



The following pages are an excerpt from the North American Product Technical Guide, Volume 1: Direct Fastening Technical Guide, Edition 22.

Please refer to the publication in its entirety for complete details on this product including data development, base materials, general suitability, installation, corrosion, and product specifications.

[Direct Fastening Technical Guide, Edition 22](#)

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## 3.2.18 X-MW MECHANICAL / ELECTRICAL CLIPS AND HANGERS

### 3.2.18.1 PRODUCT DESCRIPTION

#### X-MW MX Wire hanging system

For fastening heating, ventilation, and air condition (HVAC), and lighting to ceiling. System can be used with battery-actuated tools and X-P 20 B3 MX, and X-S 14 B3 MX fasteners. Wire length is from 6 ft up to 20 ft. System utilizes loop lock and wire holder.

#### X-MW ALH Wire hanging system

For fastening heating, ventilation, and air condition (HVAC), cable tray, conduit rack and lighting to ceiling. System is pre-mounted with X-ALH 22, X-ALH 27 or X-ALH 32 powder-actuated fasteners. Wire length is from 6 ft up to 20 ft. System utilizes loop lock or channel lock.



#### 3.2.18.1 Product Description

#### 3.2.18.2 Material Specifications

#### 3.2.18.3 Technical Data

#### 3.2.18.4 Ordering Information

### Listings / Approvals

#### ICC-ES (International Code Council)

#### ESR-2795 with LABC/LARC Supplement

#### UL (Underwriters Laboratories)

File 505298 under UL2239 for X-MW ALH27 CL and X-MW ALH32 CL

File 517614 under UL1598 for X-MW MX, X-MW ALH27 L and X-MW ALH32 L



### 3.2.18.2 MATERIAL SPECIFICATIONS

| Description         | Material         | Coating       | Minimum Coating Thickness |
|---------------------|------------------|---------------|---------------------------|
| <b>X-MW MX</b>      | Carbon steel     | Zinc          | 3 µm                      |
| <b>X-MW ALH</b>     | Carbon steel     | Zinc          | 3 µm                      |
| <b>Loop lock</b>    | Aluminum + brass | Nickel        | -                         |
| <b>Channel lock</b> | Steel + brass    | Zinc + Nickel | -                         |
| <b>Wire</b>         | Carbon steel     | Zinc          | 3 µm                      |

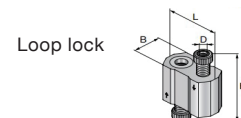
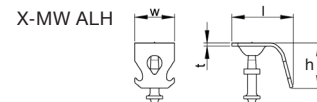
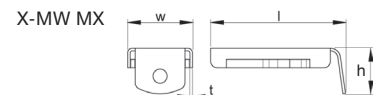
### Dimensions

| Clip Designation | Width of Wire Holder Plate<br>w | Length of Wire Holder Plate<br>l | Height of Cable Holder<br>h | Thickness Cable Holder Plate<br>t |
|------------------|---------------------------------|----------------------------------|-----------------------------|-----------------------------------|
| <b>X-MW MX</b>   | 1.18"                           | 2.56"                            | 0.82"                       | 0.03"                             |
| <b>X-MW ALH</b>  | 0.79"                           | 1.18"                            | 0.89"                       | 0.03"                             |

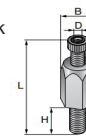
| Description               | Width of Cable Lock W<br>in. (mm) | Length of Cable Lock L<br>in. (mm) | Height of Cable Lock H<br>in. (mm) |
|---------------------------|-----------------------------------|------------------------------------|------------------------------------|
| <b>MW-L Loop Lock 2.0</b> | 1/2" (12.4)                       | 15/16" (23.1)                      | 1-11/16" (42.5)                    |

| Description               | Width of Cable Lock B<br>in. (mm) | Length of Cable Lock L<br>in. (mm) | Thread Diameter H<br>in. (mm) | Thread Length H<br>in. (mm) |
|---------------------------|-----------------------------------|------------------------------------|-------------------------------|-----------------------------|
| <b>MW-CL Channel Lock</b> | 1-1/4" (32.5)                     | 2-1/4" (58)                        | 3/8" (10)                     | 1" (25)                     |

| Cable Size     | Diameter | Available Lengths |
|----------------|----------|-------------------|
| <b>No. 2.0</b> | 5/64"    | 6ft, 10ft, 20ft   |






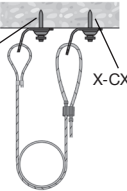
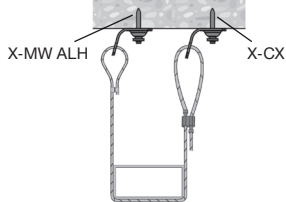

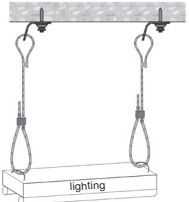

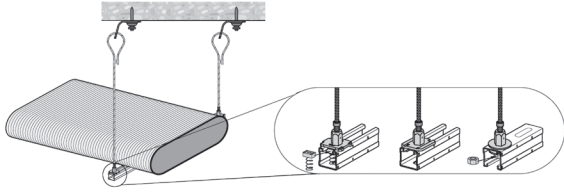
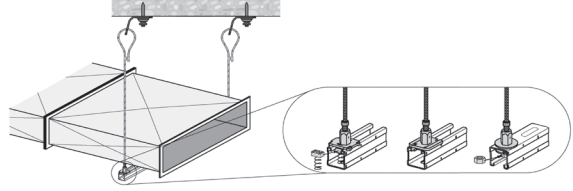
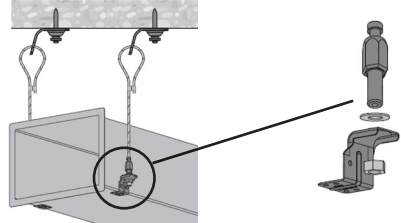
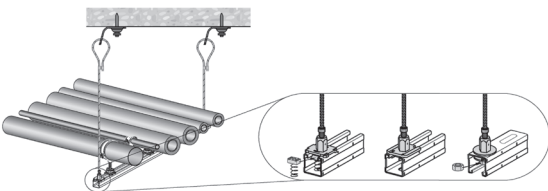
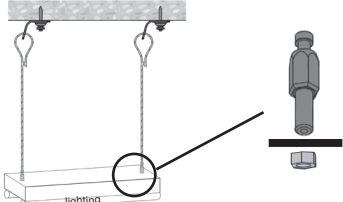
#### Channel lock



No. 2  
cable wire



# Applications

| Lock Type   | Typical Application   |                    |  |   |
|---|-----------------------|--------------------|--|---|
|    | Spiral HVAC           | X-MW MX            |     | X-MW ALH  X-MW ALH with X-CX  |
|   | Rectangular HVAC      | X-MW ALH with X-CX |    |   |
|   | Lighting or misc.     | X-MW MX            |     | X-MW ALH   |
|  | Spiral HVAC           | X-MW ALH with MQA  |   |   |
|   | Rectangular HVAC      | X-MW ALH with MQA  |  |   |
|   |                       | X-MW ALH with MVA  |  |   |
|   | Conduit or Cable Tray | X-MW ALH with MQA  |  |   |
|   | Lighting              | X-MW AL            |  |   |

## 3.2.18.3 TECHNICAL DATA

## Performance Data

Allowable loads in normal weight concrete<sup>1,2</sup>

| Description                                       | Fastener                      | Shank Diameter<br>in. (mm) | Concrete compressive strength |                      |                    |                      |
|---|-------------------------------|----------------------------|-------------------------------|----------------------|--------------------|----------------------|
|   |                               |                            | 4000 psi                      |                      | 6000 psi           |                      |
|   |                               |                            | Tension<br>lb (kN)            | 45-Degree<br>lb (kN) | Tension<br>lb (kN) | 45-Degree<br>lb (kN) |
| <b>X-MW wire hanger with pre-mounted fastener</b> | X-ALH 22                      | 0.177 (4.5)                | 60 (0.27)                     | 100 (0.44)           | 60 (0.27)          | 60 (0.27)            |
|   | X-ALH 27                      | 0.177 (4.5)                | 100 (0.44)                    | 100 (0.44)           | 100 (0.44)         | 100 (0.44)           |
|   | X-ALH 32                      | 0.177 (4.5)                | 100 (0.44)                    | 100 (0.44)           | 100 (0.44)         | 100 (0.44)           |
| <b>X-MW MX wire hanger</b>                        | X-P 20 B3 MX,<br>X-P 24 B3 MX | 0.118 (3.0)                | 30 (0.13)                     | -                    | -                  | -                    |

1. The tabulated allowable load values are for the low-velocity fasteners only, using a safety factor that is greater than or equal to 5.0, calculated in accordance with ICC-ES AC70.

2. Multiple fasteners are recommended for any attachment.

Allowable loads in minimum  $f'_c = 3000$  psi structural lightweight concrete<sup>1,2</sup>

| Description                                       | Fastener                      | Shank Diameter<br>in. (mm) | Fastener Location                                  |                      |                    |                      |
|---|-------------------------------|----------------------------|--|----------------------|--------------------|----------------------|
|   |                               |                            | Installed through 3" deep metal deck into concrete |                      |                    |                      |
|   |                               |                            | Upper Flute  |                      | Lower Flute        |                      |
|   |                               |                            | Tension<br>lb (kN)                                 | 45-Degree<br>lb (kN) | Tension<br>lb (kN) | 45-Degree<br>lb (kN) |
| <b>X-MW wire hanger with pre-mounted fastener</b> | X-ALH 22                      | 0.177 (4.5)                | 100 (0.44)   | 100 (0.44)           | 90 (0.40)          | 100 (0.44)           |
|   | X-ALH 27                      | 0.177 (4.5)                | 100 (0.44)   | 100 (0.44)           | 100 (0.44)         | 100 (0.44)           |
|   | X-ALH 32                      | 0.177 (4.5)                | 100 (0.44)   | 100 (0.44)           | 100 (0.44)         | 100 (0.44)           |
| <b>X-MW MX wire hanger</b>                        | X-P 20 B3 MX,<br>X-P 24 B3 MX | 0.118 (3.0)                | 80 (0.36)  | -                    | 60 (0.27)          | -                    |

1. The tabulated allowable load values are for the low-velocity fasteners only using a safety factor that is greater than or equal to 5.0, calculated in accordance with ICC-ES AC70. Multiple fasteners are recommended for any attachment.

2. 2 The steel deck profile for the 3" deep composite floor deck has a minimum thickness of 20 gauge (0.0358") and a minimum  $F_y = 33$  ksi. Lower and upper flute width must be a minimum of 3-7/8". Figure 1 in Section 3.2.1.6 shows the nominal flute dimensions, fastener locations and load orientations for the deck profile. Structural light weight concrete fill above top of steel deck must be minimum 3-1/4".

Allowable loads in minimum ASTM A36 ( $F_y \geq 36$  ksi;  $F_u \geq 58$  ksi) steel<sup>1,2,3</sup>

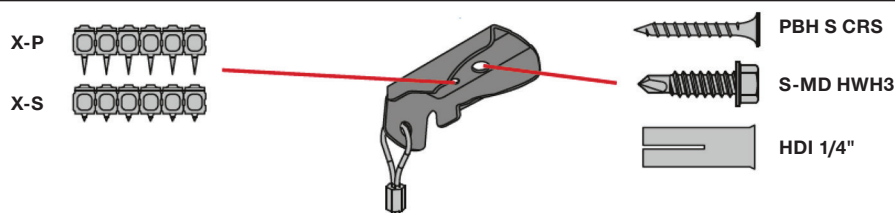
| Description                | Fastener  | Shank Diameter<br>in. (mm) | Steel Thickness in. (mm) |                    |                    |
|----------------------------|-----------|----------------------------|--------------------------|--------------------|--------------------|
|                            |           |                            | 3/16" (4.8)              | 1/4" (6.4)         | 1/2" (12.7)        |
|                            |           |                            | Tension<br>lb (kN)       | Tension<br>lb (kN) | Tension<br>lb (kN) |
| <b>X-MW MX wire hanger</b> | X-S 14 B3 | 0.118 (3.0)                | 90 (0.40)                | 85 (0.38)          | 80 (0.36)          |

1. The tabulated allowable load values are for the low-velocity fasteners only, using a safety factor that is greater than or equal to 5.0, calculated in accordance with ICC-ES AC70.

2. Multiple fasteners are recommended for any attachment.

3. For allowable loads of X-CX ALH 22, reference Section 3.3.2 X-CX Ceiling Clip.

## Allowable load when installing X-MW MX with PHB S CRS wood screw, S-MD HWH3 or HDI 1/4"

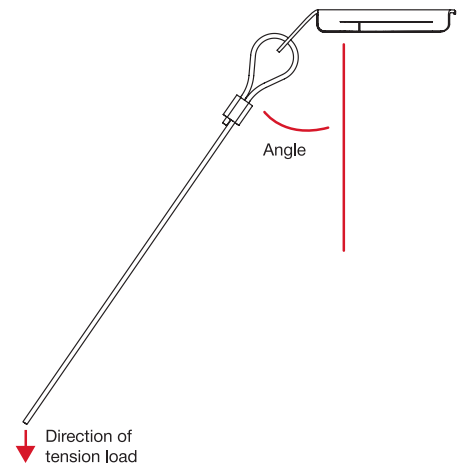


X-MW MX clip can be either installed with a X-P or X-S Battery-actuated Fastener through the smaller hole or an HDI 1/4" anchor or screws through the larger hole. When installed using anchor or screws, 30 lbs (0.13 kN) allowable load using a safety factor of 5.0 can be used. Reference X-MW MX installation instruction for more information.

### Load reduction with wire hanger angle <sup>1,2,3</sup>

| Angle from vertical           | 0°   | 15°  | 30°  | 45°  | 60°  |
|-------------------------------|------|------|------|------|------|
| <b>Load adjustment factor</b> | 1.00 | 0.96 | 0.86 | 0.70 | 0.50 |

1. The tabulated load adjustment values are for loads in the vertical down orientation as depicted in the accompanying figure.
2. Fastener and clip installation shall be such that the angle of the wire extends away from the nail.
3. Load adjustment factor shall be multiplied by the applicable X-MW allowable load.



### Spiral HVAC single wall with 10' hanging space<sup>1</sup>

| Diameter | Circumference | Weight (lbs) |          |          |
|----------|---------------|--------------|----------|----------|
|          |               | 26 Gauge     | 24 Gauge | 22 Gauge |
| 8"       | 2' 2"         | 23           | 29       | 36       |
| 12"      | 3' 2"         | 35           | 44       | 54       |
| 16"      | 4' 2"         | 47           | 59       | 72       |
| 20"      | 5' 3"         | 58           | 73       | 90       |
| 24"      | 6' 3"         | 70           | 88       | 108      |
| 28"      | 7' 4"         | 81           | 103      | 126      |
| 32"      | 8' 5"         | 93           | 117      | 144      |
| 36"      | 9' 5"         | 105          | 132      | 162      |

### Spiral HVAC double wall with 10' hanging space<sup>1</sup>

| Inside Diameter | Outside Gauge | Inside Gauge | Weight per ft. (lb/ft) |
|-----------------|---------------|--------------|------------------------|
| 8"              | 26            | 26           | 6                      |
| 12"             | 26            | 26           | 8                      |

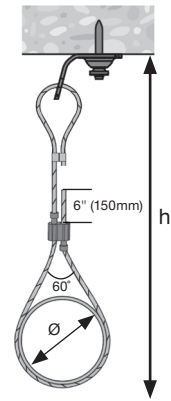
### Weight of rectangular duct, based on 8' and 10' hanging space<sup>1</sup>

| Rectangle Duct Size<br>(height + width) | Weight per ft. |          | Weight / 8 ft. | Weight / 10 ft. |
|---|----------------|----------|----------------|-----------------|
|   | 20 Gauge       | 22 Gauge |                |                 |
| 8 x 6"                                  | -              | 3.57     | 28.56          | 35.70           |
| 10 x 6"                                 | -              | 4.08     | 32.64          | 40.80           |
| 12 x 6"                                 | -              | 4.59     | 36.72          | 45.90           |
| 14 x 10"                                | -              | 6.12     | 48.96          | 61.20           |
| 16 x 16"                                | -              | 8.16     | 65.28          | 81.60           |
| 24 x 12"                                | -              | 9.18     | 73.44          | 91.80           |
| 36 x 18"                                | -              | 13.77    | 110.16         | 137.70          |
| 40 x 22"                                | 18.34          | -        | 146.73         | 183.42          |
| 50 x 20"                                | 20.71          | -        | 165.67         | 207.08          |

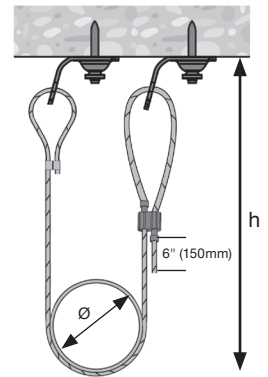
1. Weight per foot is calculated based on SMACNA HVAC Systems Duct Design.

**Hanger length charts for spiral HVAC with one fastening point using BX/DX loop lock**

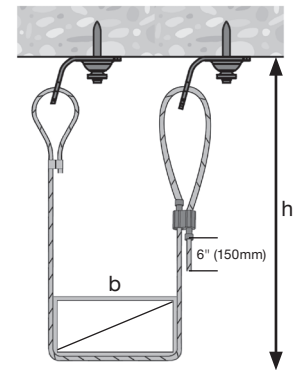
| Required Elevation h (ft.) | 1                    | 3  | 5  | 8  | 10 | 12 | 15 |
|----------------------------|----------------------|----|----|----|----|----|----|
| Diameter Ø (in.)           | Cable Length l (ft.) |    |    |    |    |    |    |
| 8"                         | 3                    | 5  | 7  | 10 | 12 | 14 | 17 |
| 12"                        | 4                    | 6  | 8  | 11 | 13 | 15 | 18 |
| 16"                        | 6                    | 8  | 8  | 11 | 13 | 15 | 18 |
| 20"                        | 7                    | 9  | 9  | 12 | 14 | 16 | 19 |
| 24"                        | 9                    | 11 | 10 | 13 | 15 | 17 | 20 |
| 28"                        | 10                   | 12 | 11 | 14 | 16 | 18 | -  |
| 32"                        | 12                   | 14 | 11 | 14 | 16 | 18 | -  |
| 36"                        | 13                   | 15 | 12 | 15 | 17 | 19 | -  |

**Hanger length charts for spiral HVAC with two fastening points using DX loop lock**

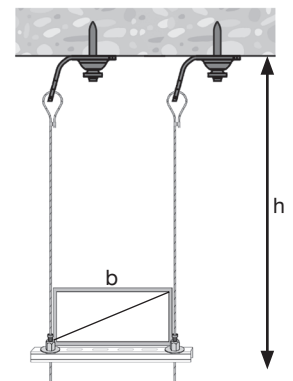
| Required Elevation h (ft.) | 1                    | 2 | 3 | 4  | 5  | 7  | 9  |
|----------------------------|----------------------|---|---|----|----|----|----|
| Diameter Ø (in.)           | Cable Length l (ft.) |   |   |    |    |    |    |
| 8"                         | 3                    | 5 | 7 | 9  | 11 | 15 | 19 |
| 12"                        | 3                    | 5 | 7 | 9  | 11 | 15 | 19 |
| 16"                        | 3                    | 5 | 7 | 9  | 11 | 15 | 19 |
| 20"                        | 3                    | 5 | 7 | 9  | 11 | 15 | 19 |
| 24"                        | 4                    | 6 | 8 | 10 | 12 | 16 | 20 |
| 28"                        | 4                    | 6 | 8 | 10 | 12 | 16 | 20 |
| 32"                        | 4                    | 6 | 8 | 10 | 12 | 16 | 20 |
| 36"                        | 4                    | 6 | 8 | 10 | 12 | 16 | 20 |

**Hanger length charts for rectangular HVAC with two fastening points using DX loop lock**

| Required Elevation h (ft.) | 1                    | 2 | 3 | 4  | 5  | 7  | 9  |
|----------------------------|----------------------|---|---|----|----|----|----|
| Width b (in.)              | Cable Length l (ft.) |   |   |    |    |    |    |
| 8"                         | 3                    | 5 | 7 | 9  | 11 | 15 | 19 |
| 12"                        | 3                    | 5 | 7 | 9  | 11 | 15 | 19 |
| 16"                        | 3                    | 5 | 7 | 9  | 11 | 15 | 19 |
| 20"                        | 3                    | 5 | 7 | 9  | 11 | 15 | 19 |
| 24"                        | 4                    | 6 | 8 | 10 | 12 | 16 | 20 |
| 28"                        | 4                    | 6 | 8 | 10 | 12 | 16 | 20 |
| 32"                        | 4                    | 6 | 8 | 10 | 12 | 16 | 20 |
| 36"                        | 4                    | 6 | 8 | 10 | 12 | 16 | 20 |

**Hanger length charts for rectangular HVAC with two fastening points using DX channel lock**

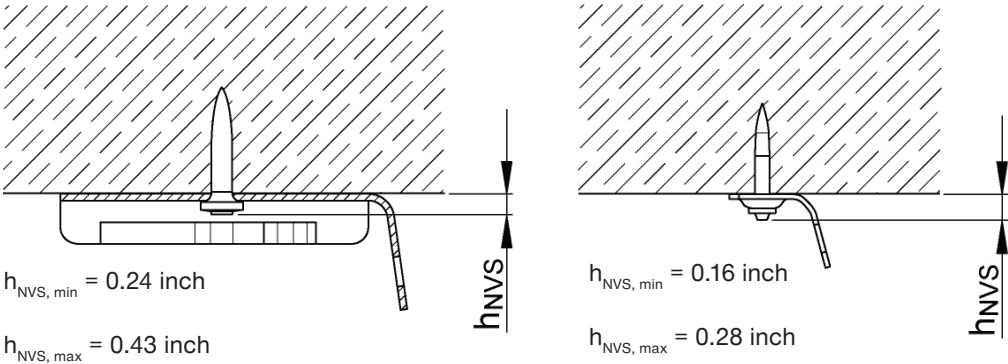
| Required Elevation h (ft.) | 1                    | 2   | 3   | 4   | 5   | 7   | 9   |
|----------------------------|----------------------|-----|-----|-----|-----|-----|-----|
| Width b (in.)              | Cable Length l (ft.) |     |     |     |     |     |     |
| 8"                         | 1.5                  | 2.5 | 3.5 | 4.5 | 5.5 | 7.5 | 9.5 |
| 12"                        | 1.5                  | 2.5 | 3.5 | 4.5 | 5.5 | 7.5 | 9.5 |
| 16"                        | 1.5                  | 2.5 | 3.5 | 4.5 | 5.5 | 7.5 | 9.5 |
| 20"                        | 1.5                  | 2.5 | 3.5 | 4.5 | 5.5 | 7.5 | 9.5 |
| 24"                        | 1.5                  | 2.5 | 3.5 | 4.5 | 5.5 | 7.5 | 9.5 |
| 28"                        | 1.5                  | 2.5 | 3.5 | 4.5 | 5.5 | 7.5 | 9.5 |
| 32"                        | 1.5                  | 2.5 | 3.5 | 4.5 | 5.5 | 7.5 | 9.5 |
| 36"                        | 1.5                  | 2.5 | 3.5 | 4.5 | 5.5 | 7.5 | 9.5 |



6" (150mm)

# Fastening Quality Assurance

## Fastening standoff



### 3.2.18.4 ORDERING INFORMATION

| Fastener Description                | Fastener Length<br>in. (mm) | Fastener Shank Ø<br>in. (mm) | Lock Type | Wire Ø<br>in. (mm) | Wire Length<br>ft. (m) |
|-------------------------------------|-----------------------------|------------------------------|-----------|--------------------|------------------------|
| <b>Without pre-mounted fastener</b> |                             |                              |           |                    |                        |
| X-MW MX L                           | -                           | -                            | Loop      | 0.08" (2.0)        | 6.6 (2)                |
| X-MW MX L                           | -                           | -                            | Loop      | 0.08" (2.0)        | 10 (3)                 |
| X-MW MX L                           | -                           | -                            | Loop      | 0.08" (2.0)        | 20 (6.1)               |
| <b>With pre-mounted fastener</b>    |                             |                              |           |                    |                        |
| X-MW ALH 22 L 10ft/3m               | 0.87" (22)                  | 0.177" (4.5)                 | Loop      | 0.08" (2.0)        | 10 (3)                 |
| X-MW ALH 27 L 6ft/2m                | 1" (27)                     | 0.177" (4.5)                 | Loop      | 0.08" (2.0)        | 6.6 (2)                |
| X-MW ALH 27 L 10ft/3m               | 1" (27)                     | 0.177" (4.5)                 | Loop      | 0.08" (2.0)        | 10 (3)                 |
| X-MW ALH 27 L 20ft/6m               | 1" (27)                     | 0.177" (4.5)                 | Loop      | 0.08" (2.0)        | 20 (6.1)               |
| X-MW ALH 32 L 10ft/3m               | 1.26" (32)                  | 0.177" (4.5)                 | Loop      | 0.08" (2.0)        | 10 (3)                 |
| X-MW ALH 27 CL 6ft/2m               | 1" (27)                     | 0.177" (4.5)                 | Channel   | 0.08" (2.0)        | 6.6 (2)                |
| X-MW ALH 27 CL 10ft/3m              | 1" (27)                     | 0.177" (4.5)                 | Channel   | 0.08" (2.0)        | 10 (3)                 |
| X-MW ALH 27 CL 20ft/6m              | 1" (27)                     | 0.177" (4.5)                 | Channel   | 0.08" (2.0)        | 20 (6.1)               |
| X-MW ALH 32 CL 10ft/3m              | 1.26" (32)                  | 0.177" (4.5)                 | Channel   | 0.08" (2.0)        | 10 (3)                 |

