Weldability

Drawn Arc "DA"

Weldability

The general welding properties of Studfast "DA" weld studs are given in the table. Select from the 1st column in the table your product parent material. Read across to the column corresponding to the weld stud material. The general welding properties of the 2 materials is then given to enable you to evaluate the compatibility of your selection.

Parent Material	Stud Material	
	Mild Steel	Stainless Steel
Low Carbon Mild Steel	***Good***	***Good***
Steel up to 0.6% carbon	***Fair***	***Good***
Austenitic Stainless Steel	***Good***	***Good***
Zinc Coated Steel	***Fair***	***Fair***
Electro Galvanised Steel	***Fair***	***Fair***
Hot Rolled Structural Steel	***Fair***	***Fair***

Parent Material

The welding properties of Studfast "DA" weld studs is dependant upon the condition of the parent material. The best quality parent material should be used wherever possible to eliminate the possibility of weld failures. When welding Mild Steel studs cold rolled material should ideally be used. The use of hot rolled Mild Steel should be avoided if possible but **"**DA**"** Studwelding is more tolerant to material in this condition and burns through any laminations that may be present in the parent material.

Drawn Arc Stud Material	
Mild Steel	BS 970 Pt 1 040A04 (Restricted Specification)
Stainless Steel	BS 970 type 304S11

Parent Material Thickness

Studfast "DA" weld studs are designed for use on thicker material than "CD" weld studs The maximum stud diameter should not exceed 4 times the thickness of the parent material, however in some instances a stud to plate ratio of 5 to 1 can be used. Studfast "DA" weld studs may be welded to materials of 0.8mm thickness upwards.

Stud Dia	Stud/Plate Ratio	
	4:1	**5:1**
M5	**1.00mm**	**0.8mm**
M6	**1.20mm**	**0.9mm**
M8	**1.60mm**	**1.30mm**
M10	**2.00mm**	**1.60mm**
M12	**2.50mm**	**2.00mm**
M16	**3.50mm**	**3.00mm**

Reverse Marking

With "DA" Studwelding reverse marking may be evident but this is normally of less importance than with "CD". The extent of any marking is proportional to stud diameter, parent material thickness, type and/or condition. Should you have any concerns regarding the extent of this marking Studfast would be pleased to carry out weld tests on sample material and provide free advice.

All Studfast "DA" weld studs are manufactured to the latest specifications and to the materials shown in the table.

Stud Location

"DA" Studwelding is more tolerant than "CD" of uneven and/or dirty surfaces and tends to burn through any laminations in the parent material, therefore location of "DA" weld studs by means of a centre pop mark is possible without significant weld degradation. For more accurate location the use of templates is recommended. Advice on the manufacture of these templates is available upon request.

Stud Dia	Min Hole Dia
M5	**13.40 mm**
M6	**13.40 mm**
M8	**15.70 mm**
M10	**19.40 mm**
M12	**20.90 mm**
M16	**26.90 mm**

Weld Testing

The strength of a "DA" weld on your material can be determined by the use of destructive and non-destructive tests. These are detailed in the appropriate data sheet but comprise of bend tests, visual tests and torque testing.

The table opposite and the graph below provide the minimum loads to fracture for good Drawn Arc "DA" studs, where Studfast "DA" weld studs have been used and where the parent material is of goods weldable quality

Stud Diameter	Mild Steel	Stainless Steel
M6	**6.70 kN**	**6.94 kN**
M8	**12.30 kN**	**12.75 kN**
M10	**19.66 kN**	**20.38 kN**
M12	**28.69 kN**	**29.73 kN**
M16	**54.47 kN**	**56.45 kN**
M20	**85.11 kN**	**88.20 kN**