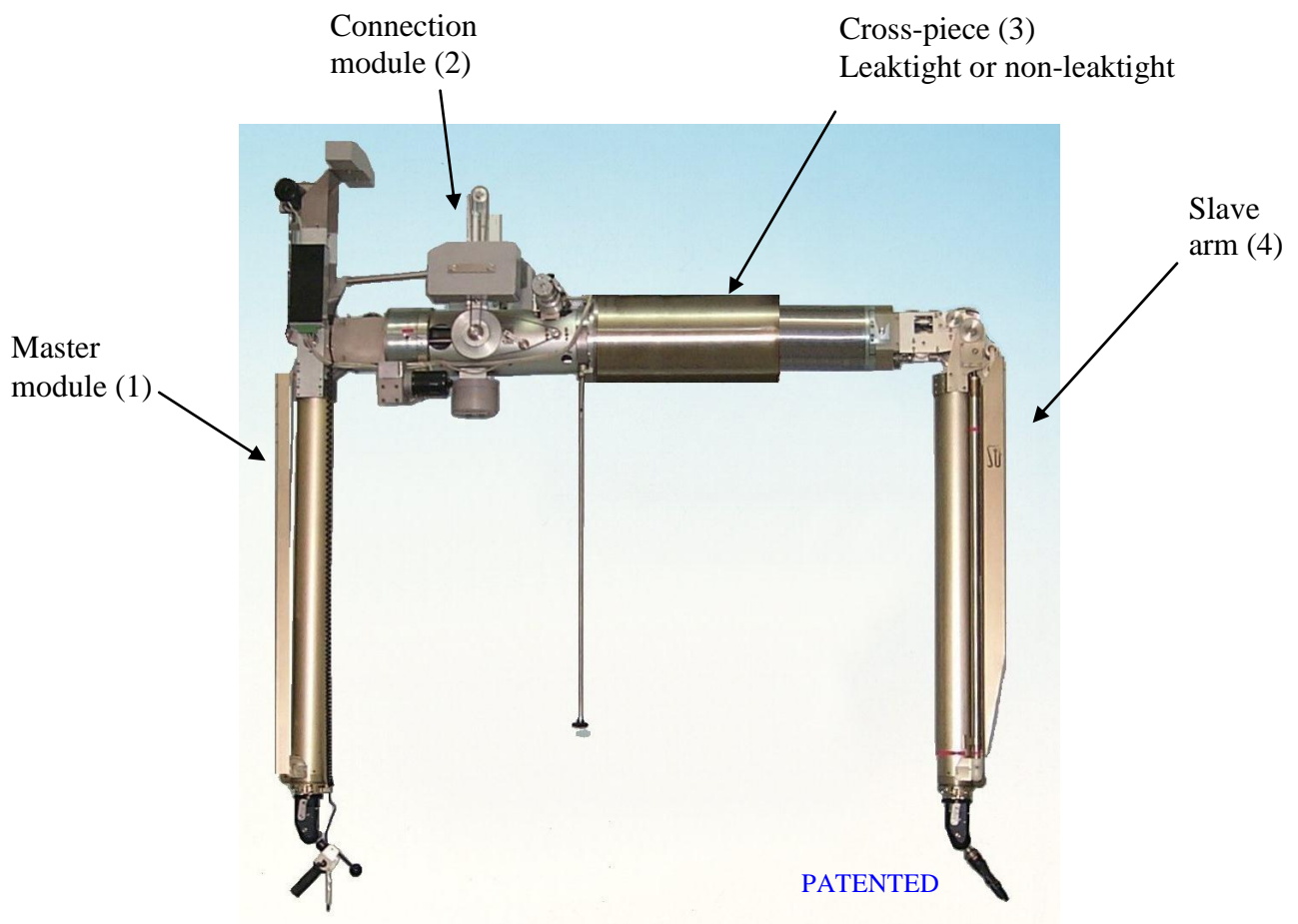


## T.S.M TYPE MODULAR TELEMANIPULATOR

The T.S.M telemanipulators are composed of 4 easily disconnectable modules:

- The master module (1) and the connection module (2) which define the master arm,
- The cross-piece (3) and the slave arm (4).

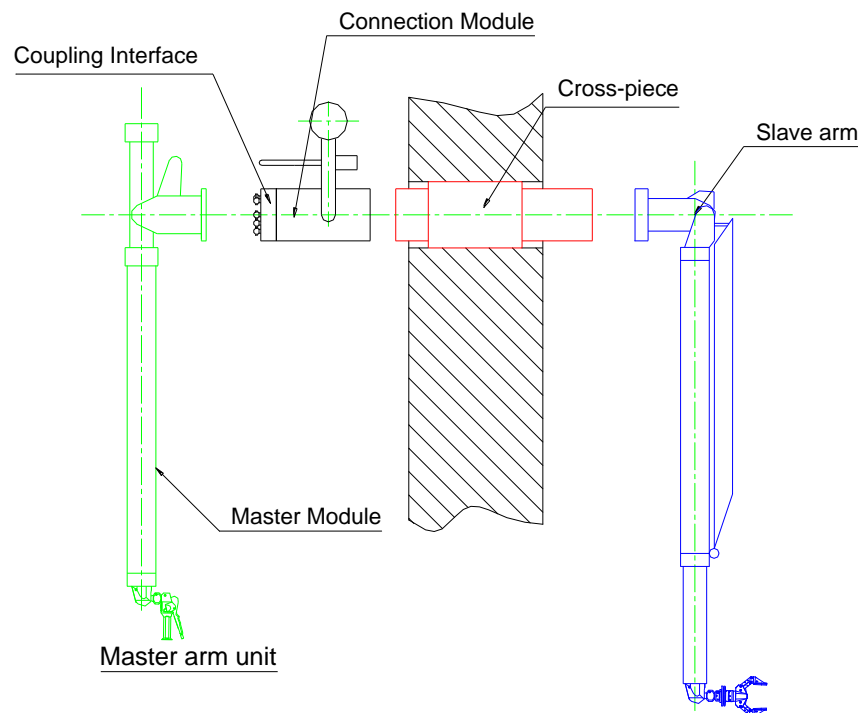


There are 4 versions of this telemanipulator:

<b>TSM-1F version</b> <ul style="list-style-type: none"> <li>- Simple balancing (1)</li> <li>- Fixed knuckle joints</li> </ul>	<b>TSM-2F version</b> <ul style="list-style-type: none"> <li>- Full balancing (2)</li> <li>- Fixed knuckle joints</li> </ul>
<b>TSM-1D version</b> <ul style="list-style-type: none"> <li>- Simple balancing(1)</li> <li>- Disconnectable knuckle joints</li> </ul>	<b>TSM-2D version</b> <ul style="list-style-type: none"> <li>- Full balancing (2)</li> <li>- Disconnectable knuckle joints</li> </ul>

The slave arms of these 4 versions can be boot-protected. They are equipped with a rotating leaktight connector to avoid the twisting of the protection sleeve.

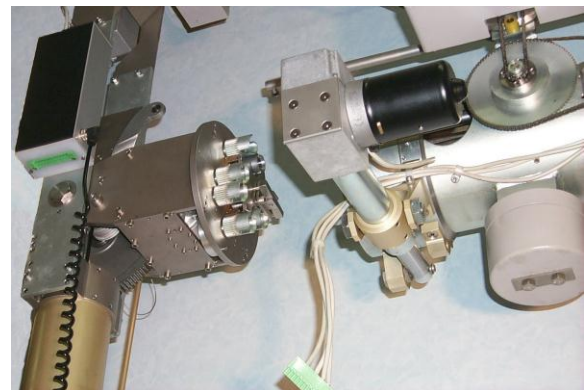
The main benefit of the TSM telemanipulator is its modularity.



The master unit, its connection module and the slave arm disconnect from the central cross-piece for complete modularity.

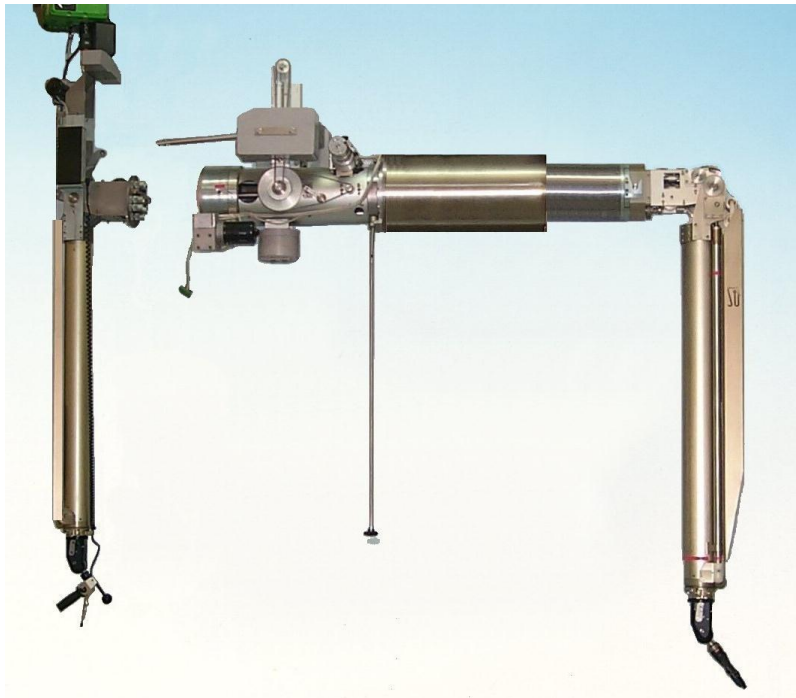
The new feature allows easier maintenance and quicker operations.

Just a single technician (with a light pulley block) can now disconnect the master unit from its connection module in less than 5 minutes.

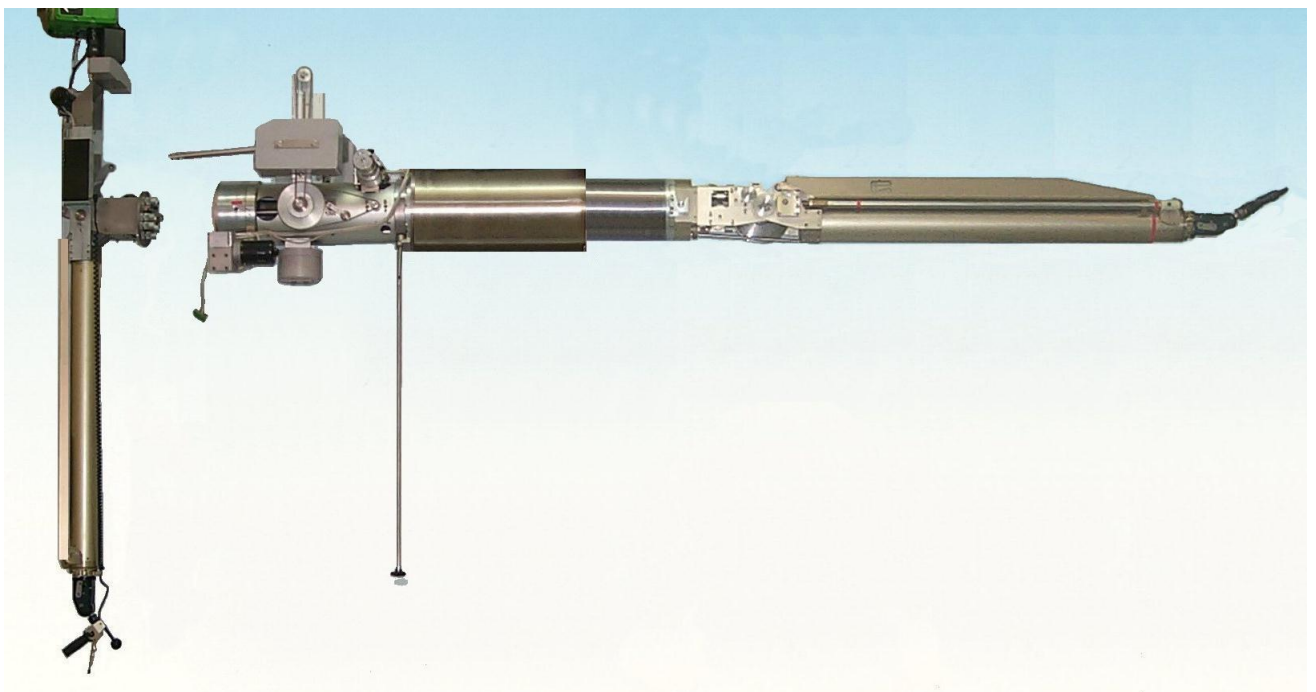


View of the TSM telemanipulator coupling interfaces.

The other benefit of this solution is that the removal of the master module requires no slave arm disassembly thus preserving a reference position.

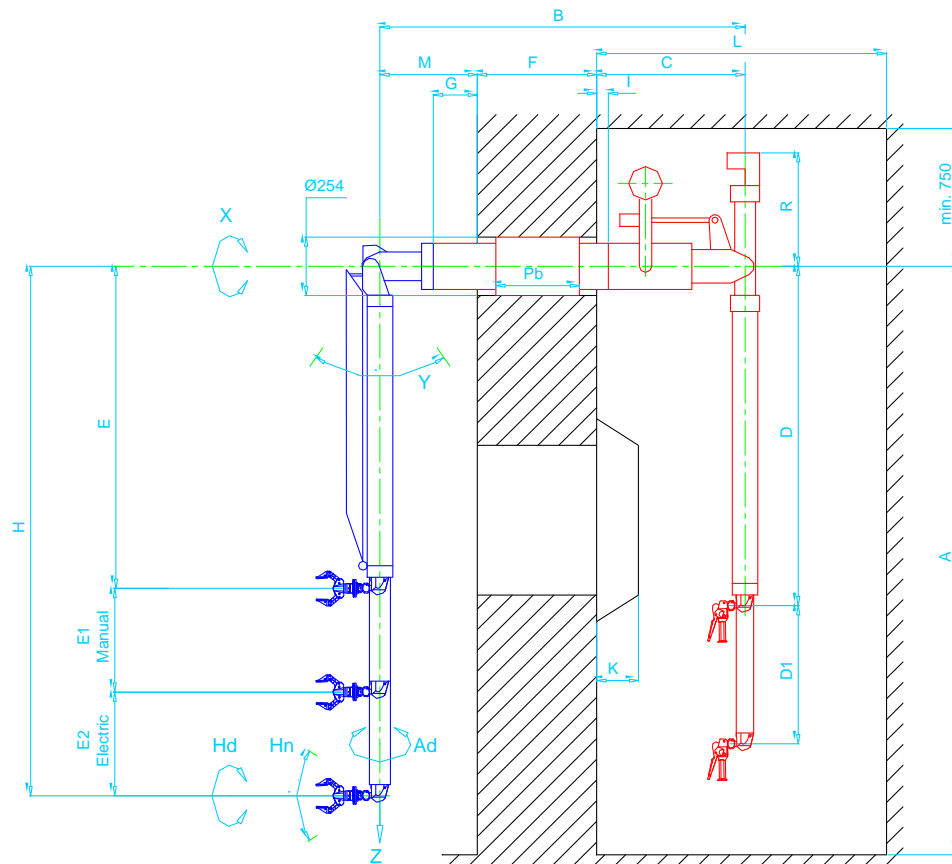


The slave arm can remain in either a vertical or horizontal position. The horizontal position of the slave arm (with master arm disconnected) allows the removal of "the connectig module + the cross-piece + the slave arm" in a single unit.



The TSM telemanipulator design establishes new criteria for speed and maintenance ease. Naturally, the dexterity and the quality of these devices remain equivalent to category standards.

## TSM Telemanipulator Characteristics



Standard range

Tongs opening	(Op)	90 mm
Hand rotation	(Hd)	$\pm 360^\circ$
Hand elevation	(Hn)	$+25^\circ; -120^\circ$
Arm rotation	(Ad)	$\pm 180^\circ$
X movement. Inclination of robotic arm around the central axis of the wall cross-piece	(X)	$\pm 30^\circ$
Y movement. Inclination of robotic arm around the shoulder articulation axis	(Y)	$+90^\circ; -20^\circ$
Z movement. Manual E1 + Electric E2 extension/retraction systems	(Z)	1950 mm

Standard dimensions

A=3050		L=3800	
C. balancing 1	640	H	3350
C. balancing 2	860	I	60
D	1400	M	460
D1	1020	R	600
E	1400	B	Variable
E1 (Manual)	940	F	Variable
E2 (Electric)	1020	K	Variable
G	180	Pb	Variable
G and M can be			Variable

Technical data Standard execution

Manipulating strength in all positions	20Kg max.	Weight of slave arm alone	31 Kg
		Weight of master arm alone	49 Kg
Hook elevation strength	60Kg max.	Weight of connection tube	62 Kg
Motor power	24 V transf.	Weight of master unit with counterweight	230 Kg

Other dimensions

	A	L	D	D1	E	E1	E2	H
Average dimensions	2700	3600	1200	820	1200	820	740	2750
Small dimensions	2500	2750	1000	620	1000	620	540	2150
Maximum slave arm dimensions					1600	1020	1140	3750

We reserve the right to make changes without prior notice in order to improve the service and quality of our products.