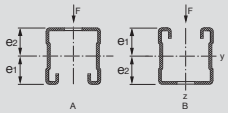
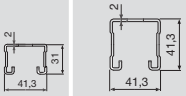
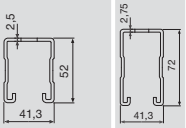
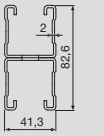
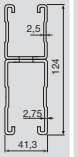
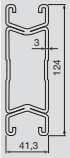
## **Technical data** for channel profiles MQ (hot-dip galvanized)

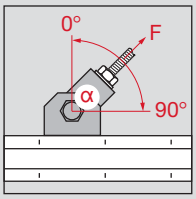
| **Definition of axes** | | |  | |  |  | |  |  |  | |  | |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | **MQ-21-F** | **MQ-21-HDG plus** | **MQ-31-HDG plus** | **MQ-41-F** | **MQ-41-HDG plus** | **MQ-52-F** | **MQ-52-HDG plus** | **MQ-72-F** | **MQ-21D-F** | **MQ-21D-HDG plus** | **MQ-41D-F** | **MQ-41D-HDG plus** | **MQ-52-72D-F** | **MQ-124XD-F** |
| Channel wall thickness | t | [mm] | 2,0 | | 2,0 | 2,0 | | 2,5 | | 2,75 | 2,0 | | 2,0 | | 2,5/2,75 | 3,0 |
| Cross-sectional area | A | [mm²] | 184.95 | | 226.55 | 267.75 | | 378.74 | | 527.55 | 372.33 | | 545.97 | | 916.19 | 1253.16 |
| Channel weight | | [kg/m] | 1,48 | | 1,76 | 2,13 | | 3,01 | | 4,20 | 2,97 | | 4,29 | | 7,26 | 10,09 |
| Delivered length | | [m] | 3/6 | 6 | 3/6 | 3/6 | 6 | 3/6 | 6 | 3/6 | 3/6 | 6 | 3/6 | 6 | 6 | 6 |
| **Material** | | | | | | | | | | | | | | | | |
| S235JR (DIN EN 10025) | | | • | • | • | • | • | • | • | • | | • | | • | | |
| S250GD (DIN EN 10346) | | | | | | | | | | | • | | • | | • | • |
| Permissible stress | $\delta_{perm}$ | [N/mm²] | 193.2 | | 193.2 | 193.2 | | 193.2 | | 193.2 | 188.3 | | 188.3 | | 188.3 | 162.3 |
| E-Modul | | [N/mm²] | 210000 | | 210000 | 210000 | | 210000 | | 210000 | 210000 | | 210000 | | 210000 | 210000 |
| **Surface** | | | | | | | | | | | | | | | | |
| Hot-dip galvanized, 45 µm - DIN EN ISO 1461 | | | • | | | • | | • | | • | • | | • | | • | • |
| Hot-dip galvanized, 70 µm - DIN EN 10326 | | | | • | • | | • | | • | | | • | | • | | |
| **cross-section values y-axis** | | | | | | | | | | | | | | | | |
| Axis of gravity A [1] | $e_1$ | [mm] | 11.22 | | 16.51 | 21.69 | | 27.27 | | 37.42 | 20.60 | | 41.30 | | 62.32 | 62.00 |
| Axis of gravity B | $e_2$ | [mm] | 9.38 | | 14.49 | 19.61 | | 24.73 | | 34.58 | 20.60 | | 41.30 | | 61.68 | 62.00 |
| Moment of inertia | $I_y$ | [cm⁴] | 1.01 | | 2.86 | 5.88 | | 12.42 | | 30.99 | 5.26 | | 32.36 | | 121.06 | 190.88 |
| Permtion modulus A | $W_{y1}$ | [cm³] | 0.90 | | 1.73 | 2.71 | | 4.55 | | 8.28 | 2.55 | | 7.83 | | 19.42 | 30.79 |
| Permtion modulus B | $W_{y2}$ | [cm³] | 1.09 | | 1.98 | 3.00 | | 5.02 | | 8.96 | 2.55 | | 7.83 | | 19.63 | 30.79 |
| Radius of gyration | $i_y$ | [cm] | 0.74 | | 1.12 | 1.48 | | 1.81 | | 2.42 | 1.19 | | 2.44 | | 3.64 | 3.90 |
| Permissible moment [2] | $M_y$ | [Nm] | 174 | | 335 | 524 | | 880 | | 1600 | 480 | | 1475 | | 3658 | 4999 |
| **z-axis** | | | | | | | | | | | | | | | | |
| Moment of inertia | $I_z$ | [cm⁴] | 4.63 | | 6.14 | 7.69 | | 11.17 | | 15.89 | 9.25 | | 15.41 | | 27.08 | 32.07 |
| Permtion modulus | $W_z$ | [cm³] | 2.24 | | 2.97 | 3.72 | | 5.41 | | 7.70 | 4.48 | | 7.46 | | 13.11 | 15.53 |
| Radius of gyration | $i_z$ | [cm] | 1.58 | | 1.65 | 1.69 | | 1.72 | | 1.74 | 1.58 | | 1.68 | | 1.72 | 1.60 |

- The permissible stress results of $\sigma_D / \gamma_{G/Q}$ where $\gamma = 1,4$.
- $\sigma_D$ results from the higher yield strength (point) resulting from cold forming as per EN1993-1-3: 2010-12: $\sigma D = f_{yk} / \gamma_M$ where $\gamma_M = 1,1$.

1) For the arithmetical bending dimensioning is the smaller value ($W_{y1}$, $W_{y2}$) decisive to ($W_{y1} = I_{y/e1}$ bzw. $W_{y2} = I_{y/e2}$).

2) My = $\delta_{perm}$ x min. ($W_{y1}$, $W_{y2}$)

**Channel selection:**
- The given data is based on a single span (simply-supported beam) bearing a single load, F(N), at mid span, L/2.
- If several loads are acting on a single span (simply-supported beam), these may be summated and regarded as a single load acting at mid span. By taking this approach, the design calculation is on the safe side. (→ Channel selection table).
- The permissible stress in the steel and the max. deflection, L/200, are not exceeded with the given max. span widths, L (mm).
- The channel's own weight has been considered.

| **Load drawing** | **Angle α** | **0°** | **10°** | **30°** | **45°** | **60°** | **80°** | **90°** |
|---|---|---|---|---|---|---|---|---|
|   | Permordable tensile load F for MQP-U M12-F and M16 under consideration of the angle α | 5,0 kN | 5,0 kN | 3,00 kN | 2.12 kN | 1.73 kN | 1.52 kN | 1.50 kN |
| | Shown load values are recommended values with partial safety factors for actions and resistance included. Design value = 1.4 * recommended value. | | | | | | | |