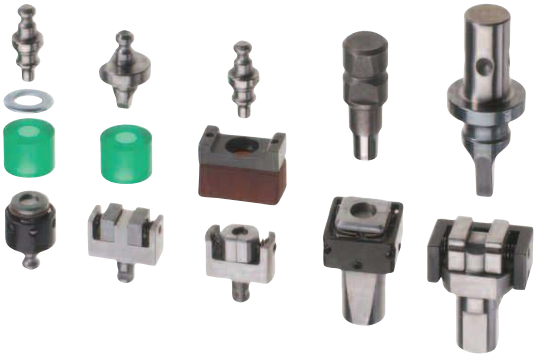
The SPOT CLINCH® tooling family

The central component of the SPOT CLINCH® joining system is the tooling, or "tool kit". These are available for round clinch joints with nominal diameters of 3, 4, 5, 6, 7, 8 and 10 mm and rectangular point joints with nominal widths of 3, 4, 4.3, 5 and 6 mm. Non standard dimensions are generally available from diameters of 1.0 to 10 mm.
A multiple tool holder can be used to integrate tool sets into corresponding SPOT CLINCH® portable units, modular work heads or a press.



Design of the segmented die body

The SPOT CLINCH® die comprises a basic die body and individual die segments, which are held in position by a steel spring. A surrounding cage permanently secures the separate sections to the die body preventing them from falling out. The die cavity can be formed by 2, 3 or 4 segments with die designs being selected depending on the application requirements.

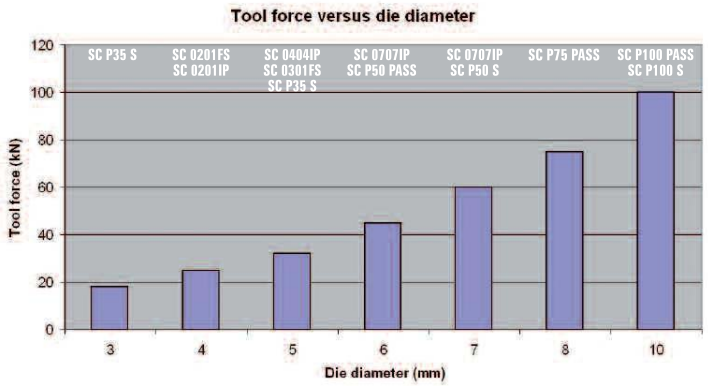
Punch Strippers

The stripper has two essential functions: keeping the sheet metal flat while clinching and pushing the sheet metal out of the punch during the return motion of the tooling. A number of standard strippers are available, given that accessibility conditions may vary for each application. Special executions may be supplied if necessary.

Criteria for selection

Selecting the tooling is the first step involved when studying a new clinching application, because it will determine the pressing force and therefore the size of the clinching force unit and work head. This choice will depend on:

- Sheet metal thickness and material: each tooling has its own range of thickness per material type.
- Accessibility and space allowed for the tooling: the thicker the material, the larger the tooling required.
- Strength requirement: there is a direct relation between the size of the tooling and the joint strength. Priority can be given to obtaining either the highest strength, or minimizing the cost of the equipment by selecting a smaller tooling.
- Punch location: whenever possible, the punch should always be on the thicker layer, which will provide a higher joint strength.
- Number and variability of sheet layers: a rectangular tooling should be selected if a low ductility material is used or if more than 2 layers, unequal thicknesses or variable total thickness are involved in the same application.

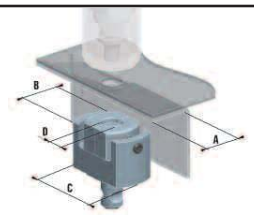
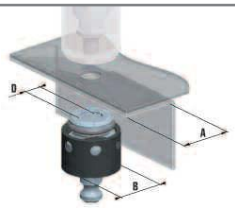
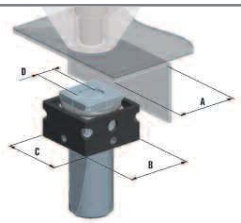
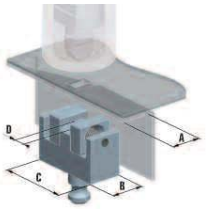
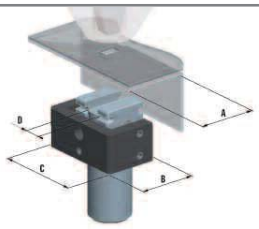


Compatibility of tooling with the machine

The SPOT CLINCH® work heads are designed to accommodate the various standard tooling. A corresponding force unit with appropriate setting force exists for each die diameter. This makes it quite simple to select the clinching machine. Irrespective of the die diameter or width, a suitable work head is available in the portable or in the modular range.

Tool selection based on clinch area and materiel thickness

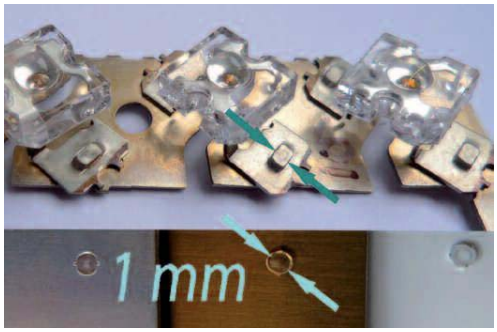
The main parameter for selection is the clinch area, in general defined by the edge of the sheet metal wall. The width or the diameter of the die must match the edge width (A) so that the die's outer dimension is at least equal to the sheet metal edge. On punch side, the limiting dimension will be the width of the stripper front piece. A special stripper front piece may be provided in case of limited access.

TOOLING TYPE	GEOMETRY OF CLINCH AREA	A (mm)	B (mm)	C (mm)	D (mm)	TOTAL THICKNESS (mm)	SETTING FORCE (kN)
SR302		8.0	8.0	22.0	3.0	0.5 – 2.0	18
SR402		8.0	8.0	22.0	4.0	0.5 – 2.5	25
SR502		10.0	10.0	22.0	5.0	1.0 – 3.0	35
SR602		12.0	12.0	25.0	6.0	1.0 – 3.0	40
SR403		13.0	13.0	13.0	4.0	0.8 – 2.5	25
SR503		14.0	14.0	14.0	5.0	1.0 – 3.0	32
SR603		16.0	16.0	16.0	6.0	1.0 – 4.0	45
SR703		18.0	18.0	18.0	7.0	1.0 – 4.0	60
SR704		18.0	18.0	18.0	7.0	1.5 – 4.0	60
SR804		22.0	22.0	22.0	8.0	2.0 – 6.0	75
SR1004		22.0	22.0	22.0	10.0	2.0 – 6.0	100
ST302		8.0	8.0	20.0	3.3	0.5 – 2.5	20
ST432		10.0	10.0	22.0	4.3	1.0 – 3.0	35
ST502		12.0	12.0	22.0	5.0	1.5 – 4.0	50
ST602		21.0	21.0	30.0	6.0	2.0 – 6.0	75

Speciality tooling

ATTEXOR Clinch Systems provides optimized and advanced clinching solutions for specific industries, notably:

- **Micro clinch tooling**, which have been used in the electronic and watch industries for 15 years, with a small record die diameter of 1.0 mm
- **Tooling for electric contacts**, with diameters ranging between 2 to 3 mm
- **Tooling for filters**, ST402, accepting high filtering fabric material thickness in the ventilation industry
- **Tooling for ventilation ducts**, which enables fast lateral displacement of machine



Micro clinch