



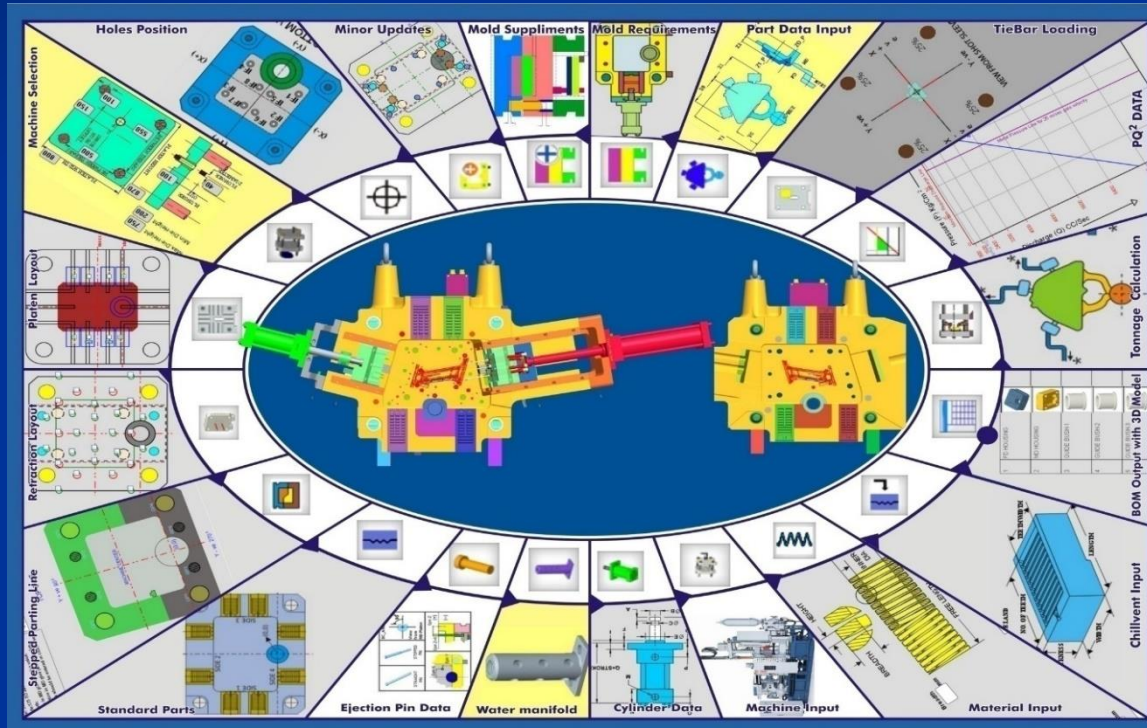
Introduction



A SOFTWARE PRODUCT OF
DIETECH INDIA (P) LIMITED



AMB FEATURES



This slide shows the different icons built in the AMB

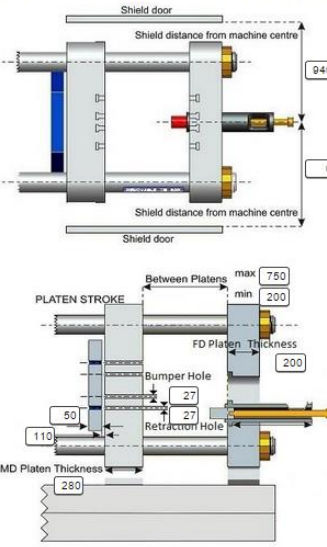
The icons are built for each design elements with variables.

The icons are placed in such a way that the design procedures are in order.

MACHINE INPUT Save

Field Marked in Yellow Colour Are Assumption Values

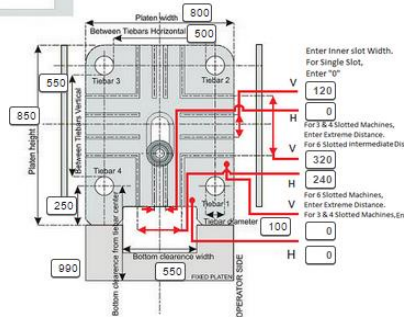
Machine Add/Edit | Geometric Data | Clamping Slot Details | Retraction Data | Plunger | PQ² Data | Die Design | Assumption



Shield door
Shield distance from machine centre: 940
Shield distance from machine centre: 0
Shield door
Between Platen: max 750, min 200
FD Platen Thickness: 200
Bumper Hole: 27
Retraction Hole: 27
MD Platen Thickness: 280

Tie bar Removable Sprue bush offset

BAR.NO	REMOVABLE	S.NO.	VALUE
1	<input type="checkbox"/>	1	150
2	<input type="checkbox"/>	2	
3	<input type="checkbox"/>	3	
4	<input type="checkbox"/>	4	
		5	
		6	



Platen width: 800
Between Tiebars Horizontal: 500
Tiebar 3
Tiebar 2
Tiebar 4
Tiebar 1
Tiebar diameter: 100
Platen height: 850
Between Tiebars Vertical: 550
Platen height: 250
Bottom clearance width: 550
Bottom clearance from tiebar centre
OPERATOR SIDE

Enter inner slot Width.
For Single Slot, Enter "0"
120
0
For 3 & 4 Slotted Machines, Enter Extreme Distance.
320
240
For 6 Slotted Machines, Enter Extreme Distance.
0
0
For 3 & 4 Slotted Machines, Enter "0"
0







Machine input forms

AMB procedure starts with capturing the machine data like platen size, between tie bar dimensions, max & min die height including injection offset distance etc...

AMB has forms to intake clamping slot details, Retraction hole positions, shot sleeve dimensions & Injection parameters.

Field Marked in Yellow Colour Are Assumption Values

Machine Add/Edit | Geometric Data | Clamping Slot Details | Retraction Data | Plunger | PQ²Data | Die Design | Assumption

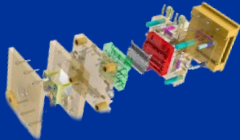
S.NO	DESCRIPTION	IMAGE	VALUES
1	Housing Chamfer		30
2	Clamping Groove Width - Moving Die		40
3	Clamping Groove Width - Fixed Die		40
4	Insert Bearing Length		30
5	Housing Bearing Length		90
6	SprueBush Wall thickness		20

Die standards

This form will intake the Die-casters standard practices of clamping thickness, insert bearing , housing bearing etc...



1. PRE DESIGN



2. DESIGN

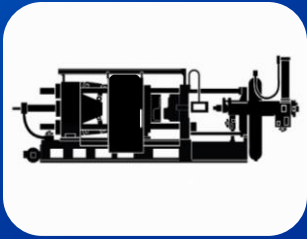


3. POST DESIGN

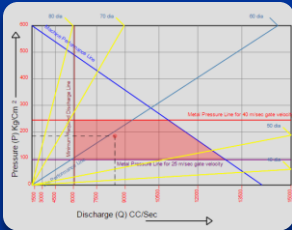
Design stages

AMB will give direction to the designer in “mold base design” like Predesign, Design & Post design.

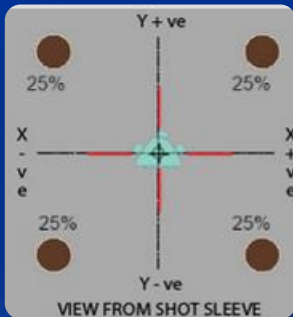
This will give clarity in design process without missing the procedure.



a. TONNAGE CALCULATION



b. PQ² DIAGRAM

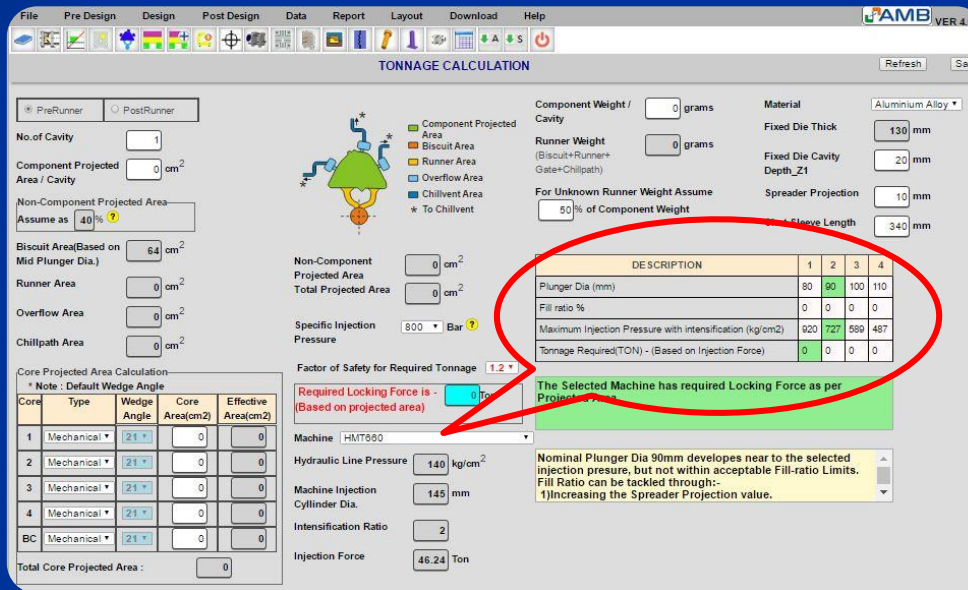


c. TIE BAR LOADING

Predesign

It deals with tonnage calculations of the desired casting, PQ square diagram, machine tie bar loading distribution study inclusive of casting part data entry in the chart.

A. TONNAGE CALCULATION



TONNAGE CALCULATION

File Pre Design Design Post Design Data Report Layout Download Help

Refresh Save

PreRunner PostRunner

No. of Cavity: 1

Component Projected Area / Cavity: 0 cm²

Non-Component Projected Area: Assume as 40%

Biscuit Area (Based on Mid Plunger Dia.): 64 cm²

Runner Area: 0 cm²

Overflow Area: 0 cm²

Chillpath Area: 0 cm²

Core Projected Area Calculation
* Note : Default Wedge Angle

Core	Type	Wedge Angle	Core Area(cm2)	Effective Area(cm2)
1	Mechanical	21	0	0
2	Mechanical	21	0	0
3	Mechanical	21	0	0
4	Mechanical	21	0	0
BC	Mechanical	21	0	0

Total Core Projected Area: 0

Component Projected Area: 0 cm²

Runner Weight (Biscuit+Runner+Gate+Chillpath): 0 grams

For Unknown Runner Weight Assume: 50% of Component Weight

Material: Aluminium Alloy

Fixed Die Thick: 130 mm

Fixed Die Cavity Depth_Z1: 20 mm

Spreader Projection: 10 mm

Stroke Length: 340 mm

DESCRIPTION	1	2	3	4
Plunger Dia (mm)	80	90	100	110
Fill ratio %	0	0	0	0
Maximum Injection Pressure with intensification (kg/cm ²)	620	727	589	487
Tonnage Required(TON) - (Based on Injection Force)	0	0	0	0

Factor of Safety for Required Tonnage: 1.2

Required Locking Force is - (Based on projected area): 0 Ton

Machine: HMT650

Hydraulic Line Pressure: 140 kg/cm²

Machine Injection Cylinder Dia.: 145 mm

Intensification Ratio: 2

Injection Force: 46.24 Ton

The Selected Machine has required Locking Force as per Projected Area

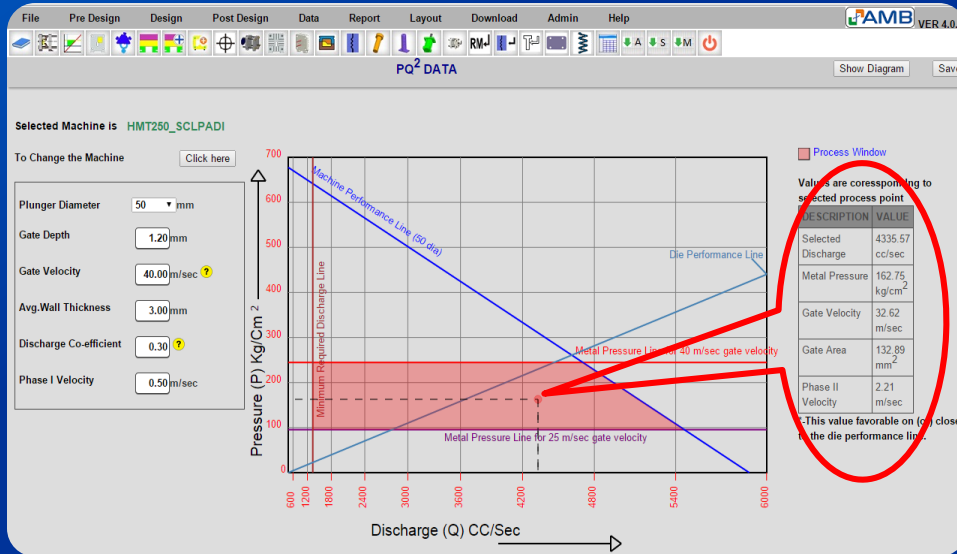
Nominal Plunger Dia 90mm develops near to the selected injection pressure, but not within acceptable Fill-ratio Limits. Fill Ratio can be tackled through:-
1) Increasing the Spreader Projection value.

Machine tonnage calculation

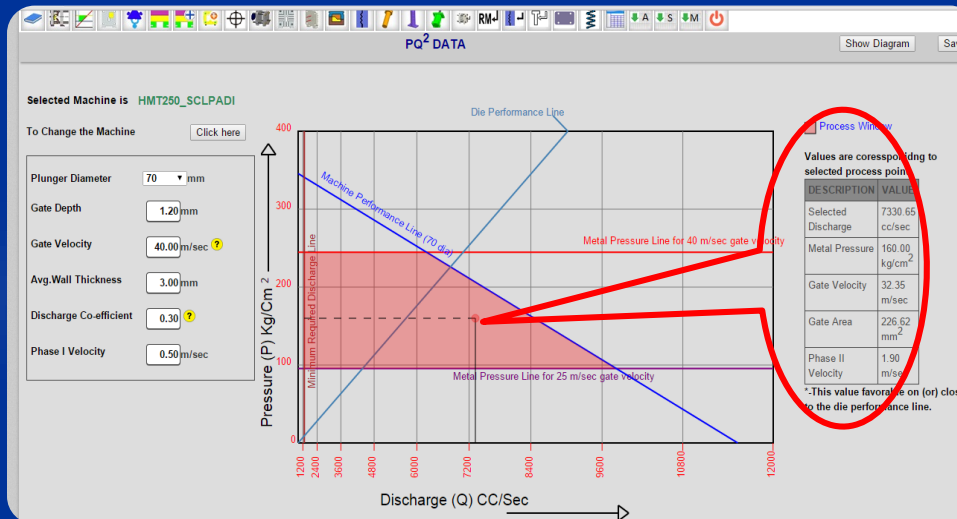
This form is having the power of selecting the required machine by asking basically the casting weight & projected area.

All other details like runner weight, etc are either guided by norms value or given as user input.

B. PQ² DIAGRAM



PQ2 DIAGRAM for Ø50 Plunger



PQ2 DIAGRAM for Ø70 Plunger

- ❖ PQ2 square diagram
- ❖ This PQ2 diagram reveals the machine & die process window between machine performance line ,required minimum discharge line and Maximum and minimum Gate velocities.
- ❖ The various size of plunger performance are also can be evaluated by selecting different plungers.
- ❖ The die performance line is shown through the process window and the reference gate area, gate velocity & cavity pressure can be taken by selecting the point in the shaded portion.

Selected Machine Name is HMT250

X-Deviation of Part Centre from Mic Centre mm

Y-Deviation of Part Centre from Mic Centre mm

The Part Centre Deviation is within the Acceptable Limit of 2.5%

VIEW FROM SHOT SLEEVE

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Tiebar loading distribution

This facility will indicate load distribution on each tie bar for the given cavity center.

The quality alert will be given to show not acceptable limits.

OBLIQUE INSERT – PLAIN DIE

Component Area: Inclined | Angle: 10

Boundary Method: MD FD BOTH

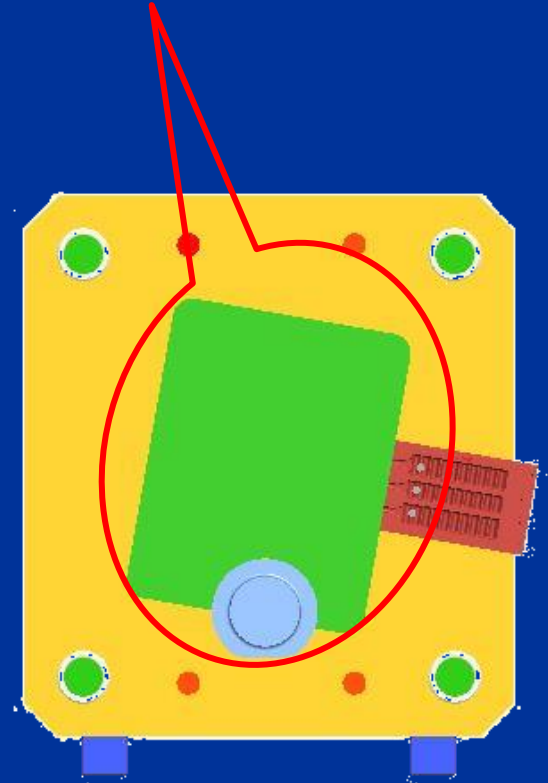
COMPOUND BOUNDARY ANGLE: (X1,Y1) (X2,Y2) (X3,Y3) (X4,Y4)

INSERT INCLINATION: Z1, Z1_P, Z0, Z0_P

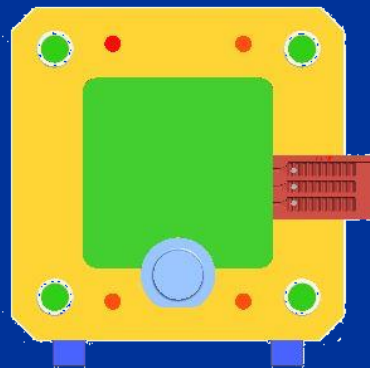
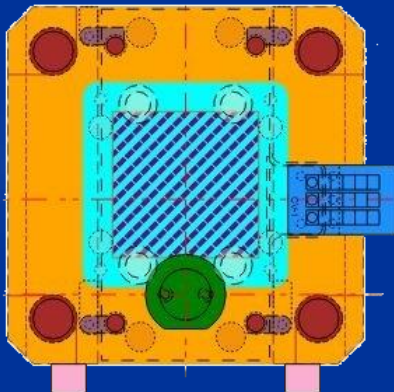
X0	-100	PCR1	20	HCH1	35
Y0	50	PCR2	20	HCH2	35
X1	100	PCR3	20	HCH3	35
Y1	250	PCR4	20	HCH4	35
Z0	30				
Z1	20				
Z0_P	0				
Z1_P	0				
Insert.Pro	0.2				

** PCR = Pocket Corner Radius
** HCH = Housing Chamfer

OBLIQUE INSERT

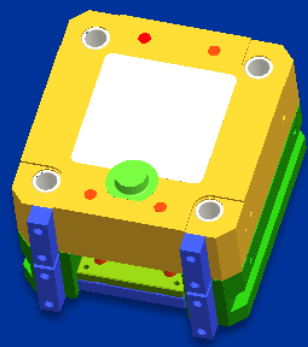
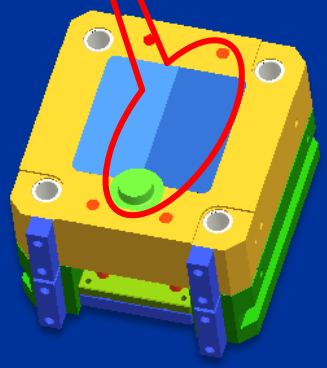
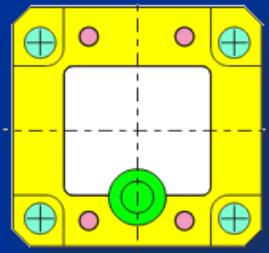
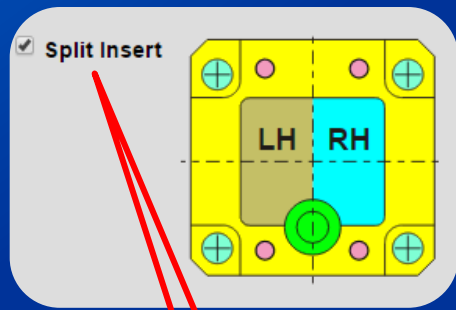


STRAIGHT INSERT



- ❖ **AMB displays proportionate die layout on the screen.**
- ❖ **This dynamic 2D graphics helps to visualize the position of the casting area placement on the mold with hatching marks. The position of all design elements can be visualized thru this graphics.**
- ❖ **Oblique insert**
- ❖ **This facility is created to make the mold base pocket in angular position of the insert to accommodate inclination of the casting placement during runner & gate design.**
- ❖ **This enables the optimum insert size and uniform bearing area around the castings.**

SPLIT INSERT TYPE SELECTION



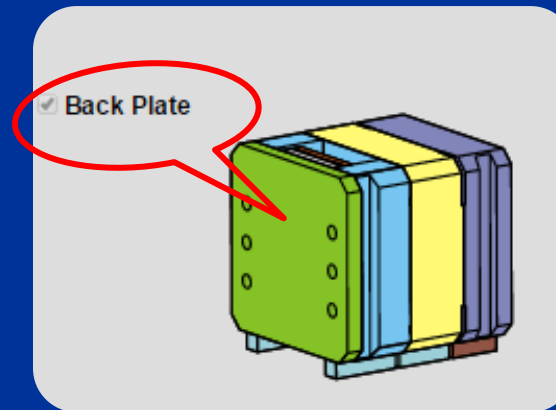
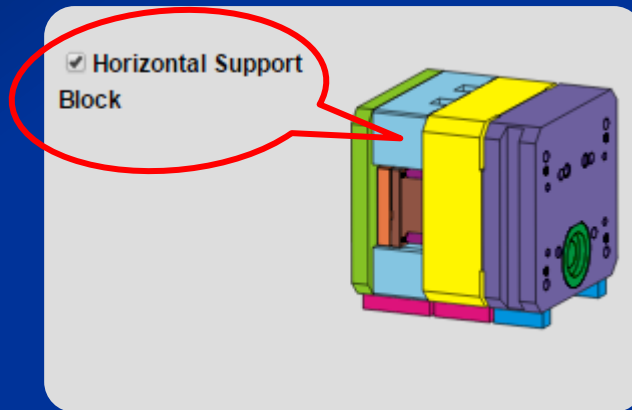
SPLIT INSERT

SINGLE INSERT

Symmetric & Non Symmetric insert

We can create symmetric and non symmetric insert and Split inserts also.

HORIZONTAL SUPPORT BLOCK SELECTION



Horizontal support block to vertical support block

In one click in the screen we can change from vertical support block to horizontal support block.

This changes will be the long time taking process in the conventional method.

STEPPED PARTING LINE

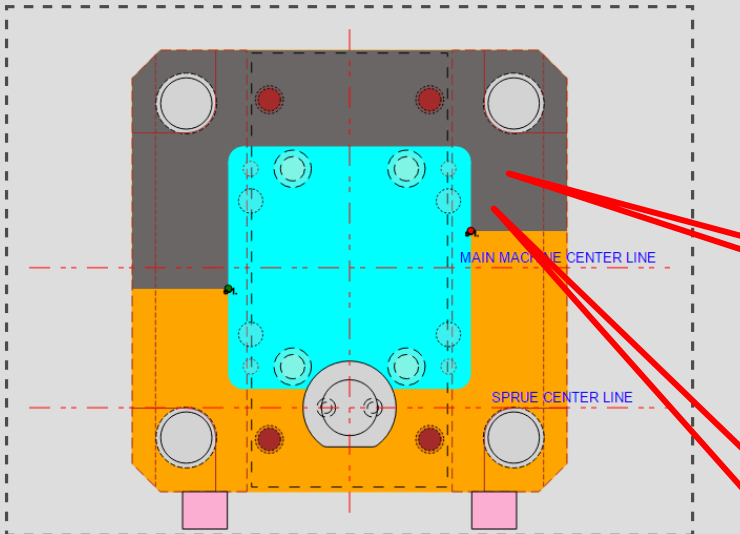
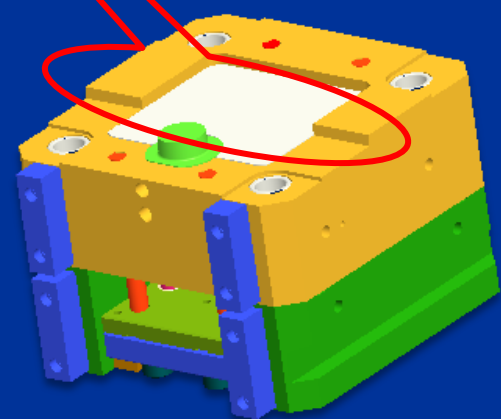
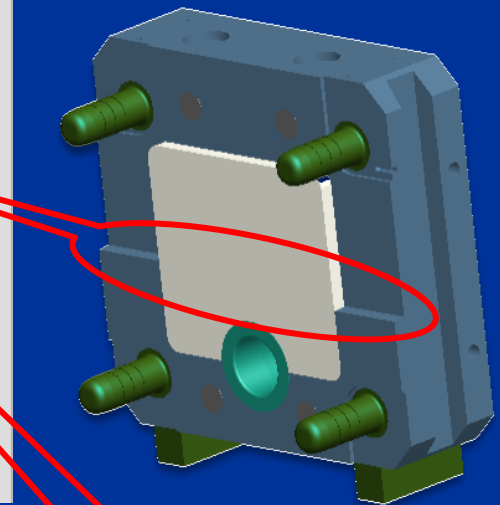
STEPPED PARTING LINE REFRESH SAVE

ANGLE LIMIT
 Angle should be in Anti-clockwise Direction.
 Step Depth:
 For Projection in MD give positive value.
 For depth in MD give negative value.

Step Alert

Step No:	Step Select:	Start Point:				End Point:				Depth:	Start Edit:	End Edit:
		X:	Y:	ANG:	DA:	X:	Y:	ANG:	DA:			
1	<input checked="" type="checkbox"/>	130	189.295	0	1	-130	127.354	180	1	10		
2	<input type="checkbox"/>	-	-	-	-	-	-	-	-	-		
3	<input type="checkbox"/>	-	-	-	-	-	-	-	-	-		
4	<input type="checkbox"/>	-	-	-	-	-	-	-	-	-		

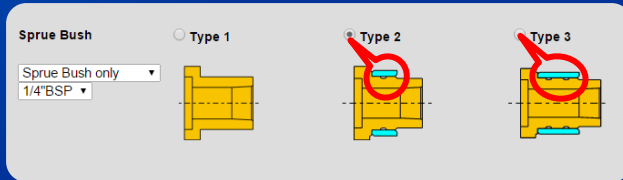
**DA ----> Draft Angle

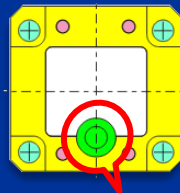
This form shows the creation of stepped parting line in thickness direction of moldbase to suit the casting parting line requirements.

This will help to provide venting thru housing parting line

SPRUEBUSH TYPE SELECTION



RECTANGULAR



ROUND

SPREADER TYPE SELECTION

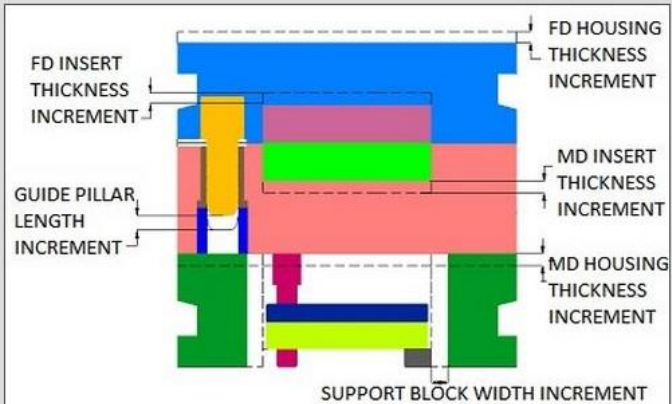
Sprue bush & spreader

The facility is to select from three types of sprue bush based on water cooling System .

Also we can select two types of spreader either round or rectangular.

SUPPLEMENTS

Fixed Insert Thickness Supplement	0
Moving Insert Thickness Supplement	0
Fixed Housing Thickness Supplement	0
Moving Housing Thickness Supplement	0
Support Block Width Increment	0
Guide Pillar Length Increment	0



The diagram shows a cross-section of a mold assembly with the following labeled components and their corresponding supplement/increment parameters:

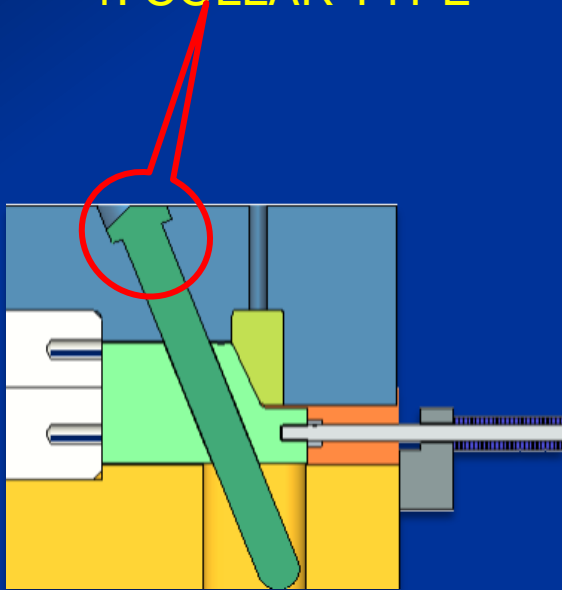
- FD INSERT THICKNESS INCREMENT
- FD HOUSING THICKNESS INCREMENT
- MD INSERT THICKNESS INCREMENT
- MD HOUSING THICKNESS INCREMENT
- SUPPORT BLOCK WIDTH INCREMENT
- GUIDE PILLAR LENGTH INCREMENT

Mold supplements

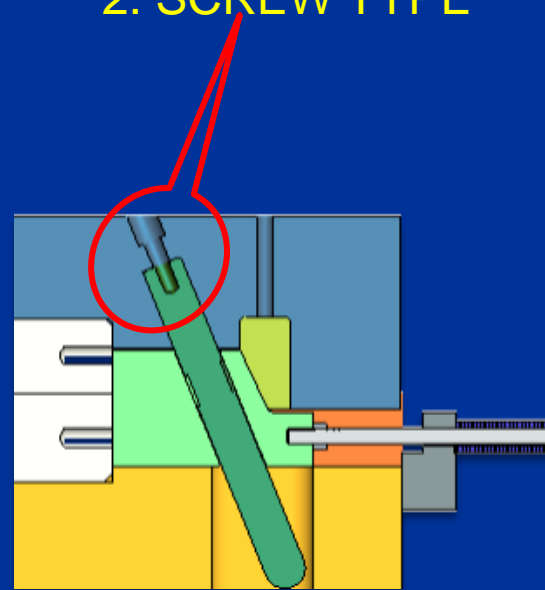
This is one of art of AMB.

The designer can alter the housing thickness ,insert thickness to match the nearing Raw material size available.

1. COLLAR TYPE



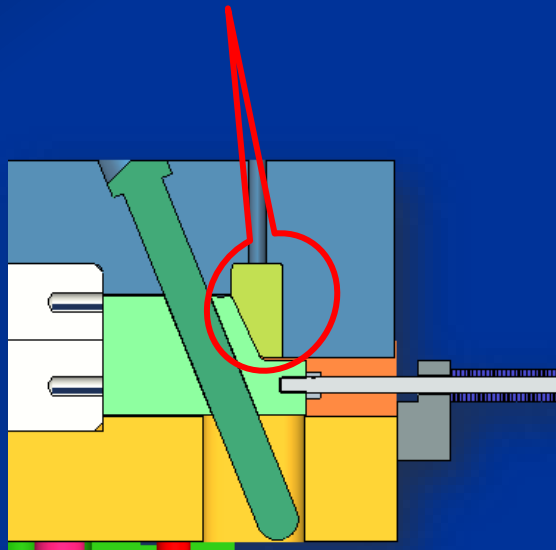
2. SCREW TYPE



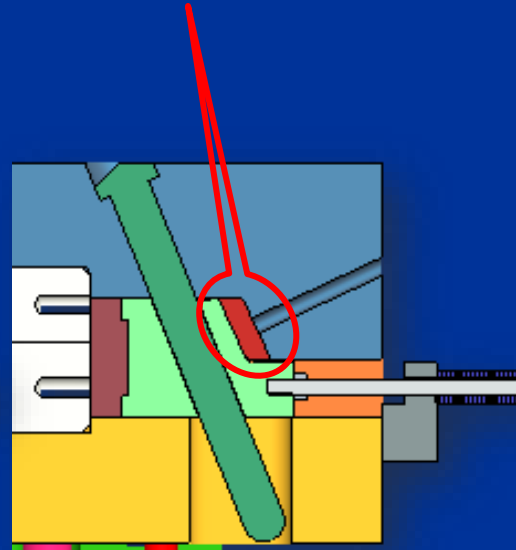
Cam rod type

Two types of cam rod like, collar & screw can be chosen in this form.

1. POCKET TYPE

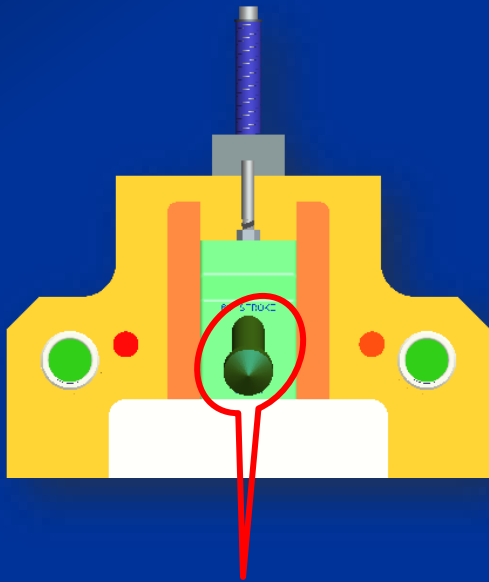


2. PLATE TYPE

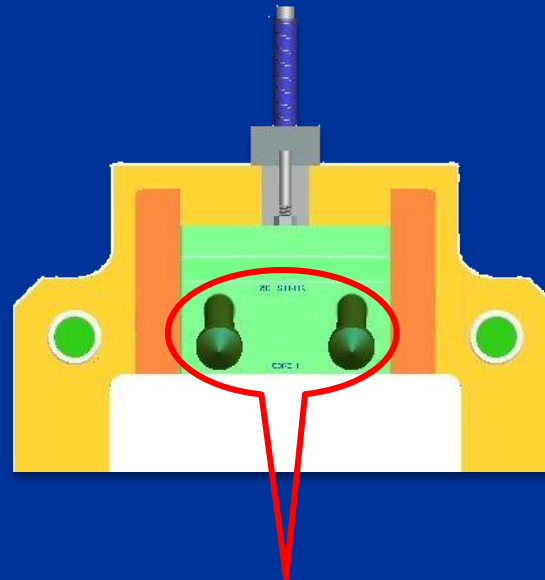


Wedge selection

The designer have the flexibility in selecting the two kinds of wedge called, “embedded” & “plate” based on the core size.



SINGLE CAMROD



DOUBLE CAMROD

Multiple cam rods.

If the core holder width is more, multi cam rod provisions will be automatically generated by the AMB.

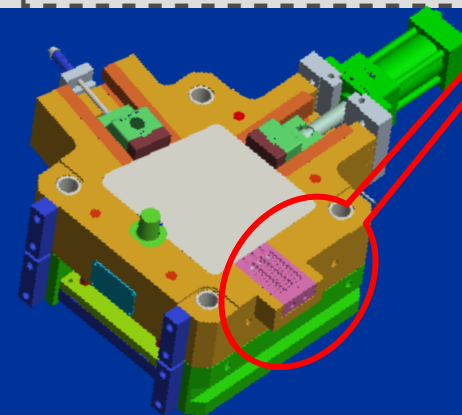
STANDARD PARTS - CHILLVENTS

CHILLVENT						
POSITION	SELECT	X-CO	Y-CO	SIZE	TYPE	SUPPORT
<input checked="" type="checkbox"/> CV1	Along Side-3	163	150	150X95X45	Triple_Cavity	<input checked="" type="checkbox"/> Y / N
<input type="checkbox"/> CV2	Along Side-1	-	-	150X95X45	Triple_Cavity	<input type="checkbox"/> Y / N
<input type="checkbox"/> CV3	Along Side-1	-	-	150X95X45	Triple_Cavity	<input type="checkbox"/> Y / N
<input type="checkbox"/> CV4	Along Side-1	-	-	150X95X45	Triple_Cavity	<input type="checkbox"/> Y / N
<input type="checkbox"/> CV5	Along Side-1	-	-	150X95X45	Triple_Cavity	<input type="checkbox"/> Y / N
<input type="checkbox"/> CV6	Along Side-1	-	-	150X95X45	Triple_Cavity	<input type="checkbox"/> Y / N
<input type="checkbox"/> CV7	Along Side-1	-	-	150X95X45	Triple_Cavity	<input type="checkbox"/> Y / N
<input type="checkbox"/> CV8	Along Side-1	-	-	150X95X45	Triple_Cavity	<input type="checkbox"/> Y / N

** Size ends with _S -> Sinewave Chillvent."

MD FD

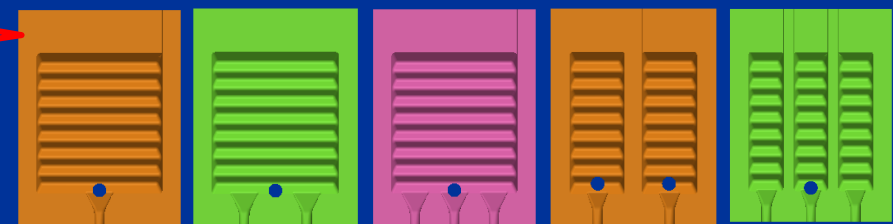
The chill vent form is designed to meet the placement of chillvents on all sides of the mold base by interactive 2D graphics.



CHILLVENT SIZES & TYPES

CHILLVENT

POSITION	SELECT	X/Y CO	SIZE	TYPE	SUPPORT i
CV1	Along Side-1	150	150X95X45	Single_Path	YES/NO
CV2	None	250	125X95X45	Single_Path	YES/NO
CV3	None	-125	55X55X55 90X55X40	Double_Path	YES/NO
CV4	None	125	150X95X45	Triple_Path	YES/NO
CV5	None	125	150X95X45	Twin_Cavity	YES/NO
CV6	None	250	150X95X45	Triple_Cavity	YES/NO
CV7	None	-125	150X95X45	Triple_Cavity	<input type="checkbox"/> YES/NO
CV8	None	125	150X95X45	Triple_Cavity	<input type="checkbox"/> YES/NO

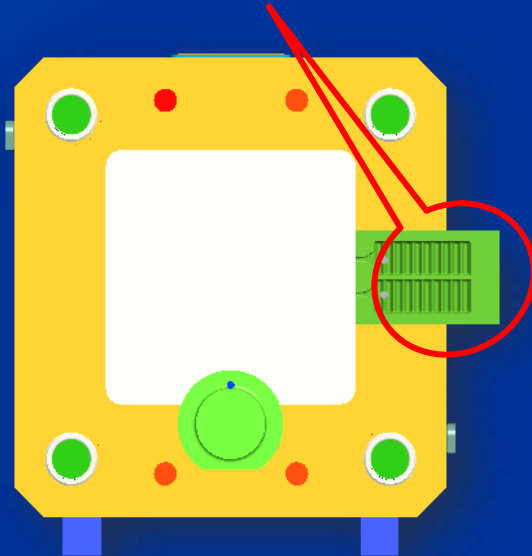


Chill vent types & sizes

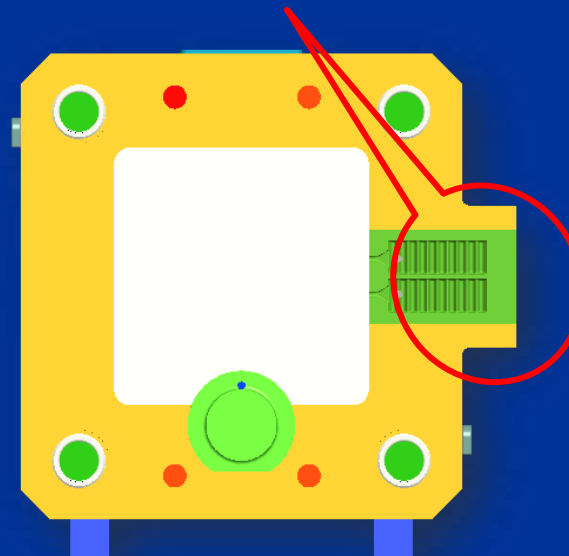
This form will help to select “the different types” of chill vents like single way & multiple way upto three.

“The different sizes” also can be embedded in the housings.

WITHOUT SUPPORT



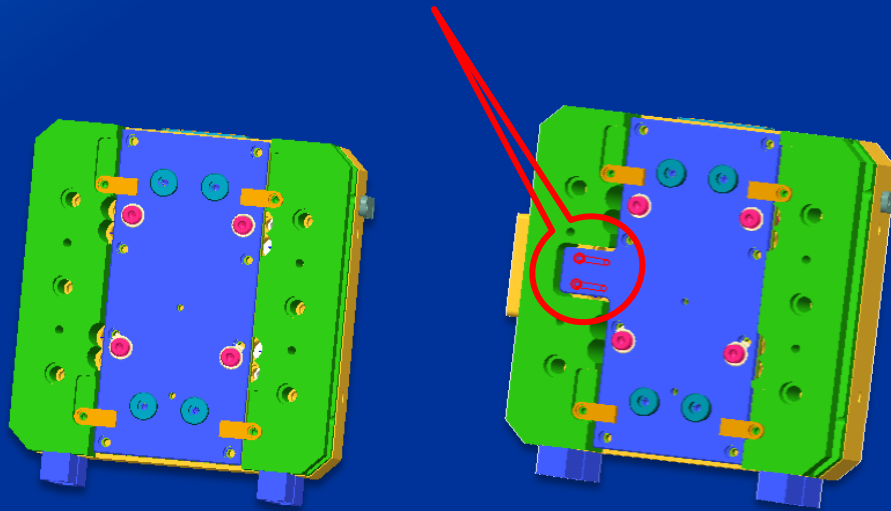
WITH SUPPORT



Chill vent extended support

The chill vent extension beyond housing can be supported with extra housing material in both housings by clicking one button.

EJECTOR PLATE EAR PROJECTION – TO SUIT CHILLVENT EJECTOR PIN



BEFORE CHILLVENT CREATION

AFTER CHILLVENT CREATION

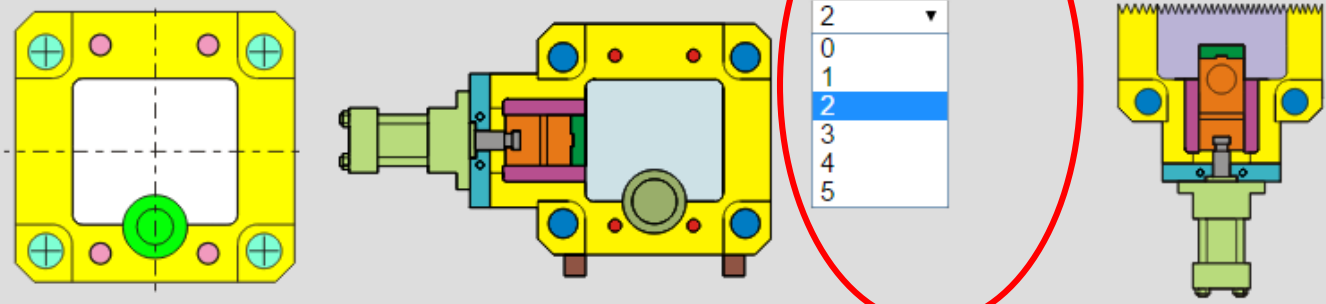
AMB has got the power of creating the 3D model with pocket location, fixing screws, hitting hole in both FD & MD housings.

Also it creates ejector pin Rooted, up to the ejector front plate, thro Moving housing. The ejector pin color pockets will be also created in the ejector front plate.

Apart from, this will make , pocket in the support block, to move the extended ejector plates.

MOLD REQUIREMENTS

Die Type Plain Die Core Die No of Side Cores Bottom Core



Core selection

In this form, the types of dies, no of core requirements can be selected.

The bottom core selection is added separately. AMB is limited upto 5 sidecores in single die.

CORE DATA

Core 1 Core 2

Core Point X: 25 mm

Core Point Y: 150 mm

Core MD Depth: -20 mm

Core FD Depth: 20 mm

Core Width: 20 mm

Core Angle: 170 Degree

Core Stroke (Actual): 60 mm

Stroke Overflow Incr: 0 mm

Core Method: Mechanical

Core Wedge: Type2

Core Plate: Collar

Cylinder Make: NAMBU

Cylinder Type: TIEBAR

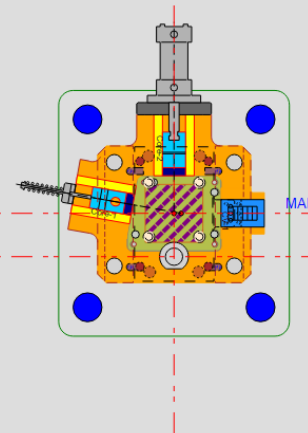
Cylinder Bore: 80

Core Pulling Type: NA

Hydraulic Wedge angle: 5 Degree

Cyl Rod Length Incr: 0 mm

MD FD



1. Mechanical
2. Hydraulic

1. NAMBU
2. YUFLOW
3. MERKLE
4. SMC

The position and other requirements of the side cores can be defined through numerical inputs with the help of visuals.

Side cores can be created anywhere between 0 to 360 degrees.

The interactive 2D graphics will help to audit the position of the same before downloading the model.

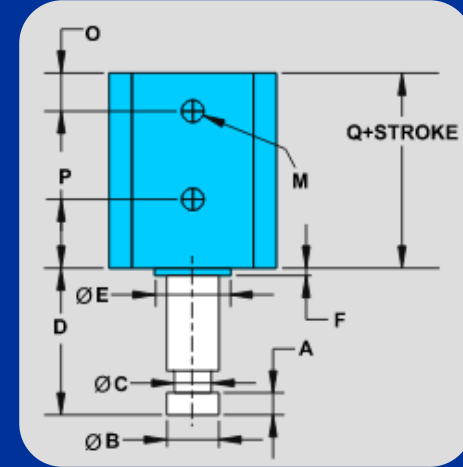
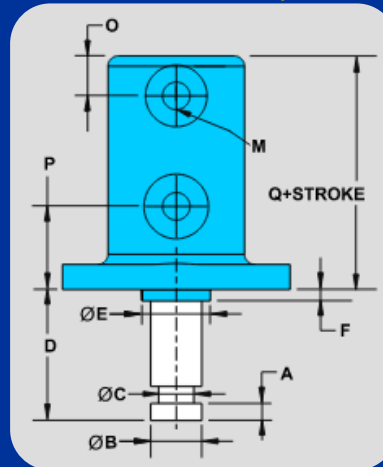
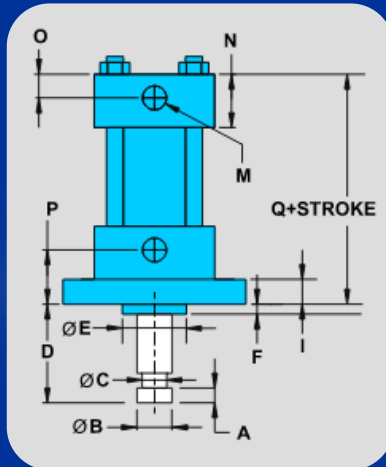
CYLINDER MAKE & TYPE

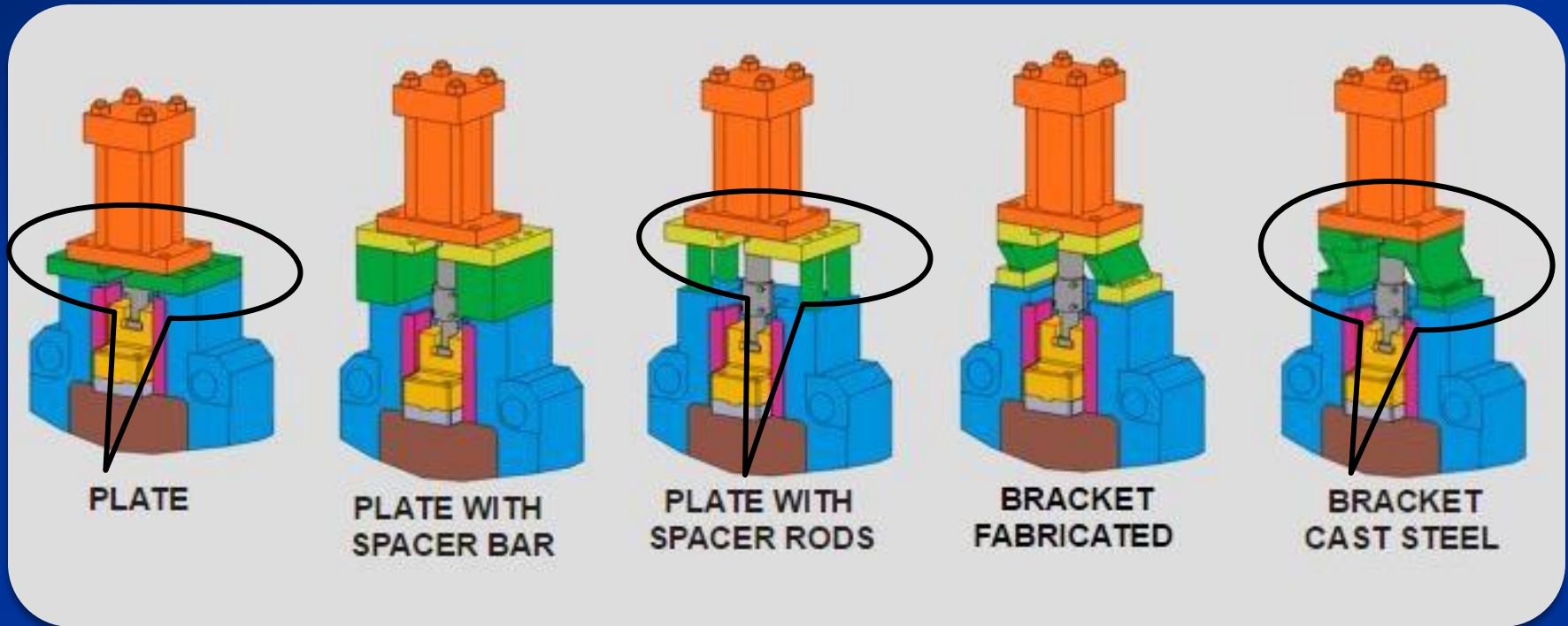
CYLINDER MAKE

1. NAMBU
2. MERKLE
3. SMC
4. YUFLOW

CYLINDER TYPE

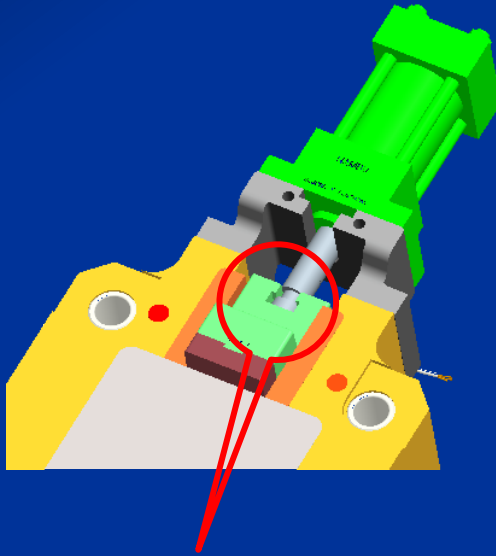
1. TIE ROD TYPE
2. COMPACT TYPE
3. WELDED TYPE



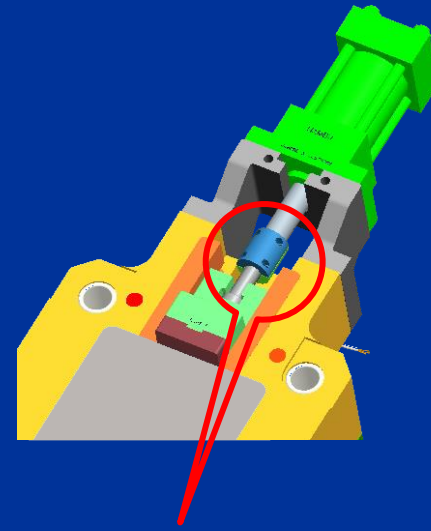


Cylinder brackets

The different types of hydraulic cylinder mounting brackets, can be selected to suit the designers options .



DIRECT PULLING TYPE



ADAPTER PULLING TYPE

Core pulling systems.


Core pulling systems form, will have two types of pulling systems, like direct & coupler types, to facilitate the designer practices.

EJECTOR PIN DATA SAVE


EJECTOR PIN VALUES

Default Standard is DIETECH Selected Standard DIETECH Select from Other Standard


SL.NO	TYPE	DIA	EPIN-X	EPIN-Y	EPIN-Z	EPIN-A	EDIT	DELETE
1	PLAIN	8	44	44	0	0	Edit	DELETE
2	STEPPED	6	50	100	0	0	Edit	DELETE




STRAIGHT
PIN




STEPPED
PIN




View
from
MD Plate



Epin X
Epin Y



Epin Z=0



Epin Z (+)
(-)

No. of Plain Ejector Pin
 No. of Stepped Ejector Pin
 Total No. of Ejector Pin

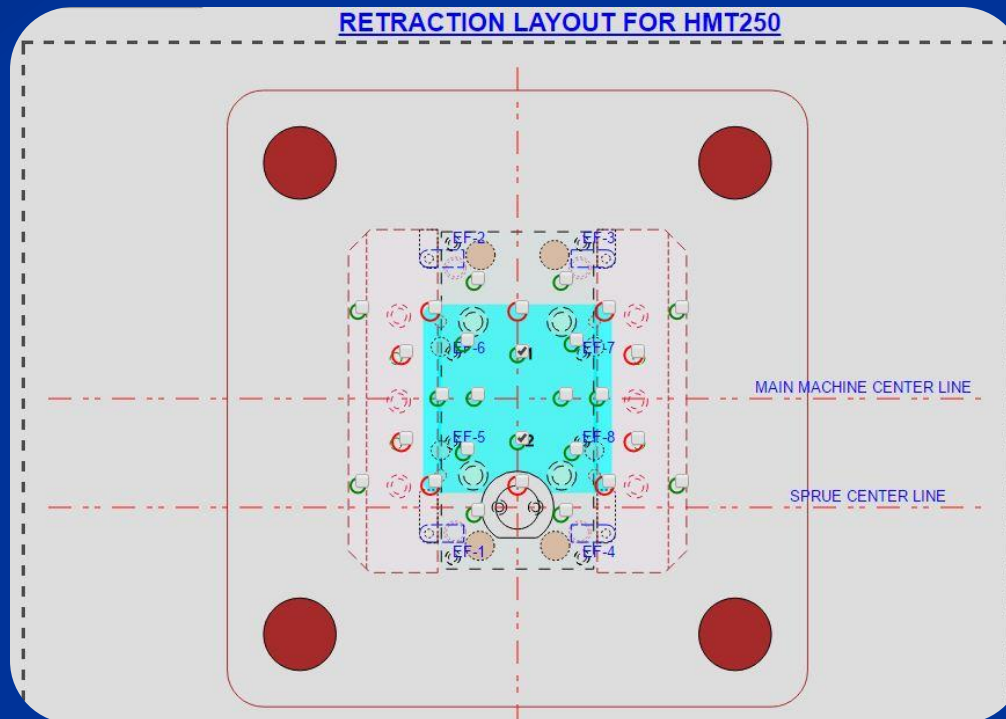
No. of Plain D Collar Ejector Pin
 No. of Stepped D Collar Ejector Pin

Ejector pin input data.

This menu helps, to select the straight & stepped type ejector pins, with collar orientation lock, if required .

X&Y position of ejection pins to be given with reference to the sprue centre, from the “casting ,runner and overflow” details.

The design process in AMB, will provide the holes in the MD housing ,ejector front plate with collar counter bore. The clearance part of ejector pin holes in the housing are also taken care in this process.



Selected machine retraction & Bumper holes position will be displayed in this form, from that balanced retraction holes can be selected.

PLATEN LAYOUT FORM

File Pre Design Design Post Design Data Report Layout Download Help

PLATEN LAYOUT

SELECT MACHINE: Main Machine

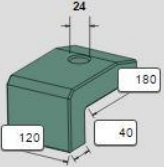
PLATEN LAYOUT FOR BUHLER1400_SCLPAD1

Clamp Thickness MD: 70 Clamp Thickness FD: 70


CLEAR MOVING PLATEN CLEAR FIXED PLATEN

SELECT CLAMP DETAILS

L-Clamp



Direct-Clamp



CL.NO	FD-CLAMP TYPE	MD-CLAMP TYPE
1	L Type	Direct
2	L Type	Direct
3	Direct	L Type
4	Direct	L Type
5	L Type	Direct
6	L Type	Direct
7	Direct	L Type
8	Direct	L Type

3D TOP VIEW 3D TOP VIEW

8 Clamps Selected with minimum one Clamp in each quarter. You can Select upto 8 clamps only.

8 Clamps Selected with minimum one Clamp in each quarter. You can Select upto 8 clamps only.

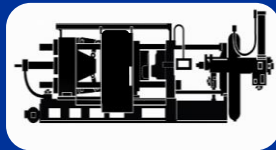
L-Type and Direct clamps upto eight clamps, can be selected in this form. If clamps are not balanced, alert message will be displayed.

DOCUMENTATION FEATURES

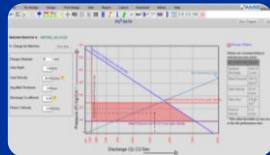
REPORTS



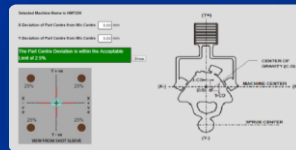
1. BOM



2. TONNAGE CALCULATION



3. PQ² DIAGRAM









4. TIE BAR LOADING CALCULATION

The Above reports are built in, for the purposes of validation by the authorities.

They are BOM List, Tonnage calculations, PQ square diagram results & Tie bar loading calculation & Retraction details.

Bill OF Material

NOTE
1. All Dimensions are in 'mm'
2. ASM STANDS FOR - AS PER MODEL

SNO	DESCRIPTION	IMAGE	QTY	DIA	LENGTH	WIDTH	HEIGHT	SPEC	MATERIAL
1	FD HOUSING		-	470	350	130.2	-		EN8_CASTING
2	MD HOUSING		1	470	350	145.2	-		EN8_CASTING
3	GUIDE BUSH-1		1	65	80	-	-		EN353
4	GUIDE BUSH-2		1	65	80	-	-		EN353
5	GUIDE BUSH-3		1	65	80	-	-		EN353
6	GUIDE BUSH-4		1	65	80	-	-		EN353

To edit Material Click on Part Name(Description)

Sno Part Name Material Dia Length Width Height Hardness

ADAP

Remarks Choose File No file chosen Change

Revoke

* Note: BOM values are based on Default model Created. Any manual model change size values will not reflect in this BOM table

BOM

This is one of the important reports in AMB.

It shows all die parts name with visuals for easy understanding.

This will also give specification & size of the each die parts to plan.

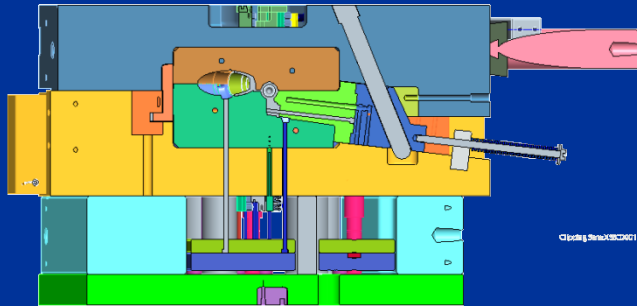
AUTO MOLDBASE LIMITATIONS



TECHNICAL LIMITATIONS

Uncovered

- Some conventional design work is required apart from auto mold-base design especially for uncovered design elements in AMB



- Dies with compound angle cores (cores inclined to the parting plane) need to be modified manually after AMB mold-base is done.

- ❖ **Core cavity extraction is not possible.**
- ❖ **AMB is limited upto 5 side cores and one Bottom core.**
- ❖ **Limit switch assembly(Proximity & Plunger type) is not available.**
- ❖ **Hydro-mechanical core option is not available.**
- ❖ **2D drawings of Assembly & Parts are not available**
- ❖ **Fixed side ejection**
- ❖ **Squeeze cylinder mechanism is not available.**
- ❖ **Profile stepped parting line option is not available.**

THANK YOU