POWER-STRUT® DEFENDER

Corrosion Resistant Product Line

Electrical Systems Submittal Package

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Atkore™
Power-Strut

NEW SUPERIOR CORROSION-RESISTANT FINISH

Power-Strut Defender offers the perfect mix of performance and value with its superior protection over Hot-Dip Galvanized and significant cost savings in place of stainless steel.

High-Performance Material

Power-Strut Defender is designed for outdoor corrosive applications utilizing two proprietary material coatings conforming to ASTM standards A1046 and A1059.

Unique Self-Healing Properties

If the product is cut or scratched in the field, the finish will propagate into those areas, providing protection and eliminating the need for secondary touch-ups.

Atkore™
Power-Strut

WHY USE POWER-STRUT DEFENDER?

- Performance: **3X the performance of Hot-Dip Galvanized (HDG)***
- Labor Cost Savings: **Cut ends don't require touch-up**
- Material Cost Savings: **Avoids costly stainless steel materials**
- Maintenance Cost Savings: **Longer service life delays the need for replacement**
- Appearance: **Maintains rust-free appearance longer than HDG**
- Eco-Friendly Manufacturing Process: **Waste is reduced through re-manufacturing, reuse and recycling.**

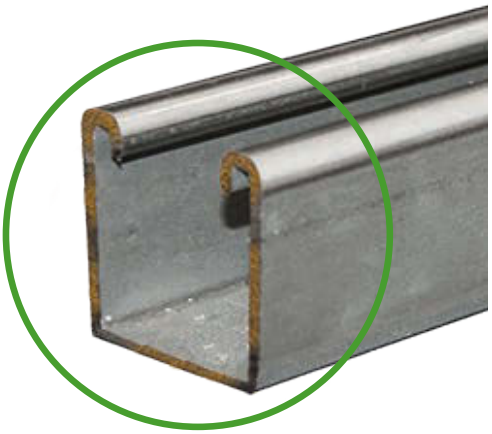
* Based on average ASTM B117 salt spray test results from an independent, accredited test laboratory.

Contact Us

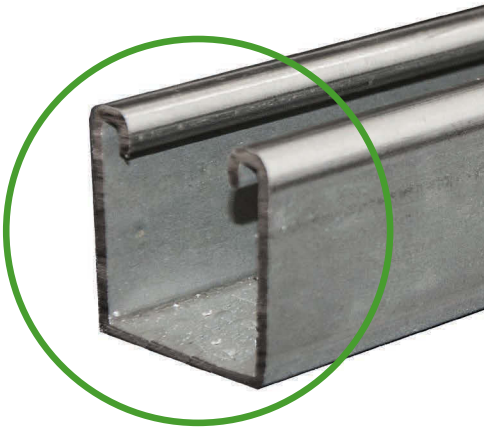
Contact your Power-Strut Sales Representative for ordering or call 800-468-9510.

SIGNIFICANT SAVINGS IN MATERIAL AND LABOR

Unique Self-Healing Properties - If the product is cut or scratched in the field, the finish will propagate into those areas eliminating the need for secondary touch-ups.



Red rust may form on the cut end



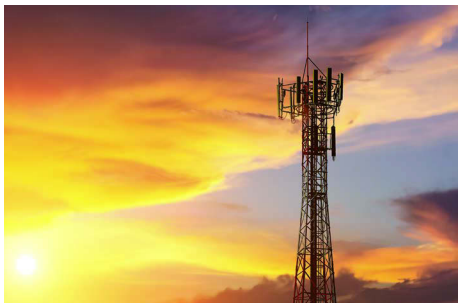
Will heal over time

* During the self-healing process red rust may form on the scratch or cut end. This is a normal part of the healing process. The Power-Strut Defender finish will propagate under the oxidation to form a protective barrier and the rust will be halted, and will eventually disperse.

Easier Installation - The thin, smooth finish of Power-Strut Defender makes it easier to install than Hot-Dip Galvanized products.

Extended Service Life - Power-Strut Defender exceeds the service life of many corrosive applications, eliminating the need to replace parts over time. See page 6.

Ease of Use - The Power-Strut Defender coating on fasteners eliminate the need to "clean" the threads prior to use, unlike Hot-Dip Galvanized products.



CORROSION PROTECTION

Power-Strut Defender was tested against Hot-Dip Galvanized products by an independent, accredited 3rd party laboratory for 3,000 hours of continuous salt spray exposure per ASTM B117. At the conclusion of the test, 5 of the 6 Power-Strut Defender samples still had not reached the 5% red rust failure criteria! The results are outlined below, showing that Power-Strut Defender survived over 3 times as long as Hot-Dip Galvanized.

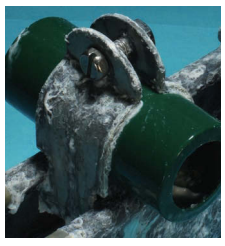
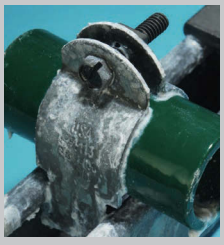
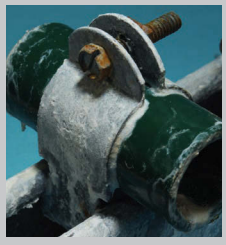
ASTM B117 TEST TO 5% RED RUST (RESULTS ARE IN HOURS):

	1	2	3	4	5	6	Average
Hot-Dip Galvanized per ASTM A123 and A153	744	744	1,207	-	-	-	898
Power-Strut Defender	2,856	3,000*	3,000*	3,000*	3,000*	3,000*	2,976 *3X Improvement!*

*Test stopped at 3,000 hours with samples still not reaching failure.

PHOTOS FROM ASTM B117 SALT SPRAY TEST:

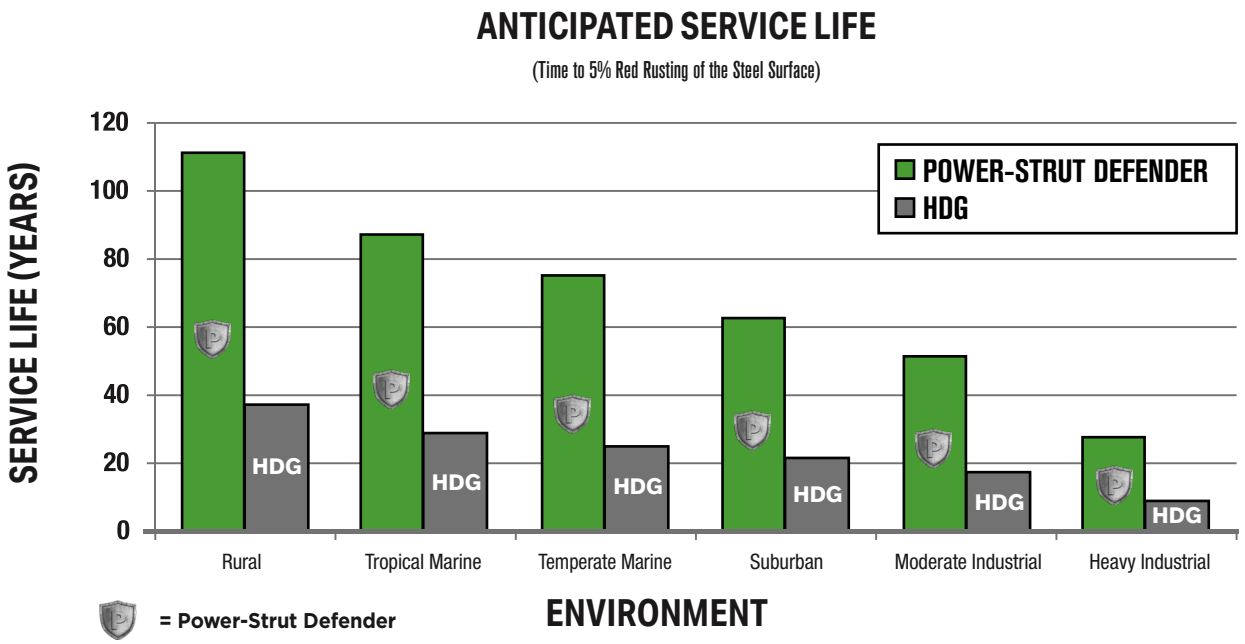
Hot-Dip Galvanized reached 5% red rust at an average of 898 hours.

	0 hrs	100 hrs	1,000 hrs	2,000 hrs	3,000 hrs
Hot-Dip Galvanized per ASTM A123 and A153					
Power-Strut Defender					

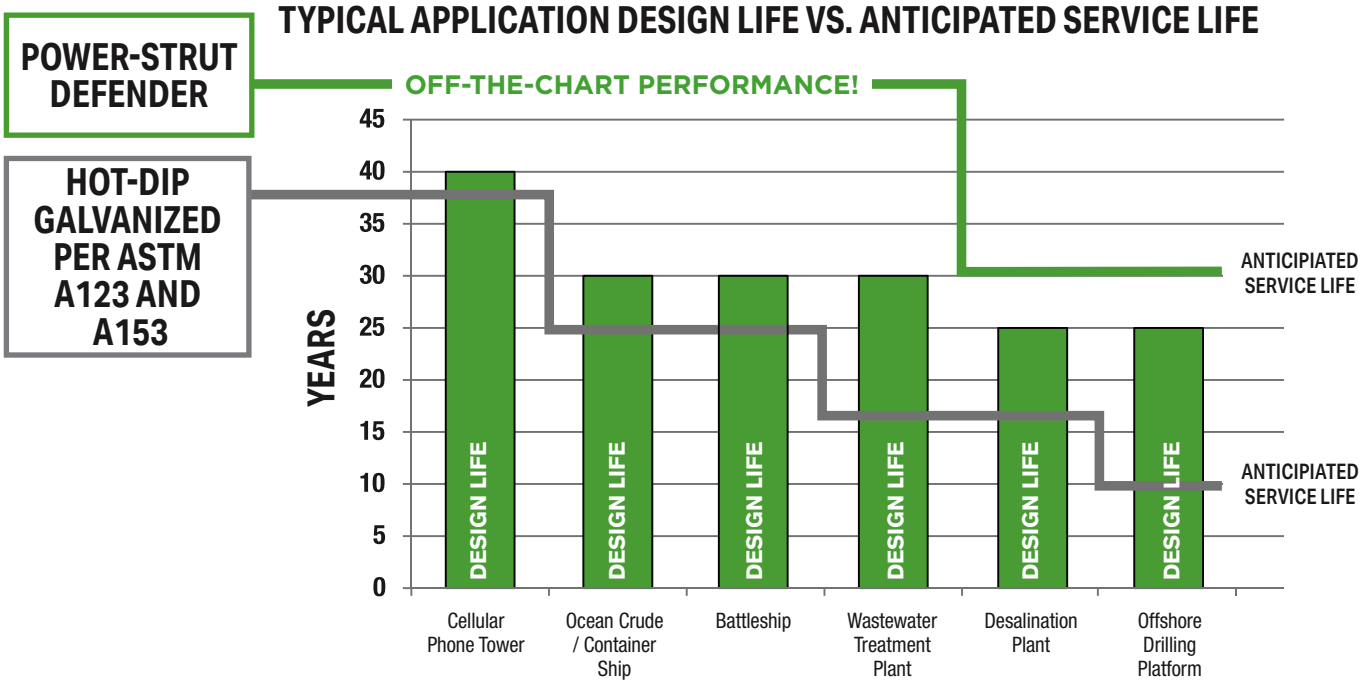
5 of 6 samples still active at 3,000 hours!

ANTICIPATED SERVICE LIFE

With over 3 times the corrosion protection of Hot-Dip Galvanized products, the anticipated service life for Power-Strut Defender vastly outperforms traditional carbon steel framing systems. Power-Strut Defender will meet the design life of most new applications, eliminating the need to replace parts over time. See the difference below!



***HDG** = Hot-Dip Galvanized per ASTM A123 and A153 coating service life as specified within the Metal Framing Industry



*Typical application design life is sourced from a number of different publications and is not true for all applications. Reference your project-specific requirements and environment for a true performance estimate.

TECHNICAL INFORMATION

FINISHES:

Power-Strut Defender is a combination of two proprietary material coatings conforming to ASTM standards A1046 and A1059.

MATERIALS:

Channel, Fittings and Pipe Clamps meet the physical requirements of ASTM A1011 SS GR 33 or A1011 HSLAS GR 45.

TECHNICAL NOTES:

1. Structural performance, including Slip and Pull-Out Loads, meets all Allowable Loads as specified in the Power-Strut General Engineering catalog for carbon steels. Please reference the Power-Strut General Engineering catalog for this information.
2. To achieve full performance and cost benefits, Power-Strut Defender must be used as a complete metal framing system. We caution the use of stainless steel and Power-Strut Defender products within the same system due to possible galvanic corrosion if used improperly. If you need to do so, please contact our engineering department at 800-468-9510 or salesengineering@atkore.com for best-practice specification.
3. Some red staining may be observed over time on Power-Strut Defender parts in corrosive environments. Red staining is superficial oxidation of the zinc/iron ions at the surface, and not corrosion of the substrate steel. This is detailed in ASTM A1059 section 6.3.
4. For inquiries regarding Power-Strut Defender's compatibility with particular chemicals, please contact our engineering team at salesengineering@atkore.com.

WELDING:

1. Power-Strut Defender channel can be welded as-is. No removal or modification of the coating is necessary prior to welding.
2. Power-Strut Defender channel does contain trace amounts of Magnesium. Amounts are small enough to pose no threat.
3. Field welds will not have the same level of corrosion protection at the weld as the remaining Power-Strut Defender system. The Power-Strut Defender system is rated up to 3,000 hours of ASTM B117 salt spray and most secondary coating materials available will not meet this performance.
4. As a reminder, one of the many advantages of the Power-Strut Metal Framing System is its weldless connection design. In most cases welding is not necessary and a Channel Nut and Bolt connection can be used instead. Power-Strut provides many configurations of pre-welded channel, which can be found in the channel section of this catalog, and in our Power-Strut Engineering catalog.

TABLE OF CONTENTS

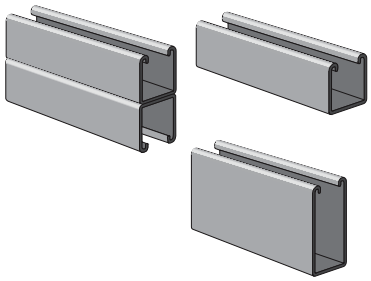
1⅝" Channel

DIMENSIONS

Imperial dimensions are illustrated in inches. Metric dimensions are shown in millimeters and rounded to one decimal place.

STANDARD LENGTHS

Standard lengths are 10 feet and 20 feet with a tolerance of +0.500"/-0.125". Special lengths are available for a small cutting charge with a tolerance of ±⅛" (3 mm).



Nuts & Hardware

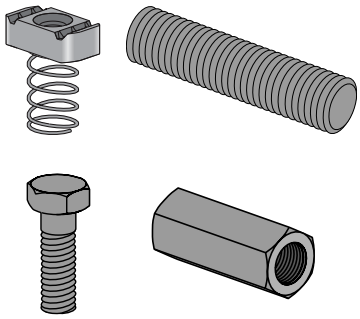
THREADS

All threads on the nuts and bolts are Unified and American coarse screw threads.

DIMENSIONS

Imperial dimensions are illustrated in inches. Metric dimensions are shown in parentheses or as noted.

Unless noted, all metric dimensions are in millimeters and rounded to one decimal place.



General Fittings & Beam Clamps

APPLICATION

All parts drawings illustrate only one application of each fitting. In most cases many other applications are possible. The channels shown in the illustrations are PS 200, 1⅝" square, except where noted otherwise.

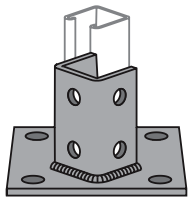
All 9/16" diameter holes use ½" x 15/16" hex head cap screws and ½" nuts – PS RS or PS SS – depending on the channel used. Nuts and bolts are not included with the fitting and must be ordered separately.

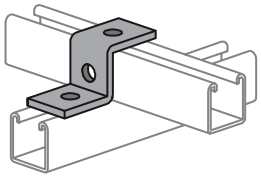
DIMENSIONS

Imperial dimensions are illustrated in inches. Metric dimensions are shown in parenthesis or as noted. Unless noted, all metric dimensions are in millimeters and rounded to one decimal place.

BEAM CLAMPS

Clamps are designed to be used with W, M, S and HP Shape beams, Standard C and Miscellaneous MC Channels, Angles and Structural Tees. Clamps must be used in pairs where indicated.





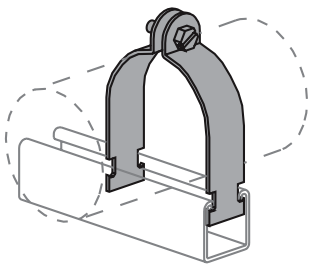
Pipe/Conduit Supports

APPLICATION

Power-Strut pipe clamps are designed for the support of electrical and mechanical services. Supports to meet nearly every requirement can be attained using Power-Strut Metal Framing components.

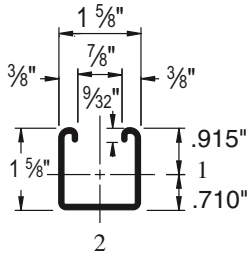
DIMENSIONS

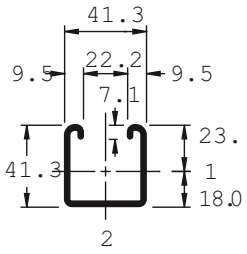
Imperial dimensions are illustrated in inches. Metric dimensions are shown in parenthesis or as noted. Unless noted, all metric dimensions are in millimeters and rounded to one decimal place.

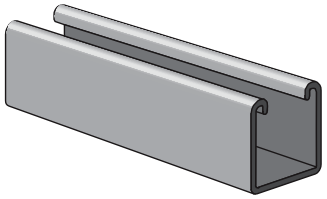


Channel & Channel Nuts

PS 200 DF

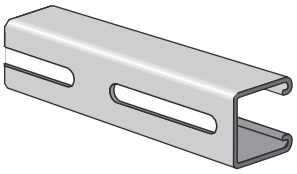


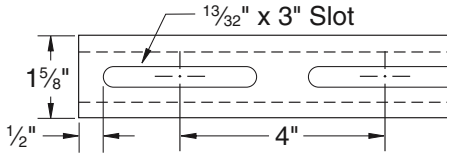




Wt/100 ft:189 lbs (281 kg/100 m)
Allowable Moment 5,070 in-lbs (570 N•m)
12 Gauge Nominal Thickness .105" (2.7mm)

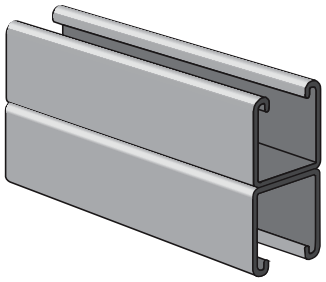
PS 200 S DF

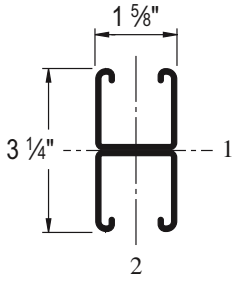


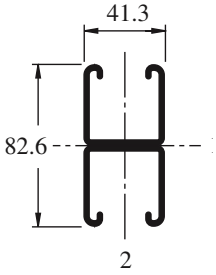


Wt/100 ft: 269 lbs (400 kg/100 m)
Allowable Moment 5,060 in-lbs (570 N•m)
12 Gauge Nominal Thickness .105" (2.7mm)

PS 200 2T3 DF

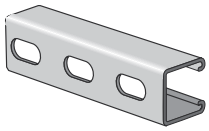


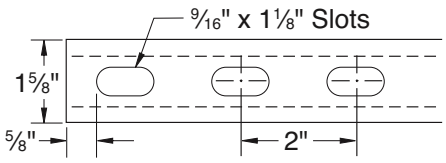




Wt/100 ft: 378 lbs (562 kg/100 m)
Allowable Moment 14,360 in-lbs (1,620 N•m)
12 Gauge Nominal Thickness .105" (2.7mm)

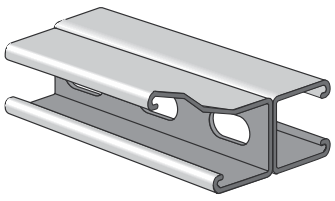
PS 200 EH DF

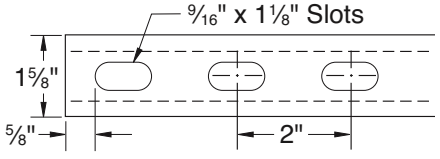




Wt/100 ft: 185 lbs (275 kg/100 m)

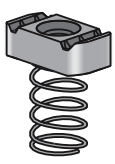
PS 200 2T3 EH DF



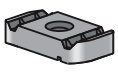


Wt/100 ft: 321 lbs (478 kg/100 m)
Allowable Moment 12,200 in-lbs (1,378 N•m)
12 Gauge Nominal Thickness .105" (2.7mm)

CHANNEL NUTS (Refer to Hardware Section for Details)



PS RS 1/4 DF
PS RS 3/8 DF
PS RS 1/2 DF

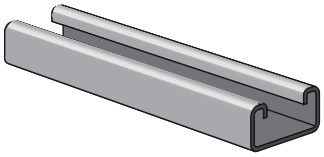


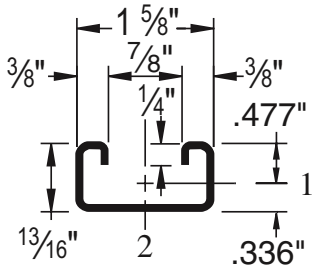
PS NS 1/4 DF
PS NS 1/2 DF
PS NS 3/8 DF

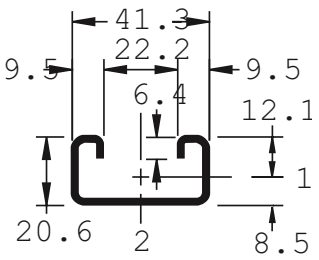
Standard Channel Lengths: 10' & 20'

Channel & Channel Nuts

PS 500 DF

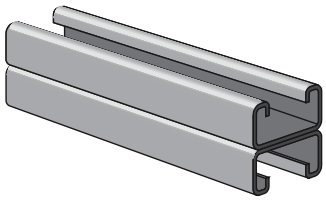


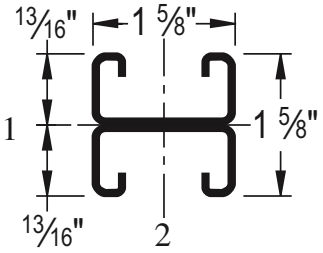


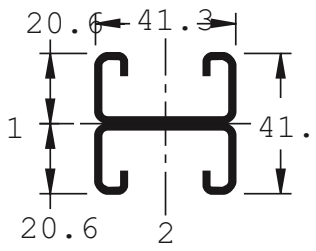


Wt/100 ft: 98 lbs (147 kg/100 m)
Allowable Moment 1,360 in-lbs (150 N•m)
14 Gauge Nominal Thickness .075" (1.9mm)

PS 500 2T3 DF



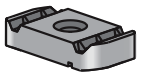




Wt/100 ft: 197 lbs (293 kg/100 m)
Allowable Moment 3,610 in-lbs (410 N•m)
14 Gauge Nominal Thickness .075" (1.9mm)

CHANNEL NUTS (Refer to Hardware Section for Details)

PS SS 1/4 DF
PS SS 3/8 DF
PS SS 1/2 DF

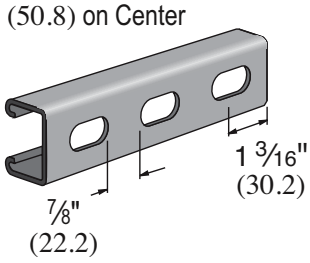


PS NS 1/4 DF
PS NS 3/8 DF
PS NS S 1/2 DF

Standard Channel Lengths: 10' & 20'

PS 500 EH DF

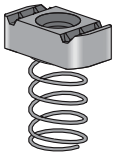
Slots are
1⅛" (28.6) x 9/16" (14.3)
2" (50.8) on Center



Wt/100 ft: 87 lbs (129 kg/100 m)

Channel Nuts With and Without Spring

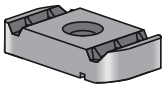
CHANNEL NUT WITH SPRING



Part Number	Nut Size Thread		Wt/100 pcs lbs (kg)	Use With
PS RS 1/4 DF	¼"	-20	7 (3.2)	PS 200 DF
PS RS 3/8 DF	⅜"	-16	10 (4.5)	
PS RS 1/2 DF	½"	-13	12 (5.4)	

Part Number	Nut Size Thread		Wt/100 pcs lbs (kg)	Use With
PS SS 1/4 DF	¼"	-20	7 (3.2)	PS 500 DF
PS SS 3/8 DF	⅜"	-16	9 (4.1)	
PS SS 1/2 DF	½"	-13	8 (3.6)	

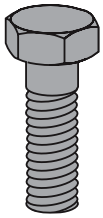
CHANNEL NUT WITHOUT SPRING



Part Number	Nut Size Thread		Wt/100 pcs lbs (kg)	Use With
PS NS 1/4 DF	¼"	-20	6 (2.7)	Any Channel
PS NS 3/8 DF	⅜"	-16	9 (4.1)	
PS NS S 1/2 DF	½"	-13	11 (5.0)	PS 500 DF
PS NS 1/2 DF	½"	-13	8 (3.6)	PS 200 DF

Hardware

PS 6024 DF HEX HEAD CAP SCREWS



Size	Wt/ 100 pcs lbs (kg)
¼" x ¾"	1.3 (0.6)
¼" x 1½"	2.6 (1.2)
⅜" x 1"	4.5 (2.0)
⅜" x 1½"	6.0 (2.7)
½" x 1"	9.2 (4.2)
½" x 1½"	11.6 (5.3)

PS 83 DF HEXAGON NUTS

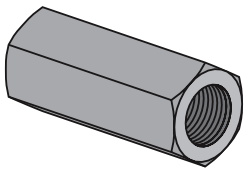
Size	Wt/100 pcs lbs (kg)
¼"	0.6 (0.3)
⅜"	1.6 (0.7)
½"	4.8 (2.2)

PS 209 DF FLAT WASHERS

Size	Wt/100 pcs lbs (kg)
¼"	0.8 (0.4)
⅜"	1.5 (0.7)
½"	3.5 (1.6)

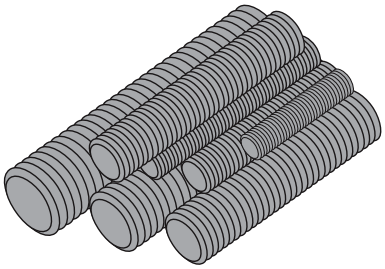
Hardware

PS 135 DF STEEL COUPLER NUTS



Size	Length in (mm)	Wt/100 pcs lbs (kg)
⅜" - 16	1¾" ***(44.5)***	9.0 (4.1)
½" - 13	1¾" (44.5)	10.0 (4.5)

PS 146 DF STEEL THREADED ROD



Low Carbon Steel Grade 1006 - 1010
F_y = 36,000 psi minimum
F_t = 58,000 psi minimum

Size	Wt/100 ft. lbs (kg)
⅜" x 16	30 (13.6)
½" x 13	53 (24.0)

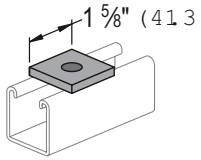
Standard Length 6' (1.83m)

PS 211 LOCK WASHERS

Size	Wt/100 pcs lbs (kg)
¼"	0.25 (0.1)
⅜"	0.63 (0.3)
½"	1.32 (0.60)

General Fittings

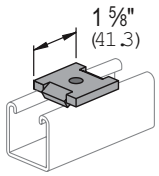
PS 619 DF



Bolt Size	Hole Size	Wt/100 pcs lbs (kg)
3/8"	7/16"	18 (8.2)
1/2"	9/16"	17 (7.7)

Note: Indicate rod size when ordering.
For example, PS 619 ½.

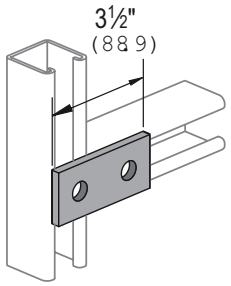
PS 2504 DF



Bolt Size	Hole Size	Wt/100 pcs lbs (kg)
3/8"	7/16"	18 (8.2)
1/2"	9/16"	17 (7.7)

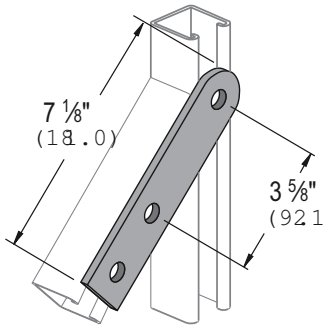
Note: Indicate rod size when ordering.
For example, PS 2504 ½.

PS 601 DF



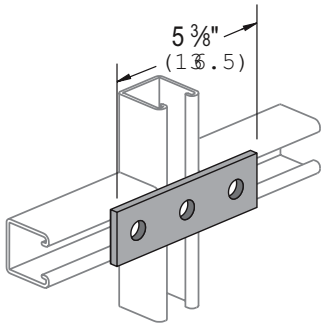
Wt/100 pcs: 38 lbs (17.2 kg)

PS 617 DF



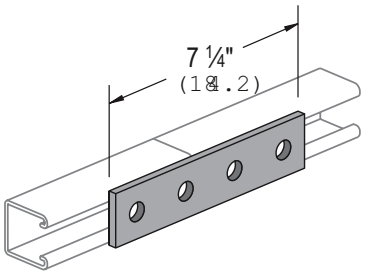
Wt/100 pcs: 75 lbs (34.0 kg)

PS 602 DF



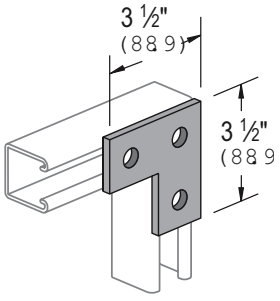
Wt/100 pcs: 56 lbs (25.4 kg)

PS 888 DF



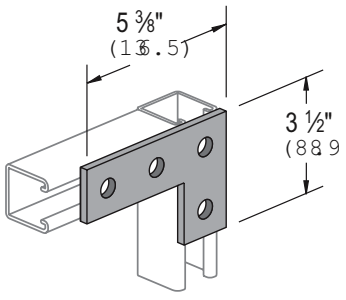
Wt/100 pcs: 78 lbs (35.4 kg)

PS 718 DF



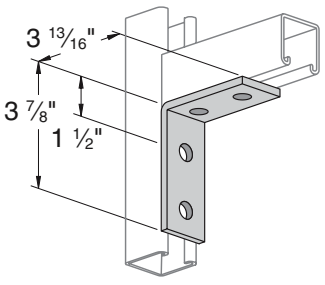
Wt/100 pcs: 58 lbs (26.3 kg)

PS 719 DF



Wt/100 pcs: 105 lbs (47.6 kg)

PS 660 DF

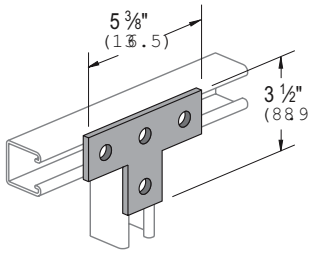


Weight/100 pcs: 78 lbs.

Standard Dimensions for 1⅝" (41.3mm) width series channel fittings (Unless Otherwise Shown on Drawing)
Hole Diameter: 9/16" (14.3mm); Hole Spacing - From End: 13/16" (20.6mm); Hole Spacing - On Center: 1⅞" (47.6mm); Width: 1⅝" (41.3mm); Thickness: ¼" (6.4mm) with steel meeting or exceeding ASTM A1011 SS GR 33, or 0.220" (5.6mm) with steel meeting or exceeding ASTM A1011 HSLAS GR 45

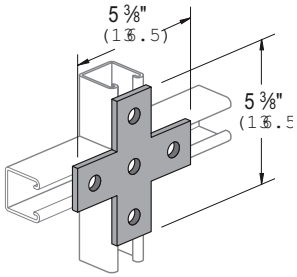
General Fittings

PS 714 DF



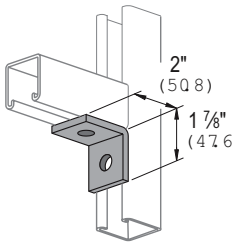
Wt/100 pcs: 80 lbs (36.3 kg)

PS 712 DF



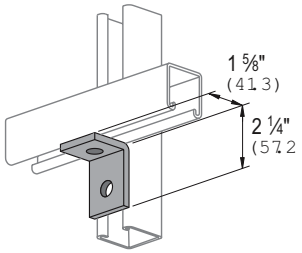
Wt/100 pcs: 105 lbs (47.6 kg)

PS 603 DF



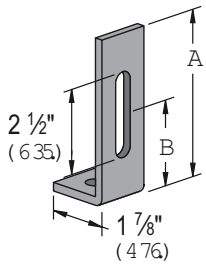
Wt/100 pcs: 38 lbs (17.2 kg)

PS 604 DF



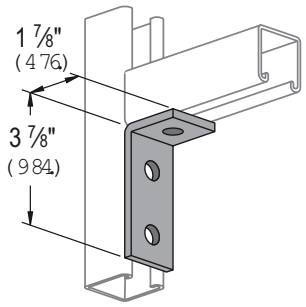
Wt/100 pcs: 38 lbs (17.2 kg)

PS 763 DF



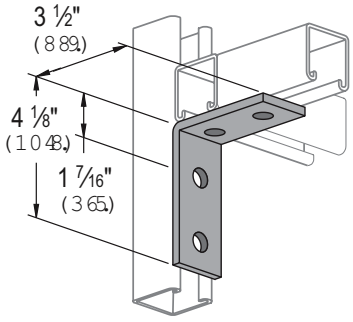
"A" in (mm)	"B" in (mm)	Wt/100 pcs lbs (kg)
4 7/8	2 1/2	65
123.8	63.5	29.5

PS 745 DF



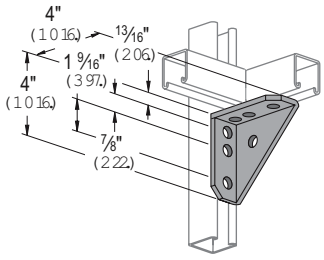
Wt/100 pcs: 58 lbs (26.3 kg)

PS 607 DF



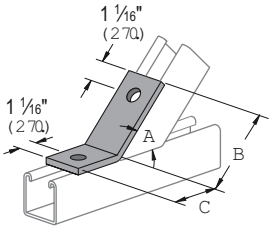
Wt/100 pcs: 78 lbs (35.4 kg)

PS 3373 DF



Wt/100 pcs: 134 lbs (60.8 kg)

PS 633 DF



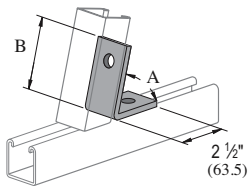
"A" Degree (rad)	"B" in (mm)	"C" in (mm)
45°	3	2 5/16
0.79	76.2	58.7

Wt/100 pcs: 58 lbs (26.3 kg)

Standard Dimensions for 1 5/8" (41.3mm) width series channel fittings (Unless Otherwise Shown on Drawing)
Hole Diameter: 9/16" (14.3mm); Hole Spacing - From End: 13/16" (20.6mm); Hole Spacing - On Center: 1 7/8" (47.6mm); Width: 1 5/8" (41.3mm); Thickness: 1/4" (6.4mm) with steel meeting or exceeding ASTM A1011 SS GR 33, or 0.220" (5.6mm) with steel meeting or exceeding ASTM A1011 HSLAS GR 45

General Fittings

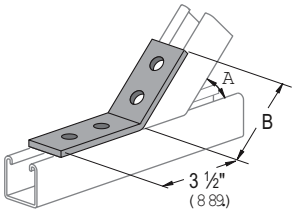
PS 624 DF



"A" Degree (rad)	"B" in (mm)
45°	3⅛
0.79	*79.4*

Wt/100 pcs: 58 lbs (26.3 kg)

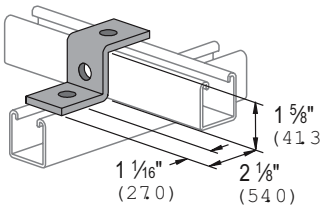
PS 781 DF



"A" Degree (rad)	"B" in (mm)
45°	3 11/16
0.79	*93.7*

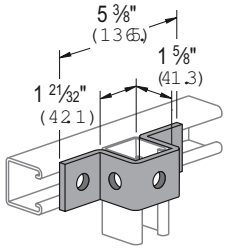
Wt/100 pcs: 78 lbs (35.4 kg)

PS 611 DF



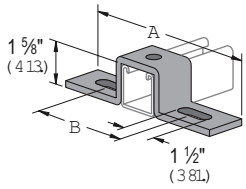
Wt/100 pcs: 55 lbs (24.9 kg)

PS 613 DF



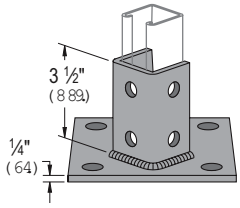
Wt/100 pcs: 88 lbs (39.9 kg)

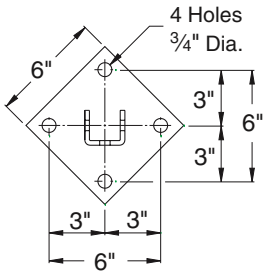
PS 687A DF



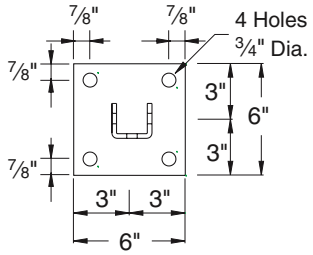
"A" in (mm)	"B" in (mm)	Wt/100 pcs lbs (kg)
7¼	4⅛	105
184.2	104.8	47.6

PS 3033 DF, PS 3033 SQ DF





(PS 3033)



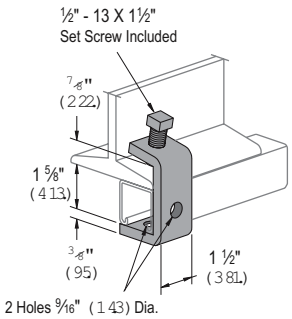
(PS 3033 SQ)

Wt/100 pcs: 373 lbs (169.2 kg)

Standard Dimensions for 1⅝" (41.3mm) width series channel fittings (Unless Otherwise Shown on Drawing)
Hole Diameter: 9/16" (14.3mm); Hole Spacing - From End: 13/16" (20.6mm); Hole Spacing - On Center: 1⅞" (47.6mm); Width: 1⅝" (41.3mm); Thickness: ¼" (6.4mm) with steel meeting or exceeding ASTM A1011 SS GR 33, or 0.220" (5.6mm) with steel meeting or exceeding ASTM A1011 HSLAS GR 45

General Fittings

PS 684 DF

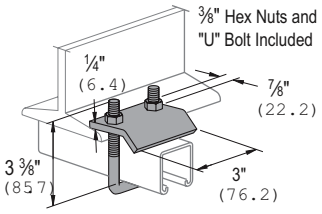


Design Load Each
500 lbs (2.22 kN)
Use in Pairs Only

Note: Requires ½" PS RS Channel Nut and bolt.

Wt/100 pcs: 95 lbs (43.1 kg)

PS 2651 T1 DF

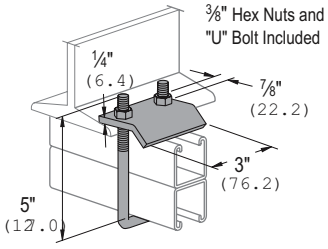


• For use with Beams up to ¾" (19.1) Flanges and with Channels PS 200, PS 200 S, PS 500, and PS 500 2T3 DF.

Design Load Each
1000 lbs (4.45 kN)
Use in Pairs Only

Wt/100 pcs: 83 lbs (37.6 kg)

PS 2651 T2 DF

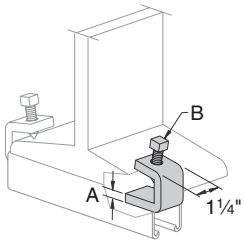


• For use with Beams up to ¾" (19.1) Flanges and with Channel PS 200 2T3.

Design Load Each
1000 lbs (4.45 kN)
Use in Pairs Only

Wt/100 pcs: 92 lbs (41.7 kg)

PS 907 DF, PS 998 DF



Part No.	Stock Thickness	Set Screw	Load Rating	Wt./100 pcs.
PS 907	¼"	⅜	450	26
PS 855 2	⅜"	½	1,000	64

Load rating is based on 2 clamps

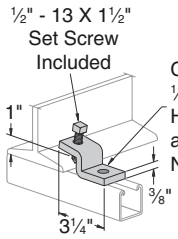
Use in pairs only

Maximum flange thickness is 1"

Wt/100 pcs: 112 lbs (50.8 kg)

Beam Clamps

PS 685 DF



Clamp Requires ½" x 15/16" Hex Head Cap Screw and ½" Channel Nut Not Included.

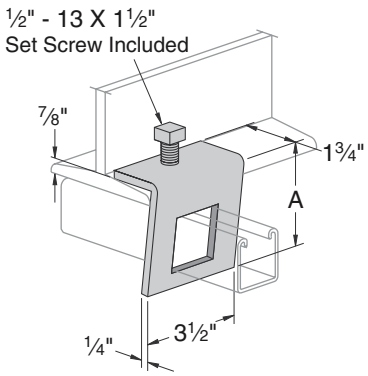
Stock Thickness: ⅜"

Load Rating: 450 lbs.

Use in pairs only

Wt/100 pcs: 63 lbs (28.6 kg)

PS 855 1 DF & PS 855 2 DF

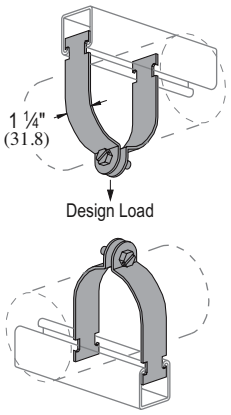


Part No.	Use With	A	Load Rating	Wt./100 pcs.
PS 855 1	PS 200	3½"	500	107
PS 855 2	PS 500			98

Standard Dimensions for 1⅝" (41.3mm) width series channel fittings (Unless Otherwise Shown on Drawing)
Hole Diameter: 9/16" (14.3mm); Hole Spacing - From End: 13/16" (20.6mm); Hole Spacing - On Center: 1⅞" (47.6mm); Width: 1⅝" (41.3mm); Thickness: ¼" (6.4mm) with steel meeting or exceeding ASTM A1011 SS GR 33, or 0.220" (5.6mm) with steel meeting or exceeding ASTM A1011 HSLAS GR 45
Note : When used for mechanical supports, load capacities of brackets and fittings should be in compliance with the American Standard Code for Pressure Piping.

Pipe & Conduit Clamps

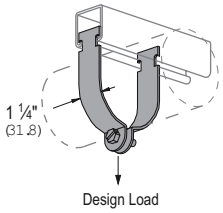
PS 1000 DF PIPE CLAMPS FOR THIN WALL CONDUIT (E.M.T.)

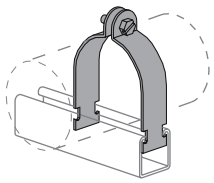


Conduit Size in	O.D. Size in (mm)	Thickness Gauge (mm)	Wt/100 pcs lbs (kg)	Design Load lbs (kN)
1	1.163	14	15	600
25.4	29.5	1.9	6.8	2.67
1¼	1.510	14	18	600
31.8	38.4	1.9	8.2	2.67
1½	1.740	12	29	800
38.1	44.2	2.7	13.2	3.56
2	2.197	12	33	800
50.8	55.8	2.7	15.0	3.56
2½	2.875	12	40	800
63.5	73.0	2.7	18.1	3.56
3	3.500	12	47	800
76.2	88.9	2.7	21.3	3.56

Slotted hex head screw and nut included.

PS 1100 DF PIPE CLAMPS FOR RIGID STEEL CONDUIT

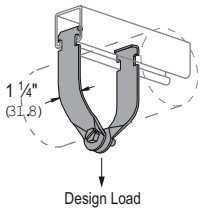


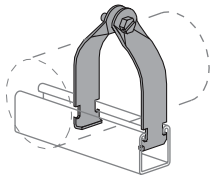


Conduit Size in	O.D. Size in (mm)	Thickness Gauge (mm)	Wt/100 pcs lbs (kg)	Design Load lbs (kN)
¾	1.050	14	15	600
	26.7	1.9	6.8	2.67
1	1.315	14	17	600
	33.4	1.9	7.7	2.67
1¼	1.660	14	19	600
	42.2	1.9	8.6	2.67
1½	1.900	12	29	800
	48.3	2.7	13.2	3.56
2	2.375	12	34	800
	60.3	2.7	15.4	3.56
2½	2.875	12	40	800
	73.0	2.7	18.1	3.56
3	3.500	12	47	800
	88.9	2.7	21.3	3.56

Slotted hex head screw and nut included.

PS 1300 DF UNIVERSAL CLAMPS FOR RIGID OR THINWALL CONDUIT





Conduit Size in (mm)	Thickness Gauge (mm)	Wt/100 pcs lbs (kg)	Design Load lbs (kN)
1¼	14	18	600
31.8	1.9	8.2	2.67
1½	14	20	600
38.1	1.9	9.1	2.67
2	14	22	600
50.8	1.9	10.0	2.67

Slotted hex head screw and nut included.

PART NUMBER INDEX

LIMITED WARRANTY

Power-Strut® warrants for a period of one year from the date of shipment or completion of installed work, as applicable, that the products or services will be free from defects in workmanship and materials at the time of delivery to the carrier. No warranty is given for products or components that have been (i) manufactured by companies other than Power-Strut; (ii) subject to misuse, improper installation, corrosion, or negligence; (iii) disassembled, modified or repaired by unauthorized persons; (iv) used in any manner contrary to Power-Strut's instructions or recommendations; or (v) subject to (1) corrosion beyond normal weathering; (2) corrosion caused by disruption of any product coating after production; (3) corrosion occurring at points in the product that have been drilled, cut or welded; or (4) corrosion occurring in unusual or highly corrosive soil, environmental or industrial conditions (in case of corrosion under this subsection (v)(4), Power-Strut's limited obligation is to ensure that the product complies with its published specifications).

POWER-STRUT DISCLAIMS ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ANY WARRANTY THAT THE PRODUCTS WILL CONFORM TO ANY SAMPLES, ANY WARRANTY THAT THE PRODUCTS WILL NOT DISCOLOR OR THE TEXTURE OR FINISH WILL NOT CORRODE OR DETERIORATE, AND ANY WARRANTY REGARDING ANY ANCILLARY SERVICES RENDERED.

REMEDY AND LIMITATION OR LIABILITY

If the products do not comply with the warranties set forth in these Terms, Buyer must provide prompt written notice to Power-Strut of the non-conformance in reasonably sufficient detail (and such other detail as Power-Strut requests) and must comply with Power-Strut's instructions and policies regarding the nonconforming product. Buyer must provide such notice within the warranty period. Power-Strut's liability will terminate upon expiration of the warranty period. Power-Strut's sole liability for non-conforming products will be to repair or replace the non-conforming product or return the purchase price paid therefore, at Power-Strut's sole option. Buyer will bear all disassembly, shipment and re-installation costs of repaired or replaced products. IN NO EVENT WILL POWER-STRUT BE LIABLE IN CONTRACT, TORT, STRICT LIABILITY OR OTHERWISE FOR INCIDENTAL, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, REGARDLESS OF WHETHER POWER-STRUT WAS INFORMED OF THE POSSIBILITY OF SUCH DAMAGES, AND IN NO EVENT WILL POWER-STRUT'S LIABILITY EXCEED AN AMOUNT EQUAL TO THE SALES PRICE OF THE PRODUCTS.

Atkore - POWERSTRUT®

This product specification is written according to the Construction Specifications Institute *MasterFormat*, 2018 Update.

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART I – GENERAL

1.01 SUMMARY

A. Framing shall be a strut type metal framing system (Strut System)
B. Strut System shall be used:
    1. To support mechanical and electrical equipment and devices.
    2. For structural applications as applicable.
C. Strut System and components must be supplied from a single approved Manufacturer.

1.02 REFRENCES

A. NFPA 70, National Electrical Code (NEC)
    1. NEC Article 384
B. ASTM Standards
    1. ASTM A1011 SS Grade 33 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
    2. ASTM A575 - Standard Specification for Steel Bars, Carbon, Merchant Quality, M-Grades
    3. ASTM A576 - Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality
    4. ASTM A36 - Standard Specification for Carbon Structural Steel
    5. ASTM A635 - Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Alloy, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability, General Requirements for
    6. ASTM A1059 - Standard Specification for Zinc Alloy Thermo-Diffusion Coatings (TDC) on Steel Fasteners, Hardware, and Other Products
    7. ASTM A1046 - Standard Specification for Steel Sheet, Zinc-Aluminum-Magnesium Alloy-Coated by the Hot-Dip Process
    8. ASTM A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
    9. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes

10. ASTM B209-14 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
11. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
12. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
13. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
14. ASTM B177 - Standard Guide for Engineering Chromium Electroplating

1.03 QUALITY ASSURANCE

A. Manufacturer's qualifications:
    1. The manufacturer shall have at least 10 years' experience in manufacturing Strut Systems.
    2. The manufacturer must certify in writing all components supplied have been produced in accordance with an established quality assurance program.
B. Work shall meet the requirements of the following standards:
    1. Federal, State and Local codes
    2. American Iron and Steel Institute (AISI) Specification for the Design of Cold Formed Steel Structural Members
    3. American Society for Testing and Materials (ASTM)
    4. Metal Framing Manufacturer's Association (MFMA)

1.04 SUBMITTALS

A. Structural calculations by a Registered Professional or Structural Engineer in the State of the Project's location for approval by the Professional of Record. Calculations may include, but are not limited to:
    1. Description of design criteria
    2. Stress and deflection analysis
    3. Selection of framing members, fittings, and accessories
B. Assembly drawings necessary to install the Strut System in compliance with the Contract Drawings
C. Pertinent manufacturers published data

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. All material is to be delivered to the work site in original factory packaging to avoid damage to the finish.
B. Upon delivery to the work site, all components shall be protected from the elements by a shelter or other covering.

1.06 WARRANTY

A. Manufacturer shall warrant for 1 year from the shipment date that products will be free from defects in material or manufacture. In the event of any such defect in violation of the warranty, Manufacturer shall have the option to repair or replace any such defective product.
B. Installer shall warrant for 1 year from the date of completion of work that the work will be free of defects in installation. In the event of any such defect in violation of the warranty, Installer shall have the option to repair or replace any such defective product.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Strut System and components shall be
    1. Atkore Power-Strut®
    16100 South Lathrop Avenue
    Harvey, IL 60426
    TOLL-FREE / 800-882-5543
    Local / (708) 339-1610

2.02 MATERIALS

A. All channel members shall be fabricated conforming to one of the following ASTM specifications:
    2. Plain Carbon Steel: A 1011 SS Grade 33
    3. Pre-Galvanized Carbon Steel: A 653 Grade 33
    4. Power-Strut Defender: A 1046 SS Grade 33
    5. Stainless Steel: A 240 (Type 304)
    6. Aluminum: B 221 (Type 6063-T6)
B. All fittings shall be fabricated conforming to one of the following ASTM specifications:
    1. Carbon Steel: All carbon steel fittings shall be fabricated from steel that meets/exceeds the physical requirements of ASTM A1011 SS Grade 33 and conforms to one of the following ASTM specifications:
        a. A 575
        b. A 576
        c. A 36
        d. A 635
        e. A 1059
        f. A 1046
    2. Stainless Steel:
        a. A 240 (Type 304 or Type 316)

b. A 276 (Type 304 or Type 316)

3. Aluminum:
   a. B 209 (Type 1100F or Type 5052-H32)

C. Any substitutions of product or manufacturer must be approved in writing ten days prior to bid date by the Professional of Record.

2.03 FINISHES

A. FACTORY PAINTED
   1. Channel
      a. Rust inhibiting thermoset acrylic enamel paint applied by electrodeposition after cleaning and phosphating, and thoroughly baked.
   2. Fittings
      a. Polyester powder coat after cleaning and phosphating, and thoroughly baked.
   3. Color shall be FHWA Highway Green, Color Tolerance Chart, PR Color No. 4
   4. Hardness = 2H
   5. Performance
      a. Salt Spray per ASTM B117
         (1) Scribed: Exceed 400 hours
         (2) Unscribed: Exceed 600 hours
      b. Nominal chalking at 1,000 hours per weatherometer G-23 test
      c. No checking at 1,000 hours per weatherometer G-23 test

B. ELECTRO-GALVANIZED per ASTM B 633 Type III SC 1

C. PRE-GALVANIZED per ASTM A653
   1. Zinc coated by hot-dipped process prior to roll forming at the steel mill
   2. Zinc coating thickness shall be G90 (0.75 mil = 0.45 oz./ sq. ft. surface area)

D. HOT-DIPPED GALVANIZED per ASTM A123 or A153
   1. Zinc coated after all manufacturing operations are complete
   2. Zinc coating thickness shall be G65 (2.6 mils = 1.50 oz./ sq. ft. surface area)

E. POWER-STRUT DEFENDER per ASTM A1046 and A1059
   1. Strut coated per A1046 to a mass of 0.45 oz./ sq. ft. surface area
   2. Fittings coated per A1059 to a thickness of 30 microns and/or A1046 to a mass of 0.45 oz./sq. ft. surface area

PART 3 – EXECUTION

3.01 EXAMINATION

A. The installer shall inspect the work area prior to installation. If work area conditions are unsatisfactory, installation shall not proceed until satisfactory corrections are completed.

3.02 INSTALLATION

A. Installation shall be accomplished by a fully trained manufacturer authorized installer.
B. Set Strut System components into final position true to line, level and plumb, in accordance with approved drawings.
C. Anchor material firmly in place, and tighten all connections to their recommended torques.

3.03 CLEANUP

A. Upon completion of this section of work, remove all protective wraps and debris. Repair any damage due to installation of this section of work.

3.04 PROTECTION

A. During installation, it shall be the responsibility of the installer to protect this work from damage.
B. Upon completion of this scope of work, it shall become the responsibility of the general contractor to protect this work from damage during the remainder of construction on the project and until substantial completion.

CERTIFICATE OF COMPLIANCE

Certificate Number	20180129 – E27817
Report Reference	E27817 – 19830729
Issue Date	2018-JANUARY-29
Issued to:	POWER-STRUT CORP 4205 Elizabeth St Wayne, MI 48184 USA
This is to certify that representative samples of	Strut-type Channel Raceway Strut-type channel raceways, Cat. Nos. PS100, PS150, PS200, PS210, PS300, PS400, PS500, PS1002T3, PS1502T3, PS2002T3, PS2102T3, PS3002T3, PS4002T3 and PS5002T3, Cover Cat. No. PS707, PS707AL, PS707P.
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	ANSI/UL 5B, "Strut-Type Channel Raceways and Fittings."
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

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TOLL FREE / 800-882-5543
WEB / power-strut.com

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TOLL FREE / 800-882-5543
WEB / power-strut.com

Date: October 11th, 2017

Subject: **Power-Strut Defender Origin**

From: Power-Strut Engineering

Power-Strut Defender channels and fittings are manufactured in the U.S. This includes channel (strut), fittings, channel nuts, brackets, clamps (pipe and beam), and concrete inserts. In addition, materials are sourced domestically from the U.S.

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Date: October 11th, 2017

Subject: **Power-Strut Defender Coating Designation**

From: Power-Strut Engineering

Power-Strut Defender is a premium coating that exceeds the performance of a typical galvanized coating. As it is not a pure galvanized coating, it cannot be given a “G” designation in accordance with ASTM A653.

That being said, the Power-Strut Defender coating has been tested for performance against corrosion in the same salt spray chamber as ASTM A653 G90 and ASTM A123 Grade 65 (equivalent to G300) galvanized channels. The results show that the Power-Strut Defender coating exceeds the corrosion protection performance of both of these galvanized finishes by greater than 3 times.

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Date: October 11th, 2017

Subject: **Power-Strut Defender Welding**

From: Power-Strut Engineering

Power-Strut Defender strut can be welded as-is. No removal or modification of the coating is necessary prior to welding. During the manufacturing processes, Power-Strut welds the ends of the steel coil together and also welds strut back-to-back.

The one consideration is that the Power-Strut Defender strut coating contains trace amounts of Magnesium. The Magnesium is not a threat, but should be noted.

It is important to note that any field welds will not have the same level of corrosion protection as the remaining Power-Strut Defender system. The Power-Strut Defender system is rated up to 3,000 hrs of ASTM B117 salt spray and most secondary coating materials available will not meet this performance.

As a reminder, one of the many advantages of the Power-Strut Metal Framing System is its weldless connection design. In most cases welding is not necessary and a Channel Nut and Bolt connection can be used instead. Power-Strut also provides many configurations of pre-welded channel, which can be found in our catalog.

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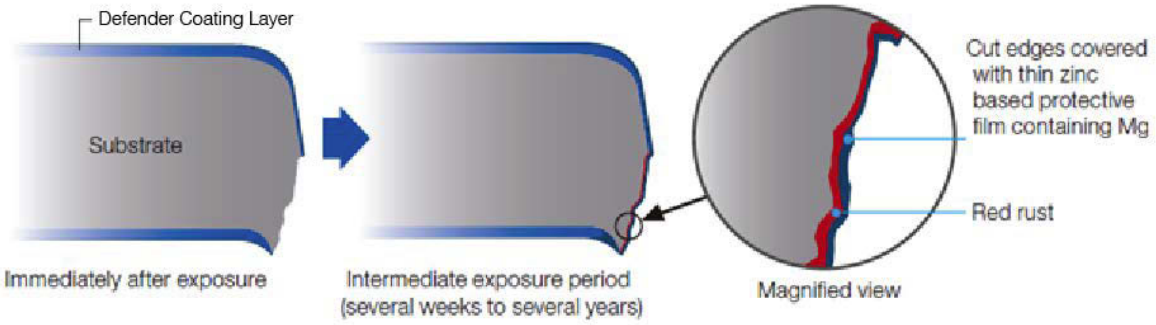
Date: October 11th, 2017

Subject: **Power-Strut Defender Self-Healing Process & Test Results**

From: Power-Strut Engineering

This memo is intended to provide additional information and recommendations about the self healing property of the Power-Strut Defender product line. After cutting the Power-Strut Defender strut, the cut edge will immediately begin healing, but it will take time for the edge to heal completely. This healing period can typically take in excess of 6 months, and possibly longer depending on environmental conditions. A number of variables can influence self healing, such as; the environment, the type of cut and equipment used, and the deburring process. During this time, a small amount of red rust may appear at the surface, but this will flake off and will be covered as the end cut heals.

The Self-Healing Process:



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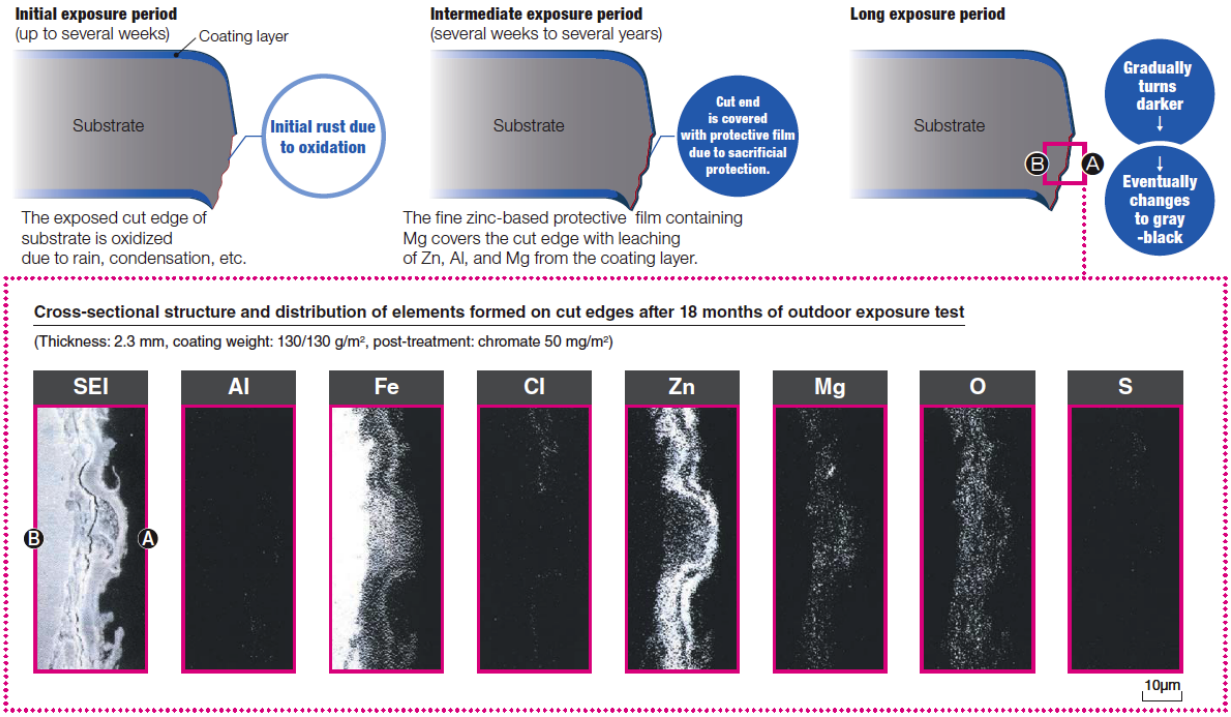
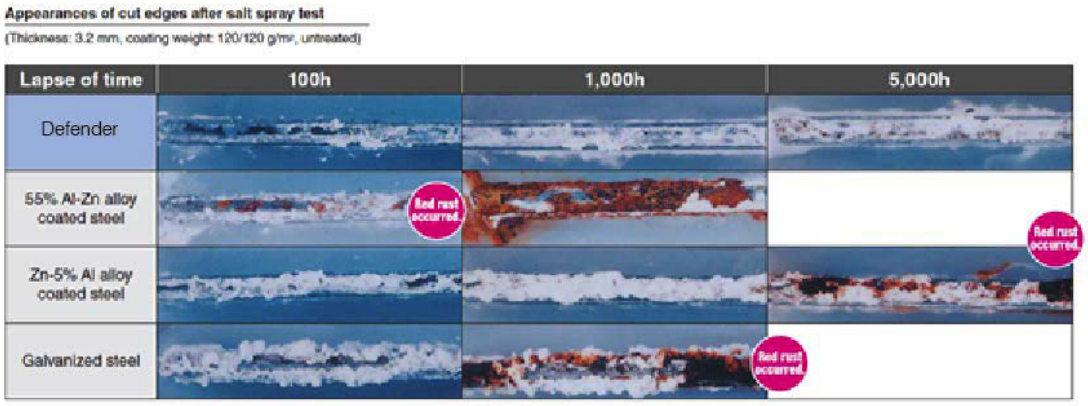


Testing of the Self-Healing Process:



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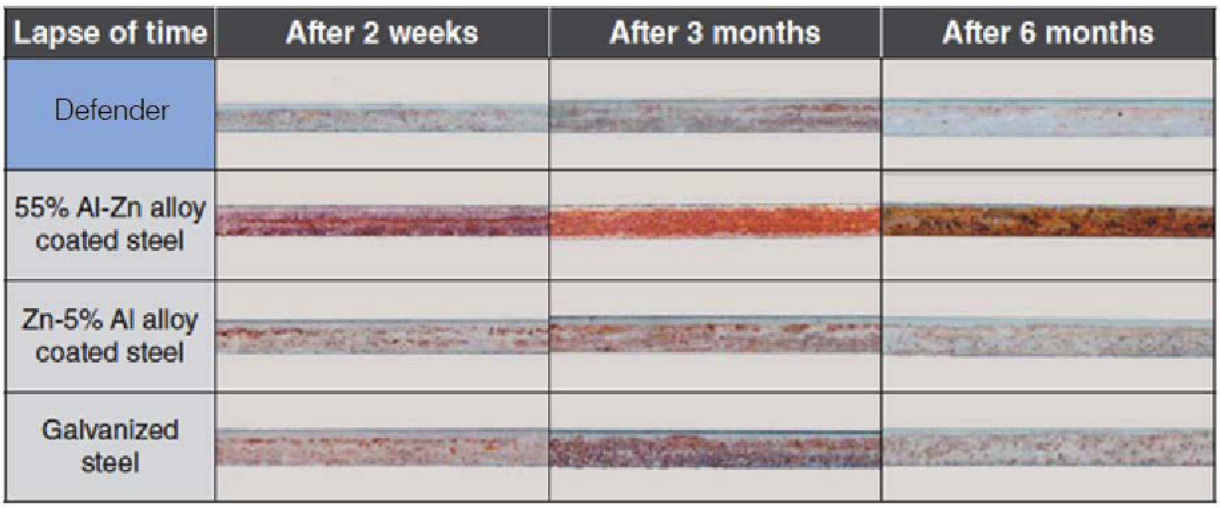
Appearances of cut edge sections after outdoor exposure test (testing location: seaside industrial area in Sakai)

(Thickness: 2.3 mm, coating weight: 90/90 g/m², chromate treatment: 50 mg/m²)



- *Environment:* The same good practices that are used for galvanized products should be used for Power-Strut Defender. Storing the product covered and in a dry environment is advised until it is ready to be used.

- *Field Cuts & Cutting Tools:* Shear cuts are preferred as they will produce an edge that will heal the quickest. Saw cuts are perfectly acceptable but will produce an edge that will take a bit longer to heal. As much as possible, cutting and deburring tools should be free from debris and materials from previous cuts that could slow self healing or cause galvanic corrosion. Laser cutting is not recommended as the heat may affect the ability of the product to heal.

- *Deburring:* Typical deburring practices are perfectly acceptable, but it's important to note that the deeper an edge is deburred, the longer it will take to fully self heal that edge.

Cut end treatment:

Secondary treatment is not necessary following a field cut to ensure long term structural integrity and corrosion protection. However, it is perfectly acceptable to apply typical end protection means like end caps, cold galvanizing spray, or other rust inhibitors if the customer wishes to do so. These can help avoid the appearance of rust during the healing period.

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Date: October 11th, 2017

Subject: **Power-Strut & MFMA**

From: Power-Strut Engineering

Power-Strut is a member of the Metal Framing Manufacturer's Association (MFMA) and actively participated in writing the Metal Framing Standards Publication. The current edition of this document is MFMA-4.

Power-Strut meets or exceeds the requirements of MFMA-4.

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Date: October 11th, 2017

Subject: **Power-Strut & LEED® Recycled Content**

From: Power-Strut Engineering

The US Green Building Council's Leadership in Energy and Environmental Design (LEED®) rating system has 6 categories each with a unique number of attainable credits. The maximum number of attainable LEED® credits is 69, while the minimum number of credits required to be LEED® certified is 26. The category "Materials & Resources" has two credit sections (Credit 4.1 and 4.2) for materials with recycled content each with an attainable credit of 1.

- Credit 4.1 - Recycled Content, 10% (post-consumer + ½ pre-consumer)
- Credit 4.2 - Recycled Content, 20% (post-consumer + ½ pre-consumer)

As a steel product, Power-Strut has a recycled steel content. However, the amount (percentage) of recycled steel depends on the steelmaking process used. There are two different steelmaking processes. These processes and the calculation for LEED® credit are discussed in the documents "2006 The Inherent Recycled Content of Today's Steel" and "Steel Takes LEED® with Recycled Content – June 2006" as published by the Steel Recycling Institute (www.recycle-steel.org).

The steelmaking processes are the Basic Oxygen Furnace (BOF) and Electric Arc Furnace (EAF). According to the Steel Recycling Institute, BOF uses 25% - 30% recycled steel, while EAF uses more than 80%. The table below provides more detailed information from 2006.

Process	Recycled Content		
	Total	Post-Consumer	Pre-Consumer
BOF	28.9%	22.3%	6.1%
EAF	82.8%	46.2%	31.1%

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Based on this 2006 data, the Recycled Content % of Power-Strut for LEED® is:

BOF Process

Recycled Content % = Post Consumer % + { ½ (Pre-Consumer %) }
= 22.3 % + { ½ (6.1%) }
= 25.3%

EAF Process

Recycled Content % = Post Consumer % + { ½ (Pre-Consumer %) }
= 46.2% + { ½ (31.1%) }
= 61.7%

Both of the Recycled Content % values exceed the 10% and 20% LEED® goals. Therefore, if Power-Strut was the only steel in the building, the LEED® applicant would get a total of 2 credits (1 each for meeting the 10% and 20% goals) towards the 26 point minimum required for certification. Most likely there are other steel products in addition to Power-Strut in the building, so the LEED® applicant must consider all steel products in the building when evaluating for Credits 4.1 & 4.2.

Power-Strut does not specify the steelmaking process when ordering steel. Therefore, when applying for LEED® credits, the applicant should use 25.3% Recycled Content for Power-Strut.

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Date: October 11th, 2017

Subject: **Power-Strut Defender – Dissimilar Metals**

From: Power-Strut Engineering

This memo is to clarify that Power-Strut Defender can come in contact directly with all types of carbon coated metals (such as Hot-Dip Galvanized and Pre-Galvanized) as well as select specialty metals such as Aluminum (excl. Stainless Steel, see below).

Anytime dissimilar metals are in contact with one another, the potential for galvanic corrosion always exists. Unfortunately, it cannot be accurately predicted how long it takes for this corrosion to occur.

The only way to eliminate galvanic corrosion is to place a barrier material between the dissimilar metals. Such is the case when Power-Strut Defender is in direct contact with Stainless Steel (304 & 316). Power-Strut Defender will behave at least the same as if Hot-Dip Galvanized were to be paired with Stainless Steel.

While the industry has successfully used Power-Strut Defender attachments to stainless steel structures, there is no documentation regarding the service life of such installations.

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Date: October 11th, 2017

Subject: **Power-Strut Defender Chemical Resistance Inquiry**

From: Power-Strut Engineering

This memo is to clarify the anticipated expectations for Power-Strut Defender product corrosion resistance performance in projects where chemicals are present or in contact with the metal framing system per a recent inquiry. As a general note, Defender products are expected to perform at least to the same measures as Hot-Dip Galvanized products per material testing and process data when used together as a metal framing system.

The following metrics are assumptions based on engineering, metallurgist, and material testing results and expertise. Power-Strut will be taking action to further investigate hypotheses, validate current testing results/parameters, and test product combinations from an accredited 3rd party laboratory to publish corrosion resistance metrics for Power-Strut Defender against the following chemicals/anomalies. Please note these are assumptions at this stage and do not in any way indicate true performance.

Format: Chemical / Assumption

1. **HCL (Hydrochloric acid)** - Anticipating at least same as HDG performance.
2. **HF (Hydrogen Fluoride)** - Anticipating at least same as HDG performance.
3. **Phosphoric Acid** - Anticipating at least 20% better performance than HDG.
4. **Sulfuric Acid** - Anticipating at least 30% better performance than HDG.
5. **TMAH (Tri Methanol)** - Anticipating at least 20% better performance than HDG.
6. **Nitric Acid** - Anticipating at least 30% better performance than HDG.
7. **Ammonium** - Anticipating 60% better performance than HDG.
8. **Chlorine** - Anticipating at least 50% better performance than HDG.
9. **Zinc Whisker** - Anticipating at least 40% better performance than HDG.
10. **Titanium Dust/Nitrates** - Anticipating at least same as HDG performance.

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CERTIFICATE OF COMPLIANCE
BUY AMERICA
BUY AMERICAN
INFRASTRUCTURE INVESTMENT AND JOBS ACT (BABA)

January 1, 2024

To Whom It May Concern:

This certifies that Power-Strut® channel is manufactured in the United States from steel melted and manufactured in the United States. These products comply with the Buy America requirements of 49 U.S.C. 5323(j)(l) and the applicable regulations in 23 CFR part 635.410, the Buy American Act of 1933 (FAR 52.225, Sections 9-12), and the Infrastructure Investment and Jobs Act (Build America, Buy America). All Power- Strut® ® channel finishes are also included as follows:

Plain (PL)	Power-Green (GR)
Pregalvanized Zinc (PG)	Electro-Galvanized (EG)
Hot Dip Galvanized (HG)	Power-Gold (ZD)
Perma-Green (GR)	Defender (DF)

Power-Strut® channel is also available in stainless steel and aluminum and meet both the Buy America and Buy American Acts, and the Infrastructure Investment and Jobs Act (Build America, Buy America).

While most Power-Strut® fittings are also certified as compliant with domestic requirements, please contact Industry Affairs with a specific bill of materials to confirm. Certification letters are also available to include a specific customer or project name upon request.

This certification has been issued for only the products listed above for domestic compliance and is valid for 180 days from date of issue. Alterations to this document by any agency other than Atkore International voids the certification.

Please contact IndustryAffairs@atkore.com if you have any questions.

Atkore Industry Affairs Team

Direct **1.800.882.5543**
Email **Industryaffairs@atkore.com**

Atkore™

Allied Tube & Conduit ▲ AFC Cable Systems ▲ Heritage Plastics ▲ Unistrut
Unistrut Construction ▲ Cope ▲ US Tray ▲ Calbrite ▲ Calbond ▲ Kaf-Tech
Columbia-MBF ▲ Eastern Wire + Conduit ▲ ACS/Uni-Fab ▲ Cii
Power-Strut ▲ Calconduit ▲ Razor Ribbon ▲ Calpipe Security
Vergokan ▲ Flexicon ▲ Marco

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Want to join a company that helps you build the mindset, skill set and tool set for success? Visit us at atkore.com/careers