

Rapid Set-up

SERCO machines have been designed for use under extremely difficult and restrictive conditions. For this reason, parallelism and concentricity settings are independent: the SERCO TU machine is set up and ready for machining in just two stages. Independent settings mean that the flatness does not need to be readjusted after concentricity has been set. Machines can be adjusted easily. Once the machine is in position, set-up can be done effortlessly providing high levels of accuracy (0.01 mm).

Light and Compact

SERCO TU machines can be set up easily in extremely confined spaces and in all positions. Their light weight also means that they can be installed and used by a single operator.



Clamping in Position

SERCO TU machines are positioned and held in place by a column/arm system clamping the outside of the part to be machined. This gives them a wide zone of use from the center of the pipe up to its outside surface.

Precision

With an accuracy of 0.01 mm and a surface finish capable of attaining Ra 1.6, Serco TU series machines are the only machines that combine reduced size and weight, ergonomic design and wide capabilities, with ultra-high precision surface machining and/or boring results.

TU series

Portable Facing and Boring Equipment

TU 200

Ø 0 - 200 mm (0" - 7.87")



Description:

The SERCO TU 200 machine is the smallest model in the SERCO TU series. This versatile machine is equipped with manually controlled axial and radial feeds. With its compact size and light weight (15 kg (33 LB)), it can be used in very confined spaces, but still performs to an accuracy of 0.01 mm.

The machine can be used with the FC 300 chain system for clamping it securely onto the outside of the part to be machined.

Technical features:

Facing Ø	0 - 200 mm (0" - 7.87")
Clamping Ø	100 - 290 mm (3.9" - 11.4")
Axial feed	70 mm (2.8")
Radial feed	30 mm (1.2")
Maximum drive motor power (at 6 bars)	150 Watt
Air supply pressure	5 - 7 (bars) 87 - 101 (psi)
Air-flow required	350 (l per min) (12.3 cfm)
Weight	≈ 15 kg (33 LB)

REF.	DESCRIPTION
TU 200	Portable facing and boring machine with air-motor - facing Ø: 0-200 mm (7.87")

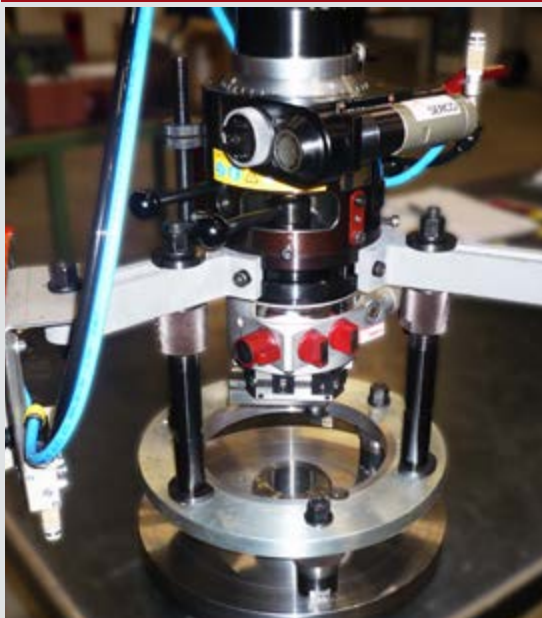


TU 200 container size:

- Outside dimensions: 700 x 550 x 380 mm (27,6" x 21,6" x 15")
- Weight: machine and accessories: ≈ 30kg (66 LB)

TU 400

Ø 0 - 400 mm (0" - 15.75")



Description :

The SERCO TU 400 is perfectly suitable for machining operations that need to be done by a single operator in a confined space.

While maintaining its precision of 0.01 mm, the TU 400 is fitted with automatic or manual axial and radial feed movements.

This feature, compared with the TU 200, enables it to work with a regular autonomous movement. The TU 400 can also be used with the RTJ system to perform conical machining functions.

In order to machine a maximum surface, the TU 400 can be held on an outside surface using the FC FC745 chain clamp.

Technical features:

Facing Ø	0 - 400 mm (0" - 15.7")
Clamping Ø	220 - 430 mm (8.7" - 16.9")
Axial feed	100 mm (3.94")
Radial feed	40 mm (1.6")
Maximum drive motor power (at 6 bars)	780 Watt
Air supply pressure	5 - 7 (bar) 87 - 101 (psi)
Air-flow required	1500 (l per min) (52.9 cfm)
Weight	≈ 35 kg (77 LB)

REF.	DESCRIPTION
TU 400	Portable facing and boring machine with air-motor - facing Ø: 0-400 mm (15.7")
TU 400-E	Portable facing and boring machine with electric motor - facing Ø: 0-400 mm (15.7")
TU 400-TE	Portable facing and boring machine with electric motor - facing Ø: 0-400 mm (15.7")



TU 400 container size:

- Outside dimensions: 680 x 530 x 380 mm (27" x 21" x 15")
- Weight: machine and accessories: ≈ 65kg (143 LB)

TU 600

Ø 0 - 600 mm (0" – 23.62")



Description :

The TU 600 is undoubtedly the most versatile machine in the SERCO range.

Its reduced weight (65 kg (143 LB)), large capacity (Ø 0-600 mm (23.62")) and high-precision machining (0.01 mm) mean that the machine is an uncontested leader in the world of on-site machining.

Moreover it provides the same advantages as the TU 400, i.e. automatic or manual axial and radial feed movements and, therefore, it can be used with the "RTJ" system

The TU 600 can also be used with the FC 745 and does not require a special hoisting and handling system.

Technical features:

Facing Ø	0 – 600 mm (0" - 23.62")
Clamping Ø	250 – 720 mm (9.84" - 28.3")
Axial feed	135 mm (5.3")
Radial feed	60 mm (2.4")
Maximum drive motor power (at 6 bars)	780 Watt
Air supply pressure	5 – 7 (bar) 87 - 101 (psi)
Air-flow required	1500 (l per min) (52.9 cfm)
Weight	≈ 65 kg (143 LB)

REF.	DESCRIPTION
TU 600	Portable facing and boring machine with air-motor – facing Ø: 0-600 mm (23.6")
TU 600-E	Portable facing and boring machine with electric motor – facing Ø: 0-600 mm (23.6")
TU 600-HY	Portable facing and boring machine with hydraulic motor – facing Ø: 0-600 mm (23.6")
TU 600-TE	Portable facing and boring machine with brushless electric motor and control system – facing Ø: 0-600 mm (23.6")



TU 600 container N° 1 size:

- Outside dimensions: 680 x 530 x 380 mm (27" x 21" x 15")
- Weight: Machine and arms: ≈ 75kg (165 LB)

TU 600 container N° 2 size:

- Dimensions (extérieures) : 680 x 530 x 380 mm (27" x 21" x 15")
- Weight: Columns and accessories: ≈ 48kg (106 LB)



OPTIONS ET ACCESSOIRES

In certain cases, the machine cannot be attached directly to the part to be machined. Chain systems are available for all the SERCO TU machines, which means that the machine can be attached to the outer rim of the pipe and the required machining can be done with the same accuracy as when the machine is attached directly to the part to be machined.



SERCO TU 200 + FC 300



FC 300



SERCO TU 400 + FC 745

Chain Clamps



FC 300

TU series

Portable Facing and Boring Equipment

TU 1100

Ø 0 - 1100 mm (0" - 43.3")



Description :

The SERCO TU 1100 is designed for machining surfaces up to 1,100 mm (43.3") in diameter. Specially designed support arms increase its capacity.

The rigidity of its design also enables it to machine valve seats down to depths of 500 mm (19.7"). Like the TU 400 and 600, it is equipped with automatic feed systems and can be fitted with an RTJ system.

The FC 1150 option, a chain clamping system specially designed for these machines, is also available.

Technical features:

Facing Ø	0 – 1100 mm (0" - 43.3")
Clamping Ø	280 – 1210 mm (11" - 47.6")
Axial feed	150 mm (5.9")
Radial feed	100 mm (3.9")
Maximum drive motor power (at 6 bars)	570 Watt
Axial downfeed power drive motor	150 Watt
Air supply pressure	5 – 7 (bar) 87 - 101 (psi)
Air-flow required	1600 (l per min) (56.5 cfm)
Weight	≈ 120 kg (264 LB)

REF.	DESCRIPTION
TU 1100	Portable facing and boring machine with air-motor – facing Ø: 0-1100 mm (43.3")
TU 1100-E	Portable facing and boring machine with electric motor – facing Ø: 0-1100 mm 43.3")
TU 1100-HY	Portable facing and boring machine with hydraulic motor – facing Ø: 0-1100 mm (43.3")
TU 1100-TE	Portable facing and boring machine with brushless electric motor and control system – facing Ø: 0-1100 mm (43.3")



Size of TU 1100 container N° 1:

- Outside dimensions: 700 x 500 x 540 mm (28" x 20" x 21")
- Weight: Machine and arm: ≈ 145kg (320 LB)

Size of TU 1100 container N° 2:

- Outside dimensions: 700 x 500 x 540 mm (28" x 20" x 21")
- Weight: Columns and accessories: ≈ 155kg (342 LB)

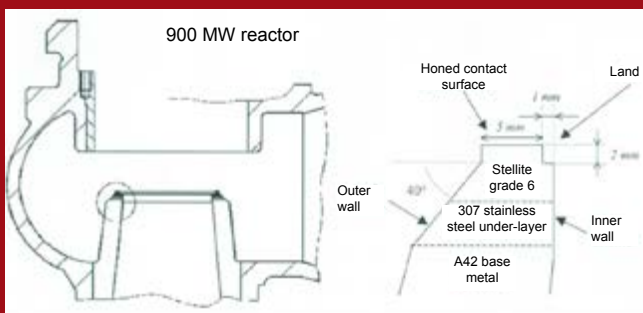
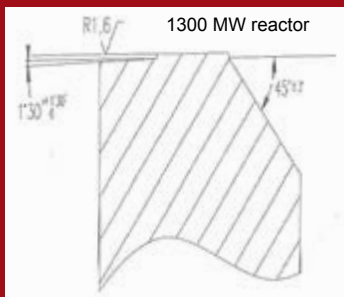


OPTIONS: Tooling for Main Steam Supply System

In a nuclear power plant the Main Steam Supply System circuit is protected against extreme pressure by relief valves called MSSS valves. These valves are a vital safety element in nuclear power plants and it is essential for them to be in good working order. Seats on these valves have a special geometry and machining them requires suitable precision tooling. MSSS tooling is most often used on circuits for 900 MW and 1300 MW reactors. Safety valve design varies slightly from one type of reactor to another, especially as far as valve seats are concerned.

SERCO uses "MSSS" tooling specially designed for machining these valve seats.

MSSS tooling can be fitted to the TU 1100 as the machines provide all the rigidity required for in-depth machining operations. The complexity and depth of the shapes to be machined make certain MSSS tooling elements vital:



- Extra-short machine clamping arm
- Short columns with adjusting nuts
- Special reinforcement plates
- Feed combination system for an angle of 1°30'
- Feed combination system for an angle of 45°
- Special anti-vibration tool-holder
- Chip protection around the nozzle
- Chip protection inside the nozzle
- Digital ruler for axial feed
- Reinforced drive spindle
- Etc ...

MSSS valve seats can also be machined with TU 600 TE and TU 1100 TE machines.

These machines are driven by brushless motors.

The machining angles can be modified to suit the different types of valves simply by changing the program.

Compared with standard MSSS tooling, a significant amount of time is saved. In fact, intervention times are reduced by 50%.

Versatility, Reliability, Precision

TU 1200

Ø 0 - 1200 mm (0" - 47.2")



Description :

The SERCO TU 1200 is designed for machining surfaces up to 1,200 mm (47.2") in diameter.

It is equipped with the same features as the TU 1100, i.e. power, durability and versatility, but with a larger maximum diameter facing capacity.

The SERCO TU 1200 can also be equipped with the "RTJ" combined feed system for machining grooves or valve seats up to a depth of 50 mm (1.97").

With the optional FC 1150 chain clamp, the machine can be attached to a maximum diameter of 1150 mm (45").

Technical features:

Facing Ø	0 – 1200 mm (0" – 47.2")
Clamping Ø	280 – 1420 mm (11" - 55.9")
Axial feed	150 mm (5.9")
Radial feed	100 mm (3.9")
Maximum drive motor power (at 6 bars)	570 Watt
Axial downfeed power drive motor	150 Watt
Air supply pressure	5 – 7 (bar) 87 - 101 (psi)
Air-flow required	1600 (l per min) (56.5 cfm)
Weight	≈ 140 kg (309 LB)

REF.	DESCRIPTION
TU 1200	Portable facing and boring machine with air-motor – facing Ø: 0-1200 mm (47.2")
TU 1200-E	Portable facing and boring machine with electric motor – facing Ø: 0-1200 mm (47.2")
TU 1200-HY	Portable facing and boring machine with hydraulic motor – facing Ø: 0-1200 mm (47.2")



Size of TU 1200 container N° 1:

- Outside dimensions: 700 x 500 x 540 mm (28" x 20" x 21")
- Weight: Machine and arm: ≈ 145kg (320 LB)

Size of TU 1200 container N° 2:

- Outside dimensions: 700 x 500 x 540 mm (28" x 20" x 21")
- Weight: Columns and accessories: ≈ 155kg (342 LB)

TU 1400

Ø 0 - 1400 mm (0" - 55.1")



Description :

The SERCO TU 1400 is designed for machining surfaces up to 1,400 mm (55.1") in diameter. Especially designed support arms increase its capacity even further.

It is the largest machine within the standard TU range. With its facing and boring capacities (to a depth of 500 mm (20")), it is the most versatile machine on the market.

Just like the TU1100 and the TU1200, the SERCO TU1400 can be attached to the outside of the part to be machined using the FC 1150 chain clamping device (maximum diameter of 1150 mm (45.3"))

Technical features:

Facing Ø	0 – 1400 mm (0" - 55.1")
Clamping Ø	280 – 1620 mm (11" - 63.7")
Axial feed	150 mm (5.9")
Radial feed	100 mm (3.9")
Maximum drive motor power (at 6 bars)	570 Watt
Axial downfeed power drive motor	150 Watt
Air supply pressure	5 – 7 (bar)
Air-flow required	1600 (l per min) 87 - 101 (psi)
Weight	≈ 160 kg (352 LB)

REF.	DESCRIPTION
TU 1400	Portable facing and boring machine with air-motor – facing Ø: 0-1400 mm (55.1")
TU 1400-E	Portable facing and boring machine with electric motor – facing Ø: 0-1400 mm (55.1")
TU 1400-HY	Portable facing and boring machine with hydraulic motor – facing Ø: 0-1400 mm (55.1")



Size of TU 1400 container N° 1:

- Outside dimensions: 800 x 600 x 640 mm (31" x 24" x 25")
- Weight: Machine and arm: ≈ 408kg (899 LB)

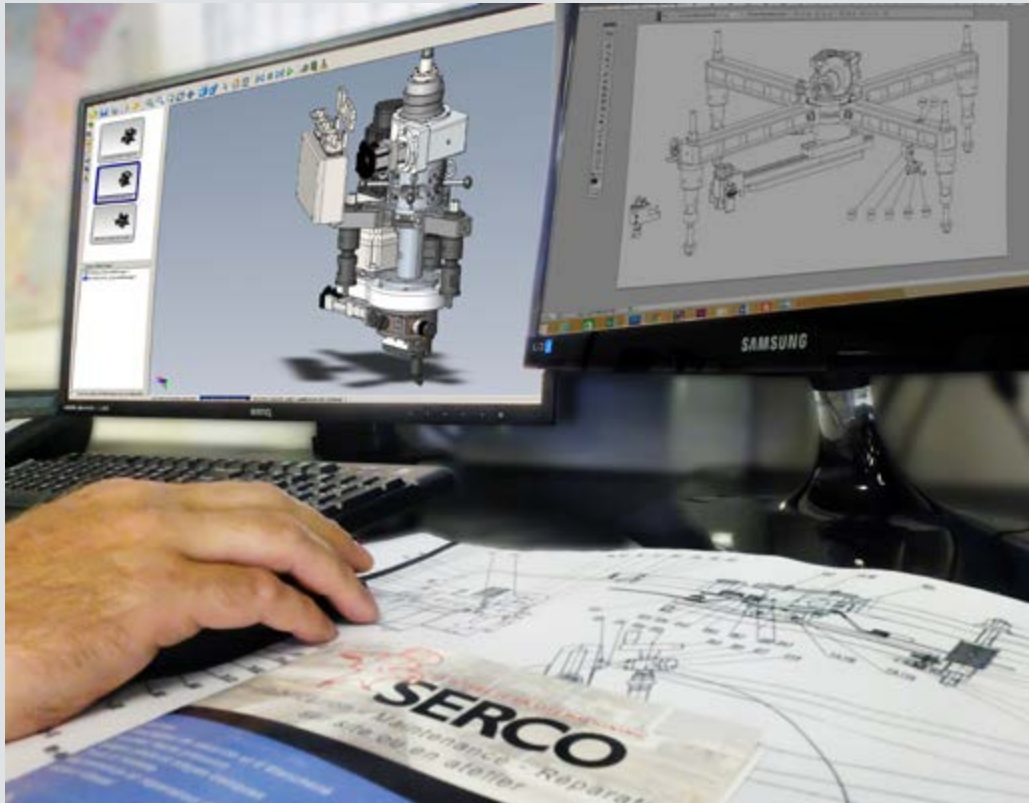
Size of TU 1400 container N° 2:

- Outside dimensions: 800 x 600 x 640 mm (31" x 24" x 25")
- Weight: Columns and accessories: ≈ 160kg (353 LB)

■ TU series

Portable Facing and Boring Equipment

Special Machine Design



TU models for diameters larger than those specified in the catalog are available upon request

Série TU	Capacités
TU 1800	0 - 1800 mm (0 - 70.9")
TU 2000	0 - 2000 mm (0 - 78.7")
TU 2200	0 - 2200 mm (0 - 86.6")
TU 2400	0 - 2400 mm (0 - 94.5")
TU 2800	0 - 2800 mm (0 - 110.2")
TU 3000	0 - 3000 mm (0 - 118.1")
TU 3200	0 - 3200 mm (0 - 126")

SERCO can design and build special machines and accessories to meet the requirements provided in your specifications.

SERCO specializes in making machine tools for machining flanges and valves. SERCO benefits from all the skills and expertise of its research and development department to find solutions to specific needs. Our engineers and technicians possess all the technical expertise needed for meeting the requirements of nuclear power, oil & gas, chemical, petrochemical, defense, shipbuilding, food-processing and other industries.

Responsiveness & Compliance with schedules:

Our teams deal with your requests just as quickly as possible. Your projects are handled with competence and professionalism.

Our technical expertise and know-how enable us to offer you a fast, suitable, rapid and personalized solution.

Consistant Quality in Service and Manufacture:

Serco has designed and built over 800 special machining and welding machines over the past 40 years for applications in a variety of industries such as:

- Construction
- Prefabrication
- Repair and maintenance

Our operations teams are always ready to make their energy and experience available to our customers throughout the world. "Excellence" marks the quality of our achievements.

SERCO Certifications:



Certification of companies that train and monitor personnel subject to ionizing radiation in the workplace.



Safety systems compliant to EC standards.

Wide Range of Diameters

TU TE Series

Ø 0mm – 1100 mm (0" – 43.3")

Description :

Designed on the basis of a standard TU 600, the machine is fully automatic and power-driven by brushless motors (rotation and axial and radial feed movements).

Its design enables all mechanical play to be eliminated and it performs at high levels of accuracy. The machine is remote-controlled by an axis interpolation technique in order to carry out highly complex and varied machining operations in addition to normal boring and facing functions.

Conical machining (infinitely variable angles)

Threading (infinitely variable radius

Threading and tapping (Ø and pitch on request)

Spiral and concentric fluting (variable pitch and depth)

The TU 600 TE can carry out numerous machining operations, many of which were impossible with a portable machine until now!

Technical features:

Surfacing Ø	0 – 600 mm (0" - 23.6")
Clamping Ø	290 – 720 mm (11.4'- 28.3")
Axial feed movement	135 mm (5.3")
Radial feed movement	60 mm (2.4")
Maximum power of drive motor	2000 Watt
Maximum power of axial down-feed motor	200 Watt
Maximum power of radial movement motor	100 Watt
Electricity supply	400 V
Weight	≈ 125 kg (276 LB)



TU 600-TE



Control panel

REF.	DESCRIPTION
TU 400-TE	Portable facing and boring machine with brushless electric motor and control system – facing Ø: 0-400 mm (15.7")
TU 600-TE	Portable facing and boring machine with brushless electric motor and control system – facing Ø: 0-600 mm (23.6")
TU 1100-TE	TU 1100-TE Portable facing and boring machine with brushless electric motor and control system – facing Ø: 0-1100 mm (43.3")



OPTIONS & ACCESSORIES

RTJ: RTJ seal surfacing system for TU machines

- Conical machining – Machining 2 slopes, inner and outer at an angle of 23° (or any other angle: 30°, 45°, etc.) in relation to vertical.
- Groove machining



Machining accuracy:
0.01 mm



Sercu TU 600 with RTJ
system



Conical machining – RTJ
(23°) or any other angle
(30°, 45° etc.)

RTJ



Machining RTJ groove
bearing surfaces

■ Serco TA 240

Portable Boring Machine

TA 240

Ø 320 - 900 mm (12.5" – 35.4")



Description:

The SERCO TA 240 machine is a portable boring machine to which three different boring heads can be fitted depending on the range of diameters to be covered:

TA 240 borer equipped with a TA 100 head:

- Bores up to 320 mm (12.6") in diameter
- Maximum radial feed 30 mm (1.18")

TA 240 borer equipped with a TA 120 head:

- Bores up to 400 mm (15.7") in diameter
- Maximum radial feed 40 mm (1.57")

TA 240 borer equipped with a TA 170 head:

- Bores up to 600 mm (23.6") in diameter
- Maximum radial feed 60 mm (2.4")

TA 240 borer equipped with a TA 220 head:

- Bores up to 900 mm (35.4") in diameter
- 100 mm(3.9") maximum radial feed
- Equipped with 4 special positioning columns and a set of four long-length arms for clamping on diameters from 350 mm (13.8") to 1210 mm (47.6").

REF.	DESCRIPTION
TA 240 / 100	TA 240 borer equipped with the TA 100 head - facing Ø: 0-320 mm (12.6")
TA 240 / 120	TA 240 borer equipped with the TA 120 head - facing Ø: 0-400 mm (15.7")
TA 240 / 170	TA 240 borer equipped with the TA 170 head - facing Ø: 0-600 mm (23.6")
TA 240 / 220	TA 240 borer equipped with the TA 220 head - facing Ø: 0-900 mm (35.4")



Applications:

Machining liner bearing surfaces on SULZER engines.

Resurfacing six upper bores Ø 505 followed by positioning inserts.

Resurfacing six intermediate bores Ø 500 followed by positioning six inserts.

Tolerances to be met: 0.03 mm (.001").

SERCO equipment: TA 240 / 220.



Machining 6 cylinders + positioning inserts in ten days.



Machining grooves.