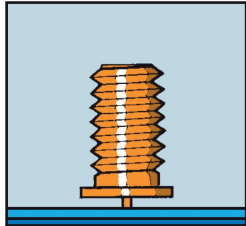


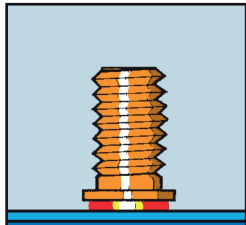
# SELECTING THE BEST PROCESS

In all processes the stud is held in a handtool or a production head.

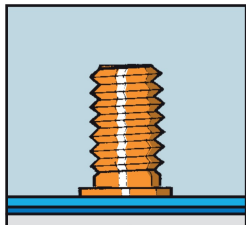
## THE CAPACITOR DISCHARGE 'CD' PROCESS



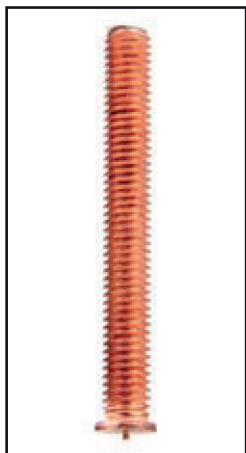
The Capacitors are charged to a pre-set voltage to suit the diameter to be welded. The stud pip is placed into contact with the sheet.



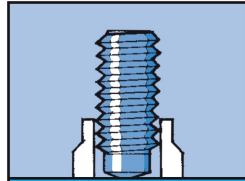
Upon triggering, the stored energy is discharged as a high current pulse, melting the pip and producing an arc.



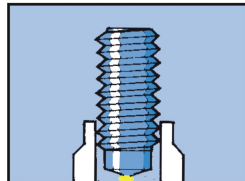
Return spring pressure forges the stud into the molten surface area on the sheet to give complete fusion across the flange.



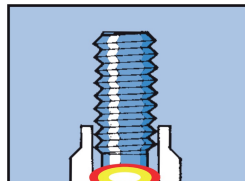
## THE DRAWN ARC 'DA' PROCESS



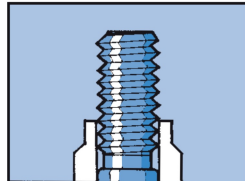
Current and weld time is pre-set to suit the diameter to be welded. The stud is then placed on the plate.



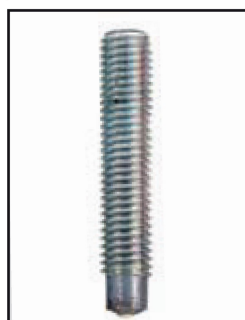
Upon triggering, a pilot arc occurs as the stud lifts to a pre-set height.



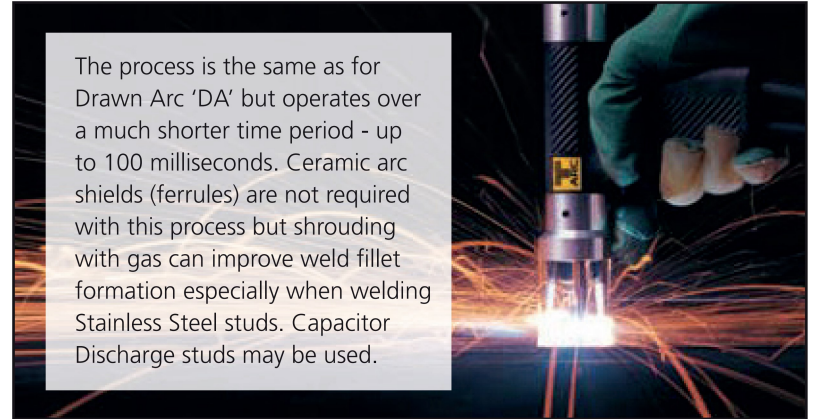
The main arc then melts the weld end of the stud and creates a molten pool in the plate.



Return spring pressure forges the stud into the molten pool. The ferrule contains the molten metal and shapes the fillet.



## THE SHORT CYCLE 'SC' PROCESS



The process is the same as for Drawn Arc 'DA' but operates over a much shorter time period - up to 100 milliseconds. Ceramic arc shields (ferrules) are not required with this process but shrouding with gas can improve weld fillet formation especially when welding Stainless Steel studs. Capacitor Discharge studs may be used.

PROCESS	STUD/MATERIAL/POWER	ADVANTAGES
<b>Capacitor Discharge "CD"</b> Designed specifically for thin gauge materials where reverse marking must be minimal. Sheet surface should be clean and flat. Stud has a weld pip.	<b>Stud Diameter</b> 1mm – M10	Low cost equipment, low cost studs, fast to load and weld, easy to jig and automate, small light equipment, no ferrules or shrouding gas required, good weld results with aluminium or brass in addition to mild and stainless steel. Weld is clean and requires no finishing.
	<b>Material Thickness</b> 0.7mm & above	
	<b>Power Requirements</b> Single Phase 240/110 Volt	
<b>Drawn Arc "DA"</b> Very strong penetrative welds are achieved with this process. Ferrules required to contain and shape molten metal. Weld end of stud is fluxed.	<b>Stud Diameter</b> 3mm to 30mm	Burns through parent material laminations, tolerates surface curvature and imperfections e.g. light rust, scale, grease and some coatings. Gives neat and controlled weld fillet. The only method of Studwelding large diameters. This process also lends itself to multi-gun applications.
	<b>Material Thickness</b> 2mm & above	
	<b>Power Requirements</b> Three Phase 415 Volt	
<b>Short Cycle "SC"</b> More penetrative welds than "CD" and is suitable for hot rolled/coated materials.	<b>Stud Diameter</b> M3 to M8	This process is more tolerant than CD of uneven or dirty surfaces. Can be easily automated and can utilise low cost "CD" studs. Ferrules are not required however shrouding gas improves weld spatter.
	<b>Material Thickness</b> 1.5mm & above	
	<b>Power Requirements</b> Three Phase 415 Volt	