ICC-ES Listing Report

ELC-5019
Reissued March 2024
Revised April 2025
This listing is subject to renewal in March 2025.

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CSI: DIVISION: 05 00 00—METALS
Section: 05 40 00—Cold-Formed Metal Framing

Product Certification System:

The ICC-ES product-certification system includes evaluating reports of tests of standard manufactured product, prepared by accredited testing laboratories and provided by the listee, to verify compliance with applicable codes and standards. The system also involves factory inspections, and assessment and surveillance of the listee's quality system.

Product: HILTI MULTI-DUTY CHANNEL SYSTEM (MT)

Listee: HILTI, INC.

Compliance with the following standard:

- CSA S136-16, North American specification for the design of cold-formed steel structural members (using the Appendix B provisions applicable to Canada), CSA Group.

Compliance with the following building codes:

The channel system has been evaluated based on CSA S136, as referenced in the applicable sections of the following code editions:

- *National Building Code of Canada*® 2020 (NBCC)
  Applicable Section: Volume 1 – Division B: 4.3.4.2.
- *National Building Code of Canada*® 2015 (NBCC)
  Applicable Section: Volume 1 – Division B: 4.3.4.2.

Description of Product:

General:

The products that are evaluated in this report are limited to those products noted in Table 1.

The installation channels MT-20 and MT-20 OC are made of thin-walled steel in C shape. Recesses in the channel profiles in the form of oblong holes and round holes allow the use of fasteners and fixtures.

The installation channels MT-30 S, MT-30, MT-30 S OC, MT-30 OC, MT-50 S, MT-50, MT-50 S OC, MT-50 OC, MT-50 U, MT-60 S, MT-60, MT-60 S OC and MT-60 OC are made of thin-walled steel with parallel flanges and a connecting web. The flanges are turned at the end which makes it possible to force-fit the channels to specific channel system fixtures. Recesses in the back and/or in the flanges of the channels in the form of oblong holes and round holes allow the use of fasteners and fixtures.

The installation channels MT-30D, MT-30D S, MT-30D OC, MT-30D S OC, MT-40D, MT-40D S, MT-40D OC, MT-40D S OC, MT-50D U,MT-50D S, MT-50D, MT-60D, MT-60D OC and MT-60D S are made each of two thin-walled channel profiles in C shape. The profile flanges are turned at the end which makes it possible to force-fit the channels to specific channel system fixtures. In the back area of the channels, the profiles are connected in a shape and force fitting way.

The installation channels MT-70 S OC, MT-70 OC, MT-80 S OC, MT-80 OC, MT-90 S OC, MT-90 OC, MT-90H OC, MT-90H S OC, MT-100 S OC and MT-100 O Care made of thin-walled steel closed profiles in square or rectangular shape with recesses in the form of dome shape round holes on the inner sides to allow use of fasteners and fixtures.

The channels are delivered in length of up to 6m and can be cut to length as required.

Table 1 summarizes MT channels material, drawings, and dimensional details. gross, effective, and torsional section properties are set forth in Table 2, for use with the Limit State Design (LSD).

Connectors, fixtures and fasteners to be used in conjunction with the channels are available through Hilti's website (www.hilti.com) and have not been evaluated under this report.

Material:

Hilti MT-20, MT-20 OC, MT-30 S, MT-30, MT-30 S OC, MT-30 OC, MT-50 S, MT-50, MT-50 S OC, MT-50 OC, MT-50 U, MT-60 S, MT-60, MT-60 S OC, MT-60 OC, MT-30D, MT-30D S, MT-30D OC, MT-30D S OC, MT-40D, MT-40D S, MT-40D OC, MT-40D S OC, MT-50D U, MT-50D S, MT-50D, MT-60D, MT-60D OC and MT-60D S channels are cold-formed from steel coils complying with European standard EN 10346 Grade S280 GD. Grade S280 steel has a minimum yield strength of 280 MPa, a minimum tensile strength of 360 MPa, and minimum elongation of 18 percent in a 50- mm gauge length in accordance EN 10346.

Hilti MT closed profiles MT-70 S OC, MT-70 OC, MT-80 S OC, MT-80 OC, MT-90 S OC, MT-90 OC, MT-90H OC, MT-90H S OC, MT-100 S OC and MT-100 OC are cold-formed from steel coils complying with European standard EN 10346 Grade S350 GD. Grade S350 steel has a minimum yield strength of 350 MPa, a minimum tensile strength of 420 MPa, and minimum elongation of 16 percent in a 50-mm gauge length in accordance with EN 10346.

Hilti MT-20, MT-30 S, MT-30, MT-50 S, MT-50, MT-50 U, MT-60 S, MT-60, MT-30D, MT-30D S, MT-40D, MT-40D S, MT-50D U, MT-50D S, MT-50D, MT-60D and MT-60D S are pre-galvanized parts conforming to ASTM A653/A653M galvanizing, with minimum 0.75 mil zinc coating. These channels are limited to dry, interior locations.

Hilti MT-20 OC, MT-30 S OC, MT-30 OC, MT-50 S OC, MT-50 OC, MT-60 S OC, MT-60 OC, MT-70 S OC, MT-70 OC, MT-80 S OC, MT-80 OC, MT-90 S OC, MT-90 OC, MT-90H OC, MT-90H S OC, MT-100 S OC, MT-100 OC, MT-30D OC, MT-30D S OC, MT-40D OC, MT-40D S OC and MT-60D OC profiles are coated with zinc-aluminum-magnesium alloy (ZM) by a continuous hot-dip galvanizing process during the steel coil phase in accordance to the ASTM A1046M Standard. Use of these channels are permitted for exterior exposure and damp environments.

Design Requirements:

Structural capacities are determined in accordance with CSA S136, based on structural properties in Tables 1 and 2 of this report.

Identification:

1. The ICC-ES mark of conformity, electronic labeling, or the listing report number (ICC-ES ELC-5019) along with the name, registered trademark, or registered logo of the listee must be included in the product label.

2. In addition, packaging of each bundle of Hilti Multi-Duty Channel System (MT) carries a label indicating the manufacturer's name and address, channel name, the ICC-ES Listing number (ELC-5019), and the ICC-ES listing mark, as applicable.

3. The report holder's contact information is the following:

   HILTI, INC.
   7250 DALLAS PARKWAY, SUITE 1000
   PLANO, TEXAS 75024
   (918) 872-8000
   www.hilti.com

Installation:

The channels must be installed in accordance with the approved plans and this report. If there is a conflict, this report governs. MT channels can be cut anywhere along the whole length. For open profiles, the distance between the end of the profile and center of the first hole has to be minimum 25 mm. For closed profiles the distance between the end of the profile and start of the dome shaped hole has to be minimum 10 mm. Threaded rods and other fixtures are only to be guided through the round holes or long holes of the channel. The approved plans must be available at the jobsite at all times during installation.

Conditions of listing:

1. The listing addresses only conformance with the standards and code sections noted above.

2. Approval of the product's use is the sole responsibility of the local code official.

3. The listing applies only to the materials tested and as submitted for review by ICC-ES.

4. The minimum loads of NBCC must be considered by the design professional based on the specific occupancy for use, as applicable.

5. Special inspections must comply with NBCC.
6. The channels must be installed in accordance with the approved plans and this report. If there is a conflict, this report governs.
7. Use of pre-galvanized channel is limited to dry, interior locations.
8. Use of channels with ZM coating in this report are permitted for exterior exposure and damp environments.
9. Web crippling and concentrated loads are outside the scope of this evaluation report.
10. Hilti proprietary connectors, fixtures and fasteners have not been evaluated and are outside the scope of this report.
11. Calculations and details demonstrating that the loads applied to the Hilti Multi-Duty Channel System (MT) comply with this report must be submitted to the code official for approval. Calculations and drawings must be prepared, signed and sealed by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
12. The Hilti Multi-Duty Channel System (MT) is manufactured under a quality control program with inspections by ICC-ES.

TABLE 1—SHAPE, DIMENSIONS, AND MATERIAL OF CHANNELS[1,2]

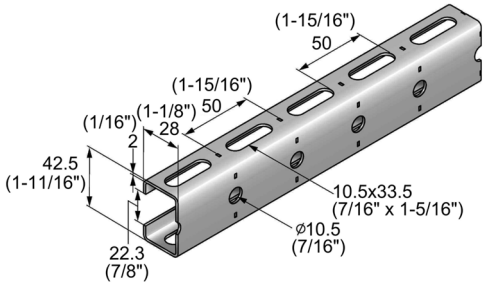
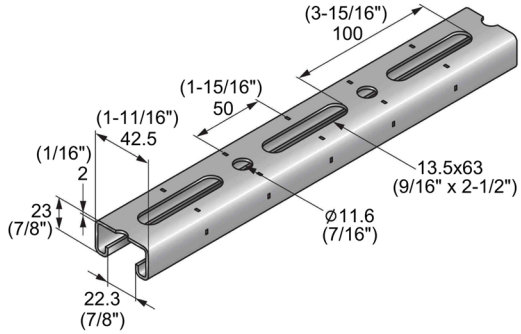
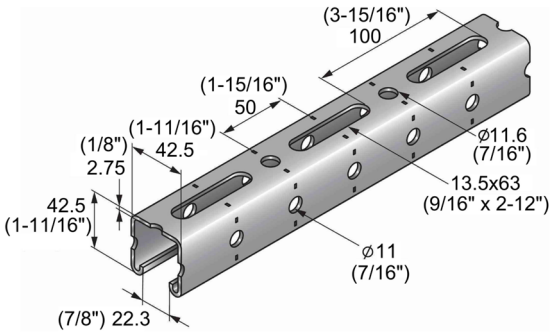
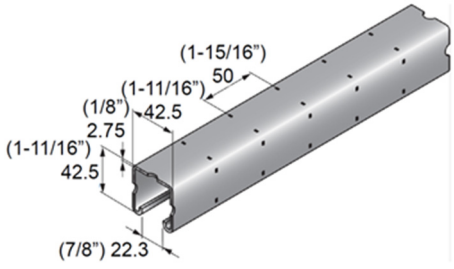
Illustration	Item Number	Designation	Length [m]	Materials and coatings
	2268495	MT-20	2	S280GD+ Z275-M-A-C EN 10346
	2268496	MT-20 OC	2	S280GD+ ZM310-A-C EN 10346
	2268497	MT-30 S	3	S280GD+ Z275-M-A-C EN 10346
	2268498	MT-30	6	S280GD+ Z275-M-A-C EN 10346
	2268499	MT-30 S OC	3	S280GD+ ZM310-A-C EN 10346
	2268500	MT-30 OC	6	S280GD+ ZM310-A-C EN 10346
	2268509	MT-50 S	3	S280GD+ Z275-M-A-C EN 10346
	2268510	MT-50	6	S280GD+ Z275-M-A-C EN 10346
	2268511	MT-50 S OC	3	S280GD+ ZM310-A-C EN 10346
	2268512	MT-50 OC	6	S280GD+ ZM310-A-C EN 10346
	2362808	MT-50 U	6	S280GD+ Z275-M-A-C EN 10346

TABLE 1—SHAPE, DIMENSIONS, AND MATERIAL OF CHANNELS[1,2]

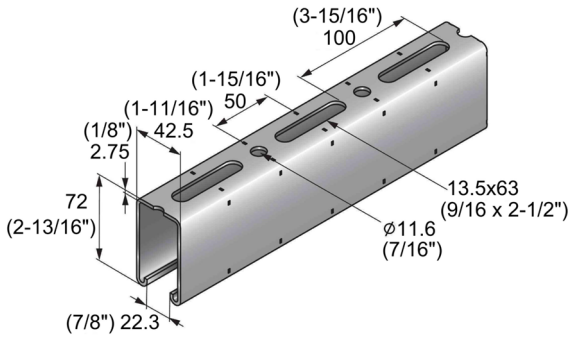
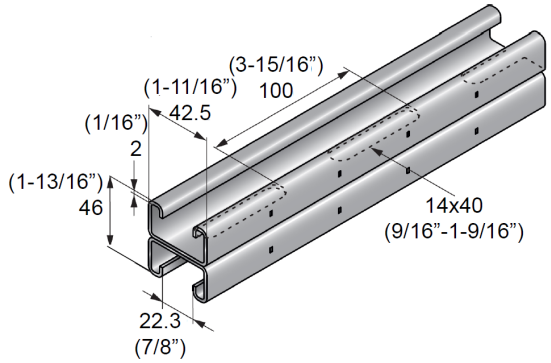
Illustration	Item Number	Designation	Length [m]	Materials and coatings
	2268513	MT-60 S	3	S280GD+ Z275-M-A-C EN 10346
	2268514	MT-60	6	S280GD+ Z275-M-A-C EN 10346
	2268515	MT-60 S OC	3	S280GD+ ZM310-A-C EN 10346
	2268516	MT-60 OC	6	S280GD+ ZM310-A-C EN 10346
	2362706	MT-30D	6	S280GD+ Z275-M-A-C EN 10346
	2362707	MT-30D OC	6	S280GD+ ZM310 A-C EN 10346
	2362708	MT-30D S	3	S280GD+ Z275-M-A-C EN 10346
	2362709	MT-30D S OC	3	S280GD+ ZM310 A-C EN 10346

TABLE 1—SHAPE, DIMENSIONS, AND MATERIAL OF CHANNELS[1,2]

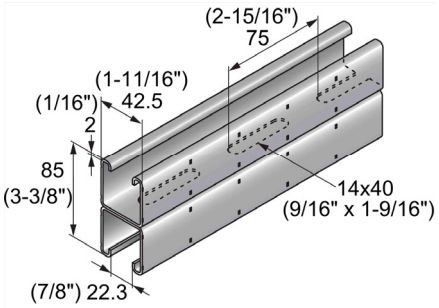
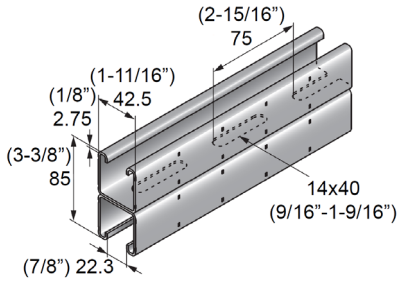
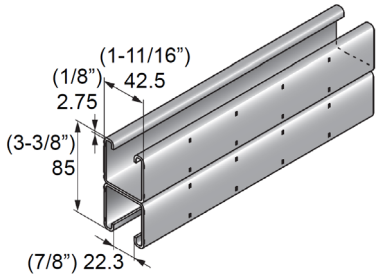
Illustration	Item Number	Designation	Length [m]	Materials and coatings
	2268517	MT-40D S	3	S280GD+ Z275-M-A-C EN 10346
	2268518	MT-40D	6	S280GD+ Z275-M-A-C EN 10346
	2268519	MT-40D S OC	3	S280GD+ ZM310 A-C EN 10346
	2268520	MT-40D OC	6	S280GD+ ZM310 A-C EN 10346
	2362803	MT-50D	6	S280GD+ Z275-M-A-C EN 10346
	2362803	MT-50D S	3	S280GD+ Z275-M-A-C EN 10346
	2362807	MT-50D U	6	S280GD+ Z275-M-A-C EN 10346

TABLE 1—SHAPE, DIMENSIONS, AND MATERIAL OF CHANNELS[1,2]

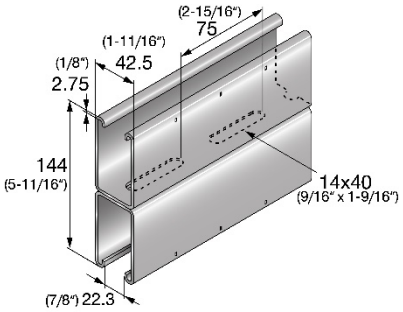
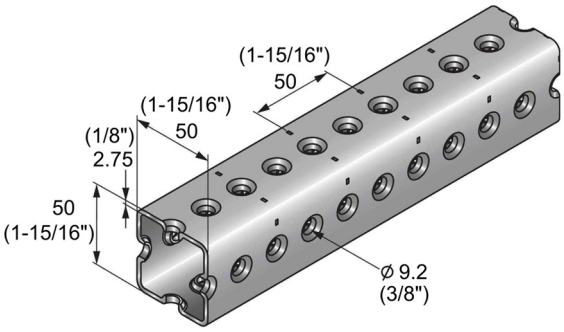
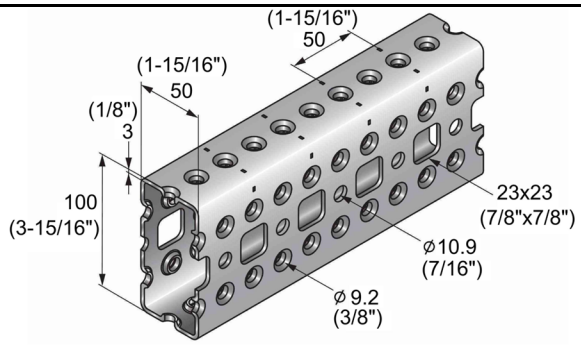
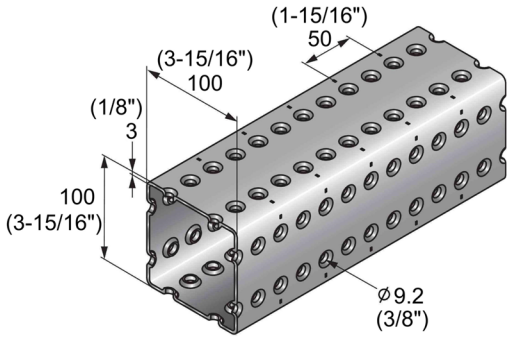
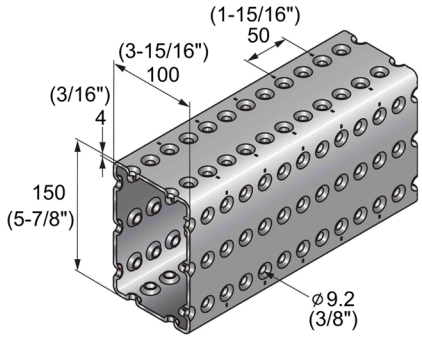
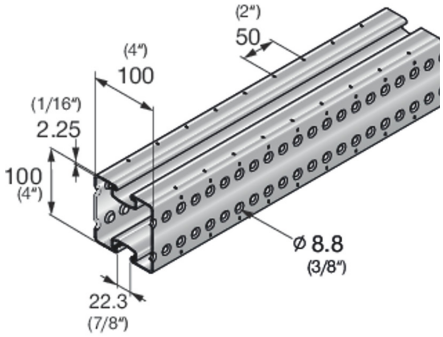
Illustration	Item Number	Designation	Length [m]	Materials and coatings
	2362800	MT-60D	6	S280GD+ Z275-M-A-C EN 10346
	2362801	MT-60D OC	6	S280GD+ ZM310-A-C EN 10346
	2362802	MT-60D S	3	S280GD+ Z275-M-A-C EN 10346
	2268364	MT-70 S OC	3	S350GD+ ZM310 A-C EN 10346
	2268365	MT-70 OC	6	S350GD+ ZM310 A-C EN 10346
	2268366	MT-80 S OC	3	S350GD+ ZM310 A-C EN 10346
	2268367	MT-80 OC	6	S350GD+ ZM310 A-C EN 10346
	2268368	MT-90 S OC	3	S350GD+ ZM310 A-C EN 10346
	2268369	MT-90 OC	6	S350GD+ ZM310 A-C EN 10346

TABLE 1—SHAPE, DIMENSIONS, AND MATERIAL OF CHANNELS[1,2]

Illustration	Item Number	Designation	Length [m]	Materials and coatings
	2268490	MT-100 S OC	3	S350GD+ ZM310 A-C EN 10346
	2268491	MT-100 OC	6	S350GD+ ZM310 A-C EN 10346
	2430776	MT-90H OC	6	S350GD+ ZM310 A-C EN 10346
	2431073	MT-90H S OC	3	S350GD+ ZM310 A-C EN 10346

1. Mechanical properties of EN 10346 Grade S280 GD meet or exceed the mechanical properties of ASTM A653/A1046 SS Grade 37
2. Mechanical properties of EN 10346 Grade S350 GD meet or exceed the mechanical properties of ASTM A653/A1046 SS Grade 50 Cl4

TABLE 2—CHANNEL SECTION PROPERTIES [1,2,3,4]

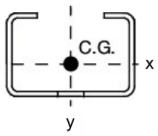
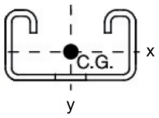
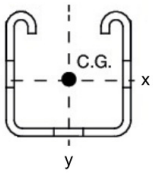
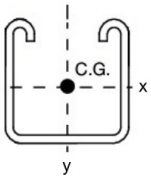
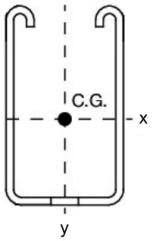
Symbol	Unit	MT-20 / MT-20 OC	MT-30 S MT-30 MT-30 S OC MT-30 OC	MT-50 S / MT-50 / MT-50 S OC / MT-50 OC	MT-50U	MT-60 S / MT-60 / MT-60 S OC / MT-60 OC
-	-					
t	**mm**	1.75	2.00	2.75	2.75	2.75
w	**kg/m**	1.25	1.64	2.93	2.91	4.21
F_y	**Mpa**	280	280	280	280	280
Gross Properties						
A	**mm^2**	187.6	208.0	374	374	538.3
I_x	**mm^4**	20349	14621	83829	83829	329006
I_y	**mm^4**	52943	53018	107679	107679	172864
s_x	**mm^3**	1216	1098	3532	3532	8432
s_y	**mm^3**	2491	2495	5067	5067	8135
R_x	**mm**	10.42	8.39	15.00	15.0	24.72
R_y	**mm**	16.80	15.97	17.00	17.0	17.92
Effective Properties						
$I_{x\text{-}eff}$	**mm^4**	18439	13594	82651	83841	324725
$I_{y\text{-}eff}$	**mm^4**	37509	52608	107662	107667	172858
$s_{x\text{-}eff}$	**mm^3**	1102	1021	3482	3532	8323
$s_{y\text{-}eff}$	**mm^3**	1765	2476	5066	5067	8135
$\Phi M_{n\text{-}x}$	**N.m**	313	325	1130	1144	2638
$\Phi M_{n\text{-}y}$	**N.m**	488	715	1424	1491	2173
$\Phi M_{nd\text{-}x}$	**N.m**	286	299	1017	1144	2107
$\Phi M_{nd\text{-}y}$	**N.m**	425	643	1425	1491	2017
$\Phi V_{n\text{-}x}$	**N**	8350	9274	11272	11272	11975
$\Phi V_{n\text{-}y}$	**N**	9878	8064	23251	23251	45756
L_u	**m**	0.71	0.65	1.19	1.10	1.81
Torsional Properties						
J	**mm^4**	192	277	942	942	1356.9
C_w	**mm^6**	9881442	8685395	42031234	42031234	160884400
X_0	**mm**	0.0	0.0	0.0	0	0.0
Y_0	**mm**	25.1	22.1	40.3	40.3	69.6
R_0	**mm**	31.95	28.49	46.2	46.2	76.00

TABLE 2—CHANNELS SECTION PROPERTIES (CONTINUED) [1,2,3,4]

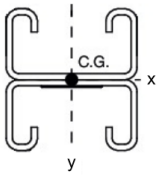
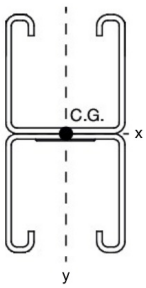
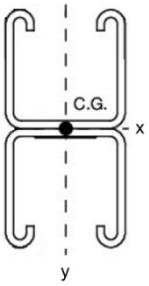
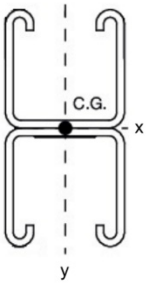
Symbol	Unit	MT-30D S / MT-30D / MT-30D S OC / MT-30D OC	MT-40D S / MT-40D / MT-40D S OC / MT-40D OC	MT-50D/ MT-50D S	MT-50D U
-	-				
t	**mm**	2.00	2.00	2.75	2.75
w	**kg/m**	2.94	4.48	5.82	5.82
F_y	**Mpa**	280	280	280	280
		Gross Properties			
A	**mm^2**	416	572	748	748
I_x	**mm^4**	68266	342808	430883	430883
I_y	**mm^4**	106035	170072	215317	215317
s_x	**mm^3**	2968	8066	10139	10138
s_y	**mm^3**	4990	8003	10133	10133
R_x	**mm**	12.8	24.5	24.0	24.0
R_y	**mm**	16.0	17.2	17.0	17.0
		Effective Properties			
$I_{x\text{-}eff}$	**mm^4**	68195	342737	430675	430883
$I_{y\text{-}eff}$	**mm^4**	105123	169144	214068	215317
$s_{x\text{-}eff}$	**mm^3**	2965	8064	10134	10138
$s_{y\text{-}eff}$	**mm^3**	4947	7960	10080	10133
$\Phi M_{n\text{-}x}$	**N.m**	960	2612	3283	3284
$\Phi M_{n\text{-}y}$	**N.m**	1535	2264	2965	2982
$\Phi M_{nd\text{-}x}$	**N.m**	960	2612	3283	3284
$\Phi M_{nd\text{-}y}$	**N.m**	1535	2264	2965	2983
$\Phi V_{n\text{-}x}$	**N**	18552	18552	22550	22550
$\Phi V_{n\text{-}y}$	**N**	16137	37098	46502	46502
L_u	**m**	0.79	1.40	1.49	1.52
		Torsional Properties			
J	**mm^4**	555	763	1885	1885
C_w	**mm^6**	17370780	78960286	84065153	84065153
X_0	**mm**	0	0	0	0
Y_0	**mm**	0	0	0	0
R_0	**mm**	20.5	29.9	29.4	29.4

TABLE 2—CHANNELS SECTION PROPERTIES (CONTINUED) [1,2,3,4]

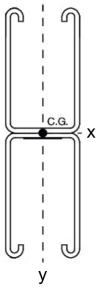
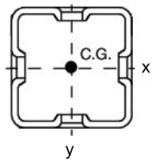
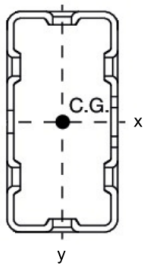
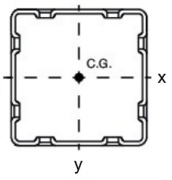
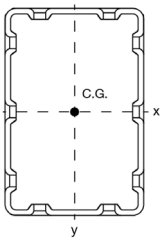
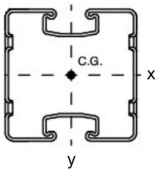
Symbol	Unit	MT-60D / MT-60D OC / MT-60D S	MT-70 S OC / MT-70 OC	MT-80 S OC / MT-80 OC
-	-			
t	mm	2.75	2.75	3.00
w	kg/m	8.42	3.91	6.59
F_y	Mpa	280	350	350
Gross Properties				
A	mm^2	1074	500.3	840.8
I_x	mm^4	1829170	182390	1064540
I_y	mm^4	344783	182390	360568
s_x	mm^3	25405	7296	21291
s_y	mm^3	16225	7296	14423
R_x	mm	41.3	19.09	35.58
R_y	mm	17.9	19.09	20.71
Effective Properties				
$I_{x\text{-}eff}$	mm^4	1828975	182390	991957
$I_{y\text{-}eff}$	mm^4	343526	182390	268521
$s_{x\text{-}eff}$	mm^3	25402	7296	19839
$s_{y\text{-}eff}$	mm^3	16166	7296	10741
$\Phi M_{n\text{-}x}$	N.m	8230	2570	7091
$\Phi M_{n\text{-}y}$	N.m	4480	2570	3568
$\Phi M_{nd\text{-}x}$	N.m	6914	N.A.	N.A.
$\Phi M_{nd\text{-}y}$	N.m	4000	N.A.	N.A.
$\Phi V_{n\text{-}x}$	N	23284	36036	38304
$\Phi V_{n\text{-}y}$	N	90846	36036	72439
L_u	m	2.64	N.A.[5]	N.A.[5]
Torsional Properties				
J	mm^4	2708	297456.0	883107.0
C_w	mm^6	320071600	39434	45468000
X_0	mm	0	0.0	0.0
Y_0	mm	0	0.0	0.0
R_0	mm	44.98	27.00	41.17

TABLE 2—CHANNELS SECTION PROPERTIES (CONTINUED) [1,2,3,4]

Symbol	Unit	MT-90 S OC / MT-90 OC	MT-100 S OC / MT-100 OC	MT-90H OC / MT-90H S OC
-	-			
t	**mm**	3.00	4.00	2.25
w	**kg/m**	8.94	14.88	9.17
F_y	**Mpa**	350	350	350
Gross Properties				
A	**mm^2**	1140.8	1894.8	1169.30
I_x	**mm^4**	1770469	5946036	1645192
I_y	**mm^4**	1770469	3185651	1483982
s_x	**mm^3**	35409	79280	32903
s_y	**mm^3**	35409	63713	29679
R_x	**mm**	39.39	56.02	37.51
R_y	**mm**	39.39	41.00	35.63
Effective Properties				
$I_{x\text{-}eff}$	**mm^4**	1605985	5005546	1550611
$I_{y\text{-}eff}$	**mm^4**	1605985	2695127	1367793
$s_{x\text{-}eff}$	**mm^3**	32120	66741	31011
$s_{y\text{-}eff}$	**mm^3**	32120	53903	27374
$\Phi M_{n\text{-}x}$	**N.m**	10486	22879	10949
$\Phi M_{n\text{-}y}$	**N.m**	10486	17306	8870
$\Phi M_{nd\text{-}x}$	**N.m**	N.A.	N.A.	N.A.
$\Phi M_{nd\text{-}y}$	**N.m**	N.A.	N.A.	N.A.
$\Phi V_{n\text{-}x}$	**N**	88704	112896	44199
$\Phi V_{n\text{-}y}$	**N**	88704	180096	50730
L_u	**m**	N.A.[5]	N.A.[5]	N.A.[5]
Torsional Properties				
J	**mm^4**	2783333.0	6606148.0	1134474.0
C_w	**mm^6**	610560	343560000	574110000
X_0	**mm**	0.0	0.0	0.0
Y_0	**mm**	0.0	0.0	0.0
R_0	**mm**	55.71	69.42	51.73

1. Tabulated gross properties, including torsional properties, are based on the full unreduced cross section of the members, away from the punch-outs.
2. For deflection calculations, use the effective moment of inertia.
3. LSD design bending strength is the lesser of ΦM_n and ΦM_{nd}. Distortional buckling moment, ΦM_{nd}, based on assumed $K\varphi = 0$.
4. Members are assumed to be adequately braced at a maximum spacing of L_u to develop full design moment, ΦM_n.
5. Global buckling does not need to be considered for members with unbraced length up to of 12m

DEFINITION OF SYMBOLS

SYM.	DEFINITION
F_y:	Yield Strength.
W:	The weight per foot of the full unreduced cross-section of the members, away from the punch-outs.
t:	Design thickness.
A:	The cross-sectional area of the full unreduced cross-section of the members, away from the punch-outs.
I_x:	Moment of inertia of the gross section about axis X.
I_y:	Moment of inertia of the gross section about axis Y.
S_x:	Gross section-modulus about axis X.
S_y:	Gross section-modulus about axis Y.
R_x:	Radius of gyration of the gross section about axis X.
R_y:	Radius of gyration of the gross section about axis Y.
$I_{x\text{-}eff}$:	Effective moment of inertia about axis X at stress = Fy.
$I_{y\text{-}eff}$:	Effective moment of inertia about axis Y at stress = Fy.
$S_{x\text{-}eff}$:	Effective section modulus about axis X at stress = Fy.
$S_{y\text{-}eff}$:	Effective section modulus about axis Y at stress = Fy.
$\Phi M_{n\text{-}x}$:	LSD design bending strength based on local buckling about axis X and Φ_b=0.9.
$\Phi M_{n\text{-}y}$:	LSD design bending strength based on local buckling about axis Y and Φ_b=0.9.
$\Phi M_{nd\text{-}x}$:	LSD design distortional bending strength about axis X based on k_Φ = 0 and Φ_b=0.9.
$\Phi M_{nd\text{-}y}$:	LSD design distortional bending strength about axis Y based on k_Φ = 0 and Φ_b=0.9.
$\Phi V_{n\text{-}x}$:	LSD design shear about X axis and Φ_v=0.8.
$\Phi V_{n\text{-}y}$:	LSD design shear about Y axis and Φ_v=0.8.
L_u:	Limit of unbraced length below which lateral-torsional buckling for bending about the axis perpendicular to the web is not considered. Members are considered fully braced when unbraced length is less than L_u. Global buckling shall be checked for the other direction.
J:	St. Venant Torsional Constant.
C_w:	Torsional warping constant.
X_o:	Distance from the shear center to the centroid along the principal X-axis.
Y_o:	Distance from the shear center to the centroid along the principal Y-axis.
R_o:	Polar radius of gyration about the shear center.

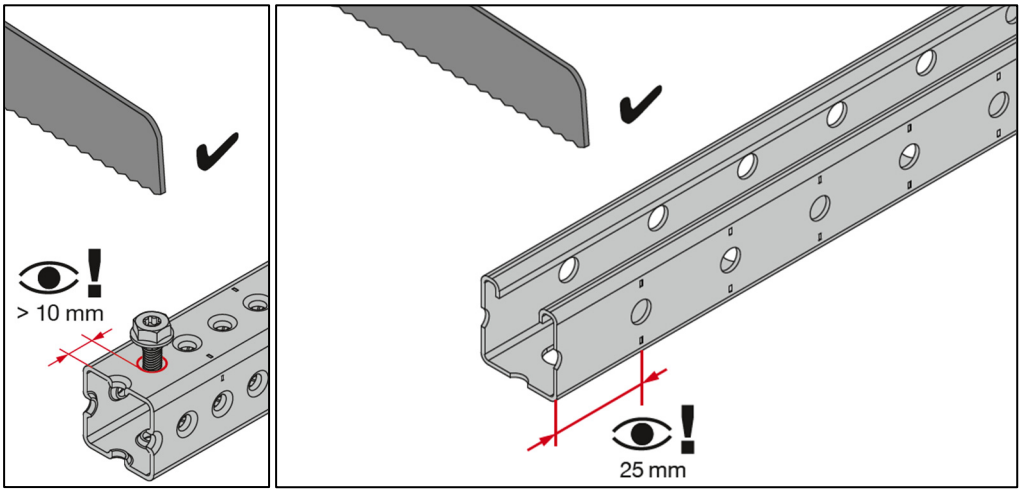


FIGURE 1—TYPICAL CUTTING DETAILS