

Module Service Tool



5 extensions with centering devices



MST – tool itself with ropes

Module Service Tool

Technical Background

Tool Set	Clamping Tool	Comes with set of rubber elements (→ Ø23, Ø24, Ø25, Ø27 (tbd))
	Extensions	Each extension is 1m long and comes with centring devices <ul style="list-style-type: none">▪ Standard set with 5 extensions▪ Up to 7 extensions fit into the protective cases
	Ropes	2 pieces, Ø 10 mm, 8m long, maximum pulling force 13.000 kN
	Maintenance Tools	Tbd
	Protective Cases	60 x 40 x 22.3 cm, 1 handle, waterproof, integrated pressure-equalisation-valve
		120 x 40 x 16,8 cm, 3 handles, waterproof, integrated pressure-equalisation-valve, transportation wheels
	Foam Inserts	Each protective case has a foam insert for storing the tools

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Technical Background

Weight	Clamping Tool	~5,2 kg
	Extensions with centring devices	each 2,65 kg
	Ropes	0,7 kg
	Protective Cases	60 x 40 x 22.3 cm → 3,82 kg
		120 x 40 x 16,8 cm → 7,48 kg
		Σ ~19,15 kg

Module Service Tool

Technical Information	
The tool was designed for pulling	8``-modules
	interconnectors
Maximum pulling force for modules	1.000 N → The maximum possible pulling force is higher, but the endurance of rubber elements will suffer
The tool lasts at least	50.000 cycles
Material	Tool is built up from stainless steel
Property Rights	The gripping principle is protected by patent
Wearing parts interchangeable such as	Rubber elements, O-rings, Slide bushings, Springs, Gear rag, Locking rockers

Possible Questions by the Customer

Questions	Answers
What size modules can MST remove?	The tool is designed for removing 8''-modules.
What range does the MST module cover in terms of permeate pipe sizes?	Up to seven extensions do fit into the protective casing. So the tool is able to maintain pressure vessels with a maximum number of eight modules in one pressure vessel.
What size spacers are recommended for which size diameter pipe?	Tbd, 3 – 4 different \varnothing of rubber elements will be able to handle the complete range of modules.
How often do these spacers need to be replaced / per number of modules removed / what do they cost?	The rubber elements achieved more than 5.000 cycles with a pulling force of 1.000 N. Cycles were tested at 20°C under lab conditions. IN the field the total amount of cycles may vary depending on the operating conditions.
When the spacers are warm or cold do you lose pulling power?	Cycles of rubber elements will be guaranteed for a temperature of 20°C. A temperature influence on the durability must be investigated, if desired.
Can the MST be operated by one person?	Yes, one person is able to handle the MST.
Can you pull out the interconnector pipe?	The single rubber element with a smaller \varnothing in front of the tool is able to pull the interconnector.
Do you need any safety equipment when using the MST tool?	In all likelihood a set of gloves and safety boots will do.
What training do you need to use the MST tool?	A special training is not necessary. The operating instructions are sufficient.