MANNI SIPRE
STEEL CO-CREATION

PART OF MANNI GROUP

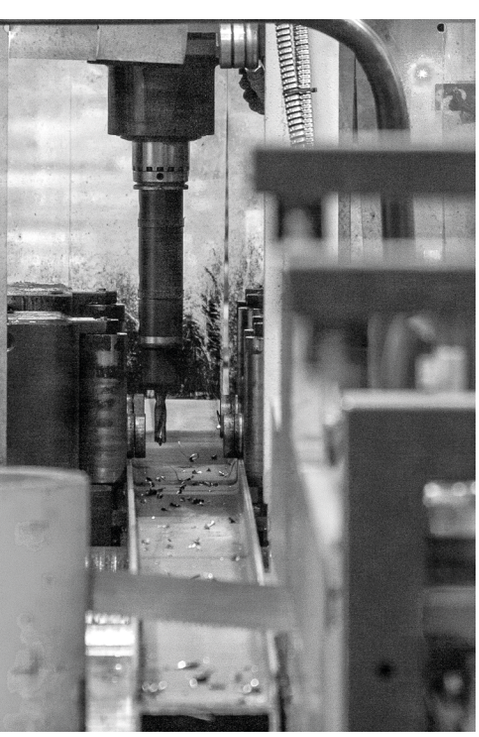
# WELDED BEAMS (HS)

## Steel plates cutting, forming and welding of T and double T welded beams

Welded composite beams (plates girders) are manufactured in the workshop by means of welded web or flanges also with varying thicknesses.

This technique makes it possible to obtain beams with sections of shapes and sizes that would otherwise not be possible with the normal hot-rolling process.

They are usually T or double T sections.

The construction of welded beams is carried out through the following main steps:

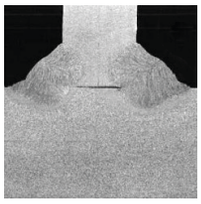
**SHOT BLASTING**
Cleaning process of the surface of steel plates by metal shot blasting to make the elements suitable for welding.

**CUT**
Oxyfuel, plasma or laser cutting of web or flanges from steel plates.

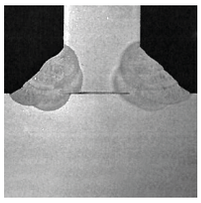
**WELDING**
Performed with automatic welding machine submerged arc. The wire used for submerged arc welding is according to EN 14171 and the flux according to EN ISO 14174. The wire and flux per process 121 are used in accordance with the WPQR (Welding Procedure Qualification Record) applicable to WPS.

**DRILLING**
Obtained by automatic controlled machines before or after welding.

**FINAL DRESSING**
The "bare" welded beam is then completed by welding the additional elements up to the composition of the drawing mark. All welding processes are according to EN ISO 15614 - EN ISO 3834 - EN 1090 part 1.



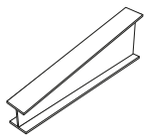
SINGLE PASS WELDING BEAD SIDE RANGE
Z = 6-14 MM



MULTIPASS WELDING BEAD SIDE RANGE
Z = 14- ¥ MM

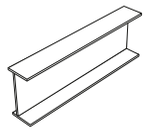
FULL PENETRATION WELDING

## TYPES OF BEAMS

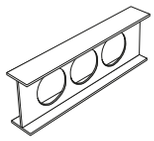


TAPERED WEB

T-WELDED BEAM

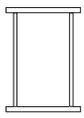


OFFSET



HONEYCOMB

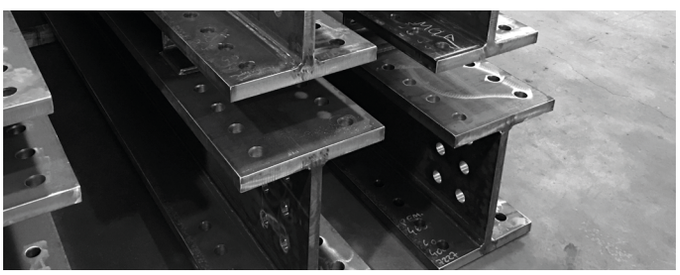
BEAM WITH LOWER WING WITH REINFORCEMENT



BOX BEAMS

## TECHNICAL NOTES WELDED BEAMS

| | | SUBMERGED ARC WELDER HS |
|---|---|---|
| MAXIMUM HEIGHT (mm) | H | 2500 |
| MINIMUM HEIGHT (mm) | H | 200 |
| MAX WIDTH (mm) | b | 1200 |
| MIN WIDTH (mm) | b | 150 |
| MAX WING THICK. (mm) | s | 80 |
| MIN WING THICK. (mm) | s | 10 |
| MAX WEB THICK. (mm) | a | 50 |
| MIN WEB THICK. (mm) | a | 6 |
| MAX CAMBER (mm) | | 60 |
| MAX LENGTH (mm) | L | 24000 |
| MAXIMUM WEIGHT (Kg/m) | | 1500 |
| MAXIMUM OVERHEAD CRANE CAPACITY (ton) | | 20 |
| MIN-MAX WELDING BEAD SIDE (mm) | z | 6÷14 |
| FULL PENETRATION WELDING | | SI |
| SANDBLASTING (mm) | H x b MAX | 3000 X 400 |
| MAX STEEL PLATE SIZE FOR PRE-WELDING DRILLING (mm) | | 3000 |
| MAX WEB INCLINATION (degrees) | | 3° |
| COLD CUT (mm) | H x b MAX | 1000 X 450 |
| ROBOT THERMAL CUT (mm) | H x b MAX | 1900 X 600 |
| FULL BEAM DRILLING (mm) | | 2000 X 600 |



## REFERENCE STANDARDS

- Material UNI EN 10025-2:2005
- Thickness tolerance UNI EN 10029:2011 CLASS A
- Tolerance on surface finishes according to EN 101632:2005 CLASS A
- Standard applicable in manufacture UNI EN ISO 3834-2
- I- and H-beams dimensional and shape tolerance UNI EN 10034
- Existing WPS (UNI EN 288-3:1993 / UNI EN ISO 156141:2017)
- Welding quality level UNI EN ISO 5817:2014 Level C
- NDT checks according to Manni Sipre spa standards
- Operator qualifications according to UNI EN ISO 14732:2013/ UNI EN ISO 9606-1:2017
- Construction tolerances of welded sections according to EN 1090-2:2018
- Length tolerance with executive cut (oxyfuel) ±2 mm and in any case according to EN 1090-2:2018 CLASS 1
- Drilling tolerance for beams drilled before welding
- Removal of cutting burrs by hand scraper

## ON REQUEST

- Sandblasting ISO 8501-1:2007 SA 2.5
- Any surface treatments
- Any additional checks and issuing of certificates

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