



Metamag® Molten Metal Transfer System

Metamag® Patented Pumping System



- Metamag's patented pump is controlled by a proprietary PLC program. This offer un-matched process control over pour speed and pour time.
- No touching parts below the molten magnesium surface. This means less wear, therefore increasing the effective life of replaceable components.
- Heated transfer pipe for quick metal delivery.
- Removable non-wetting refractory Nozzle for Easy Cleaning
- Eliminates run-on and drips

Metamag® Pumping Control and its Effect on Quality

The Metamag® Pumping system helps improve and stabilize the internal quality of the die casted parts by reducing shot sleeve fill time.

Because of the faster shot sleeve fill time, the injection process is activated faster and the pressure buildup gives you faster part cavity fill time, thus compressing the porosity out of the casting more effectively. In a typical die cast application of an armature weighing 1.5 kg, a conventional transferring device would be between 2 to 4 seconds. **The Metamag® Pumping System** can transfer the same weight in between .75 and 1.5 seconds.

It is evident that the faster the molten metal is transferred the better the quality of the part.

Wear and tear is reduced by the die cast machine by allowing it to operate successfully at lower pressures.

Metamag® Pump Control Package

Metamag Inc. is now using the E-Palm as a hand held operator interface for pump control. It can also be used to operate furnaces and ingot preheaters on turn key systems.

All pump functions needed to transfer liquid metal to the die cast machine we be accessed using the E-Palm. This replaces the older style Operator Pendant which did not display any operating parameters of the pump while in set-up or in production mode. It also includes hard wire e-stops, dead man stop buttons on both sides. The EPalm Pump Control start-up menu contains six (6) function buttons.

Metamag® EPalm Programmed Functions:

F2 Rotating: Forward/ Reverse

F3 Speeds: Pumping Speed Measured In Hertz

F4 Control Timers: Pumping Time Measured in 10ths of a Second

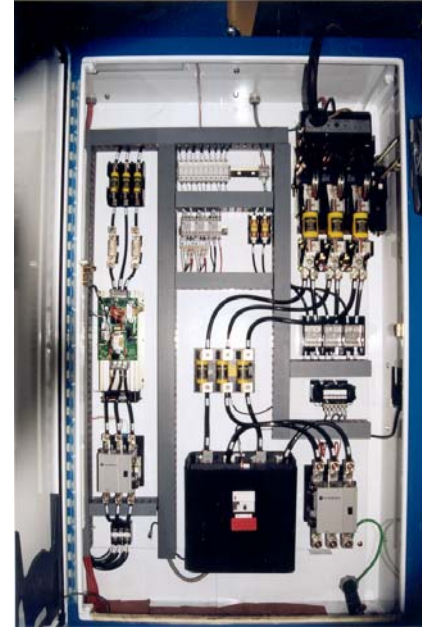
F5 Manual Pouring: Initiates Manual Pouring Sequence

F6 Pump Modes: Idle Speed, Production, Shut Down

F7 Pump Options: Max/Min Set Point Adjustment for all Pumping Parameters, Ramping Time and Speed, Bath Temperature monitoring, Increase/Decrease Adjusting Speed.

EPalm Controls Metamag® Control Panel & Pumping System

EPalm



Metamag®
Control Panel

Metamag®
Pumping System



EPalm10 Features:

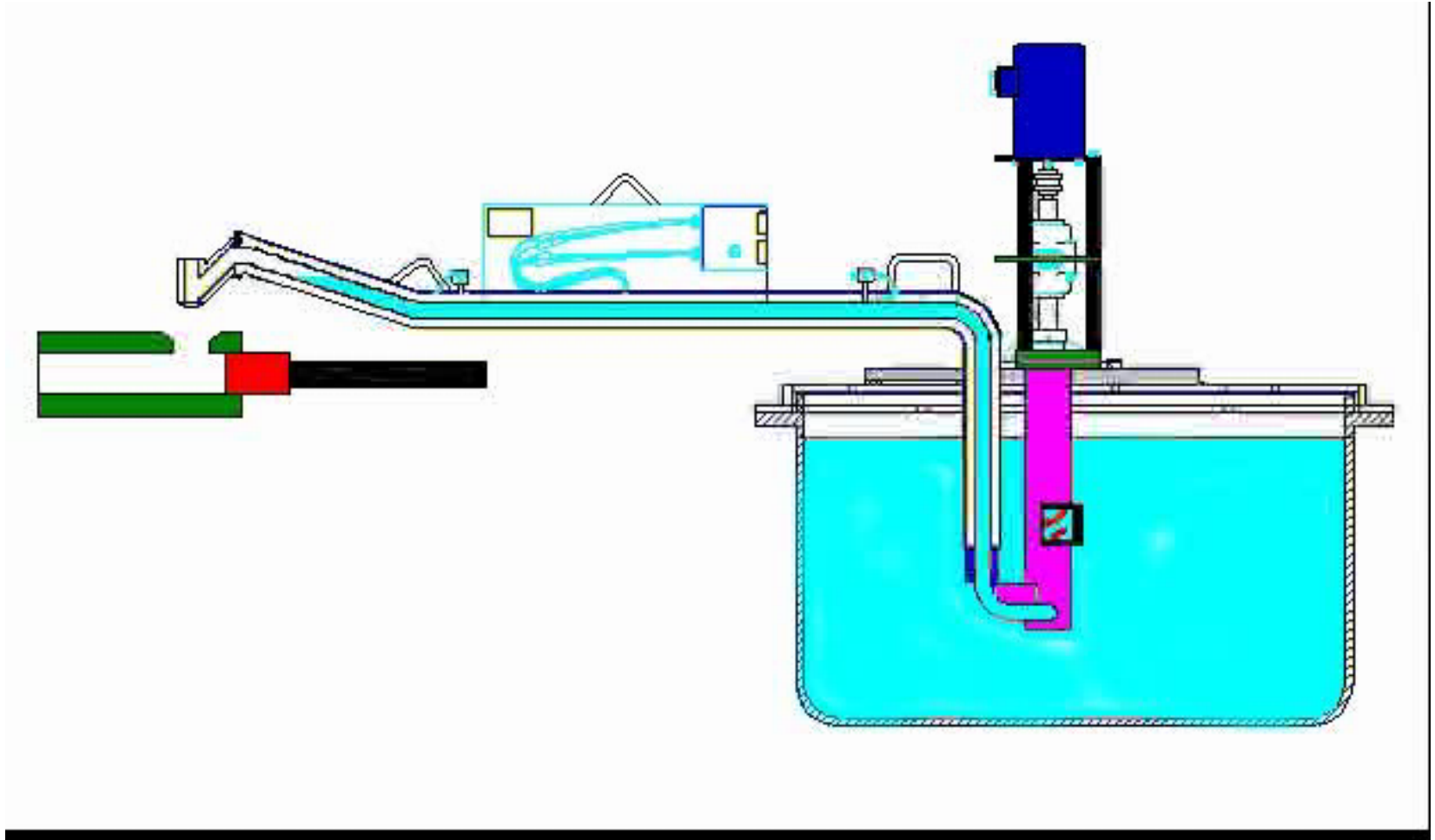
- **Graphical display 0x64 pixels (up to 8 lines 20 characters)**
- **Highly visible transfective LCD display**
- **27-keys keypad with tactile feedback**
- **Connection to industrial bus systems**
- **Large memory size (512 KB Flash card)**
- **IP65 protection**
- **Emergency Stop button**
- **'Dead-man' buttons**



Metamag® Pumping Parameters

	MP 4000	MP 6000
Pump Capacity in Pounds	.05-10 lbs / 0.25 - 4.5 kg.	10-75 lbs. / 4.5 - 40 kg.
Optimum Pour Time	.75-5.0 seconds	3.5-10 seconds
Repeatability	99%	98.5%
Accuracy of Shot Weight	+/- 3%	+/- 2%
Response Time in Milliseconds	1	1.5
Motor Temperature Rating	210°C	210°C
Motor Control	Vector Drive	Vector Drive
Motor Braking	Resistor	Resistor

Metamag® Molten Metal Transfer Movie



Double click image to view animation

Metamag® Pump

VECTOR DRIVE MOTOR FOR ACCURATE SPEED CHANGE

DOUBLE SUPPORT BEARINGS FOR TROUBLE-FREE OPERATION OF SCREW BELOW METAL LEVEL

WHEN PUMP IS AT IDLE SPEED THE MOLTEN METAL IS MAINTAINED AT THIS POSITION

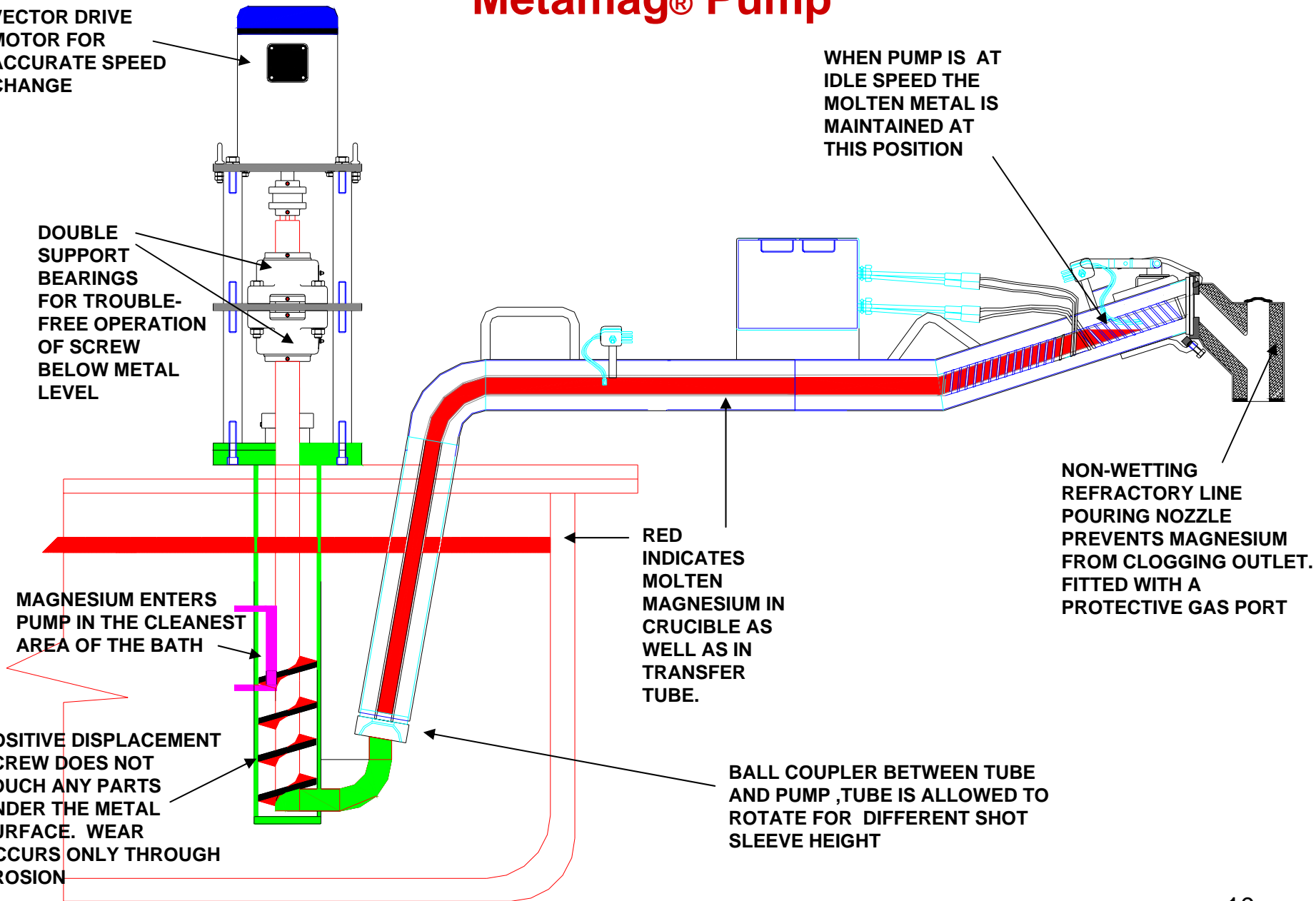
NON-WETTING REFRACTORY LINE POURING NOZZLE PREVENTS MAGNESIUM FROM CLOGGING OUTLET. FITTED WITH A PROTECTIVE GAS PORT

MAGNESIUM ENTERS PUMP IN THE CLEANEST AREA OF THE BATH

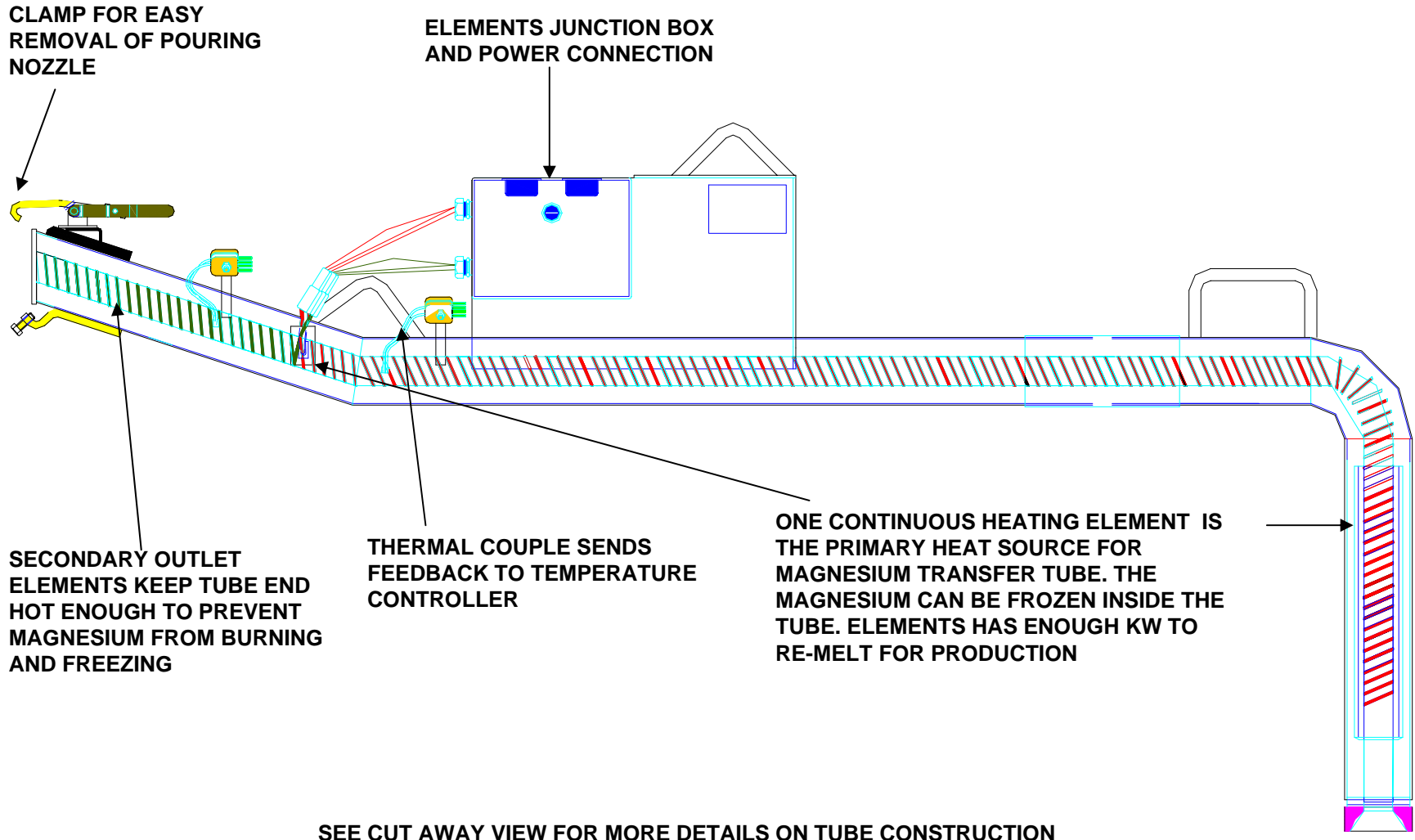
RED INDICATES MOLTEN MAGNESIUM IN CRUCIBLE AS WELL AS IN TRANSFER TUBE.

BALL COUPLER BETWEEN TUBE AND PUMP, TUBE IS ALLOWED TO ROTATE FOR DIFFERENT SHOT SLEEVE HEIGHT

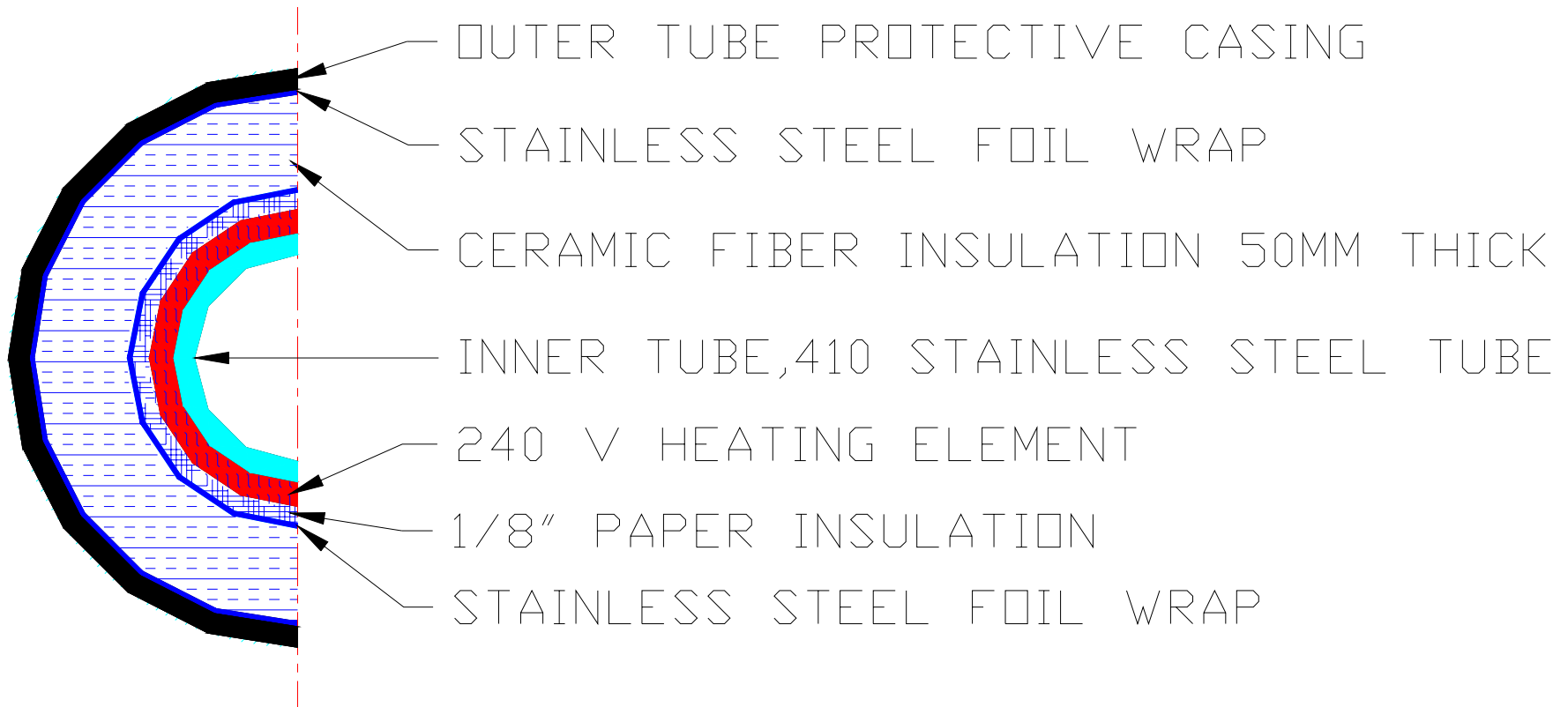
POSITIVE DISPLACEMENT SCREW DOES NOT TOUCH ANY PARTS UNDER THE METAL SURFACE. WEAR OCCURS ONLY THROUGH EROSION



Metamag® Transfer Tube Construction



Cut Away View of Metamag® Transfer Tube



Metamag® Refractory Nozzle

