

# Accessories

## Handling:

- Handling and setting down device.
- Lifting device (long) for master arm installation.
- Lifting device (short) for master arm installation.
- Device for horizontal positioning of the slave arm after removal of the master arm, where the arm cannot be removed from the front due to lack of space.
- Push-through system to replace the thru-tube for a sealed thru-tube manipulator (when the thru-tube is removed into the cell interior).
- Stacker to install the manipulator when no lifting device is available.

## Manipulation:

- Parking fixture for jaws and tongs.
- Parking fixture for wrist joint.
- Aluminium or titanium tongs.
- Tongs extension (installed between wrist joint and jaws) and its parking fixture.
- Slave arm extender (installed between arm and wrist joint) and its parking fixture.
- Fixed or disconnectable jaws, various jaws shapes can be adapted.

## Sealing:

- Cell ring BE 88 or BE 99, to replace booting without breaking containment.
- Booting ejection device CE 88 ou CE 99.
- Sealed booting - single, double or semi-sealed.
- Double booting for extra safety, with possibility to check booting tightness

## Maintenance:

- Maintenance toolkit.

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La Calhène is an equipment manufacturer specialized in material to protect human beings in a hostile environment, protect a product against the surrounding environment, and protect the environment from hazardous products. Its customer base is half in the nuclear field and half in the pharmaceutical field.

In the nuclear sector La Calhène supplies 4 product lines: remote manipulators, transfer systems (the DPTE® range, standard and special applications), Glove Box ports, and shielded casks for transfer / transport. La Calhène supplies to 5 market segments: nuclear fuel manufacture, spent fuel recycling, radiopharmacy, laboratory / universities / units of research, and dismantling / decommissioning / sanitization.

On the basis of its long experience in the nuclear sector, Getinge La Calhène developed a set of solutions and equipment for the pharmaceutical industry, in particular for isolators and sterile transfer systems (DPTE® and DPTE-BetaBag®).

La Calhène is an active member of:



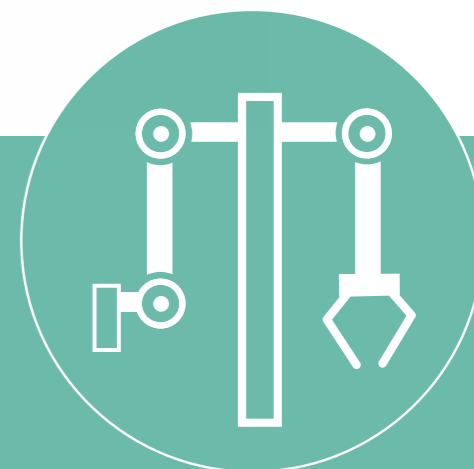
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## MT 200

Mechanical Remote Manipulator  
with telescopic disconnectable arm



# A remote manipulator for medium and large cells

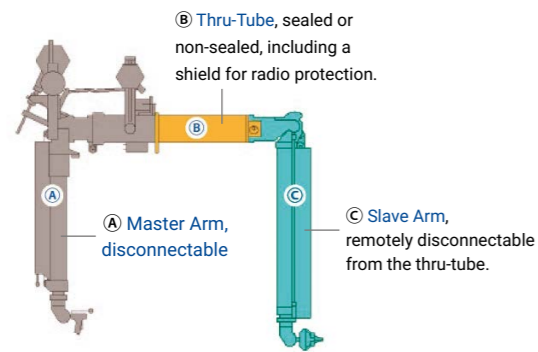
The MT 200 is a mechanical Master - Slave manipulator with a telescopic disconnectable slave arm, designed for high performance work in medium and large cells: high working load and large articulation. Combined with a range of operating accessories, it provides a sturdy, reliable and efficient system.

The MT 200 manipulators are the most powerful in our range, covering all requirements in terms of high performance manipulation.

Load capacity is up to 20 kg\* (45 lb), in all positions, irrespective of the slave arm's spatial position within the working area.

## Design

The MT 200 consists of three parts which can be dissociated:



Two configurations provide flexibility for installation and operation:

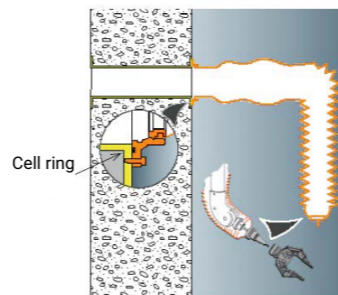
The MT 200 is usually configured with a sealed booting and non-sealed thru-tube, so the manipulator may be extracted from the front.

In some specific work situations e.g. a high temperature cell where booting cannot be used, a sealed thru-tube can be installed with slave arm disconnection inside the hot cell.

\* manufacturer's test value

**Configuration 1: sealed booting and non-sealed thru-tube.** A sleeve provides containment and the slave arm may be extracted from the front.

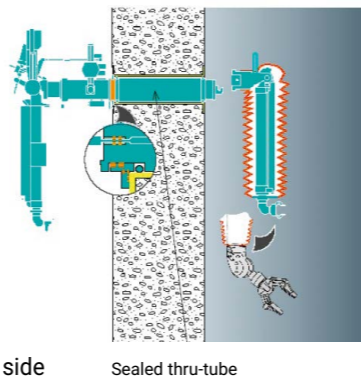
A sleeve mounted on an ejectable ring system coupled with the cell ring maintains cell containment. The sleeve also protects the slave arm from contamination.



**Configuration 2: sealed thru-tube.** Containment is provided by the thru-tube and the slave arm may be disconnected inside the cell.

The sealed thru-tube may be replaced, from the cold side, taking the appropriate precautions, or from the hot side with the «push push» system developed for the purpose.

The slave arm is deposited using a lifting device positioned inside the cell. A semi-sealed sleeve can be installed on the slave arm in order to reduce contamination.



## Kinematics

Depending on the motion concerned, kinematics use cables, chains, transmission bars and toothed sectors. Rotating bars are used for the thru-tube.

The kinematics for the thru-tube can be stopped and re-started by clutch mechanisms which can also separate the thru-tube from the master or slave arm, in a simple quick operation. For the slave arm, these operations are initiated from the cold side using a lifting device inside the cell and a ratchet wrench.

## Motion

Major X (lateral), Y (depth) and Z (extension) motions are equipped with fully counter-balanced electrical offsets for greater operator comfort and to increase the equipment's working range. They are controlled by the handle and transmitted by two actuators mounted on the master arm.

## Motion brakes

Motion brakes are performed by three mechanical controls located at the base of the master arm and acting on X, Y and Z motions. The tongs brake system (also denoted «small movements») is included in the Z motion brake.

The gripping motion brake is actuated by a control integrated in the handle.

## Balancing

The MT 200 can be configured with two different types of balancing:

- **Balancing n°1:** A standard system, designed specifically for occasional use of the arms.
- **Balancing n°2:** An optimized system, designed for intensive use and operator comfort.

## Arm ends fitting

The arm ends fittings consist of identical wrist joints (supplied in connectable or disconnectable versions) to which the master actuator or handle and the slave tool or tongs are connected. The disconnectable wrist joint has many advantages: rapid change-over inside the cell, remote disconnection etc.

The master actuator is an ambidextrous ergonomic handle equipped with control knobs for the electrical offset of X, Y and Z motions and the control for the tongs clamping motion and its brake.

The standard slave tool is a parallel clamping tongs equipped with jaws supplied in connectable and disconnectable versions. They have a 90 mm opening and a clamping force of more than 20 daN.

## Wall thru-tube

The MT 200 wall thru-tube is available in 2 versions: sealed and non-sealed. In both cases, lead spacers provide shielding. Neutronic protection can also be supplied as an option.

**Non-sealed thru-tube:** in this configuration, containment is provided on the hot side by a booting (slave arm protection) mounted on a ring ejection system coupled with a cell ring. The booting is installed without breaking containment using a pneumatic ejection device.

**Sealed thru-tube:** the thru-tube is sealed by containment systems on the cold side: gaskets on the rotating rods and a flange with double O-ring between the wall sleeve and the thru-tube.

