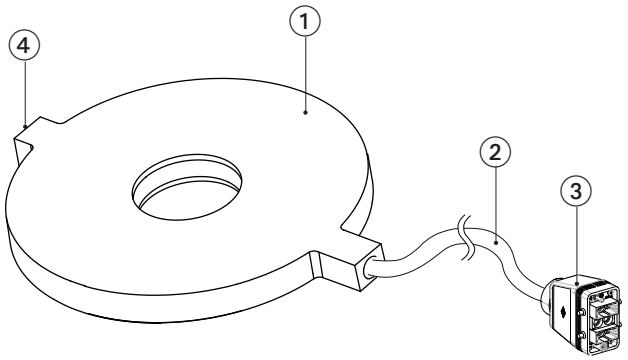
Inductive heating blankets

pre-heating of molds for metal and rubber presses



MHB-H-02-150/500-*

① Circular inductor covered with protective fabric
② Connection cable to ECT trolley / ECC cabinet
③ Quick connector
④ Cooling air outlet

MHB

Heating blankets designed to preheat quickly and safely the molds. They consist of circular flat inductors, insulated and covered with heat-resistant fabric. The blankets are powered by the ECT command trolley or ECC cabinet, and exploit the principle of magnetic induction to heat the ferromagnetic material they are in contact with. MHB blankets allows to obtain significant benefits compared to traditional open flame heating systems:

- Rapid heating
- Elimination of risks related to the use of combustible gases in production plants
- Automatic control of the heating cycle without specialized personnel

MHB blankets are available in different combinations of diameters to suit various mold geometries and sizes. Each blanket is equipped with protective sheets to safeguard the covering fabric.

1 MODEL CODE

MHB	-	H	-	02	-	150	/	500	-	05	*

Inductive heating blanket

Size
H = for connection with trolley ECT or ECC cabinet

Type of execution
01 = single stage, half mold heating
02 = double stage, heating of both mold halves

Internal diameter (1)
*** = from 100 mm to 400 mm with step 50 mm

External diameter (2)
*** = From 400 mm to 800 mm with step 50 mm

Length of connection cable
05 = 5 m
10 = 10 m

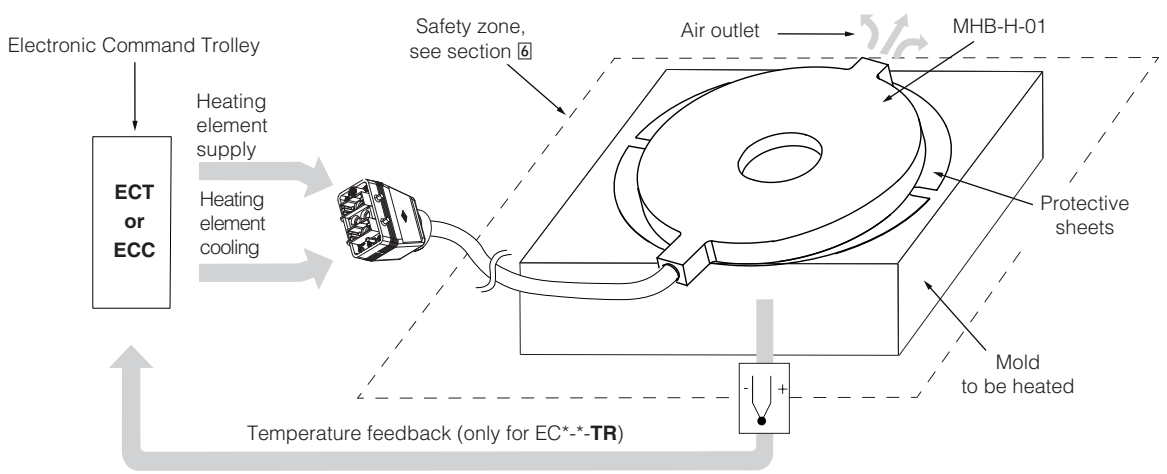
Series number

(1) The internal diameter allows to position the blanket even in the presence of central dimensions of the mold, for example centring axes. The internal diameter must be selected to be as close as possible to the dimensions of the central encumbrance. If the mold has no internal constraints, select the smallest internal diameter available (100 mm)
(2) The outer diameter of the blanket should be selected according to the surface of the mold; for example, in the case of rectangular mold, select the outer diameter of the blanket less than or equal to the length of the mold short side. See section 8 for available diameter combinations

Note: for diameters not included in the standard dimensions, contact Atos Induction's technical department

2 FUNCTIONAL EXAMPLE

EXAMPLE OF HEATING ONE HALF OF THE MOLD



3 FUNCTIONAL DESCRIPTION

Thanks to indirect heat transfer, molds can be pre-heated quickly and safely simply by placing blankets on the surfaces to be heated. The heat is generated directly inside the mold through the circulation of eddy currents, induced in the metal by appropriately modulated magnetic fields. This reduces heating times and improves process efficiency. In addition, the use of MHB blankets avoids the burning of combustible gases in production plants and their associated hazards.

4 BLANKET/MOLD COUPLING

The power transferred by the inductor depends on the magnetic coupling between the blanket and the mold. For example, particular mold geometries, presence of air gaps and irregular contacts between blanket and metal can result in poor magnetic coupling, reducing heating speed and uniformity.

⚠ The installation of MHB heating blankets is intended for metal and rubber molds. For applications on other types of metal parts, please contact the Atos Induction technical office.

5 MAIN CHARACTERISTICS

Power supply device		ECT trolley or ECC cabinet
Max power	[kW]	15
Working frequency	[kHz]	4 ÷ 15
Max heating temperature of the mold		350°C on the surface of the mold, in contact with the plate
IP protection degree [CEI EN 605229]		Not applicable, avoid contact between blankets and liquids
Cable insulation class		Class **H**
Electromagnetic emissions [EN UNI 12198]		The use of the blankets is comparable to a Class 1 source

6 INSTALLATION PRESCRIPTIONS

The MHB blanket must be connected to the ECT command trolley through the quick connector, which include the connections for power supply of the inductor and the passage of compressed air for cooling, coming from the power supply device.

In the case of horizontal installation for two-stage heating, the upper half of the mold has to be placed in contact with the blanket, but suitably supported, through supports, to prevent its weight from damaging the heating element.

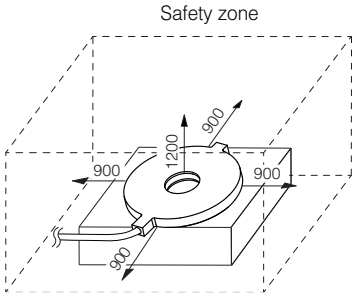
Due to the irregular surfaces and the roughness of the molding surfaces, the blankets are supplied with attached protective sheets to be placed in direct contact with the mold. Therefore, for correct use of the blanket, place the protective sheet directly on the mold and then place the MHB blanket on it.

Note: the number of protective sheets supplied with MHB are: one for MHB-H-01-**, two for MHB-H-02-**. Is possible order additional spare sheets separately; see section 9

⚠ Always remove the MHB blanket from the hot mold at the end of the heating cycle

⚠ During blanket handling, is recommended use of personal protective equipment suitable for high temperature.

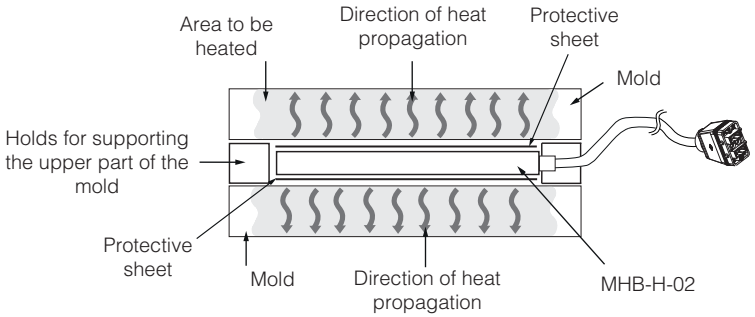
During the heating process the MHB inductor generates a high surface temperature and a surrounding electromagnetic field that could be dangerous for the health of the operators working in the immediate vicinity. For this reason, a “safety zone” around the blanket must be circumscribed and bounded by a proper barrier (not supplied with the blanket), placed at a distance of at least 900 mm from the heating blanket edge. This ensures the protection of operators against accidental contact with hot parts and against electromagnetic fields.
The ECT/ECC power device, must be positioned outside the safety barrier.
The safety distance of 1200 mm must also be guaranteed upwards.



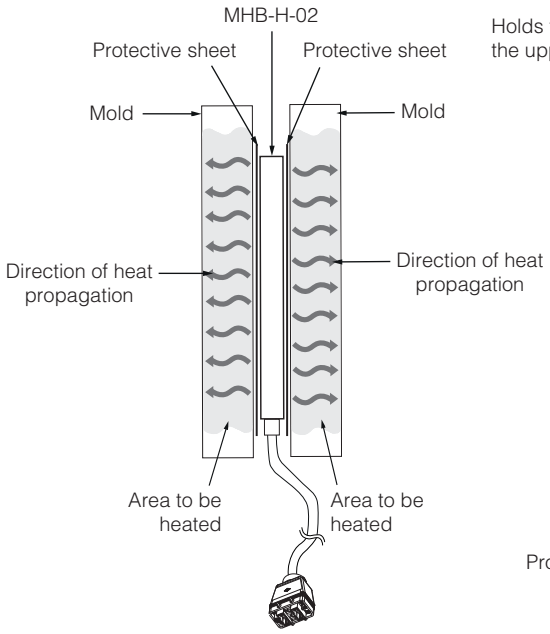
⚠ During the heating process, access to the safety zone is severely prohibited

EXAMPLES OF MHB BLANKETS POSITIONING

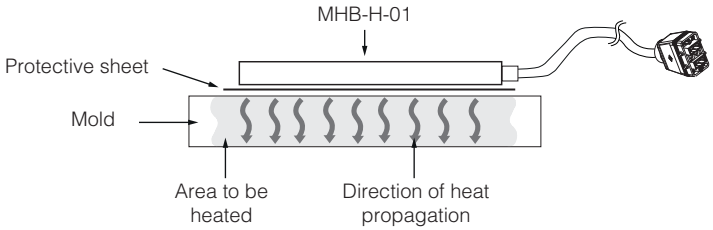
Horizontal double stage application



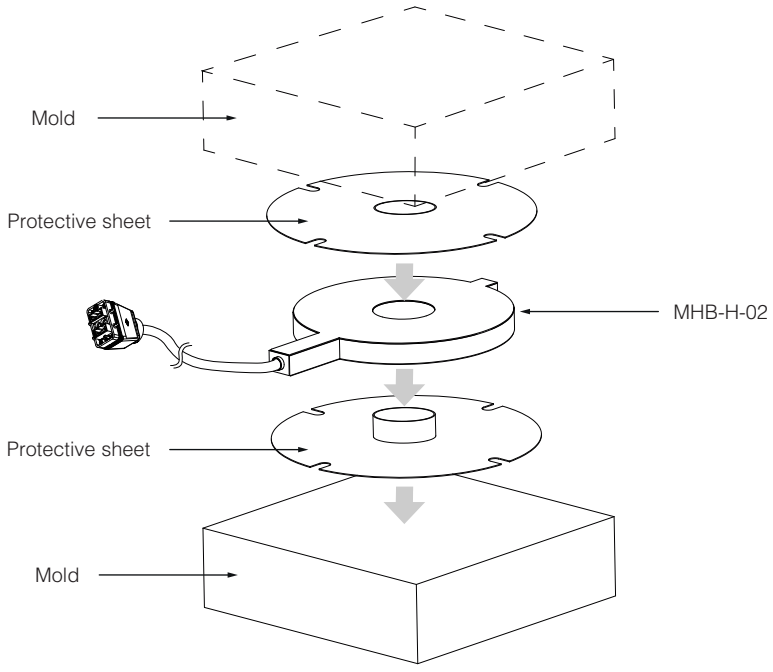
Vertical double stage application



Single stage application

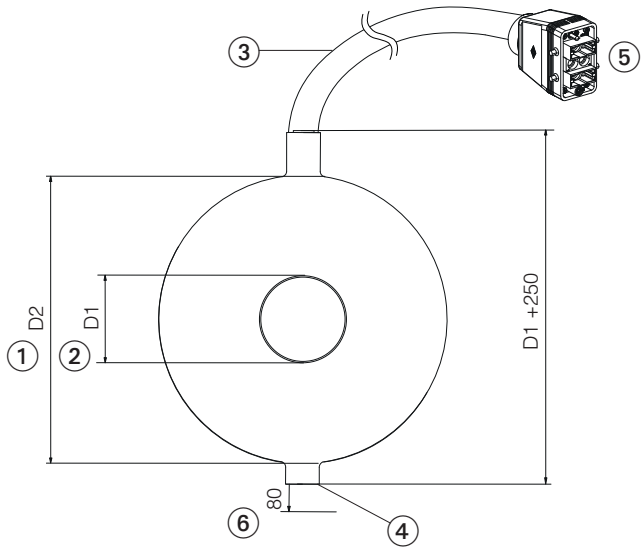


Double stage application example

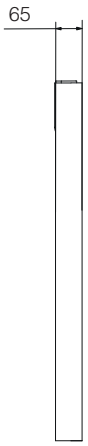


7 DIMENSIONS [mm]

MHB blanket top view

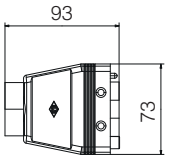


MHB blanket side view

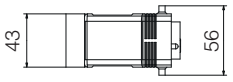


Quick connector

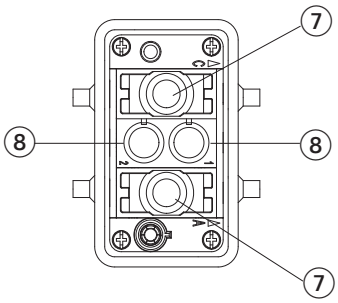
Top view



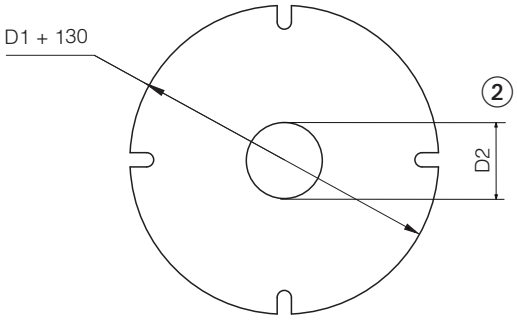
Side view



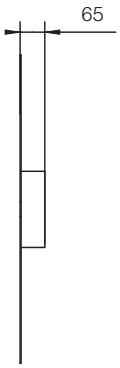
Front view



Protective sheet top view



Protective sheet side view



(1) External diameter of the blanket

(2) Internal diameter of the blanket

(3) Connection cable to ECT/ECC

(4) Cooling air outlet

(5) Quick connector

(6) Minimum free space required for proper cooling air dissipation

(7) Blanket power supply passage

(8) Cooling air passages

8 POSSIBLE COMBINATIONS OF AVAILABLE DIAMETERS

The following tables show the combinations of external and internal diameters available for the different executions of MHB blankets

MHB-H-01 Single stage heating blankets

= Available blankets

= Blankets available on request

		External diameter = D2 [mm]								
		400	450	500	550	600	650	700	750	800
Internal diameter = D1 [mm]	100									
	150									
	200									
	250									
	300									
	350									
	400									

MHB-H-02 Double stage heating blankets

= Available blankets

= Blankets available on request

		External diameter = D2 [mm]								
		400	450	500	550	600	650	700	750	800
Internal diameter = D1 [mm]	100									
	150									
	200									
	250									
	300									
	350									
	400									

9 MODEL CODE OF PROTECTIVE SHEETS

PS	-	150	/	500

Protective sheet

Internal diameter of the corresponding MHB blanket

External diameter of the corresponding MHB blanket

10 RELATED DOCUMENTATION

AI700 - Electronic command systems ECT and ECC