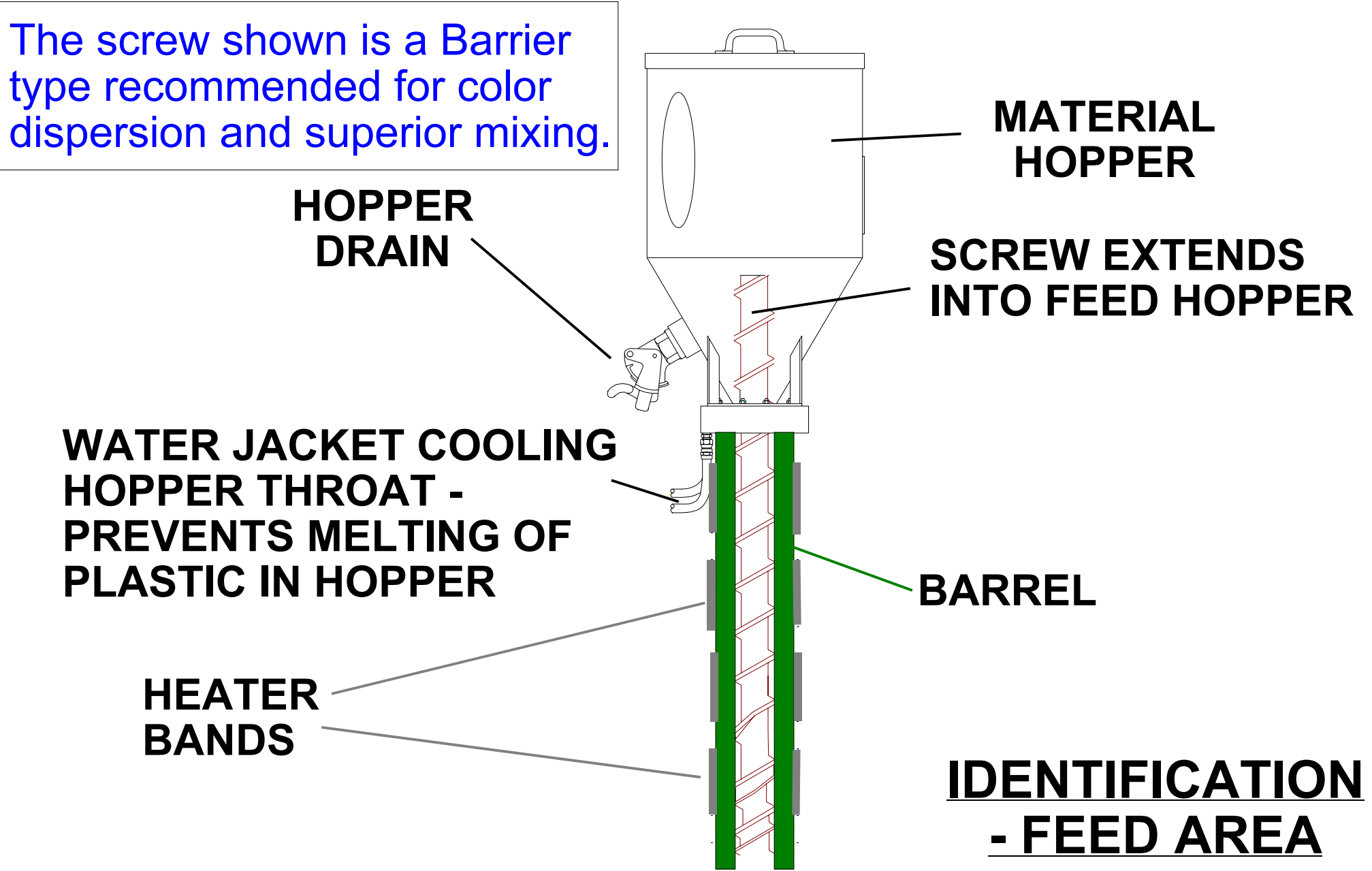


**THE  
JOMAR  
VERTICAL  
PLASTIFIER  
ASSEMBLY  
AND  
HOW IT  
WORKS.**

The screw shown is a Barrier type recommended for color dispersion and superior mixing.



**LIMIT SWITCH TO STOP  
SCREW WHEN CAVITIES  
ARE FULL**

**HYDRAULIC  
HOLDING  
CYLINDER**

**HEATER BAND**

**STEEL PRIMARY  
NOZZLE**

**REPLACEABLE BRASS  
NOZZLE TIP**

**SPLIT**

**MACHINE BED**

**WATER JACKET TO  
PROTECT SCREW  
MOTOR**

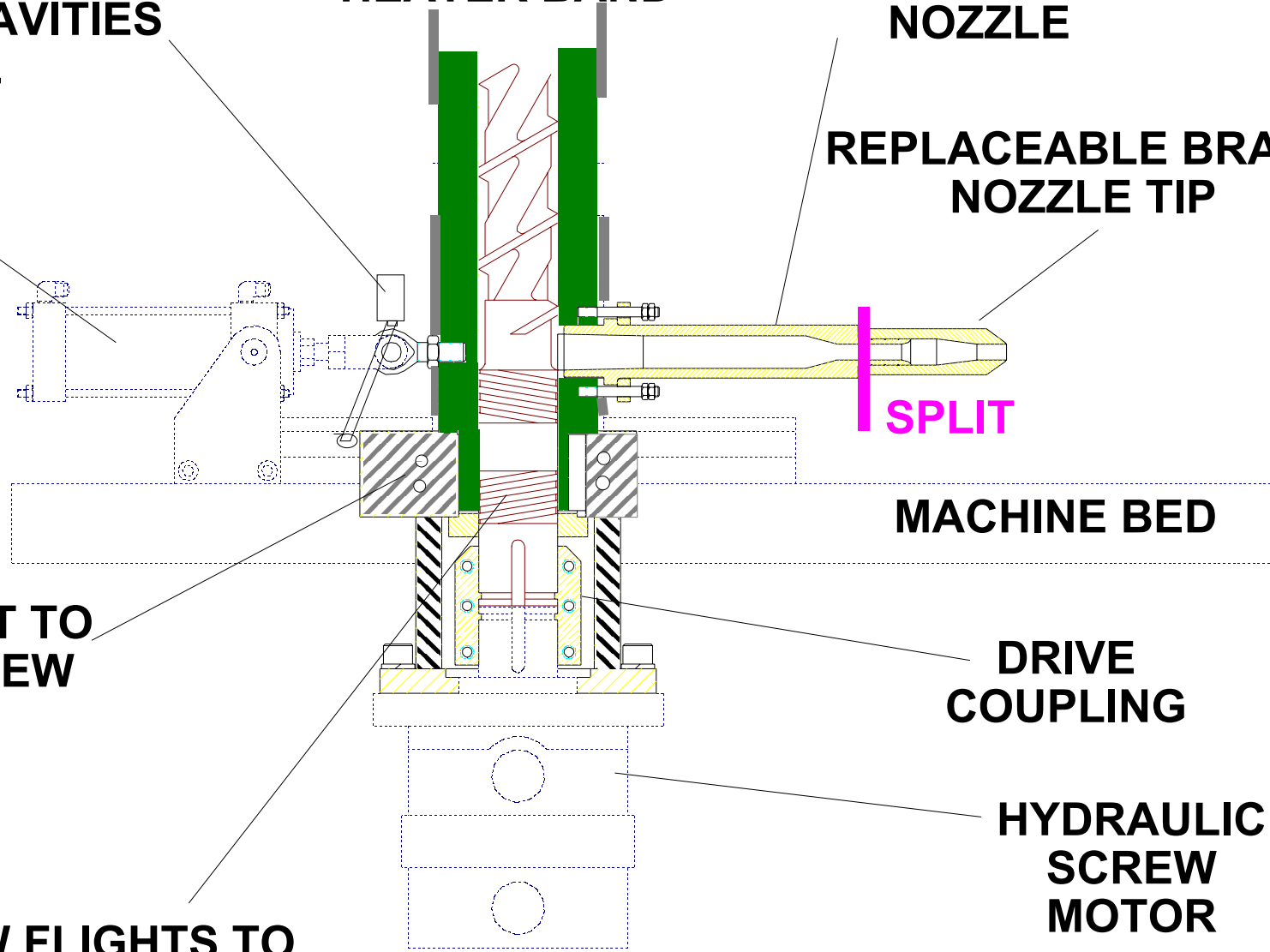
**DRIVE  
COUPLING**

**SHALLOW FLIGHTS TO  
REDUCE FLOW OF BLEED  
FROM LIVE BEARING**

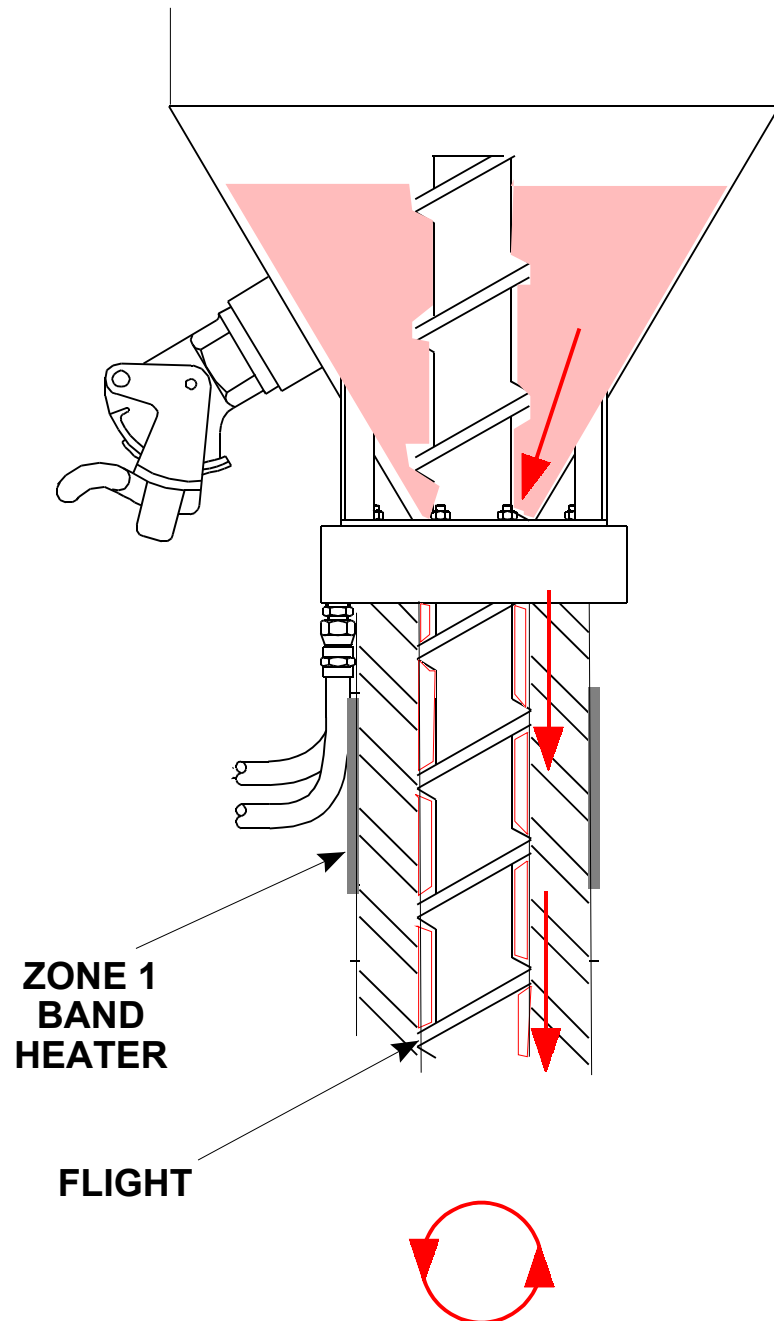
**HYDRAULIC  
SCREW  
MOTOR**

**PLASTIFIER MOVEMENT**

**IDENTIFICATION- DRIVE END**



# OPERATION

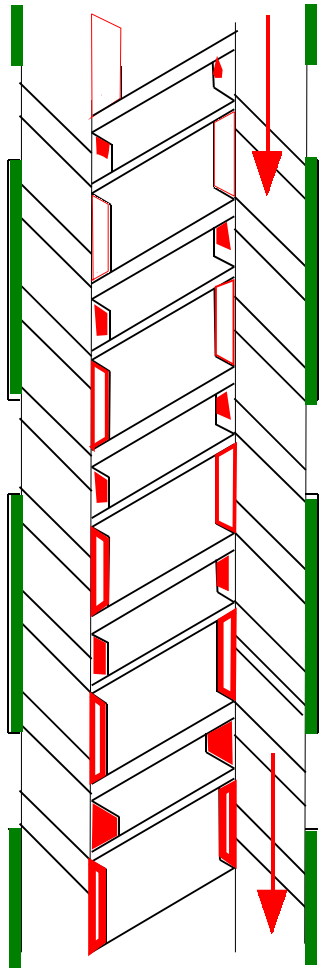


1. AS THE SCREW ROTATES, COLD GRANULES ARE PULLED INTO THE PRIMARY FLIGHT.

THIS MATERIAL IS HEATED BY BAND HEATERS AROUND THE BARREL.

IN ZONE 1, MATERIAL IS HEATED, COMPRESSED AND CONTINUES MOVING DOWN THE BARREL. RISING IN TEMPERATURE.

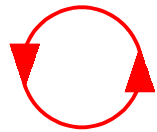
IN PRODUCTION, MELTING DOES NOT USUALLY BEGIN UNTIL AFTER ABOUT 6 FLIGHTS



2. IN ZONE 2 THE GRANULES  IN CONTACT WITH THE BARREL BEGIN TO MELT.  MOLTEN PLASTIC STARTS FLOWING ACROSS THE "BARRIER" INTO THE 2<sup>ND</sup> FLIGHT.

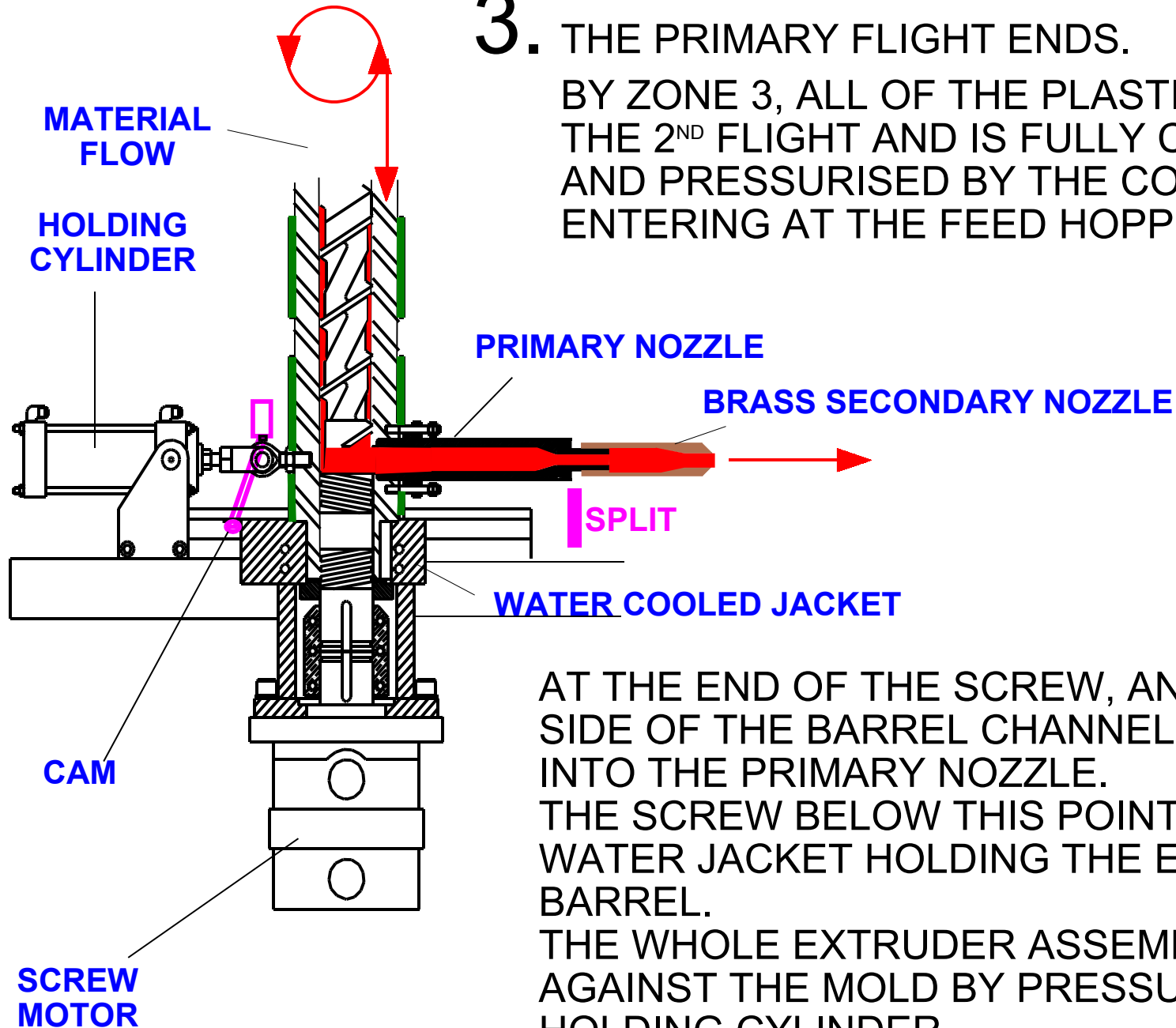
THE CONTINUAL ROLLING ACTION IN THE FLIGHT AND WITH ADIABATIC HEAT GENERATED BY TURBULENCE IN THE SCREW MORE AND MORE OF THE GRANULE BECOMES MOLTEN.

MATERIAL BECOMES COMPRESSED AS THE MAIN FLIGHT DEPTH DECREASES. THE 2<sup>ND</sup> FLIGHT CONTINUES INTO THE METERING ZONE OF THE SCREW.

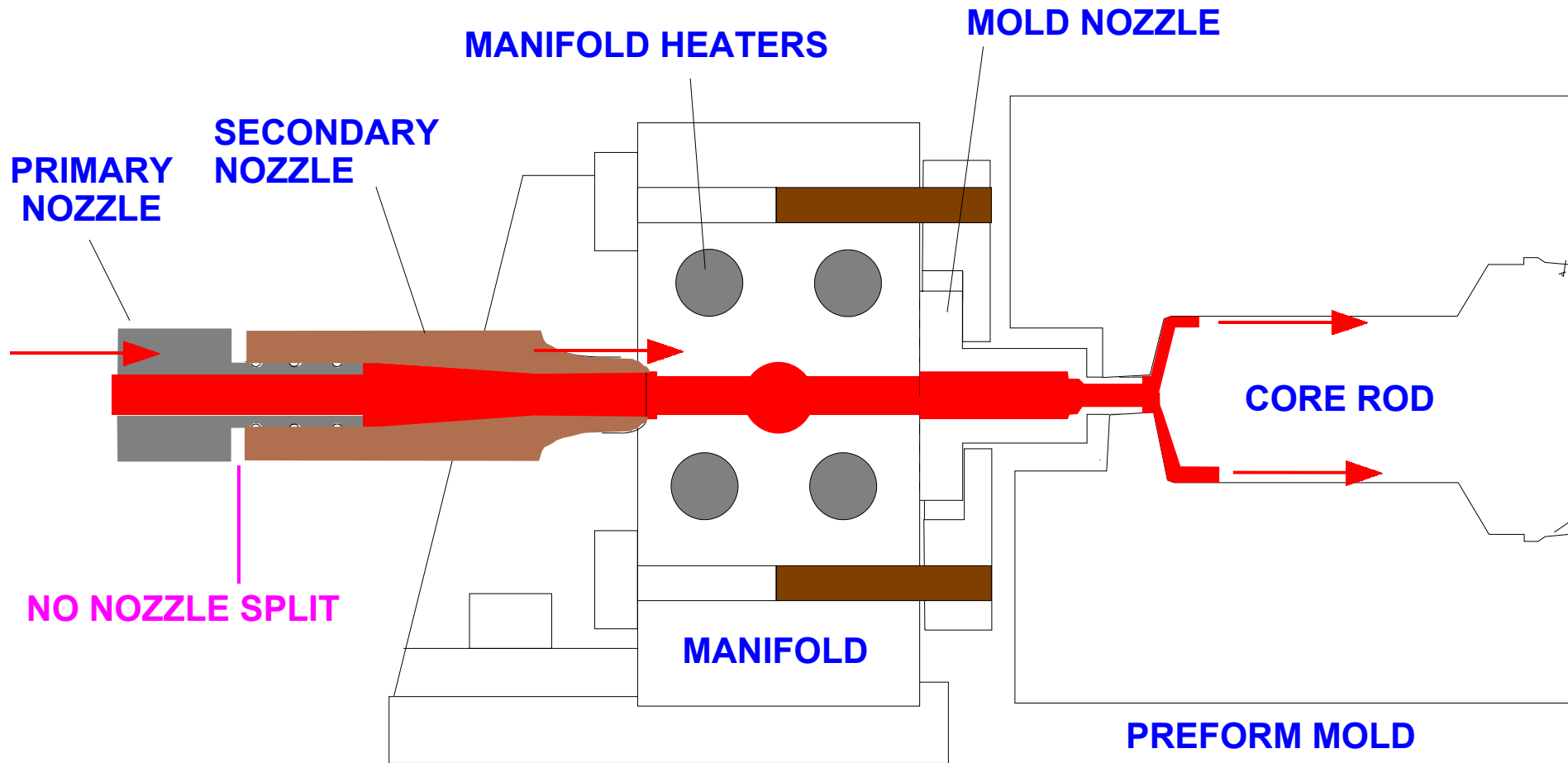


### 3. THE PRIMARY FLIGHT ENDS.

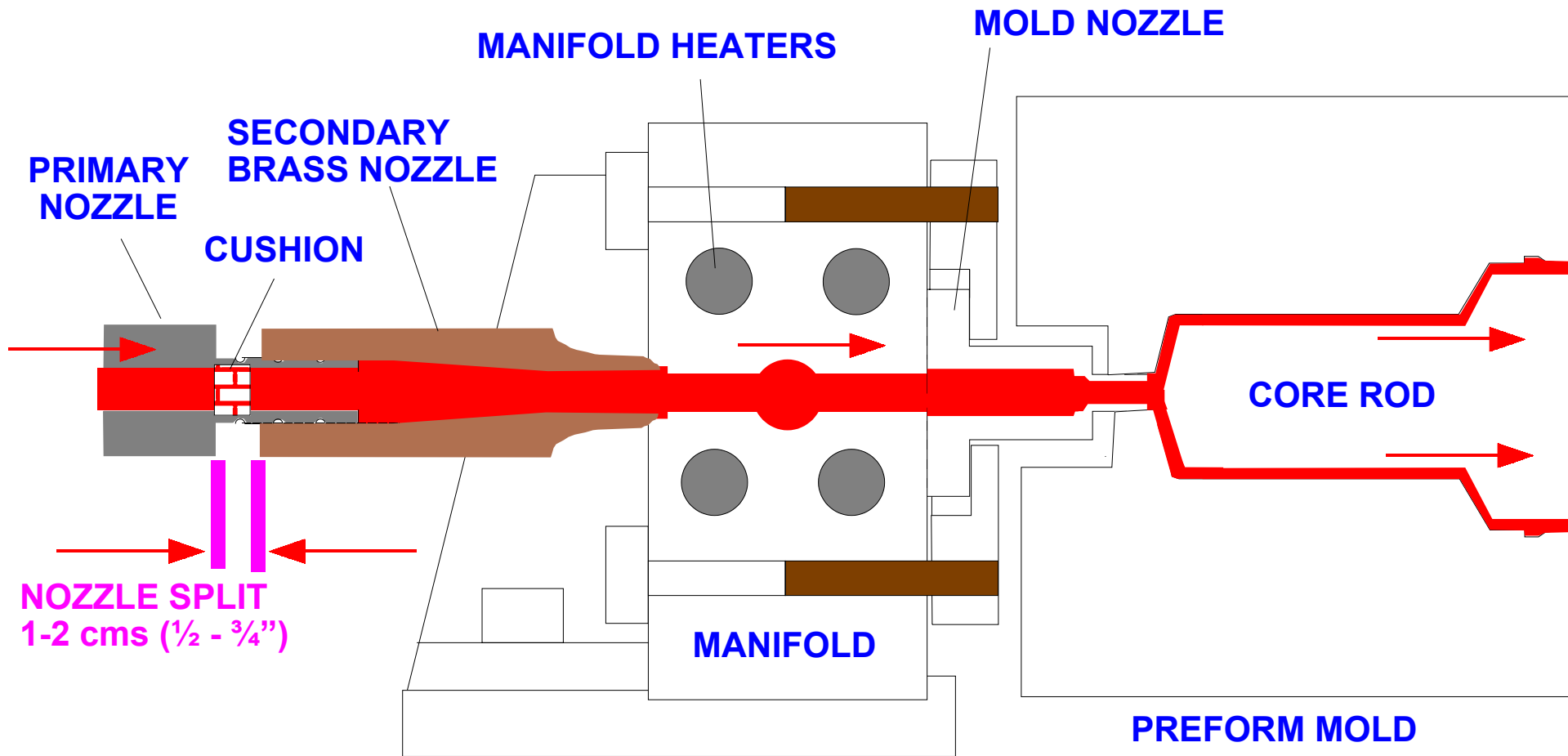
BY ZONE 3, ALL OF THE PLASTIC IS MOLTEN IN THE 2<sup>ND</sup> FLIGHT AND IS FULLY COMPRESSED AND PRESSURISED BY THE COLD MATERIAL ENTERING AT THE FEED HOPPER.



AT THE END OF THE SCREW, AN EXIT PORT IN THE SIDE OF THE BARREL CHANNELS THE MATERIAL INTO THE PRIMARY NOZZLE. THE SCREW BELOW THIS POINT IS COOLED BY A WATER JACKET HOLDING THE END OF THE BARREL. THE WHOLE EXTRUDER ASSEMBLY IS HELD AGAINST THE MOLD BY PRESSURE IN THE SMALL HOLDING CYLINDER

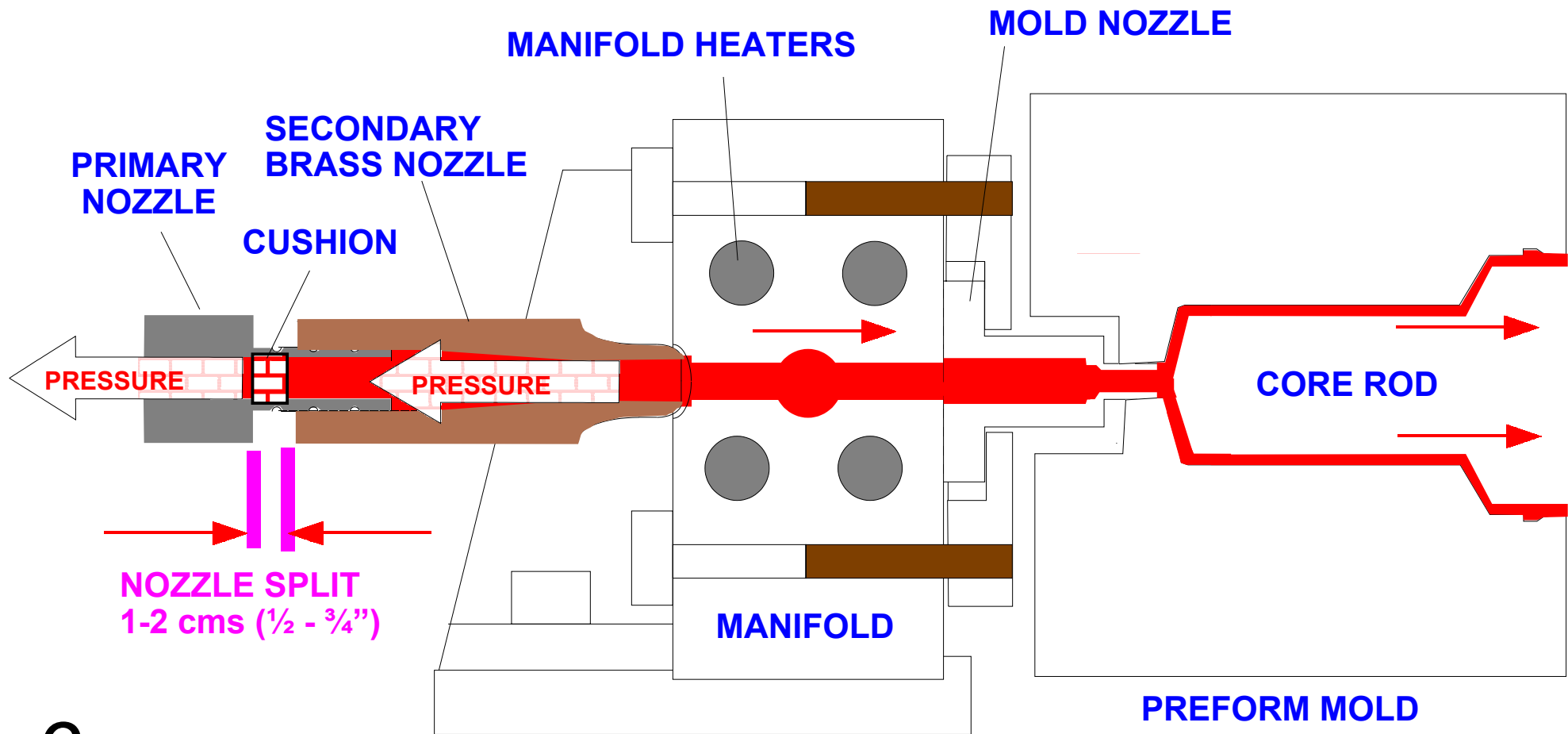


4. THE MOLTEN PLASTIC GOES THROUGH THE CENTRE OF THE PRIMARY NOZZLE, THE BRASS “SPLIT” NOZZLE, AND INTO THE MANIFOLD WHERE INDIVIDUAL NOZZLES DIRECT THE MELT INTO EACH PREFORM CAVITY.

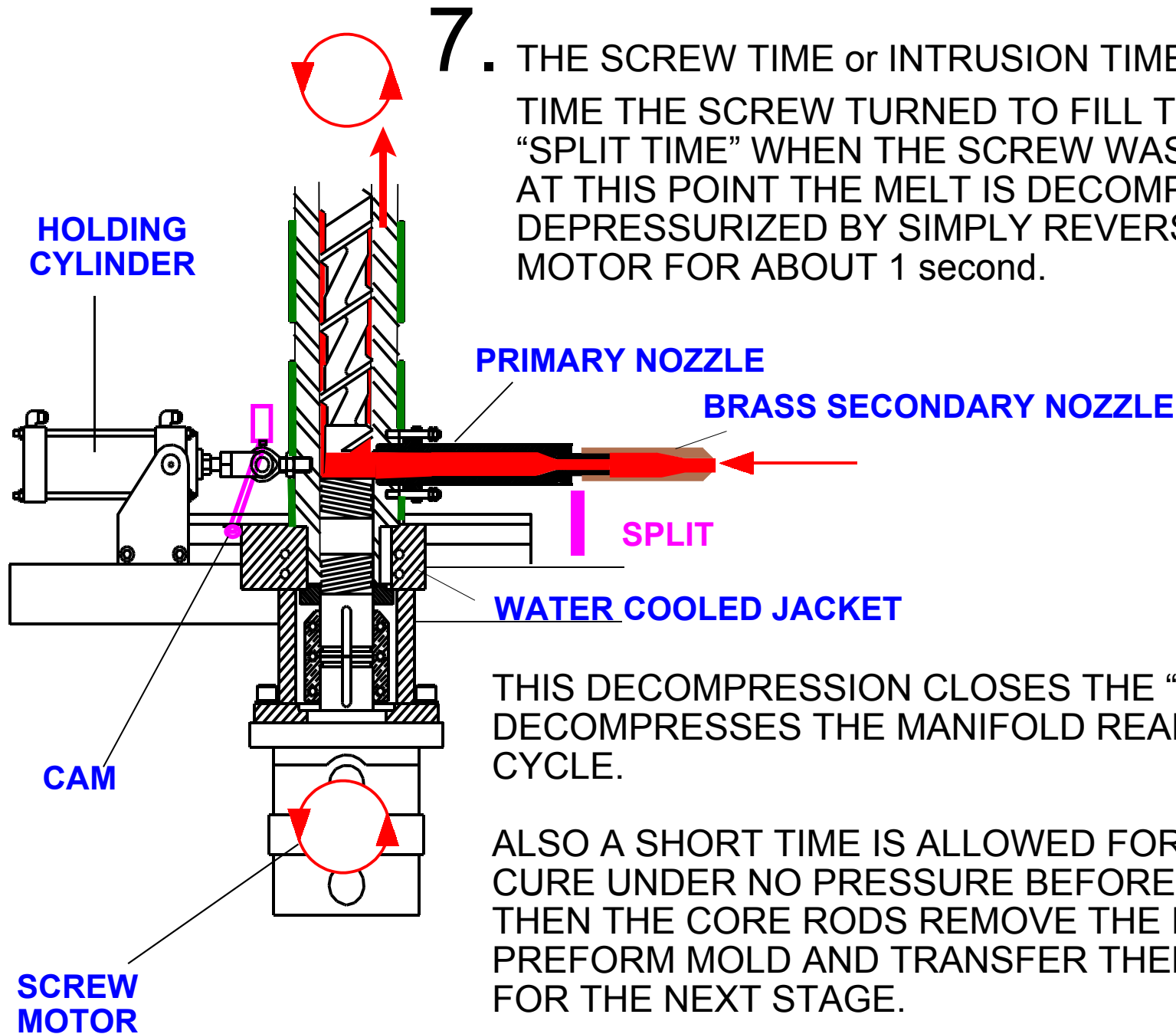


5. THE PREFORM CAVITY FINALLY FILLS.  
 AS THE STILL TURNING SCREW FORCES MORE MATERIAL INTO THE CAVITY, THE MELT PRESSURISES AND THE PRIMARY AND SECONDARY NOZZLE “**SPLIT**” OR SEPARATE.  
 THIS FORCES THE WHOLE EXTRUDER ASSEMBLY ON ITS CARRIAGE BACK BY ABOUT 1-2 cms. BY OVERCOMING THE HOLDING CYLINDER PRESSURE.





6. THE INTRUSION PRESSURE FROM THE JOMAR VERTICAL PLASTIFIER IS LOWER THAN THE PRESSURE GENERATED ON A HORIZONTAL SCREW. THE INTRUSION PRESSURE IS EQUAL TO THE PRESSURE SET ON THE SMALL HOLDING CYLINDER. AS THE PLASTIFIER SEPARATES A CAM TRIGGERS A LIMIT SWITCH TO STOP THE SCREW TURNING. THE CUSHION DEVELOPED BY THE NOZZLES SPLITTING IS USED TO PACK THE CAVITIES UNDER THE HOLDING CYLINDER PRESSURE FOR A SHORT TIME WE CALL THE "SPLIT TIME".



**7.** THE SCREW TIME or INTRUSION TIME CONSISTS OF THE TIME THE SCREW TURNED TO FILL THE CAVITY AND THE "SPLIT TIME" WHEN THE SCREW WAS STOPPED. AT THIS POINT THE MELT IS DECOMPRESSED or DEPRESSURIZED BY SIMPLY REVERSING THE SCREW MOTOR FOR ABOUT 1 second.

THIS DECOMPRESSION CLOSSES THE "SPLIT" NOZZLES and DECOMPRESSES THE MANIFOLD READY FOR THE NEXT CYCLE.

ALSO A SHORT TIME IS ALLOWED FOR THE PREFORM TO CURE UNDER NO PRESSURE BEFORE THE MOLDS OPEN. THEN THE CORE RODS REMOVE THE PREFORMS FROM THE PREFORM MOLD AND TRANSFER THEM TO THE BLOW MOLD FOR THE NEXT STAGE.

# CAVITIES FULL?

STOP THE SCREW!

A VERY SIMPLE MELT  
PRESSURE TRANSDUCER -

AT NO EXTRA CHARGE!

FOR A FULL DESCRIPTION OF THE  
JOMAR VERTICAL PLASTIFIER -  
READ THE FILE ATTACHED TO THIS  
PRESENTATION  
“Vertical screw text.pdf”.

The reader for this is available in folder “Acrobat”

THE NEXT SLIDE SHOWS THE TYPICAL  
JOMAR PLASTIFIER ASSEMBLY AND IS  
REFERRED TO IN THE TEXT FILE.

# TYPICAL JOMAR PLASTIFIER ASSEMBLY

