 0040	2.140 kg

1) Please complete the order code by adding the desired length.
Drawing dimensions in mm

PIL 4012 Extrusion 40x120

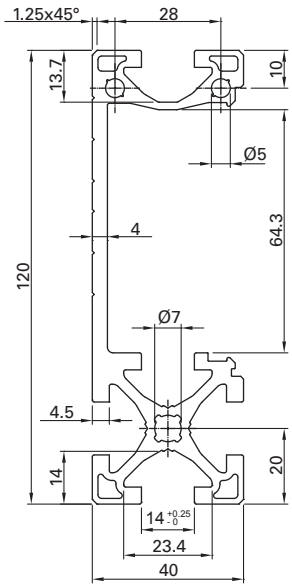
Application

- Roller conveyor
- Cable ducts
- Manual workstations
- In- and outfeed conveyors

Technical Data

Material: clear anodized aluminum

Section modulus	W_x:	27.6 cm³
Section modulus	W_y:	6.8 cm³
Geometrical moment of inertia:		
against x	I_x:	182.2 cm⁴
against y	I_y:	19.3 cm⁴
against torsion	I_t:	1.2 cm⁴
Cross sectional area	A:	1108.8 mm²



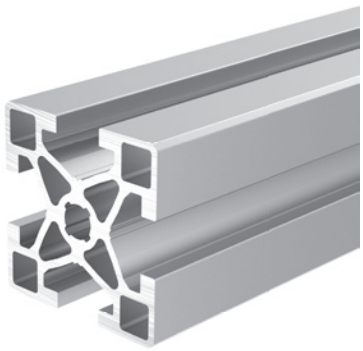
Tolerances and Deflection
see pages 198 to 199

Cover Extrusion For PIL 4012
see pages 176

Order Code

Description	Order Code[1] Length	Weight/Meter
Extrusion, cut to length, M6 or M8 tapped on both ends, 50 mm deep	PIL 4012 SNN ____	3.050 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 4012 NNN 6050	3.050 kg
Extrusions, 24 pcs., stock length: 6050 mm (usable length 6000 mm)	PIL 4012 PAC 0024	3.050 kg

PIL 5050 Extrusion 50x50

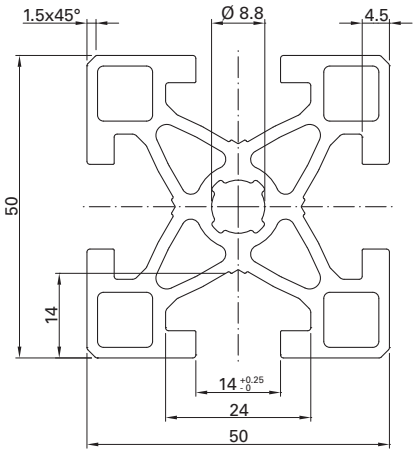


Application
- Machine frames
- Robot frame structures
- Workstations
- Machine guardings
- Enclosures
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus	$W_x = W_y$:	8.0 cm³
Geometrical moment of inertia:		
against x + y	$I_x = I_y$:	20.0 cm⁴
against torsion	I_t:	4.8 cm⁴
Cross sectional area	A:	857.5 mm²

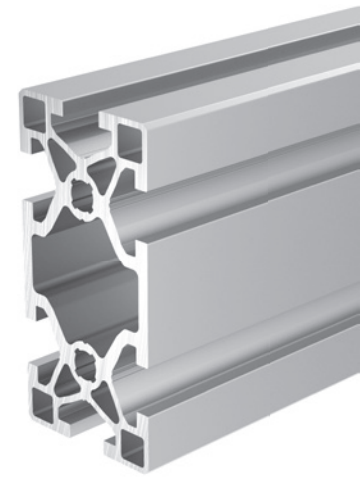


Tolerances and Deflection
see pages 198 to 199

Order Code

Description	Order Code[1] Length	Weight/Meter
Extrusion, cut to length, M10 tapped on both ends, 50 mm deep	PIL 5050 SNN ____	2.350 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 5050 NNN 6050	2.350 kg
Extrusions, 64 units, stock length 6050 mm (usable length 6000 mm)	PIL 5050 PAC 0064	2.350 kg

PIL 5010 Extrusion 50x100

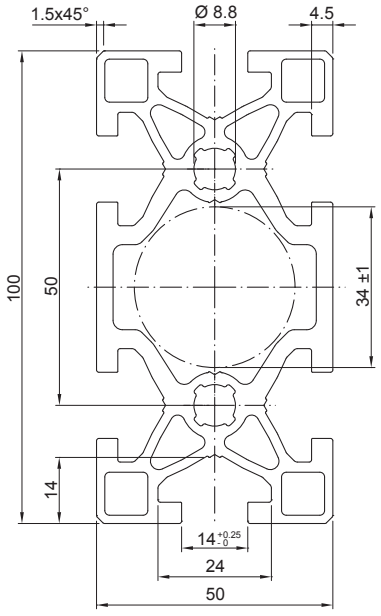


Application
- Machine frames
- Robot frame structures
- Workstations
- Base support for Linear Motion Units & gantries
- Machine guardings
- Enclosures
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus	W_x:	29.7 cm³
Section modulus	W_y:	16.6 cm³
Geometrical moment of inertia:		
against x	I_x:	148.5 cm⁴
against y	I_y:	41.4 cm⁴
against torsion	I_t:	37.0 cm⁴
Cross sectional area	A:	1559.3 mm²



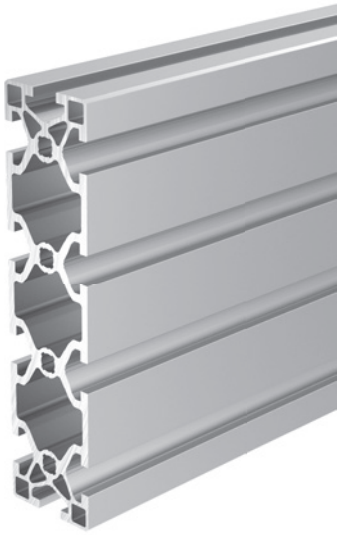
Tolerances and Deflection
see pages 198 to 199

Order Code

Description	Order Code[1] Length	Weight/Meter
Extrusion, cut to length, M10 tapped on both ends, 50 mm deep	PIL 5010 SNN ____	4.290 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 5010 NNN 6050	4.290 kg
Extrusions, 32 units, stock length 6050 mm (usable length 6000 mm)	PIL 5010 PAC 0032	4.290 kg

1) Please complete the order code by adding the desired length.
Drawing dimensions in mm

PIL 5020 Extrusion 50x200



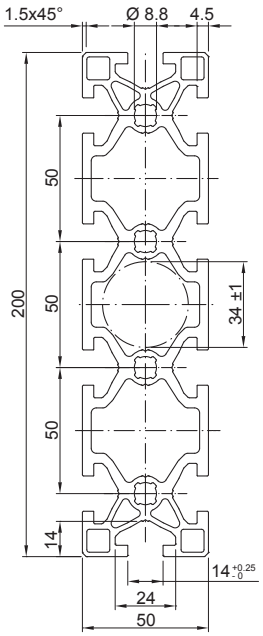
Application

- Heavy duty machine frames
- Robot frame structures
- Workstations
- Base support for Linear Motion Units & gantries
- Machine guardings
- Enclosures
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus	W_x:	107.8 cm^3
Section modulus	W_y:	33.6 cm^3
Geometrical moment of inertia:		
against x	I_x:	1077.8 cm^4
against y	I_y:	84.1 cm^4
against torsion	I_t:	107.0 cm^4
Cross sectional area	A:	2962.8 mm^2



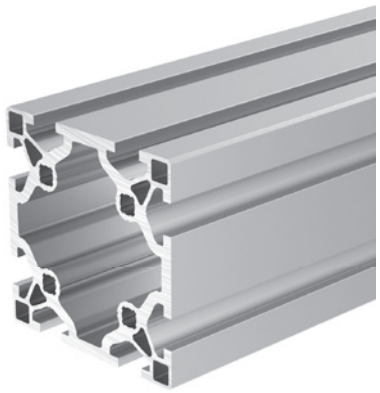
Tolerances and Deflection
see pages 198 to 199

Order Code

Description	Order Code[1] Length	Weight/Meter
Extrusion, cut to length, M10 tapped on both ends, 50 mm deep	PIL 5020 SNN ____	8.150 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 5020 NNN 6050	8.150 kg
Extrusions, 16 units, stock length 6050 mm (usable length 6000 mm)	PIL 5020 PAC 0016	8.150 kg

1) Please complete the order code by adding the desired length.
Drawing dimensions in mm

PIL 1010 Extrusion 100x100

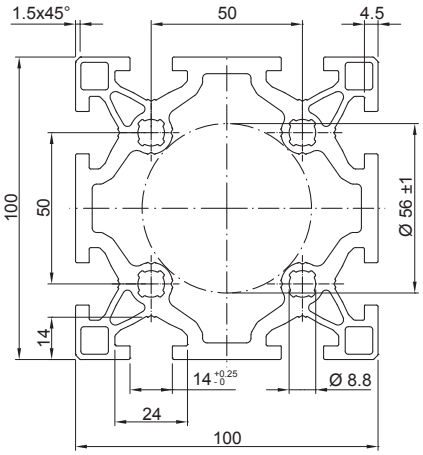


Application
- Heavy duty machine frames
- Robot frame structures
- Workstations
- Base support for Linear Motion Units & gantries
- Machine guardings
- Enclosures
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus	$W_x = W_y$:	61.1 cm³
Geometrical moment of inertia:		
against x + y	$I_x = I_y$:	305.6 cm⁴
against torsion	I_t:	256.0 cm⁴
Cross sectional area	A:	2714.4 mm²

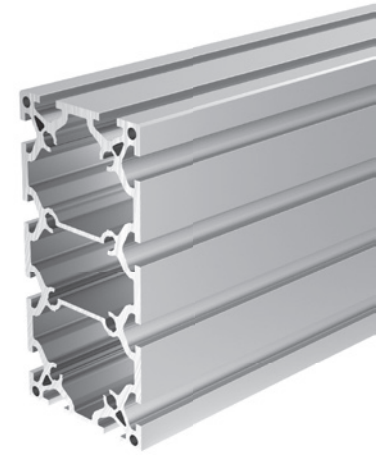


Tolerances and Deflection
see pages 198 to 199

Order Code

Description	Order Code[1] Length	Weight/Meter
Extrusion, cut to length, M10 tapped on both ends, 50 mm deep	PIL 1010 SNN ____	7.480 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 1010 NNN 6050	7.480 kg
Extrusions, 16 units, stock length 6050 mm (usable length 6000 mm)	PIL 1010 PAC 0016	7.480 kg

PIL 1020 Extrusion 100x200

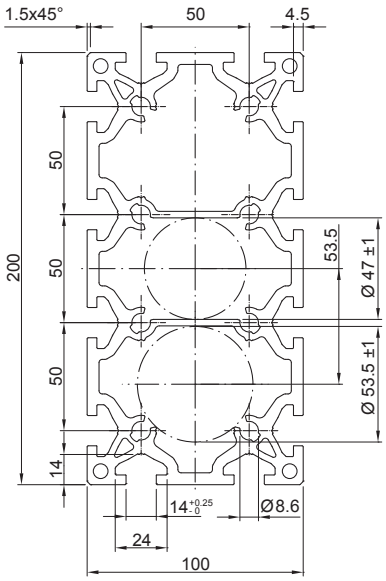


Application
- Heavy duty machine frames
- Robot frame structures
- Workstations
- Base support for Linear Motion Units & gantries
- Machine guardings
- Machine enclosures
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus	W_x:	220.2 cm³
Section modulus	W_y:	132.9 cm³
Geometrical moment of inertia:		
against x	I_x:	2202.2 cm⁴
against y	I_y:	664.4 cm⁴
against torsion	I_t:	794.0 cm⁴
Cross sectional area	A:	5128.7 mm²



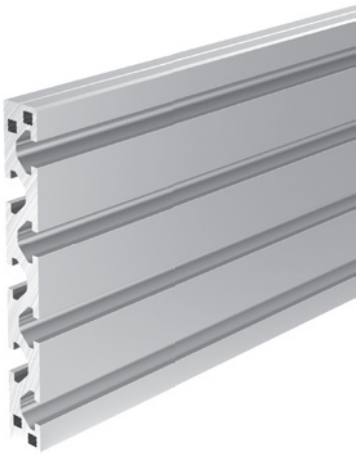
Tolerances and Deflection
see pages 198 to 199

Order Code

Description	Order Code[1] Length	Weight/Meter
Extrusion, cut to length, M10 tapped on both ends, 50 mm deep	PIL 1020 SNN ____	13.700 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 1020 NNN 6050	13.700 kg
Extrusions, 8 units, stock length 6050 mm (usable length 6000 mm)	PIL 1020 PAC 0008	13.700 kg

1) Please complete the order code by adding the desired length.
Drawing dimensions in mm

PIL 2520 Extrusion 25x200



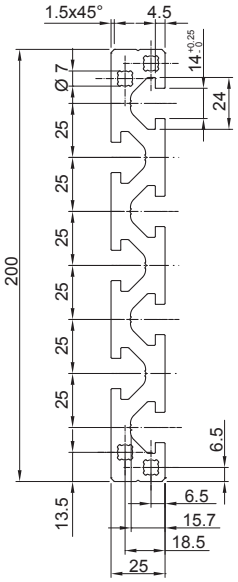
Application

- Carriage plates for Linear Motion Units
- Workstations
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus	W_x:	102.8 cm³
Section modulus	W_y:	14.1 cm³
Geometrical moment of inertia:		
against x	I_x:	1027.9 cm⁴
against y	I_y:	17.6 cm⁴
against torsion	I_t:	9.8 cm⁴
Cross sectional area	A:	2891.7 mm²



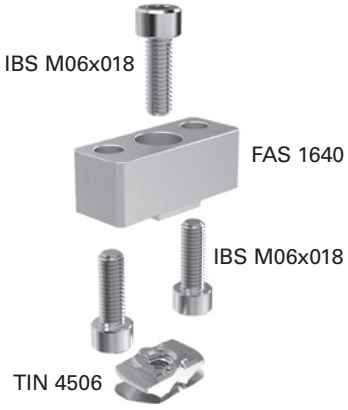
Tolerances and Deflection
see pages 198 to 199

Order Code

Description	Order Code[1] Length	Weight/Meter
Extrusion, cut to length, M8 tapped on both ends, 15 mm deep	PIL 2520 SNN ____	7.900 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 2520 NNN 6050	7.900 kg

1) Please complete the order code by adding the desired length.
Drawing dimensions in mm

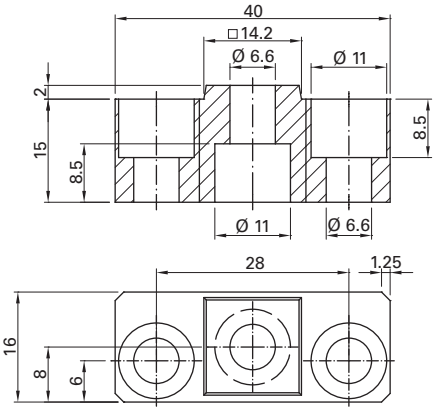
FAS 1641 Fastener 16x40



Application
90° fastener for extrusion PIL 1640

Technical Data
Material: clear anodized aluminum, galvanized steel

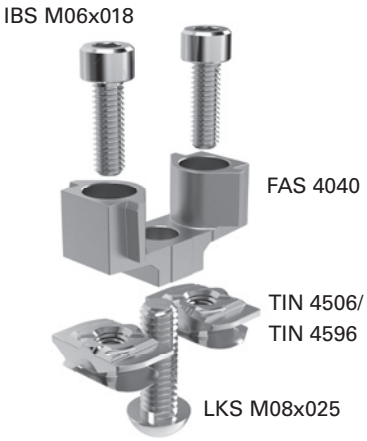
Tightening torque
IBS M06x018 = 10 Nm



Order Code

Description	Scope of Delivery FAS 1640	TIN 4506	IBS M06x018	Order Code	Weight
Fastener Kit, 16x40	1	1	3	FAS 1641	0.045 kg

FAS 404_ Fastener 40x40



Transfer resistance per conductive connection: < 0,4 Ω

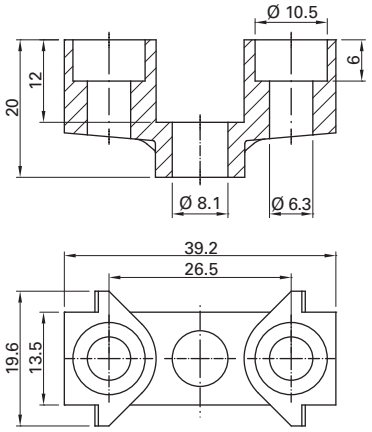
Application
90° fastener on 40 mm series for extrusion PIL 4040 and PIL 4080 transverse

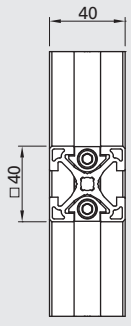
Technical Data
Material: galvanized GD-Zn, galvanized steel

Load index
See page 198

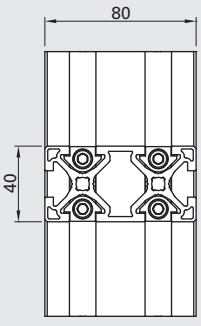
Tightening torque
IBS M06x018 = 10 Nm
LKS M08x025 = 12 Nm

Optional
40x40 fastener Kit for conductive structures

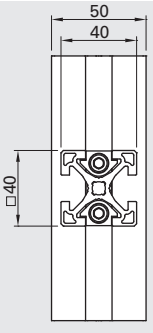




1 unit
FAS 4041 or
FAS 4043
conductive



2 units
FAS 4041 or
FAS 4043
conductive

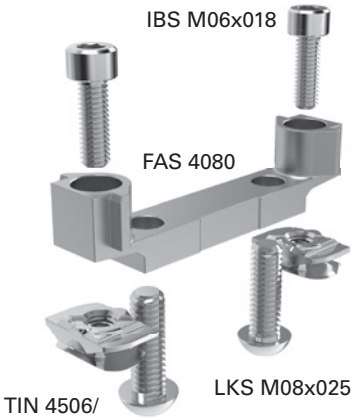


1 unit
FAS 4041 or
FAS 4043
conductive

Order Code

Description	Scope of Delivery FAS 4040	TIN 4506	TIN 4596	IBS M06x018	LKS M08x025	Order Code	Weight
Fastener Kit, 40x40	1	2	-	2	1	FAS 4041[1]	0.068 kg
Fastener Kit, 40x40	1	2	-	2	1	FAS 4041CP[2]	0.068 kg
Fastener Kit, 40x40, conductive	1	-	2	2	1	FAS 4043[1]	0.068 kg
Fastener Kit, 40x40, conductive	1	-	2	2	1	FAS 4043CP[2]	0.068 kg

FAS 408_ Fastener 40x80



Transfer resistance per conductive connection: < 0,4 Ω

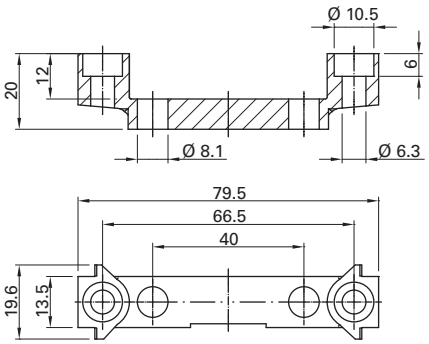
Application
90° fastener on 40 mm series for extrusion
- PIL 4080, longitudinal
- PIL 8080

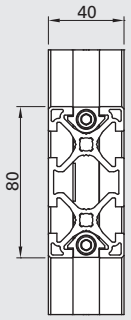
Technical Data
Material: galvanized GD-Zn, galvanized steel

Load index
See page 198

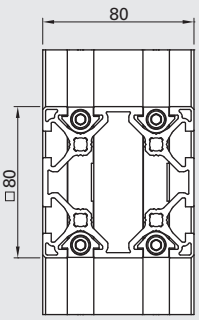
Tightening torque
IBS M06x018 = 10 Nm
LKS M08x025 = 12 Nm

Optional
40x80 fastener Kit for conductive structures

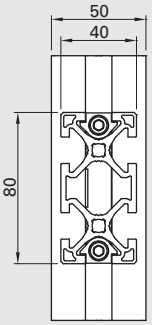




1 unit
FAS 4081 or
FAS 4083 conductive



2 units
FAS 4081 or
FAS 4083 conductive



1 unit
FAS 4081 or
FAS 4083 conductive

Order Code

	Scope of Delivery					Order Code	
Description	FAS 4080	TIN 4506	TIN 4596	IBS M06x018	LKS M08x025		Weight
Fastener Kit, 40x80	1	2	-	2	2	FAS 4081[1]	0.103 kg
Fastener Kit, 40x80	1	2	-	2	2	FAS 4081CP[2]	0.103 kg
Fastener Kit, 40x80, conductive	1	-	2	2	2	FAS 4083[1]	0.103 kg
Fastener Kit, 40x80, conductive	1	-	2	2	2	FAS 4083CP[2]	0.103 kg

1) Packaged in Kit
2) Packaged by type, available for an order quantity of 100 or more
Drawing dimensions in mm

FAS 4049 Surface Fastener 40x40

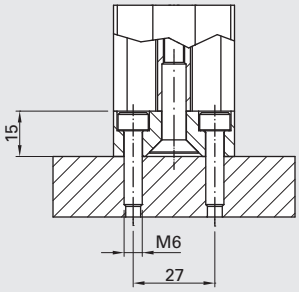
FAS 4048

SKS M08x030

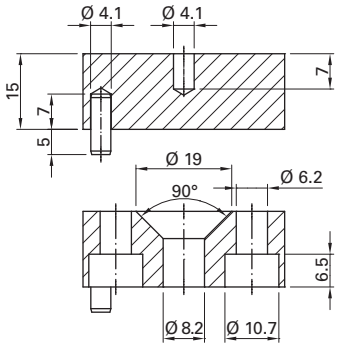
Application
Used for connections to non-Robotunits surfaces on 40 mm series for extrusion PIL 4040

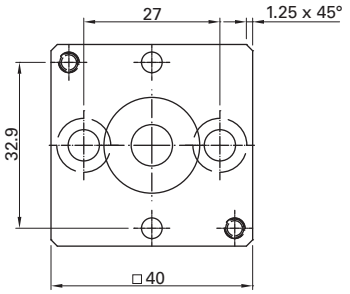
Technical Data
Material: clear anodized aluminum, galvanized steel

Tightening torque
SKS M08x030 = 15 Nm



e.g. for attaching to steel plates

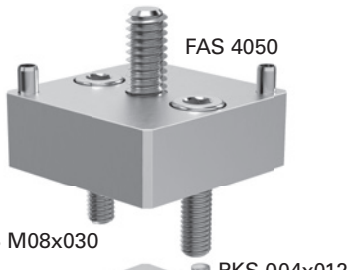




Order Code

Description	Scope of Delivery FAS 4048	Scope of Delivery SKS M08x030	Order Code	Weight
Surface Fastener Kit, 40x40	1	1	FAS 4049	0.070 kg

FAS 4051 End-to-End Fastener 40x40

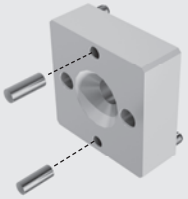


IBS M06x025

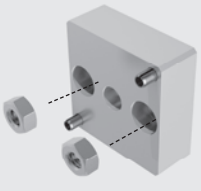
Application
Used for end-to-end connections of 40 mm series for extrusion PIL 4040

Technical Data
Material: clear anodized aluminum, galvanized steel

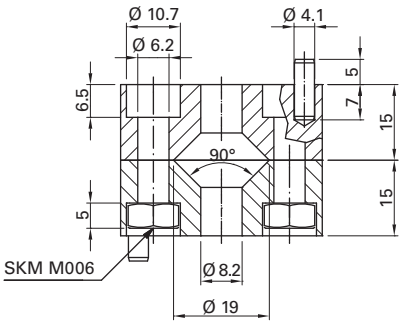
Tightening torque
SKS M08x030 = 15 Nm
IBS M06x025 = 10 Nm

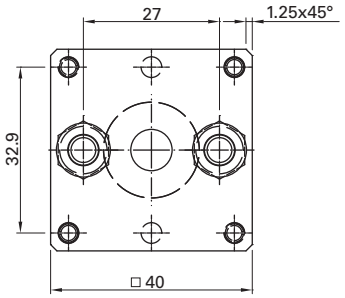


Drive in grooved pin



Press in nut





Order Code

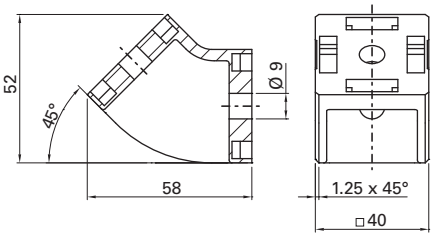
Description	Scope of Delivery FAS 4048	FAS 4050	SKS M08x030	IBS M06x025	PKS 004x012	Order Code	Weight
End-to-End Fastener Kit, 40x40	1	1	2	2	2	FAS 4051	0.160 kg

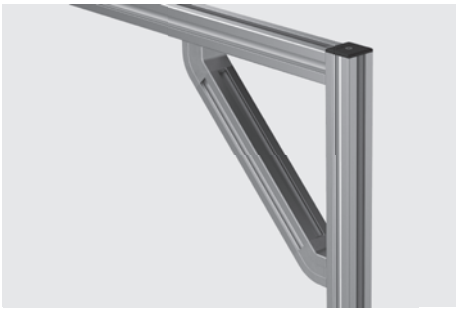
GUS 4541 Angle Fastener 45°

Application
For rigid 45° bracing, e.g.:
- Guardings
- Frames

Technical Data
Material: zinc diecast or galvanized steel

Tightening torque
IBS M08X025 = 26 Nm
IBS M08x020NIKO = 20 Nm

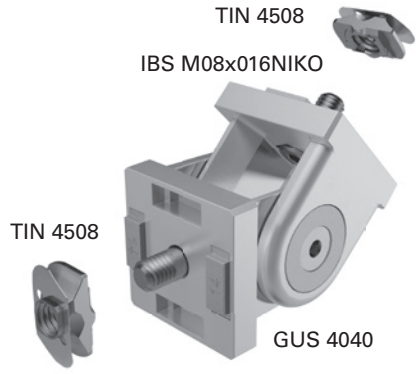




Order Code

	Scope of Delivery					Order Code	
Description	GUS 4540	TIN 4508	IBS M08x025	IBS M08x020NIKO	BLS M008		Weight
Angle Fastener 45° Kit	1	1	1	1	2	GUS 4541	0,211 kg

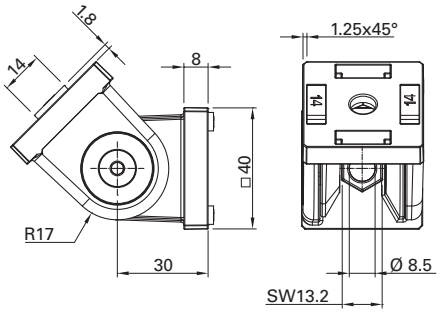
GUS 4_41 Elbow Joint 40

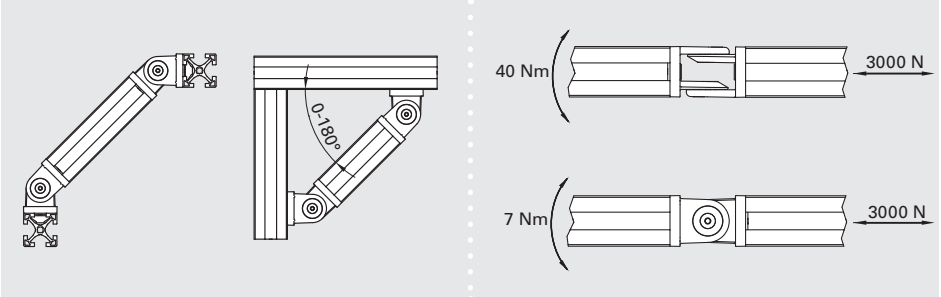


Application
For variable angle connections, e.g.:
- Guardings
- Frames
- Swing arms

Technical Data
Material: zinc diecast or galvanized steel
Pivoting range: +/- 90°

Tightening torque
IBS M08x016NIKO = 20 Nm
Clamp screw = 8 Nm



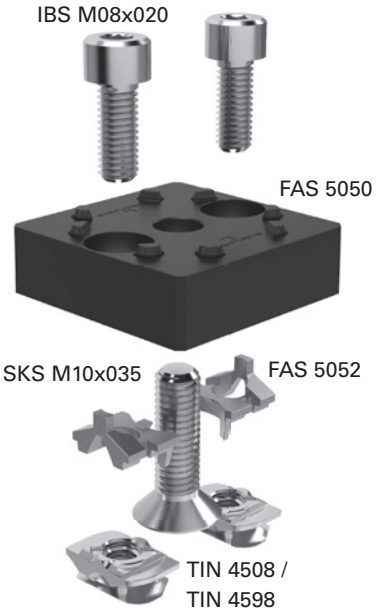


Order Code

	Scope of Delivery				Order Code	
Description	GUS 4040	GUS 4140	TIN 4508	IBS M08x016NIKO		Weight
Elbow Joint 40 Kit	1	-	2	2	GUS 4041	0.135 kg
Elbow Joint 40 Kit with Clamping Lever	-	1	2	2	GUS 4141	0.205 kg

Drawing dimensions in mm

FAS 505_ Fastener 50x50



Application
Used for 90° connections of heavy-duty structures in the 50 mm series for extrusions:

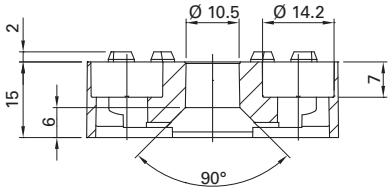
- PIL 5050
- PIL 5010
- PIL 5020

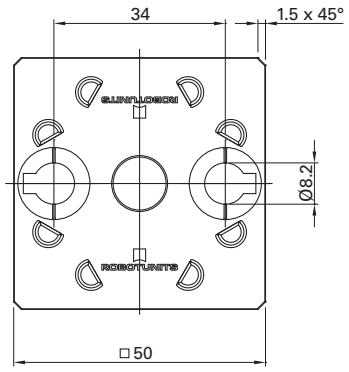
Technical Data
Material: GD-Zn black KTL coated, galvanized steel

Load index
See page 198

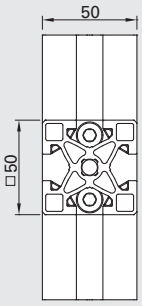
Tightening torque
IBS M08x020 = 26 Nm
SKS M10x035 = 40 Nm

Transfer resistance per conductive connection: < 0,4 Ω

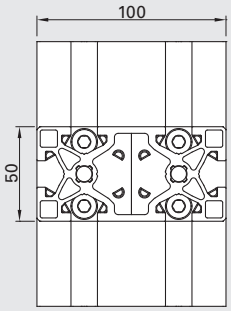




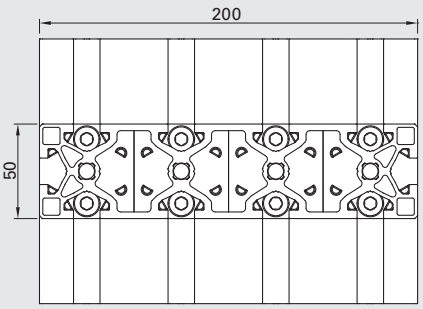
Assembly



1 units FAS 5051 or FAS 5053 conductive



2 units FAS 5051 or FAS 5053 conductive



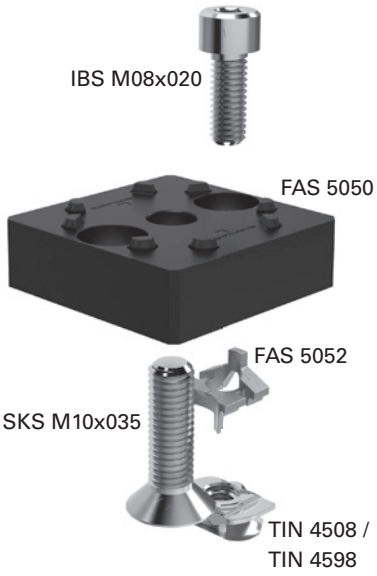
4 units FAS 5051 or FAS 5053 conductive

Order Code

	Scope of Delivery						Order Code	
Description	FAS 5050	FAS 5052	TIN 4508	TIN 4598	IBS M08x020	SKS M10x035		Weight
Fastener Kit, 50x50	1	2	2	-	2	1	FAS 5051[1]	0.223 kg
Fastener Kit, 50x50	1	2	2	-	2	1	FAS 5051CP[2]	0.223 kg
Fastener Kit, 50x50, conductive	1	2	-	2	2	1	FAS 5053[1]	0.223 kg
Fastener Kit, 50x50, conductive	1	2	-	2	2	1	FAS 5053CP[2]	0.223 kg
Fastener, 50x50	100	-	-	-	-	-	FAS 5050 PAC 0100	14.400 kg

1) Packaged in Kit
2) Packaged by type, available for an order quantity of 100 or more
Drawing dimensions in mm

FAS 505_ Single-Sided Fastener 50x50



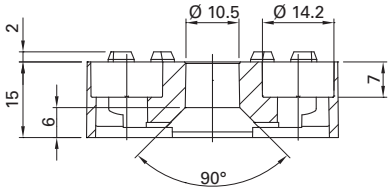
Application
Used for 90° connections of heavy-duty structures in the 50 mm series for extrusions:
- PIL 5010
- PIL 1010
- PIL 5020

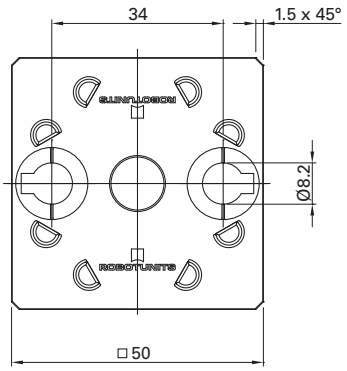
Technical Data
Material: GD-Zn black KTL coated, galvanized steel

Load index
See page 198

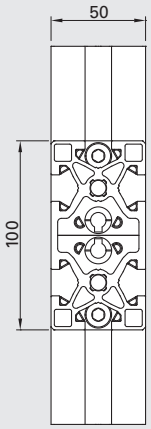
Tightening torque
IBS M08x020 = 26 Nm
SKS M10x035 = 40 Nm

Transfer resistance per conductive connection: < 0,4 Ω

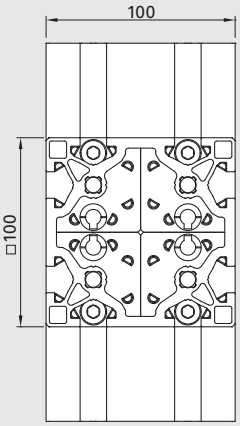




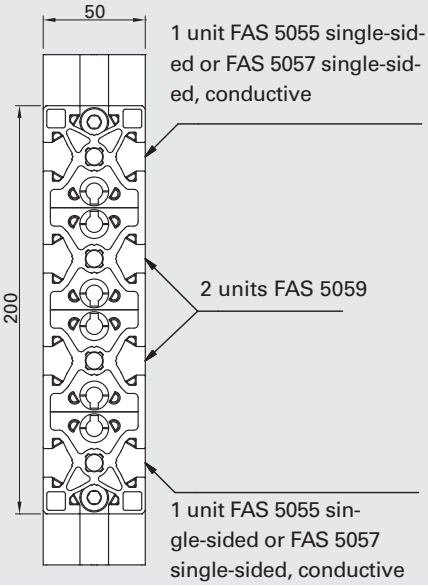
Assembly



2 units FAS 5055 single-sided or FAS 5057 single-sided, conductive



4 units FAS 5055 single-sided or FAS 5057 single-sided, conductive



Order Code

	Scope of Delivery						Order Code	
Description	FAS 5050	FAS 5052	TIN 4508	TIN 4598	IBS M08x020	SKS M10x035		Weight
Fastener Kit, 50x50, single-sided	1	1	1	-	1	1	FAS 5055[1]	0.185 kg
Fastener Kit, 50x50, single-sided	1	1	1	-	1	1	FAS 5055CP[2]	0.185 kg
Fastener Kit, 50x50, single-sided, cond.	1	1	-	1	1	1	FAS 5057[1]	0.185 kg
Fastener Kit, 50x50, single-sided, cond.	1	1	-	1	1	1	FAS 5057CP[2]	0.185 kg
Fastener, 50x50	100	-	-	-	-	-	FAS 5050 PAC 0100	14.400 kg

1) Packaged in Kit
2) Packaged by type, available for an order quantity of 100 or more
Drawing dimensions in mm

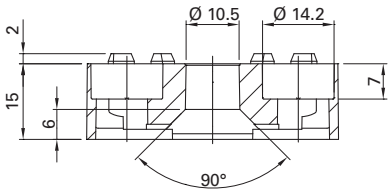
FAS 5059 Surface Fastener 50x50

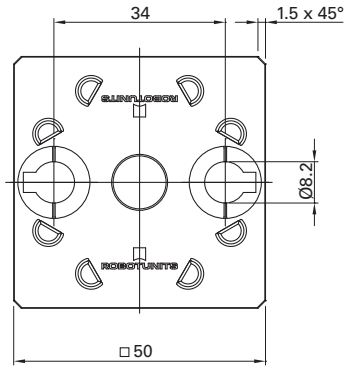
Application
Used for connections to non-Robotunits surfaces. 90° connection for massive structures in the 50 mm series for extrusions

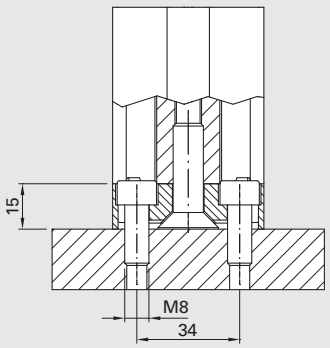
- PIL 5050
- PIL 5010
- PIL 1010
- PIL 5020

Technical Data
Material: GD-Zn black KTL coated, galvanized steel

Tightening torque
SKS M10x035 = 40 Nm







e.g. for attaching to steel plates

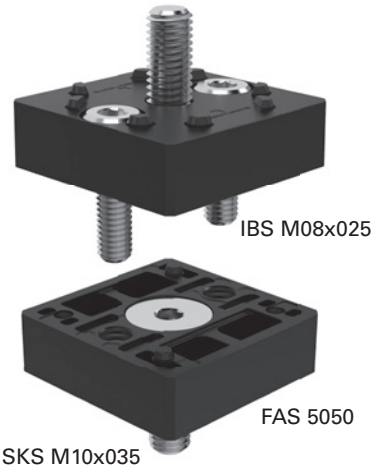
Order Code

	Scope of Delivery		Order Code	
Description	FAS 5050	SKS M10x035		Weight
Surface Fastener Kit, 50x50	1	1	FAS 5059	0.168 kg

Drawing dimensions in mm

FAS 5061 End-To-End Fastener 50x50

FAS 5060
Integrated thread

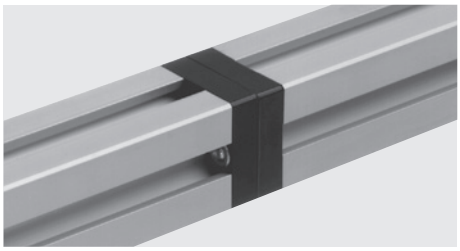


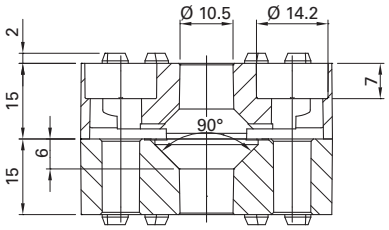
Application
Used for end-to-end connections of 50 mm series extrusions for

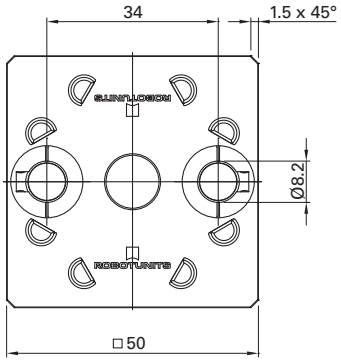
- PIL 5050
- PIL 5010
- PIL 1010
- PIL 5020

Technical Data
Material: GD-Zn black KTL coated, galvanized steel

Tightening torque
IBS M08x020 = 26 Nm
SKS M10x035 = 40 Nm





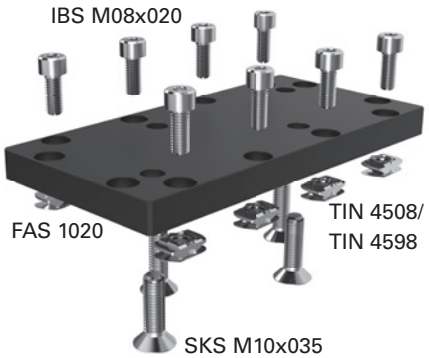


Order Code

	Scope of Delivery				Order Code	
Description	FAS 5050	FAS 5060	IBS M08x025	SKS M10x035		Weight
End-To-End Fastener Kit, 50x50	1	1	2	2	FAS 5061	0.374 kg

Drawing dimensions in mm

FAS 102_ Fastener 100x200

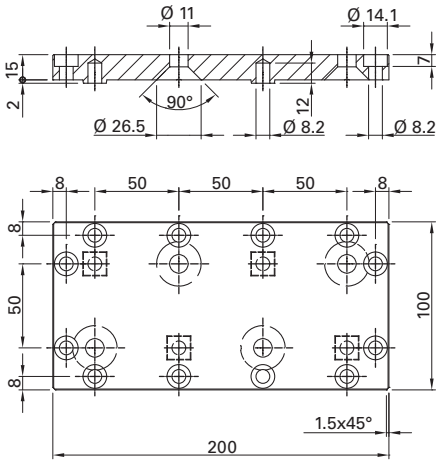


Application
Used for 90° connections of heavy duty structures of PIL 1020

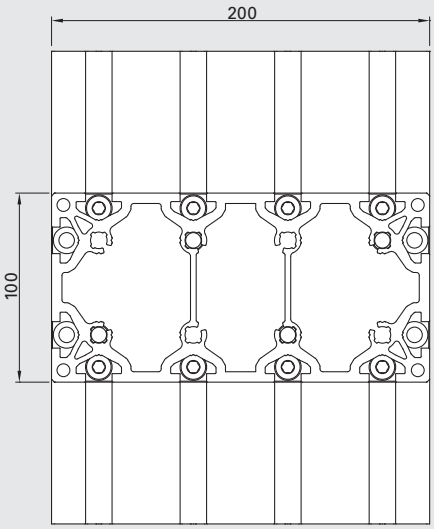
Technical Data
Material: black anodized aluminum, galvanized steel

Tightening torque
IBS M08x020 = 26 Nm
SKS M10x035 = 40 Nm

Transfer resistance per conductive connection: < 0,4 Ω

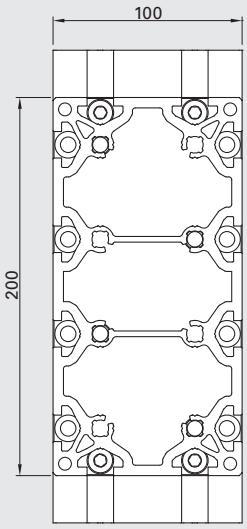


Cross Fastener



1 units FAS 1021 or FAS 1023 conductive

In-Line Fastener



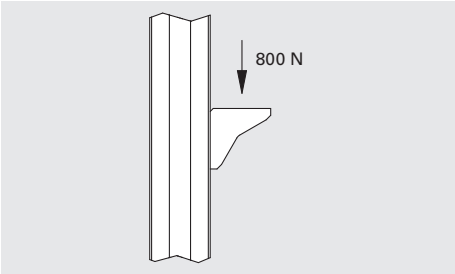
1 units FAS 1025 or FAS 1027 conductive

Order Code

	Scope of Delivery					Order Code	
Description	FAS 1020	TIN 4508	TIN 4598	IBS M08x020	SKS M10x035		Weight
Cross Fastener Kit, 100x200	1	8	-	8	4	FAS 1021	1.000 kg
Cross Fastener Kit, 100x200, cond.	1	-	8	8	4	FAS 1023	1.000 kg
In-Line Fastener Kit, 100x200	1	4	-	4	4	FAS 1025	0.920 kg
In-Line Fastener Kit, 100x200, cond.	1	-	4	4	4	FAS 1027	0.920 kg

Drawing dimensions in mm

GUS 450_ Corner Bracket 40/50



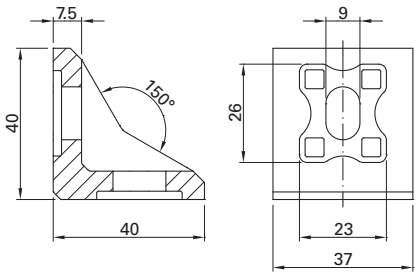
Application
Used for 90° connections and as strengthening element in combination with Robotunits fasteners, for both 40 mm and 50 mm series extrusions, e.g.:
- 40/40 series combination
- 50/50 series combination
- 40/50 series combination

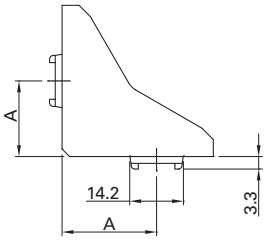
Connections to non-Robotunits extrusions and surfaces, e.g.:
- Mounting of table tops
- Fastening to non-Robotunits extrusions
- Fastening to walls

Technical Data
Material: GD-Zn black KTL coated, galvanized steel

Tightening torque
IBS M08x020NIKO = 20 Nm

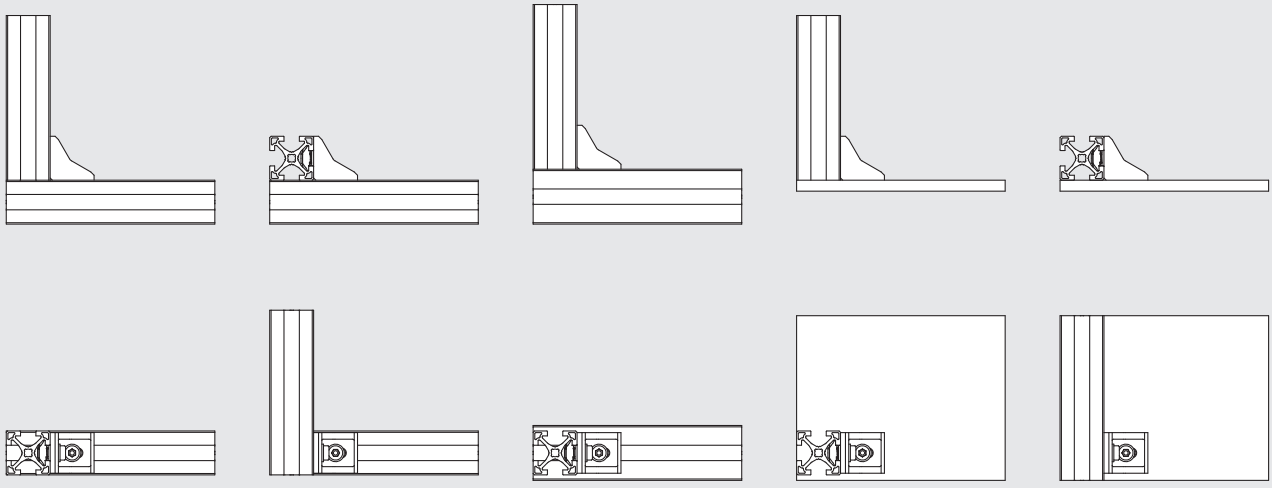
By turning the centering insert (GUS 4502), the angle bracket can be used in either the 40 mm or the 50 mm series.





A in 40 mm series = 20
A in 50 mm series = 25

Applications

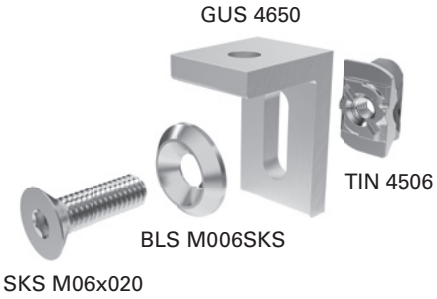


Order Code

	Scope of Delivery					Order Code	
Description	GUS 4500	GUS 4502	TIN 4508	IBS M08x020NIKO	BLS M008		Weight
Corner Bracket 40/50 Kit	1	2	2	2	2	GUS 4501[1]	0.180 kg
Corner Bracket 40/50 Kit	1	2	2	2	2	GUS 4501CP[2]	0.180 kg
Corner Bracket 40/50	80	-	-	-	-	GUS 4500 PAC 0080	9.920 kg

1) Packaged in Kit
2) Packaged by type, available for an order quantity of 100 or more
Drawing dimensions in mm

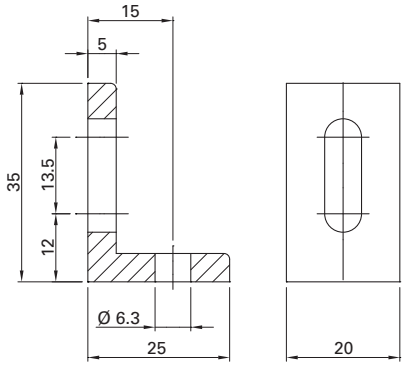
GUS 4651 Fixing Bracket 35x25



Application
Used for 90° connections and as strengthening element in combination with Robotunits extrusion technology with non-Robotunits components. Particularly suitable for fixing table plates and similar surface elements

Technical Data
Material: clear anodized aluminum
galvanized steel

Tightening torque
SKS M06x020 = 9 Nm



Applications

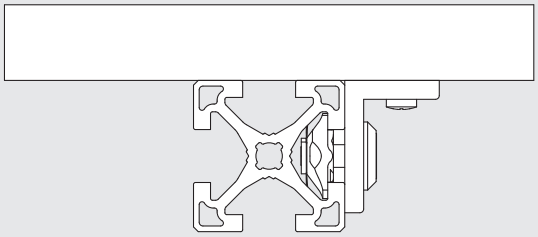
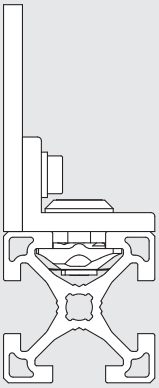


Table plate fastening



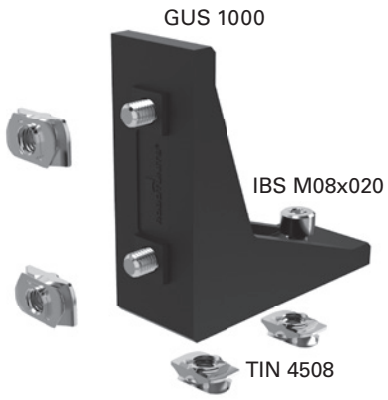
Surface element fastening

Order Code

	Scope of Delivery				Order Code	
Description	GUS 4650	TIN 4506	SKS M06x020	BLS M006SKS		Weight
Fixing Bracket, 35x25 Kit	1	1	1	1	GUS 4651	0.030 kg

Drawing dimensions in mm

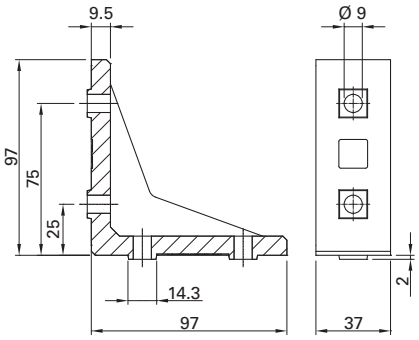
GUS 100_ Corner Bracket 100

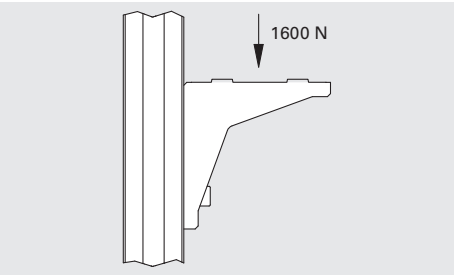


Application
Used for 90° connections and as strengthening element in combination with Robotunits fasteners. The GUS 1000 can also be used with 40 mm series extrusions parallel to T-slot centerline.

Technical Data
Material: GD-Zn black KTL coated, galvanized steel

Tightening torque
IBS M08x020 = 26 Nm

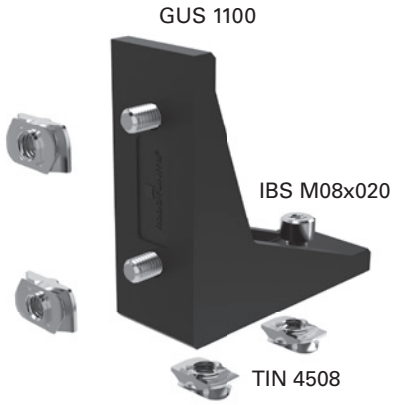




Order Code

Description	Scope of Delivery GUS 1000	TIN 4508	IBS M08x020	Order Code	Weight
Corner Bracket 100 Kit	1	4	4	GUS 1001[1]	0.615 kg
Corner Bracket 100 Kit	1	4	4	GUS 1001CP[2]	0.615 kg
Corner Bracket 100	16	-	-	GUS 1000 PAC 0016	9.500 kg

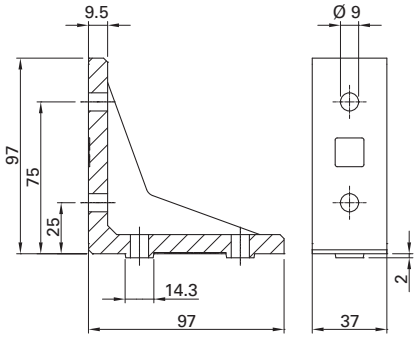
GUS 110_ Corner Bracket 100, one side centered

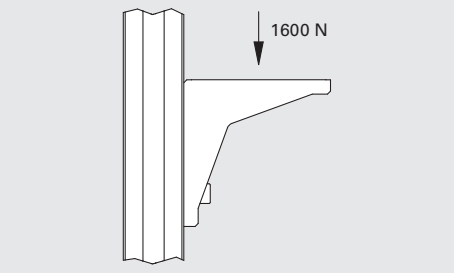


Application
Used for 90° connections and as strengthening element in combination with Robotunits fasteners and non-Robotunits extrusions and surfaces. The GUS 1100 can also be used with 40 mm series extrusions parallel to T-slot centerline.

Technical Data
Material: GD-Zn black KTL coated, galvanized steel

Tightening torque
IBS M08x020 = 26 Nm

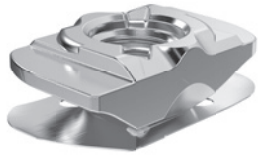




Order Code

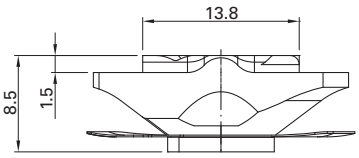
Description	Scope of Delivery GUS 1100	TIN 4508	IBS M08x020	Order Code	Weight
Corner Bracket 100 Kit, one side centered	1	4	4	GUS 1101[1]	0.615 kg
Corner Bracket 100 Kit, one side centered	1	4	4	GUS 1101CP[2]	0.615 kg
Corner Bracket 100, one side centered	16	-	-	GUS 1100 PAC 0016	9.500 kg

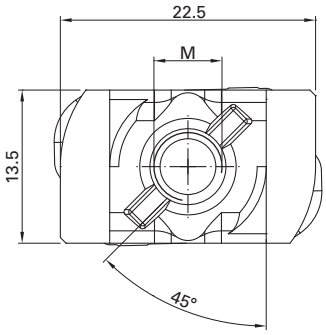
TIN 45__ Drop-in Nut

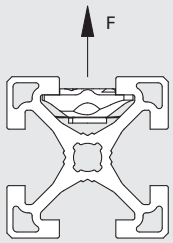


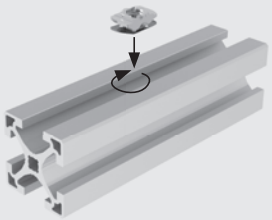
Application
Used for 40 mm and 50 mm series extrusions
- Self-centering
- Slip protection (leaf springs)
- Anti-twist safeguard

Technical Data
Material: galvanized steel









Order Code

Description	F[1]	Order Code	Weight
Drop-in Nut M4	1500 N	TIN 4504	0.010 kg
Drop-in Nut M4, conductive	1500 N	TIN 4594	0.010 kg
Drop-in Nut M5	3000 N	TIN 4505	0.010 kg
Drop-in Nut M5, conductive	3000 N	TIN 4595	0.010 kg
Drop-in Nut M6	4500 N	TIN 4506	0.010 kg
Drop-in Nut M6, conductive	4500 N	TIN 4596	0.010 kg
Drop-in Nut M8	6000 N	TIN 4508	0.010 kg
Drop-in Nut M8, conductive	6000 N	TIN 4598	0.010 kg

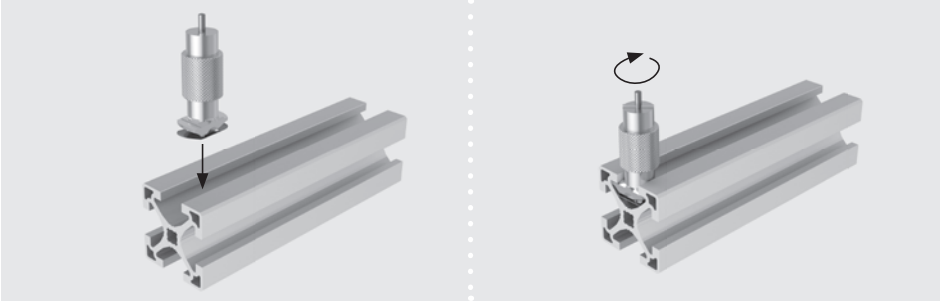
TIN 9990 Inserter

New, with built-in magnet

Application
Assembly tool for inserting Drop-in Nuts into T-slot.

Technical Data
Material: galvanized steel

Assembly

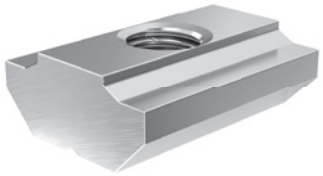


Order Code

Description	Order Code	Weight
Inserter	TIN 9990	0.045 kg

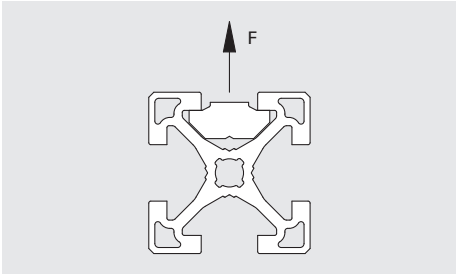
1) Pull-out values are based on screw quality 8.8

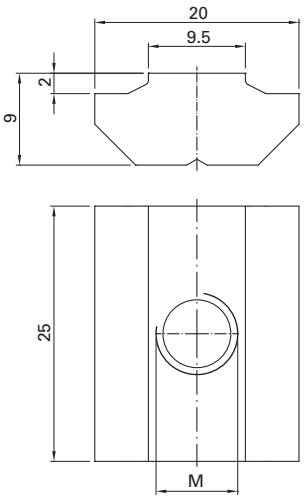
TIN 60__ T-Nut



Application
For 40 mm series and 50 mm series extrusions
- Self-centering

Technical Data
Material: galvanized steel



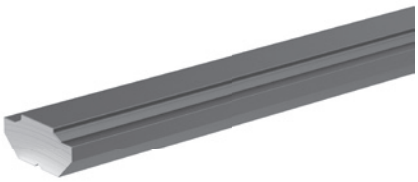


Order Code

Description	F[1]	Order Code	Weight
T-Nut M8	7500 N	TIN 6008	0.027 kg
T-Nut M10	7500 N	TIN 6010	0.025 kg

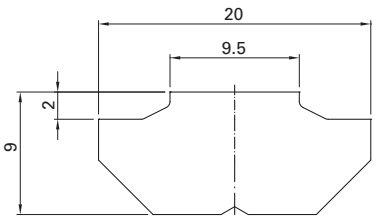
1) Pull-out values are based on screw quality 8.8
Drawing dimensions in mm

TIN 4590 T-Nut Bar



Application
Used for specific applications with 40 mm and 50 mm series extrusions

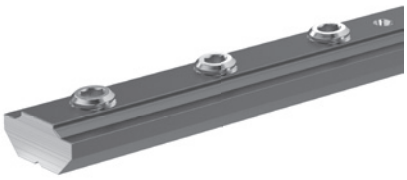
Technical Data
Material: untreated steel
Stock length: 3030 mm



Order Code

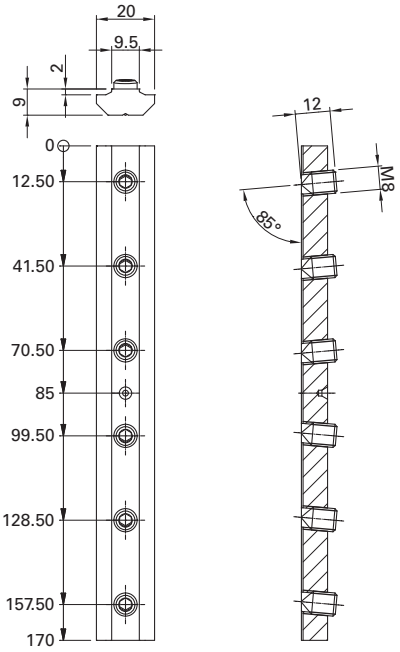
Description	Order Code	Weight
T-Nut Bar, cut to length	TIN 4590 SNN _ _ _ _	1.125 kg/m
T-Nut Bar, stock length: 3030 mm	TIN 4590 NNN 3030	3.375 kg

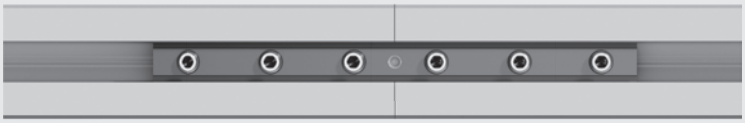
TIN 0171 T-Nut In-Line Fastener



Application
Used for end-to-end connections of 40 mm and 50 mm series extrusions

Technical Data
Material: galvanized steel



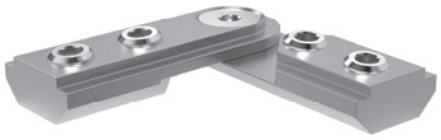


Order Code

Description	Scope of Delivery: Base Part	Scope of Delivery: GST M08x012 SPI	Order Code	Weight
T-Nut In-Line Fastener	1	6	TIN 0171	0.196 kg

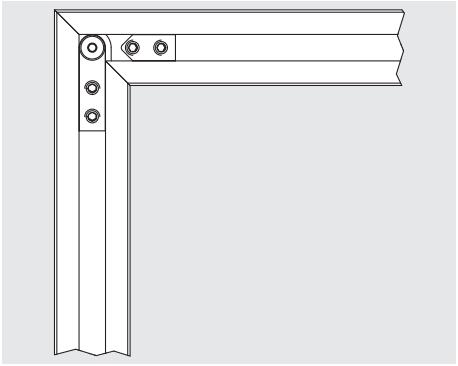
Drawing dimensions in mm

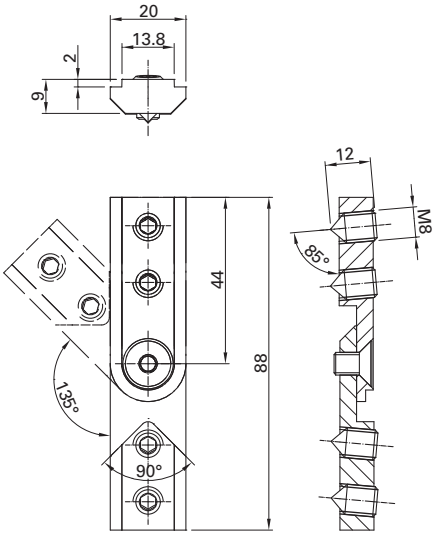
TIN 4545 Miter Fastener



Application
Fasteners for extrusions with miter cuts

Technical Data
Material: galvanized steel





Order Code

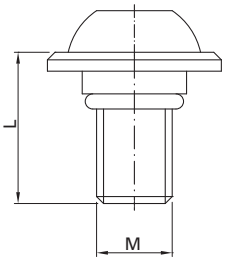
	Scope of Delivery				Order Code	
Description	Base Part countersink	Base Part thread	GST M08x012 SPI	SKS M06x010		Weight
Miter Fastener	1	1	4	1	TIN 4545	0.098 kg

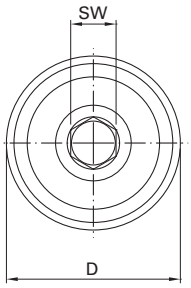
TIN _000 Special Fastener

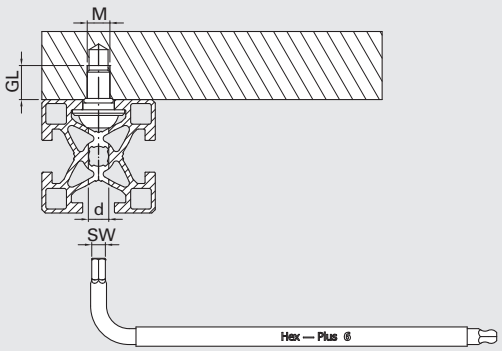
Application
For mounting parts onto Robotunits extrusions where no holes are to be seen from the outside of the assembly

In contrast with all other Robotunits fasteners, this fastener requires drilling.

Technical Data
Material: galvanized steel, NBR







Order Code

							Order Code	
Description	GL	SW	M	d	D	L		Weight
Special Fastener 40	15	5	M8	7	20	20	TIN 4000	0.016 kg
Special Fastener 50	15	6	M10	9	23	20	TIN 5000	0.032 kg