



walraven

Know-how - Innovation
System thinking - Quality - Service



Walraven Catalog

Installation systems



The value of smart

walraven.com/us

About us

Walraven is a family owned company that is a global market leader of value-added installation systems for mechanical, plumbing, seismic and electrical industries and applications for over 80 years.

Our companies headquarters is in The Netherlands, and operates in Europe, China, Asia, India, Middle East and North America and exports to the rest of the world. Due to its location, great resources and possibilities, the Virginia area was chosen for the US sales office and manufacturing facility. At Walraven, we connect with both our customers and the market. Like Henry Ford, Jan van Walraven, our company's founder could visualize concepts and put physical form to innovative ideas, which is a perfect match for the North American market.

In the United States, Walraven manufactures and markets, pipe hangers, strut accessories and in-wall solutions specifically designed for US plumbing, mechanical and electrical applications.

Our high-quality products are engineered to support materials used in most installations such as PEX, PVC, CPVC, PP, copper, steel, cast iron and conduit providing contractors with simpler, smarter, faster and easier installations while improving profitability. Walraven products are incorporated in a wide range of residential, light commercial and heavy-duty commercial applications, such as houses, hotels, high-rises, apartment complexes, schools/ universities, airports, multi-use buildings, sports arenas and industrial facilities, just to name a few. Most of our products offer superior corrosion resistance, noise and vibration reduction, are UV, plenum and/or fire-rated and meet most US standards including Buy American, UPC and UL listings. We know how important it is for even the smallest part to do its job properly.

Regardless of the type and size of pipe, Walraven has a solution. That is why we are known around the world as the industry leader in pipe support systems.

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Abbreviations Key

BndL	=	# of items per pallet
BndS	=	# of items per bundle (bands of products)
BT	=	Bolt size
CTS	=	Copper tube size
D	=	Diameter of item
D/ACR	=	Pipe diameter for HVACR pipes
D/CTS	=	Diameter of copper tube
D/IPS	=	Diameter of iron pipe
EMT	=	Electrical Metallic Tubing
Fa,z	=	Maximum allowed load
Fb,z	=	Breaking load vertically
For rail	=	What size and/or type of rail the product fits
IPS	=	Iron pipe size
SS	=	Stainless steel



In-Wall Products

Rapid Sliding Wall Bracket (RSWB)



- Extendable in-wall bracket for mounting plumbing pipes, electrical pipes, electrical boxes and conduit between studs
- Suitable for use in metal or wood stud walls and floor joists
- Quicker and easier to install than traditional methods - no measuring or cutting
- Can be set at multiple depths
- For use with RapidRail® Slide Nuts, starQuick® Clamps, starQuick® Universal Rail Adapter and RapidRail® Hammerfix accessories
- Break apart design (sold in connected pairs)
- Material: pre hot-dip galvanized steel 1.0226

Item number	Product abbreviation	Expansion range (inches)	Items per pkg.
59491220	RSWB3	12-20	50
59491827	RSWB4	16-26	35



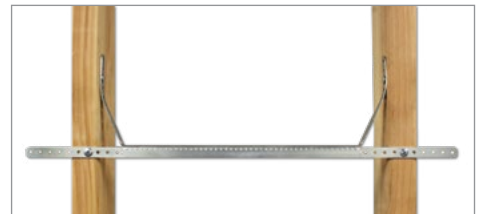
Rapid Sliding Wall Bracket in use with Rabbit clamp holding copper pipe and starQuick® clamp holding PEX pipe.

Light Angled Wall Bracket (LAWB)



- Used to support vertical piping and horizontal stub-outs within the wall
- Bracket mounts at 4 points for added strength, stability and durability
- Adjustable for ease of use with studs that are not exactly on center
- Hole pattern allows for adjustable stub-outs every 2" +or- 1/2"
- Packaged in convenient resealable tube
- Material: pre hot-dip galvanized steel 1.0242

Item number	Product abbreviation	Expansion range (inches)	Items per pkg.
59493001	LAWB1	12-20	25
59493002	LAWB2	18-26	25



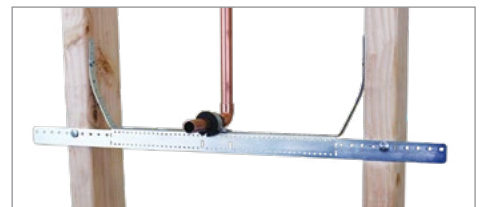
Light Angled Wall Bracket securely mounts at 4 points.

Heavy Angled Wall Bracket (HAWB)



- Used to support vertical piping and horizontal stub-outs within the wall
- Bracket mounts at 4 points for added strength, stability and durability
- Adjustable for ease of use with studs that are not exactly on center
- Hole pattern allows for adjustable stub-outs every 2" +or- 1/2"
- Packaged in convenient resealable tube
- Material: steel 1.0242

Item number	Product abbreviation	Expansion range (inches)	Items per pkg.
59494001	HAWB1	12-20	25
59494002	HAWB2	18-26	25



Heavy Angled Wall Bracket in use with single CPVC/copper stub-out clamp.

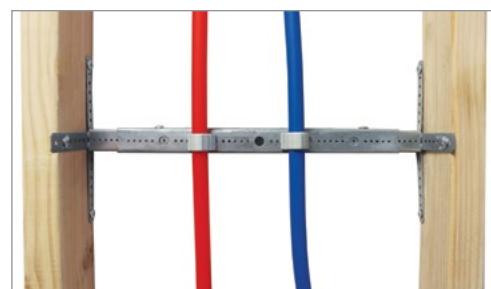
In-Wall Products

Multi-Purpose Telescoping Support (MPTS)



- This heavy-duty, adjustable, 3 piece bracket is used to support vertical piping and stub-outs on studs at 6 points
- Adjustable for ease of use
- Heavy-duty profile supports any in-wall hardware
- Hole pattern fits sliding and fixed stub-outs as well as a variety of clamps
- Material: pre-galvanized steel 1.0242

Item number	Product abbreviation	Expansion range (inches)	Items per pkg.
59492001	MPTS1	12-20	25
59492002	MPTS2	18-26	25



Multi-Purpose Telescoping Support in use with starQuick® clamps

Multi-Purpose Telescoping Support (MPTS) Insert

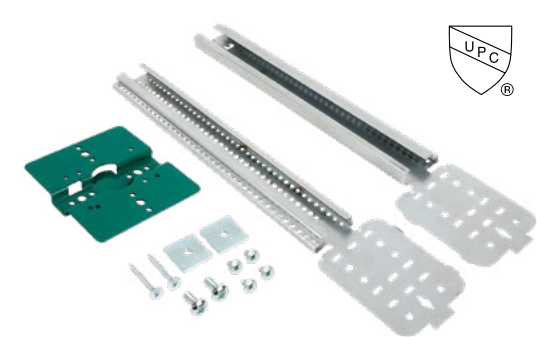


- Can be used to make a custom length in-wall bracket when paired with WMO strut
- Can be used as a cantilever or to attach strut in between walls
- Features 3 fixing points to support any length of WMO strut
- Easily customizable
- Use to attach custom size WMO strut in a narrow, confined space
- Material: pre-galvanized steel 1.0242

Item number	Size (inches)	Items per pkg.
59492000	8" x 3/4" x 1/2"	50

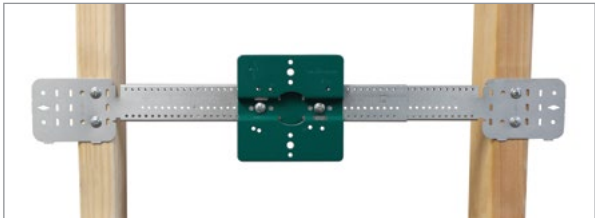
In-Wall Products

Rapid Sliding Wall Bracket (RSWB) Shower Valve Bracket Kit

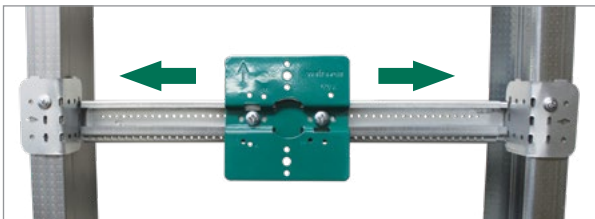


- Mounting kit for the industries most popular shower valves
- Bracket is mounted to stud and the shower valve plate is attached using screws (included)
- Versatile - use square nut and bolt for adjustable application and screws for fixed application
- Kit includes: Rapid Sliding Wall Brackets, Universal Shower Valve Plates, square nut, mounting hardware
- Individually bagged for convenience

Item number	Each kit contains	Items per pkg.
59490960	RSWB3, spans from 12" to 20", Universal Shower Valve Plate 1 (USVP1*), hardware	25
59490961	RSWB4, spans from 16" to 26", Universal Shower Valve Plate 1 (USVP1*), hardware	25
59490950	RSWB4, spans from 16" to 26", Universal Shower Valve Plate 2 (USVP2**), hardware	25



Universal Shower Valve Plate shown mounted in a fixed application.



Square nut allows Universal Shower Valve Plate to be adjusted horizontally once mounted.

Rapid Sliding Wall Bracket (RSWB) Shower Valve Bracket Kit – Contractor Pack of 25



- Loose parts are organized and nested in one sturdy box
- Universal Shower Valve Brackets (USVP) are boxed and hardware is bagged separately within larger box for easy access
- Contractor Pack includes: Rapid Sliding Wall Brackets, Universal Shower Valve Plates, square nut, mounting hardware
- Versatile - use square nut and bolt for adjustable application and screws for fixed application

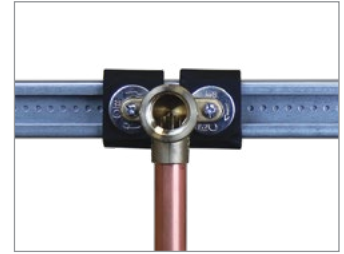
Item number	Each kit contains	Items per pkg.
59490962	RSWB3, spans from 12" to 20", Universal Shower Valve Plate 1 (USVP1*), hardware	25
59490963	RSWB4, spans from 16" to 26", Universal Shower Valve Plate 1 (USVP1*), hardware	25

* USVP1: Universal Shower Valve Plate 1 is used with Delta, Moen®, Kohler® and American Standard shower valves.
 ** USVP2: Universal Shower Valve Plate 2 is used with PROFLO® and Price Pfister® shower valves.

Silent Nut Assembly for Shower Head

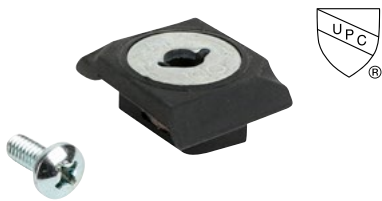


- An adjustable connection option for mounting shower drop ear 90 to Rapid Sliding Wall Bracket (RSWB) and in-wall strut
- Noise and vibration reducing
- Features quick, quarter-turn technology
- Hardware included



Item number	Size (inches)	Items per pkg.
59490965	#8 x 3/4	25

Silent Nut Assembly for Stub-Out Bracket and Universal Shower Valve Plate



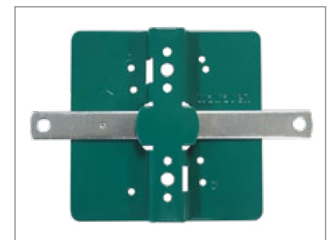
- An adjustable connection option for mounting Universal Shower Valve Plate to stub-out bracket
- Noise and vibration reducing
- Features quick, quarter-turn technology
- Hardware included

Item number	Size (inches)	Items per pkg.
59490964	1/4 x 1/2	25

Plate for Adjustable Shower Valve



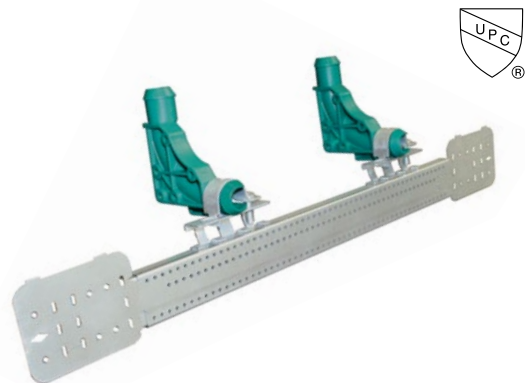
- Conveniently fits on the Universal Shower Valve Plate
- Allows for Universal Shower Valve Plate to be repositioned once valve is attached.
- Easy to install
- Square nut and 1/4" x 1/2" machine screw included
- Material: zinc plated steel 1.0332



Item number	Items per pkg.
59490990	50

In-Wall Products

Rapid Sliding Wall Bracket (RSWB) Double PEX 1/2" Stub-Out Kit

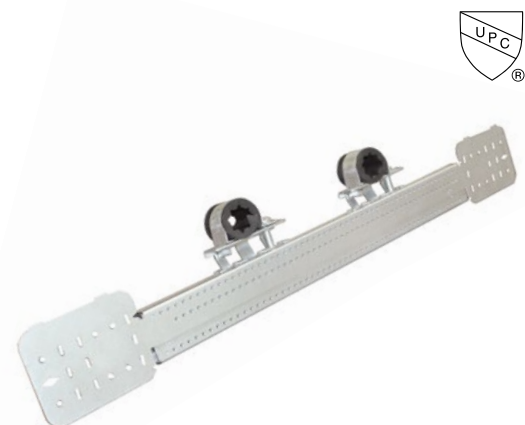


- Pre-assembled and ready to use with PEX pipe
- Easy to adjust and close using hands or drill
- Individually bagged for convenience

Item number	Each kit contains	Items per pkg.
59490971	RSWB3, spans from 12" to 20", 2 stub-out brackets, hardware	25
59490972	RSWB4, spans from 16" to 26", 2 stub-out brackets, hardware	25

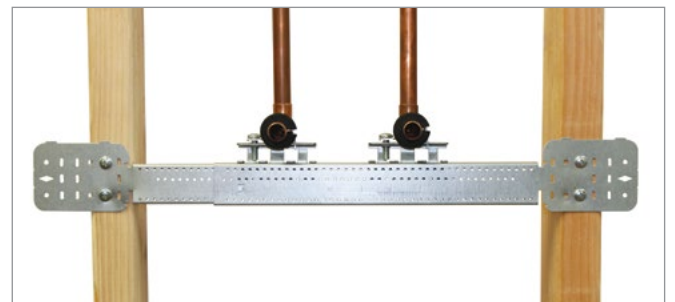


Rapid Sliding Wall Bracket (RSWB) Double CPVC or Copper Pipe 1/2" Stub-Out Kit



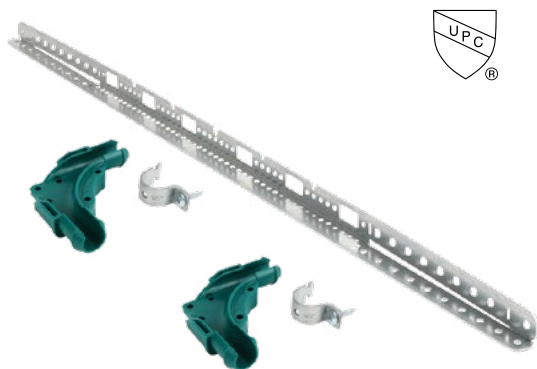
- Pre-assembled and ready to use with CPVC or copper pipe
- Easy to adjust and close using hands or drill
- Individually bagged for convenience

Item number	Each kit contains	Items per pkg.
59490981	RSWB3, spans from 12" to 20", 2 stub-out brackets, hardware	25
59490982	RSWB4, spans from 16" to 26", 2 stub-out brackets, hardware	25



In-Wall Products

Light Angled Wall Bracket (LAWB) Double PEX 1/2" Stub-Out Kit

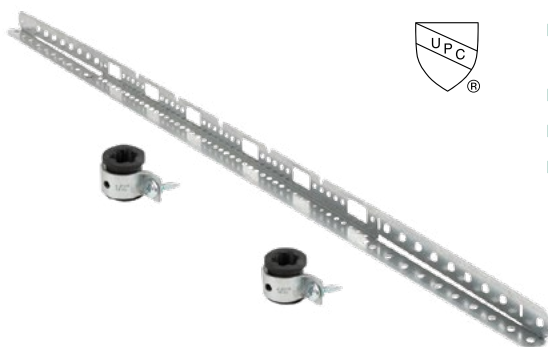


- A light duty bracket with PEX bends and clamps for stub-outs
- Adjustable to accommodate different stud spacing
- Hole pattern for stub-outs is every 2" with adjustability of +or- 1/2"
- Pre-packaged with necessary hardware

Item number	Each kit contains	Items per pkg.
59496111	LAWB1, spans from 12" to 20", 2 stub-out brackets, hardware	25
59496112	LAWB2, spans from 18" to 26", 2 stub-out brackets, hardware	25

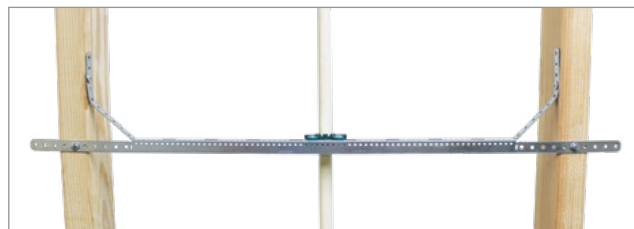


Light Angled Wall Bracket (LAWB) Double CPVC or Copper Pipe 1/2" Stub-Out Kit



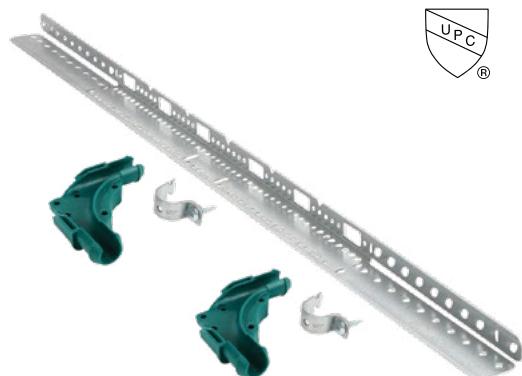
- A light duty bracket with rubber inserts and clamps for use with CPVC or copper pipe stub-outs
- Adjustable to accommodate different stud spacing
- Hole pattern for stub-outs is every 2" with adjustability of +or- 1/2"
- Pre-packaged with necessary hardware

Item number	Each kit contains	Items per pkg.
59496211	LAWB1, spans from 12" to 20", 2 stub-out brackets, hardware	25
59496212	LAWB2, spans from 18" to 26", 2 stub-out brackets, hardware	25



In-Wall Products

Heavy Angled Wall Bracket (HAWB) Double PEX 1/2" Stub-Out Kit

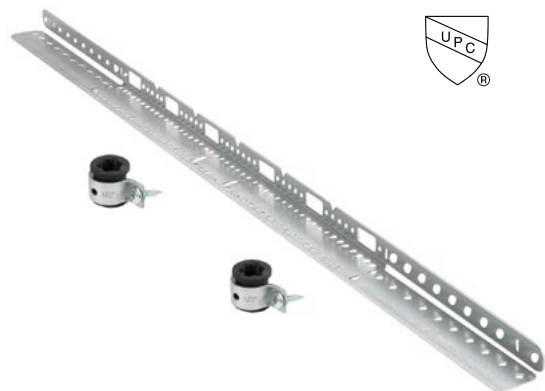


- A heavy duty bracket with PEX bends and clamps for stub-outs
- Adjustable to accommodate different stud spacing
- Hole pattern for stub-outs is every 2" with adjustability of +or- 1/2"
- Pre-packaged with necessary hardware

Item number	Each kit contains	Items per pkg.
59495111	HAWB1, spans from 12" to 20", 2 stub-out brackets, hardware	25
59495112	HAWB2, spans from 18" to 26", 2 stub-out brackets, hardware	25



Heavy Angled Wall Bracket (HAWB) Double CPVC or Copper Pipe 1/2" Stub-Out Kit



- A heavy duty bracket with rubber inserts and clamps for use with CPVC or copper pipe stub-outs
- Adjustable to accommodate different stud spacing
- Hole pattern for stub-outs is every 2" with adjustability of +or- 1/2"
- Pre-packaged with necessary hardware

Item number	Each kit contains	Items per pkg.
59495211	HAWB1, spans from 12" to 20", 2 stub-out brackets, hardware	25
59495212	HAWB2, spans from 18" to 26", 2 stub-out brackets, hardware	25



In-Wall Products

PEX Stub-Out Clamp for Rapid Sliding Wall Bracket (RSWB)



- For use with PEX tubing
- Pre-assembled for quick installation
- Features a thumb screw and square nut for easy adjustability
- A secure way to support PEX stub-outs
- Easily mounts to the Multi-Purpose Telescoping Support (MPTS)

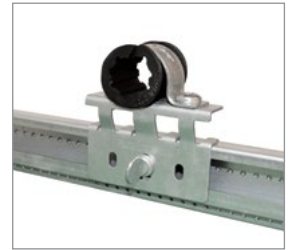


Item number	Size (inches)	Items per pkg.
59497112	1/2	25

CPVC or Copper Pipe Stub-Out Clamp for Rapid Sliding Wall Bracket (RSWB)



- For use with CPVC or copper pipe
- Pre-assembled for quick installation
- Features a thumb screw for easy adjustability
- A secure way to support CPVC or copper pipe stub-outs
- Easily mounts to the Multi-Purpose Telescoping Support (MPTS)



Item number	Size (inches)	Items per pkg.
59497212	1/2	25
59497216	3/4	25

PEX Stub-Out Clamp for Angled Wall Bracket



- For use with PEX tubing
- Assembly is placed into pre-punched holes on Angled Wall Bracket or in-wall strut and secured using retained screw
- No loose hardware
- Adjustable every 2", +or- 1/2"
- Insert PEX bend to create a secure stub-out support
- Easily mounts to the Multi-Purpose Telescoping Support (MPTS)



Item number	Size (inches)	Items per pkg.
59498112	1/2	25

In-Wall Products

CPVC or Copper Pipe Stub-Out Clamp for Angled Wall Bracket



- For use with CPVC or copper pipe
- Pre-assembled for quick installation
- Features a thumb screw for easy adjustability
- A strong and secure way to support copper pipe stub-outs
- Easily mounts to the Multi-Purpose Telescoping Support (MPTS)



Item number	Size (inches)	Items per pkg.
59498212	1/2	25
59498216	3/4	25

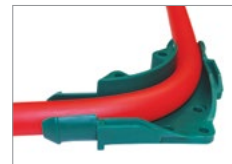
PEX 90° Bend Support



- Easily snap-in your PEX tubing instead of having to slide it in
- Conveniently fits stub-out assemblies
- Creates a secure and kink-free bend radius for 1/2" PEX tubing
- Versatile - suitable for many types of installations
- Higher lip to reduce damage to the PEX tube
- Materials: Polypropylene



Item number	Size (inches)	Items per pkg.
59490973	1/2	25



Flush Valve Support - 1"



- Supports the 1" line from toilet carrier to wall
- Rubber lined support reduces vibration and noise
- Adjustable both horizontally and vertically
- Pipe is secured using two captured screws
- Material: pre hot-dip galvanized steel 1.0226



Item number	Size (inches)	Items per pkg.
59499982	1	10

In-Wall Products

Wall Plate for WMO Strut



vertical mount



horizontal mount

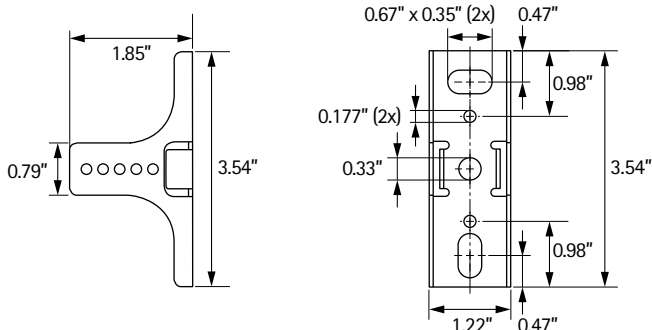


- Used to mount custom lengths of light strut or WMO onto wall, ceiling or studs
- Can easily support custom length light strut
- Can be mounted flat to horizontal or vertical surfaces
- Material: pre hot-dip galvanized steel 1.0226



PEX shown mounted to wood studs using Wall Plate and a starQuick® clamp

Item number	For strut	Items per pkg.
66190110	WMO	25



Cantilever Arm for WMO Strut



- Mounts directly to the wall or ceiling without all thread, allowing for a tight mounting
- A large variety of clamps can be attached to the cantilever with only a single screw or other accessories
- Conveniently pre-assembled for a quick installation
- Material: pre hot-dip galvanized steel 1.0226



Copper pipe shown mounted to Cantilever Arm and secured with starQuick® clamp

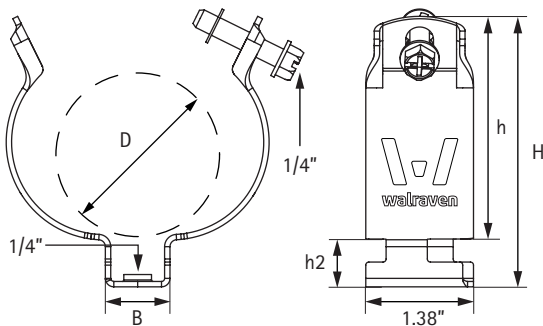
Item number	Size (inches)	Items per pkg.
66090110	8	25

Strut Clamps

W1000 Strut Clamp



- For use with steel pipes and EMT conduit
- 3-way use, on strut, on threaded rod, directly on wall or ceiling
- One piece design means no loose parts
- Easier, faster, safer - installs with one hand
- 3 way screw head: Phillips, flat and hex
- Unique design allows one clamp to fit multiple pipe sizes meaning less items to stock
- W Series Clamps are boxed for easy handling - no more bags
- Surface is treated with high grade Zn-Mg based coating (withstands a salt spray corrosion test of at least 600 hours)
- Test Reports: Strength: 2017-TR15XXXX-VX
- Material: pre-galvanized steel 1.0242



Item number	D / IPS (inches)	D / EMT (inches)	D (mm)	B (inches)	H (inches)	h (inches)	h2 (inches)	Fa,z (lbs.)	Items per pkg.
2015021	1/2	1/2	18-21	0.57	2.05	1.42	0.63	200	50
2015027	3/4	3/4	23-27	0.75	2.24	1.65	0.59	200	50
2015033	1	1	29-33	0.75	2.52	1.89	0.63	220	25
2015042	1-1/4	1-1/4	38-42	0.85	2.87	2.24	0.63	220	25
2015048	1-1/2	1-1/2	44-48	0.85	3.07	2.48	0.59	400	25
2015060	2	2	56-60	0.85	3.46	2.83	0.59	400	25

This versatile clamp can be installed 3 different ways:



Use with strut channel, like a standard strut clamp



Suspend from threaded rod, like a clevis/loop hanger



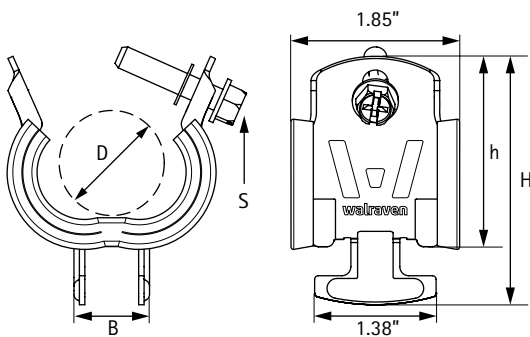
Mount directly on the wall, like a conduit clamp

Strut Clamps

W2000 Cushion Clamp



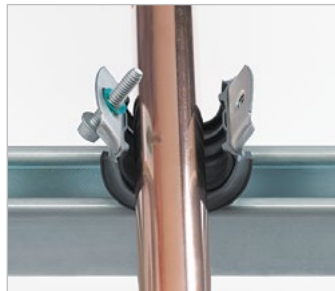
- For use with metal pipes
- Patented one piece design means no loose parts
- Easier, faster, safer - installs with one hand
- 3 way screw head: Phillips, flat and hex
- Unique design allows one clamp to fit multiple pipe sizes - meaning less items to stock
- Noise and vibration reducing lining according to DIN EN ISO 3822-1
- EPDM rubber lining protects against galvanic corrosion
- W Series Clamps are boxed for easy handling - no more bags
- Surface is treated with high grade Zn-Mg based coating (withstands a salt spray corrosion test of at least 600 hours)
- Test Reports: Strength, Fire and Smoke: UL 1565 Listed, Noise emission: 2016-SG-Bauakustik-1647-001-16
- Materials: pre-galvanized steel 1.0242, age resistant lining: EPDM rubber



Item number	D / CTS (inches)	D / ACR (inches)	D / IPS (inches)	D (mm)	B (inches)	H (inches)	h (inches)	S (inches)	Fa,z (lbs.)	Items per pkg.
2025004	1/4	3/8	-	9-10	0.85	2.16	1.50	1/4	200	50
2025006	3/8	1/2	-	11-13	0.85	2.16	1.50	1/4	200	50
2025008	1/2	5/8	1/4	14-16	0.85	2.16	1.50	1/4	200	50
2025010	5/8	3/4	3/8	17-19	0.85	2.32	1.65	1/4	220	50
2025012	3/4	7/8	1/2	20-22	0.85	2.44	1.77	1/4	220	50
2025014	1	1-1/8	3/4	25-29	0.85	2.71	2.09	1/4	400	50
2025016	1-1/4	1-3/8	1	32-35	0.79	2.91	2.28	1/4	400	50
2025018	-	1-1/2	-	37-40	0.79	2.91	2.28	1/4	400	50
2025020	1-1/2	1-5/8	1-1/4	40-43	0.79	3.19	2.56	5/16	400	25
2025022	-	-	1-1/2	48-50	0.75	3.50	2.87	5/16	400	25
2025024	2	2-1/8	-	54-56	0.79	3.70	3.07	5/16	400	25
2025026	-	-	2	60-63	0.79	4.05	3.46	5/16	400	25



1. Place and turn into strut



2. Insert pipe

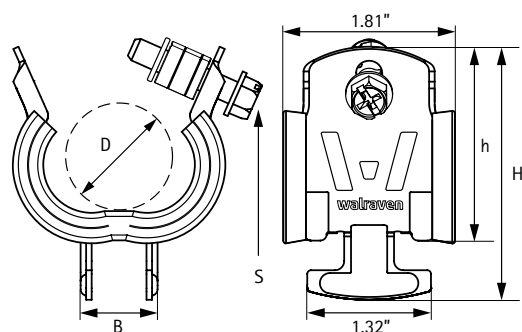


3. Tighten screw

Strut Clamps

W5000 Cushion Clamp

NOISE REDUCING

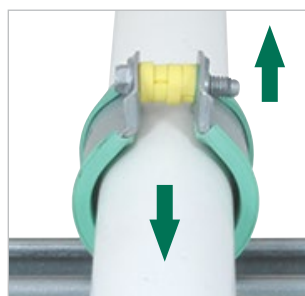


- For use with plastic pipes
- Spacers allow for pipe expansion and contraction
- Removable spacers make clamp suitable for either sliding or fixed points
- Patented one piece design means no loose parts
- Easier, faster, safer - installs with one hand
- 3 way screw head: Phillips, flat and hex
- Unique design allows one clamp to fit multiple pipe sizes - meaning less items to stock
- Noise and vibration reducing lining according to DIN EN ISO 3822-1
- Green EPDM rubber lining will prevent plasticiser migration
- W Series Clamps are boxed for easy handling - no more bags
- Surface is treated with high grade Zn-Mg based coating (withstands a salt spray corrosion test of at least 600 hours)
- Test Reports: Strength, Fire and Smoke: UL 1565 Listed, Plasticizer migration behavior: 2016-TR151002-V5, Noise emission: 2016-SG-Bauakustik-1647-001-16
- Materials: pre-galvanized steel 1.0242, noise insulation lining: EPDM rubber

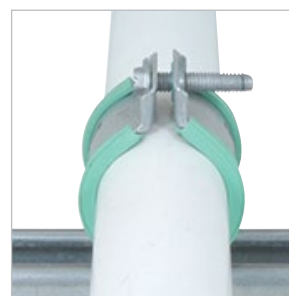
Item number	D / CTS (inches)	D / IPS (inches)	D (mm)	B (inches)	H (inches)	h (inches)	S (inches)	Fa,z (lbs.)	Items per pkg.
2055007	3/8	-	12-13	0.85	2.16	1.50	1/4	200	50
2055008	-	1/4	14-15	0.85	2.16	1.50	1/4	200	50
2055009	1/2	-	15-16	0.85	2.32	1.65	1/4	200	50
2055010	-	3/8	17-18	0.85	2.32	1.65	1/4	220	50
2055012	5/8-3/4	1/2	19-22	0.85	2.44	1.77	1/4	220	50
2055013	-	-	24-25	0.85	2.71	2.09	1/4	400	50
2055014	1	3/4	26-29	0.85	2.71	2.09	1/4	400	50
2055016	1-1/4	1	32-35	0.79	2.91	2.28	1/4	400	50
2055020	1-1/2	1-1/4	40-43	0.79	3.19	2.56	5/16	400	25
2055022	-	1-1/2	47-49	0.75	3.50	2.87	5/16	400	25
2055023	-	-	50-52	0.79	3.70	3.07	5/16	400	25
2055024	2	-	53-54	0.79	3.70	3.07	5/16	400	25
2055025	-	-	56-58	0.75	4.05	3.46	5/16	400	25
2055026	-	2	60-63	0.75	4.05	3.46	5/16	400	25



Clamp has removable spacers.



Use spacers for sliding points



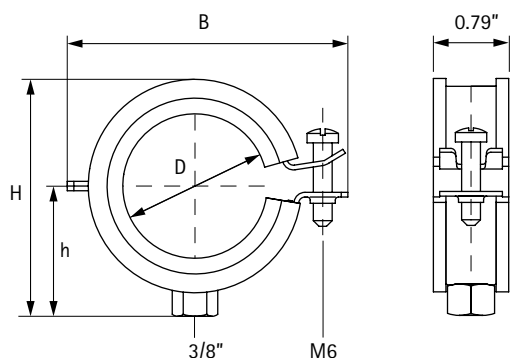
Remove spacers for fixed points

Hanging Clamps and Accessories

BISMAT® Flash Clamp®



- For use with all metal pipes
- Suitable for fitting all types of metal pipes 3/8" up to and including 2"
- Single screw clamp installs with one hand
- Features our patented quick-locking system
- Due to the locking screw feature, no tools are required for installation
- Since the locking screw is manually closed, there is minimal rubber compression: this results in better absorption of noise and vibration.
- Noise and vibration reducing lining according to DIN 4109
- Plenum rated - tested to ASTM E-84
- Tested for fire safety
- Materials: zinc plated steel 1.0037, age resistant lining: EPDM rubber

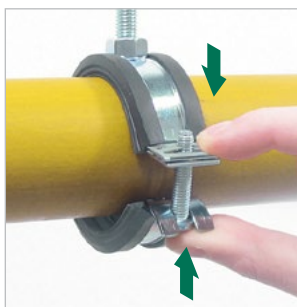


Item number	D / CTS (inches)	D / IPS (inches)	D (mm)	B (inches)	H (inches)	h (inches)	Fa,z (lbs.)	Items per pkg.
CR3379018	1/2	3/8	15-18	1.9	1.4	0.87	180	50
CR3379023	3/4	1/2	20-23	2.1	1.5	0.91	180	50
CR3379028	1	3/4	25-28	2.3	1.7	1.00	180	50
CR3379035	1-1/4	1	32-35	2.6	2.0	1.20	180	50
CR3379043	1-1/2	1-1/4	40-43	2.9	2.4	1.30	180	50
CR3379051	-	1-1/2	48-51	3.2	2.6	1.50	180	50
CR3379056	2	-	53-56	3.3	3.0	1.60	180	50
CR3379063	-	2	57-63	3.6	3.2	1.80	180	50

The maximum allowed load (Fa,z) is calculated using specific statistical methods related to the breaking load, taking into account a deflection of 0.060" (1.5mm) or 2% of the maximum nominal clamp diameter. The test results are certified and monitored by an independent test institute.



1. Insert pipe



2. Close clamp/push screw



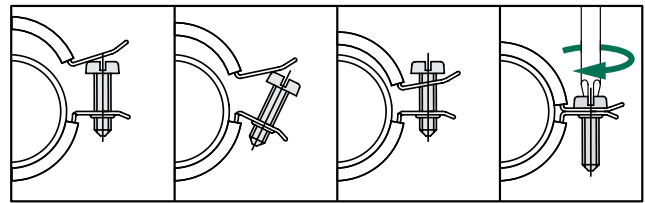
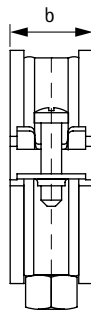
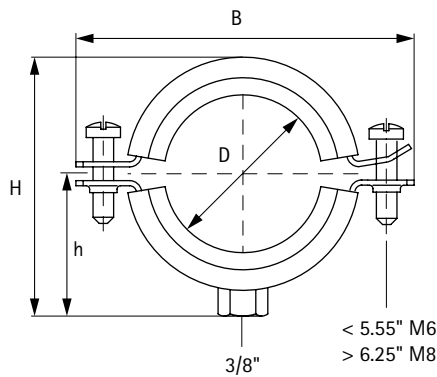
3. Done!

Hanging Clamps and Accessories

BISMAT® 2000 Clamp



- For use with all metal pipes
- Double screw clamp features a swivel opening
- Features our patented quick-locking system
- Noise and vibration reducing lining according to DIN 4109
- Complies with Federal Specification WW-H-w171E and A-A-1192A Type 4 and Manufacturers Standardization Society MSS-SP-58 and SP-69 Type 12
- Contains no plastizers
- Plenum rated - tested to ASTM E-84
- Materials: zinc plated steel 1.0332, age-resistant lining: EPDM rubber



Item number	Replaces item #	D / CTS (inches)	D / IPS (inches)	D (mm)	B (inches)	b (inches)	H (inches)	h (inches)	Fa,z (lbs.)	Items per pkg.
CR3408070	CR3409070	2-1/2	-	64-70	4.5	0.90	3.9	0.87	210	50
CR3408080	CR3409080	3	2-1/2	73-80	5.0	0.90	4.3	2.4	210	50
CR3408091	CR3409091	-	3	83-91	5.4	0.98	4.8	2.6	210	25
Features dual nut										
CR3408105	CR3409105	4	-	100-105	6.0	0.98	5.3	2.9	210	25
CR3408114	CR3409114	-	4	108-114	6.3	0.98	5.7	3.1	210	25
CR3408125	-	-	-	122-125	6.78	1.22	6.58	3.78	-	25
CR3408141	-	-	5	133-141	7.36	1.22	7.13	4.05	-	25

The maximum allowed load (Fa,z) is calculated using specific statistical methods related to the breaking load, taking into account a deflection of 0.060" (1.5mm) or 2% of the maximum nominal clamp diameter. The test results are certified and monitored by an independent test institute.

Hanging Clamps and Accessories

Bifix® 5000 G2 Clamp

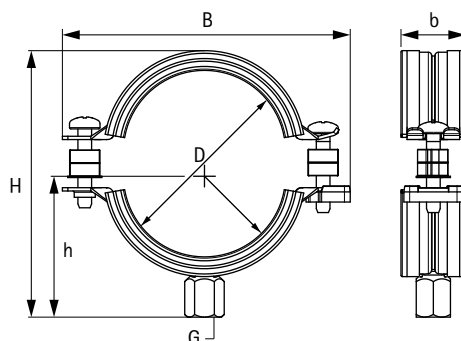


CR3189019-CR3189079



CR3189105-CR3189169

- For use with plastic pipes
- Clamp sizes 1/4"-2-1/2" feature a 3/8" nut (CR3189019-CR3189079) which allows for installation on 3/8" threaded rod
- Clamp sizes 3"-6" feature a 3/8"-1/2" dual nut (CR3189105-CR3189169), which allows for installation on 3/8" or 1/2" threaded rod without the need of an adapter
- Removable spacers allow for expansion and contraction of pipe and makes clamp suitable for sliding or anchoring applications
- Plenum rated - tested to ASTM E-84
- Surface protection: Product is part of the BIS UltraProtect® 1000 system - withstands a salt spray corrosion test for a minimum of 1,000 hours (maximum 5% red rust) according to ISO 9227
- Suitable for indoor and outdoor applications
- Age resistant lining
- Noise insulating lining according to DIN 4109
- Inner part of lining is smooth to improve sliding of pipe in clamp
- Material: steel 1.0332, lining: EPDM rubber



Item number	Replaces these BISMAT® 5000	D / CTS (inches)	D / IPS (inches)	D (mm)	B (inches)	b (inches)	G (inches)	H (inches)	h (inches)	Fa,z (lbs.)	Items per pkg.
Features 3/8" nut											
CR3189019	CR3489018	1/2	1/4	14-17	2.49	0.96	3/8	1.69	0.92	180	50
CR3189023	CR3489023	3/4	1/2	19-23	2.67	0.96	3/8	1.89	0.99	180	50
CR3189028	CR3489028	1	3/4	26-29	2.91	0.96	3/8	2.12	1.11	180	50
CR3189039	CR3489035	1-1/4	1	32-35	3.31	0.96	3/8	2.33	1.31	180	50
CR3189045	CR3489043	1-1/2	1-1/4	40-42	3.57	0.96	3/8	2.61	1.44	180	50
CR3189052	CR3489053	-	1-1/2	47.9-49	3.82	0.96	3/8	2.89	1.56	180	50
CR3189058	CR3489056	2	-	53-54	4.09	0.96	3/8	3.07	1.70	180	50
CR3189064	CR3489058	-	2	60	4.31	0.96	3/8	3.33	1.80	180	50
CR3189070	CR3489067	2-1/2	-	66-67	4.64	0.97	3/8	3.59	1.96	300	50
CR3189079	CR3489075	3	2-1/2	73-74	4.92	0.97	3/8	3.82	2.11	300	50
Features 3/8" - 1/2" dual nut											
CR3189105	CR3489090	-	3	78.7-92	5.81	1.08	3/8-1/2	5.37	3.29	300	25
CR3189115	CR3489110	-	4	114-115	6.44	1.08	3/8-1/2	6.36	3.61	300	25
CR3189130	CR3489125	5	-	125-130	7.11	1.09	3/8-1/2	6.96	3.94	300	25
CR3189160	CR3489160	6	-	156-156	8.21	1.09	3/8-1/2	7.95	4.49	300	10
CR3189169*	-	-	6	168-169	8.85	1.16	3/8-1/2	8.65	4.71	300	10

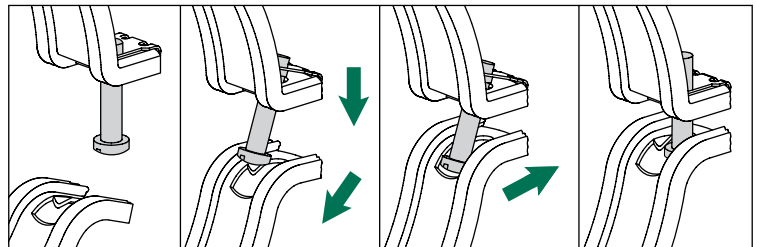
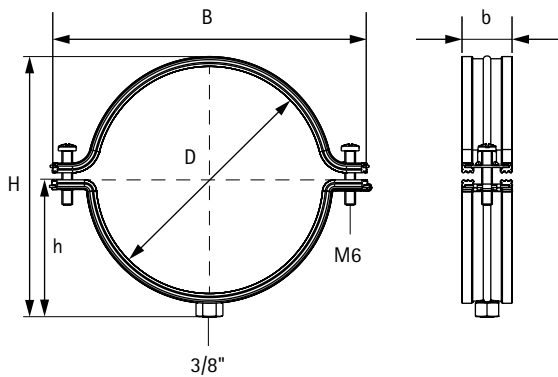
*6" IPS made to order.

Hanging Clamps and Accessories

BIS Aero® Clamp



- For use with spiral ducts and metal and plastic venting
- Designed for use with 3/8" threaded rod
- Features our patented quick-locking system
- Rubber lining is conjoined with the clamp (lining remains attached when sliding on spiral duct)
- Materials: pre-galvanized steel 1.0226, noise insulating lining: TPE rubber



Patented quick-locking system

Item number	D (inches)	D (mm)	B (inches)	b (inches)	H (inches)	h (inches)	Fa,z (lbs.)	Items per pkg.
CR4115060	-	60	4.90	1	3.10	1.70	157	25
CR4115080	3	80	5.28	1	3.31	2.13	157	25
CR4115100	-	100	6.10	1	4.53	2.52	157	25
CR4115110	4	110	6.22	1	5.16	2.76	157	25
CR4115125	5	125	7.05	1	5.47	2.99	157	20
CR4115150	-	150	8.07	1	6.45	3.46	162	20
CR4115160	6	160	8.46	1	6.89	3.66	162	20
CR4115200	8	200	10.04	1	8.46	4.49	162	20
CR4115250	10	250	12.05	1	10.43	5.43	162	20
CR4115300	12	300	14.02	1	12.68	6.50	162	20
CR4115315	-	315	14.61	1	13.07	6.77	162	20



Rubber lining is joined with steel



Trouble-free when sliding duct through clamp



Features patented Quick-Locking system

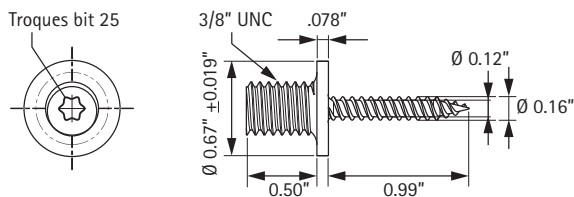
Hanging Clamps and Accessories

Quick Hanger Bolt - Male



- Used to quickly attachment of 3/8" threaded rod clamps
- Quick and easy to install
- Packaged in easy close container
- Self-tapping
- Installs on metal studs, wood studs or Walraven bracket systems
- Material: steel, 1.5525

Item number	Size (inches)	Items per pkg.
6353991	3/8 x 1-1/2	200



Quick Hanger Bolt - Female



- Used to quickly attachment of 3/8" threaded rod clamps
- Quick and easy to install
- Packaged in easy close container
- Self-tapping
- Installs on metal studs, wood studs or Walraven bracket systems

Item number	Size (inches)	Items per pkg.
6353992	3/8 x 2	50

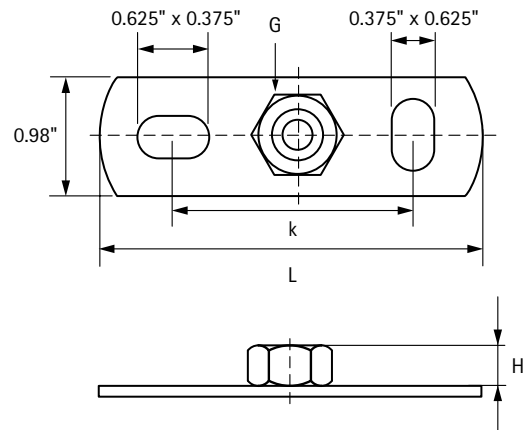
Hanging Clamps and Accessories

BIS Wall Plate



- Slots at 90° to each other to simplify installation
- Designed for mounting to walls and ceilings
- Features resistance welded connection nut
- Material: zinc plated steel

Item number	G (inches)	H (inches)	k (inches)	L (inches)	Items per pkg.
ML6703011	3/8	0.39	1.96	3.15	50

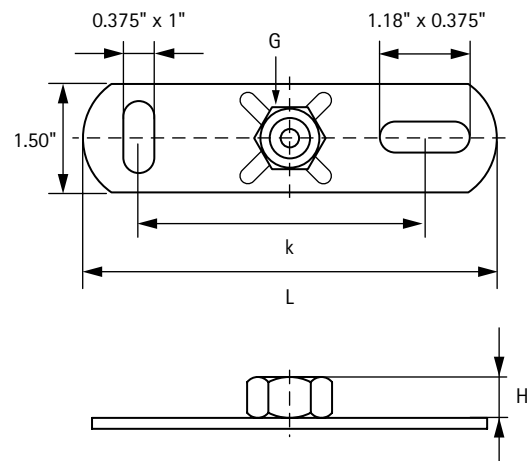


BIS Wall Plate - Heavy



- Slots at 90° to each other to simplify installation
- Designed for mounting to walls and ceilings
- Features CO2 welded connection nut
- Material: zinc plated steel

Item number	G (inches)	H (inches)	k (inches)	L (inches)	Items per pkg.
ML6713013	1/2	0.43	3.94	5.17	50



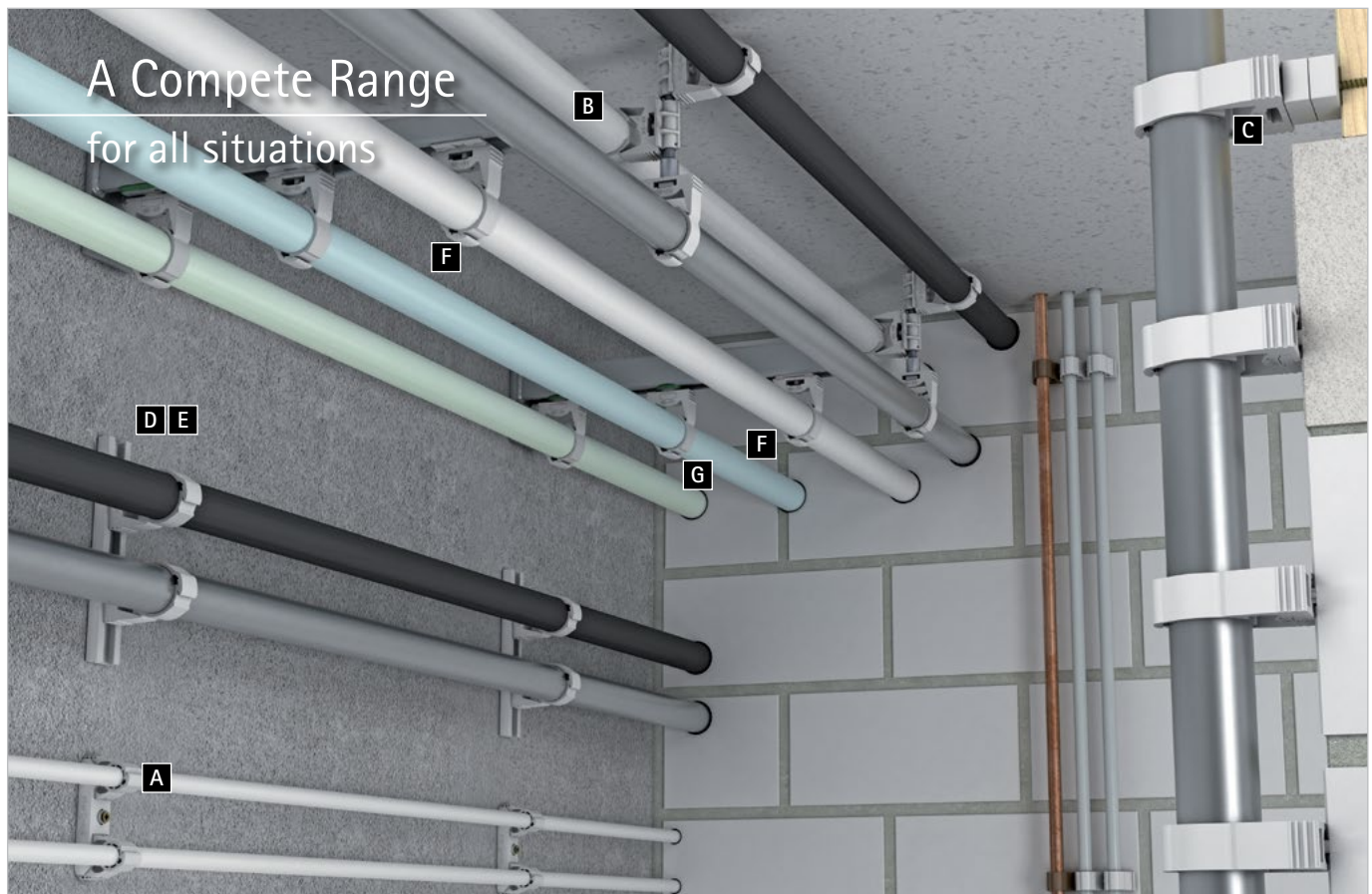
Plastic Clamps and Support

starQuick®

starQuick® products are made from UV-stabilized polyamid PA6. This state of the art materials offers a wide temperature range and has a high resistance to many chemicals. Halogen-free, corrosion-free and fully recyclable.

The starQuick® clamps guarantee a reliable and time-saving pipe installation. The starQuick® clamp is self-locking, meaning the clamp closes when the pipe is pushed into it. The starQuick® clamps are suitable for plumbing, heating and electrical installations.

The starQuick® range offers all kinds of smart solutions for mounting two or more parallel running pipes, pipe work to metal rail and pipe work to threaded rods.

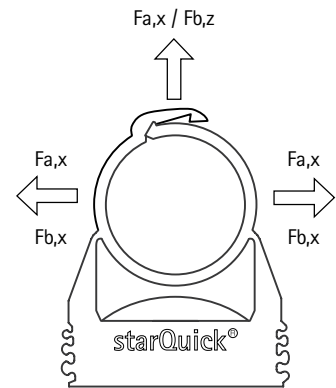
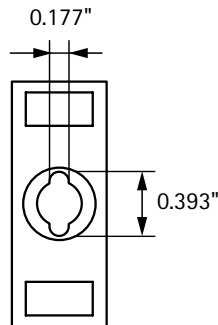
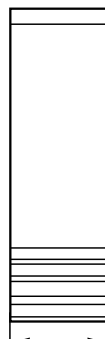
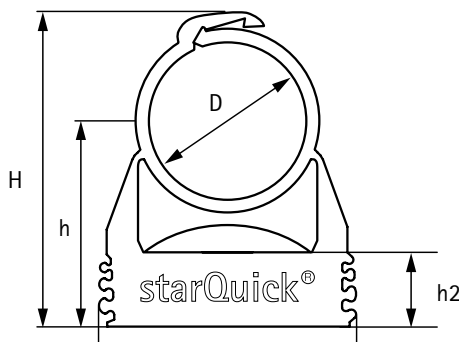


Plastic Clamps and Support

starQuick® Clamp



- For use with all pipe materials
- One-part clamp closes by applying pressure to the pipe
- For both indoor and outdoor use
- Due to a patented profile, it is possible to tack several clamps to each other (up to 1-1/4" CP)
- Resistant to UV, aging, oil and gasoline
- Corrosion-free, recyclable, halogen-free
- Temperature resistance: from approximately -104°F to approximately 194°F constant, approximately 266°F peak (Note: temperature must be above 15°F during installation process)
- Plenum rated - tested to ASTM E-84
- Material: modified PA6 (polyamide)



Item number	Type (size)	D / CTS (inches)	D / IPS (inches)	D (mm)	B (inches)	b (inches)	H (inches)	h (inches)	h2 (inches)	Fa,z (lbs.)	Fb,z (lbs.)	Items per pkg.
0854010	SQ-10	1/4	-	10-12	1.1	0.67	1.3	0.91	0.413	38	112	100
0854012	SQ-12	3/8	1/4	12-14	1.1	0.67	1.3	0.91	0.413	40	123	100
0854015	SQ-15	1/2	-	14-16	1.1	0.67	1.4	0.94	0.413	45	134	100
0854018	SQ-17	5/8	3/8	16-20	1.1	0.67	1.6	1.00	0.413	51	157	100
0854022	SQ-20	3/4	1/2	20-23	1.1	0.67	1.7	1.10	0.413	60	179	50
0854028	SQ-25	-	3/4	24-28	1.6	0.67	2.0	1.20	0.413	63	191	50
0854031	SQ-28	1	-	28-32	1.6	0.67	2.1	1.30	0.413	67	202	50
0854035	SQ-32	1-1/4	1	32-35	1.7	0.67	2.2	1.30	0.413	74	224	50
0854038	SQ-36	-	-	35-40	1.9	0.67	2.6	1.60	0.472	83	247	25
0854042	SQ-40	1-1/2	1-1/4	40-44	2.0	0.67	2.8	1.70	0.472	90	269	25
0854050	SQ-47	-	-	44-50	2.2	0.67	3.0	1.80	0.472	96	292	25
0854054	SQ-51	2	1-1/2	48-55	2.5	0.67	3.2	1.90	0.472	105	314	15
0854063	SQ-59	-	2	59-65	2.9	0.78	3.7	2.20	0.472	112	337	15

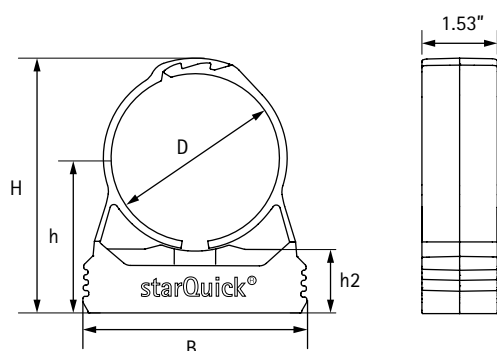
$F_{a,x} = F_{a,z} / F_{b,x} = F_{b,z}$

The starQuick® System contains clamps for mounting all types of pipe, from 1/4" through 4". The starQuick® clamps are suitable for plumbing, heating and electrical installations.

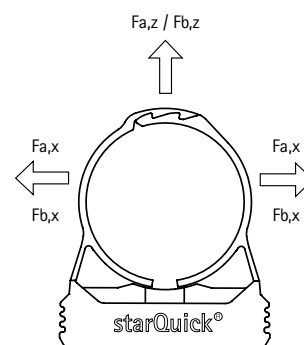


Plastic Clamps and Support

starQuick® Clamp



- For use with all pipe materials
- One-part clamp
- Clamp closes by applying pressure to the pipe
- For both indoor and outdoor use
- Clamp can be mounted to wall, floor or ceiling by use of two bolts (outer slots) or by using a standard Walraven slide nut (middle hole) and screwing the clamp on a threaded rod
- Due to a patented profile, it is possible to tack several clamps to each other (up to 1-1/4" CP)
- Resistant to UV, aging, oil and gasoline
- Corrosion-free, recyclable, halogen-free
- Temperature resistance: from approximately -104°F to approximately 194°F constant, approximately 266°F peak (Note: temperature must be above 15°F during installation process)
- Plenum rated - tested to ASTM E-84
- Material: modified PA6 (polyamide)



Item number	D/IPS (inches)	D (mm)	B (inches)	H (inches)	h (inches)	h2 (inches)	d1 (inches)	d2 (inches)	Fa,z (lbs.)	Items per pkg.
08541075	2-1/2	71-76	4.13	4.50	2.88	1.10	0.413	0.511 x 0.326	200	50
08541090	3	88-93	4.50	5.25	3.25	1.25	0.511	0.590 x 0.413	200	40
08541110	4	109-115	5.75	6.50	3.75	1.38	0.511	0.590 x 0.413	200	25

For item # 08541075: use 3/8" bolts (for outer slots) or 1/2" Walraven slide nut to connect to 1/2" threaded rods (for middle hole).

For item # 08541090: use 3/8" bolts (for outer slots) or 1/2" Walraven slide nut to connect to 1/2" threaded rods (for middle hole).

For item # 08541110: use 1/2" bolts (for outer slots) or 1/2" Walraven slide nut to connect to 1/2" threaded rods (for middle hole).

NOTE: This clamp does not work with starQuick® accessories.

starQuick® Clamp - V0 fire-rated



New

- For use with all pipe materials
- One-part clamp closes by applying pressure to the pipe
- For both indoor and outdoor use
- Due to a patented profile, it is possible to tack several clamps to each other (up to 1-1/4" CP)
- Resistant to UV, aging, oil and gasoline
- Corrosion-free, recyclable, halogen-free
- Temperature resistance: from approximately -104°F to approximately 194°F constant, approximately 266°F peak (Note: temperature must be above 15°F during installation process)
- Plenum rated - tested to ASTM E-84
- Material: PA - polyamide (nylon)



Item number	D / CTS (inches)	D / IPS (inches)	D (mm)	Items per pkg.
0854015S	1/2	-	14-16	100
0854022S	3/4	1/2	20-23	50

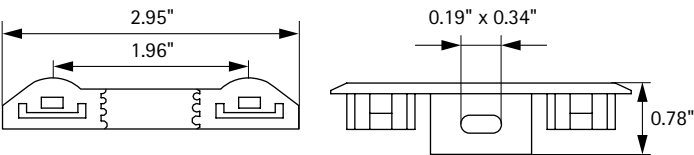
Plastic Clamps and Support

starQuick® Duo Bracket



Item number	Fb,z (lbs.)	Items per pkg.
0854000	134	100

- For use with all pipe materials
- Used to easily mount two pipes using starQuick® clamps
- Suitable for starQuick® Clamps up to 3/4" CTS
- Allows for 3/16" lateral adjustment
- The distance between the pipe and the wall is equal to that of a single clip
- Resistant to UV, aging, oil and gasoline
- Corrosion-free, recyclable, halogen-free
- Temperature resistance: from approximately -104°F to approximately 194°F constant, approximately 266°F peak
- Material: modified PA6 (polyamide)

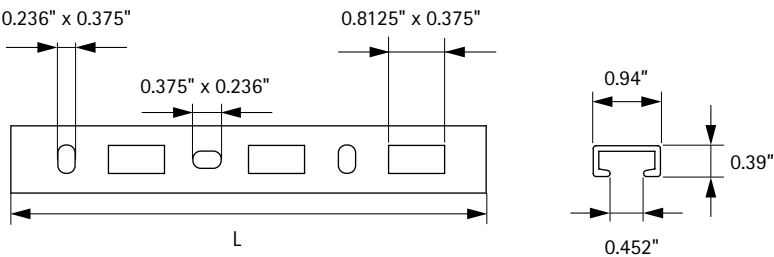


starQuick® Fixing Rail



Item number	L (inches)	Items per pkg.
0854316	6	50
0854325	39	25

- For anchoring of multiple pipes with starQuick® clamps without nuts
- The starQuick® clamp is attached to the rail using the starQuick® Rail Adapter (item #0854313)
- Material: PVC (polyvinylchloride)



Installing two or more pipes

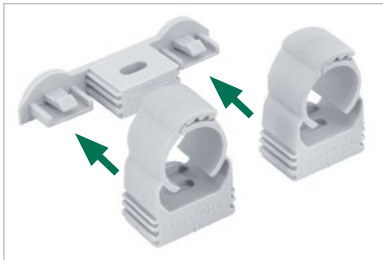
The starQuick System offers various time and cost-saving solutions for installing two or more parallel pipes. It is possible to tack more than one starQuick® Clamp together. Additional solutions include the starQuick Fixing Rail and the starQuick Duo Bracket; the ultimate solution for paired pipe runs such as hot and cold or supply and return runs.



Tacking



Fixing Rail



Duo Bracket

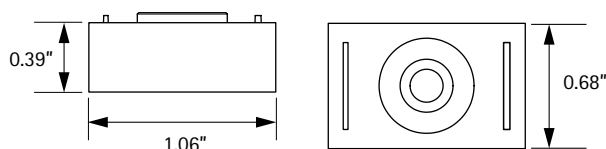
Plastic Clamps and Support

starQuick® Distance Block



- Used for mounting a clamp when there is distance to the structure
- Used for screwing a clip to a distance block, using a screw of at least 2.165"
- Suitable for use with starQuick® clamp sizes SQ-10 to SQ-36
- starQuick® clamp can easily be stacked onto a distance block
- Can be clicked together for a larger distances from wall/surface
- Resistant to UV, ozone and chemicals
- Corrosion-free, recyclable, halogen-free
- Temperature resistance: from approximately -104°F to approximately 194°F constant, approximately 266°F peak
- Material: PA/Nylon 6 (polyamide/nylon 6)

Item number	Items per pkg.
0854510	25

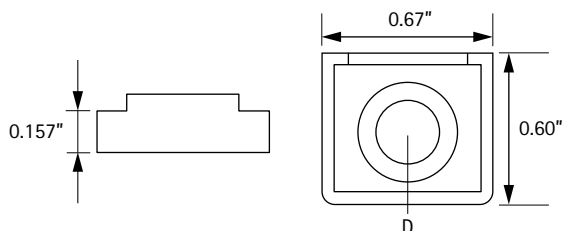


starQuick® Fixing Nut



- Used to make a threaded connection in a starQuick® clamp
- Entirely integrated in clamp (does not protrude)
- Temperature resistance: from approximately -95°F to approx. 230°F (constant); to approximately 257°F short term
- Material: PC (polycarbonate)

Item number	D (inches)	Items per pkg.
SQ0854006	1/4	100
0854308	M8	100



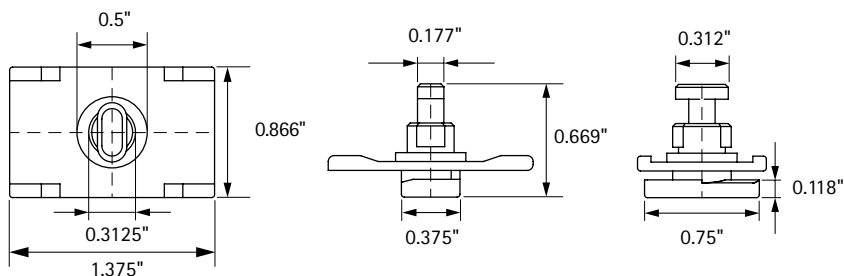
Plastic Clamps and Support

starQuick® Rail Adapter

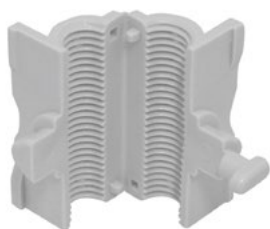


Item number	Items per pkg.
0854313	20

- Used to easily mount starQuick® clamps up to 1-1/4" CTS in size
- Used to attach a starQuick® clamp (without nut) onto a starQuick® Fixing Rail
- Resistant to UV, aging, oil and gasoline
- Corrosion-free, recyclable, halogen-free
- Temperature resistance: from approximately -104°F to approximately 194°F constant, approximately 266°F peak
- Material: modified PA6 (polyamide)

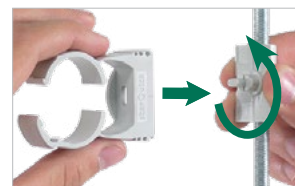


starQuick® Threaded Rod Adapter

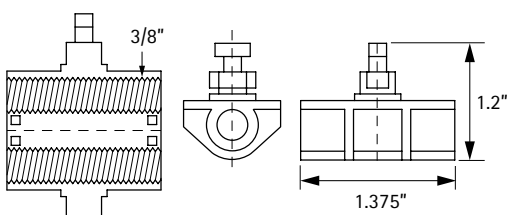


Item number	Items per pkg.
0854359	25

- For mounting starQuick® clamp to a 3/8" threaded rod
- To add pipework quickly and simply to an existing installation
- Suitable for use with starQuick® clamp sizes SQ-10 to SQ-51
- Resistant to UV, aging, oil and gasoline
- Corrosion-free, recyclable, halogen free
- Temperature resistance: from approximately -104°F to approximately 194°F constant, approximately 266°F peak
- Material: PA (polyamide)



Close adapter around rod and mount clamp



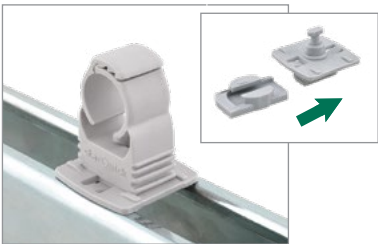
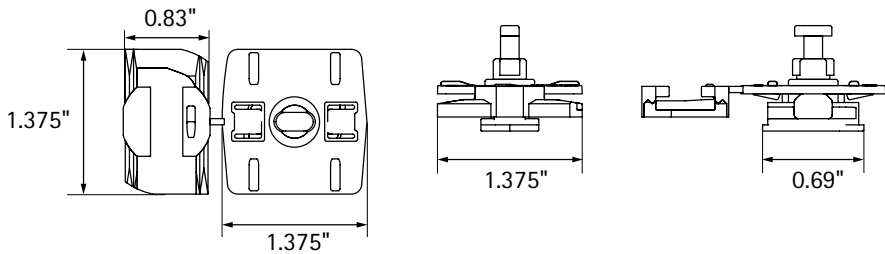
Plastic Clamps and Support

starQuick® Universal Rail Adapter

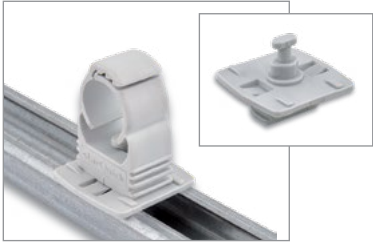


- Used to easily mount starQuick® clamps to RapidRail®, Strut Rail or Rapid Sliding Wall Brackets (RSWB)
- Used to add pipework quickly and simply to an existing installation
- Suitable for use with starQuick® clamp sizes SQ-10 to SQ-51
- Suitable for WM15 RapidRail® and 1-5/8" Strut
- Resistant to UV, aging, oil and gasoline
- Temperature resistance: from approximately -104°F to approximately 194°F constant, approximately 266°F peak
- Material: modified PA6 (polyamide)

Item number	For strut	Items per pkg.
0854332	WM15+ Strut	50



For Strut



For RapidRail® and Rapid Sliding Wall Bracket (RSWB)

starQuick® Universal Rail Adapter - V0 fire-rated



New

- Used to easily mount starQuick® V0 fire-rated clamps to RapidRail®, Strut Rail or Rapid Sliding Wall Brackets (RSWB)
- Used to add pipework quickly and simply to an existing installation
- Suitable for use with starQuick® clamp sizes SQ-10 to SQ-51
- Suitable for WM15 RapidRail® and 1-5/8" Strut
- Resistant to UV, aging, oil and gasoline
- Temperature resistance: from approximately -104°F to approximately 194°F constant, approximately 266°F peak
- Material: PA - polyamide (nylon)

Item number	For strut	Items per pkg.
0854332S	WM15+ Strut	100

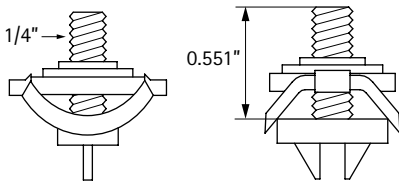
Plastic Clamps and Support

starQuick® Hammerfix - 1/4"



Item number	For rail	Items per pkg.
SQ0854337	WM15	50

- Assembly to mount clamps to RapidRail®
- Plenum rated - tested to ASTM E-84
- starQuick® 1/4" Fixing Nut (item #SQ0854006) is included
- Material: metal parts made of zinc plated steel 1.0332, spring(s) made of POM (polyoxymethylene)



starQuick® Silent Nut Assembly



Item number	Size (inches)	Items per pkg.
0854999	#8 x 1	25

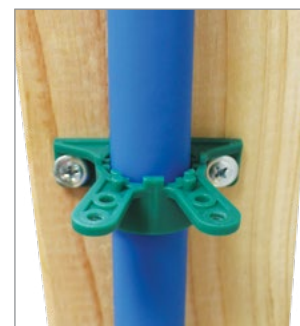
- A sound reducing, adjustable connection option for shower drop ear 90 to Rapid Sliding Wall Bracket (RSWB), RapidRail® and in-wall strut
- Creates a noise and vibration reducing connection
- Features quick-turn technology
- Hardware conveniently included to mount starQuick® clamps

Plastic Clamps and Support

Rabbit Clamp

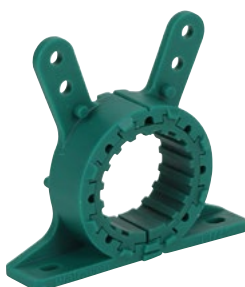


- One piece multi-purpose clamp that can be secured at the base or top using two screws to mount 1/2" pipe
- Ideal for copper, PEX and CPVC tubing
- Mounts directly to brackets, studs and walls
- Features multi-use mounting holes
- Materials: Polypropylene, PA6 (polyamide)



Item number	Size (inches)	D / CTS (inches)	D / IPS (inches)	Items per pkg.
0856016	1/2	1/2	-	100
0856022	3/4	3/4	1/2	100

Rabbit Clamp with Plastic Insert



- Multi-purpose clamp that can be secured at the base or top using two screws to mount multiple pipe sizes
- Ideal for copper, PEX and CPVC tubing
- Insert is either retained or removed based upon pipe size
- Can be used with 2 different sizes of pipe, due to insert
- Mounts directly to brackets, studs and walls
- Features multi-use mounting holes
- Materials: Polypropylene, PA6 (polyamide)



Item number	Size (inches)	D / CTS (inches)	D / IPS (inches)	Items per pkg.
0856035	1-1/4	1 to 1-1/4	-	50
0856054	2	1-1/2 to 2	-	25

Rabbit Clamp with Rubber Insert



- Multi-purpose clamp that can be secured at the base or top using two screws to mount multiple pipe sizes
- Ideal for copper pipe, PEX and CPVC tubing
- Rubber insert helps reduce noise and vibration
- Mounts directly to brackets, studs and walls
- Features multi-use mounting holes
- Materials: Polypropylene, PA6 (polyamide)



Item number	Size (inches)	D / CTS (inches)	D / IPS (inches)	Items per pkg.
0856016N	1/2	-	-	25
0856022N	3/4	-	-	25
0856028N	1	-	-	25

Plastic Clamps and Support

Rabbit Clamp - VO fire-rated



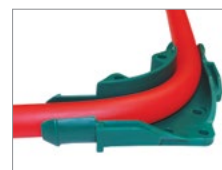
- One piece multi-purpose, VO fire-rated clamp that can be secured at the base or top using two screws to mount 1/2" pipe
- Ideal for copper, PEX and CPVC tubing
- Mounts directly to brackets, studs and walls
- Quick-closing
- Features multi-use mounting holes
- VO fire-rated
- Material: PA - polyamide (nylon)

Item number	Size (inches)	D / CTS (inches)	D / IPS (inches)	Items per pkg.
0856016S	1/2	1/2	-	25
0856022S	3/4	3/4	1/2	25

PEX 90° Bend Support



- Easily snap-in your PEX tubing instead of having to slide it in
- Conveniently fits stub-out assemblies
- Creates a secure and kink-free bend radius for 1/2" PEX tubing
- Versatile - suitable for many types of installations
- Higher lip to reduce damage to the PEX tube
- Materials: Polypropylene



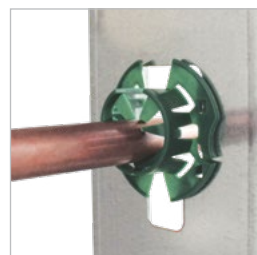
Item number	Size (inches)	Items per pkg.
59490973	1/2	25

Plastic Clamps and Support

Grommet



- Easily snaps into pre-drilled/punched holes to protect electrical wiring and plumbing lines from directly contacting the metal studs
- Fits PEX 90° bend support (item #59490973)
- Accommodates 1/2" and 3/4" PEX, CPVC and copper pipe
- Conveniently fits in both round and rectangular stud holes
- Eliminates/prevents pipe rattle
- One-piece design
- Materials: Polypropylene, PA6 (polyamide)



Item number	D / CTS (inches)	Items per pkg.
08549922	1/2-3/4	100

Grommet - VO fire-rated



- Easily snaps into pre-drilled/punched holes to protect electrical wiring and plumbing lines from directly contacting the metal studs
- Fits PEX 90° bend support (item #59490973)
- Accommodates 1/2" and 2/4" PEX, CPVC and copper pipe
- Conveniently fits in both round and rectangular stud holes
- Eliminates/prevents pipe rattle
- One-piece design
- VO fire-rated
- Material: PA - polyamide (nylon)



Item number	D / CTS (inches)	Items per pkg.
08549922S	1/2-3/4	100



New

Strut now available

Walraven is a strong believer in local for local, meaning producing US-products for the US market. Thereby we understand the importance of having strut in our assortment. For that reason we have recently added strut to our portfolio. All produced at our new Virginia facility!

Interested? Call us at: (800) 610 5056

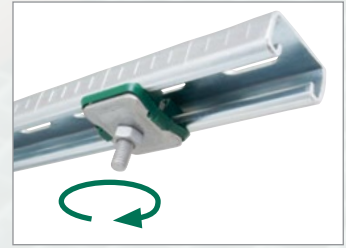
walraven.com/us



RapidStrut® Standard Strut and Accessories

Fast and Easy

The accessories are pre-assembled and delivered 'ready to use' on site. The plastic spring allows the slide nut to be fixed easily into the rail, retaining the assembly in place before final tightening.



RapidStrut® Rail DS 5

The DS 5 has a unique hole pattern allowing RapidStrut® Accessories to be mounted quickly on both sides of the rail.



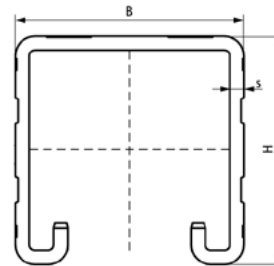
Strut and Accessories – Standard Strut

RapidStrut®



- Universal Strut System
- With continuous perforation
- Distance between rail end and first hole is always equal
- Continuous graduated 2 inch scale on both sides
- Inward formed flanges with serrated profile for extra grip
- Material: pre-galvanized steel

Item number	Strut size (BxHxS) (inches)	Length (ft.)	Items per bundle
CR6505322	1-5/8 x 13/16 x 14 ga.	10	10
CR6505324	1-5/8 x 13/16 x 16 ga.*	10	10
CR6505325	1-5/8 x 13/16 x 12 ga.*	10	10
CR6505342	1-5/8 x 1-5/8 x 14 ga.	10	10
CR6505345	1-5/8 x 1-5/8 x 12 ga.	10	10
CR6505365	1-5/8 x 2-7/16 x 12 ga.*	10	10
CR6505385	1-5/8 x 3-1/4 x 12 ga.*	10	10
CR6505642	1-5/8 x 1-5/8 x 14 ga.*	20	10
CR6505645	1-5/8 x 1-5/8 x 12 ga.*	20	10
CR6505665	1-5/8 x 2-7/16 x 12 ga.*	20	10
CR6505685	1-5/8 x 3-1/4 x 12 ga.*	20	10



For more information about the maximum allowed load (Fa,z) please refer to the loading tables or our on-line data sheet, Technical Details RapidStrut®

* Call for availability

Strut and Accessories - Standard Strut

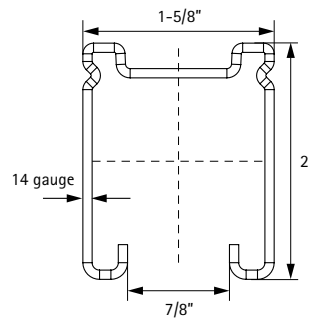
RapidStrut® DS 5



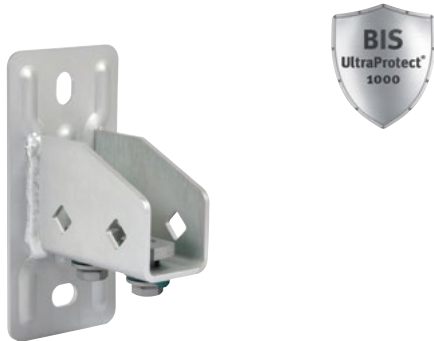
- Used for quick and easy installation
- Unique hole pattern, allowing RapidStrut® accessories to be mounted on both sides of the rail
- Corrosion protection remains intact even after cutting
- Strength equal to US strut 1-5/8" x 1-5/8" x 12 gauge
- Designed with continuous perforation
- Distance between rail end and first hole is always equal
- Continuous graduated centimeter scale on one side
- Surface protection: Product is part of the BIS UltraProtect® 1000 system - withstands a salt spray corrosion test for a minimum of 1,000 hours (maximum 5% red rust) according to ISO 9227
- Suitable for indoor and outdoor applications
- Material: pre-galvanized steel

Item number	Strut size (inches)	Length (ft.)	Items per bundle
65058352	1-5/8 x 2 x 14 ga.	10	10

For more information about the maximum allowed load (Fa,z) please refer to the loading tables or our on-line data sheet, Technical Details RapidStrut®



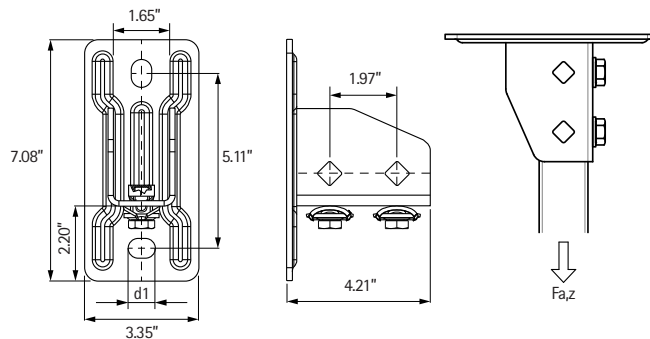
RapidStrut® Base Plate



- Flexible base plate for strut rails
- Suitable for all Strut rail up to 82mm height
- Open side of rails 1.61" x 1.61" can be turned to all sides
- At high loads we advise to install with throughbolts
- Time-saving with pre-assembled fasteners
- Surface protection: Product is part of the BIS UltraProtect® 1000 system - withstands a salt spray corrosion test for a minimum of 1,000 hours (maximum 5% red rust) according to ISO 9227
- Suitable for indoor and outdoor applications
- Tested for fire safety
- Material: metal parts made of steel 1.0332; spring(s) made of POM (polyoxymethylene)

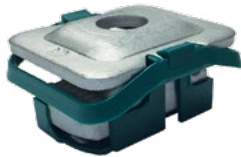


Item number	For rail	d1 (inches)	Fa,z (lbs.)	Items per pkg.
665885400	Strut	0.78 x 0.55	817	10



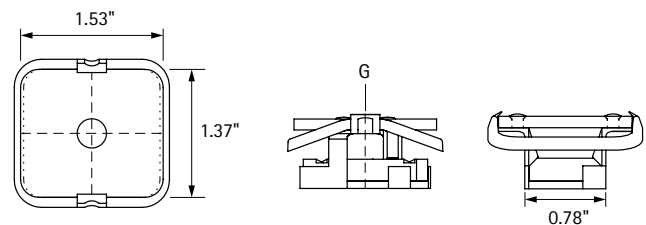
Strut and Accessories - Standard Strut

RapidStrut® Slide Nut



- Replaces tee-nut and washer with single piece
- Can be used with 1-5/8" x 1-5/8", 1-5/8" x 13/16" and DS5: 1-5/8" x 2" strut
- Fits in both deep and shallow strut
- Slide nut with washer and RapidStrut® spring
- Ready-to-use, pre-assembled for quick installation
- Retains assembly in place before final tightening
- Tested for fire safety
- Conforms to Metal Framing Manufacturers Association standards
- Surface protection: Product is part of the BIS UltraProtect® 1000 system - withstands a salt spray corrosion test for a minimum of 1,000 hours (maximum 5% red rust) according to ISO 9227
- Suitable for indoor and outdoor applications
- Material: metal parts made of steel 1.0332, spring(s) made of POM (polyoxymethylene)

Item number	For rail	G (inches)	Fa,x (lbs.)	Items per pkg.
SR66518109	Strut	3/8	1,348	20
SR66518113	Strut	1/2	2,248	20

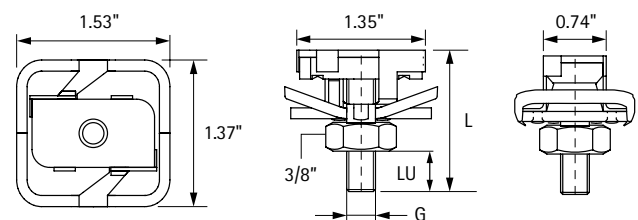


RapidStrut® Hammerfix



- Ready-to-use, pre-assembled for a quick installation
- Can be used with 1-5/8" x 1-5/8", 1-5/8" x 13/16" and DS5: 1-5/8" x 2" strut
- Fits in both deep and shallow strut
- Slide nut with threaded rod, washer and RapidStrut® spring
- Retains assembly in place before final tightening
- Replaces tee-nut, washer and threaded rod with one piece assembly
- No need to measure and cut rod!
- Tested for fire safety
- Conforms to Metal Framing Manufacturers Association standards
- Surface protection: Product is part of the BIS UltraProtect® 1000 system - withstands a salt spray corrosion test for a minimum of 1,000 hours (maximum 5% red rust) according to ISO 9227
- Suitable for indoor and outdoor applications
- Material: metal parts made of steel 1.0332, spring(s) made of POM (polyoxymethylene)

Item number	For rail	G (inches)	L (inches)	LU (inches)	Fa,x (lbs.)	Items per pkg.
SR6528005	Strut	3/8	1-1/2	1/2	1,686	15
SR6528007	Strut	3/8	3	2	1,686	10
SR6528011	Strut	3/8	4	3	1,686	5
SR6528016	Strut	3/8	6	5	1,686	5



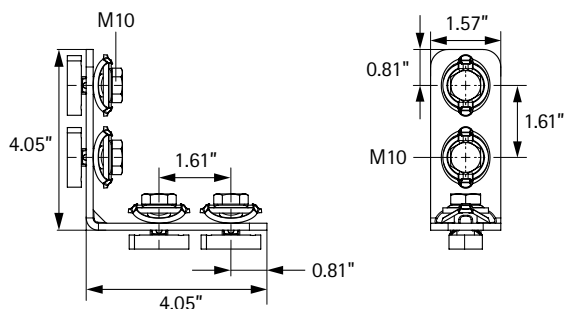
Strut and Accessories - Standard Strut

RapidStrut® Connector - 90°



Item number	Model	For rail	Items per pkg.
665885205	Long/Long	Strut	20

- Connector with pre-assembled RapidStrut® slide nut(s)
- Used for RapidStrut rail fabrication
- Ready-to-use, pre-assembled for quick installation
- Retains assembly in place before final tightening
- Surface protection: Product is part of the BIS UltraProtect® 1000 system - withstands a salt spray corrosion test for a minimum of 1,000 hours (maximum 5% red rust) according to ISO 9227
- Suitable for indoor and outdoor applications
- "Direct Twist" technology for easy and secure installation
- Visual guide to check position of slide nut
- Optimized for easy installation with electrical tools
- Material: metal parts made of steel 1.0332, spring(s) made of POM (polyoxymethylene)

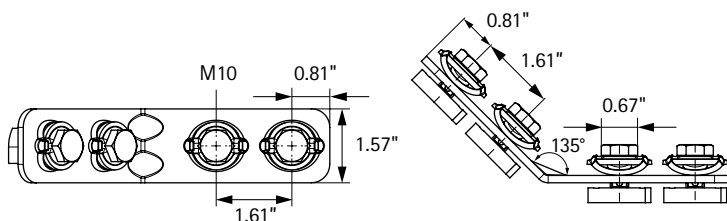


RapidStrut® Connector - 135°



Item Number	Model	For rail	Items per pkg.
665885235	Long/Long	Strut	20

- Connector with pre-assembled RapidStrut® slide nut(s)
- Used for RapidStrut rail fabrication
- Ready-to-use, pre-assembled for quick installation
- Retains assembly in place before final tightening
- Surface protection: Product is part of the BIS UltraProtect® 1000 system - withstands a salt spray corrosion test for a minimum of 1,000 hours (maximum 5% red rust) according to ISO 9227
- Suitable for indoor and outdoor applications
- "Direct Twist" technology for easy and secure installation
- Visual guide to check position of slide nut
- Optimized for easy installation with electrical tools
- Material: metal parts made of steel 1.0332, spring(s) made of POM (polyoxymethylene)



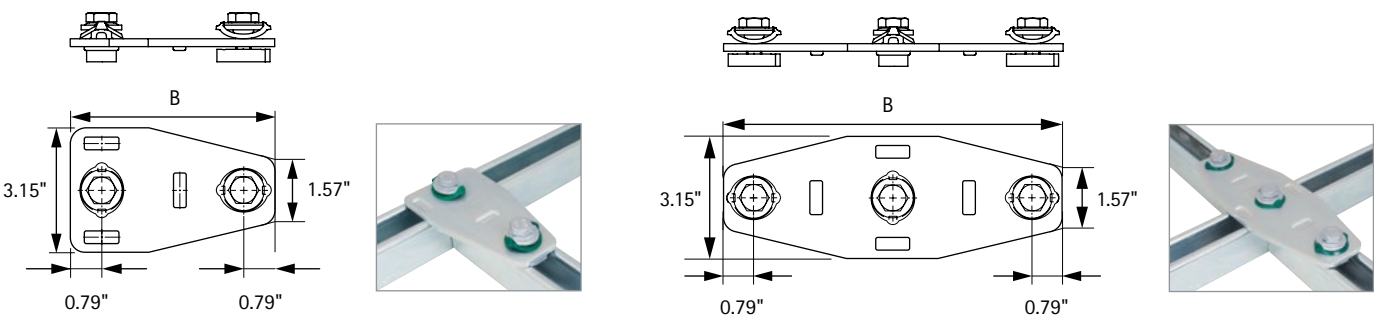
Strut and Accessories - Standard Strut

RapidStrut® T and X Connector

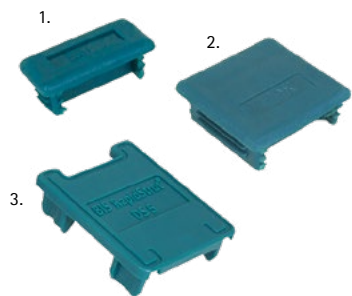


- Connector with pre-assembled RapidStrut® Slide nut(s)
- Used to make fabrication with Strut Rail
- Ready-to-use, pre-assembled for quick installation
- Retains assembly in place before final tightening
- Surface protection: Product is part of the BIS UltraProtect® 1000 system - withstands a salt spray corrosion test for a minimum of 1,000 hours (maximum 5% red rust) according to ISO 9227
- Suitable for indoor and outdoor applications
- "Direct Twist" technology for easy and secure installation
- Visual guide to check position of slide nut
- Optimized for easy installation with electrical tools
- Material: metal parts made of steel 1.0332, spring(s) made of POM (polyoxymethylene)

	Item number	Type	Bolt size (inches)	B (inches)	For rail	Items per pkg.
1.	665885213	T	3/8	5.16	Strut	20
2.	665885223	X	3/8	8.74	Strut	15



Strut End Caps



- Install for a clean finish of rail end, covers all burrs
- Fits US strut sizes
- Easily inserted
- Secure fit - will not fall out
- Material: PE (polyethylene)

	Item number	For strut (inches)	Items per pkg.
1.	6566021	1-5/8 x 13/16	50
2.	6566041	1-5/8 x 1-5/8	50
3.	6566051	1-5/8 x 2	40



Use end caps for a professional finish on any installation

RapidRail®

Medium Duty Strut and Accessories



Insert, lock, done

The accessories are pre-assembled and delivered 'ready to use' to site. The plastic spring allows the slide nut to be fixed into the rail easily.



Extensive system

The RapidRail® System offers a choice of rail profiles and cantilever arms plus an extensive range of accessories for pipe fitting and rail construction.



Easy fitting

RapidRail® WM15 has a unique hole pattern allowing the accessories to be used on both sides of the rail. The distance between the rail end and the first hole is always even.



Strut and Accessories – Medium Strut

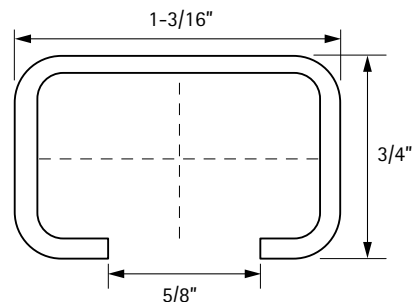
RapidRail®



- C-profile
- For quick and easy installation
- Features continuous perforation
- The distance between rail end and first hole is always equal
- Continuous graduated centimeter scale on one side
- Unique perforation on rail WM15 allows for hanging on both sides
- Yield stress 34,809 pounds/square inch
- Material: pre-galvanized steel 1.0242

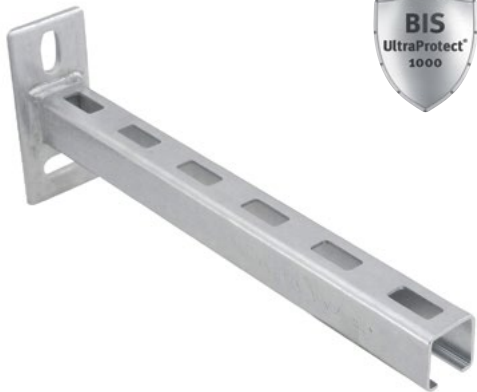
Item number	Type	L (inches)	# of items per bundle	# of items per pallet
65059502	WM15	10	20	-
65059505	WM15	20	10	-
65059510	WM15	39	10	-
6505015	WM15	78	10	240

For information about the maximum allowed load (Fa,z) please refer to the loading tables.



Strut and Accessories - Medium Strut

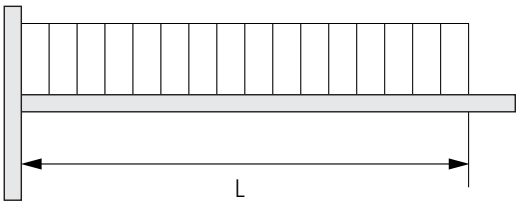
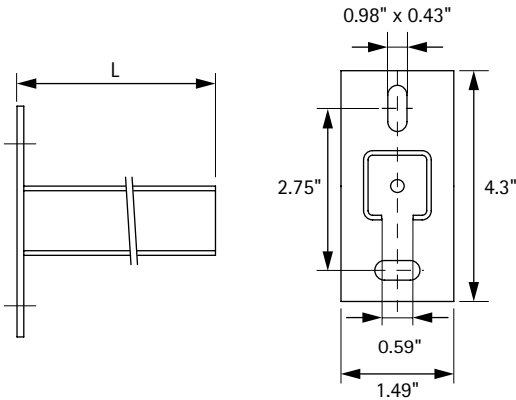
RapidRail® Cantilever Arm



- Used for mounting to wall or ceiling
- Wall plate with CO2 welded C-profile
- Slots at 90° to each other to simplify installation
- Continuous graduated centimeter scale on one side
- Unique perforation on rail WM15 allows for hanging on both sides
- Surface protection: Product is part of the BIS UltraProtect® 1000 system - withstands a salt spray corrosion test for a minimum of 1,000 hours (maximum 5% red rust) according to ISO 9227
- Suitable for indoor and outdoor applications
- Tested for fire safety
- Material: steel 1.0038

Item number	For strut	L (inches)	Items per pkg.
6603725	WM15	10	20

For more information about the maximum allowed load (Fa,z) refer to the loading tables.



RapidRail® Cantilever Arms
Uniformly Distributed Load



Length (L) (inches)	WM15 (1.18" x 0.78")
10	133 lbs.

The stated values are only valid for the cantilever arms.
The maximum safe load of all other construction parts
have to be verified.



RapidRail® Cantilever Arms
One Suspension Point



Length (L) (inches)	WM15 (1.18" x 0.78")
10	50 lbs.

The stated values are only valid for the cantilever arms.
The maximum safe load of all other construction parts
have to be verified.

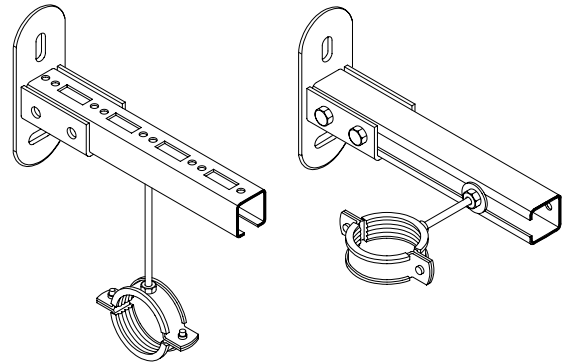
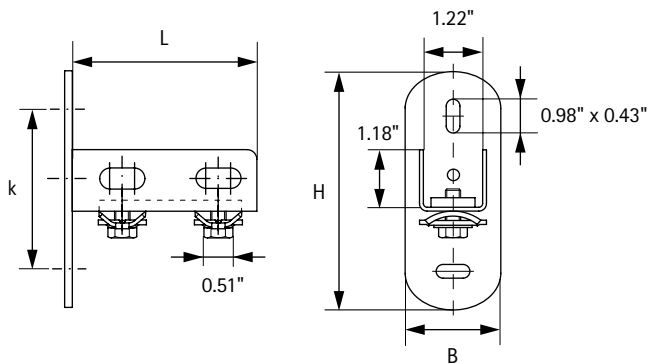
Strut and Accessories – Medium Strut

RapidRail® Wall Plate



- Can be mounted to floor or wall
- U-profile C02 welded on wall plate
- Create a custom cantilever arm by cutting the rail to size and placing into wall plate
- Rail can be fixed with slot downwards or sideways
- Slots at 90° to each other to simplify fixing
- Pre-assembled with RapidRail® Slide Nut(s) for quick installation
- Retains assembly in place before final tightening
- Materials: metal parts made of zinc plated steel 1.0332, spring(s) made of POM (polyoxymethylene)

Item number	For strut	Items per pkg.
6613200	WM15	25



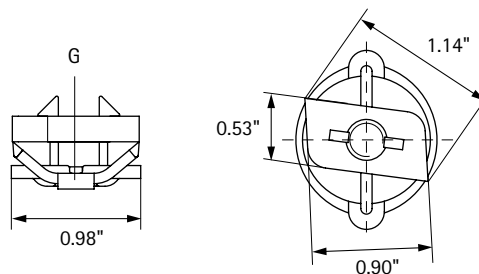
Strut and Accessories - Medium Strut

RapidRail® Slide Nut



- Used for attaching to RapidRail®
- Replaces tee-nut and washer with a single piece
- Slide nut with washer and RapidRail® spring
- Ready-to-use, pre-assembled for quick installation
- Retains assembly in place before final tightening
- Plenum rated - tested to ASTM E-84
- Conforms to Metal Framing Manufacturers Association standards
- Material: metal parts made of zinc plated steel 1.0332, spring(s) made of POM (polyoxymethylene)

Item number	For strut	G (inches)	Fa,z (lbs.)	Fa,x (lbs.)	Items per pkg.
RR6513109	WM15	3/8	625	135	50

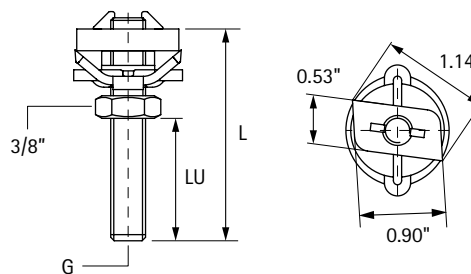


RapidRail® Hammerfix



- Used for attaching to RapidRail®
- No need to measure and cut rod
- Slide nut with threaded rod, washer and RapidRail® spring
- Ready-to-use, pre-assembled for quick installation
- Retains assembly in place before final tightening
- Replaces tee-nut, washer and threaded rod with one piece assembly
- Plenum rated - tested to ASTM E-84
- Conforms to Metal Framing Manufacturers Association standards
- Material: metal parts made of zinc plated steel 1.0332, spring(s) made of POM (polyoxymethylene)

Item number	For strut	G (inches)	L (inches)	LU (inches)	Items per pkg.
RR6523902	WM15	3/8	1-1/2	1	25
RR6523908	WM15	3/8	3	2-1/2	25
RR6523910	WM15	3/8	4	3-1/2	25
RR6523916	WM15	3/8	6	5-1/2	25



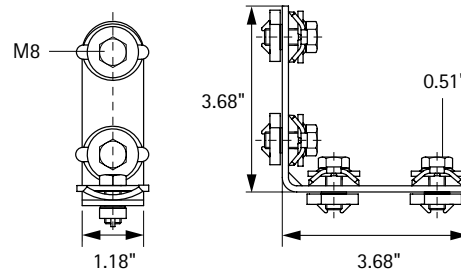
Strut and Accessories – Medium Strut

RapidRail® Connector – 90°



- Used to make rail fabrications
- Connector with pre-assembled RapidRail® slide nut
- Ready-to-use, pre-assembled for quick installation
- Retains assembly in place before final tightening
- Conforms to Metal Framing Manufacturers Association standards
- Material: metal parts made of zinc plated steel 1.0332, spring(s) made of POM (polyoxymethylene), green

Item number	For strut	Fa,z (lbs.)	Fa,x (lbs.)	Items per pkg.
6584001	WM15	351	250	25

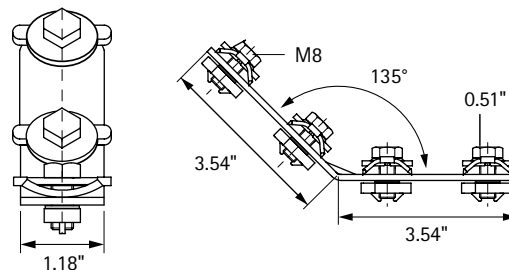


RapidRail® Connector – 135°



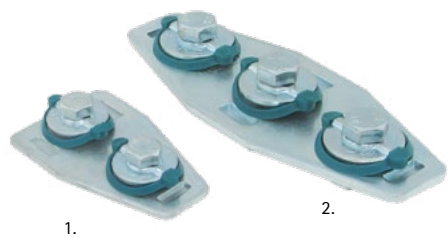
- Used to make rail fabrications
- Connector with pre-assembled RapidRail® slide nut
- With pre-assembled RapidRail® sliding nut(s) for quick installation
- Retains assembly in place before final tightening
- Conforms to Metal Framing Manufacturers Association Standards
- Material: metal parts made of zinc plated steel 1.0332, spring(s) made of POM (polyoxymethylene), green

Item number	For strut	Fa,z (lbs.)	Fa,x (lbs.)	Items per pkg.
6584051	WM15	350	250	25



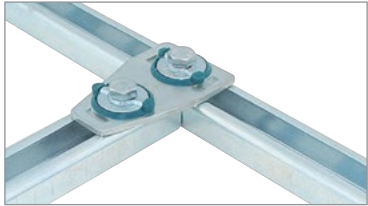
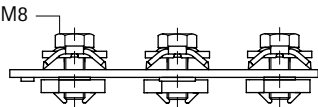
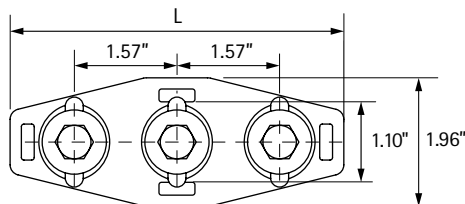
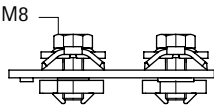
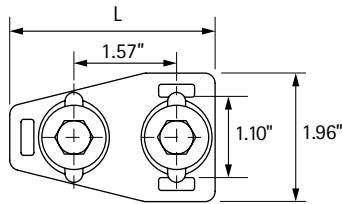
Strut and Accessories - Medium Strut

RapidRail® T and X Connector

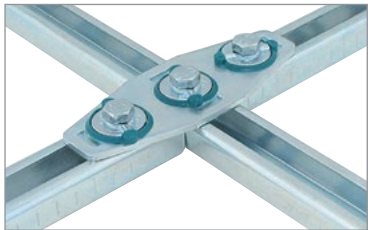


- Used to make rail fabrications
- Connector with pre-assembled RapidRail® slide nut
- Ready-to-use, pre-assembled for quick installation
- Retains assembly in place before final tightening
- Conforms to Metal Framing Manufacturers Association standards
- Material: metal parts made of zinc plated steel 1.0332, spring(s) made of POM (polyoxymethylene), green

	Item number	Type (style)	For strut	L (inches)	Fa,x (lbs.)	Items per pkg.
1.	6584090	T	WM15	3.14	77	25
2.	6584091	X	WM15	5.11	77	25



T connector in use with RapidRail®



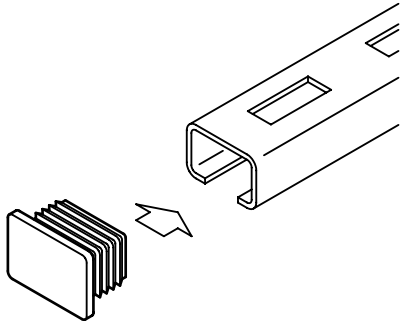
X connector in use with RapidRail®

RapidRail® End Caps



- Use for clean finishing of rail end, covers all burrs
- Easily to insert
- Secure fit - will not fall out
- Material: PE (polyethylene), green

Item number	For strut	Items per pkg.
6566000	WM15 (1.18 x 0.78)	50



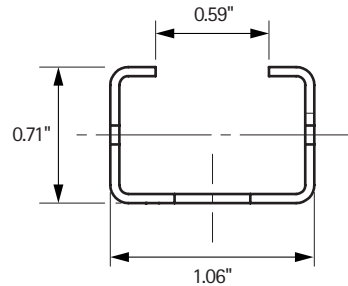
Strut and Accessories - Light Strut

In-Wall Strut WMO



- Once hung or mounted, this is used to support vertical or horizontal piping with attachments
- Channel side fits RapidRail®, starQuick® and stub-out accessories
- Pre-punched holes fit 3/8" threaded rod and angled wall bracket accessories
- Pre-drilled holes allow for secure mounting of starQuick®, Rabbit clamp and BISMAT® clamps using a Quick Hanger Bolt
- Material: pre-galvanized steel 1.0226

Item number	Length (inches)	Items per pkg.
650509008	8	25
650509012	12	25
650509018	18	25
650509022	22	25
650509032	32	25
650509000	7 ft.	1



Multi-purpose Hanging Strut (MPHS)



- Adjustable, horizontal support that can be used with sliding or fixed accessories
- Pre-punched holes fit 3/8" threaded rod without the need for specialty washers
- A large variety of clamps can be easily mounted with a single screw or accessory
- Material: pre hot-dip galvanized steel 1.0242

Item number	Expansion range (inches)	Items per pkg.
650509922	12-20	20
650509923	22-30	20
650509924	32-40	20

Rail Cutter for Rail



- Easy to cut precise lengths of WMO Rail without creating burrs
- Perfect for prefabrication
- Cut light strut on the job site without the need for addition tools
- Create custom options specific to your installation needs



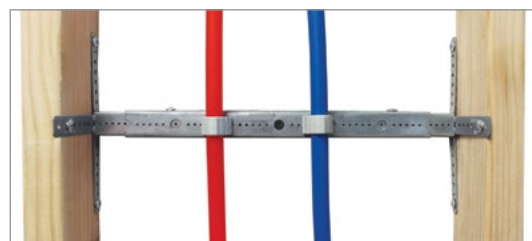
Item number	Items per pkg.
6900005	1

Strut and Accessories - Light Strut

Multi-Purpose Telescoping Support (MPTS)



- This heavy-duty, adjustable, 3 piece bracket is used to support vertical piping and stub-outs on studs at 6 points
- Adjustable for ease of use
- Heavy-duty profile supports any in-wall hardware
- Hole pattern fits sliding and fixed stub-outs as well as a variety of clamps
- Material: pre-galvanized steel 1.0242



Item number	Product abbreviation	Expansion range (inches)	Items per pkg.
59492001	MPTS1	12-20	25
59492002	MPTS2	18-26	25

Multi-Purpose Telescoping Support (MPTS) Insert



- Can be used to make a custom length in-wall bracket when paired with WMO strut
- Can be used as a cantilever or to attach strut in between walls
- Easily customizable
- Use to attach custom size WMO strut in a narrow, confined space
- Material: pre-galvanized steel 1.0242

Item number	Size (inches)	Items per pkg.
59492000	8" x 3/4" x 1/2"	50

Rapid Sliding Wall Bracket (RSWB)



- Extendable in-wall bracket for mounting plumbing, pipes, electrical pipes, electrical boxes and conduit between studs in wall
- Suitable for use in metal or wood stud walls and floor joists
- Quicker and easier to install than traditional methods - no measuring or cutting
- Can be set at multiple depths
- For use with RapidRail® Slide Nuts, starQuick® Clamps, starQuick® Universal Rail Adapter and RapidRail® Hammerfix accessories
- Break apart design (sold in connected pairs)
- Material: pre hot-dip galvanized steel

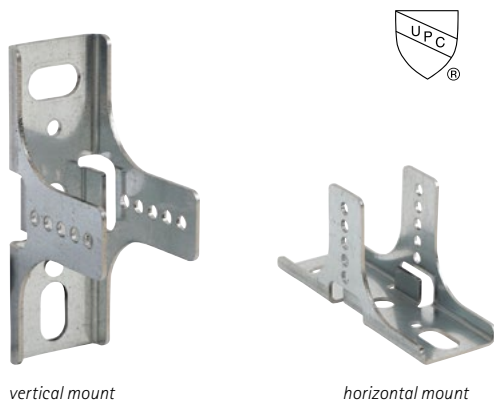


RSWB used in floor joists

Item number	Product abbreviation	Expansion range (inches)	Items per pkg.
59491220	RSWB3	12-20	50
59491827	RSWB4	16-26	35

Strut and Accessories – Light Strut

Wall Plate for WMO Strut

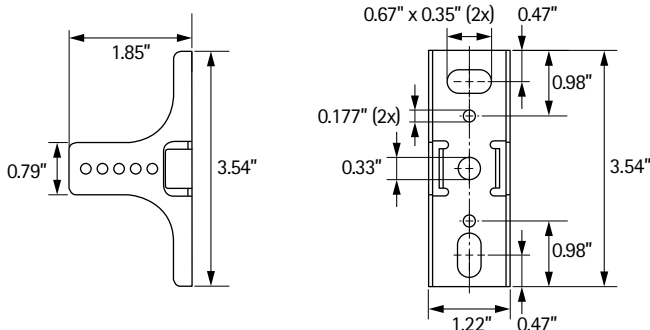


- Used to mount custom lengths of light strut or WMO onto wall, ceiling or studs
- Can easily support custom length light strut
- Can be mounted flat to horizontal or vertical surfaces
- Material: pre hot-dip galvanized steel 1.0226



PEX shown mounted to wood studs using Wall Plate and a starQuick® clamp.

Item number	For strut	Items per pkg.
66190110	WMO	25



Cantilever Arm for WMO Strut



- Mounts directly to the wall or ceiling without all thread, allowing for a tight mounting
- A large variety of clamps can be attached to the cantilever with only a single screw or other accessories
- Conveniently pre-assembled for a quick installation
- Material: pre hot-dip galvanized steel 1.0226



Copper pipe shown mounted to Cantilever Arm and secured with starQuick® clamp

Item number	Length (inches)	Items per pkg.
66090110	8	25

Plastic (PEX and PP) Pipe Support



Pipe Reinforcement in use with BISMAT® 5000 Clamps

- Self-gripping and continuous support for plastic pipes to prevent unsatisfactory curvature, bending or snaking
- Allows for longer distance between supports
- Reinforcement conveniently fits inside insulation
- Lightweight and economical, also 9 foot lengths are easy to handle which speeds installation of plastic pipes
- Insulation can be installed over both the plastic pipe and pipe reinforcement
- Easily cut to size with basic hand tools
- Material: pre-galvanized steel – 20 gauge



PEX Pipe Reinforcement

Item number	D/CTS (inches)	L (feet)	L (meters)	Recommended hanger spacing*	Items per bundle
PSU050-9	1/2	9	2.75	5 ft.	5
PSU075-9	3/4	9	2.75	5 ft.	5
PSU100-9	1	9	2.75	6 ft.	5
PSU125-9	1-1/4	9	2.75	7 ft.	5
PSU150-9	1-1/2	9	2.75	8 ft.	5
PSU200-9	2	9	2.75	8 ft.	5

*At room temperature. For higher temperatures, check PEX pipe supplier recommendations. Larger sizes are available. Please contact your local sales office.

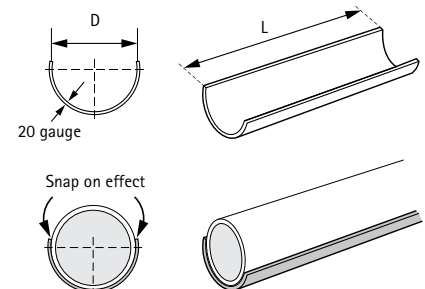
PEX Pipe Spacing Recommendations using Walraven Pipe Reinforcement

Nominal pipe size	Spacing for bare PEX pipe			Spacing with pipe reinforcement
	International Code: IPC and IMC	Uniform Codes: UPC and UMC	Canadian Code: NPCC	All Codes
1/2"	32" (0.8m)	32" (0.8m)	32" (0.8m)	72" (1.8m)
3/4"	32" (0.8m)	32" (0.8m)	32" (0.8m)	72" (1.8m)
1"	32" (0.8m)	32" (0.8m)	32" (0.8m)	96" (2.4m)
1-1/4"	32" (0.8m)	48" (1.2m)	32" (0.8m)	96" (2.4m)
1-1/2"	32" (0.8m)	48" (1.2m)	32" (0.8m)	96" (2.4m)
2"	32" (0.8m)	48" (1.2m)	32" (0.8m)	96" (2.4m)

PP Pipe Reinforcement

Item Number	D (inches)	D (mm)	L (feet)	L (meters)	Recommended hanger spacing*	Items per bundle
PRM020	1/2	20	10	3	72"	5
PRM025	3/4	25	10	3	72"	5
PRM032	1	32	10	3	96"	5
PRM040	1-1/4	40	10	3	96"	5
PRM050	1-1/2	50	10	3	96"	5
PRM063	2	63	10	3	96"	5
PRM075	2-1/2	75	10	3	96"	5
PRM090	3	90	10	3	96"	5
PRM110	3-1/2	110	10	3	96"	5
PRM125	4	125	10	3	96"	5
PRM160	6	160	10	3	96"	5
PRM200	8	200	10	3	96"	5
PRM250	10	250	10	3	120"	5
PRM315	12	315	10	3	120"	5

*At room temperature. For higher temperatures, check PP pipe supplier recommendations. Larger sizes are available. Please contact your local sales office.



Hardware

Cable Ties - stainless steel



- Secures Pipe Reinforcement to plastic pipe
- Self-locking for a secure mount
- High resistance to moisture, corrosion and temperature
- Made of black PVC coated stainless steel
- Conveniently packaged in plastic bag

Item #	Fits pipe sizes (inches)	Fits pipe size (mm)	Items per pkg.
09970150	1/2 to 1	16-25	15
09970260	1-1/4 to 2	32-63	15
09970520	2-1/2 to 3-1/2	75-125	15

Accessories

Photo	Item #	Item Description	Size (inches)	Box qty. (each)
A	61839412	Phillips Modified Truss/waferhead Self-tapping Screw	#8 x 1/2	250
B	61839425	Phillips Modified Truss/waferhead Self-tapping Screw	#8 x 1	250
C	61839441	Phillips Modified Truss/waferhead Self-tapping Screw	#8 x 1-5/8	250
D	61739612	Phillips Panhead Machine Screw	1/4 x 1/2	250
E	6519106	Square Nut, 25 x 25 x 3	1/4	250
F	59490990	Plate for Adjustable Shower Valve	5.90	50
G	VA6474321	Thread Adapter	1/2 npt male, 3/8 female	50
H	VA6474221	Thread Adapter	1/2 npt male, 1/2 female	50



A



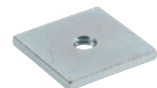
B



C



D



E



F



G



H

Nut Spinner



- Quickly thread nuts up and down threaded rod
- Designed for 3/8" and 1/2" nuts
- Open end allows access to nut anywhere along rod
- Material: PA (polyamide)

Item number	Items per pkg.
0699211	50



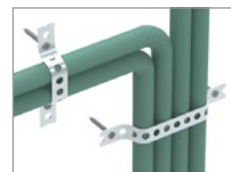
Specialty Products

BIS Suspension Band - Light duty



Item number	Size (inches)	Size (mm)	Fa,z (lbs.)	Items per pkg.
0831012	0.47 x 0.031	12 x 0.8	118	10

- Supports drain pipes and air ducts horizontally or vertically when attached to a joist or bracket respectively
- 30 foot roll is packaged in convenient case
- Can be cut effortlessly with hand tools
- Bends easily
- 19 gauge
- Material: steel 1.0226



BIS Suspension Band - Heavy duty



Item number	Size (inches)	Size (mm)	Fa,z (lbs.)	Items per pkg.
0830017	0.67 x 0.039	17 x 1.0	337	10

- Supports drain pipes and air ducts horizontally or vertically when attached to a joist or bracket respectively
- 30 foot roll is packaged in convenient case
- Can be cut effortlessly with hand tools
- Bends easily
- 19 gauge
- Material: steel 1.0226



BIS Suspension Band - Plasticized



Item number	Size (inches)	Size (mm)	Fa,z (lbs.)	Items per pkg.
0832714	0.55 x 0.12	14 x 3.0	197	10

- Supports drain pipes and air ducts horizontally or vertically when attached to a joist or bracket respectively
- PVC coating protects plastic pipes - unlike uncoated suspension bands
- 30 foot roll is packaged in convenient case
- Can be cut effortlessly with hand tools
- Bends easily
- Features continuous perforation
- 19 gauge
- Material: steel 1.0226 with PVC coating



Specialty Products

Silent Nut



- An adjustable connection option for mounting clamps and accessories to Rapid Sliding Wall Bracket (RSWB), RapidRail® and in-wall strut
- Noise and vibration reducing
- Features quick, quarter-turn technology

Item number	Size (inches)	Items per pkg.
65197015	8-32	50
65197022	1/4	50

starQuick® Silent Nut Assembly



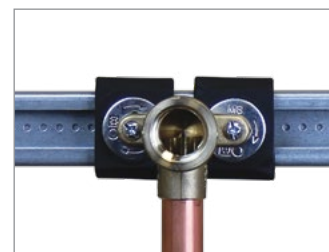
- An adjustable connection option for mounting starQuick® clamps to Rapid Sliding Wall Bracket (RSWB), RapidRail® and in-wall strut
- Noise and vibration reducing
- Features quick, quarter-turn technology
- Hardware included

Item number	Size (inches)	Items per pkg.
0854999	#8 x 1	25

Silent Nut Assembly for Shower Head



- An adjustable connection option for mounting shower drop ear 90 to Rapid Sliding Wall Bracket (RSWB) and in-wall strut
- Noise and vibration reducing
- Features quick, quarter-turn technology
- Hardware included



Item number	Size (inches)	Items per pkg.
59490965	#8 x 3/4	25

Silent Nut Assembly for Stub-Out Bracket and Universal Shower Valve Plate



- An adjustable connection option for mounting Universal Shower Valve Plate (USVP) to stub-out bracket
- Noise and vibration reducing
- Features quick, quarter-turn technology
- Hardware included

Item number	Size (inches)	Items per pkg.
59490964	1/4 x 1/2	25

Rooftop Products

BIS Yeti® 130 Support System



- Modular supporting system for light rooftop installations
- Flexible, cost-effective solution for pipes, cable-trays, air duct channels, etc.
- For horizontal and vertical applications
- Features a non-slip, anti-vibration mat
- Features a unique click-mechanism for quick and safe installation
- Resistant to UV and chemical influences
- Material: moldings made of WPC, a composite of recycled plastic and wood fiber

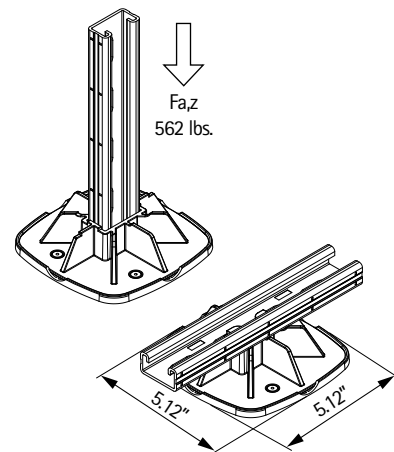
Item number	For strut (inches)	Items per pkg.
67685130	1-5/8 x 13/16 + 1-5/8 x 1-5/8	10



Horizontal use
All strut rails with standard hole pattern can be used, preferably 1-5/8" x 13/16" or 1-5/8" x 1-5/8". You can build your own length of horizontal support.



Vertical use
Strut rails 1-5/8" x 13/16" can be used as H-construction for light weights, the adapter is not necessary, just push the rail into the body of BIS Yeti® 130.



BIS Yeti® 335 Support System

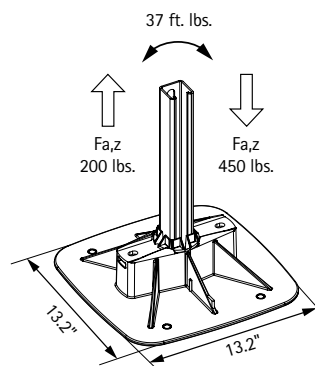


- Modular supporting system for HVAC installations, solar panels, walkways, pipe work, cable ways, etc.
- Designed for use on flat roofs
- For horizontal and vertical applications
- 1-5/8" strut insert rotates 360°
- Features non-slip, anti-vibration mat
- Also available as H-Set, strut is not included (# 67685302)
- Resistant to UV and chemical influences
- Materials: moldings made of WPC, a composite of recycled plastic and wood fiber

Item number	For strut (inches)	Items per pkg.
67685201	1-5/8 x 1-5/8 + DS 5 (1-5/8 x 2)	1



Insert rotates 360° for precise positioning



Rooftop Products

BIS Yeti® 480 Support System



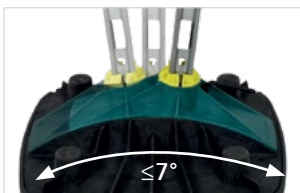
- Modular supporting system for HVAC installations, solar panels, walkways, pipe work, cable ways, etc.
- Designed for use on flat and low pitched roofs
- Adjustable up to 7° to compensate for roof pitch
- 1-5/8" strut insert rotates 360°
- Features a non-slip anti-vibration mat
- Also available as H-Set, strut is not included (# 67685301)
- Available with optional stackable ballast block for increased weight/stability
- Resistant to UV and chemical influences
- Materials: moldings made of WPC, a composite of recycled plastic and wood fiber

Item number	For strut (inches)	Items per pkg.
67685001	1-5/8 x 1-5/8 + DS 5 (1-5/8 x 2)	1

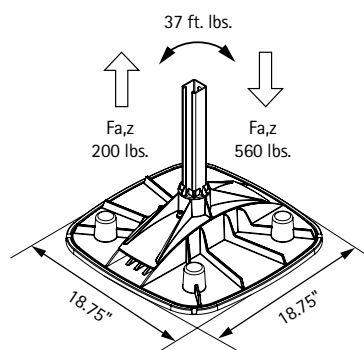
Adjustable for precise positioning



Insert rotates 360°.



Adjustable to compensate roof pitch up to 7°

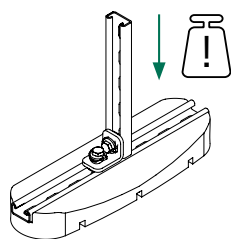


BIS Ursus Support System

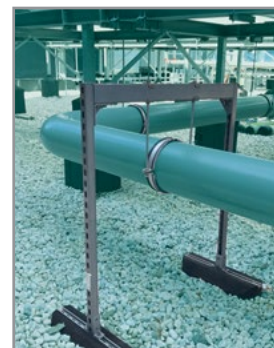
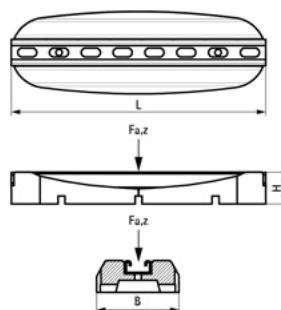


- For supporting small pipework systems, ductwork runs and cable trays
- To support climate installations, walkways on flat roofs, etc.
- Does not penetrate the waterproof membrane (at PVC roofs a separating layer must be installed to protect against plasticizer migration)
- Material: vulcanized rubber, black; Strut Rail made of steel
- UV resistant
- Strut: surface protection:
 - Product is part of the BIS UltraProtect® 1000 system
 - Suitable for in and outdoor applications
 - Stands min. 1,000 hours salt spray test (max. 5% red rust) according to ISO 9227 and ASTM B117

Item number	Size - LxBxH (inches)	Items per pkg.
67687250	10 x 5.11 x 2	1
67687400	16 x 5.11 x 2	1
67687601	24 x 7.87 x 2	1

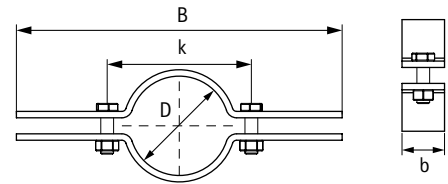


Fa,z
 - 225 lbs (# 67687250)
 - 450 lbs (# 67687400)
 - 675 lbs (# 67687601)



Riser Clamps

Riser Clamp - Zinc plated



- Recommended for support and stabilizing of vertical pipe runs
- Perfect for plastic and metal pipe applications where riser is required above and below floor penetration
- BIS Whisper Riser Pads (WP) are packaged separately
- Material: zinc plated carbon steel

Item number	Item number with Whisper riser pads*	D/IPS (inches)	Bolt size (inches)	B (inches)	b (inches)	k (inches)	Fa,z (lbs.)	Items per pkg.**
B4973027	B4973027WP	3/4	3/8	8-13/16	1	2-5/16	220	25
B4973034	B4973034WP	1	3/8	9-1/16	1	2-5/8	220	25
B4973042	B4973042WP	1-1/4	3/8	9-7/16	1	2-15/16	250	25
B4973048	B4973048WP	1-1/2	3/8	10	1	3-7/16	250	25
B4973060	B4973060WP	2	3/8	10-9/16	1	4	300	25
B4973075	B4973075WP	2-1/2	3/8	11-1/8	1	4-9/16	400	25
B4973090	B4973090WP	3	3/8	11-13/16	1	5-1/4	500	25
B4973106	B4973106WP	3-1/2	3/8	13	1	6	600	25
B4973114	B4973114WP	4	1/2	13-5/8	1	6-5/8	750	20
B4973140	B4973140WP	5	1/2	14-1/8	1-1/2	7-5/8	1,500	10
B4973169	B4973169WP	6	1/2	15-3/8	1-1/2	8-7/8	1,600	10
B4973227	B4973227WP	8	5/8	18-5/8	1-1/2	12	2,500	5
B4973275	B4973275WP	10	5/8	21	2	14-1/2	2,500	4

*Riser clamps with Whisper Riser Pads (B4973027WP - B4973275WP) are packaged together but not assembled.

**Items per package quantities for the products that include Whisper Riser Pads (WP) may vary by size.

Riser Clamp - Copper-Gard



- Recommended for support and stabilizing of vertical pipe runs
- Perfect for plastic and metal pipe applications where riser is required above and below floor penetration
- BIS Whisper Riser Pads (WP) are packaged separately
- Material: carbon steel with Copper-Gard coating with zinc hardware

Item number	Item number with Whisper riser pads*	D/IPS (inches)	Bolt size (inches)	B (inches)	b (inches)	k (inches)	Fa,z (lbs.)	Items per pkg.**
B4979018	B4979018WP	1/2	1/4	6-11/16	1	1-11/16	225	50
B4979023	B4979023WP	3/4	1/4	7	1	2	225	50
B4979030	B4979030WP	1	1/4	8-3/4	1	2-1/4	250	50
B4979035	B4979035WP	1-1/4	1/4	9	1	2-1/2	250	50
B4979043	B4979043WP	1-1/2	1/4	9-3/8	1	2-7/8	250	50
B4979054	B4979054WP	2	3/8	9-15/16	1	3-3/8	500	25
B4979070	B4979070WP	2-1/2	3/8	10-1/2	1	4	500	25
B4979080	B4979080WP	3	3/8	11	1	4-7/16	500	25
B4979092	B4979092WP	3-1/2	3/8	12-3/16	1-1/4	5-1/8	500	25
B4979105	B4979105WP	4	3/8	12-5/8	1-1/4	5-9/16	500	25
B4979130	B4979130WP	5	1/2	14-1/8	1-1/2	7-1/8	815	10
B4979151	B4979151WP	6	1/2	15	1-1/2	8	815	10

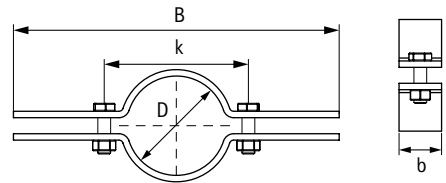
Copper Gard Approvals: Complies with Manufacturers' Standardization Society MSS SP-58 and SP-69 (Type 8)

*Riser clamps with Whisper Riser Pads (B4979018WP - B4979151WP) are packaged together but not assembled.

**Items per package quantities for the products that include Whisper Riser Pads (WP) may vary by size.

Riser Clamps

Riser Clamp - Metric epoxy coated



- Recommended for support and stabilizing of vertical pipe runs
- Perfect for plastic and metal pipe applications where riser is required above and below floor penetration
- BIS Whisper Riser Pads (WP) are packaged separately
- Material: epoxy coated carbon steel

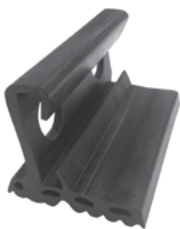
Item number	Item number with Whisper riser pads*	D/IPS (mm)	Bolt size (inches)	B (inches)	b (inches)	k (inches)	Fa,z (lbs.)	Items per pkg.**
B4976025	B4976025WP	25	M10 x 30mm	240	25	65	250	10
B4976032	B4976032WP	32	M10 x 30mm	245	25	68	250	10
B4976040	B4976040WP	40	M10 x 30mm	254	25	86	250	10
B4976050	B4976050WP	50	M10 x 30mm	265	25	95	250	10
B4976063	B4976063WP	63	M10 x 30mm	275	25	114	375	10
B4976075	B4976075WP	75	M10 x 30mm	285	25	116	500	10
B4976090	B4976090WP	90	M12 x 40mm	305	40	136	500	10
B4976110	B4976110WP	110	M12 x 40mm	343	40	176	800	10
B4976125	B4976125WP	125	M12 x 40mm	370	40	210	1,050	10
B4976160	B4976160WP	160	M12 x 40mm	395	40	228	1,450	10
B4976200	B4976200WP	200	M16 x 50mm	470	40	297	2,300	10
B4976250	B4976250WP	250	M16 x 50mm	530	40	371	2,500	10

Epoxy Gard Approvals: Complies with Manufacturers' Standardization Society MSS SP-58 and SP-69 (Type 8)

*Riser clamps with Whisper Riser Pads (B4976025WP - B4976250WP) are packaged together but not assembled.

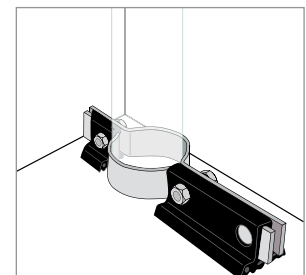
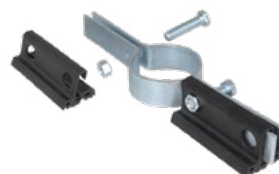
** Items per package quantities for the products that include Whisper Riser Pads (WP) may vary by size.

BIS Whisper Riser Pad



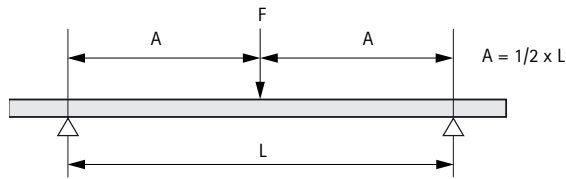
Call for price and availability

- For use with most riser clamps up to 8" in size
- Used to insulate riser clamps from building structure to minimize vibration and noise transfer
- Reduces corrosion by isolating clamp from floor
- Temperature rated up to 250° F
- Tested for fire safety - fire resistant
- Material: EPDM rubber



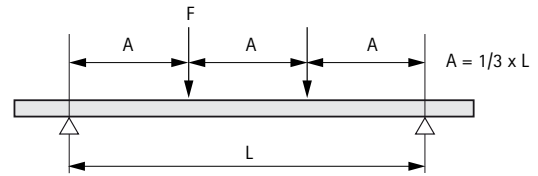
Whisper Riser Pads can be cut to create a customized fit.

RapidRail® and RapidStrut® Fixing Rail Load Tables



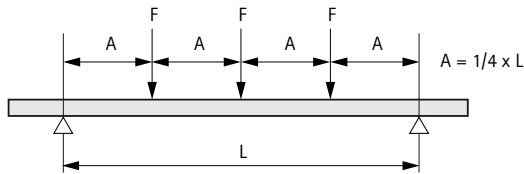
Single centered load
between 2 supports (lbs.)

	RapidStrut®	RapidRail®	In-wall strut
Length (L)	DS 5	WM15	WM0
0' 10"	1,981	276	191
1' 0"	1,650	230	159
1' 2"	1,415	197	136
1' 4"	1,238	173	119
1' 6"	1,100	154	106
1' 8"	990	138	96
1' 10"	825	117	87
2' 0"	707	100	80
2' 6"	619	78	60
3' 0"	550	62	50
3' 6"	495	44	38
4' 0"	413	34	29
4' 6"	354	27	23
5' 0"	309	22	19
6' 0"	275	15	13



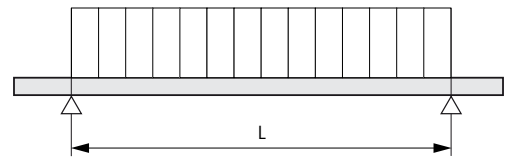
Equal load on 2 points
between 2 supports (lbs.)

	RapidStrut®	RapidRail®	In-wall strut
Length (L)	DS 5	WM15	WM0
0' 10"	1,486	207	143
1' 0"	1,238	173	119
1' 2"	1,061	148	102
1' 4"	928	130	90
1' 6"	825	115	80
1' 8"	742	104	72
1' 10"	619	94	65
2' 0"	530	79	60
2' 6"	464	51	42
3' 0"	412	35	30
3' 6"	371	26	22
4' 0"	309	20	17
4' 6"	265	16	14
5' 0"	207	13	11
6' 0"	163	9	8



Equal load on 3 points
between 2 supports (lbs.)

	RapidStrut®	RapidRail®	In-wall strut
Length (L)	DS 5	WM15	WM 0
0' 10"	990	138	96
1' 0"	825	115	80
1' 2"	707	99	68
1' 4"	619	86	60
1' 6"	550	77	53
1' 8"	495	69	48
1' 10"	412	63	43
2' 0"	354	57	40
2' 6"	310	36	30
3' 0"	275	25	21
3' 6"	248	19	16
4' 0"	206	14	12
4' 6"	177	11	10
5' 0"	148	9	8
6' 0"	117	6	6



Uniformly distributed load
between 2 supports (lbs.)

	RapidStrut®	RapidRail®	In-wall strut
Length (L)	DS 5	WM15	WM0
0' 10"	3,961	553	382
1' 0"	3,301	461	318
1' 2"	2,830	395	273
1' 4"	2,476	346	239
1' 6"	2,201	307	212
1' 8"	1,981	276	191
1' 10"	1,650	251	174
2' 0"	1,415	216	159
2' 6"	1,238	138	115
3' 0"	1,100	96	82
3' 6"	990	70	61
4' 0"	825	54	47
4' 6"	707	43	38
5' 0"	564	34	31
6' 0"	446	24	22

Use Of Loading Tables

Calculation Method

The published safe working loads are based on tests with perforated (slotted) rail. For non perforated rail the safe working loads can be taken as 20% higher.

Loads are calculated taking into consideration a maximum deflection (f) of length $1/200 \times L$ and a maximum bending stress of 160 N/mm². (figure A)

1 N (Newton) = 0.22 lbs.
2.2 lbs. = 8.89 N (Newton)

Installing rails to walls or ceilings

The strength of the anchoring of the rail has not been taken into consideration. The installer must verify that the bolts and wall plugs used are suitable for the maximum permitted loading of the rail. (figure B)

Methods of loading

Where loads are suspended beneath rails, the load must not exceed the relevant safe load of the slide nut. To increase rigidity of the installation we recommend the use of a U-formed washer. (figure C)

Reading the rail loading tables

The stated values are only valid for the fixing rail. The maximum safe load of all other construction parts have to be verified. The stated maximum safe load is calculated for a static load at free bending support. (figure D)

Where the segment is marked with a hyphen, the stated length cannot be safely loaded.

Special conditions

For special conditions not stated in the loading tables, please do not hesitate to contact Walraven Project Support.

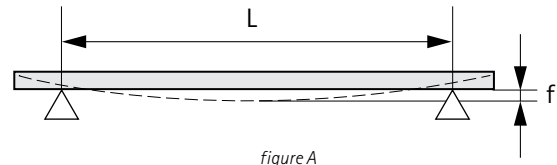


figure A

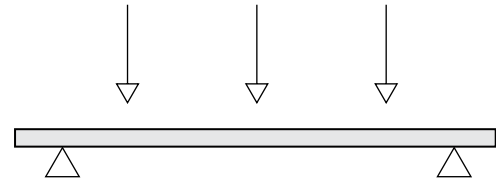


figure B

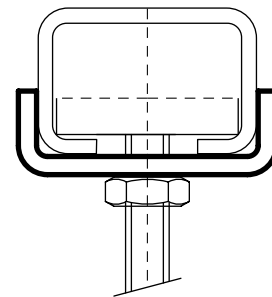


figure C

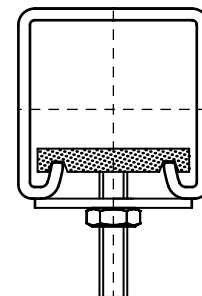


figure D

Explanation of Maximum Recommended Load

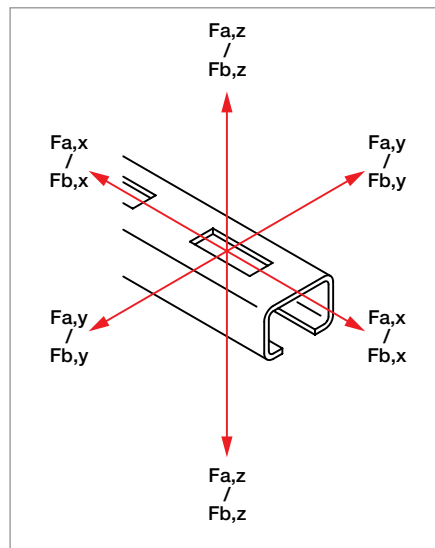
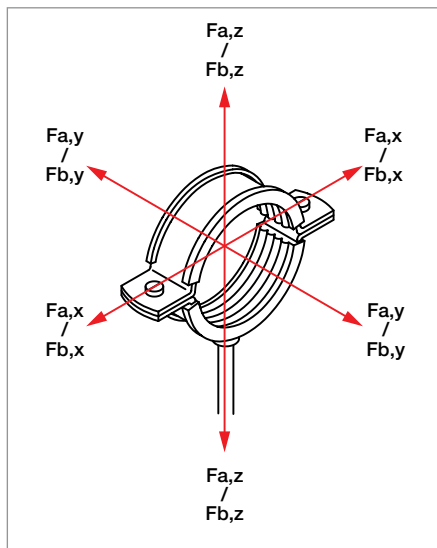
Maximum allowed load:

For most of our products, a maximum allowed load is mentioned in the article tables. Stated values are determined by a Walraven developed method.

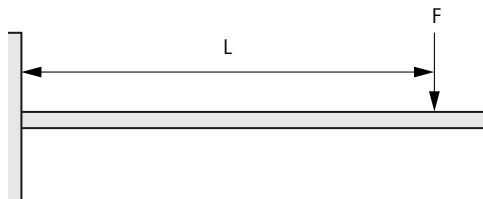
Force direction (F) x, y and z (at 68° F)

Fa = maximum allowed load

Fb = breaking load



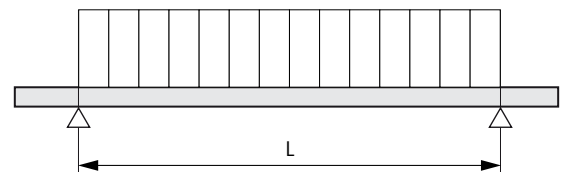
Cantilever Arm Load Tables



Single Suspended Load on 1 point (lbs)

RapidRail® Cantilevers

Item #	6603715	6603725	66090110
Type	WM15		WMO
Length (L)	6"	10"	8"
4"	175	175	28
6"	117	117	---
8"	---	78	14
10"	---	50	---
12"	---	---	---
14"	---	---	---
16"	---	---	---
18"	---	---	---
20"	---	---	---
22"	---	---	---
24"	---	---	---



Uniformly distributed load between 2 supports (lbs.)

Length	RapidStrut®	RapidRail®
	DS 5	WM15
0' 10"	3,961	553
1' 0"	3,301	461
1' 2"	2,830	395
1' 4"	2,476	346
1' 6"	2,201	307
1' 8"	1,981	276
1' 10"	1,650	251
2' 0"	1,415	216
2' 6"	1,238	138
3' 0"	1,100	96
3' 6"	990	70
4' 0"	825	54
4' 6"	707	43
5' 0"	564	34
6' 0"	446	24

Information: Steel Pipes

Steel Pipe Data Schedule 40 and 80

Pipe size (inches)	Pipe OD (inches)	Pipe OD (mm)	Schedule no.	Wall thickness (inches)	Weight per foot (lbs.)	
					Pipe	Pipe filled with water
3/8"	0.675	17.15	40	0.091	0.567	0.650
			80	0.126	0.740	0.800
1/2"	0.84	21.34	40	0.109	0.850	0.980
			80	0.147	1.090	1.190
3/4"	1.05	26.67	40	0.113	1.130	1.360
			80	0.154	1.470	1.660
1"	1.315	33.40	40	0.133	1.680	2.050
			80	0.179	2.170	2.480
1-1/4"	1.66	42.16	40	0.140	2.270	2.920
			80	0.191	3.000	3.550
1-1/2"	1.9	48.26	40	0.145	2.720	3.600
			80	0.200	3.630	4.400
2"	2.375	60.33	40	0.154	3.650	5.100
			80	0.218	5.020	6.300
2-1/2"	2.875	73.03	40	0.230	5.790	7.860
			80	0.276	7.660	9.490
3"	3.5	88.90	40	0.216	7.580	10.780
			80	0.300	10.250	13.110
3-1/2"	4	101.60	40	0.226	9.110	13.400
			80	0.318	12.510	16.360
4"	4.5	114.30	40	0.237	10.790	16.300
			80	0.337	14.980	19.960
5"	5.563	141.30	40	0.258	14.620	23.290
			80	0.375	20.780	28.660
6"	6.625	168.28	40	0.280	18.970	31.490
			80	0.432	28.570	39.860
8"	8.626	219.10	40	0.322	25.550	50.150
			80	0.500	43.390	63.190
10"	10.75	273.05	40	0.365	40.480	74.580
			80	0.593	64.400	95.500
12"	12.75	323.85	40	0.406	53.600	102.100
			80	0.687	88.600	132.600
14"	14	355.60	40	0.437	63.000	122.000
			80	0.750	107.000	132.600
16"	16	406.40	40	0.500	83.000	160.000
			80	0.843	137.000	207.000
18"	18	457.20	40	0.563	105.000	202.000
			80	0.937	171.000	260.000
20"	20	508.00	40	0.593	123.000	244.000
			80	1.031	209.000	318.000
24"	24	609.60	40	0.687	171.000	345.000
			80	0.218	297.000	455.000
30"	30	762.00	20	0.500	158.000	444.000
36"	36	914.40	API	0.500	190.000	607.000

Information: Copper Pipe

Copper Tubing Type L

Pipe size (inches)	Pipe OD			Wall thickness (inches)	Weight per foot (lbs.)	
	(inches)		(mm)		Pipe	Pipe filled with water
1/4"	3/8"	0.375	9.53	0.030	0.126	0.160
3/8"	1/2"	0.500	12.70	0.035	0.198	0.260
1/2"	5/8"	0.625	15.88	0.040	0.285	0.385
5/8"	3/4"	0.750	19.05	0.042	0.362	0.513
3/4"	7/8"	0.875	22.23	0.045	0.455	0.664
1"	1-1/8"	1.125	28.58	0.050	0.655	1.014
1-1/4"	1-3/8"	1.375	34.93	0.055	0.884	1.430
1-1/2"	1-5/8"	1.625	41.28	0.060	1.140	1.910
2"	2-1/8"	2.125	53.98	0.060	1.750	3.091
2-1/2"	2-5/8"	2.625	66.68	0.080	2.480	4.544
3"	3-1/8"	3.125	79.38	0.090	3.330	6.279
3-1/2"	3-5/8"	3.625	92.08	0.100	4.290	8.279
4"	4-1/8"	4.125	104.78	0.110	5.380	10.568
5"	5-1/8"	5.125	130.18	0.125	7.610	15.691
6"	6-1/8"	6.125	155.58	0.140	10.200	21.816
8"	8-1/8"	8.125	206.38	0.200	19.290	39.579
10"	10-1/8"	10.125	257.18	0.250	30.100	61.690
12"	12-1/8"	12.125	307.98	0.280	40.400	85.826

Copper Tubing Type K

Pipe size (inches)	Pipe OD			Wall thickness (inches)	Weight per foot (lbs.)	
	(inches)		(mm)		Pipe	Pipe filled with water
1/4"	3/8"	0.375	9.53	0.035	0.145	0.177
3/8"	1/2"	0.500	12.70	0.049	0.269	0.324
1/2"	5/8"	0.625	15.88	0.049	0.344	0.438
5/8"	3/4"	0.750	19.05	0.049	0.418	0.562
3/4"	7/8"	0.875	22.23	0.065	0.641	0.829
1"	1-1/8"	1.125	28.56	0.065	0.839	1.176
1-1/4"	1-3/8"	1.375	34.93	0.065	1.040	1.567
1-1/2"	1-5/8"	1.625	41.28	0.072	1.360	2.103
2"	2-1/8"	2.125	53.98	0.083	2.060	3.370
2-1/2"	2-5/8"	2.625	66.68	0.095	2.920	4.920
3"	3-1/8"	3.125	79.38	0.109	4.000	6.960
3-1/2"	3-5/8"	3.625	92.08	0.120	5.120	9.020
4"	4-1/8"	4.125	104.78	0.134	6.510	11.570
5"	5-1/8"	5.125	130.18	0.160	9.670	17.670
6"	6-1/8"	6.125	155.58	0.192	13.870	25.070
8"	8-1/8"	8.125	206.38	0.271	25.900	45.400
10"	10-1/8"	10.125	257.18	0.338	40.300	70.723
12"	12-1/8"	12.125	307.98	0.405	57.800	101.475

Information: Hubless Cast Iron Pipe

Pipe size (inches)	Pipe OD (inches)	Pipe OD (mm)	Wall thickness (inches)	Weight per foot (lbs.)	
				Pipe	Pipe filled with water
1-1/2	1.90	48.26	0.16	2.85	3.7
2	2.35	59.69	0.16	3.71	5.1
3	3.35	85.09	0.16	5.40	8.4
4	4.38	111.25	0.19	7.60	12.4
5	5.30	134.62	0.19	9.76	18.1
6	6.30	160.02	0.19	11.78	23.8
8	8.38	212.85	0.23	17.09	38.0
10	10.56	268.22	0.28	25.46	59.5
12	12.50	317.50	0.28	31.81	80.3
15	15.83	402.08	0.36	49.26	127.0

Information: PVC Pipe

PVC Pipes – Schedule 40

Pipe size (inches)	Pipe OD (inches)	Pipe OD (mm)	Minimum wall thickness (inches)	Nominal inside diameter (inches)	Weight per foot (lbs.)	
					Pipe	Pipe filled with water
3/8"	0.675	17.15	0.091	0.493	0.122	0.205
1/2"	0.840	21.34	0.109	0.622	0.180	0.312
3/4"	1.050	26.67	0.113	0.824	0.239	0.469
1"	1.315	33.40	0.133	1.049	0.352	0.726
1-1/4"	1.660	42.16	0.140	1.380	0.475	1.122
1-1/2"	1.900	48.26	0.145	1.610	0.568	1.450
2"	2.375	60.33	0.154	2.067	0.761	2.213
2-1/2"	2.875	73.03	0.203	2.469	1.201	3.273
3"	3.500	88.90	0.216	3.068	1.572	4.772
4"	4.500	114.30	0.237	4.026	2.239	7.749
5"	5.563	141.30	0.258	5.047	3.062	11.722
6"	6.625	168.28	0.280	6.065	3.945	16.455
8"	8.625	219.08	0.322	7.981	5.920	27.520
10"	10.750	273.05	0.365	10.020	8.406	42.506
12"	12.750	323.85	0.406	11.938	11.172	59.672
14"	14.000	355.60	0.438	13.124	13.262	71.762
16"	16.000	406.40	0.500	15.000	17.312	93.812

PVC Pipes – Schedule 80

Pipe size (inches)	Pipe OD (inches)	Pipe OD (mm)	Minimum wall thickness (inches)	Nominal inside diameter (inches)	Weight per foot (lbs.)	
					Pipe	Pipe filled with water
3/8"	0.675	17.15	0.126	0.423	0.154	0.215
1/2"	0.840	21.34	0.147	0.546	0.225	0.326
3/4"	1.050	26.67	0.154	0.742	0.305	0.491
1"	1.315	33.40	0.179	0.957	0.449	0.760
1-1/4"	1.660	42.16	0.191	1.278	0.618	1.173
1-1/2"	1.900	48.26	0.200	1.500	0.751	1.516
2"	2.375	60.33	0.218	1.939	1.040	2.319
2-1/2"	2.875	73.03	0.276	2.323	1.584	3.418
3"	3.500	88.90	0.300	2.900	2.124	4.984
4"	4.500	114.30	0.337	3.826	3.105	8.085
5"	5.563	141.30	0.375	4.813	4.343	12.213
6"	6.625	168.28	0.432	5.761	5.929	17.219
8"	8.625	219.08	0.500	7.625	9.051	28.851
10"	10.750	273.05	0.593	9.564	13.429	44.529
12"	12.750	323.85	0.687	11.376	18.458	52.458
14"	14.000	355.60	0.750	12.500	22.224	73.424
16"	16.000	406.40	0.843	14.314	28.557	98.257

Information: CPVC Pipe

CPVC Pipes – SDR 11

Pipe size (inches)	Pipe OD (inches)	Pipe OD (mm)	Minimum wall thickness (inches)	Nominal inside diameter (inches)	Weight per foot (lbs.)	
					Pipe	Pipe filled with water
1/2"	0.625	15.88	0.068	0.546	0.225	0.326
3/4"	0.875	22.23	0.080	0.742	0.305	0.491
1"	1.125	28.58	0.102	0.957	0.449	0.760
1-1/4"	1.375	34.93	0.125	1.278	0.618	1.173
1-1/2"	1.625	41.28	0.148	1.500	0.751	1.516
2"	2.125	53.98	0.193	1.939	1.040	2.319

Information: PEX Pipe

PEX

Pipe size (inches)	Pipe OD (inches)	Pipe OD (mm)	Minimum wall thickness (inches)	Nominal inside diameter (inches)	Weight per foot (lbs.)	
					Pipe	Pipe filled with water
1/4"	0.375	9.53	0.067	0.241	0.040	0.059
3/8"	0.500	12.70	0.075	0.350	0.047	0.088
1/2"	0.625	15.88	0.075	0.475	0.060	0.137
5/8"	0.750	19.05	0.088	0.574	0.087	0.199
3/4"	0.875	22.23	0.102	0.671	0.110	0.263
1"	1.125	28.58	0.132	0.862	0.192	0.445
1-1/4"	1.375	34.93	0.161	1.054	0.350	0.727
1-1/2"	1.625	41.28	0.191	1.244	0.440	0.966
2"	2.125	53.98	0.248	1.629	0.682	1.622
2-1/2"	2.625	66.68	0.308	2.010	0.880	2.300
3"	3.125	79.38	0.363	2.400	1.280	3.240
3-1/2"	3.625	92.08	0.421	2.784	1.738	4.420
4"	4.125	104.78	0.478	3.169	2.251	5.670

Noise Insulation in Pipe Work Systems

Sources of noise

Pipe work systems installed for fluid supply, heating and sanitary purposes, as well as ductwork systems for air conditioning, can act as conductors of acoustic vibrations. These vibrations arise from the flow of the medium in the system, the method of system connection and pumps, fans, valves etc.

Statutory regulations

If a system conducting the acoustic vibrations mentioned above is directly fixed to walls or ceilings the noise level can increase because the building structure acts as an amplifier. Building regulations state a maximum permissible transmitted noise level from pipe work systems (see DIN 4109). Currently this residual value is 35 dB (A) future regulation is expected to reduce this level.

Noise insulation by pipe clamps

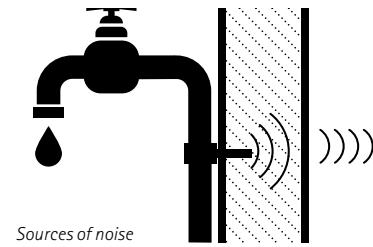
To reduce the transmission of acoustic vibrations in pipe work to the building structure, a layer of acoustic vibration absorbing material must be placed between the pipe work and all support fixing points. It is essential that the support fixing point into the building structure is never directly in contact with the pipe work. The smallest direct contact will act as a sound carrying bridge. Therefore, the acoustic vibration absorbing material needs to be specifically designed for each pipe clamp support.

Maximizing noise insulation

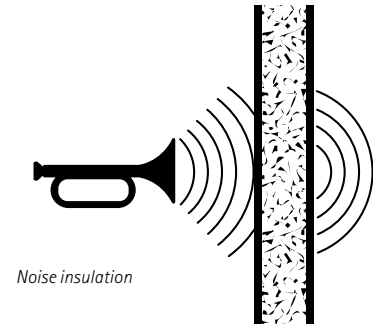
The acoustic vibration absorbing materials used in our products are rubber profiles. Since rubber is elastic the transmission of acoustic vibrations is considerably reduced. The shape of the rubber profile is specifically designed for each clamp to eliminate contact between pipe and clamp. We have also paid considerable attention to the cross section of the rubber profile by introducing grooves which maximize absorption of acoustic vibrations.

Quality of the rubber lining

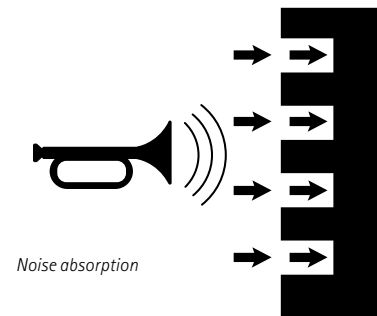
The rubber lining must be durable and capable of retaining its elastic qualities to adequately absorb acoustic vibrations over a prolonged period. In consultation with rubber technology experts we have established performance standards to optimize aging resistance. The rubber profiles which we use are regularly tested against these performance standards independent specialist testing institutes.



Sources of noise



Noise insulation



Noise absorption

Test certification

The reduction in noise transmission by use of our rubber lined pipe clamps tested by independent institutes on the basis of the requirements of DIN 4109.

The test method employed is that described in DIN 52 218 for measurement of noise transmission reduction of rubber linings.

Original test certificates are available upon request.

Please note the recorded RESIDUAL VALUE of noise transmission is that achieved by the DIN 52 218 test and measurement method at 3 bar.

Rubber temperature performance

EPDM rubber (both black and green) has been designed for an operating temperature range of minus 58° F up to plus 200° F, continuous. For a peak situation it can be plus 250° F.

For steam pipes a special silicon rubber profile (red) is available, allowing for an operating temperature of 390° F, continuous and 420° F peak.

Information: Surface Treatment

To improve the corrosion resistance of steel products, Walraven uses all kinds of methods. Below you will find an overview:

BIS UltraProtect® 1000 system

The BIS UltraProtect® 1000 system is the ideal and most durable solution for securing or supporting mechanical installations, solar systems and many other types of installations.



The products in the BIS UltraProtect® 1000 system have very high corrosion resistance. They effortlessly withstand a salt spray test of at least 1000 hours* (in accordance with ISO 9227). The salt spray test shows that the corrosion resistance of BIS UltraProtect® 1000 products is considerably higher than that of, for example, Hot Dip Galvanized products (approximately 300-600 hours).

Although the system utilizes a relatively thin protective coating, the corrosion resistance is high. Not only does the BIS UltraProtect® 1000 system offer a smooth and fine finish, the products are also visually appealing. An additional benefit of the relatively thin protective coating is that threaded products are also well protected against corrosion. The BIS UltraProtect® 1000 products, including threaded items such as bolts, nuts and threaded rods, have superior corrosion resistance and will last at least 20 years**!

Zinc Plating

The products to be treated are cleaned, degreased and pickled. The protective coating is then applied in an electrolytic process. The thickness of the layer of zinc is between 1 and 20 µm (0.001 – 0.020 mm) and is determined by the current intensity and the duration of the galvanizing process. After the galvanizing process the products are passivated to extend the protection period.

Pre-galvanized

Also known as Sendzimir galvanization. Pre-galvanizing is a continuous thermal galvanizing process. The strip steel is guided through a bath containing liquid zinc after having been cleaned, degreased and pickled. Later the steel is cut to the required width. The sides of this cut material are not galvanized. This is also the case with any holes that may be drilled in the pre-galvanized material.

The sides of material thinner than 1,5 mm are protected somewhat by the zinc layer on the top and bottom by the electrolytic process of 'pulling together'.

This method is excellently suited for products with a screw thread, which are to be used indoors or in a non-corrosive environment.

Hot-Dip Galvanizing

Also known as 'thermal galvanizing', 'full bath galvanizing' or 'centrifugal galvanizing'. The products to be treated are cleaned, degreased and pickled and subsequently put into an immersion bath of liquid zinc. The immersion bath has a temperature of 1022° F. In this process an alloy of zinc/iron develops on the surface and is then covered by a layer of pure zinc.

The thickness of the zinc layer varies between 50 and 150 µm (0.050 – 0.150 mm). In consequence the process is less suitable for products with screw thread. Hot-dip galvanized products are suitable for inside as well as outside use and also for damp and light-corrosive environments.

Delta-Tone 9000

Delta-Tone 9000 consists of zinc and aluminum particles that are held together by an inorganic binder. This offers an effective protection against corrosion even with a limited layer of thickness.

Delta-Tone 9000 is applied in an immersion/centrifugal or spray process and then dried at a temperature of 392° F. With this method an even layer is formed over the whole product with a thickness of 10 – 12 µm. Subsequently Delta-Tone 9000 forms a connection with the metal underneath and the surface consists of a layer of inorganic material with zinc and aluminum flakes. In contrast to electrolytic and thermal galvanizing, with Delta-Tone 9000 there is no danger of hydrogen embrittlement in materials with an increased carbon content, such as spring steel.

To improve the corrosion resistance, the process can be repeated which increases the thickness each time by 10 – 12 µm.

Products protected by Delta-Tone 9000 are suitable for outside use as well as moderate corrosive environments.

Stainless Steel 316 (1.4401)

Stainless steel 316 is one of the best corrosion resistant types of stainless steel. It offers a superior corrosion resistance compared to many other types of stainless steel in very many corrosive environments.

The protective layer is damaged by treatments such as punching, rilling and welding. That is why, after the last treatment, all stainless steel products receive an extra treatment which pickles and passivates to repair the protective layer.

Products from stainless steel 316 can be applied in aggressive situations such as a sea climate and industry.

* Until the occurrence of maximum 5% red rust. ** The warranty conditions can be found on our website www.bis-ultraprotect.com

Information: Surface Treatment

Salt-spray test

To compare the protection duration of various surface treatments, a salt-spray test is carried out according to ISO 9227. In this test products are placed in a space and sprayed with a salt solution. The products will start to corrode. The point at which "white" and then "red" rust appears is noted.

This test does not give a perfect protection duration (this depends on the surroundings in which the product is applied), but does offer a comparative view of the various surface treatments.

Table 1: results of salt-spray test

	Thickness protection layer (µm)	Hours until 5% red rust*
BIS UltraProtect® 1000 system	– **	1,000
Surface treatment		
Zinc plating, blue passivation	8 - 10	72
Zinc plating, yellow passivation	8 - 10	80
Pre-galvanized	25	150
Hot-dip galvanizing	50 - 80	300 - 600
Dacromet	8	600***
Delta-Tone 9000	10 - 12	480

* Until the occurrence of maximum 5% red rust

** Method and thickness protection layer differ per product

*** Test stopped

Information: Material Properties Plastics

ABS – Acrylonitrile-Butadiene-Styrene

Temperature-resistance:

Permanently up to 316° F, briefly up to 365° F and to about minus 40° F*.

Resistant to:

Formic acid, citric acid, lactic acid.

Conditionally resistant to:

Hydrochloric acid, sulphuric acid.

Not resistant to:

Acetone, petrol, benzene, solvents for paints and lacquers, butyric acid, chlorine, acetic acid, nitric acid.

PA – PolyAmide (Nylon)

Temperature-resistance:

Permanently up to about 194° F, briefly up to about 266° F and to about minus 40° F*.

Resistant to:

Petrol, benzene, diesel oil, acetone, solvents for paints and lacquers, oils and greases.
Low tendency to stress cracking.

Not resistant to:

Bleach, most acids, chlorine.

PA-GV – Polyamide, fiberglass reinforced

Temperature-resistance:

Permanently up to about 212-230° F, briefly up to 320° F and to about minus 40° F*.

Resistant to:

Petrol, benzene, diesel oil, acetone, solvents for paints and lacquers, oils and greases.
Low tendency to stress cracking.

Not resistant to:

Bleach, most acids, chlorine.

PE – PolyEthylene

Temperature-resistance:

Hard types permanently up to about 194° F, briefly up to about 221° F soft types permanently up to about 176° F, briefly up to about 212° F and to about minus 40° F*.

Resistant to:

Alkalis and inorganic acids.

Conditionally resistant to:

Acetone, organic acids, petrol, benzene, diesel oil, most oils.

Not resistant to:

Chlorine, hydrocarbons, oxidizing acids.

POM – PolyOxyMethylene

(polyacetal, polyformaldehyde)

Temperature-resistance:

Permanently up to about 212° F, briefly up to about 266° F and to minus 40° F*.

Resistant to:

Acetone, ether, petrol, weak acetic acid, benzene, heating oil, oils and greases, toluene.

Not resistant to:

Methylene chloride, trichloroethylene, hydrochloric acid, nitric acid, sulphuric acid.

PP – PolyPropylene

Temperature-resistance:

Permanently about 194 °F, briefly up to about 230° F and to about minus 22° F*.

Resistance to chemicals generally as for polyethylene.

PS – PolyStyrene

Temperature-resistance:

Because of its relatively high sensitivity to the effects of chemicals, its use is not recommended at temperatures above normal room temperature, about 77° F.
Resistance to cold: to about minus 40° F*.

Resistant to:

Alkalis, most acids, alcohol.

Conditionally resistant to:

Oils and greases.

Not resistant to:

Butyric acid, concentrated nitric acid, concentrated acetic acid, acetone, ether, petrol and benzene, solvents for paints and lacquers, chlorine, diesel fuel.

PVC (hard) – PolyVinylChloride (hard)

Temperature-resistance:

Permanently up to about 149° F, briefly up to about 167° F and to about minus 22° F*.

Resistant to:

Weak acids, alkalis, oils and greases, petrol.

Not resistant to:

Strong acids, benzene, acetone, iodine, toluene, trichloroethylene.

*The minus values apply only for parts in the quiescent condition with no severe impact stress.

DELIVERY AND TERMS

1. PRICES

Prices are those stated on the order. Prices shown on Walraven's price list or elsewhere are for information only and do not constitute quotations or offers to sell. Walraven's prices are subject to change without notice at any time. Price increases will not be applied to products covered by an order acknowledgment stipulating a shipment date within 15 days after the effective date of the increase. Prices do not include taxes.

2. ACCEPTANCE OF ORDERS

All orders are subject to final approval and acceptance by Walraven. Walraven has the right to accept orders in whole or in part. Shipment of less than an entire order shall be deemed acceptance of that portion of the order actually shipped. Any different or additional terms and conditions proposed by Purchaser in its purchase order, or otherwise not specifically approved in writing by Walraven, are rejected by Walraven. Walraven accepts no responsibility and Purchaser cannot hold Walraven responsible for errors or misunderstandings, whether or not due to Walraven's negligence, in complying with orders or instructions given to Walraven by telephone or orders or instructions given to a third party for transmittal to Walraven. Delivery to Walraven of Purchaser's acceptance of Walraven's quotation according to its terms, Walraven's actions in reliance on Purchaser's oral acceptance of a written or oral quotation, or Purchaser's receipt of Products, will constitute acceptance and a binding order.

3. CANCELLATION

Customer may not cancel the order unless agreed to by Walraven in writing.

4. DELIVERY AND PACKAGING

Walraven shall package product in accordance with its own standard practices. All items will be shipped in standard box quantities only. A minimum order quantity of \$150 is in effect on all orders. Orders below \$150 shall be subject to a \$25 handling charge.

5. FREIGHT

All sales are F.O.B. point of origin unless otherwise agreed to in writing in advance of the shipment date. Delivery dates are estimates only. Walraven is not responsible to prepay transportation or insurance costs. Whether or not Walraven prepays shipping charges, risk of loss passes to Purchaser upon tender of product to a carrier. Freight Terms by Category
Category I-Free Freight Allowance: \$1,500 prepaid net. All products except Pipe Reinforcement. - \$150 minimum order.
Category II -Free Freight Allowance: \$3,000 prepaid net (Pipe Reinforcement).

6. TITLE

Title and right to possession of any Product remains with Walraven until all payments are made in full. Purchaser agrees to do all acts necessary to protect such right and title. Risk of loss however shall pass to Purchaser at the time of delivery to the carrier. Purchaser shall make claims for loss or damage to goods while in transit against the carrier.

7. PAYMENT TERMS

Final payment is due and payable 30 days from date of invoice, unless otherwise specified. Any amount not timely paid by Purchaser shall bear interest at the maximum rate permitted by U.S. law. If at any time reasonable grounds for insecurity arise with respect to Purchaser's performance of its payment or other obligations, Walraven may demand immediate payment in full or a documentary letter of credit approved by a U.S. bank acceptable to Walraven. All amounts owed by Purchaser shall be accelerated and payable immediately if Purchaser fails to make any payment on time as required. Walraven may allocate payments from Purchaser among outstanding invoices at its own discretion. Walraven may change payment terms on seven (7) days written notice.

8. RETURNS

All returns must comply with the following established guidelines:

- (a) Proof of purchase is required for all returns.
- (b) Return Authorization (RGA) number is required and are valid for 30 days after issue date.
- (c) Products must be in standard full cartons in first-class salable condition. All

returns are subject to Walraven inspections and acceptance.

(d) All products sold 12 months or earlier from the date of return shipment are NON-Returnable.

(e) Category II: Pipe Reinforcement returns are not accepted

(f) A 25% restocking fee will be charged for all returns

(g) Return transportation must be prepaid and freight expenses will be the responsibility of the Purchaser. Returns must be shipped to: WALRAVEN, 2605 East Oakley Park Road, Suite B, Walled Lake, MI 48390

9. PRODUCTS

Walraven may modify or discontinue any product or line of products at any time without liability except to refund any amounts already paid for any such products that have been ordered but not yet delivered. Unless otherwise agreed in writing, all product dimensions are approximate. Consequently, Purchaser shall take into account reasonable product tolerances.

10. BRAND PROTECTION

Customer may not resell Product under any brand name other than the name under which they were purchased.

11. TAXES

All duties, sales, use, excise or similar taxes or charges applicable to the sale or use of any products shall be Purchaser's responsibility, and Purchaser shall indemnify Walraven against any liability there under.

12. WARRANTY

Walraven warrants that for a period of 12 months from the date of shipment, it will, at its option, refund the purchase price, repair or replace any product if it contains a defect in material or workmanship, provided that a claim, and proof thereof, along with a request of a return authorization number is made in writing to Walraven within 6 months after Purchaser's receipt thereof. ALL DEFECTS AND NON-CONFORMITIES WHICH ARE NOT SO SPECIFIED ARE WAIVED. If product is not returned within 30 days of a claim, the claim shall be deemed conclusively to have been abandoned. No other warranty expressed or implied (including any warranty of merchantability or fitness for a particular purpose) shall exist in relation to the sale of any Walraven products. Walraven shall in no event be liable for any product which has been altered, repaired, or misused, nor for any claim related to special, direct, indirect, incidental, consequential or any other damages arising out of the sale, use or inability to use the products, for which Purchaser hereby agrees to indemnify Walraven. There are no express warranties other than those contained in the order. Walraven DISCLAIMS ALL IMPLIED WARRANTIES (OTHER THAN GOOD TITLE) INCLUDING BUT NOT LIMITED TO THOSE OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, AND NON-INFRINGEMENT.

13. LIMITATIONS OF LIABILITY

Walraven excludes all liability except such liability that is directly attributable to the willful or gross negligence of Walraven's employees. Should Walraven be held liable, its liability shall in no event exceed the total purchase price under the order. Walraven SHALL IN NO EVENT BE RESPONSIBLE FOR ANY LOSS OF BUSINESS OR PROFITS, DOWNTIME OR DELAY, LABOR, REPAIR OR MATERIAL COSTS OR ANY SIMILAR CONSEQUENTIAL LOSS OR DAMAGE INCURRED BY PURCHASER OR ANY THIRD PARTY. Product cannot be deemed defective if Walraven cannot duplicate the alleged failure.

14. FORCE MAJEURE

If Walraven is prevented from performing its obligations by Force Majeure, Walraven will have the right to suspend the performance of the agreement or to terminate the agreement in whole or in part, at Walraven's option, without judicial intervention and without Walraven being liable for any claims for damages or guarantees. Force Majeure includes any circumstance, foreseen and unforeseen, as a result of which performing the obligations of the order can no longer reasonably be expected by Purchaser, including but not limited to war, sabotage, rebellion, revolt, transportation disturbances, strikes, accidents, fire, explosion, technical failures and delayed delivery by suppliers.

15. AMICABLE RESOLUTION OF DISPUTES

No litigation may be commenced (other than for injunctive relief) by a party unless it first proposes a meeting of management personnel to resolve the dispute. For all disputes which cannot be amicably resolved, the parties shall attempt to resolve them by mediated negotiation with the assistance of a neutral person or arbitrator. Any disputes which cannot be resolved through negotiation or mediation shall, on written notice by either party, be submitted to final and binding arbitration by three arbitrators under the Rules of Commercial Arbitration of the American Arbitration Association ("AAA") in effect at the time, at the AAA regional office in Michigan. Arbitrators shall have no authority to award punitive or exemplary damages against either party or to amend or nullify this agreement. All final and interim orders and awards of the arbitrator or arbitration panel shall be final and enforceable by any court of record having jurisdiction.

16. GOVERNING LAW

Walraven and Customer acknowledge that they are merchants in respect to the Products, they have had an opportunity to review the order, and the provisions of the order are reasonable when considered as a whole. These terms and conditions shall be governed, construed and enforced under the laws of the State of Michigan, including the Uniform Commercial Code in force at the time of the original date of order. The courts of Michigan shall have exclusive jurisdiction over the parties and the disputes arising under or related to these terms and conditions, unless such exclusivity is waived by Walraven.

17. INDEMNITY

Purchaser agrees to defend, indemnify, and hold harmless Walraven, its agents, employees, directors, officers, servants, and insurers, from and against any and all losses, claims, demands, liabilities or causes of action of every kind and character, whether in order or in tort, including claims of negligence, or strict liability (including any action brought by any employee, agent or customer of Purchaser for Purchaser's failure to comply with Walraven's published instructions and specifications concerning the operation, use or maintenance of Products) in favor of any person or party, for injury to or illness or death of any person or party, or for any property damage (including loss of income, profits, sales or "down time") arising out of or incident to the Products, except any loss, claim, demand or liability proven to be the result of the gross negligence of Walraven and not contributed to by the negligence of Purchaser, its agents, employees, officers or directors or other third parties. Walraven provides product information on all its products. It is Purchaser's responsibility to provide any customer, upon buying any Walraven product, with the appropriate product information.

18. INTEGRATION AND MODIFICATION

No modifications, limitations, waivers or discharge of the order or any of its terms shall bind Walraven unless in writing and signed by Walraven's authorized employee. No agent, employee, or representative of Walraven has the authority to bind Walraven to any affirmation, waiver, representation, or warranty concerning Product, not contained the order. Walraven may correct unilaterally any mathematical or typographical errors in the order.

TERMS AND CONDITIONS

1. WEBSITE DISCLAIMER

Any and all information, website content, catalogs, materials, documents, application/technical notes, products, specifications, advice and other services included on, made available or provided to you either directly or indirectly (collectively "Information") by Walraven Inc. ("Walraven") are provided on an "AS IS" and "AS AVAILABLE" basis. Walraven makes no representations or warranties of any kind, express or implied, as to the appropriateness, quality, accuracy, adequacy, sufficiency, reliability, usability, compliance and condition of the Information, especially for your application and usage even if you inform Walraven of your intended application and usage. All Information provided may be subject to change by Walraven without notice. You expressly agree that: your use or reliance of any Information is at your sole risk and liability, and Walraven does not warrant or represent that any Information made available to you complies with, is sufficient for, or is adequate for your usage, situation, product and/or product design. Walraven shall not be liable

for any damages of any kind arising from the Information including, but not limited to, direct, indirect, incidental, punitive, and consequential damages. To the fullest extent permissible by applicable law and unless specified in writing by Walraven, Walraven disclaims all warranties, express or implied, including, but not limited to, implied warranties of merchantability and fitness for a particular purpose relating to the Information and its products.

2. LIMITED WARRANTY AND DISCLAIMER

Walraven warrants to the original purchaser of the Walraven product ("Product") that for a period of 12 months from the date of shipment, it will, at its option, refund the purchase price, repair or replace any Product that fails to substantially conform to Walraven's specifications published at www.walraven.com, provided that a claim, and proof thereof, along with a request of a return authorization number is made in writing to Walraven within 6 months after purchaser's receipt thereof. ALL DEFECTS AND NON-CONFORMITIES WHICH ARE NOT SO SPECIFIED ARE WAIVED. If Product is not returned within 30 days of a claim, the claim shall be deemed conclusively to have been abandoned. No other warranty, expressed or implied (including any warranty of merchantability or fitness for a particular purpose) shall exist in relation to the sale of any Product. Walraven shall in no event be liable for any Product which has been altered, repaired or misused, nor for any claim related to special, direct, indirect, incidental, consequential or any other damages arising out of the sale, use or inability to use the Product. Purchaser shall defend, indemnify and hold harmless Walraven and its directors, officers, shareholders, employees, independent contractors, affiliates, successors and assigns from and against any and all claims, demands, losses, actions, proceedings, damages, injuries, liabilities, costs and expenses (including attorneys' fees) relating to, associated with or arising from, including allegations of such, the Product (including without limitation the alteration, repair, maintenance, handling, ownership, sale, use or inability of use thereof) or any action or inaction of purchaser, its agents or employees. Walraven shall in no event be liable for any costs of removing or reinstalling the Product, which costs shall be borne by the purchaser. All shipping and other transportation costs related to shipping the defective Product to Walraven and shipping the repaired or replacement Product shall be borne by the purchaser. There are no express warranties other than those contained herein. WALRAVEN DISCLAIMS ALL IMPLIED WARRANTIES (OTHER THAN GOOD TITLE) INCLUDING BUT NOT LIMITED TO THOSE OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, AND NON-INFRINGEMENT.

3. LIMITATION OF LIABILITY

THE LIMITED WARRANTY GRANTED BY WALRAVEN FOR ITS PRODUCTS SHALL COMPRISE THE ORIGINAL PURCHASER'S SOLE AND EXCLUSIVE REMEDIES CONCERNING THE PRODUCTS, WHICH REMEDIES SHALL NOT BE APPLICABLE TO (i) ANY ASSIGNS, SUCCESSORS, SUBSEQUENT (DOWNSTREAM) PURCHASERS OF THE ORIGINAL PURCHASER OR (ii) ANY OTHER PERSON OR ENTITY OTHER THAN THEN THE ORIGINAL PURCHASER. EXCEPT FOR THE REMEDIES GRANTED BY WALRAVEN UNDER THE LIMITED WARRANTY, WALRAVEN SHALL NOT BE LIABLE FOR ANY AMOUNTS REPRESENTING DIRECT, INDIRECT, CONSEQUENTIAL, SPECIAL, EXEMPLARY, OR PUNITIVE DAMAGES OF PURCHASER ARISING OUT OF OR RELATED TO WALRAVEN'S PRODUCTS, THEIR USE, OR MISUSE, INCLUDING COSTS OR DAMAGES ARISING OUT OF OR RELATED TO LOSS OF BUSINESS, LOSS, WORK STOPPAGES OR DELAYS, PRODUCT RECALLS OR PRODUCT LIABILITY.

Updated May 2022 / Walraven Inc. / 800-610-5056

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