

GENERAL DESIGN CONSIDERATIONS

PALLETS

Pallets are flat transport structures that support goods in a stable fashion while being lifted by a forklift. They supply the structural foundation of the unit load and as such are an important consideration for the design of any warehouse.

Interlake Mecalux products are optimized to the dimensions of the standard pallet used in the U.S., the Grocery Manufacturers' Association or GMA pallet.

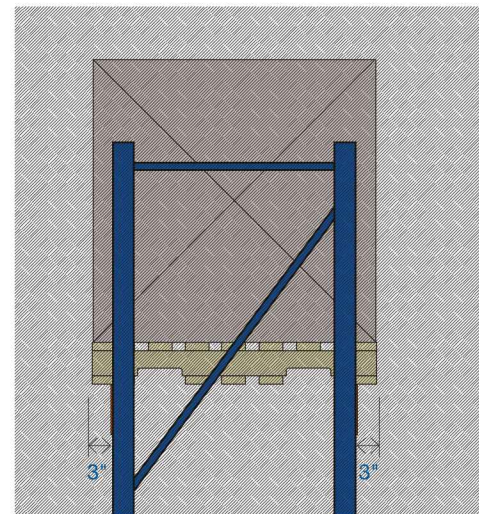
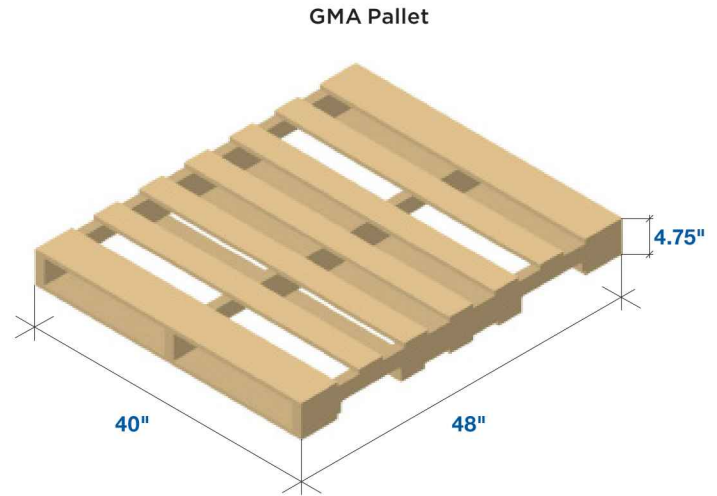
CLEARANCES

In any design, it is important to consider the vertical clearances required to successfully lift the load and pallet off the rack using a forklift or pallet jack. As an industry standard, the distance from the top of the pallet load overhead is 4" to 6".

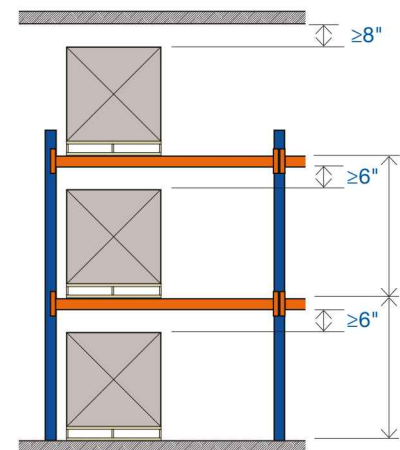
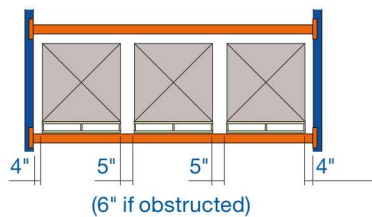
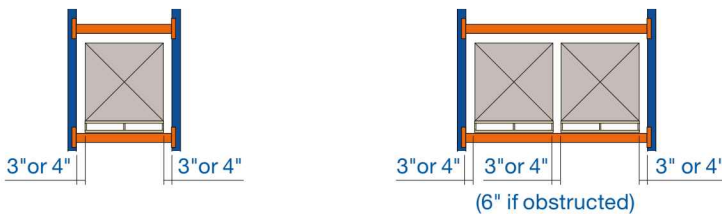
The pallet must extend 3" beyond the frame depth on either side to ensure proper pallet support.

CLEARANCES BETWEEN PALLETS AND POSTS

Each pallet should be positioned 3" or 4" from any adjacent post or pallet, unless the bay has a 3" pallet width. In this case, a 5" clearance should be provided between pallets and 4" between post and pallet.



Frame Depth Clearances - Side Elevation



Load Level Clearances - Front Elevation

SELECTIVE ROLL FORMED BEAMS AND FRAMES

OVERVIEW

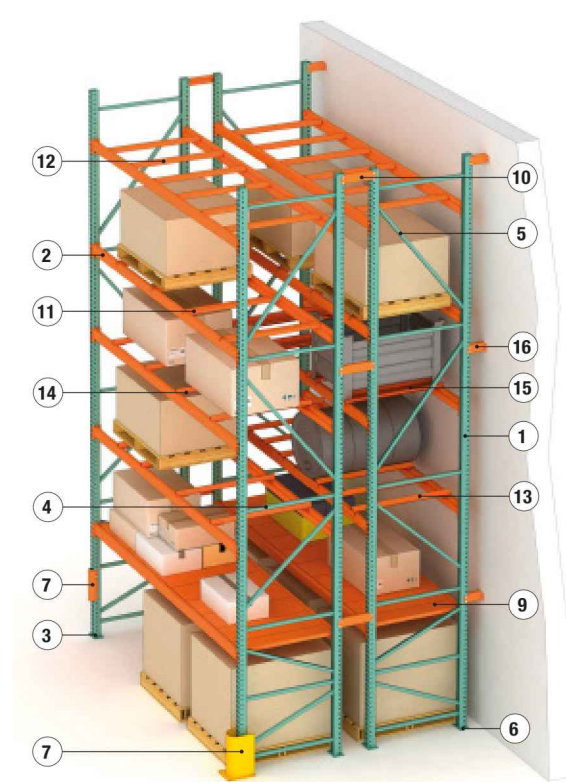
Selective rack is the most common type of storage solution found across the United States. It is a static system combining beams and frames to provide proper storage for pallets and other large items. Selective rack also comes with a variety of accessories and options, which are detailed in this guide.

Frames are the vertical elements of the racks. They are rectangular in shape and come in a variety of heights, widths and depths depending on the load being stored and the model of frame being used. A standard frame consists of two posts connected by a series of horizontal and diagonal struts and includes a foot plate welded or bolted to the bottom of each post.

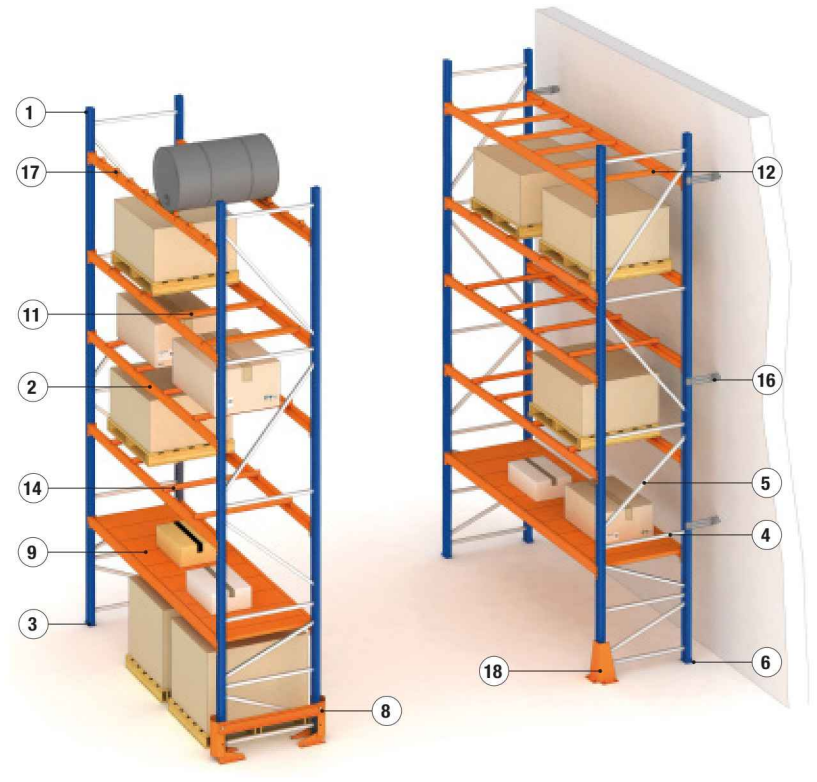
Beams are the horizontal elements of the system and are typically orange. Interlake Mecalux offers several different sizes and profiles of beams with varying capacities to fit the needs of the customer and the items being stored. Pallets are placed directly on the beams. Special accessories can be added to help support loads or store specialty loads such as drum coils.

Components

- | | | | |
|---------------|------------------------|-----------------------------------|------------------------|
| 1. Frame | 4. Horizontal strut | 9. Shelf panel | 14. Fork clearance bar |
| 2. Beam | 5. Diagonal strut | 10. Row spacer | 15. Skid channel |
| 3. Foot plate | 6. Shim | 11. Roll-in pallet support | 16. Wall tie |
| | 7. Post protector | 12. Double flanged pallet support | 17. Drum cradle |
| | 8. End aisle protector | 13. Drum/coil bed | 18. Corner protector |



Welded Selective Pallet Rack

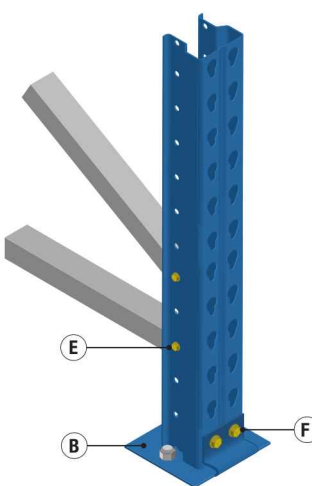


Bolted Selective Pallet Rack

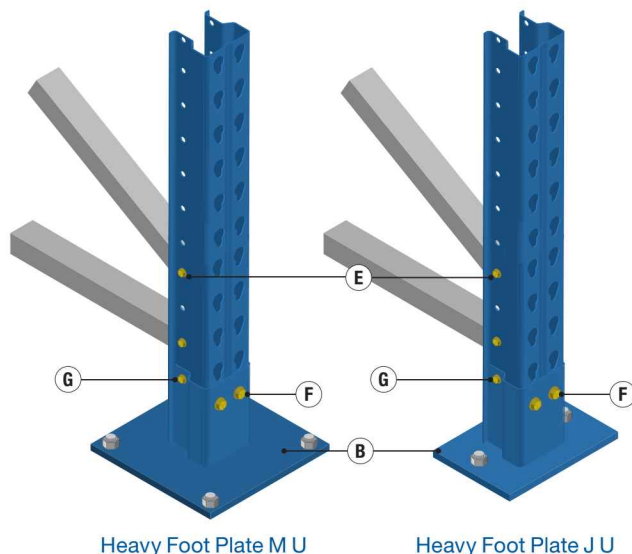
BOLTED ROLL FORMED FRAMES

COMPONENTS

Bolted selective frames are available in a standard cataphoresis blue (RAL-5003) finish and adhere to RMI 2012 standards. Foot plates and bracing are bolted into place. In special cases, foot plates may be welded using a 1/8" (0.125") fillet weld. Please note that Interlake Mecalux Bolted and Welded frames have updated strutting patterns.

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- A.** Post (314, 313, 312, 101, 102, 122, UA10)
 - B.** Foot Plate U (3P, 100, 120 model) or Foot Plate J U and FJ U (3P, 100 and 120 model) or Foot Plate M U and FM U (3P, 100 and 120 model) or Foot Plate PP and PP 8X8 or Foot Plate UA10 / FUA10 (UA10 model).
 - C.** Horizontal Strut (UC456G, UC715G, UC915G or UC502G)
 - D.** Diagonal Strut (UC456G, UC715G, UC915G or UC502G)
 - E.** Bolts W 5/16 x 2 3/8" D931 G5 B TE1A (T0201564 - 314 and 312)
Bolts W 5/16 x 3 7/16" D931 G5 B TE1A (T0029094 - 101 and 102)
Bolts W 5/16 x 4 7/32" D931 G5 B TE1A (T0029095 - 5122)
Bolts W 5/16 x 2 5/8" D931 G5 B TE1A (T0029080 - UA10)
 - F.** 2 Washer Cups - Foot Plate TD U (T0043168)
2 Bolts W 3/8 x 1" D933 G5 B TE1A (T0029082)
 - G.** 1 Bolt W 5/16 X 2 3/4" D931 G5 B TE1A (T0029098 - 314 and 312)
1 Bolt W 5/16 X 3 3/4" D931 G5 B TE1A (T0203315 - 101 and 102)
1 Bolt W 5/16 X 4 3/4" D931 G5 B TE1A (T0203317 - 5122)
2 Bolts W 5/16 X 3" D931 G5 B TE1A (T0208041 - UA10) +
2 Bolts W 3/8 X 3 3/4" D931 G5 B TE1A (T0208042 - UA10)

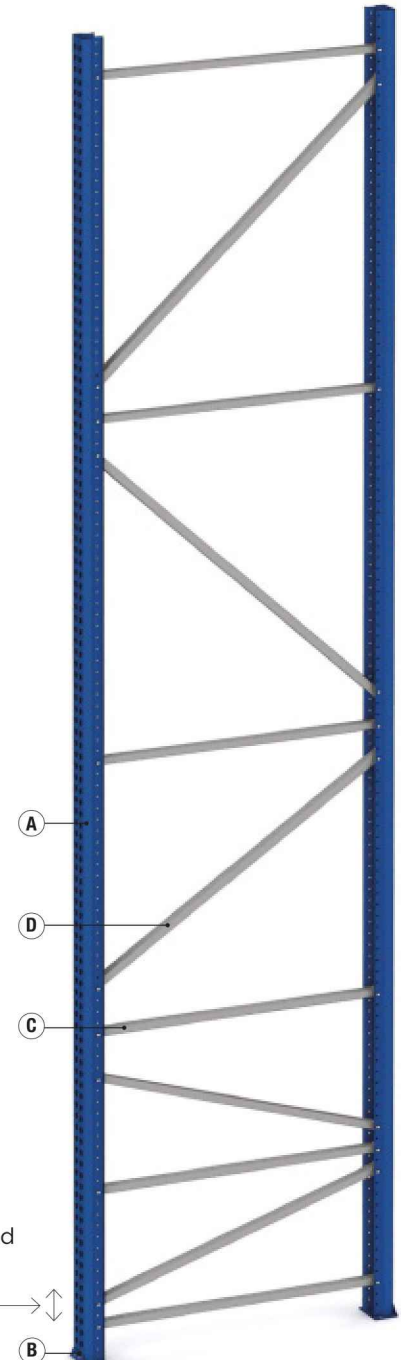
Heavy Foot Plate U



Heavy Foot Plate M U

Heavy Foot Plate J U

The front of the frame is located where the first two struts are adjacent to each other.

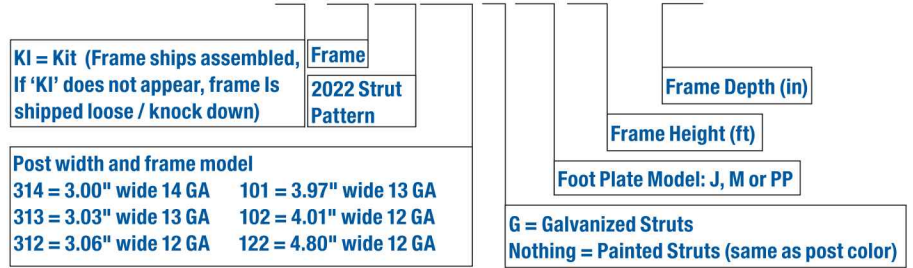


PRODUCT CODE DESCRIPTION

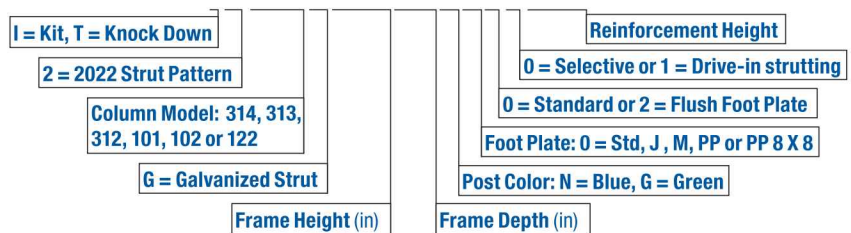
Standard frames are manufactured in even 12" increments for height and 2" increments for depth. Custom options are available at 2" increments for height. **For more details, contact your Interlake Mecalux representative.**

- Standard depths: 36", 42" and 48".
- Available in a standard cataphoresis blue (RAL-5003) or green (RAL-6033) finish.
- Assembled frames available through "KI-FR" parts.
- Special frame sizes available upon request.

KI-FR.2.312 G BJ 24' X 42"



I2312G28842NJ00000



| Bolted Frame Capacities (lbs) | | | | | | | | | | | |
|--------------------------------|----------------|--------|----------------|--------|----------------|--------|----------------|----------------|----------------|----------------|--------|
| Model | 2.314 | | 2.313 | | 2.312 | | 2.101 | 2.102 | 2.122 | UA10 | |
| Gauge | 14 GA (0.075") | | 13 GA (0.090") | | 12 GA (0.105") | | 13 GA (0.090") | 12 GA (0.105") | 12 GA (0.105") | 12 GA (0.105") | |
| Height | ≤ 21' | > 21' | ≤ 21' | > 21' | ≤ 21' | > 21' | | | | | |
| Maximum Unsupported Span (HbL) | 36" | 24,571 | 25,847 | 29,583 | 31,133 | 34,514 | 36,322 | 40,800 | 47,800 | 55,000 | 86,400 |
| | 42" | 22,807 | 23,924 | 27,531 | 28,900 | 32,120 | 33,717 | 39,000 | 45,800 | 53,200 | 82,200 |
| | 48" | 20,867 | 21,832 | 25,741 | 26,286 | 30,032 | 30,667 | 36,900 | 43,300 | 51,300 | 77,700 |
| | 54" | 18,849 | 19,680 | 22,753 | 23,778 | 26,546 | 27,742 | 34,700 | 40,800 | 49,100 | 72,800 |
| | 60" | 16,849 | 17,563 | 20,288 | 21,166 | 23,670 | 24,694 | 32,400 | 38,100 | 46,800 | 67,700 |
| | 66" | 14,784 | 15,400 | 17,994 | 18,755 | 20,994 | 21,881 | 30,000 | 35,300 | 44,400 | 62,500 |
| | 72" | 12,982 | 13,535 | 15,705 | 16,392 | 18,323 | 19,125 | 27,600 | 32,500 | 41,800 | 57,200 |
| | 78" | 11,156 | 11,571 | 13,584 | 14,104 | 15,849 | 16,455 | 25,200 | 29,700 | 39,200 | 52,000 |
| | 84" | 9,758 | 10,075 | 11,892 | 12,291 | 13,875 | 14,340 | 22,800 | 27,000 | 36,700 | 46,900 |
| | 90" | 8,595 | 8,848 | 10,397 | 10,705 | 12,130 | 12,490 | 20,600 | 24,300 | 34,000 | 42,000 |
| | 96" | 7,597 | 7,795 | 9,174 | 9,414 | 10,703 | 10,984 | 18,300 | 21,700 | 31,500 | 37,200 |
| | 102" | 6,761 | 6,918 | 8,240 | 8,435 | 9,614 | 9,841 | 16,300 | 19,300 | 28,900 | 33,100 |
| 108" | 6,086 | 6,216 | 7,368 | 7,527 | 8,596 | 8,782 | 14,600 | 17,200 | 26,500 | 29,600 | |
| 114" | 5,496 | 5,601 | 6,562 | 6,690 | 7,656 | 7,805 | 13,100 | 15,500 | 24,000 | 26,600 | |
| 120" | 4,989 | 5,074 | 5,979 | 6,087 | 6,976 | 7,102 | 11,900 | 14,000 | 21,800 | 24,000 | |

HbL = Height between levels

NOTE:

- Capacities are according to the most important RMI guidelines and ANSI MH16, 1 2012 specifications.; Steel strength: FY = 55 KSI.
- Capacities for static loads only, including product load plus dead load (dead load = 2% of product load).

• Capacities are only valid when used with Interlake Mecalux published beam sizes.

- These capacities assume that all component parts are: (1) Manufactured by Interlake Mecalux. (2) In good condition. (3) Properly installed.
- Maximum unsupported height (Height between levels) is the maximum beam spacing or the distance between the floor and the top of the first beam (whichever is greater) assuming equally spaced levels.

BOLTED FRAMES - GENERAL INFORMATION

| Bolted Frames for Selective Pallet Rack Dimensions | | |
|--|---|-----------------------|
| | FR.2.314 G, FR.2.312 G, FR.2.313 G FR. 2.101 G, FR.2.102 G, FR.2.122 G, TD UA10 | Standard Intervals |
| Height minimum | 48" (4') | Every 12" *** |
| Height maximum | 480" (40') | |
| Depth minimum (standard)* | 36" (3') | 36", 42" and 48" **** |
| Depth maximum (standard)** | 48" (4') | |

- * Min. custom depth = 18", contact your Interlake Mecalux representative for more information.
- ** Max. custom depth = 72", contact your Interlake Mecalux representative for more information.
- *** Custom height intervals are available every 2", contact your Interlake Mecalux representative for more information.
- **** Custom depth intervals are available every 1", contact your Interlake Mecalux representative for more information.

| Bolted Frames With Standard Components (Selective Pallet Rack) | | | | | | | |
|--|--------------|---------|-------------|---|--|---------|---|
| Frame | Frame Family | Post | Post Family | Heavy Foot Plate | Hardware for Foot Plate Connection | Strut | Hardware For Strut To Post Connection |
| FR.2.314 G | B2314G | TD U314 | PU314TD | U3P T0200868 (blue) | 2 Washer Cup - Foot Pate TD U (T0043168) + 2 Bolts W 3/8 x 1" D933 G5 B TE1A (T0029082) | U C456G | BOLTS W 5/16 X 2 3/8" D931 G5 B TE1A (T0201564) |
| FR.2.313 G | B2313G | TD U313 | PU313TD | | | | |
| FR.2.312 G | B2312G | TD U312 | PU312TD | | | | |
| FR.2.101 G | B2101GGC | TD U101 | PU101TD | U100 T0029078 (blue) | | U C715G | BOLTS W 5/16 X 3 7/16" D931 G5 B TE1A (T0029094) |
| FR.2.102 G | B2102GGC | TD U102 | PU102TD | | | | |
| FR.2.122 G | B2122GGC | TD U122 | PU122TD | U120 T0029079 (blue) | | U C915G | BOLTS W 5/16 X 4 7/32" D931 G5 B TE1A (T0029095) |
| N/A | N/A | TD UA10 | PUA10TD | UA10 T0206656 (blue) F UA10 T206657 (blue) | 2 BOLTS W 5/16 X 3" D931 G5 B TE1A (T0208041) + 2 BOLTS W 3/8 X 4 3/4" D931 G5 B TE1A (T0208042) | U 502 G | BOLTS W 5/16 X 2 5/8" D931 G5 B TE1A (T0029080) |

Bolted Frames

BOLTED POST PROFILES AND FRAMES

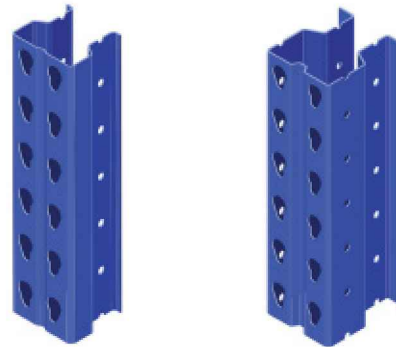
Post profiles are available in various sizes. Each profile has 7 to 9 bends, depending on the model. Post profiles have perforations every 2" on the face and the sides.

The tear drop perforations on the face are designed to secure beam placement, with the narrow section facing downwards, as shown in the drawing.

Side perforations are used for fitting struts and accessories, such as row spacers and column protectors, using $\frac{5}{16}$ " (0.3125") diameter grade 5 bolts.

There are different models of uprights, which vary in dimensions and gauges.

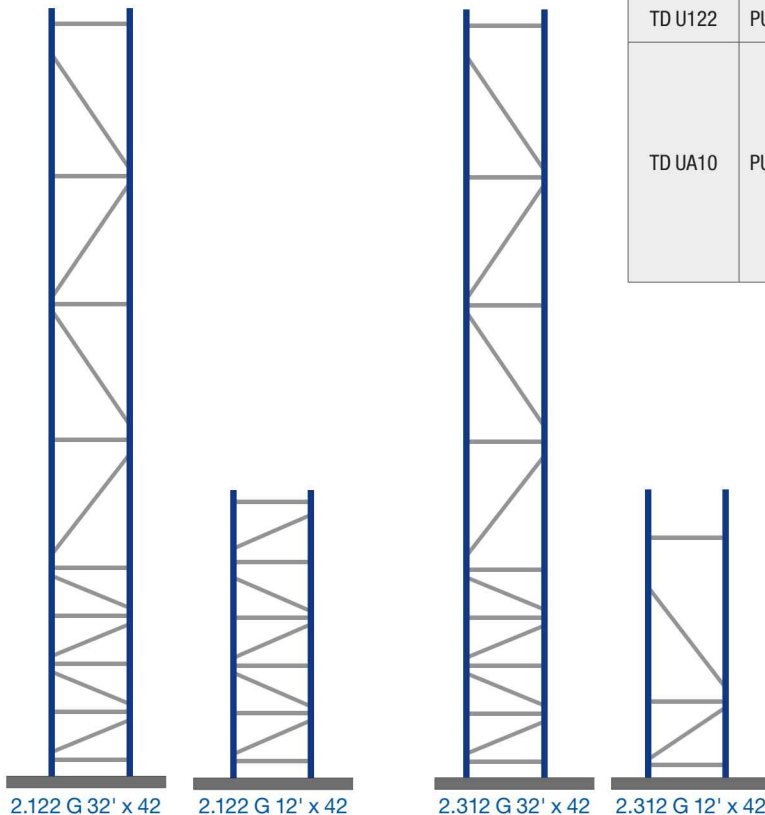
- Available in a standard cataphoresis blue (RAL-5003).



Post TD U314, U313, U312, U101, U102 & U122

Post TD UA10

| Post Model | Family | A | B | C | |
|------------|---------|-------|-------|----------------|--|
| TD U314 | PU314TD | 3" | 2.71" | 14 GA (0.075") | |
| TD U313 | PU313TD | 3.03 | | 13 GA (0.090") | |
| TD U312 | PU312TD | 3.06" | | 12 GA (0.105") | |
| TD U101 | PU101TD | 3.97" | | 13 GA (0.090") | |
| TD U102 | PU102TD | 4.01" | | 12 GA (0.105") | |
| TD U122 | PU122TD | 4.8" | | 12 GA (0.105") | |
| TD UA10 | PUA10TD | 4.01 | 4.85 | 12 GA (0.105") | |



2.101 - 2.122
(48" - 480")

These frames will have a consistent strut pattern.

2.314 - 2.312
(48" - 480")

2.314, 2.313 and 2.312 Frames have 2 strut patterns, one used when frames are <21' and another for frames >21'

BRACING DISTRIBUTION

Standard bracing distribution for bolted frames varies by model according to the required height of the frame; however, the following guidelines may be applied.

For more details, contact your Interlake Mecalux representative.

STANDARD FOOT PLATES

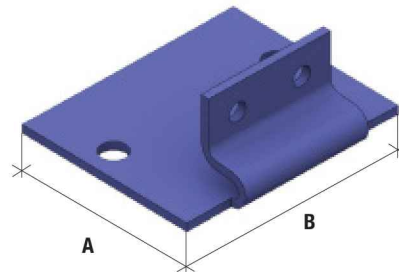
STANDARD FOOT PLATES

Frames are secured to the ground using foot plates that are bolted to the bottom of the posts. Foot plates are anchored to the floor using HILTI Anchor W ½ X 5 ½" (U0074596).

"J" and "M" foot plates are commonly used in seismic areas or in locations with less than desired floor structures.

If a different foot plate is used, the number of anchors will be determined by the calculation. Additional anchors provided by special request.

All foot plates come with holes that allow the frame to be bolted into the floor. Each hole is 5/8" (0.625") in diameter.



Foot Plate U3P / U100 / U122

| Bolted Foot Plates | | | | | | | |
|--------------------|--|--------------|------------------------|--------|---------------------|---------------------|------------|
| Foot Plate | Frame | Frame Family | Foot Plate Part Number | Finish | A | B | Gauge |
| U3P | FR.2.314 G FR.2.313 G FR.2.312 G | B2314G | T0200868 | Blue | 4 11/16" (4.68") | 5 3/32" (5.09") | 6 (0.194") |
| | | B2313G | | | | | |
| | | B2312G | | | | | |
| U100 | FR.2.101 G FR.2.102 G | B2101GGC | T0029078 | Blue | 4 11/16" (4.68") | 6 7/64" (6.10") | 6 (0.194") |
| | | B2102GGC | | | | | |
| U122 | FR.2.122 G | B2122GGC | T0029079 | Blue | 4 11/16" (4.68") | 6 57/64" (6.59") | 6 (0.194") |

Foot plates should be attached to the posts using:

- (2) Bolts W ¾ X 1" D933 G5 B TE1A (T0029082) and
- (2) Washer Cup-Foot plate TD U (T0043168)