7th Step

With the steps selected up to now we have selected a **single spindle** riveting machine model, this will be sufficient for most requirements, if this is your case then you have finished.

If you need simultaneous riveting on **two equal spindles**, initially consult the maximum and minimum distances between the centres of the rivets and apply correction factor **Fc4** to the initial formulas, thus:

If the rivet is **solid** the general formula to be applied is:

$$Stc = 3{,}14 \cdot R^2 \cdot Fc1 \cdot Fc2 \cdot \mathbf{Fc4}$$

If the rivet is **semi-tubular or tubular** the general formula to be applied is:

$$Stc = 3{,}14 \cdot (R^2 - r^2) \cdot Fc1 \cdot Fc2 \cdot \mathbf{Fc4}$$

Double riveting head	Correction factor **Fc4**
	2

With the result obtained select the suitable **double spindle riveting head** model depending on the Corrected work section **Stc** value, in the following table:

Corrected work section. Stc	MACHINE MODEL
From 7 to 20	**RA-6 DB**
From 20 to 95	**RA-12 DB**
From 95 to 122	**RA-14 DB**
From 122 to 154	**RA-16 DB**
From 154 to 200	**RA-18 DB**
From 200 to 255	**RA-20 DB**

Remarks: For other alternatives or clearance distances for the spindle, consult with the factory.

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This information is aimed at giving a **quick guide** to enable the most suitable type of riveting machine to be chosen. To make the selection the following **basic information** will be needed from the customer:

1. Type of rivet, solid, semi-tubular or tubular.
2. Final maximum head diameter required.
3. Resistance of material used for rivet.
4. Rivet material specification.
5. Free height of the spindle.
6. Single riveting or double head spindle.

Key in the known values into the general formula, to calculate the **Correct work section (Stc),** this value will enable us to select **the most suitable model** in the table (step 5), by carrying out the steps as follows:

1ST Step

If the rivet is **solid** the general formula to be applied is:

$$Stc = 3{,}14 \cdot R^2 \cdot Fc1 \cdot Fc2$$

If the rivet is **semi-tubular or tubular** the general formula to be applied is:

$$Stc = 3{,}14 \cdot (R^2 - r^2) \cdot Fc1 \cdot Fc2$$

With:
- **Stc:** Correct work section.
- **R:** Exterior radius of the rivet.
- **r:** Interior radius of the rivet hole.
- **Fc1:** Correction factor 1 (obtained in step 3).
- **Fc2:** Correction factor 2 (obtained in step 4).

2nd Step

Substitute the following values in the formula:

R if it is a solid rivet.
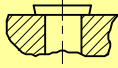**R and r** if it is semi-tubular or tubular.

R=D/2

R=D/2 y r=d/2

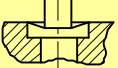**Solid Rivet**

Semi-tubular or tubular rivet
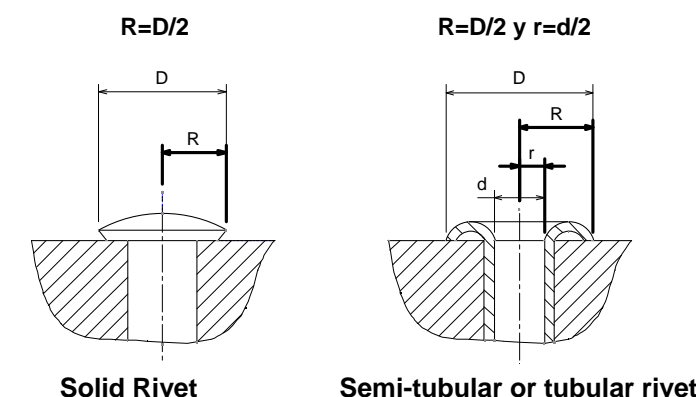
3rd Step

Select correction factor **Fc1** depending on the **type of rivet material and the composition**. See the table below:

Material	Resistance daN/mm^2	Correction factor Fc1
Aluminium	~20	**0,50**
Bronze	~30	**0,75**
Steel	~40	**1**
Stainless steel	~80	**2**
Pre-treated steel	~120	**3**

4TH Step

Select the correction factor **Fc2** depending on the **shape of the head** required. See table below:

| Rivet head shape		Correction factor Fc2
Flat		
Conical		1
Flat flanged		
Cambered		
Flanged		1,10
Drawn		1,20
Conical sphere		1,50

5th Step

Select the suitable riveting machine model depending on the **corrected work section Stc** value obtained from the application of the formula:

Corrected work section. (Stc)	MACHINE MODEL
From 0,20 to 7	**RA-4**
From 7 to 20	**RA-6**
From 20 to 95	**RA-12**
From 95 to 122	**RA-14**
From 122 to 154	**RA-16**
From 154 to 200	**RA-18**
From 200 to 255	**RA-20**
From 255 to 490	**RA-30**

6th Step

Once the most suitable machine model has been chosen, it is necessary to ensure that the **free height of the tool** in the head is sufficient, otherwise it is necessary to change the components of the head radius in order to have a greater H distance.
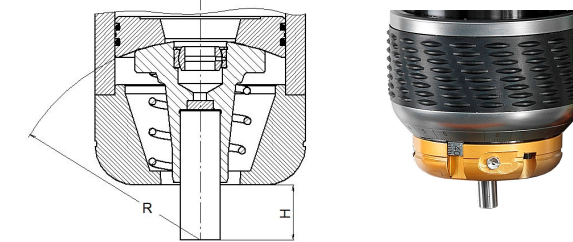
MACHINE MODEL	Free height	H	Correction factor (Fc3)
RA-4 RA-6 RA-12	**Standard R65**	**20**	1
	Optional R85	40	1,25
	Optional R105	60	1,65
RA-14 RA-16 RA-18 RA-20	**Standard R100**	**28**	1
	Optional R125	53	1,25
	Optional R150	78	1,65
RA-30	**Standard R150**	**45**	1
	Optional R200	95	1,25
	Optional R250	145	1,65

If the head is changed for a **new H distance** that is not standard, it will be necessary to **re-apply** a new correction factor Fc3 to the initial formulas, as follows:

If the rivet is **solid** the general formula to be applied is:

$$Stc = 3,14 \cdot R^2 \cdot Fc1 \cdot Fc2 \cdot Fc3$$

If the rivet is **semi-tubular or tubular** the general formula to be applied is:

$$Stc = 3,14 \cdot (R^2 - r^2) \cdot Fc1 \cdot Fc2 \cdot Fc3$$

and with the result obtained **re-take step 5** to repeat the selection of the machine model.