



Balai Pengembangan Talenta Indonesia  
Pusat Prestasi Nasional  
Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi

**MERDEKA  
BELAJAR**



**SMK**

# Kisi-Kisi

## Lomba Kompetensi Siswa Nasional 2024

**Teknik Rekayasa Pembuatan Mould**  
(Plastic Die Engineering)



24

**MERDEKA BERPRESTASI**  
Talenta **Vokasi** Menginspirasi



KISI - KISI

# PLASTIC DIE ENGINEERING

LKS SMK  
TINGKAT NASIONAL  
KE XXXII  
**2024**

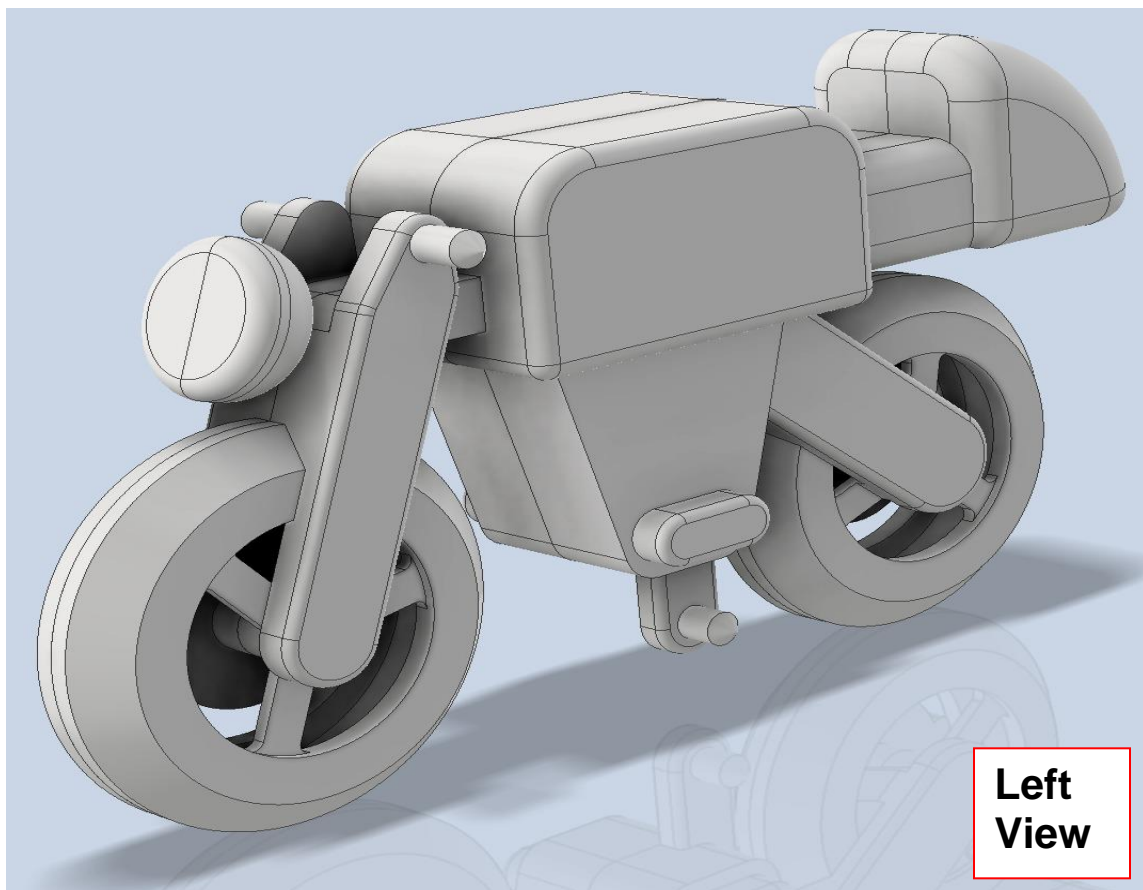
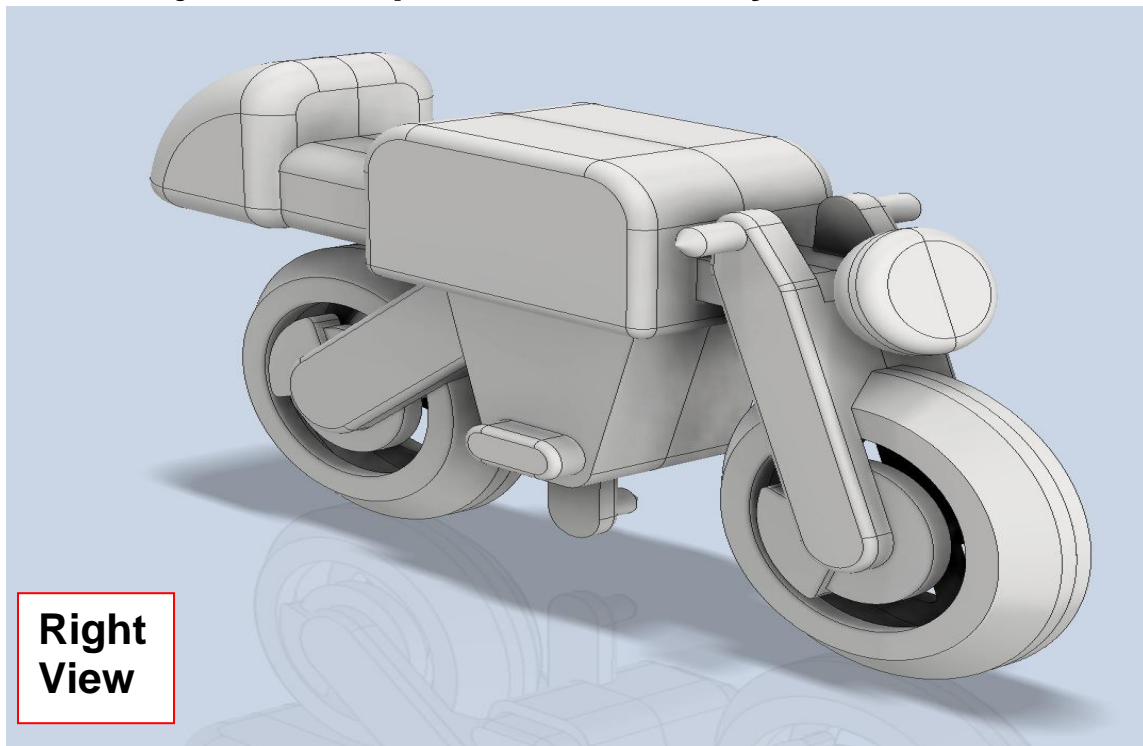
CREATED BY : MURYANTO, S.Kom.

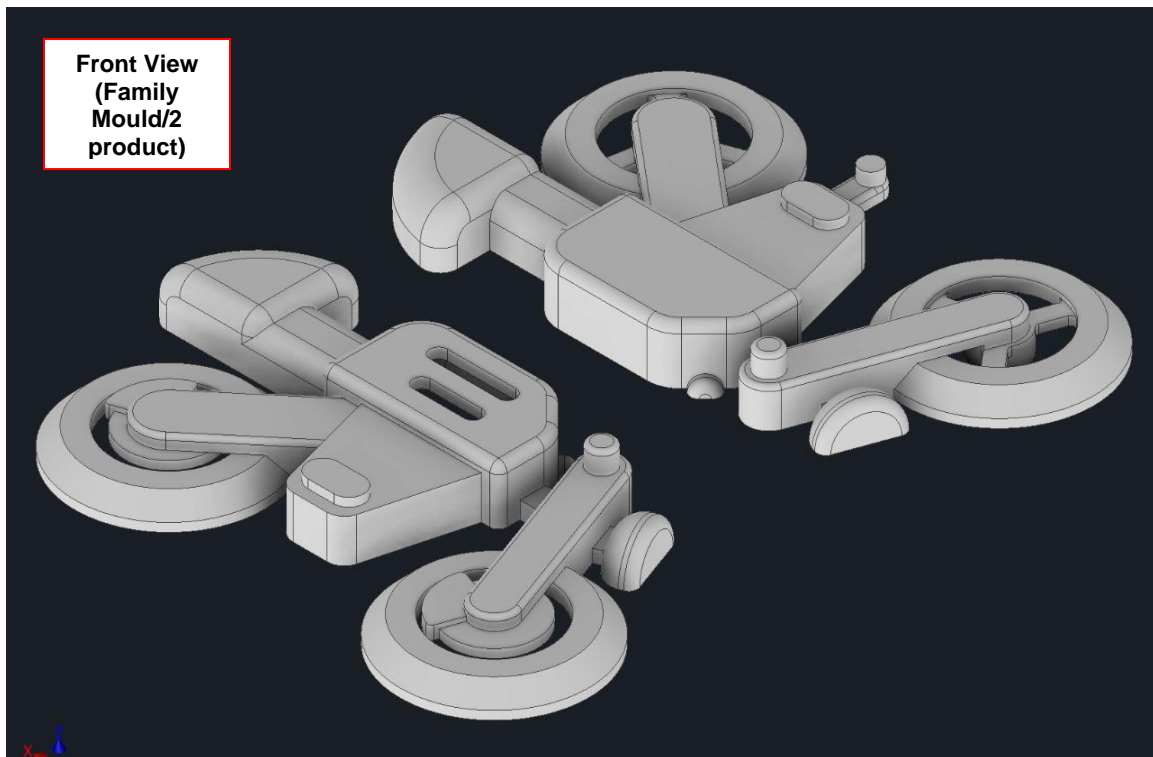
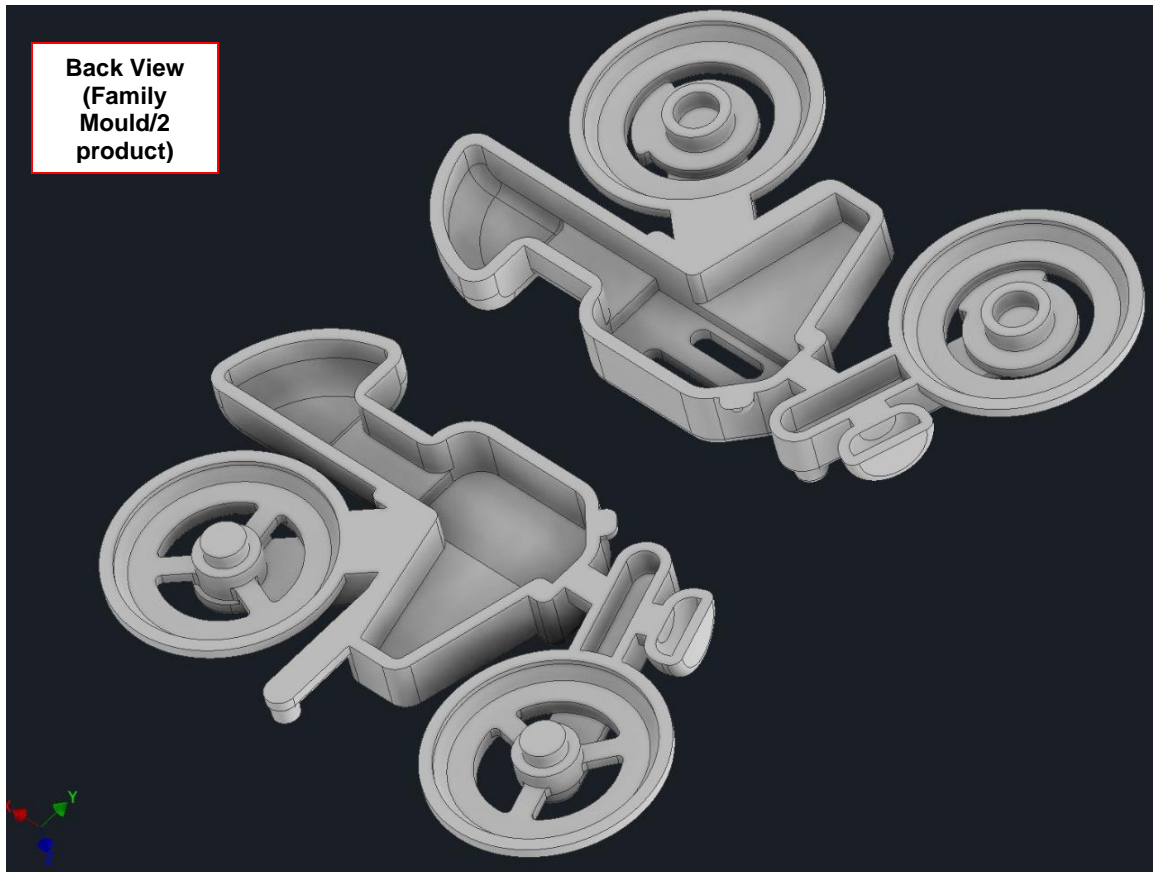
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SRENGSENG SAWAH - JAKARTA



## Test Project Konsep : Classic MotoCycle

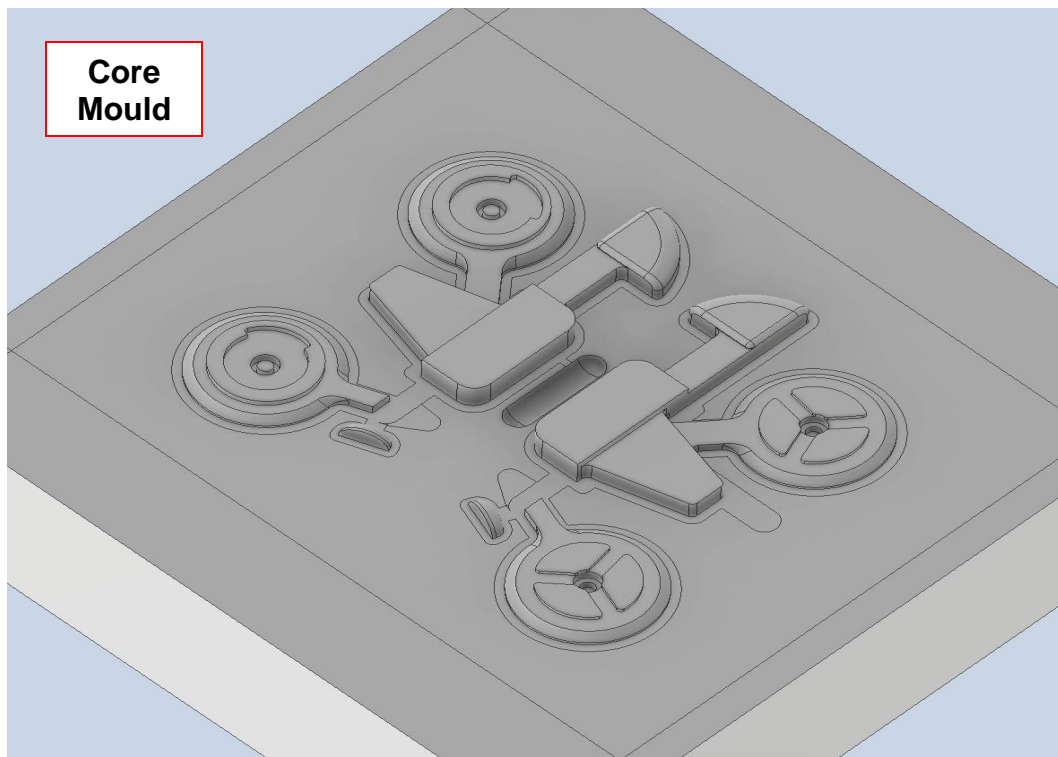
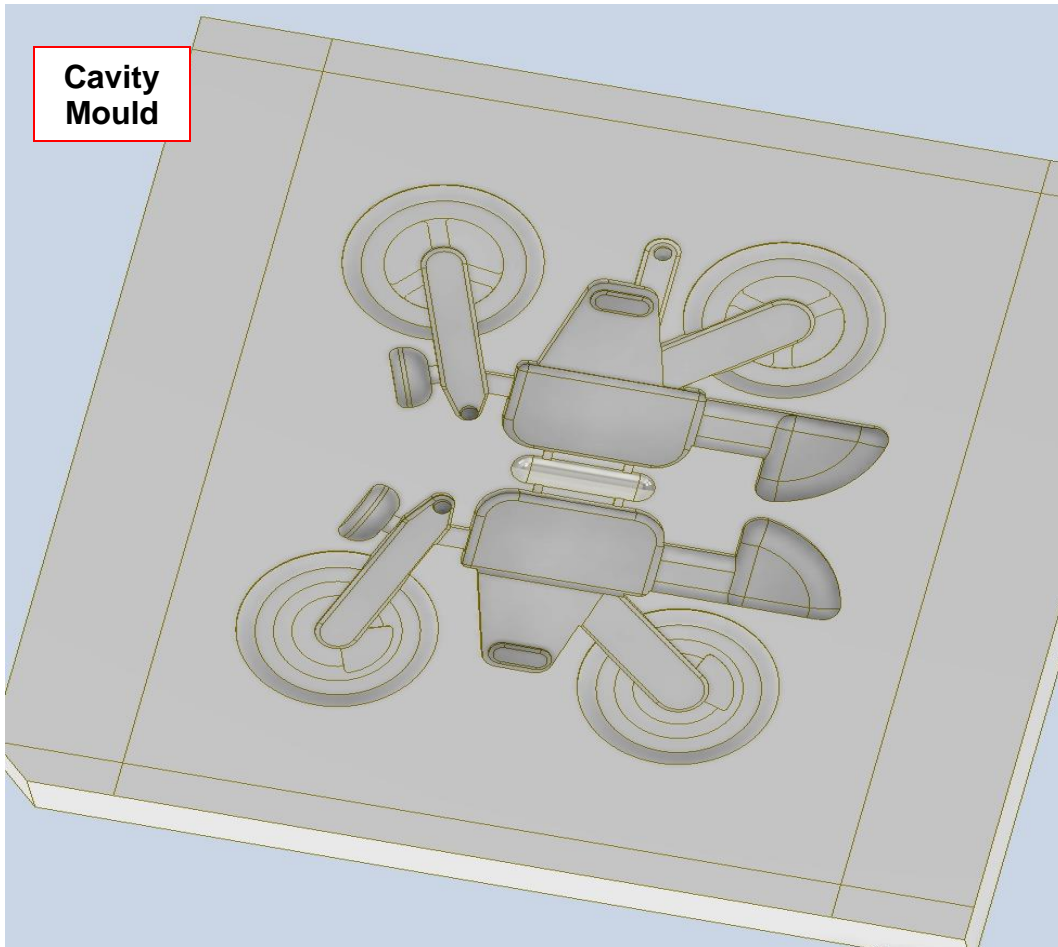




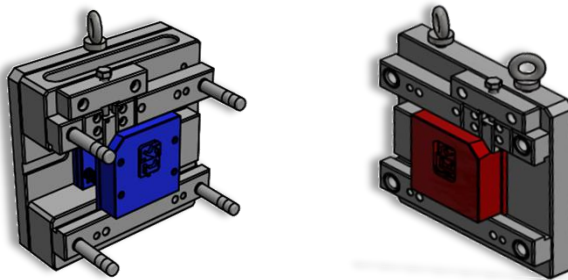
Test Project Plastic Die Engineering pada LKS Nasional tahun 2024 ini mengambil konsep design yaitu Classic Motorcycle. Project yang dikerjakan oleh Peserta LKS tahun ini yaitu membuat cetakan/mould Product Plastic berpasangan atau disebut family Mould. Pekerjaan yang dilakukan saat lomba bidang *Plastic Die Engineering* antara lain:

1. *Mould Design* atau pembuatan desain *mould*/cetakan plastic dengan memperhitungkan *shrinkage* (penyusutan), fungsi serta estetika. *Software* yang digunakan adalah *Autodesk inventor* versi 2023/2024.
2. *Manufacturing Mould* atau proses pembuatan mould yang meliputi proses machining model Cavity & Core mould serta dilanjutkan ke proses polishing. *Software* yang digunakan untuk membuat program/G-Code menggunakan *software Computer Aided Manufacturing (CAM)* dan proses *machining* menggunakan *Computer Numerical Control (CNC) Milling* serta proses *polishing* dengan menggunakan *polishing tools* seperti: gerinda pensil, *lapper*, *Wooden stick*, batu gosok, *ceramic stone*, amplas, *felt* dan *diamond compound*. Material yang digunakan untuk membuat *mould* yaitu S45C. *Software CAM* yang digunakan adalah *Mastercam* dengan versi 2023/2024 serta mesin yang digunakan adalah *CNC Milling 3 Axis* dengan *control system* antara lain : *FANUC*, *GSK*, *Sinumeric* atau *Mitsubishi*. *Software* maupun jenis control mesin CNC disesuaikan dengan kesiapan fasilitas yang ada di lokasi tuan rumah LKS 2024, sehingga peserta diharapkan dapat mempersiapkan pelatihannya dengan menggunakan berbagai macam versi software mastercam maupun beragam control system mesin CNC

Berikut ini contoh design mould Classic Motorcycle :



**LOMBA KOMPETENSI SISWA  
SEKOLAH MENENGAH KEJURUAN  
TINGKAT NASIONAL KE- XXXII  
TAHUN 2024**



**SOAL**

**BIDANG LOMBA  
PLASTIC DIE ENGINEERING**



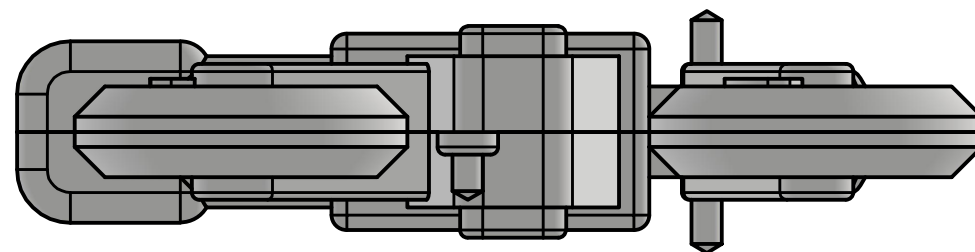
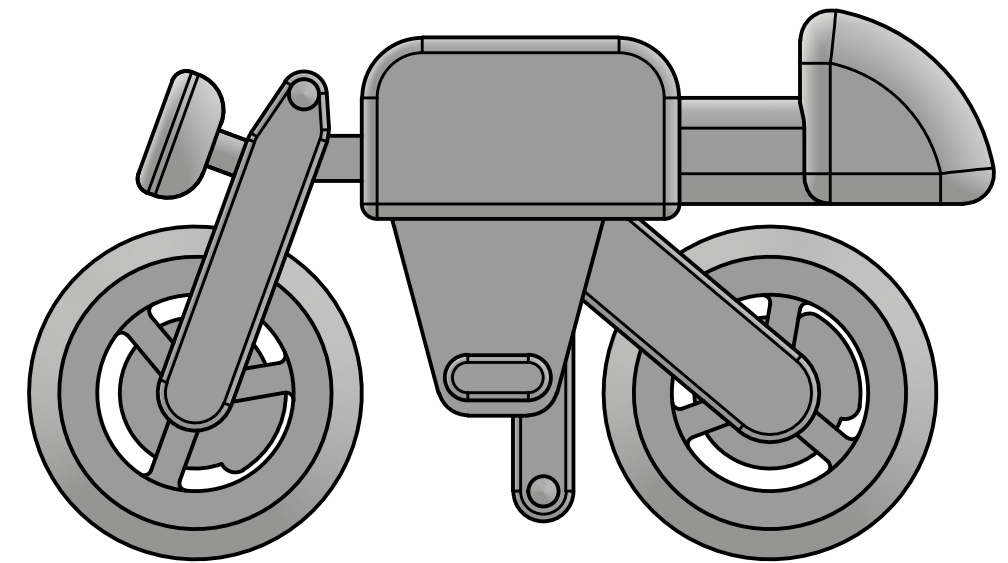
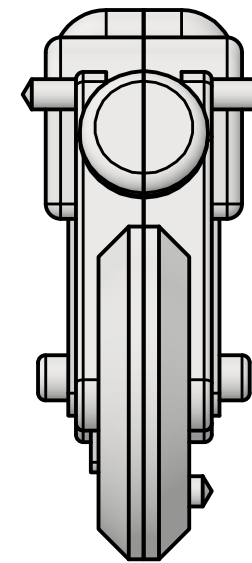
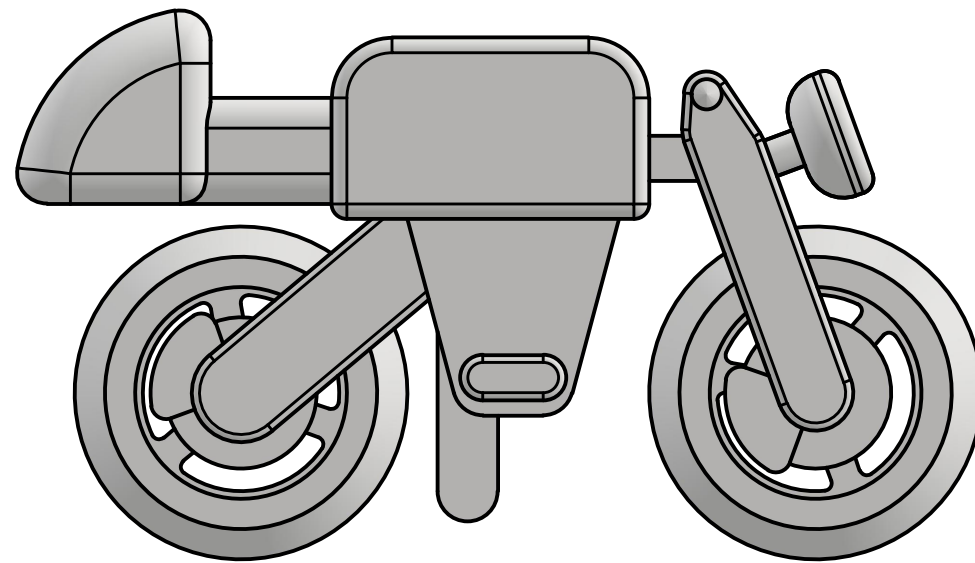
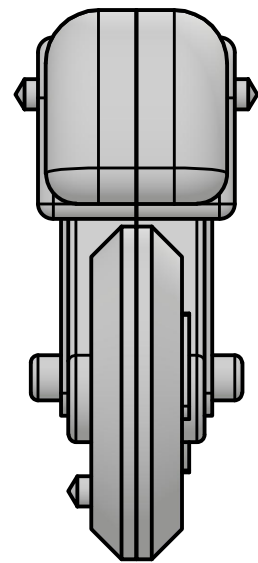
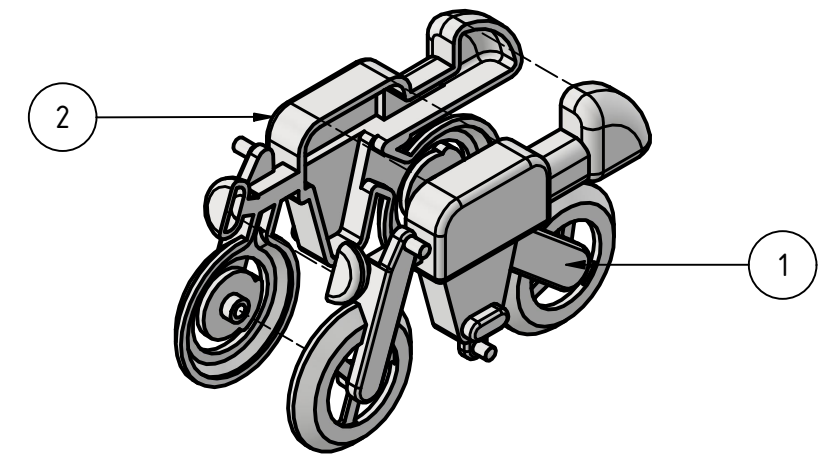
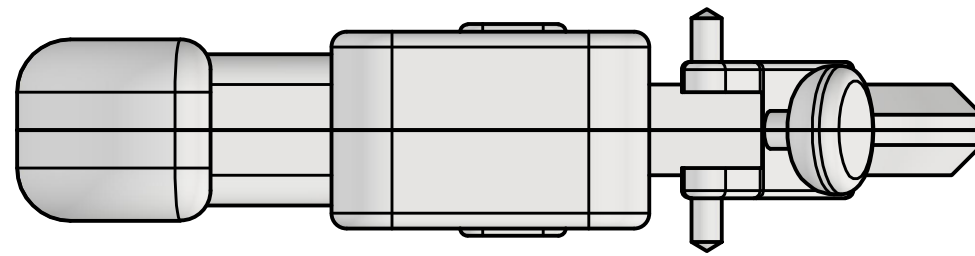
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**SRENGSENG SAWAH - JAKARTA**



# ASSEMBLY




Ensure That :

- 1) The moulding component is polystyrene (shrinkage approx. 0.5%).
- 2) There is no burr on the product (moulded part).
- 3) There is no cutter mark of machining on the surface of the product (moulded part).
- 4) There is no scratches, dent etc on the surface of the product (moulded part).
- 5) There is no defective moulding such as flow marks, weld line, burn etc.
- 6) Steps of ejector pin mark are within 0.1mm, Protrusions are not allowed

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Competition in Lampung, Indonesia 2024.  
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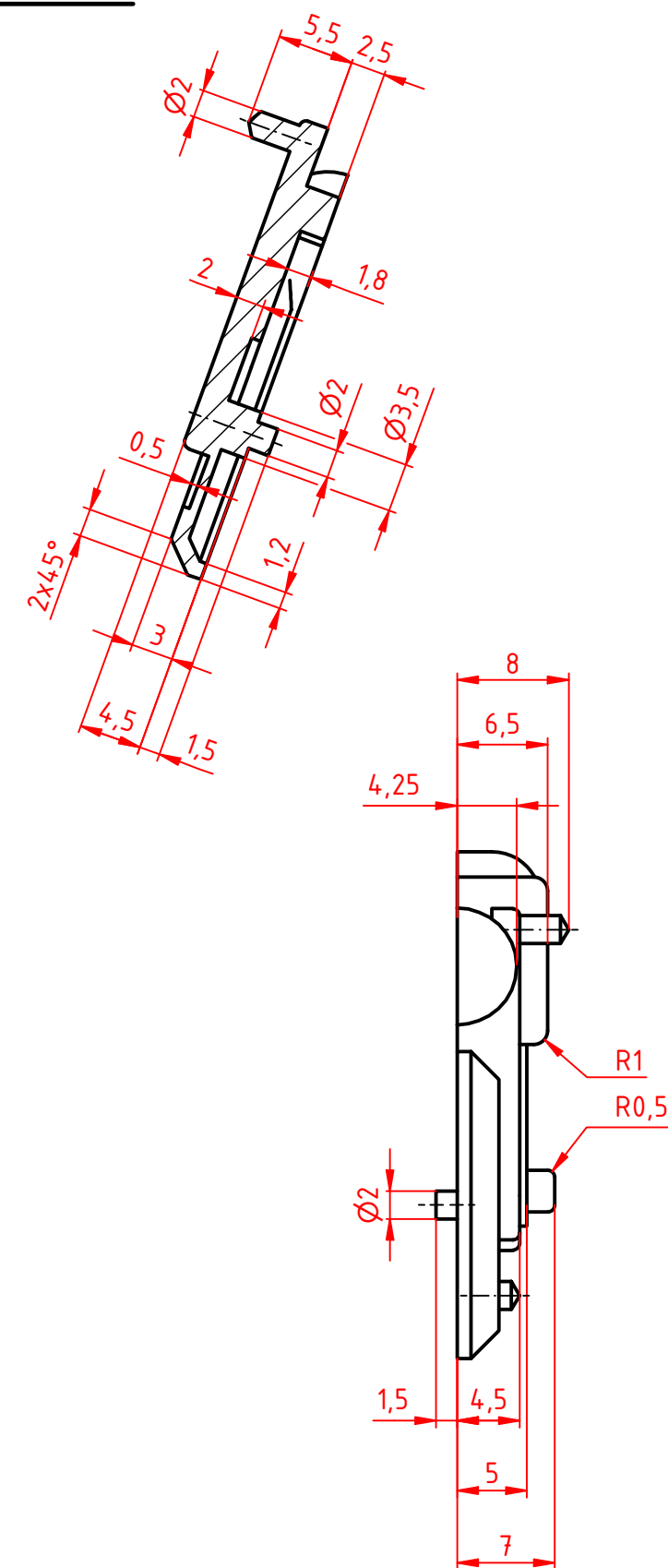


Skill : Plastic Die Engineering			Projection A ISO 5456-2	
Scale : 1 : 1	Date : 04-02-2024	Paper : A3		
Drawn / Design by : Juri PDE			Drawing No: -	
Description : Motorcycle Assembly			Rev : -	Page : 1 of 3

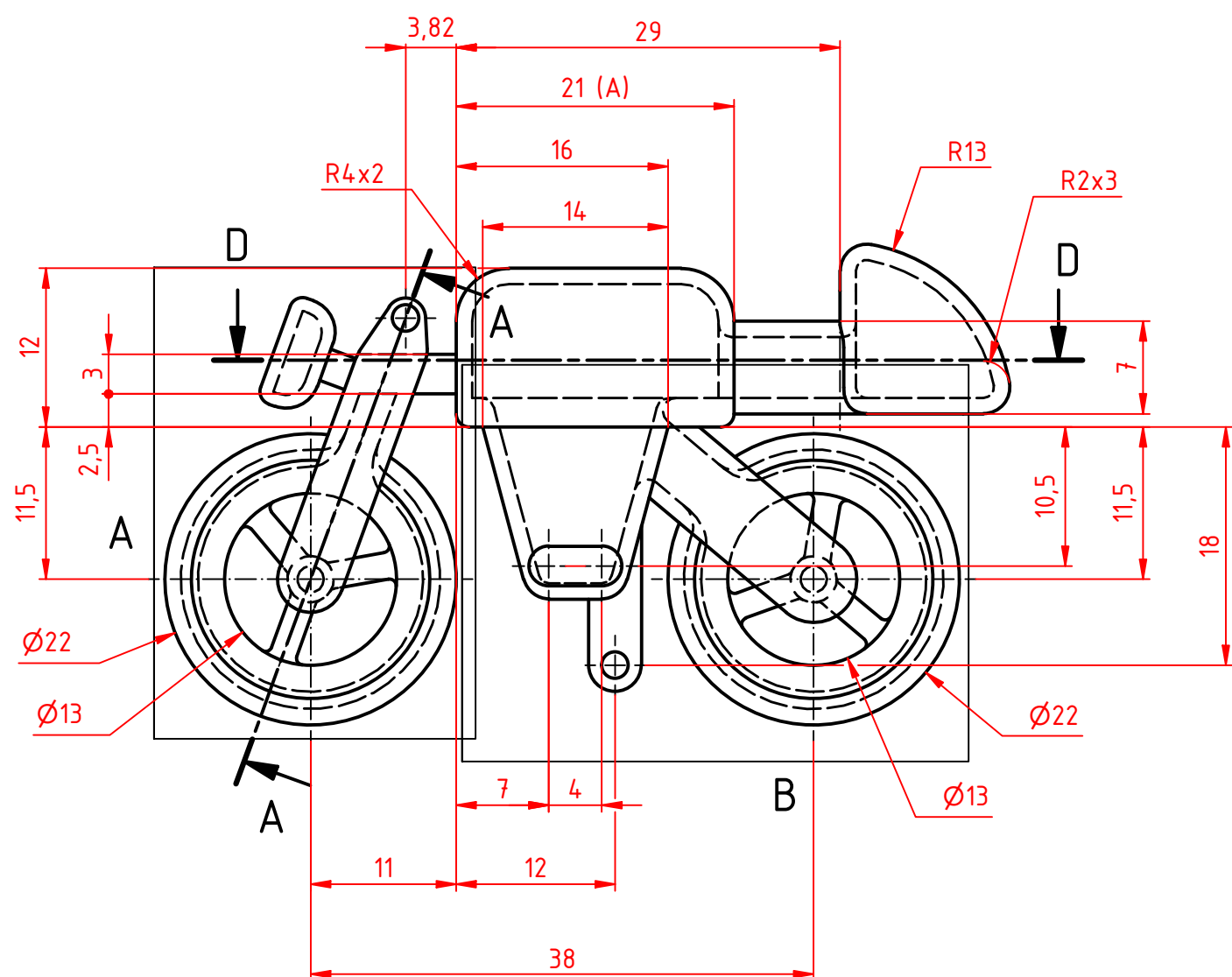
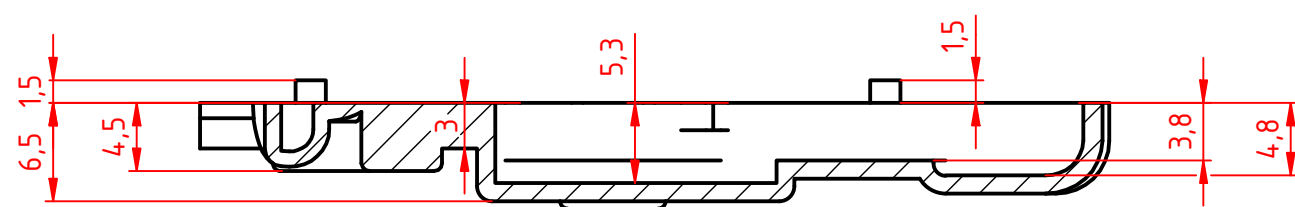


PART 1

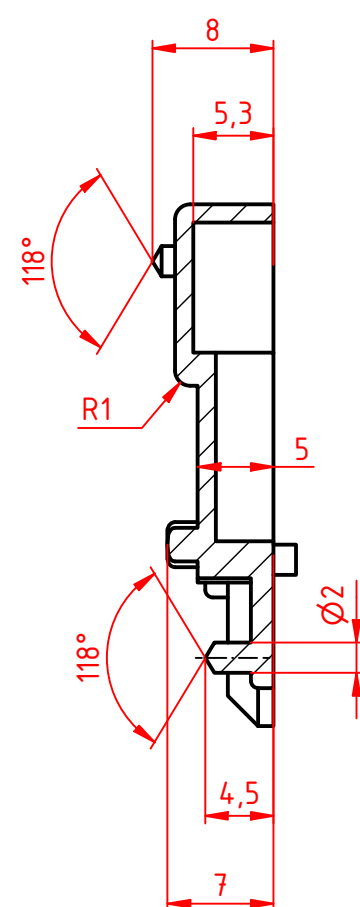
SECTION A-A



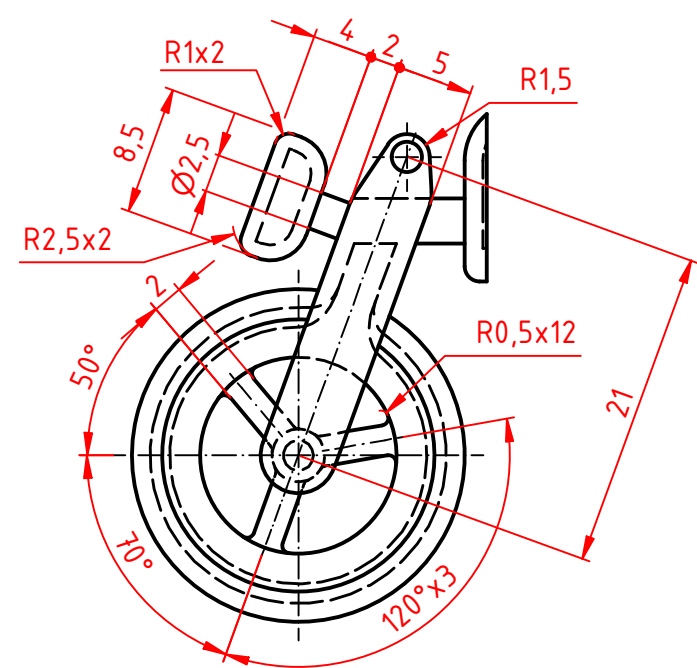
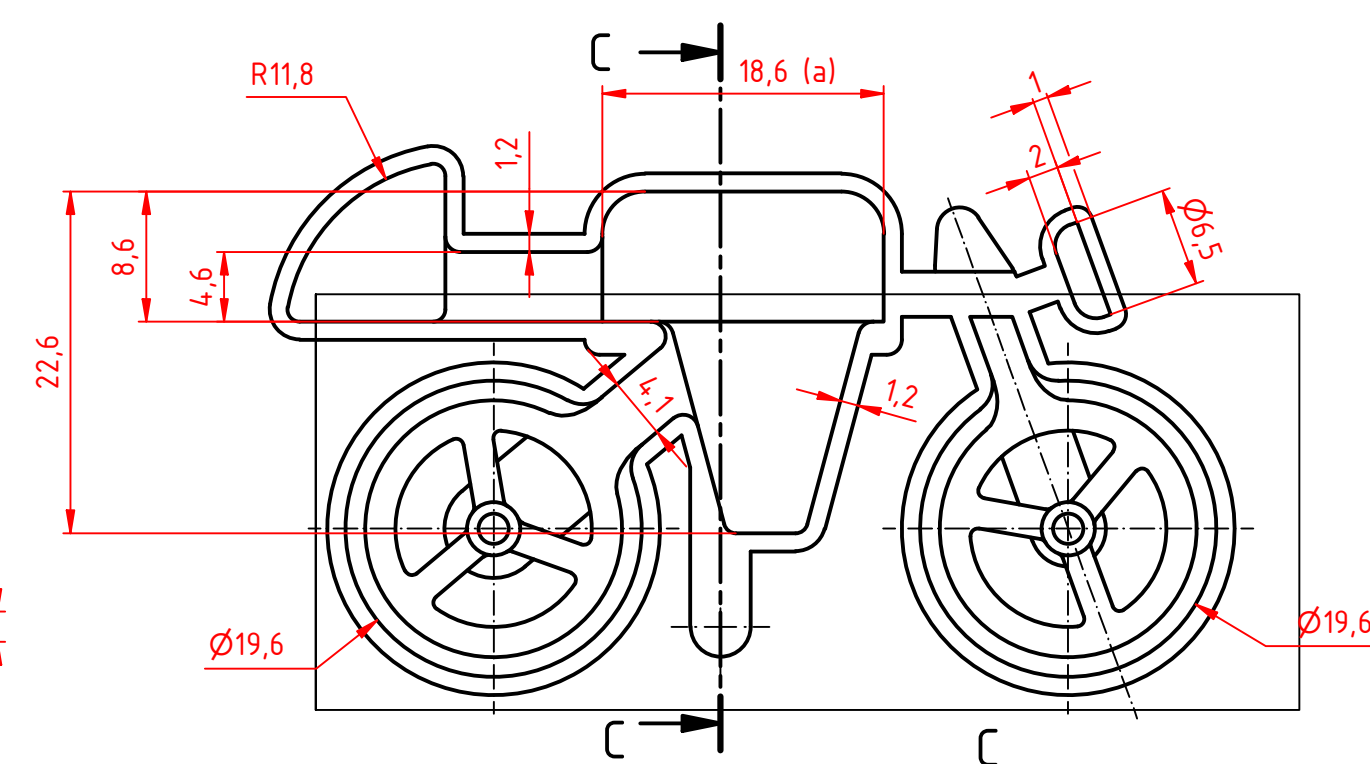
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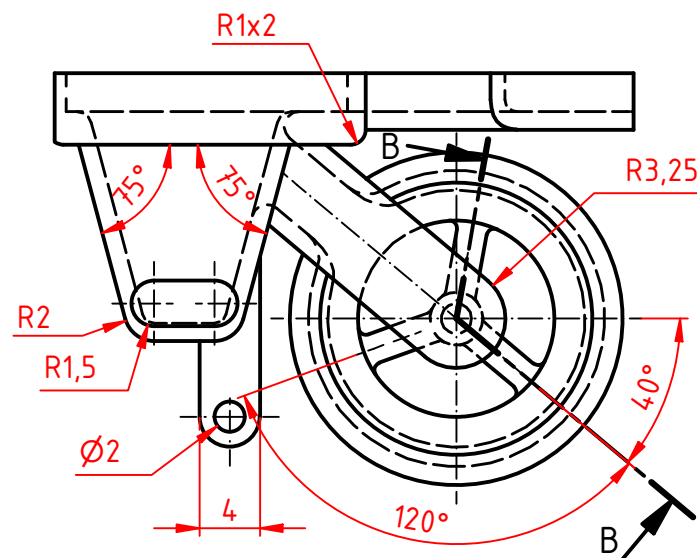
SECTION C-C



DETAIL C

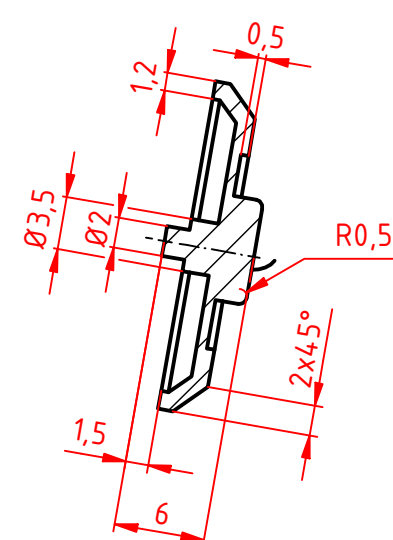


DETAIL A




DETAIL B

SECTION B-B

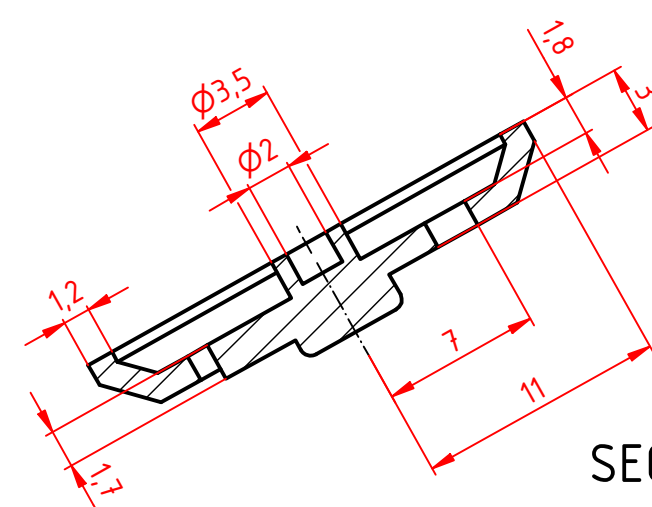
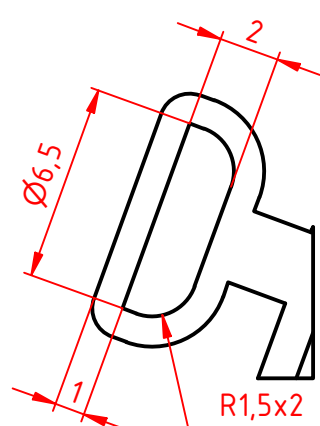
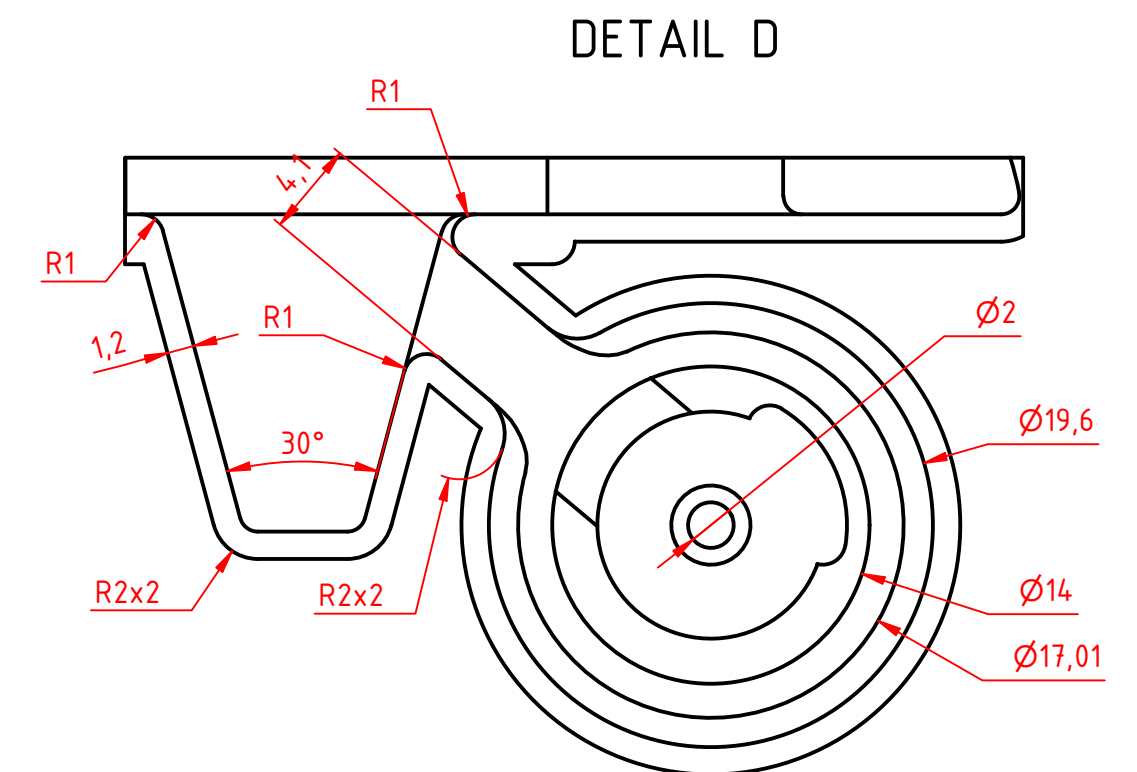
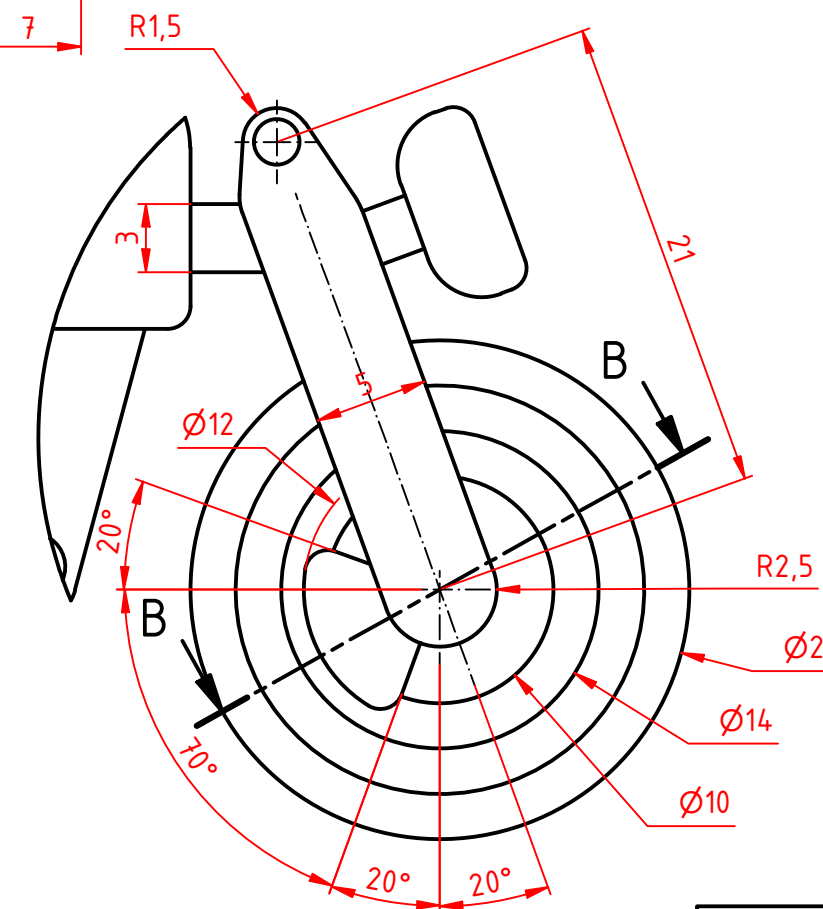
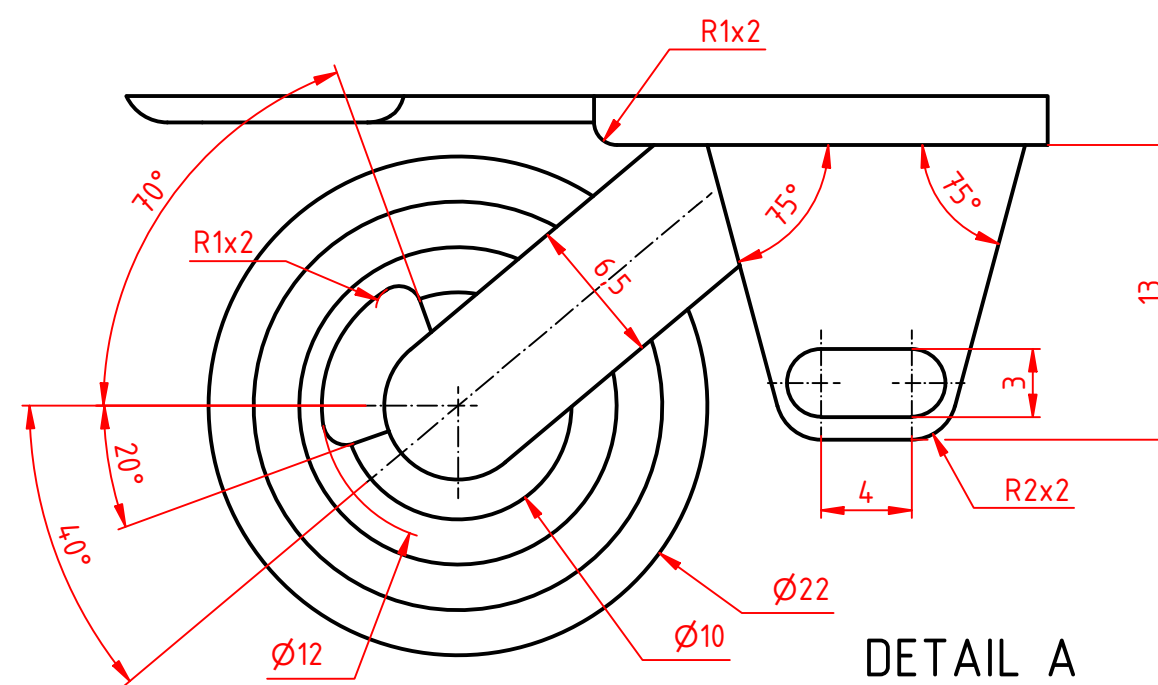
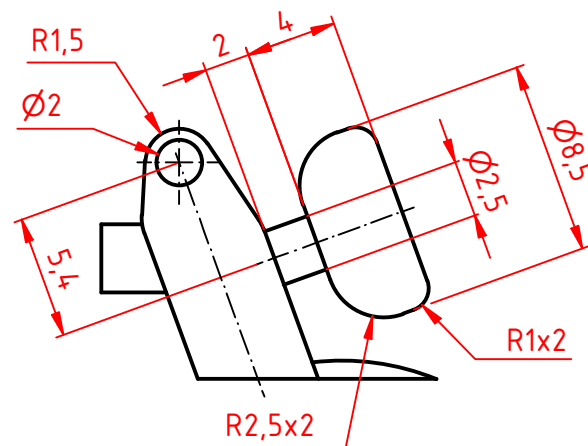
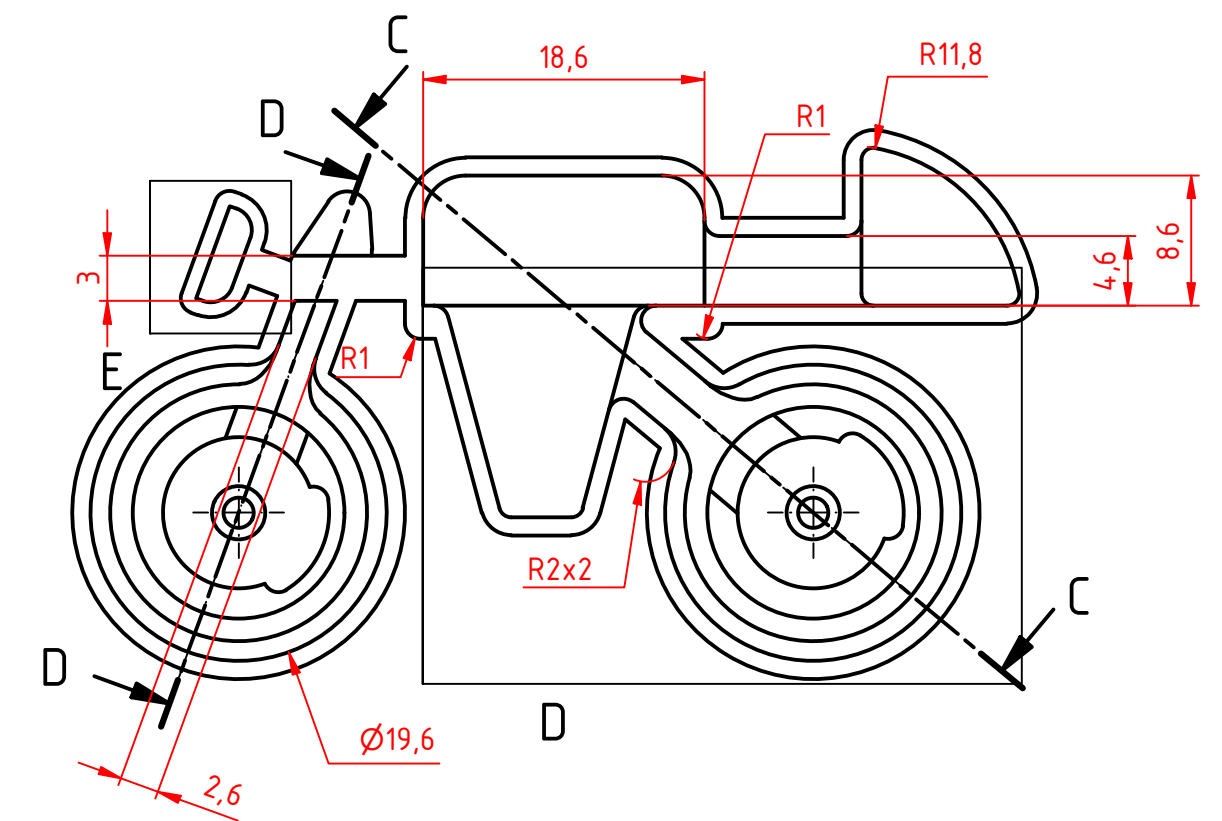
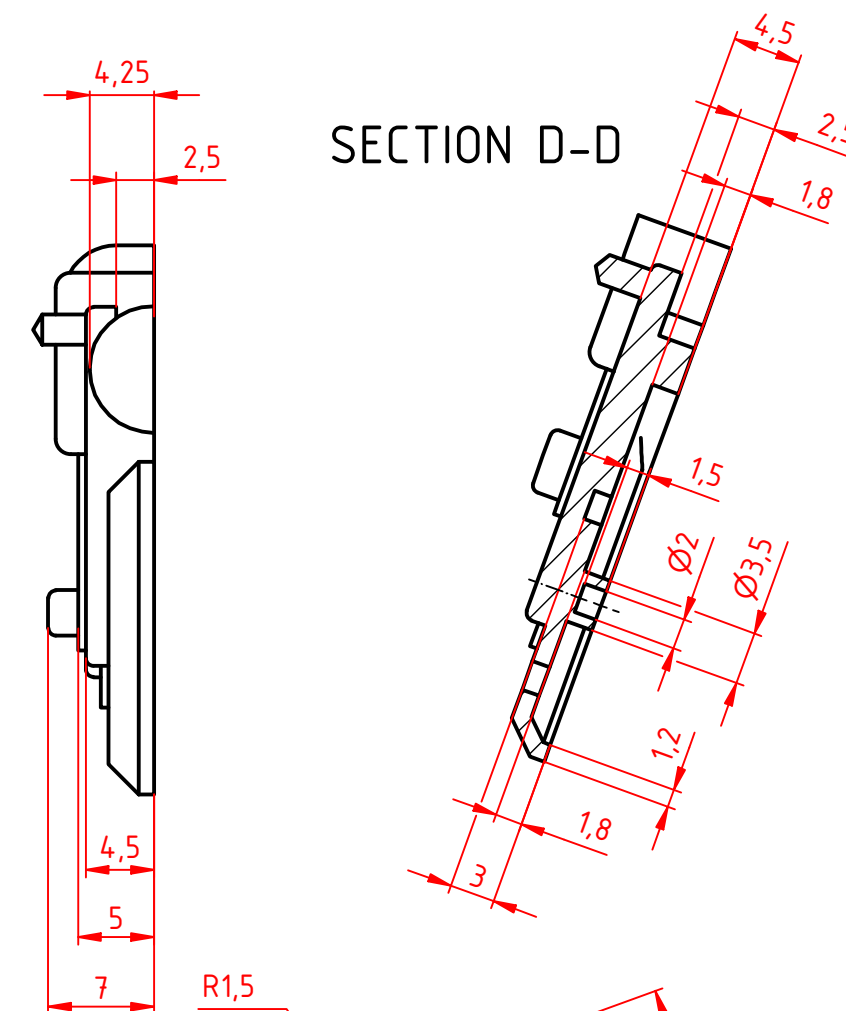
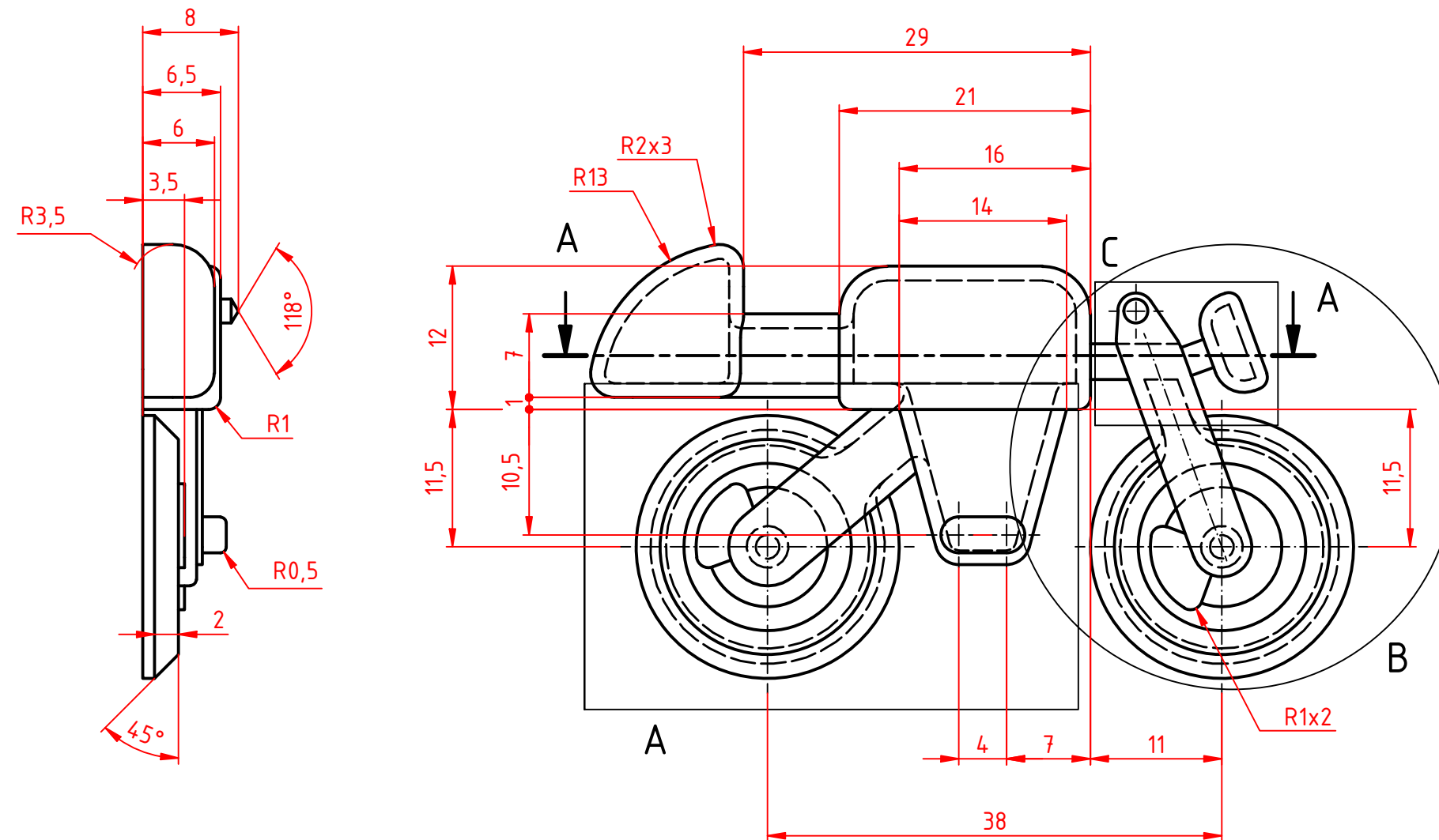
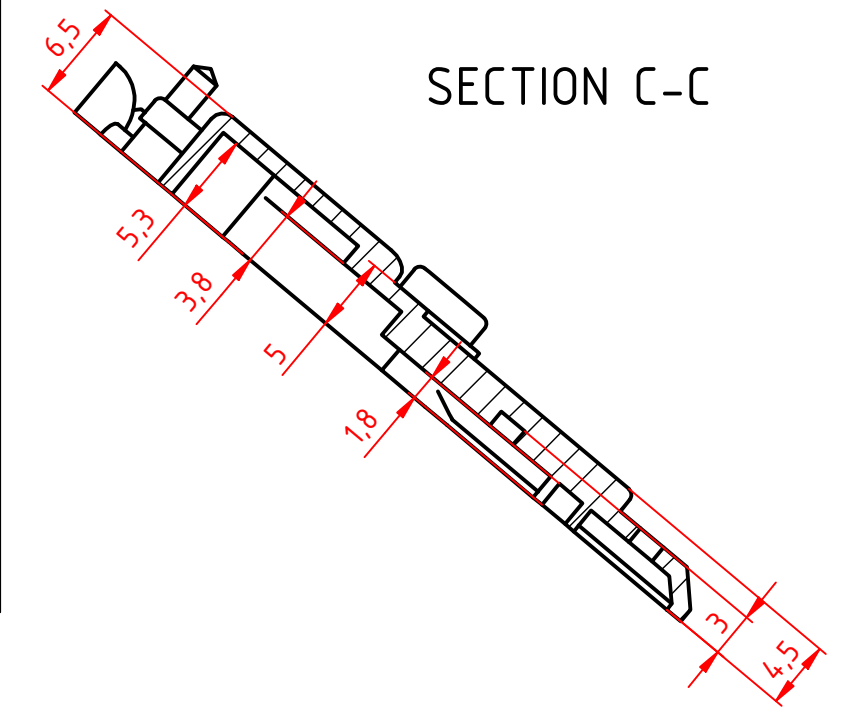
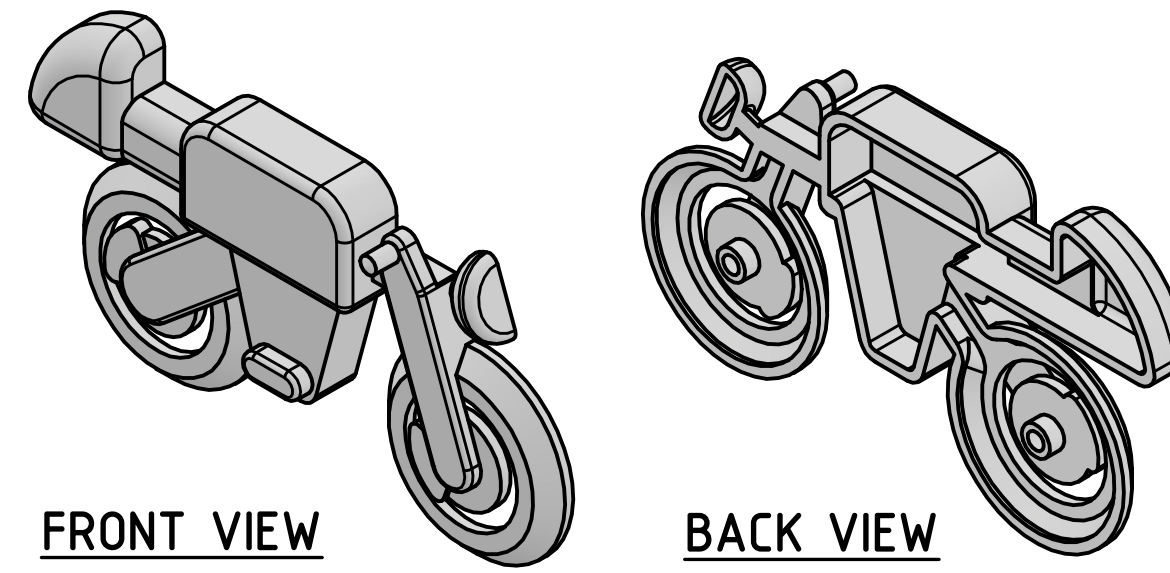
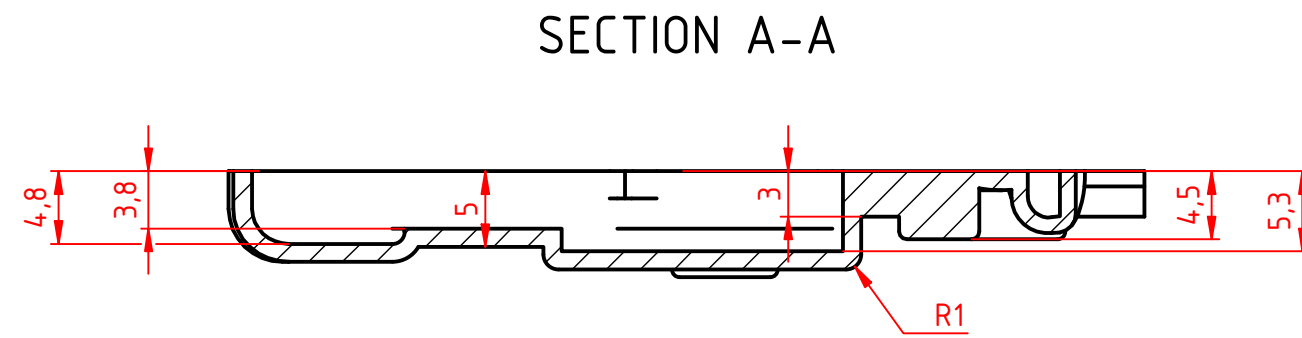


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Skill : Plastic Die Engineering			Projection A		
Scale : 1 : 1	Date : 04-02-2024	Paper : A3	ISO 5456-2		
Drawn / Design by : Juri PDE			Drawing No: -		
Description : Part 1 Motorcycle			Rev : -		Page : 2 of 3

## PART 2



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Skill : Plastic Die Engineering			Projection A	
Scale : 1 : 1	Date : 04-02-2024	Paper : A3	ISO 5456-2	
Drawn / Design by : Juri PDE			Drawing No. :-	
Description : Part 2 Motorcycle			Rev. :-	Page : 3 of 3

## PETUNJUK MENGERJAKAN TEST PROJECT

### MOULD DESIGN

### LKS NASIONAL 2024

1. Berdo'a.
2. Perhatikan Soal/gambar plastik, lihat ukurannya dengan teliti dan pahami dengan baik.
3. - Menyiapkan / Membuat 1 Folder Baru di Desktop yang akan dipakai untuk mengerjakan modul Mould Design dengan nama  
LKS<Tahun>\_PDE\_<Nama>\_<Provinsi>.
4. - Pada Folder Mould Design harus berisi semua file gambar yang sudah dibuat (File **IAM, IPT, IDW, PDF & Pack n Go Gambar Assembly**)
  - Semua File Gambar (**IAM, IPT, IDW, PDF & pack n Go Assembly**) harus disimpan (Save as).
  - File Disimpan dengan rapi di dalam Folder tersebut dengan penamaan file sbb :  
PDE\_<Nama Gambar> \_<Nama Siswa> \_<Nama Singkatan Provinsi>.  
Contoh :  
PDE\_Cavity Mould\_Eko Purwanto\_Banten  
PDE\_Core Mould\_Eko Purwanto\_Banten  
PDE\_Assembly Mould\_Eko Purwanto\_Banten  
dst.
5. Gambar kerja yang diberikan adalah gambar part plastik yang kemudian dilakukan proses desain mould ( Cavity Mould , Core Mould & Assembly Mould ) dengan menggunakan software Autodesk Inventor sesuai dengan ukuran unit die pada Deskripsi Teknis.
6. Gambar yang dibuat adalah Model Cavity mould , Model Core Mould , Assembly Mould ( lengkap dengan komponen-komponenya ).
  - Membuat design Runner,Gate , Air Vent , Sprue Lock, Cooling chanel
  - Jumlah Ej.Pin yang dibuat harus mempertimbangkan keseimbangan saat proses Eject part (Jumlah Ej.Pin Bebas: Min 8).

- Ej.Pin akan dinilai keseimbangannya dan akan di cek ukurannya
  - Gambar yang ditampilkan minimal Pandangan Depan, Atas, samping, Isometric, Detail dan Section (Jika diperlukan)
  - Gunakan template yang sudah disediakan untuk membuat gambar 2D
  - Gunakan kertas A3
7. Ukuran harus dicantumkan dengan jelas sesuai pada soal yaitu : ukuran core mould menggunakan huruf kecil ,ukuran cavity mould menggunakan huruf besar , ukuran datum model dari ordinat xy , posisi ejector pin dari ordinat xy.
  8. Gunakan alat bantu yang sesuai ,kalkulator ,dll.
  9. Penyusutan ukuran yang ditetapkan adalah 0,5 % (mengacu pada standard world skills international untuk jenis material GPPS ,General Purpose Poly Styrene).
  10. Lakukan penghitungan penyusutan plastik untuk menentukan ukuran model mould, dengan cara :  
Misal ukuran panjang part plastik 100 mm,dengan penyusutan 0,5%.Maka ukuran mould yang harus dibuat adalah  $100 + (100 \times 0,005) = 100,5 \text{ mm}$ .
  11. Kontrol Waktu kerja menggunakan Stopwatch, Jam tangan, Jam dinding atau pakai alat lain (bebas)



**PETUNJUK MENGERJAKAN TEST PROJECT**  
**MANUFACTURING**  
**LKS NASIONAL 2024**

1. Berdo'a.
2. Siapkan alat dan bahan yang akan digunakan.
3. Lakukan pengecekan mesin, alat dan bahan yang akan digunakan.
4. Laporkan kepada teknisi, pembimbing dan juri ketika terdapat ke-abnormalan dalam mesin, alat, maupun bahan yang akan digunakan untuk praktek.
5. Gunakan peralatan safety sbb :

Peserta wajib membawa peralatan safety dari sekolahnya masing-masing ,yaitu:

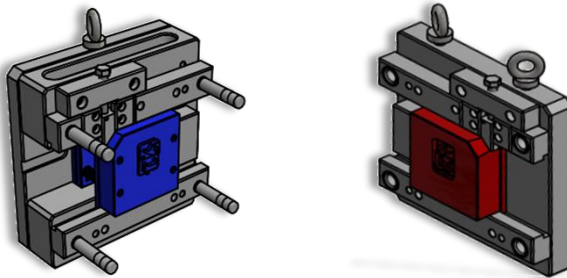
- \* Seragam kerja lengan pendek
- \* Sepatu safety ,bukan sepatu sport
- \* Kacamata safety
- \* Penutup kepala (topi)

**Jika ada peserta yang tidak mengenakan alat safety seperti yang tercantum diatas maka tidak diijinkan mengikuti pertandingan.**

6. Mesin yang digunakan adalah mesin *CNC milling 3 Axis* dengan control system : *FANUC, GSK, Sinumeric* atau Mitsubishi (disesuaikan dengan ketersediaan jenis Control system yang ada di Lokasi perlombaan). Oleh sebab itu peserta harus siap untuk mengoperasikan CNC dengan Control system apapun.
7. Pekerjaan yang dilakukan adalah :
  - membuat model mould dengan bermacam cutting tools untuk membuat model sesuai soal/gambar plastik , membuat lubang ejector pin , runner , gate , airvent , cooling chanel dll.
  - Lakukan proses polishing pada bagian model mould dengan berbagai macam polishing tools.
  - Peserta memasang Ej. Pin dengan jumlah dan ukuran ejector pin sesuai dengan Design Mould.

- Ej. Pin harus dipotong sesuai dengan design menggunakan alat potong gerinda.
- Setelah selesai pembuatan mould (machining dan polishing), semua komponen dirakit sesuai dengan gambar assembly.

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SEKOLAH MENENGAH KEJURUAN  
TINGKAT NASIONAL KE- XXXII  
TAHUN 2024**



**CONTOH  
Pengerjaan Soal**

**BIDANG LOMBA  
PLASTIC DIE ENGINEERING**



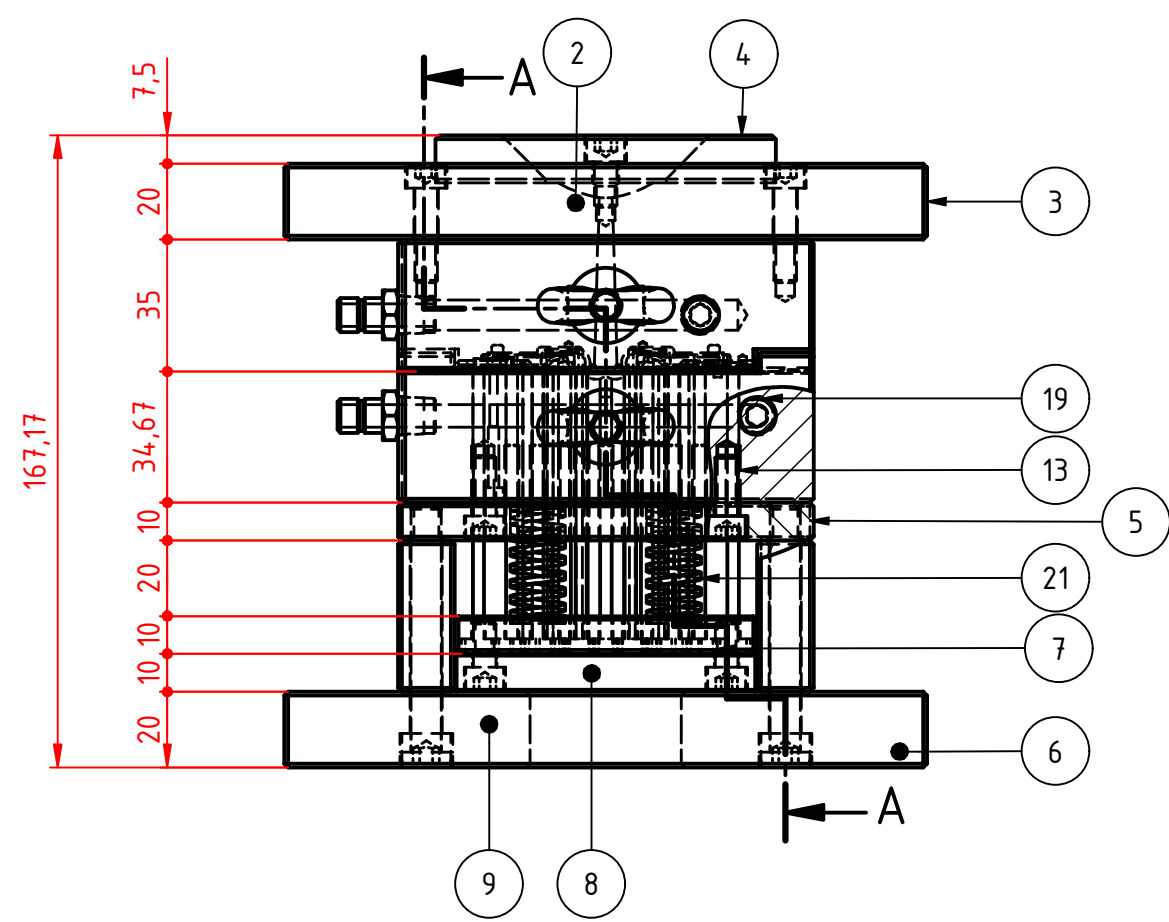
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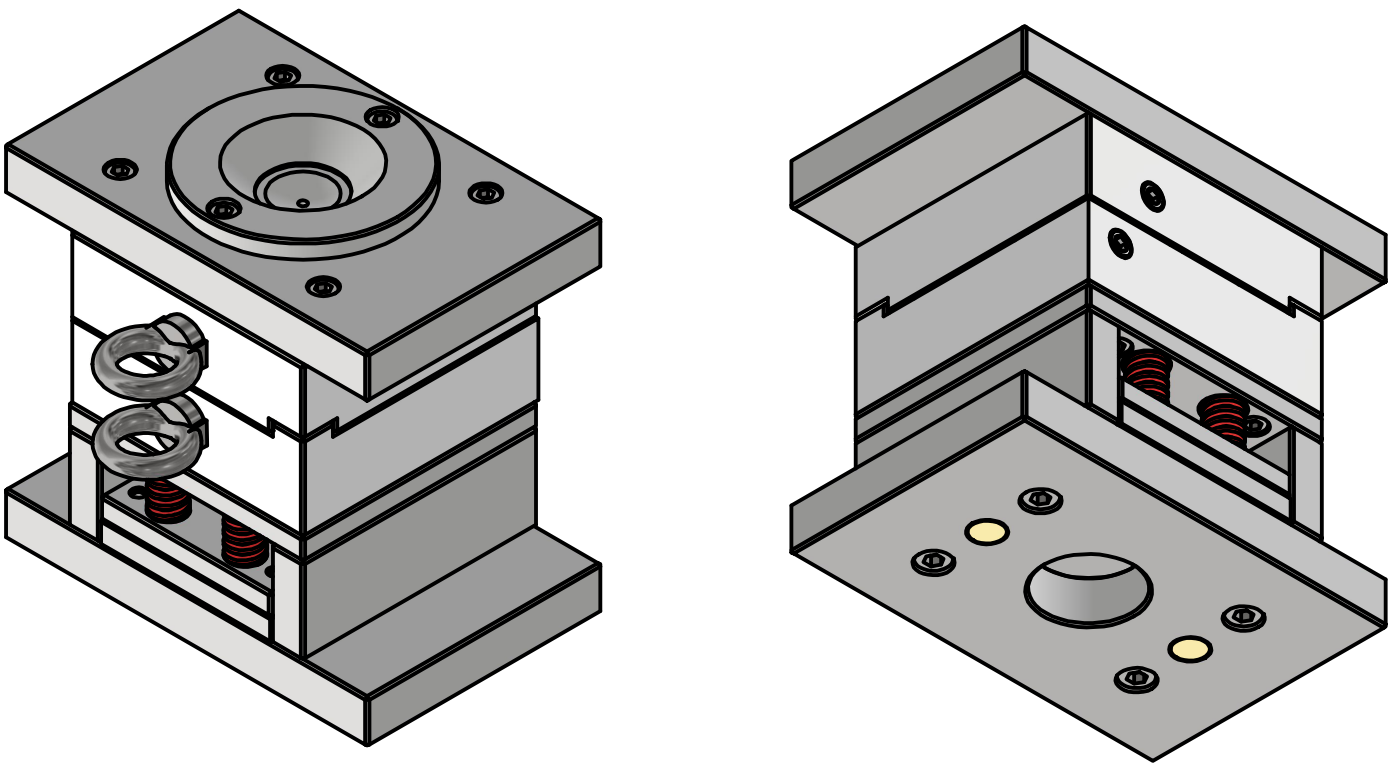
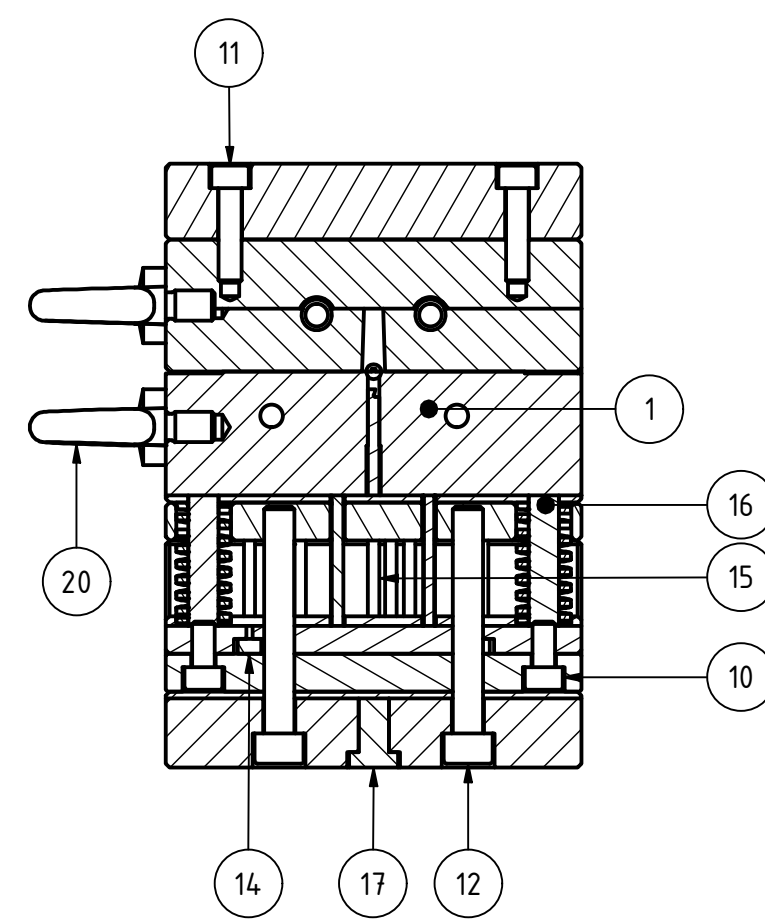
**SRENGSENG SAWAH - JAKARTA**

SAMPLE ASSEMBLY MOLD

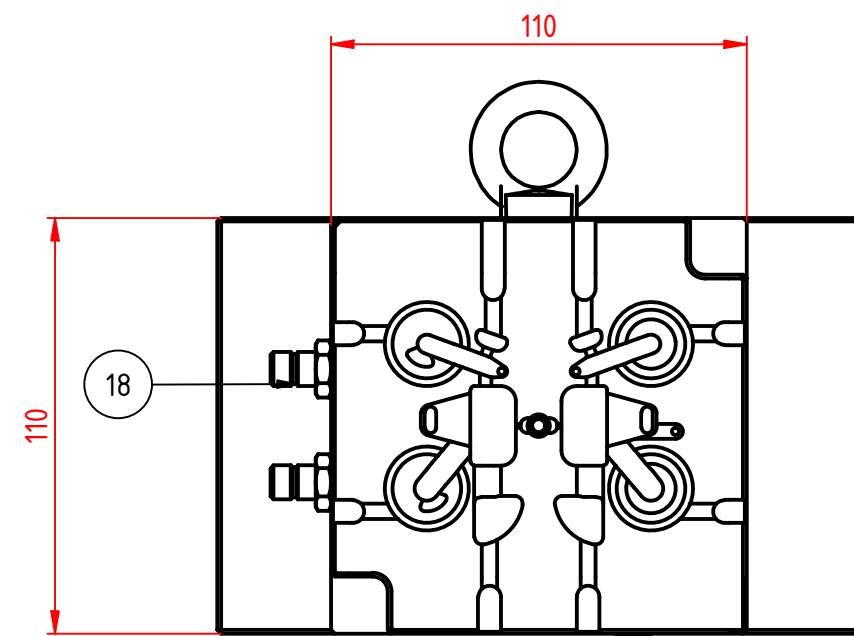
ASSY SIDE VIEW



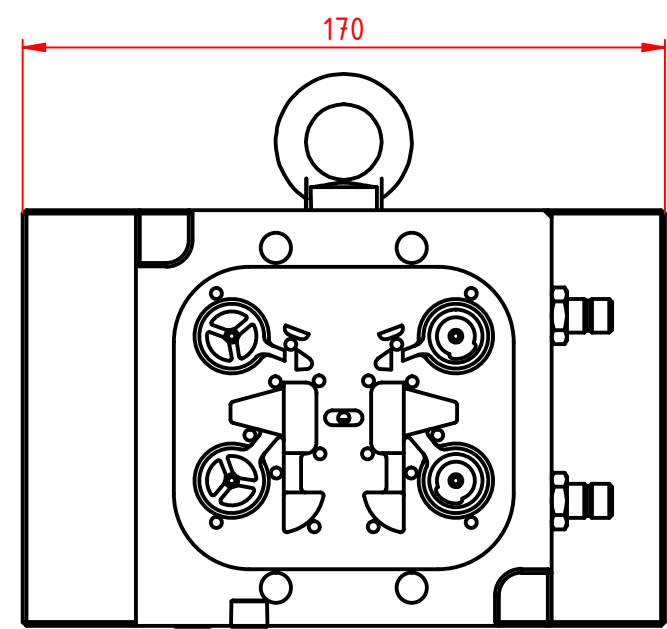
SECTION A-A



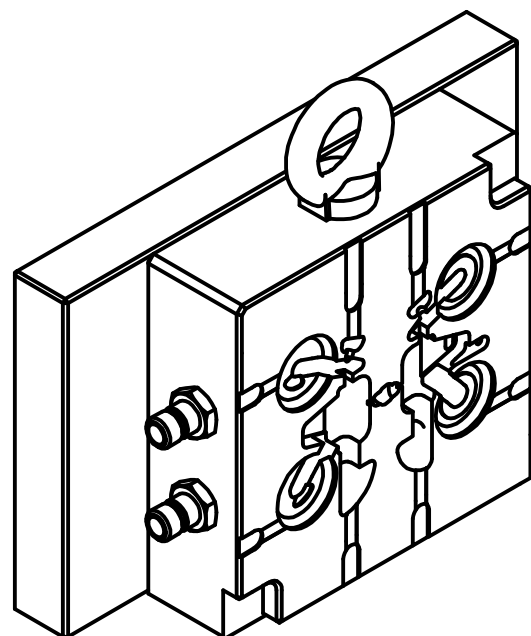
3D ASSYMETRIC VIEW



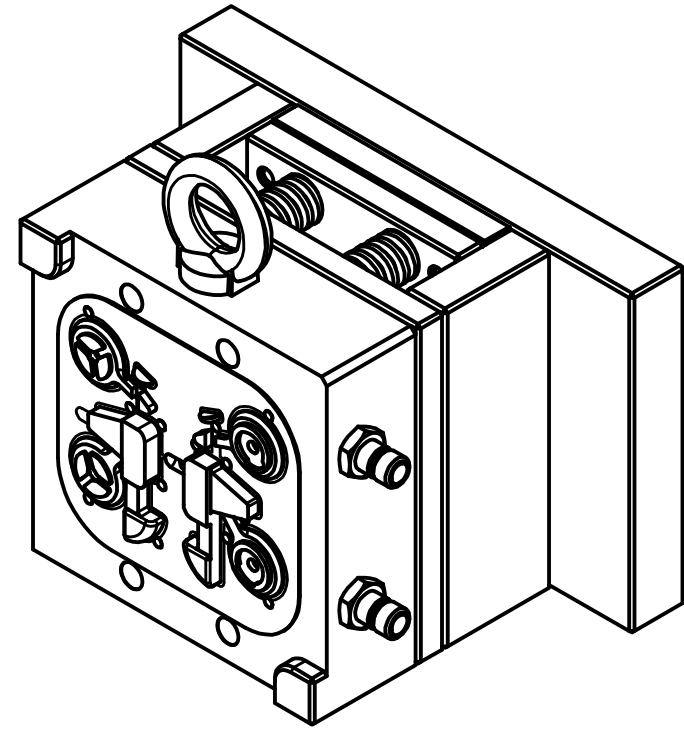
CORE TOP VIEW



CAVITY TOP VIEW



CORE MOLD




CAVITY MOLD

PARTS LIST				
ITEM	PART NUMBER	SIZE	MATERIAL	QTY
1	CORE MOLD	110 x 110 x 40	S45C / S50C	1
2	CAVITY MOLD	110 x 110 x 35	S45C / S50C	1
3	ADAPTOR CAVITY	170 x 110 x 20	S45C / S50C	1
4	LOCATING RING	646 - 90 - 32 - 12,5	S45C / S50C	1
5	CORE BACK PLATE	110 x 110 x 10	S45C / S50C	1
6	STRIPPER PLATE	110 x 40 x 15	S45C / S50C	2
7	EJECTOR PLATE	110 x 80 x 10	S45C / S50C	1
8	EJECTOR RETAINER PLATE	110 x 80 x 10	S45C / S50C	1
9	ADAPTOR BASE CORE	170 x 110 x 20	S45C / S50C	1
10	BOLT	ISO 4762 - M6 x 12	STANDART	6
11	BOLT	ISO 4762 - M6 x 25	STANDART	4
12	BOLT	ISO 4762 - M8 x 60	STANDART	4
13	BOLT	ISO 4762 - M6 x 16	STANDART	4
14	EJECTOR PIN	D 3	STANDART	18
15	EJECTOR PIN CENTER LOCK	D 3	STANDART	1
16	RETURN PIN	D 8	STANDART	4
17	RETURN PIN 2	D 8	STANDART	2
18	CONNECTOR PLUG	"251-BSPT"	STANDART	4
19	PLUG	"MSWTS1"	STANDART	2
20	EYE BOLT	DIN 580 - M8	STANDART	2
21	SPRING	ID 8,5	STANDART	4

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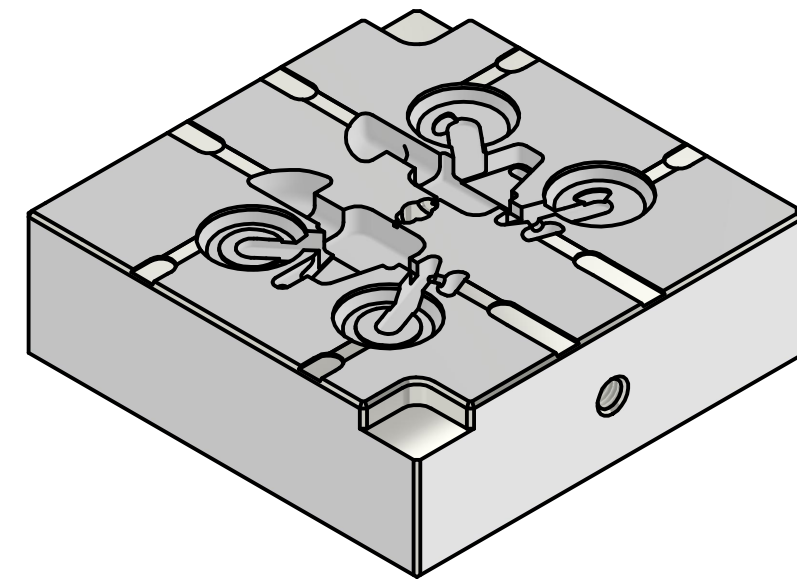
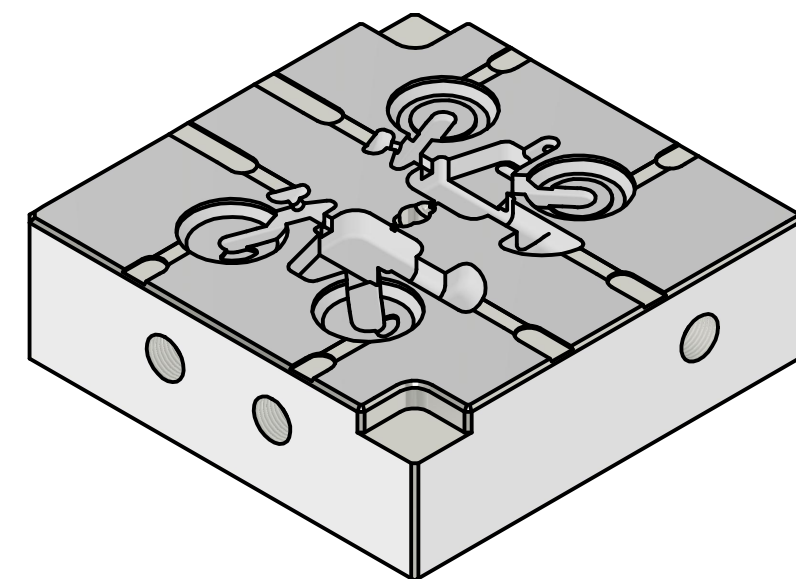
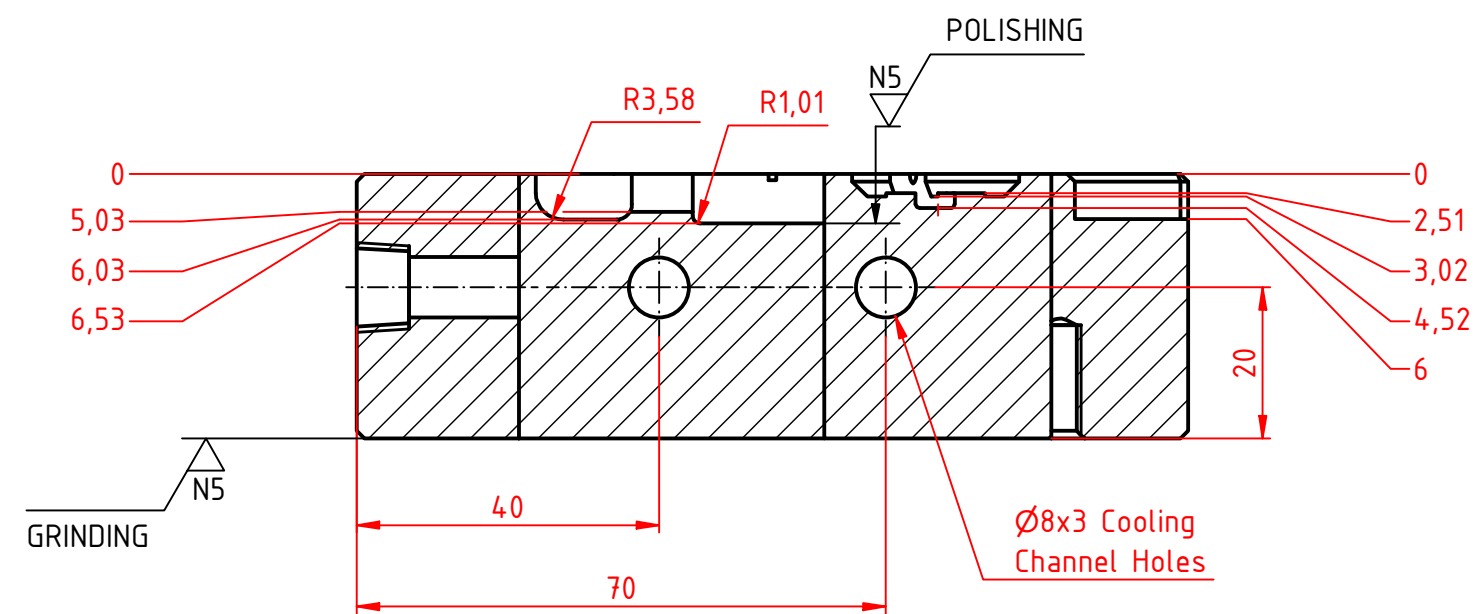
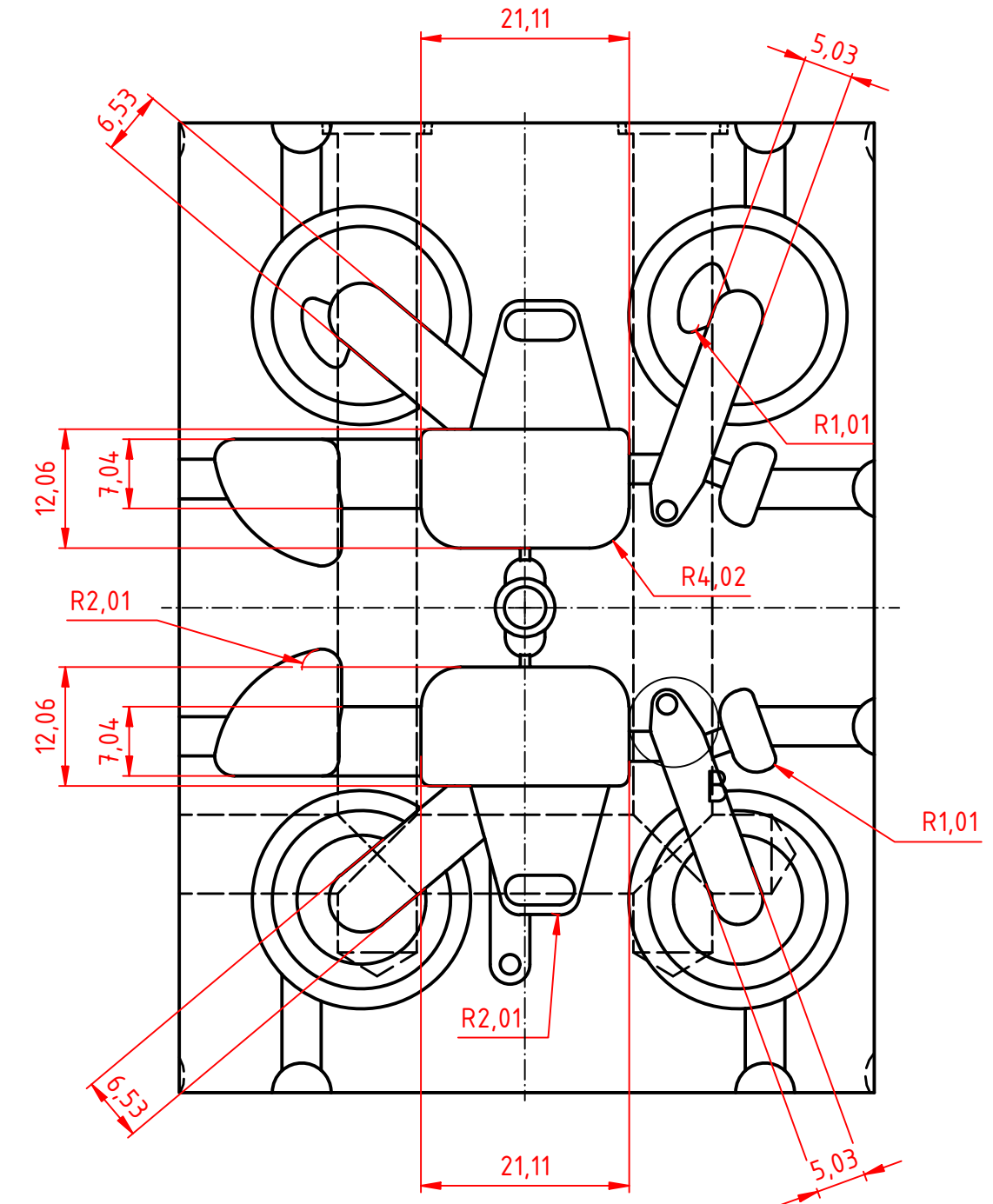
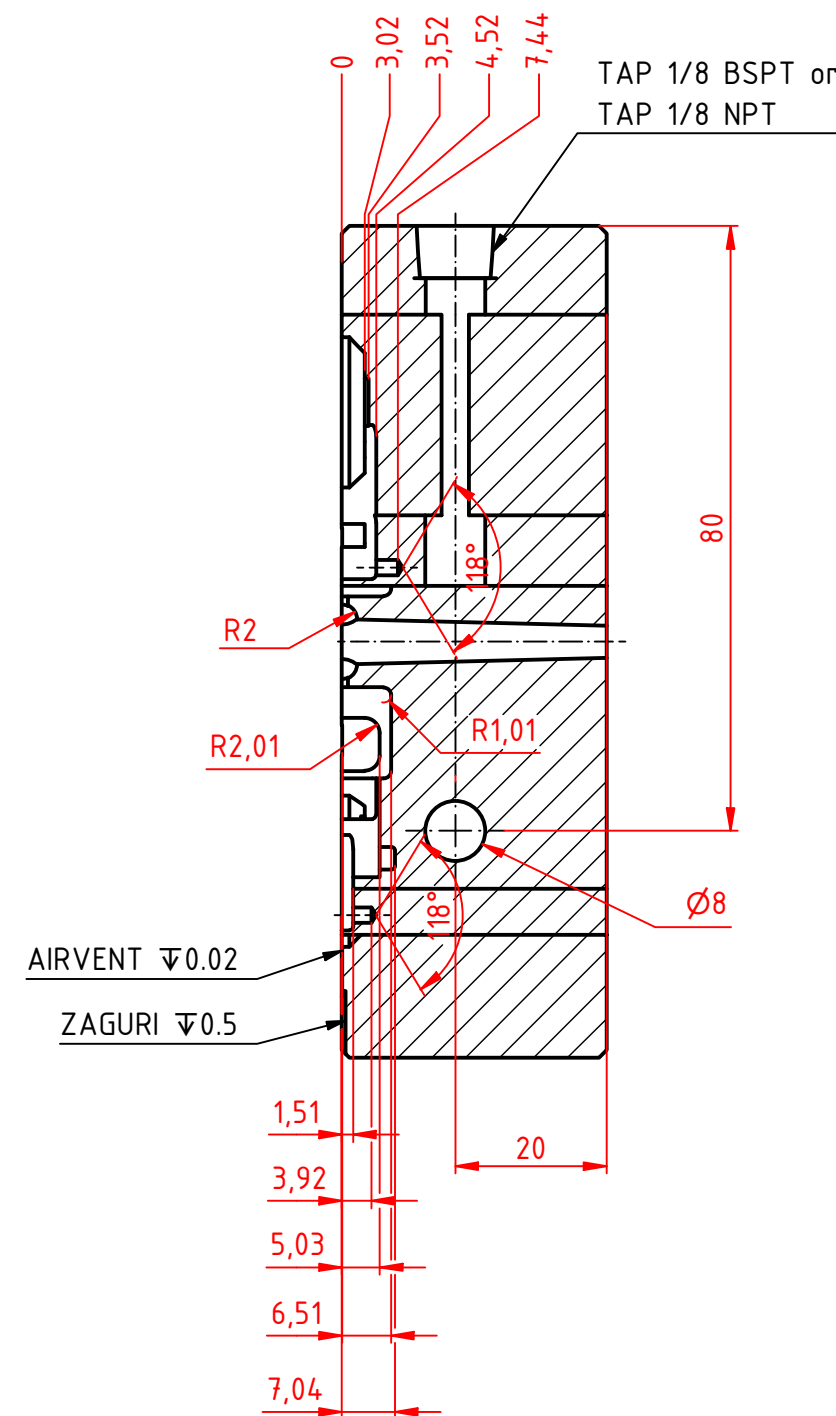
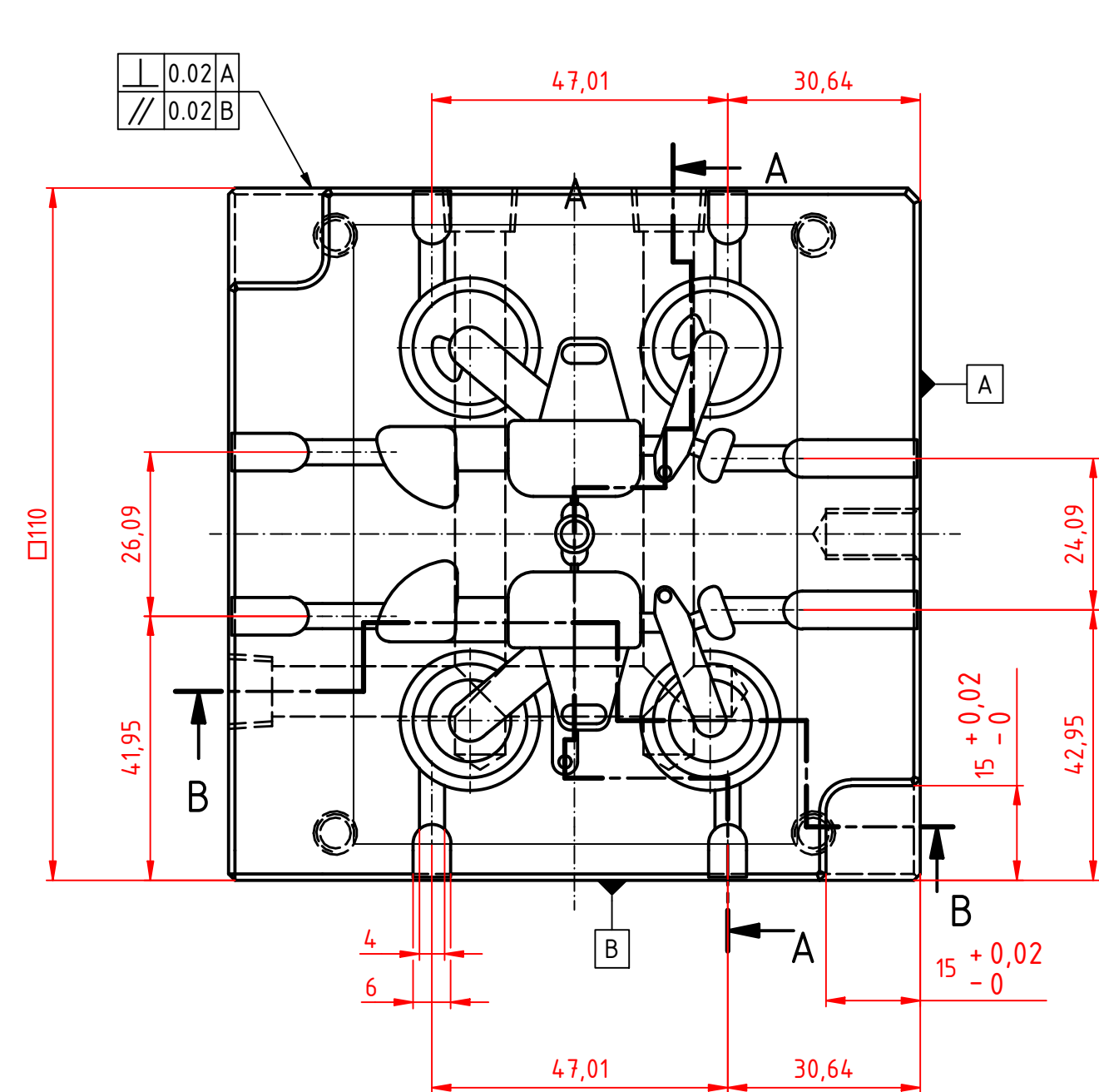
Skill : Plastic Die Engineering			Projection A		
Scale : 1 : 1	Date : 04-02-2024	Paper : A3	ISO 5456-2		
Drawn / Design by : Juri PDE			Drawing No: -		
Description : Part 1 Motorcycle			Rev : -	Page : 1 of 3	



# SAMPLE CAVITY MOLD

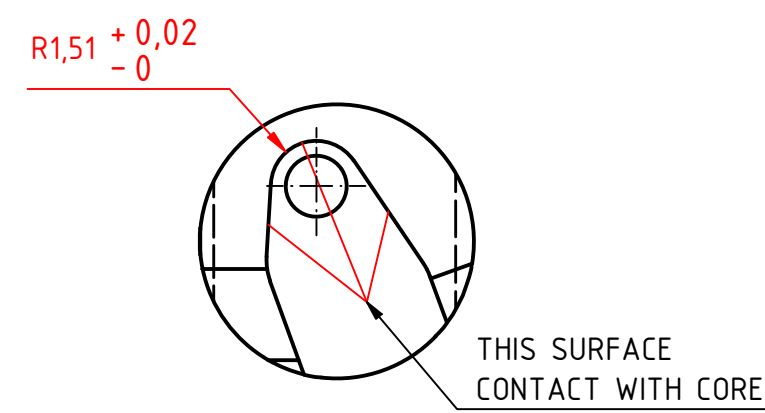
SECTION A-A

DETAIL A



3D ISOMETRIC VIEW


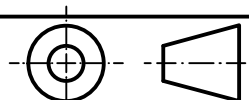
SECTION B-B



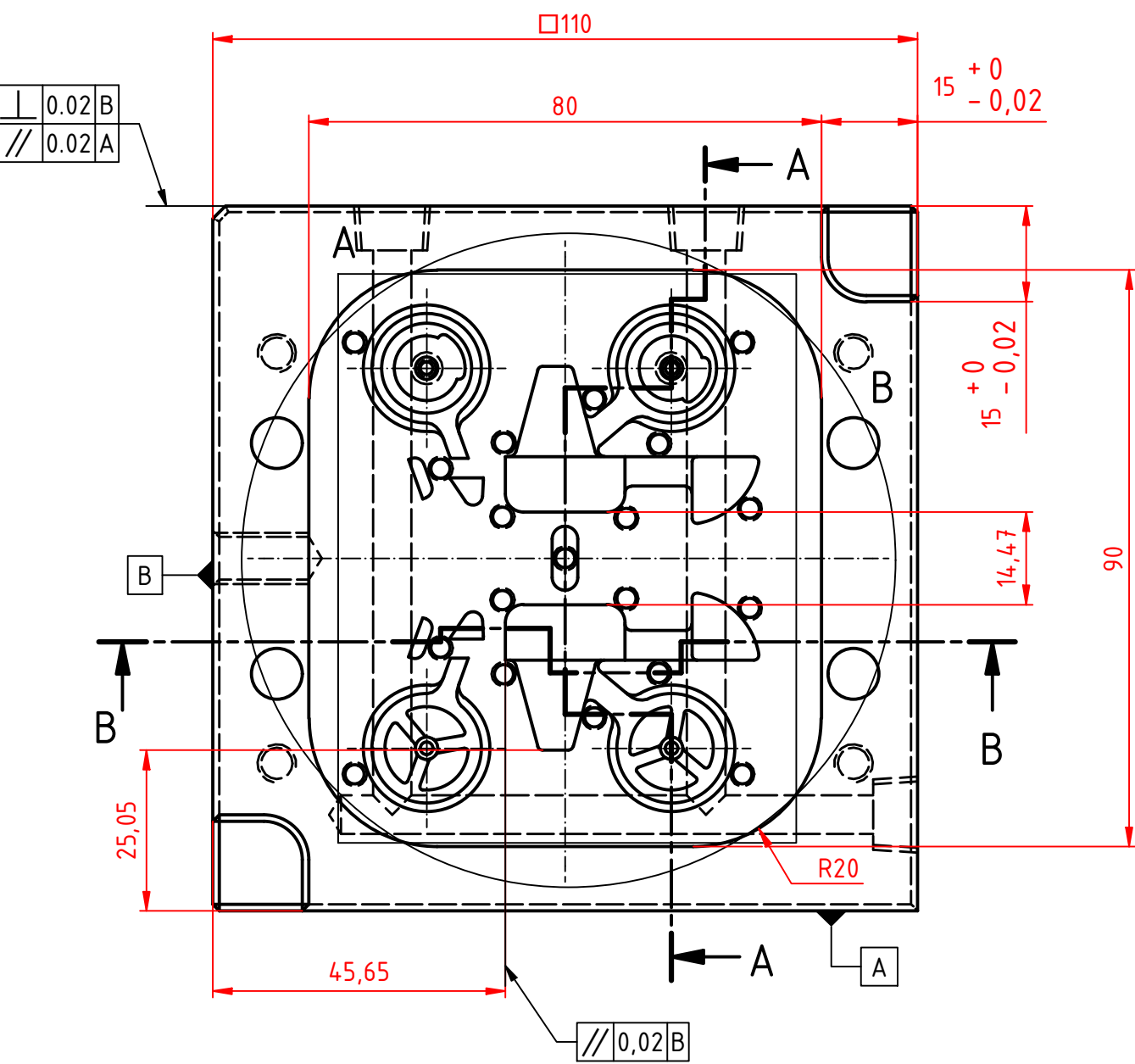
DETAIL B

**Tools yang dipakai (Contoh) :**

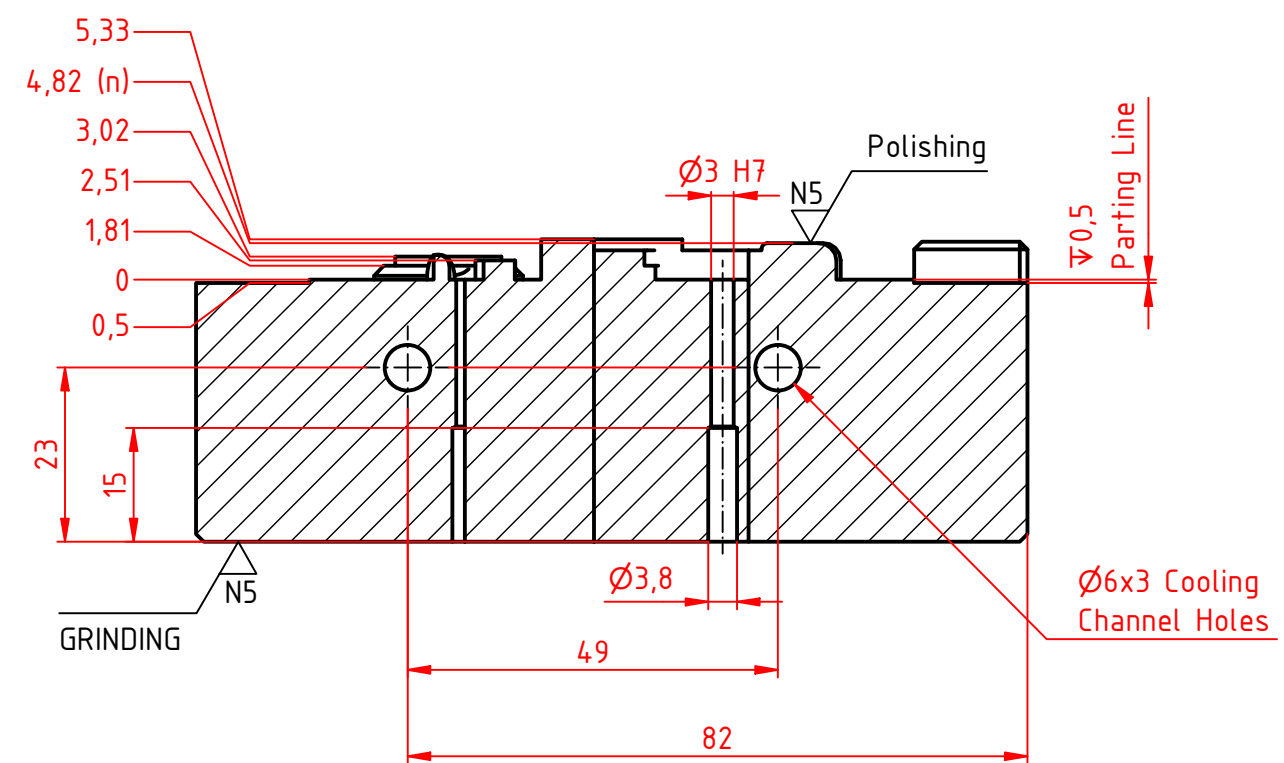
1. Endmill 6 Roughing
2. Endmill 4 Roughing
2. Endmill 2 Roughing
- 3 Endmill 4 Finishing
4. Endmill 2 Finishing
5. Drill 1.8 & 2.8 & 8
6. Reamer 2 & 3
7. Tap 1/8 BSPT / NPT

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Skill : Plastic Die Engineering			Projection A		
Scale : 1 : 1	Date : 04-02-2024	Paper : A3	ISO 5456-2		
Drawn / Design by : Juri PDE			Drawing No: -		
Description : CAVITY MOLD			Rev : -		Page : 3 of 3

SAMPLE CORE MOLD



SECTION B-B



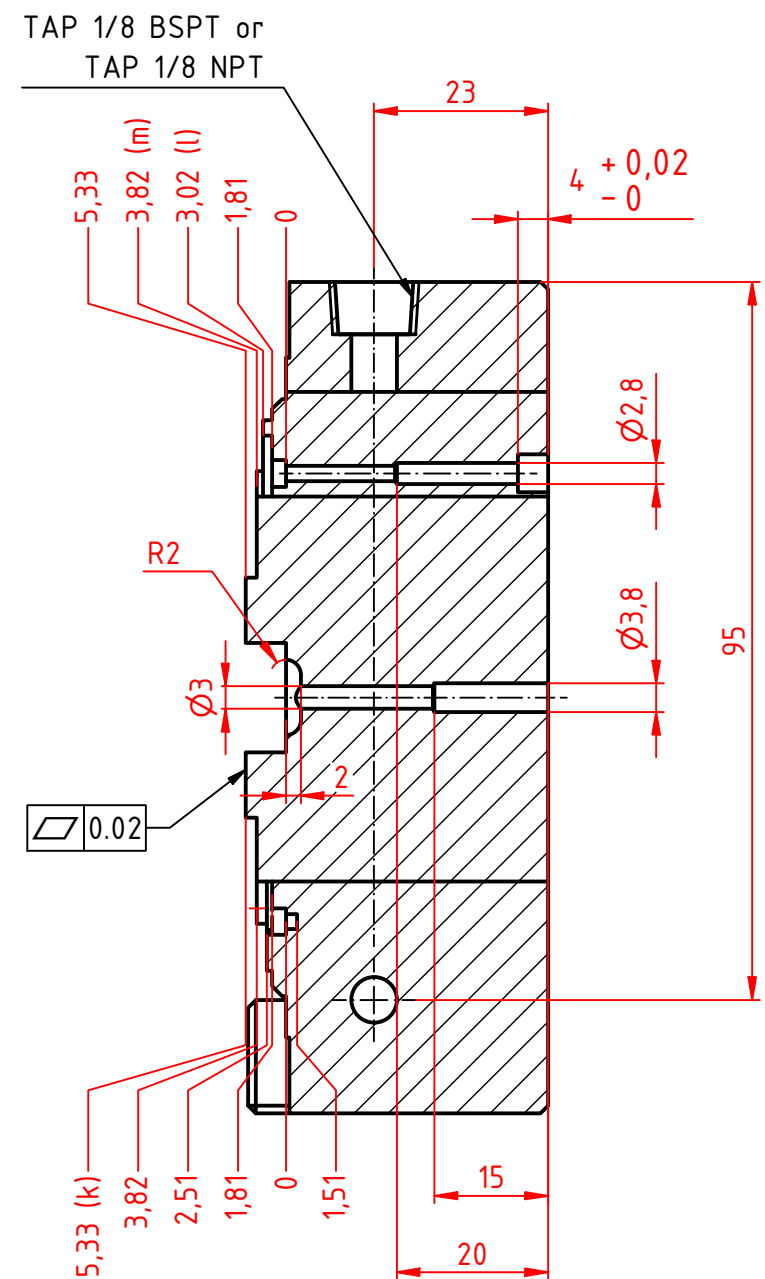
Tools yang dipakai (Contoh) :

Panjang Pin (Contoh) :

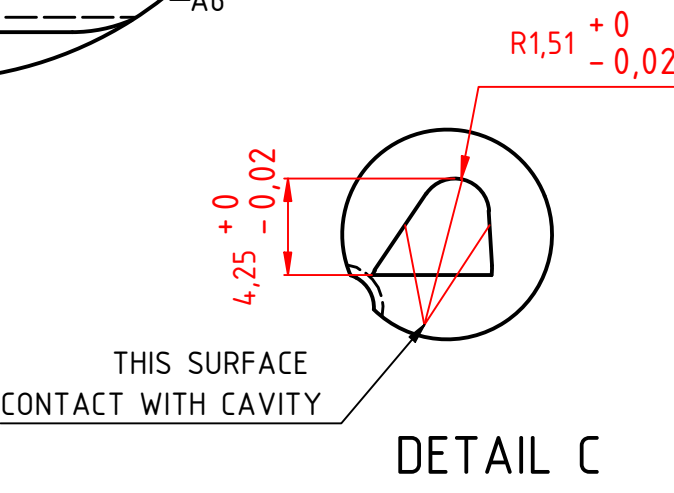
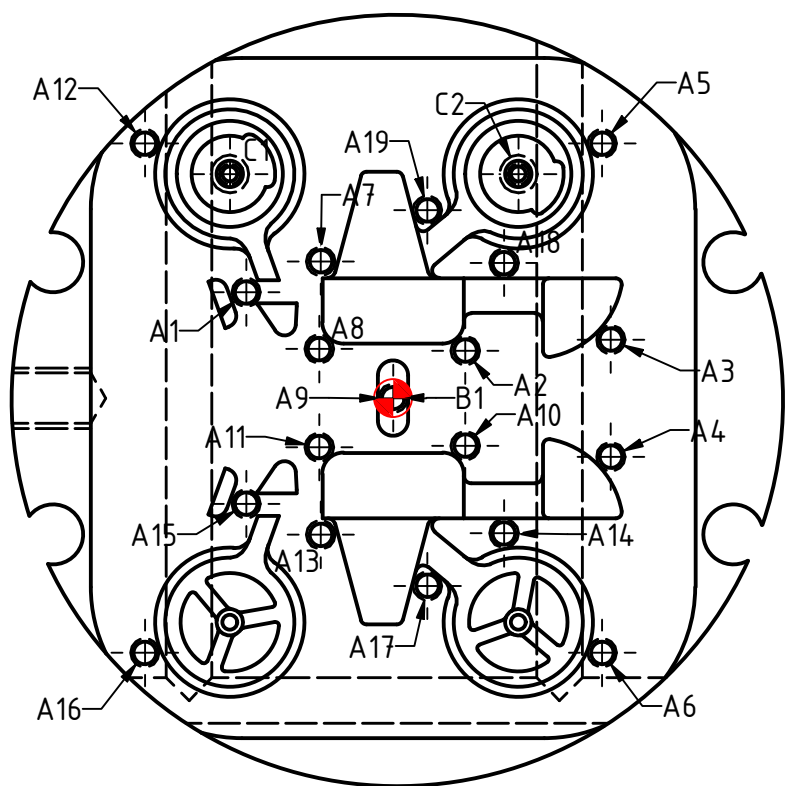
- 1. Ejector Pin 1 (7x) = ..... mm
- 2. Ejector Pin 2 (2x) = ..... mm
- 3. Ejector Pin 3 (3x) = ..... mm
- 4. Ejector Pin Runner (1x) = ..... mm
- 5. Core Pin = .... mm
- 6. Retrurn Pin = .... mm

- 1. Endmill 12 Roughing
- 2. Endmill 4 Roughing
- 3. Endmill 2 Roughing
- 4. Endmill 4 Finishing
- 5. Endmill 2 Finishing
- 6. Drill 1.8 & 2.8 & 8
- 7. Reamer 2 & 3
- 8. Tap 1/8 BSPT / NPT

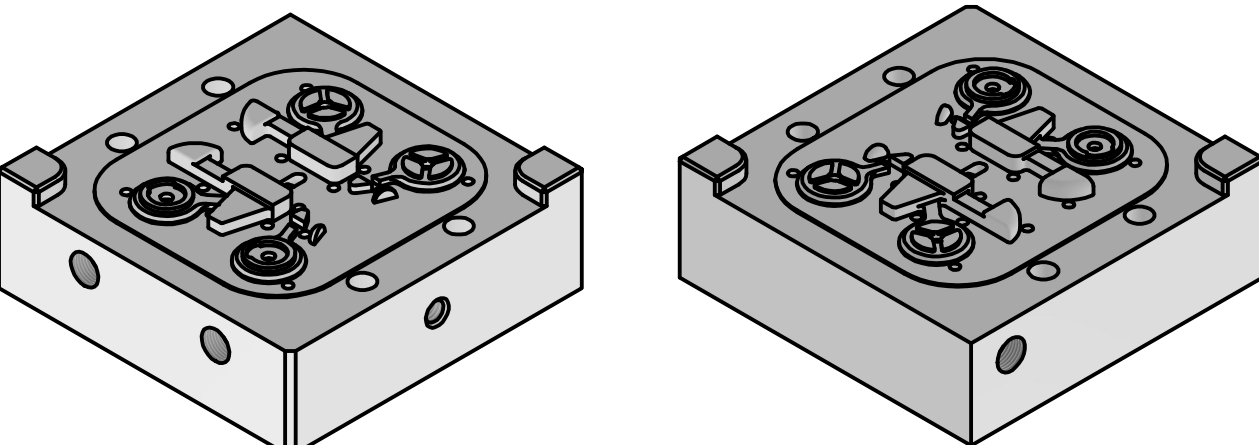
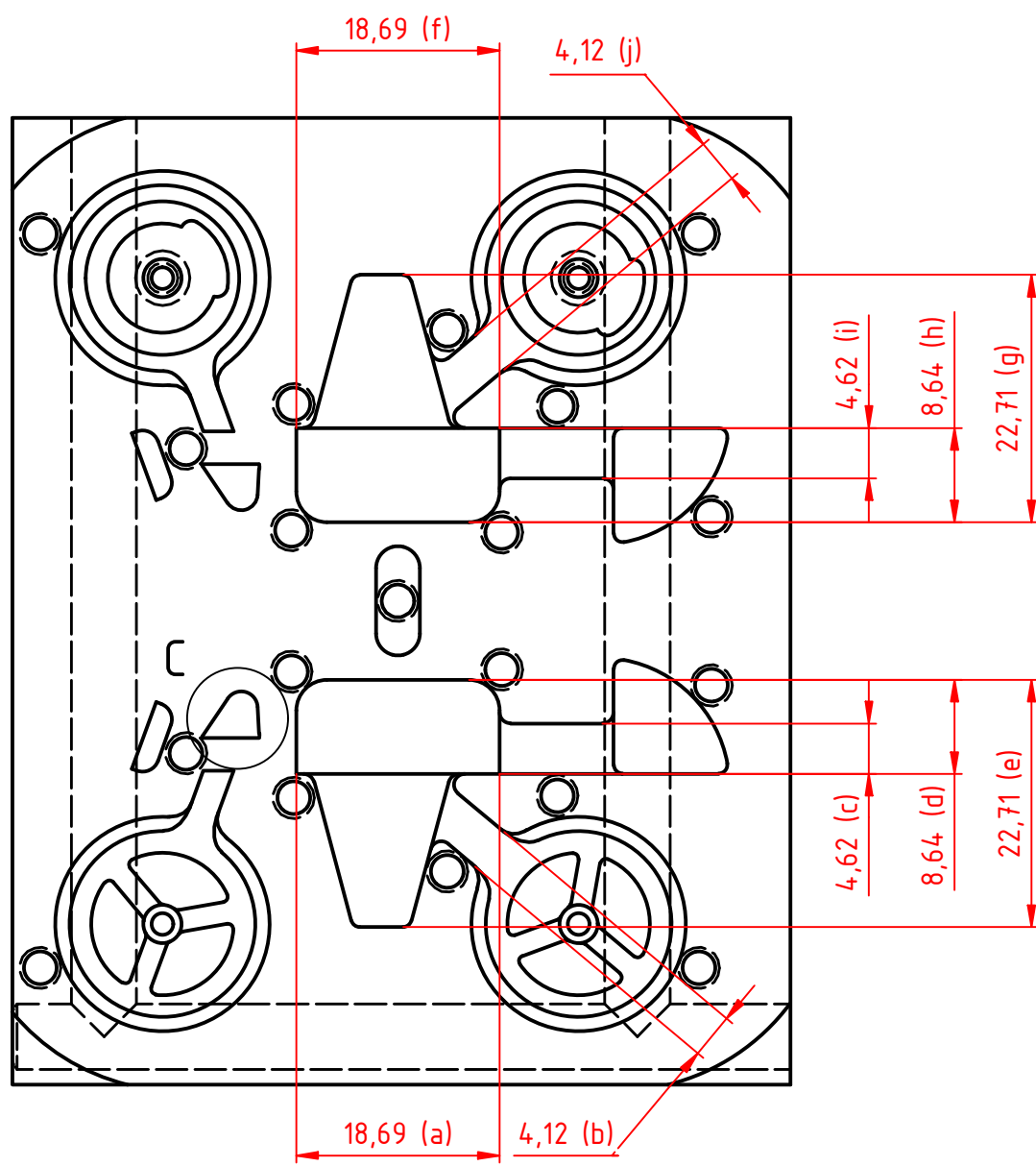
SECTION A-A



DETAIL B



DETAIL A




3D ISOMETRIC VIEW

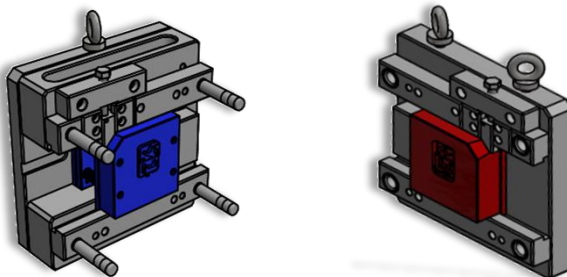
HOLE TABLE				HOLE TABLE			
HOLE	XDIM	YDIM	DESCRIPTION	HOLE	XDIM	YDIM	DESCRIPTION
A13	-9,57	-18,08	$\varnothing 3,8$ -15 DEEP	A1	-19,45	13,99	$\varnothing 3,8$ -15 DEEP
A14	14,65	-17,88	$\varnothing 3,8$ -15 DEEP	A2	9,55	6,30	$\varnothing 3,8$ -15 DEEP
A15	-19,45	-13,99	$\varnothing 3,8$ -15 DEEP	A3	28,80	7,75	$\varnothing 3,8$ -15 DEEP
A16	-32,85	-33,69	$\varnothing 3,8$ -15 DEEP	A4	28,80	-7,75	$\varnothing 3,8$ -15 DEEP
A17	4,54	-24,84	$\varnothing 3,8$ -15 DEEP	A5	27,65	33,69	$\varnothing 3,8$ -15 DEEP
A18	14,65	-17,88	$\varnothing 3,8$ -15 DEEP	A6	27,65	-33,69	$\varnothing 3,8$ -15 DEEP
A19	4,54	24,84	$\varnothing 3,8$ -15 DEEP	A7	-9,57	18,08	$\varnothing 3,8$ -15 DEEP
B1	0,00	0,00	$\varnothing 3$ THRU	A8	-9,78	6,50	$\varnothing 3,8$ -15 DEEP
C1	-21,61	29,65	$\varnothing 2,8$ -20 DEEP DIN 974 - $\varnothing 5 \times 4$	A9	0,00	0,00	$\varnothing 3,8$ -15 DEEP
C2	16,58	29,65	$\varnothing 2,8$ -20 DEEP DIN 974 - $\varnothing 5 \times 4$	A10	9,55	-6,30	$\varnothing 3,8$ -15 DEEP
				A11	-9,78	-6,50	$\varnothing 3,8$ -15 DEEP
				A12	-32,85	33,69	$\varnothing 3,8$ -15 DEEP

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Competition in Lampung, Indonesia 2024.  
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Skill : Plastic Die Engineering			Projection A		
Scale : 1 : 1	Date : 04-02-2024	Paper : A3	ISO 5456-2		
Drawn / Design by : Juri PDE			Drawing No.:-		
Description : CORE MOLD			Rev : -	Page : 2 of 3	

**LOMBA KOMPETENSI SISWA  
SEKOLAH MENENGAH KEJURUAN  
TINGKAT NASIONAL KE- XXXII  
TAHUN 2024**



**UNIT DIE**

**BIDANG LOMBA  
PLASTIC DIE ENGINEERING**



**KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET, DAN TEKNOLOGI  
BADAN PENGEMBANGAN TALENTA INDONESIA (BPTI)**

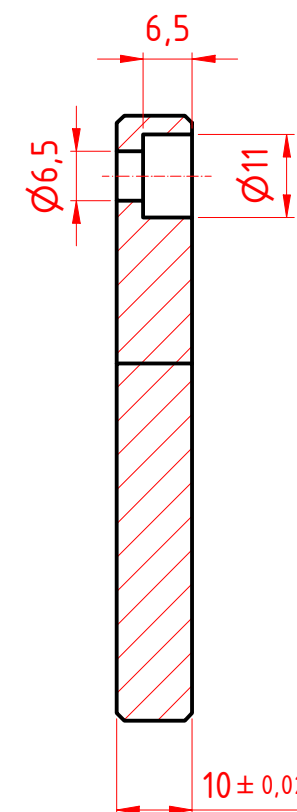
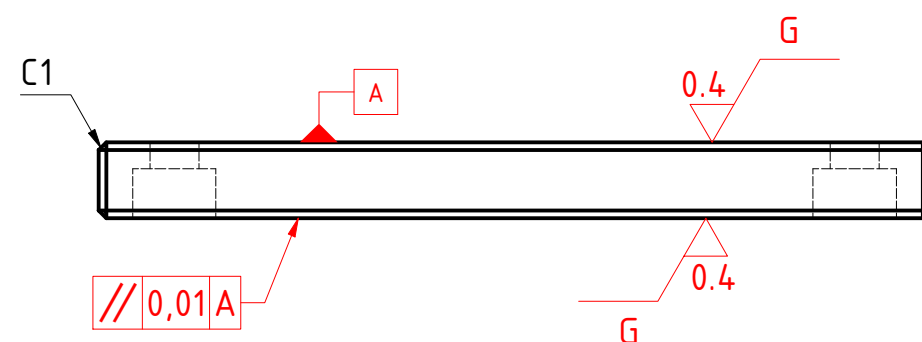
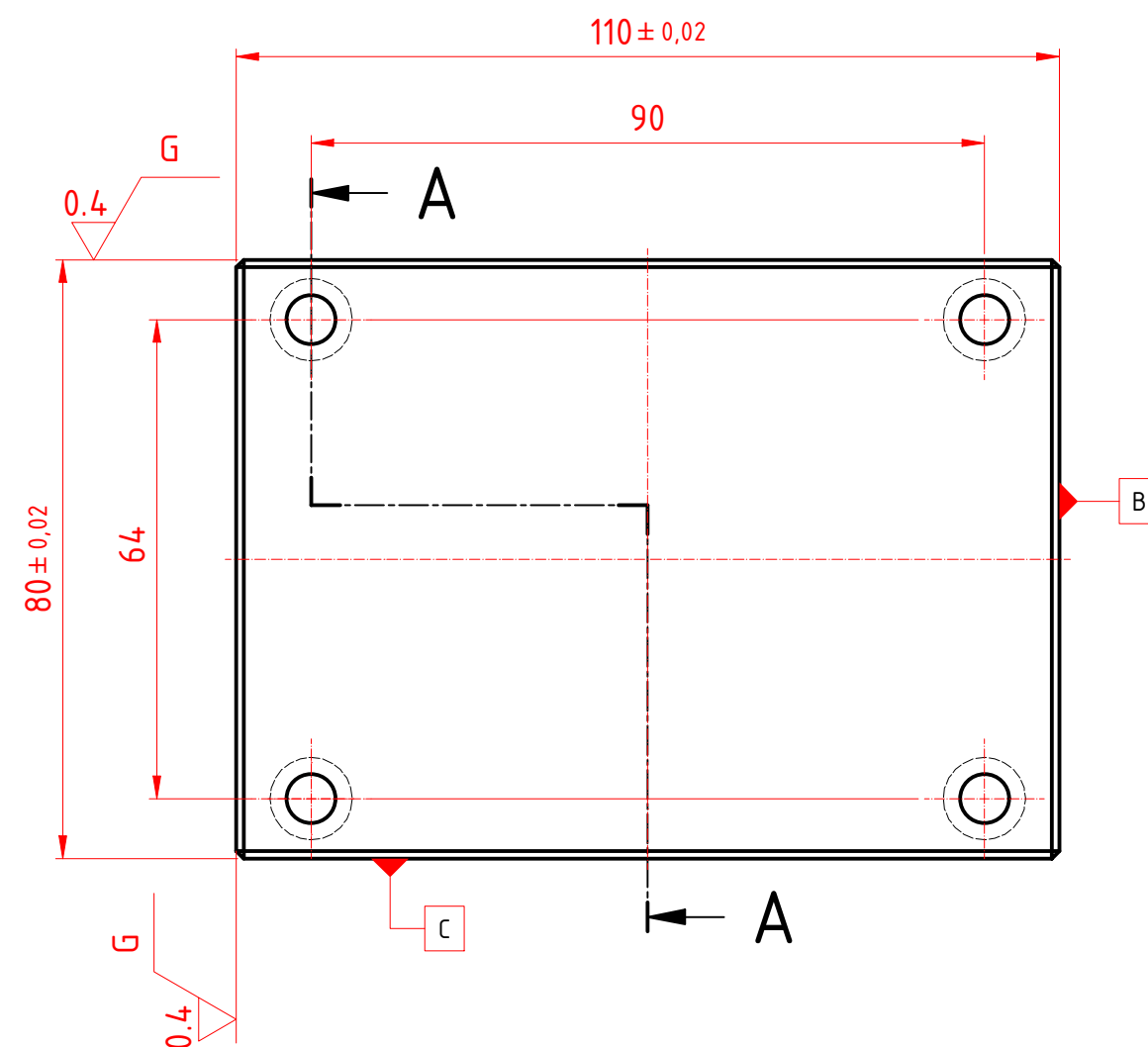
Jalan Gardu, Srengseng Sawah

Website: [www.pusatprestasinasional.kemdikbud.go.id](http://www.pusatprestasinasional.kemdikbud.go.id)

**SRENGSENG SAWAH - JAKARTA**

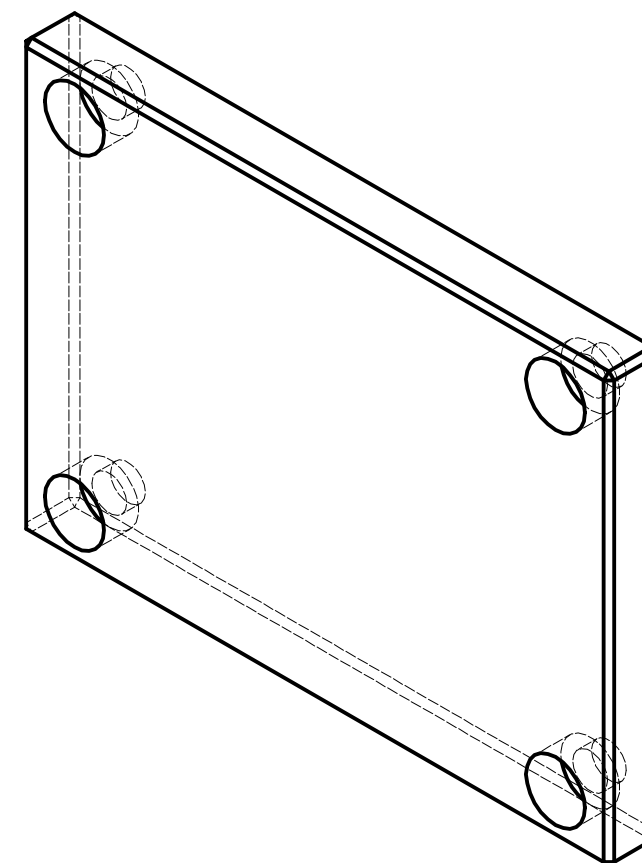






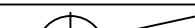
SECTION A-A

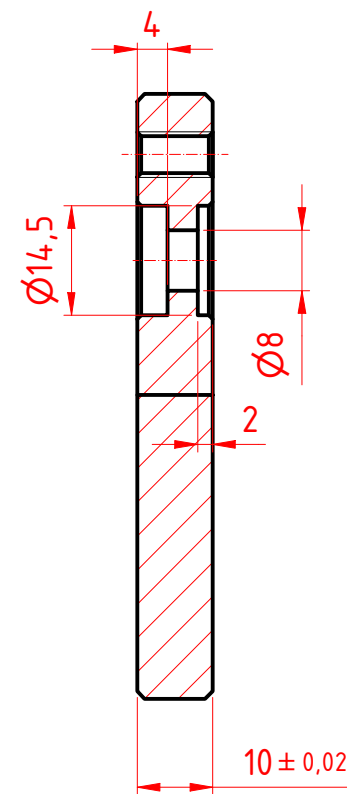
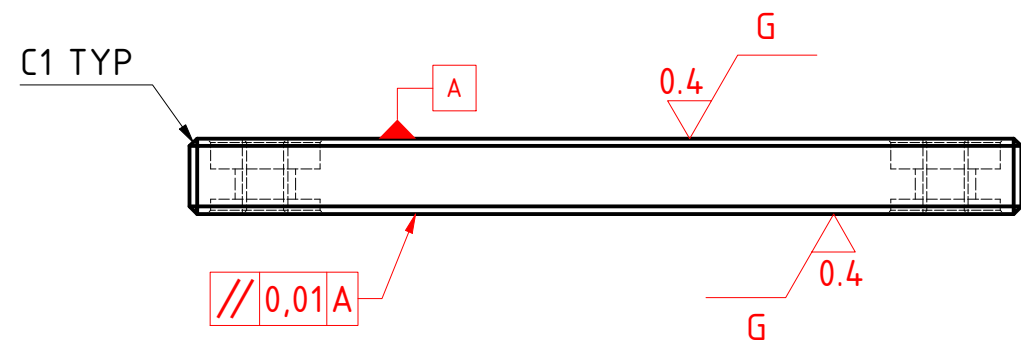
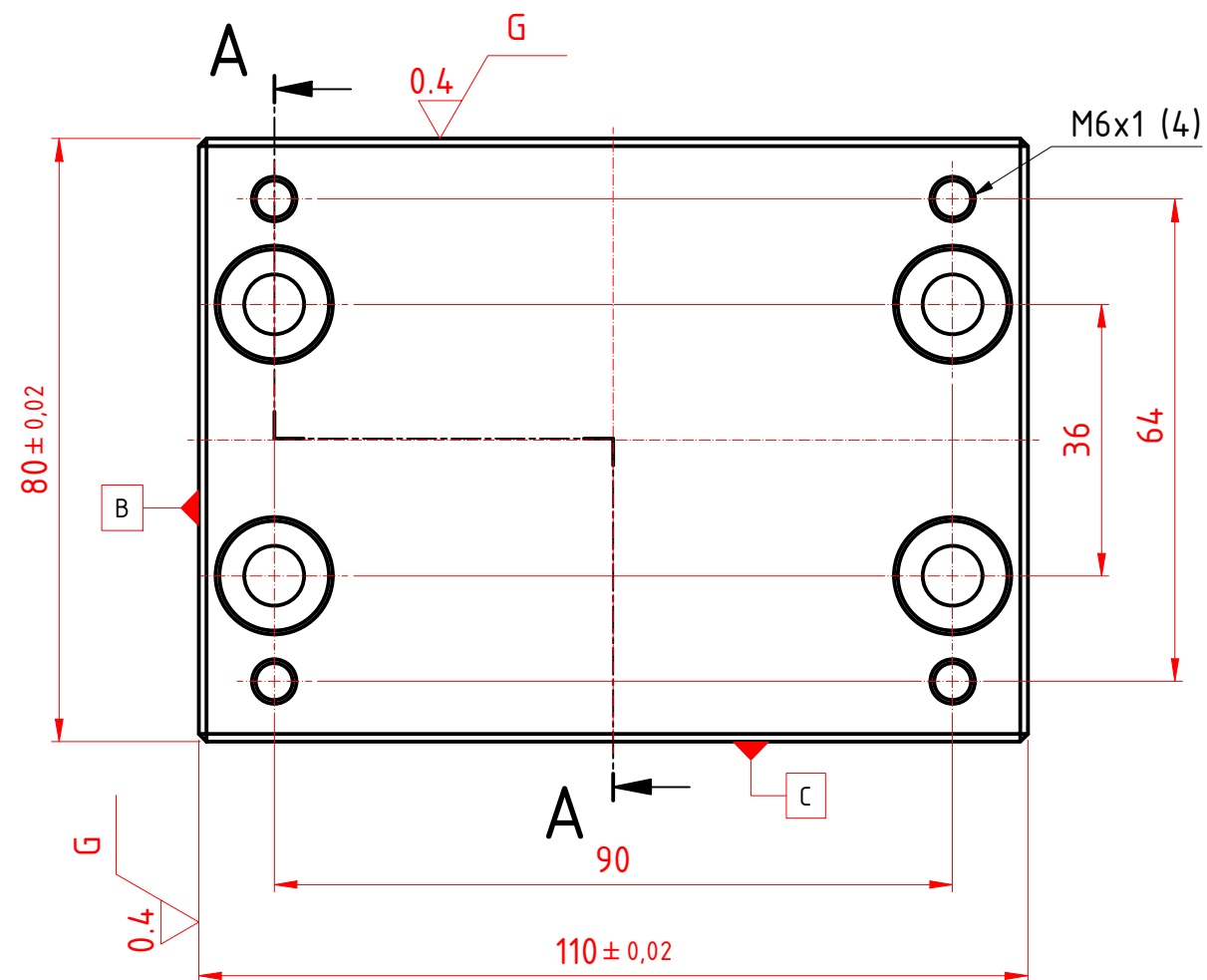
5.  $\sqrt[3.2]{}$  (  $\sqrt[0.8]{}$  Reaming ,  $\sqrt[3.2]{}$  Grinding )



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Competition 2024.  
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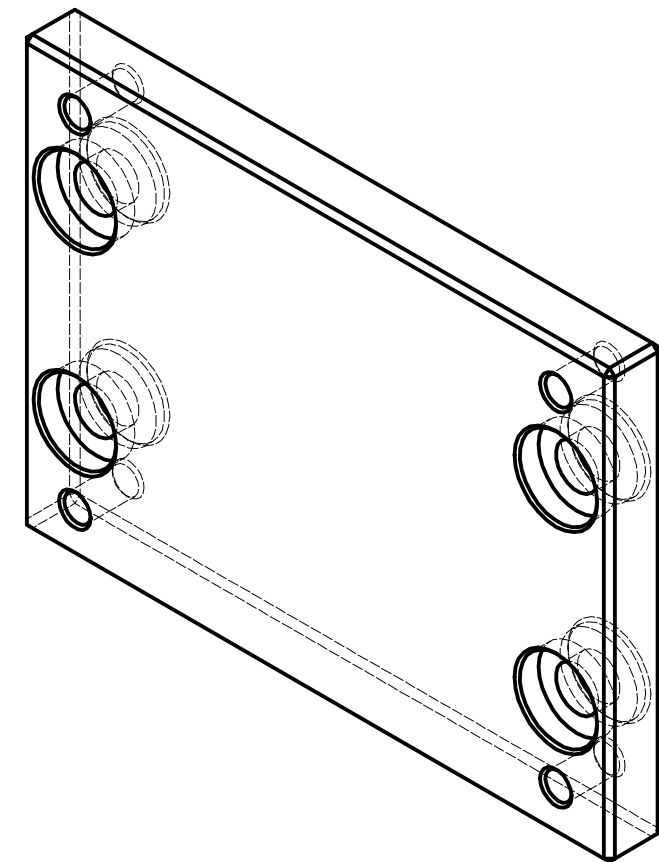


Skill: PLASTIC DIE ENGINEERING			Projection A ISO 5456-2A	
Scale: 1:1	Date: 05-2-2024	Paper: A3		
Drawn / Design by: MURYANTO			Drawing No: -	
Description: EJECTOR RETAINER PLATE			Rev:0	Page: 6/10



SECTION A-A

6.  $\sqrt[3.2]{}$  (  $\sqrt[0.8]{}$  Reaming ,  $\sqrt[3.2]{}$  Grinding )



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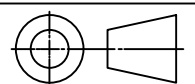
Skill: PLASTIC DIE ENGINEERING

Scale: 1:1

Date: 05-2-2024

Paper: A3

Projection A  
ISO 5456-2A



Drawn / Design by: MURYANTO

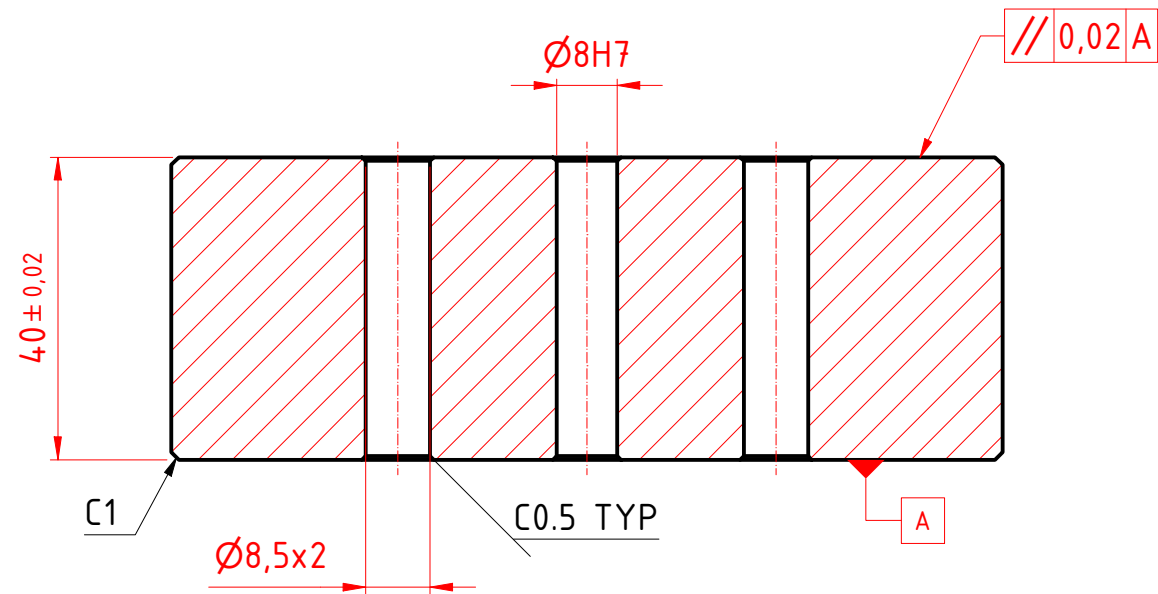
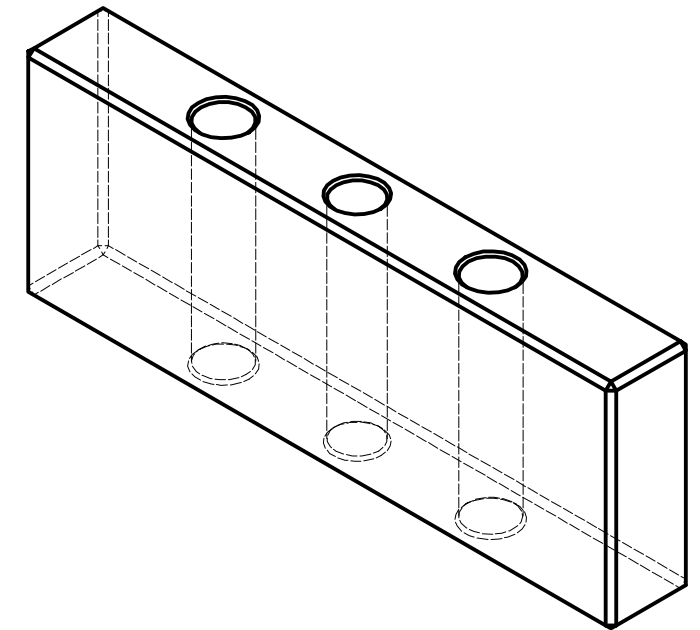
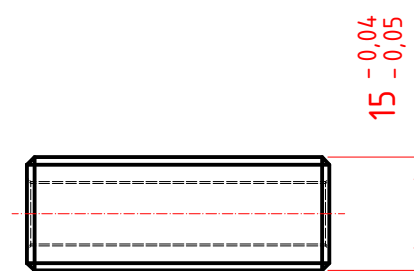
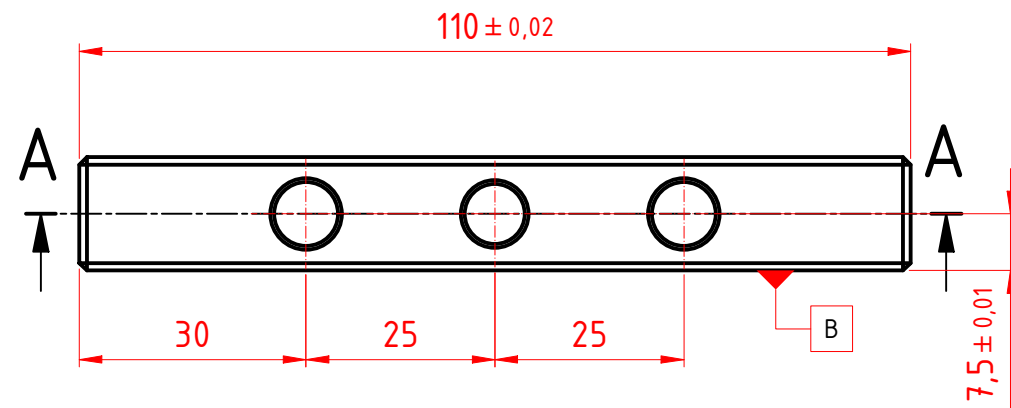
Drawing No: -

Description: EJECTOR PLATE

Rev: 0

Page: 7/10

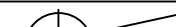
8.  $\sqrt[3.2]{\phantom{x}}$  (  $\sqrt[0.8]{\phantom{x}}$  Reaming ,  $\sqrt[3.2]{\phantom{x}}$  Grinding )



SECTION A-A

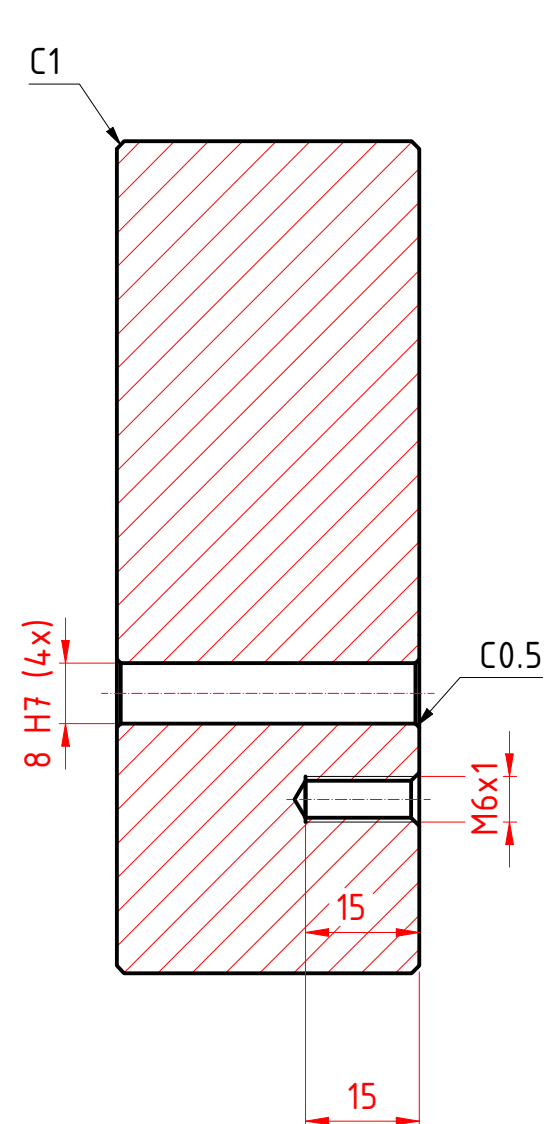
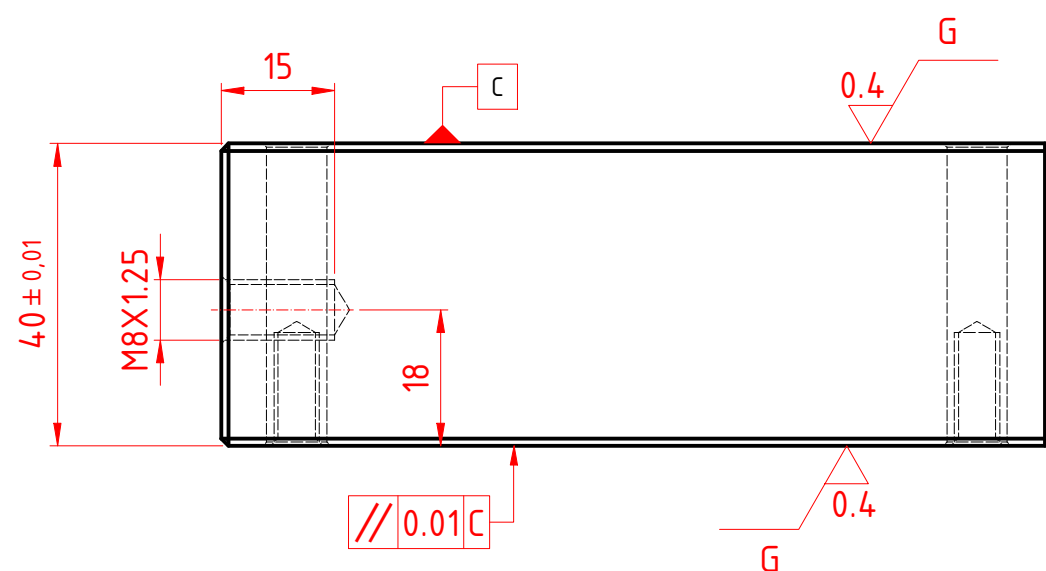
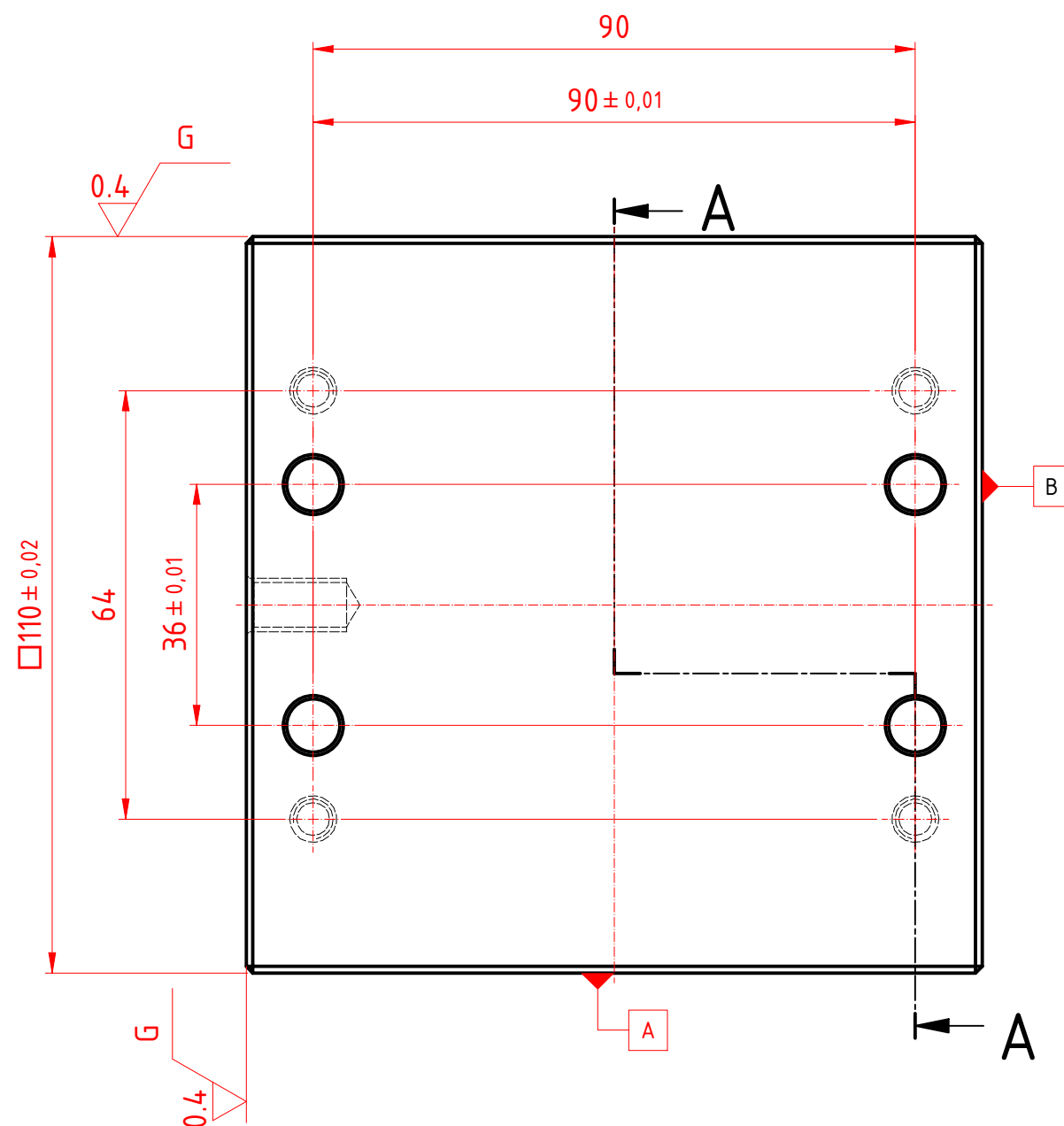
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Skill: PLASTIC DIE ENGINEERING			Projection A ISO 5456-2A	
Scale: 1:1	Date: 05-2-2024	Paper: A3		
Drawn / Design by: MURYANTO			Drawing No: -	
Description: STRIPPER			Rev: 0	Page: 9/10

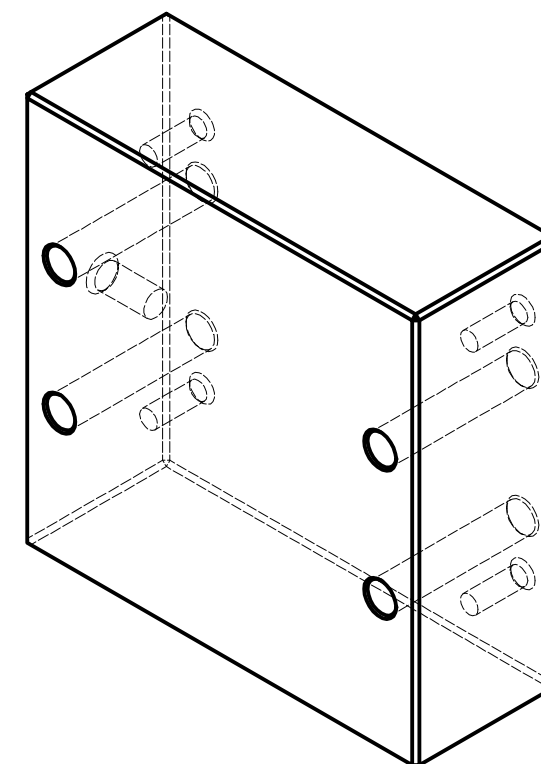






SECTION A-A

3.  $\sqrt{3.2}$  (  $\sqrt{0.8}$  Reaming ,  $\sqrt{3.2}$  Grinding )



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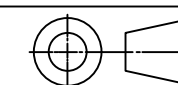
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Scale: 1:1

Date: 05-2-2024

Paper: A3

Projection A  
ISO 5456-2A



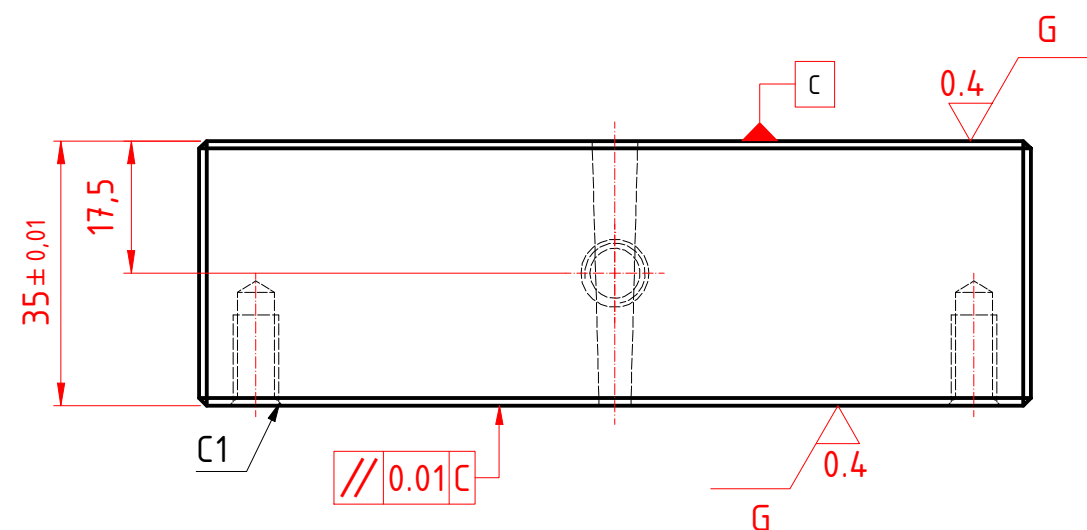
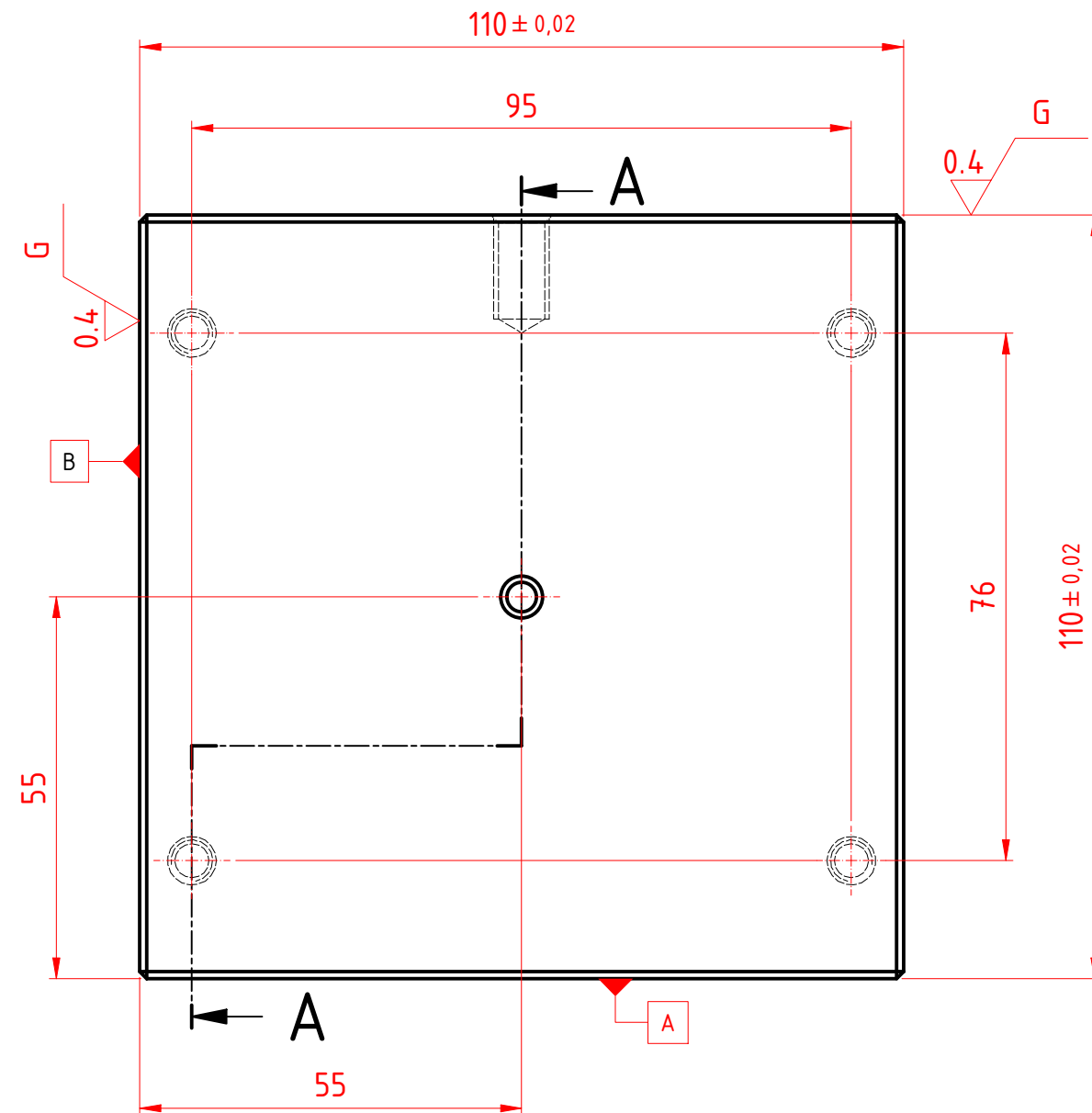
Drawn / Design by: MURYANTO

Drawing No: -

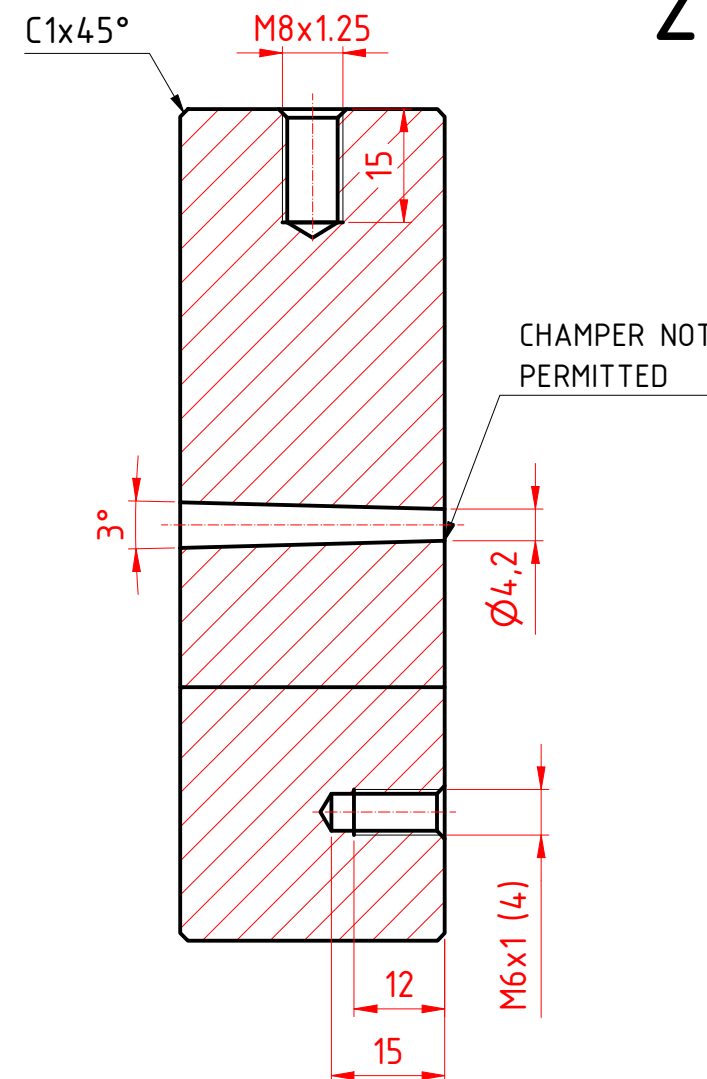
Description: CORE PLATE

Rev: 0

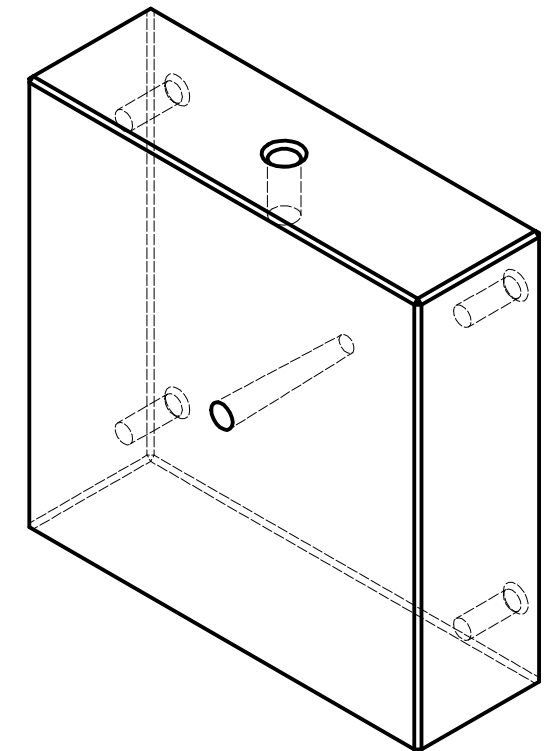
Page: 4/10



## SECTION A-A



2.  $\sqrt{3.2}$  (  $\sqrt{0.8}$  Reaming ,  $\sqrt{3.2}$  Grinding )



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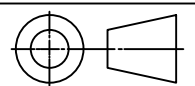
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Scale: 1:1

Date: 05-2-2024

Paper: A3

Projection A  
ISO 5456-2A



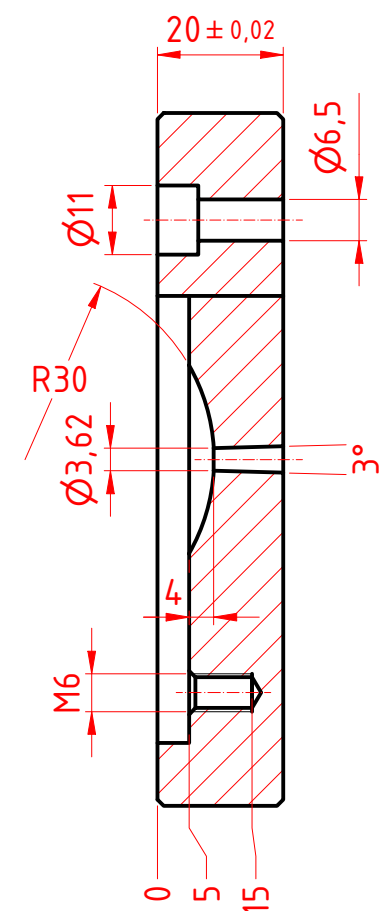
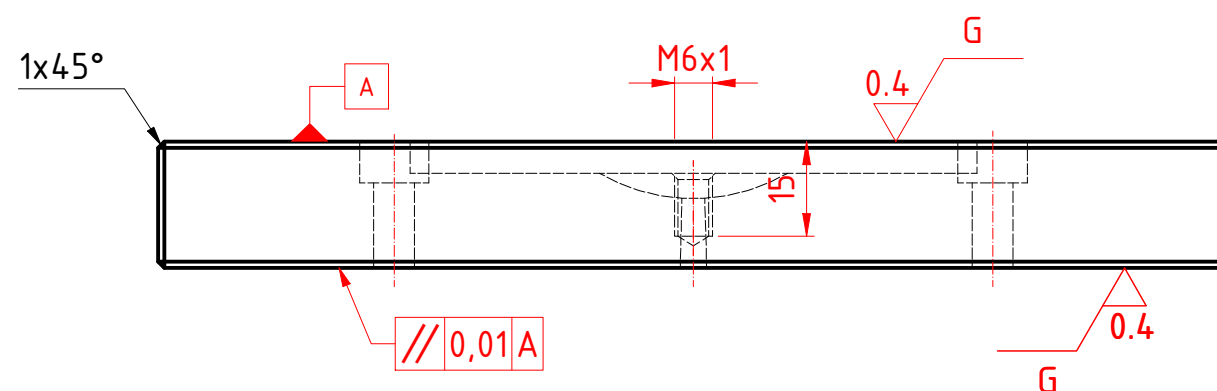
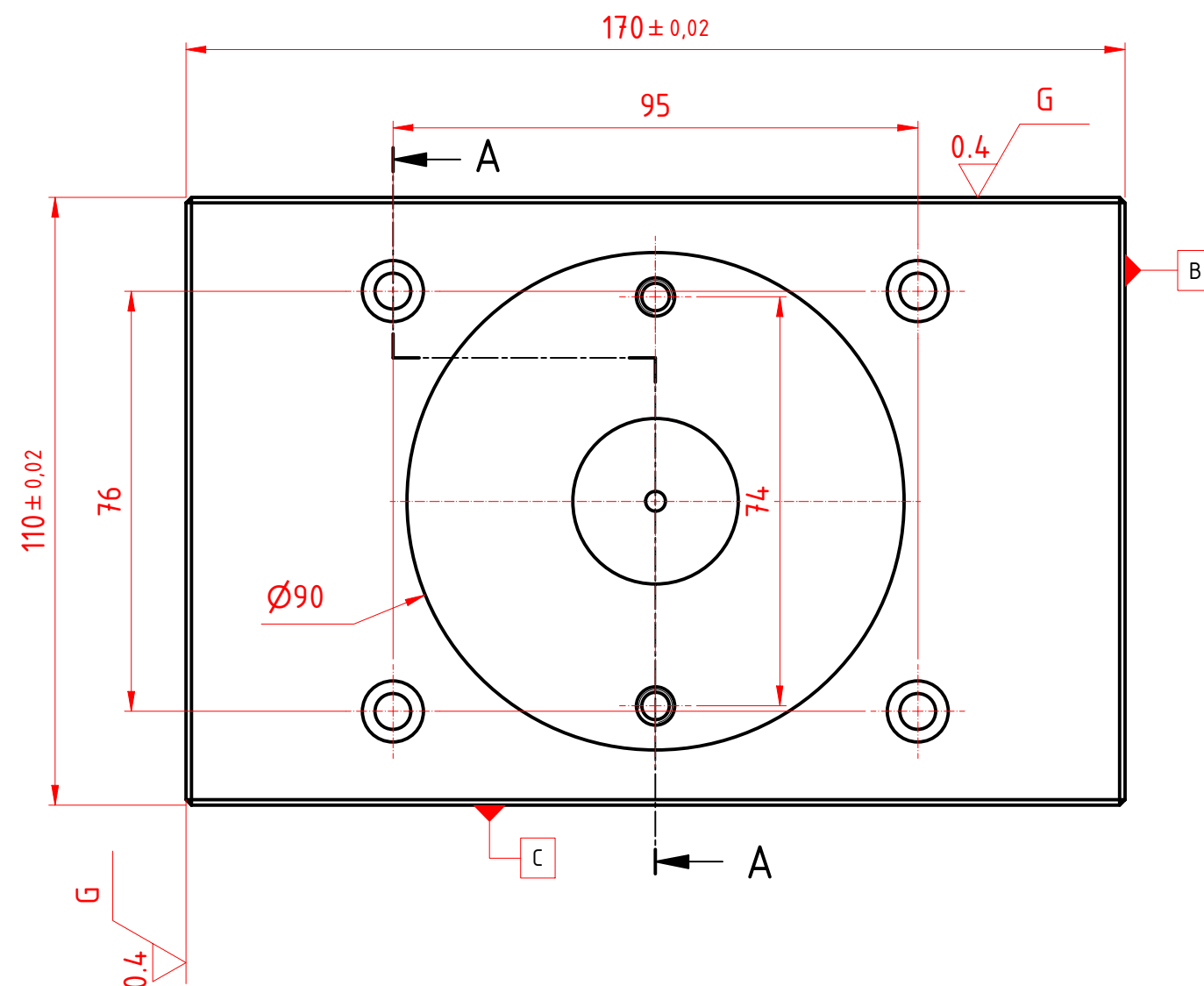
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Drawing No: -

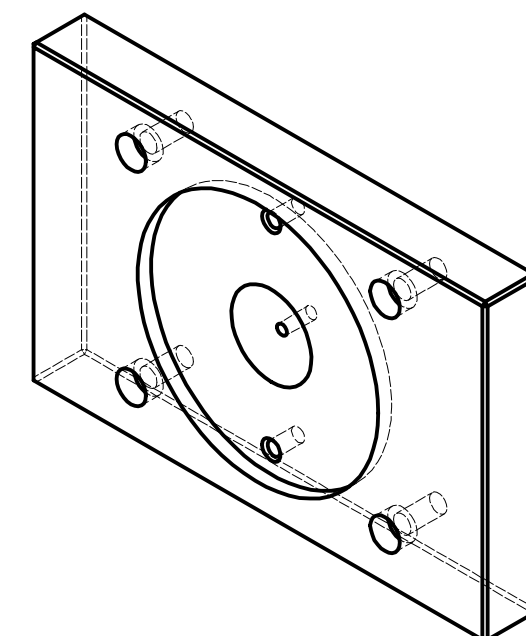
Description: CAVITY PLATE

Rev: 0

Page: 3/10



SECTION A-A



1.  $\sqrt{3,2}$  (  $\sqrt{0,8}$  Reaming ,  $\sqrt{3,2}$  Grinding )

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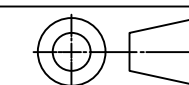
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Scale: 1:1

Date: 05-2-2024

Paper: A3

Projection A  
ISO 5456-2A



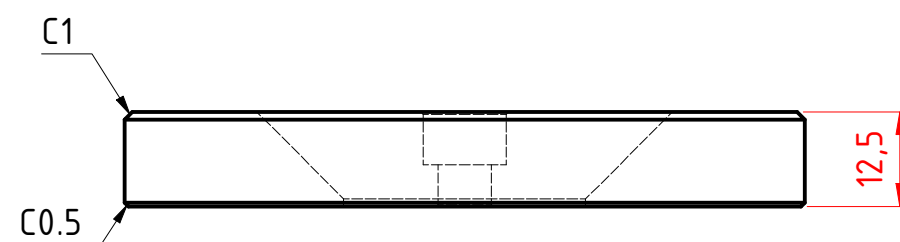
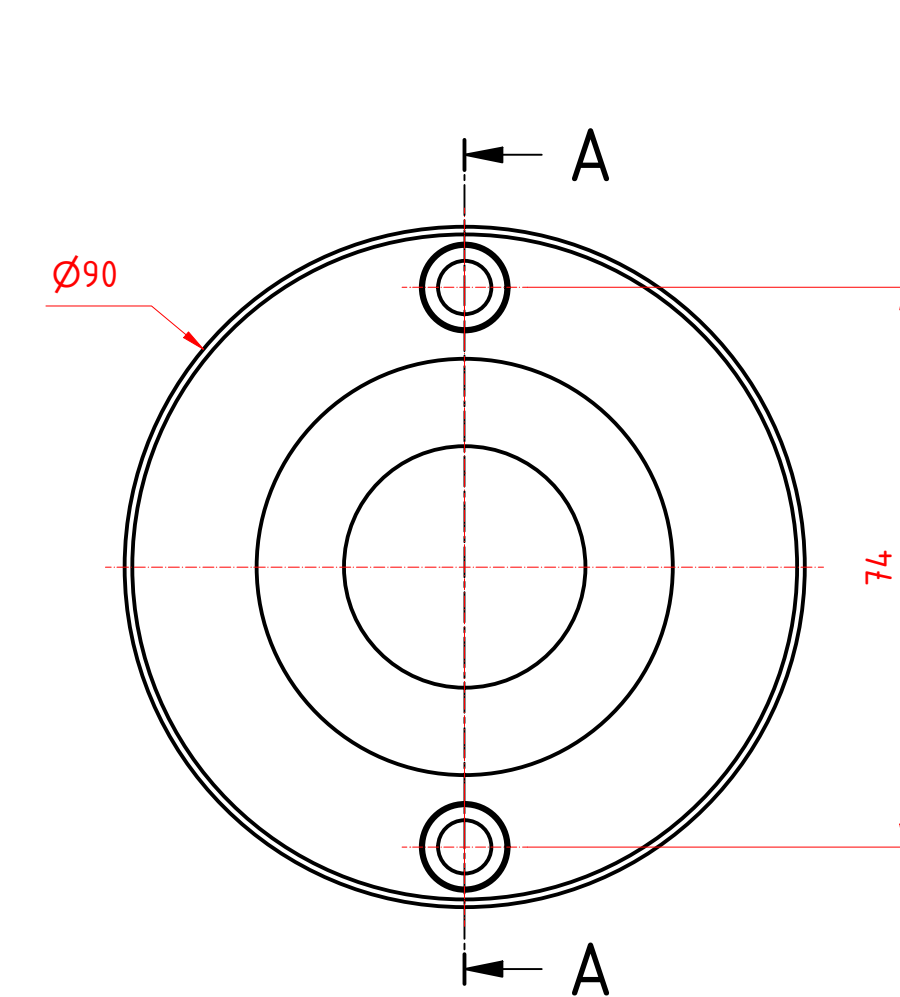
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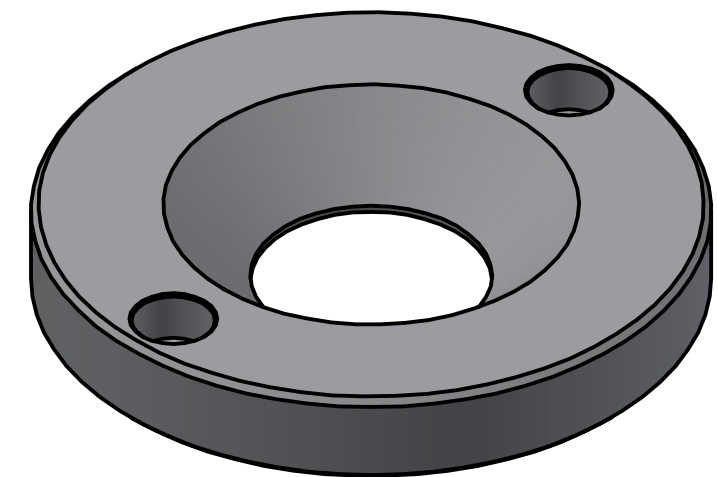
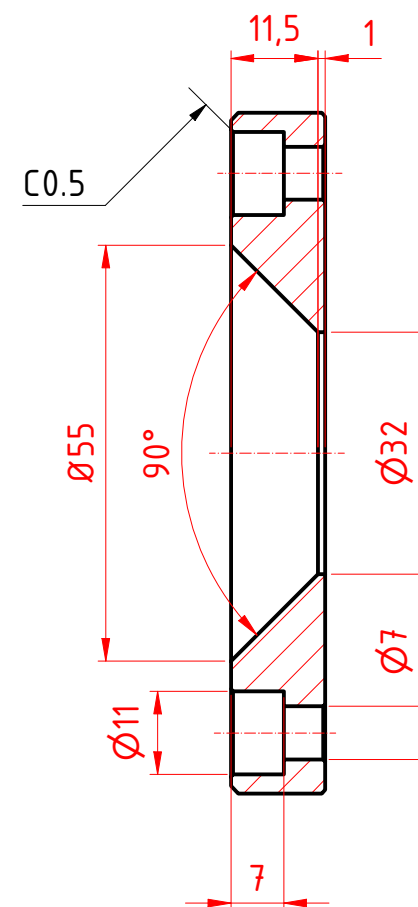
Description: ADAPTOR CAVITY

Rev: 0

Page: 2/10

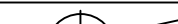


# SECTION A-A

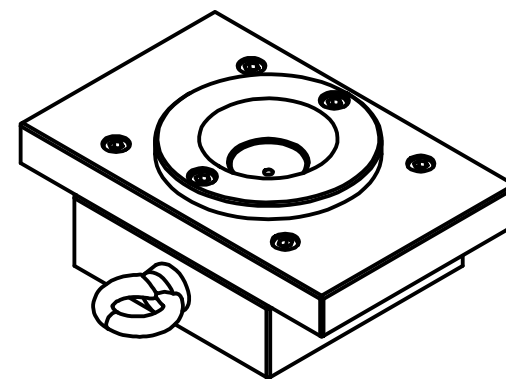
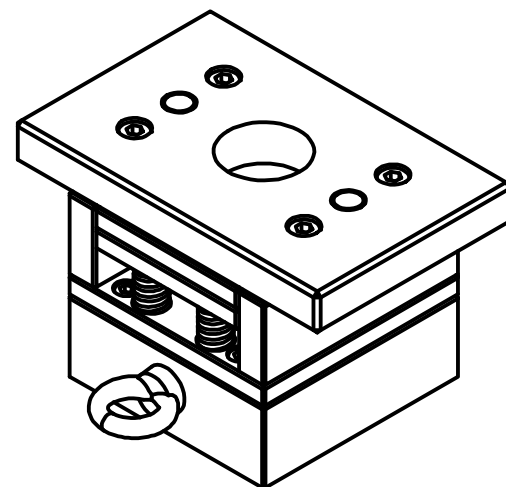
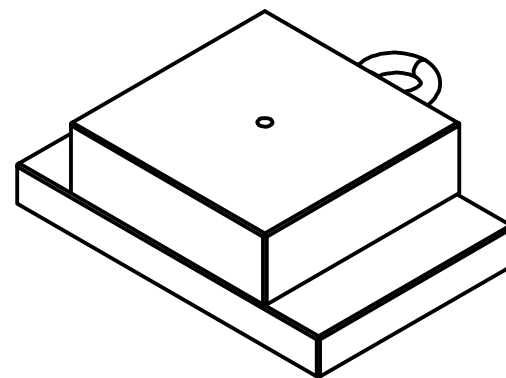
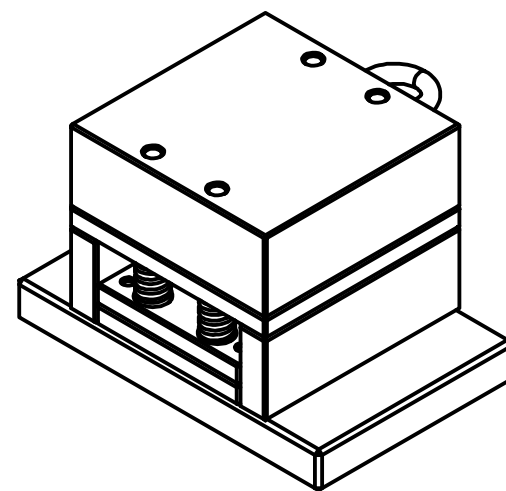
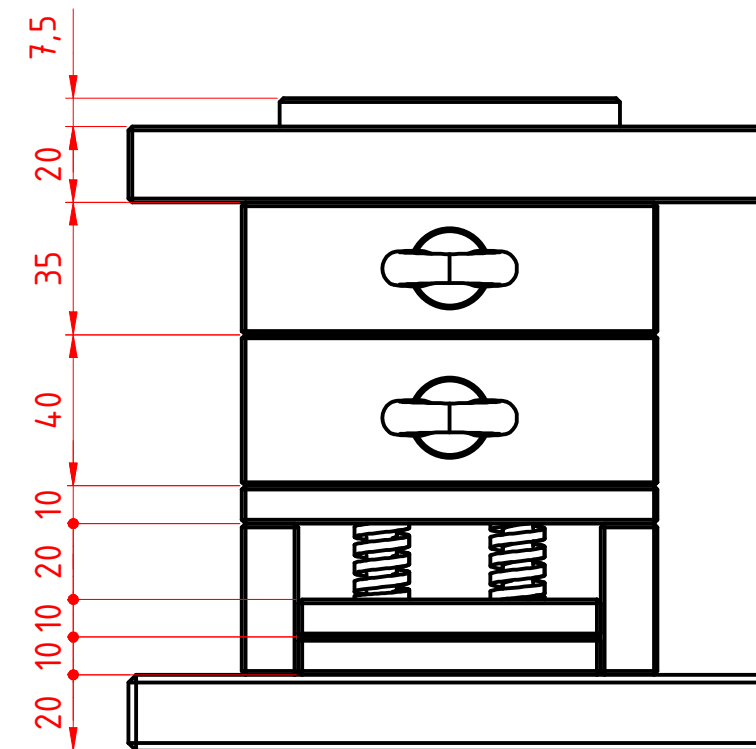
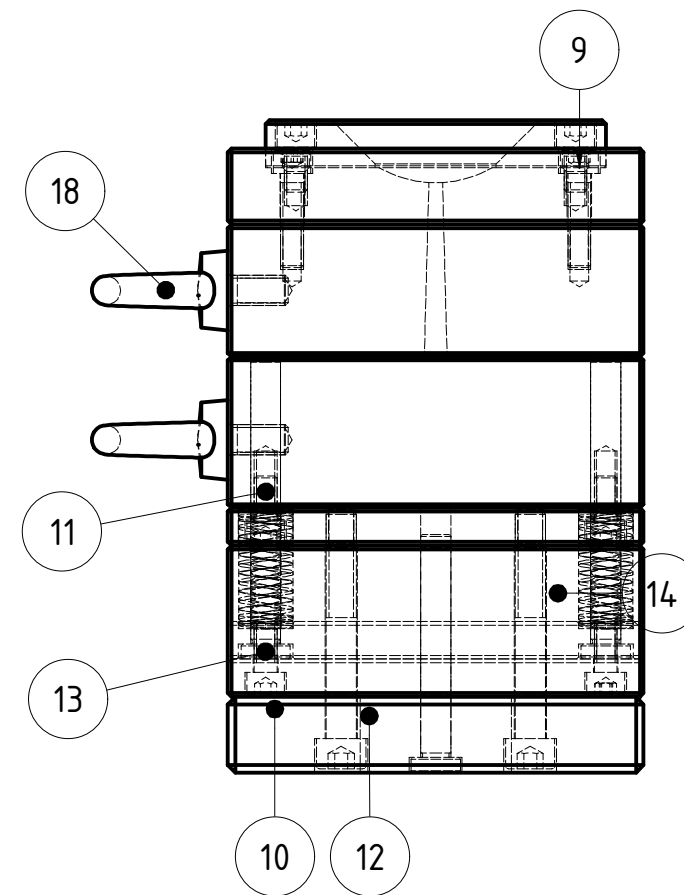
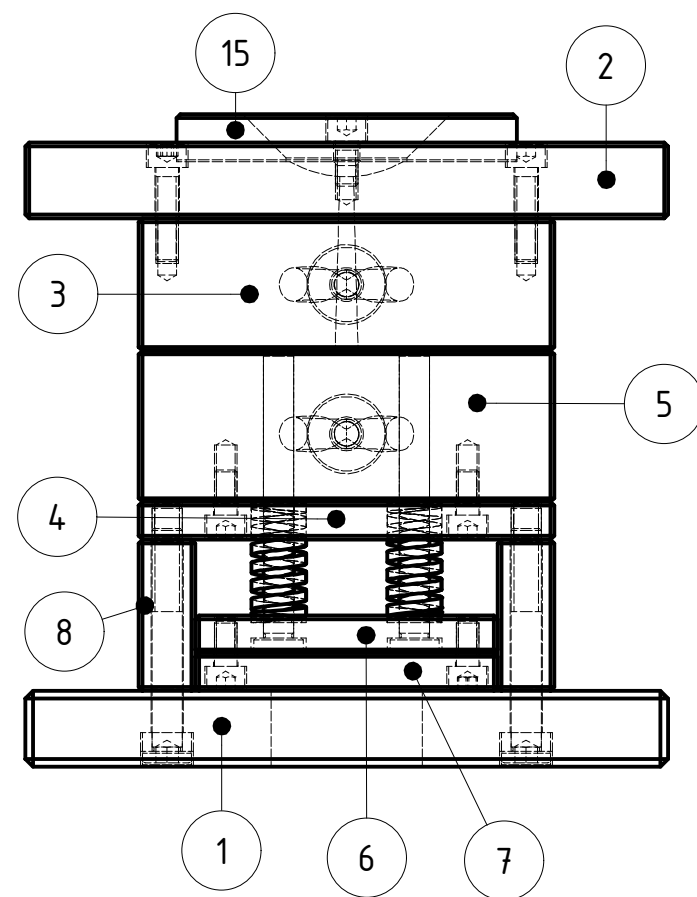
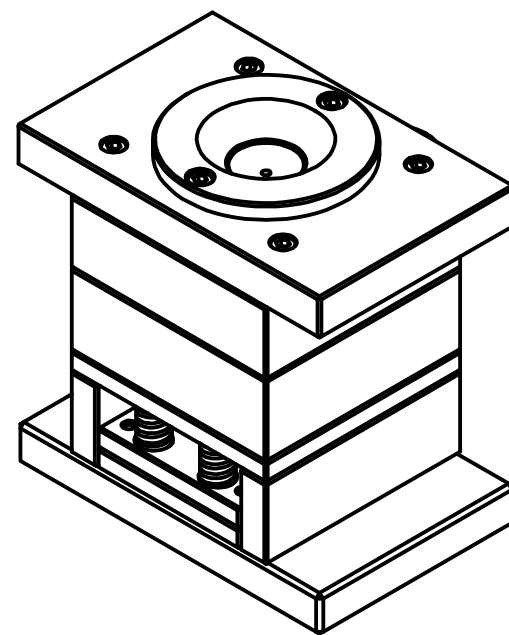


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Skill: PLASTIC DIE ENGINEERING			Projection A ISO 5456-2A	
Scale: 1:1	Date: 05-2-2024	Paper: A3		
Drawn / Design by: MURYANTO			Drawing No: -	
Description: LOCATING RING			Rev:0	Page: 10/10





Core Mould

Cavity Mould

#### PARTS LIST

ITEM	PART NUMBER	SIZE	MATERIAL	QTY
1	ADAPTOR BASE	170 x 110 x 20	S50C/S45C	1
2	ADAPTOR CAVITY	170 x 110 x 20	S50C/S45C	1
3	CAVITY PLATE	110 x 110 x 35	S50C/S45C	1
4	CORE BACK PLATE	110 x 110 x 10	S50C/S45C	1
5	CORE PLATE	110 x 110 x 40	S50C/S45C	1
6	EJECTOR RETAINER PLATE	110 x 80 x 10	S50C/S45C	1
7	RETAINER PLATE	110 x 80 x 10	S50C/S45C	1
8	STRIPER	110 x 40 x 15	S50C/S45C	2
9	Hexagon Socket Head Cap Screw	ISO 4762 - M6 x 25	Stainless Steel, 440C	4
10	Hexagon Socket Head Cap Screw	ISO 4762 - M8 x 60	Stainless Steel, 440C	4
11	Hexagon Socket Head Cap Screw	ISO 4762 - M6 x 12	Stainless Steel, 440C	10
12	Return Pin	Return Pin N 8x63	MISUMI	2
13	Return Pin	Return Pin N 8x79	MISUMI	4
14	Rectangular wire die spring yellow colour extra load	358-16-32	Generic	4
15	Locating Ring	646-90-32-12.5	ANFOR XC 38 TS	1
18	Eye Bolt	M8	Stainless Steel, 440C	2

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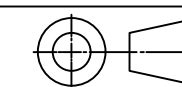
Skill: PLASTIC DIE ENGINEERING

Scale: 1:1

Date: 05-2-2024

Paper: A3

Projection A  
ISO 5456-2A



Drawn / Design by: MURYANTO

Drawing No: -

Description: ASSEMBLY

Rev: 0

Page: 1/10

Plastic Die Engineering								
WorldSkills Standards Specification								
Section	WSOS Marks							
Criteria								
ID	Name							
A	Workshop Organisation and Management							
B	Mould Design							
C	Mould Machining							
D	Mould Polishing and Assembly							
Sub Criterion ID	Sub Criterion Name or Description	Day of Marking	Aspect Type M = Meas J = Judg	Aspect - Description	Judg Score	Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only)		
A1	Clean Work place		J	Work place organization on Day 1	0	Always maintains a clean work place  Workspace is consistently in a state of disarray: multiple tools and components on the floor / significant number of tools not in use are scattered about on the work bench		
			1	Workspace is consistently in a moderate state of organization: Tools and components are rarely on the floor / A small number of tools not in use scattered about on the work bench				
			2	Workspace is consistently in a good state of organization: NO tools and components on the floor / No significant number of tools not in use scattered about on the work bench				
			3	Workspace is consistently in an excellent state of organization: Tools and components are never left on the floor / NO Tools not in use scattered about on the work bench				
			J	Work place organisation Day 2	0	Always maintains a clean work place  Workspace is consistently in a state of disarray: multiple tools and components on the floor / significant number of tools not in use are scattered about on the work bench		
			1	Workspace is consistently in a moderate state of organization: Tools and components are rarely on the floor / A small number of tools not in use scattered about on the work bench				
			2	Workspace is consistently in a good state of organization: NO tools and components on the floor / No significant number of tools not in use scattered about on the work bench				
			3	Workspace is consistently in an excellent state of organization: Tools and components are never left on the floor / NO Tools not in use scattered about on the work bench				
			J	Work place organization on Day 3	0	Workspace is consistently in a state of disarray: multiple tools and components on the floor / significant number of tools not in use are scattered about on the work bench		
			1	Workspace is consistently in a moderate state of organization: Tools and components are rarely on the floor / A small number of tools not in use scattered about on the work bench				
			2	Workspace is consistently in a good state of organization: NO tools and components on the floor / No significant number of tools not in use scattered about on the work bench				
			3	Workspace is consistently in an excellent state of organization: Tools and components are never left on the floor / NO Tools not in use scattered about on the work bench				
			A2	Health & Safety	J	Health & Safety on Day 1 ~ Finish	0	Not wearing goggles during drilling &Pin cutting,crossing yellow line,Running in the workshop,Spiling oil and coolent on the flow, use of inpropoer tool and methods etc
			1	following health & safety precauitons most of the time				
			2	following the sfaely precauitons all the time and some time execceds				
			3	Excellent in all aspects				
A3	Problem Solving (Contingency Management Skill)	J	Interview about Plastic Die Engineering Problem Solving	0	Can't Explain about problem when processing			
A4	Task Completion		J	completion of module	1	Can Explain but not clearly		
					2	Can Explain problem and get good solve		
					3	Can Explain problem very clearly, get good solve and good body leanguage		
					3	whole task completed in time		
A5	Time Management		J	Dicipline	0	below 50%		
					1	between 50-70%		
					2	between70-90%		
					3	between 90-100%		
					0	Ontime ( Follow Schedule & Instruction Jury )		
					1	Come Late to Competition Area > 15 & ≤ 30 Minutes		
					2	Come Late to Competition Area < 15 Minutes		
					3	Always Come Ontime to Competition Area		
Sub Criterion ID	Sub Criterion Name or Description	Day of Marking	Aspect Type M = Meas J = Judg	Aspect - Description	Judg Score	Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only)		
B1	Cavity Mould		M	Main Dimension "A"		Deduce 0.3 if dimension / Model missing		

B2	Core Mould		M	Main Dimension "B"	Deduce 0.3 if dimension / Model missing	
		M	Main Dimension "C"	Deduce 0.3 if dimension / Model missing		
		M	Main Dimension "D"	Deduce 0.3 if dimension / Model missing		
		M	Main Dimension "E"	Deduce 0.3 if dimension / Model missing		
		M	Main Dimension "F"	Deduce 0.3 if dimension / Model missing		
		M	Main Dimension "G"	Deduce 0.3 if dimension / Model missing		
		M	Main Dimension "H"	Deduce 0.3 if dimension / Model missing		
		M	Secondary Dimension "I"	Deduce 0.3 if dimension / Model missing		
		M	Secondary Dimension "J"	Deduce 0.3 if dimension / Model missing		
		M	Secondary Dimension "K"	Deduce 0.3 if dimension / Model missing		
		M	Secondary Dimension "L"	Deduce 0.3 if dimension / Model missing		
		M	Secondary Dimension "M"	Deduce 0.3 if dimension / Model missing		
		M	Secondary Dimension "N"	Deduce 0.3 if dimension / Model missing		
		M	Datum/Location of part (placement of profile in cavity X & Y ordinate )	Deduce 0.25 if location / tolerance not specified		
		M	Shrinkage added	Deduce 0.40 if shrinkage is not added as per requirement		
		M	Air Vent	Deduce 0.50 if Airvent is not added as per requirement		
		M	Sprue Hole	Deduce 0.50 if not Created or Missing		
		M	Creation water line in cavity ( Hole & Tread )	Water line created or not ,Reduce 0.25 if it interferes with any hole)		
		M	Runner	Deduce 0.50 if not Created or Missing		
		M	Gate	Deduce 0.50 if not Created or Missing		
		M	Completed Cavity Model	Deduce 0.2 each for missing Model		
		M	Title block ( Name & Province , Skills Name , Description , Scale , Paper Size )	Deduce 0.10 / item not created or missing		
		J	Drawing & Presentation Cavity	Drawing as per relevant ISO standard		
B3	Assembly Drawing		0	No proper placement. Views and dimensions too crowded		
		1	views& dimensions not crowded but not uniform			
		2	Uniform placement,easy location of feature details			
		3	Excellent placement of views and dimensions,notes etc.			
			M	Main Dimension "a"	Deduce 0.3 if dimension / Model missing	
		M	Main Dimension "b"	Deduce 0.3 if dimension / Model missing		
		M	Main Dimension "c"	Deduce 0.3 if dimension / Model missing		
		M	Main Dimension "d"	Deduce 0.3 if dimension / Model missing		
		M	Main Dimension "e"	Deduce 0.3 if dimension / Model missing		
		M	Main Dimension "f"	Deduce 0.3 if dimension / Model missing		
		M	Main Dimension "g"	Deduce 0.3 if dimension / Model missing		
		M	Main Dimension "h"	Deduce 0.3 if dimension / Model missing		
		M	Secondary Dimension "i"	Deduce 0.3 if dimension / Model missing		
		M	Secondary Dimension "j"	Deduce 0.3 if dimension / Model missing		
		M	Secondary Dimension "k"	Deduce 0.3 if dimension / Model missing		
		M	Secondary Dimension "l"	Deduce 0.3 if dimension / Model missing		
		M	Secondary Dimension "m"	Deduce 0.3 if dimension / Model missing		
		M	Secondary Dimension "n"	Deduce 0.3 if dimension / Model missing		
		M	Ej. Pin Hole Model & Position from ordinate X & Y	Deduce 0.20 / Hole if position not Complete or Missing		
		M	Datum/Location of part (placement of profile in core X & Y ordinate )	Deduce 0.25 if location / tolerance not specified		
		M	Shrinkage added	Deduce 0.40 if shrinkage is not added as per requirement		
		M	Core Pin & Position from ordinate X & Y	Deduce 0.25 / Hole if position not Complete or Missing		
		M	Creation water line in core ( Hole & Tread )	Water line created or not ,Reduce 0.25 if it interferes with any hole)		
M	Runner	Deduce 0.50 if not Created or Missing				
M	Completed Core Model	Deduce 0.2 each for missing Model				
M	Title block ( Name & Province , Skills Name , Description , Scale , Paper Size )	Deduce 0.10 if not created				
J	Ej.pin Balance	Quantity of Ej.Pin is balancing				
	0	Ejector Pin Not balanced & not economical				
	1	Ejector Pin Balance but not economical				
	2	Ejector Pin Balance & economical				
	3	Ejector Pin Balanced , Good Position & economical				
		Drawing as per relevant ISO standard				
	0	No proper placement. Views and dimensions too crowded				
	1	views& dimensions not crowded but not uniform				
	2	Uniform placement,easy location of feature details				
	3	Excellent placement of views and dimensions,notes etc.				
B3	Assembly Drawing		M	Title block ( Name & Province , Skills Name , Description , Scale , Paper Size )	Deduce 0.10 if not created	
		M	Assembly Drawing ( ISO metric view )	Deduce 0.50 if missing		
		M	Adaptor Base	Deduce 0.50 if not Assembly		
		M	Ejector Retainer Plate	Deduce 0.50 if not Assembly		
		M	Ejector Plate	Deduce 0.50 if not Assembly		
		M	Stripper Plate	Deduce 0.50 if not Assembly		
		M	Core Back Plate	Deduce 0.50 if not Assembly		
		M	Core Plate	Deduce 0.50 if not Assembly		
		M	Cavity Plate	Deduce 0.50 if not Assembly		
		M	Cavity Back Plate	Deduce 0.50 if not Assembly		
		M	Locating Ring	Deduce 0.50 if not Assembly		
		M	Spring	Deduce 0.20 / Component if not Assembly		
		M	Return Pin for Guide Retainer Plate,Core Back Plate & Core Plate	Deduce 0.20 / Component if not Assembly		
		M	Return Pin For Guide Striper Plate	Deduce 0.25 / Component if not Assembly		
		M	Plug & Nipple 1/8 NPT	Deduce 0.20 / Component if not Assembly		
		M	Ejector pins created or not	Deduce 0.20 / Component if not Assembly		
		M	Core pin	Deduce 0.25 / Component if not Assembly		
		M	Bolt	Deduce 0.10 / Component if not Assembly		
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C1	Main Dimensions Cavity Mould		M	For Critical dimension "A" required on the mould		Deduce 2.00 if out of Tolerance
C2	Secondary dimensions Cavity Mould		M	For Critical dimension "B" required on the mould		Deduce 2.00 if out of Tolerance
			M	For Critical dimension "C" required on the mould		Deduce 2.00 if out of Tolerance
			M	For Critical dimension "D" required on the mould		Deduce 2.00 if out of Tolerance
			M	For Critical dimension "E" required on the mould		Deduce 2.00 if out of Tolerance
			M	For Critical dimension "F" required on the mould		Deduce 2.00 if out of Tolerance
			M	For Critical dimension "G" required on the mould		Deduce 2.00 if out of Tolerance
C3	Main Dimensions Core Mould		M	For Critical dimension "H" required on the mould		Deduce 2.00 if out of Tolerance
			M	For less Critical dimension "I" required on the mould		Deduce 1.75 if out of Tolerance
			M	For less Critical dimension "J" required on the mould		Deduce 1.75 if out of Tolerance
			M	For less Critical dimension "K" required on the mould		Deduce 1.75 if out of Tolerance
			M	For less Critical dimension "L" required on the mould		Deduce 1.75 if out of Tolerance
			M	For less Critical dimension "M" required on the mould		Deduce 1.75 if out of Tolerance
C4	Secondary dimensions Core Mould		M	For less Critical dimension "N" required on the mould		Deduce 1.75 if out of Tolerance
			M	For Critical dimension "a" required on the mould		Deduce 2.00 if out of Tolerance
			M	For Critical dimension "b" required on the mould		Deduce 2.00 if out of Tolerance
			M	For Critical dimension "c" required on the mould		Deduce 2.00 if out of Tolerance
			M	For Critical dimension "d" required on the mould		Deduce 2.00 if out of Tolerance
			M	For Critical dimension "e" required on the mould		Deduce 2.00 if out of Tolerance
C5	Main Dimensions Cavity Mould		M	For Critical dimension "f" required on the mould		Deduce 2.00 if out of Tolerance
			M	For Critical dimension "g" required on the mould		Deduce 2.00 if out of Tolerance
			M	For Critical dimension "h" required on the mould		Deduce 2.00 if out of Tolerance
			M	For less Critical dimension "i" required on the mould		Deduce 1.75 if out of Tolerance
			M	For less Critical dimension "j" required on the mould		Deduce 1.75 if out of Tolerance
			M	For less Critical dimension "k" required on the mould		Deduce 1.75 if out of Tolerance

C5	Ejector Pin Dimensions		M	For less Critical dimension "j" required on the mould		Deduce 1.75 if out of Tolerance
			M	For less Critical dimension "k" required on the mould		Deduce 1.75 if out of Tolerance
C6	Completed Model Mould		M	For less Critical dimension "l" required on the mould		Deduce 1.75 if out of Tolerance
			M	For less Critical dimension "m" required on the mould		Deduce 1.75 if out of Tolerance
			M	For less Critical dimension "n" required on the mould		Deduce 1.75 if out of Tolerance
			M	Ejector pin 1 counter bore depth > 0 & < + 0.02		Deduce 0.20 if out of Tolerance
			M	Ejector pin 2 counter bore depth > 0 & < + 0.02		Deduce 0.20 if out of Tolerance
			M	Ejector pin 3 counter bore depth > 0 & < + 0.02		Deduce 0.20 if out of Tolerance
			M	Ejector pin 4 counter bore depth > 0 & < + 0.02		Deduce 0.20 if out of Tolerance
			M	Ejector pin 5 counter bore depth > 0 & < + 0.02		Deduce 0.20 if out of Tolerance
			M	Ejector pin 6 counter bore depth > 0 & < + 0.02		Deduce 0.20 if out of Tolerance
			M	Ejector pin 7 counter bore depth > 0 & < + 0.02		Deduce 0.20 if out of Tolerance
			M	Ejector pin 8 counter bore depth > 0 & < + 0.02		Deduce 0.20 if out of Tolerance
			M	Ejector pin 9 counter bore depth > 0 & < + 0.02		Deduce 0.20 if out of Tolerance
			M	Ejector pin 1 clearance hole > 0.5 & ≤ 0.8		Deduce 0.20 if out of Tolerance
			M	Ejector pin 2 clearance hole > 0.5 & ≤ 0.8		Deduce 0.20 if out of Tolerance
			M	Ejector pin 3 clearance hole > 0.5 & ≤ 0.8		Deduce 0.20 if out of Tolerance
			M	Ejector pin 4 clearance hole > 0.5 & ≤ 0.8		Deduce 0.20 if out of Tolerance
			M	Ejector pin 5 clearance hole > 0.5 & ≤ 0.8		Deduce 0.20 if out of Tolerance
			M	Ejector pin 6 clearance hole > 0.5 & ≤ 0.8		Deduce 0.20 if out of Tolerance
			M	Ejector pin 7 clearance hole > 0.5 & ≤ 0.8		Deduce 0.20 if out of Tolerance
			M	Ejector pin 8 clearance hole > 0.5 & ≤ 0.8		Deduce 0.20 if out of Tolerance
			M	Ejector pin 9 clearance hole > 0.5 & ≤ 0.8		Deduce 0.20 if out of Tolerance
			M	Ejector pin 10 clearance hole > 0.5 & ≤ 0.8		Deduce 0.20 if out of Tolerance
			M	Core Model		Deduce 0.20 each for missing Model
			M	Cavity Model		Deduce 0.20 each for missing Model
			M	Airvent in Cavity		Deduce 0.40 each for missing Model
			M	Cooling Channel ( Hole & Thread )		Deduce 0.60 if air not circulation
			M	Runner & Gate Model		Deduce 0.60 each for missing Model
			M			
Sub Criterion ID	Sub Criterion Name or Description	Day of Marking	Aspect Type M = Meas J = Judg	Aspect - Description	Judg Score	Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only)
D1	Surface finish		J	Machine mark (outside the moulding area-Core side)		Very smoothly Milled surface 0 very deep cutter marks,Gouging ,dents etc on the surface 1 Over all smooth surface but some deep cutter marks 2 smooth surface,little or no cuttermarks,guoges or dents 3 Excellent machined surface,Very fine cutter marks and no gouge marks Mirror finish 0 Moulding surface with visible cuttenmarks and a few scratches 1 over all very smooth surface close to mirror 2 mirror finish in most of the areas except areas not easily accessible 3 Mirror fininsh through out the moulding surface Mirror finish 0 Moulding surface with visible cuttenmarks and a few scratches 1 over all very smooth surface close to mirror 2 mirror finish in most of the areas except areas not easily accessible 3 Mirror fininsh through out the moulding surface No Burr 0 not meeting industry standard 1 meeting industry standard 2 better than industry standard 3 Excellent or outstanding
D2	Assy Ejector Pin		J	Surface finish(Core side_moulding area)		
			J	Surface finish (Cavity side-moulding area )		
			J	Burr		
D3	Additional Mark		J	Movement of the ejector system		0 Movement either too tight or does not move 1 Moves little tight and also sometimes extra push is required for return 2 moves always smooth but some time does not return fully 3 moves extremely smooth and always returns to its original position
			M	Additional Core or Cavity inserts		No additional material used
			M	Additional Core adapter plate		No additional material used
			M	Additional Ejector retainer plate		No additional material used
			M	Additional Ejector pins		Maximum two additional
			M	Thickness of Cavity as per unit die drawing		Y/N
			M	Thickness of Cavity as per unit die drawing		Y/N
			M	Screw holes		Deduce 0,2 if any ejector hole interferes
			M	Spring holes		Deduce 0.1 if any ejector hole interferes
			M	Ejector holes		Deduce 0.2 if any ejector hole or counter bore is outside
			M	Extra hole in material		Deduce 0.2 if any extra hole in any plate



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