

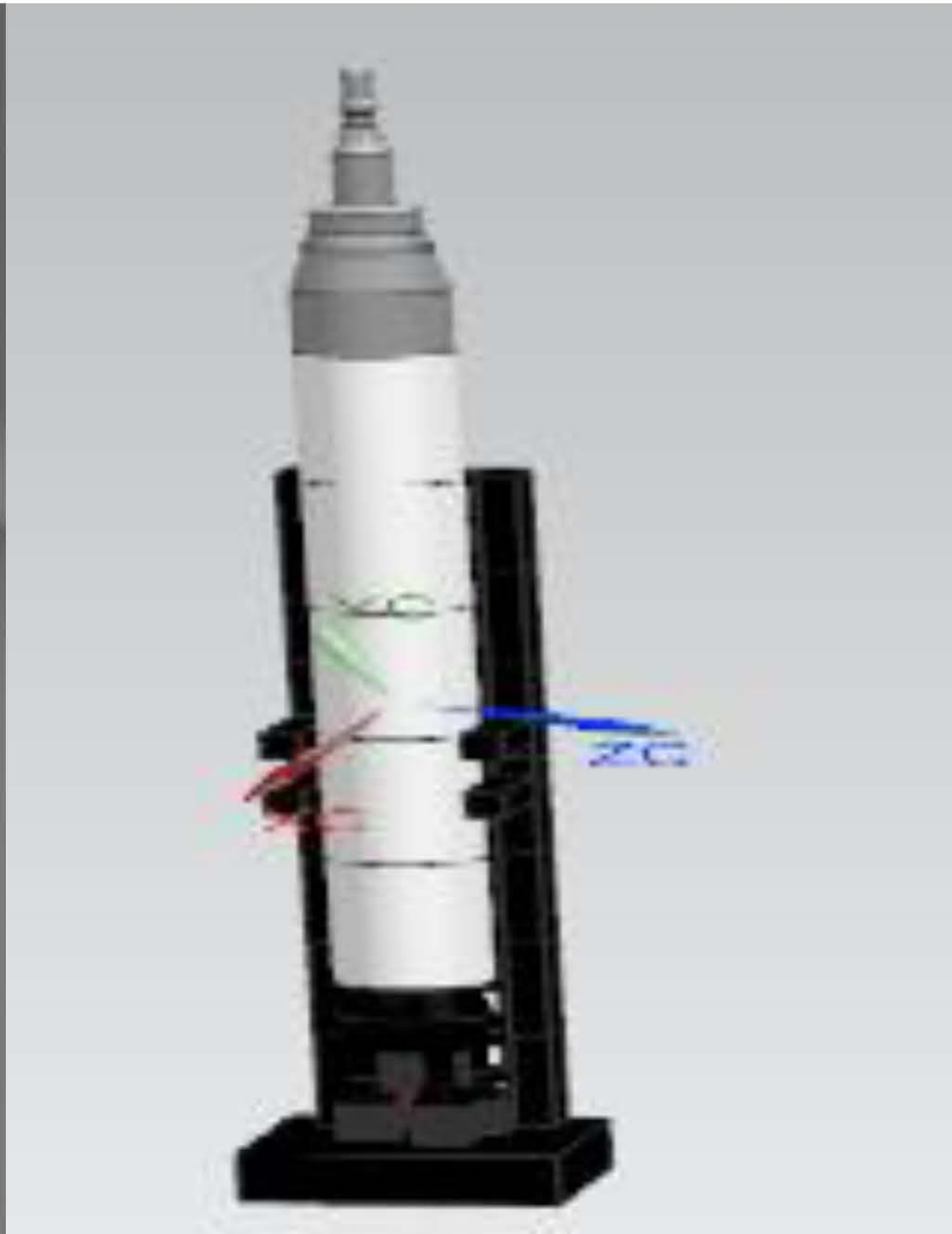


PROJECT

아폴로 11호

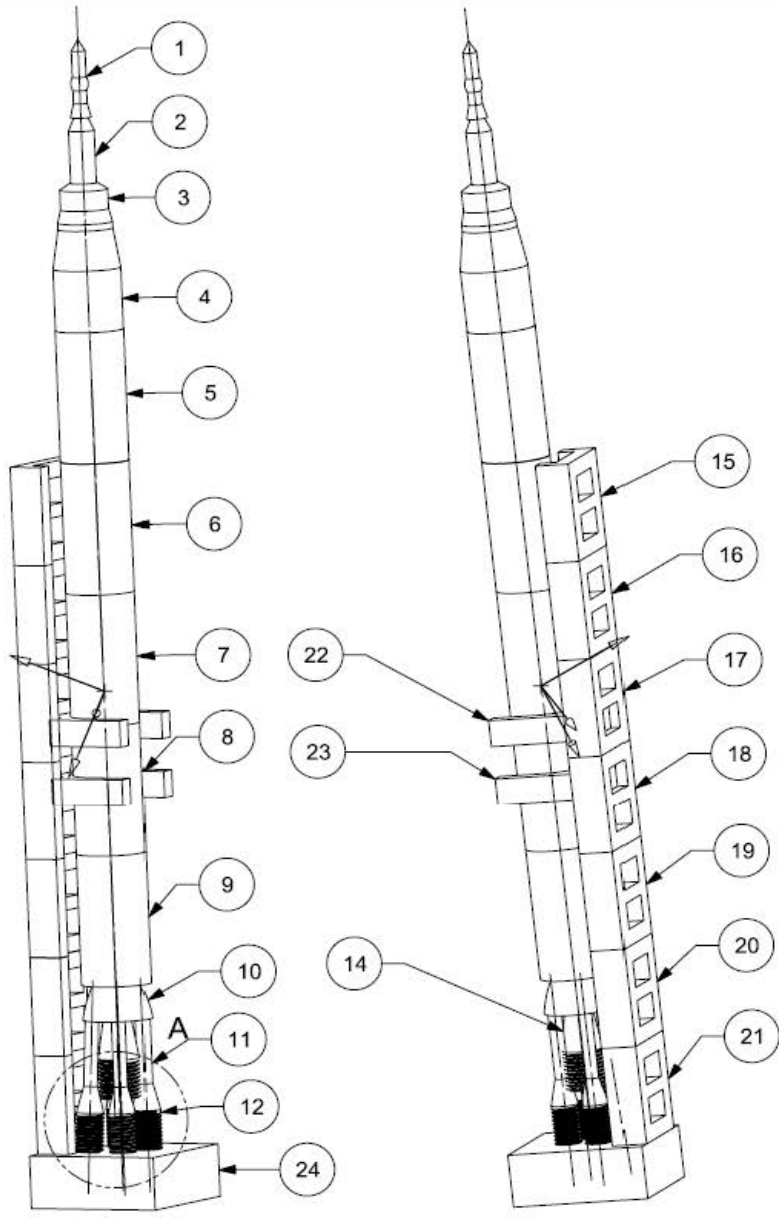


설 계 분 야



부품도(2D DRAFTING)

사용프로그램 : NX8.5



부품번호	부품명	수량
1	FRONT1	1
2	FRONT2	1
3	FRONT3	1
4	FRONT4	1
5	BODY	1
6	BODY	1
7	BODY	1
8	BODY	1
9	BODY FINAL	1
10	BOOSUTER	1
11	D12 PIN	4
12	SUB BOOSTER	4
13	FIRE	1
14	MAIN BOOSTER	1
15	BASE1	1
16	BASE2	1
17	BASE2	1
18	BASE2	1
19	BASE2	1
20	BASE2	1
21	BASE2	1
22	ARM	1
23	ARM	1
24	BASE3	1

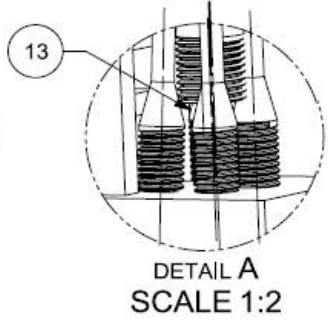
CAD/CAM응용CNC가공양성		
	NAME	DATE
DRAW		
DESIGN		
CHECK		
APPRV		
UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM		
PROJECT NAME	APOLO ROCKET	
PART NAME	ASSEMBLY DESIGN	
PART NO	ASSEMBLY	
MATERIAL	MC 나이론	
FINISH	도장(락카)	
QTY	1EA	
Delivery date	19.02.19	
SIZE	A3	
TOLERANCE		
0.	± 0.1	
0.0	± 0.08	
0.00	± 0.05	
0.000	± 0.01	

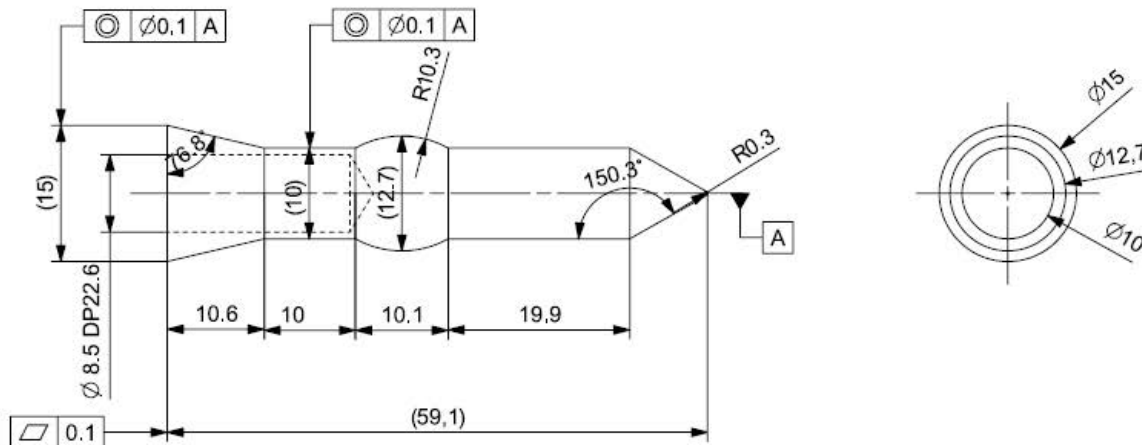
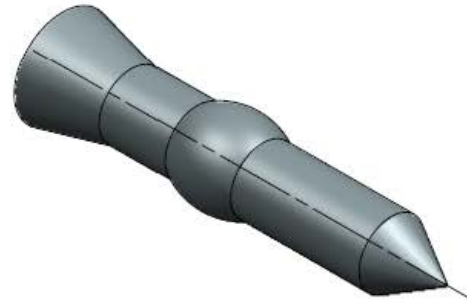
NOTE(GENERAL)

- 1.GENERAL CHAMFER : C0.3(MAX)
- 2.GENERAL ROUND : R0.5(MAX)
- 3.GENERAL SURFACE : 6.3S

NOTE(ETC)

- 1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT
- 2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFROMITY AND THERE IS SWELLING DELAMINATION ETC
- 3.Displays the part chart except the pins that are assembled





CAD/CAM응용CNC가공양성

	NAME	DATE
DRAW	SANGUKPARK	19.01.01
DESIGN		
CHECK	SEOJUN LEE	19.01.02
APPRV	SANGUK PARK	19.01.02

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM

PROJECT NAME	APOLO ROCKET
PART NAME	FRONT1
PART NO	APL-FRONT-001
MATERIAL	MC 나이론
FINISH	도장(락카)
QTY	1EA
SCALE	2:1
SIZE	A3

TOLERANCE

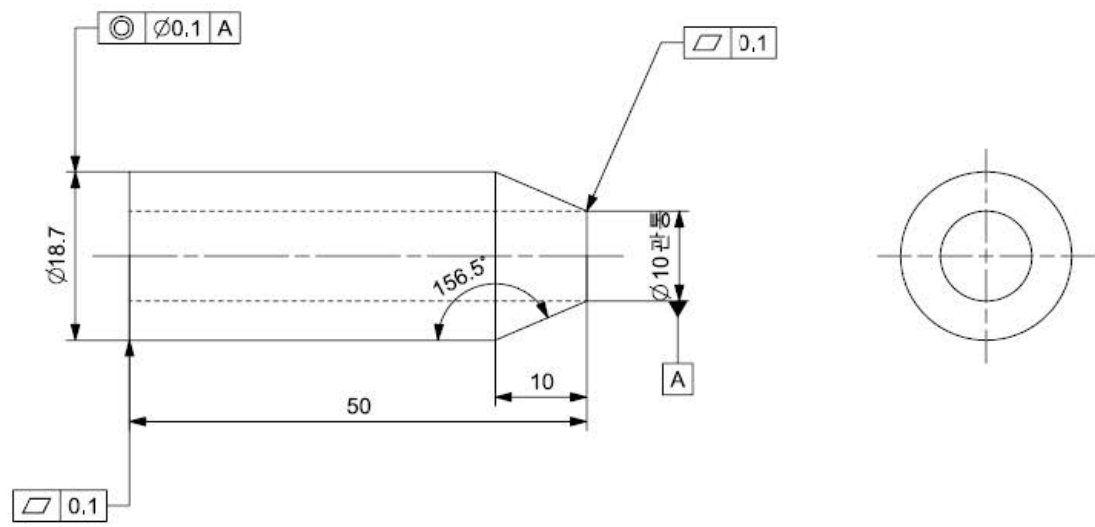
0.	± 0.1
0.0	± 0.08
0.00	± 0.05
0.000	± 0.01

NOTE(GENERAL)

- 1.GENERAL CHAMFER : C0.3(MAX)
- 2.GENERAL ROUND : R0.5(MAX)
- 3.GENERAL SURFACE : 6.3S

NOTE(ETC)

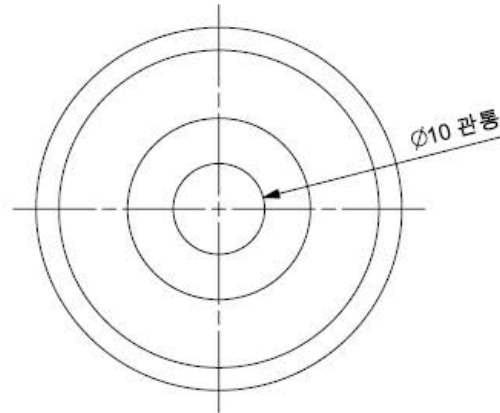
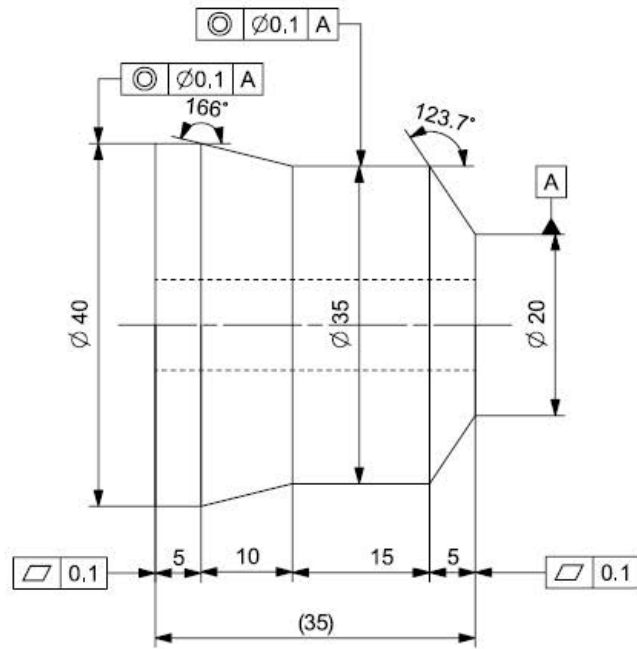
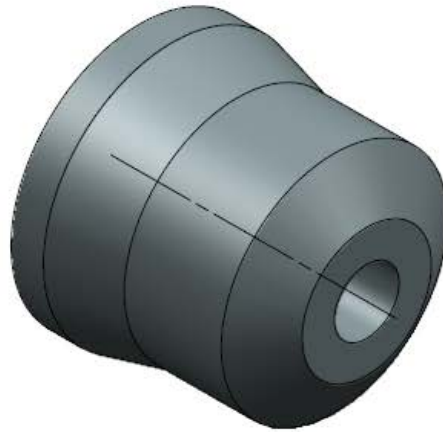
- 1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT
- 2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFROMITY AND THERE IS SWELLING DELAMINATION ETC



CAD/CAM응용CNC가공양성		
	NAME	DATE
DRAW	SANGUK PARK	19.01.01
DESIGN		
CHECK		
APPRV	SANGUK PARK	19.01.01
UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM		
PROJECT NAME	APOLO ROCKET	
PART NAME	FRONT2	
PART NO	APL-FRONT2-001	
MATERIAL	MC 나이론	
FINISH	도장(락카)	
QTY	1EA	
SCALE	2:1	
SIZE	A3	
TOLERANCE		
0.		± 0.1
0.0		± 0.08
0.00		± 0.05
0.000		± 0.01
NOTE(GENERAL)		
1.GENERAL CHAMFER : C0.3(MAX)		
2.GENERAL ROUND : R0.5(MAX)		
3.GENERAL SURFACE : 6.3S		
NOTE(ETC)		
1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT		
2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFROMITY AND THERE IS SWELLING DELAMINATION ETC		

부품도(2D DRAFTING)

사용프로그램 : NX8.5



CAD/CAM응용CNC가공양성

	NAME	DATE
DRAW	SANGUK PARK	19.01.01
DESIGN		
CHECK		
APPRV	SANGUK PARK	19.01.02

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM

PROJECT NAME	APOLO ROCKET
PART NAME	FRONT3
PART NO	APL-FRONT3-001
MATERIAL	MC 나이론
FINISH	도장(락카)
QTY	1EA
SCALE	2:1
SIZE	A3

TOLERANCE

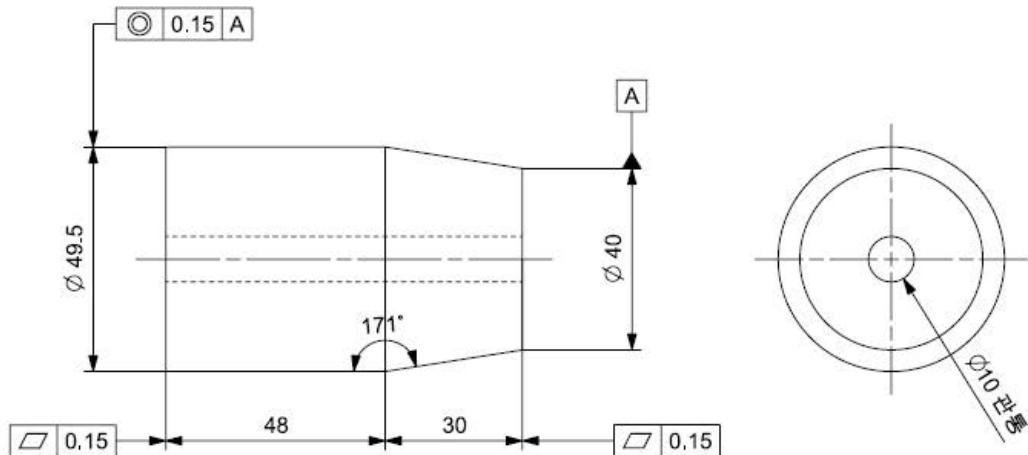
0.	± 0.1
0.0	± 0.08
0.00	± 0.05
0.000	± 0.01

NOTE(GENERAL)

- 1.GENERAL CHAMFER : C0.3(MAX)
- 2.GENERAL ROUND : R0.5(MAX)
- 3.GENERAL SURFACE : 6.3S

NOTE(ETC)

- 1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT
- 2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFROMITY AND THERE IS SWELLING DELAMINATION ETC



CAD/CAM응용CNC가공양성

	NAME	DATE
DRAW	SANGUK PARK	19.01.01
DESIGN		
CHECK		
APPRV	SANGUK PARK	19.01.02

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM

PROJECT NAME	APOLO ROCKET
PART NAME	FRONT4
PART NO	APL-FRONT4-001
MATERIAL	MC 나이론
FINISH	도장(락카)
QTY	1EA
SCALE	1:1
SIZE	A3

TOLERANCE

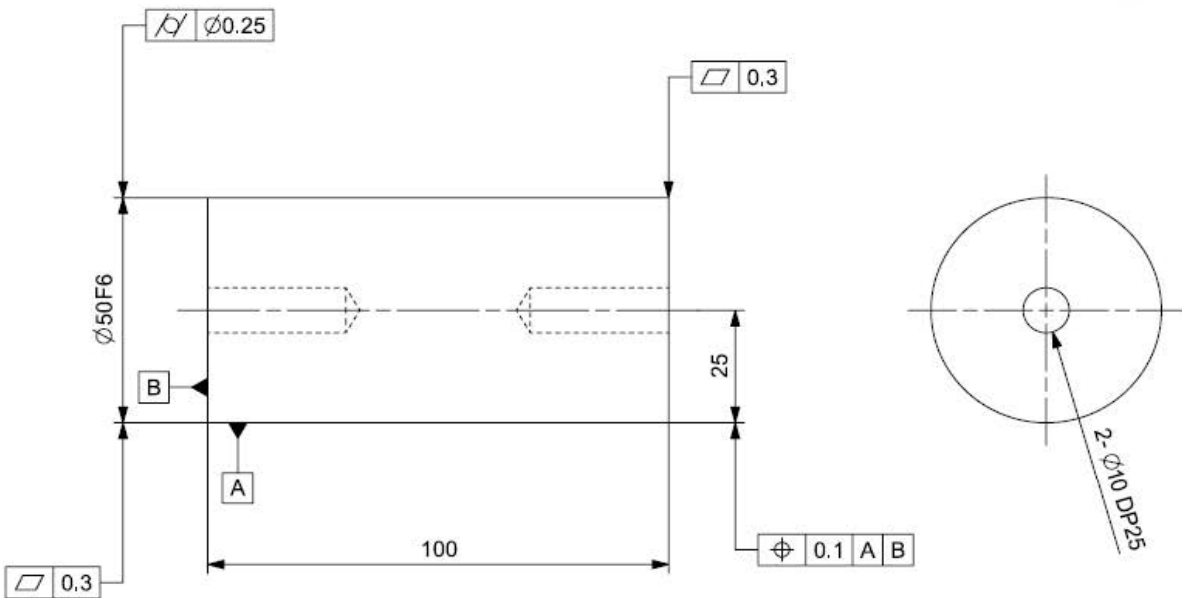
0.	± 0.1
0.0	± 0.08
0.00	± 0.05
0.000	± 0.01

NOTE(GENERAL)

- 1.GENERAL CHAMFER : C0.3(MAX)
- 2.GENERAL ROUND : R0.5(MAX)
- 3.GENERAL SURFACE : 6.3S

NOTE(ETC)

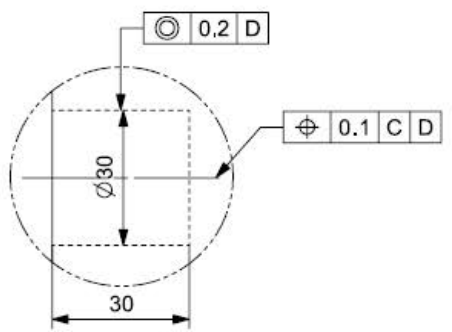
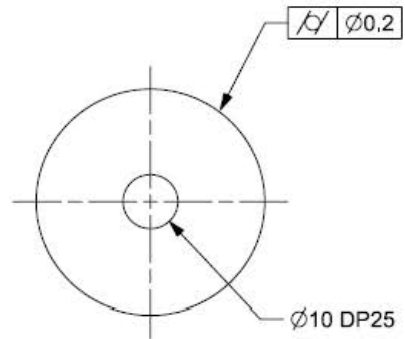
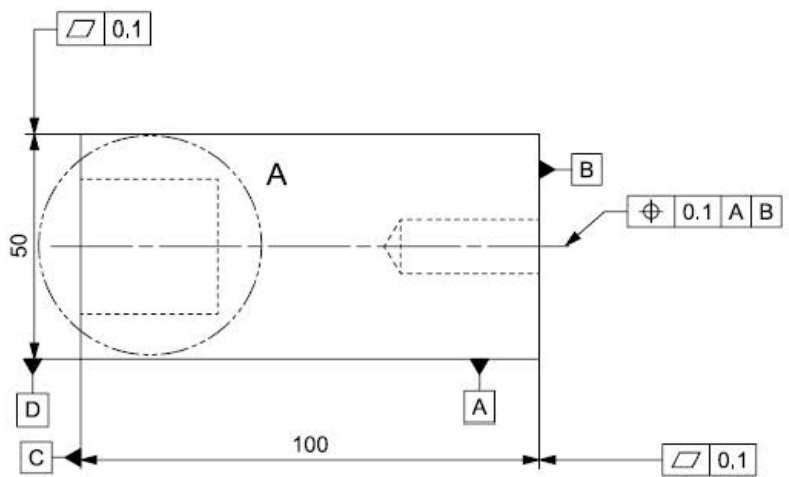
- 1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT
- 2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFROMITY AND THERE IS SWELLING DELAMINATION ETC



CAD/CAM응용CNC가공양성		
	NAME	DATE
DRAW	SANGUK PARK	19.01.01
DESIGN		
CHECK	SEOJUN LEE	19.01.02
APPRV	SANGUK PARK	19.01.02
UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM		
PROJECT NAME	APOLO ROCKET	
PART NAME	BODY	
PART NO	APL-BODY-001	
MATERIAL	MC 나이론	
FINISH	도장(락카)	
QTY	4EA	
SCALE	1:1	
SIZE	A3	
TOLERANCE		
0.	± 0.1	
0,0	± 0,08	
0.00	± 0.05	
0,000	± 0.01	
NOTE(GENERAL)		
1.GENERAL CHAMFER : C0.3(MAX)		
2.GENERAL ROUND : R0.5(MAX)		
3.GENERAL SURFACE : 6.3S		
NOTE(ETC)		
1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT		
2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFROMITY AND THERE IS SWELLING DELAMINATION ETC		

부품도(2D DRAFTING)

사용프로그램 : NX8.5



DETAIL A
SCALE 1:1

CAD/CAM응용CNC가공양성

	NAME	DATE
DRAW	SANGUK PARK	19.01.01
DESIGN		
CHECK	DAEKYU LEE	19.01.02
APPRV	SANGUK PARK	19.01.02

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM

PROJECT NAME	APOLO ROCKET	
PART NAME	BODY FINAL	
PART NO	APL-BODY FINAL-001	
MATERIAL	MC 나이트론	
FINISH	도장(락카)	
QTY	1EA	
SCALE	1:1	
SIZE	A3	

TOLERANCE

0.	± 0.1
0.0	± 0.08
0.00	± 0.05
0.000	± 0.01

NOTE(GENERAL)

- 1.GENERAL CHAMFER : C0.3(MAX)
- 2.GENERAL ROUND : R0.5(MAX)
- 3.GENERAL SURFACE : 6.3S

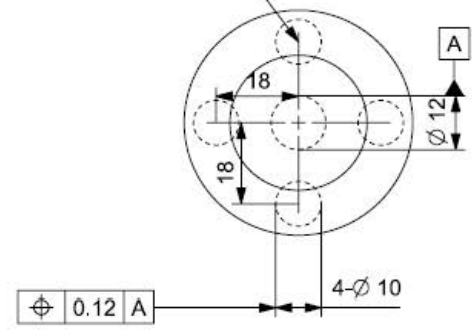
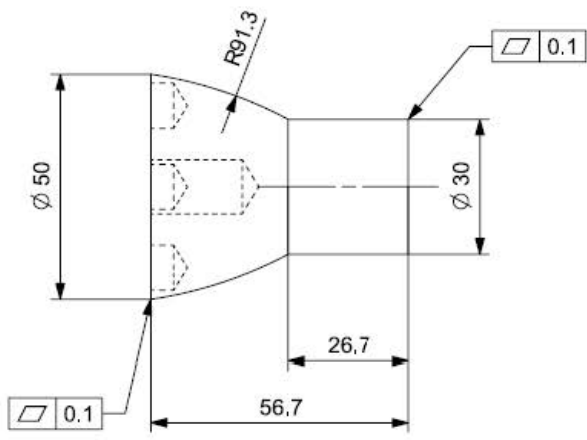
NOTE(ETC)

1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT

2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFROMITY AND THERE IS SWELLING DELAMINATION ETC



Ø12 HOLE CENTER 기준으로
Ø10 HOLE CENTER 위치 맞출것



CAD/CAM응용CNC가공양성

	NAME	DATE
DRAW	SANGUK PARK	19.01.01
DESIGN		
CHECK		
APPRV	SANGUK PARK	19.01.02

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM

PROJECT NAME	APOLO ROCKET
PART NAME	BOOSTER
PART NO	APL-BOOSTER-001
MATERIAL	MC 나이론
FINISH	도장(락카)
QTY	1EA
SCALE	1:1
SIZE	A3

TOLERANCE

0.	± 0.1
0.0	± 0.08
0.00	± 0.05
0.000	± 0.01

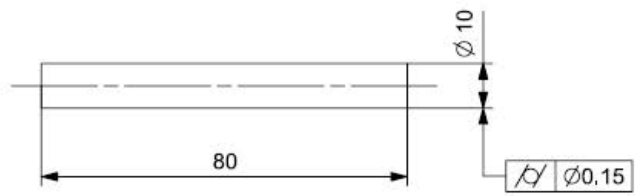
NOTE(GENERAL)

- 1.GENERAL CHAMFER : C0.3(MAX)
- 2.GENERAL ROUND : R0.5(MAX)
- 3.GENERAL SURFACE : 6.3S

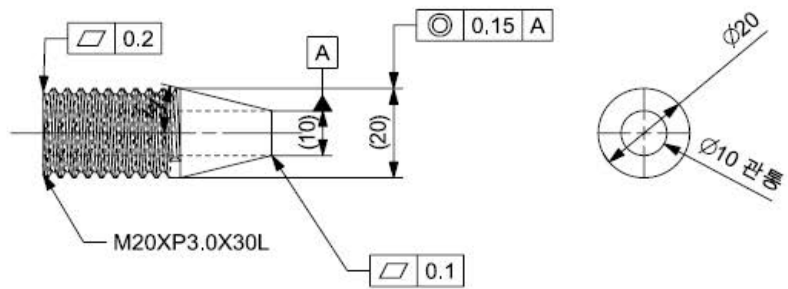
NOTE(ETC)

- 1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT
- 2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFROMITY AND THERE IS SWELLING DELAMINATION ETC

1 Ø10 PIN



2 SUBBOOSTER



CAD/CAM응용CNC가공양성

	NAME	DATE
DRAW	SANGUK PARK	19.01.01
DESIGN		
CHECK		
APPRV	SANGUK PARK	19.01.02

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM

PROJECT NAME	APOLO ROCKET
PART NAME	D10 PIN & SUBBOOSTER
PART NO	APL-SUBBOOSTER-001
MATERIAL	MC 나이론
FINISH	도장(락카)
QTY	4EA
SCALE	1:1
SIZE	A3

TOLERANCE

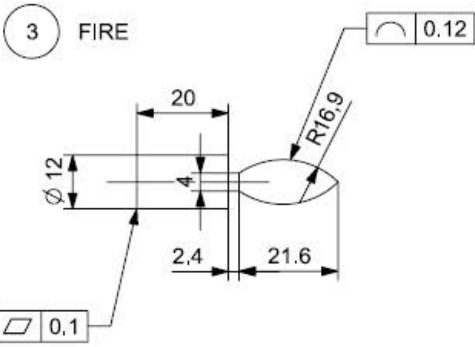
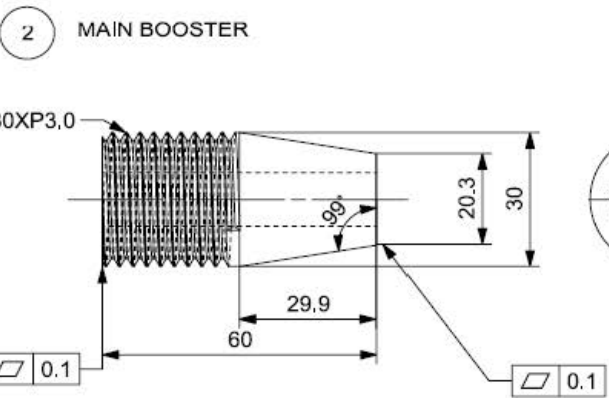
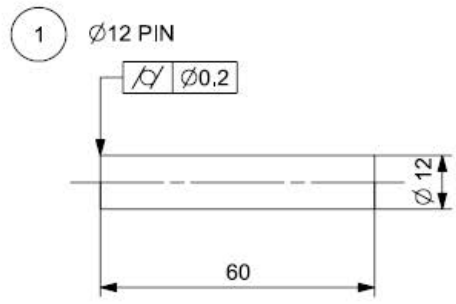
0.	± 0.1
0.0	± 0.08
0.00	± 0.05
0.000	± 0.01

NOTE(GENERAL)

- 1.GENERAL CHAMFER : C0.3(MAX)
- 2.GENERAL ROUND : R0.5(MAX)
- 3.GENERAL SURFACE : 6.3S

NOTE(ETC)

- 1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT
- 2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFROMITY AND THERE IS SWELLING DELAMINATION ETC



CAD/CAM응용CNC가공양성

	NAME	DATE
DRAW	SANGUK PARK	19.01.01
DESIGN		
CHECK		
APPRV	SANGUK PARK	19.01.02

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM

PROJECT NAME	APOLO ROCKET	
PART NAME	D12 PIN & MAINBOOSTER&FIRE	
PART NO	APL-MAIN-001	
MATERIAL	MC 나이론	
FINISH	도장(락카)	
QTY	1EA	
SCALE	1:1	
SIZE	A3	

TOLERANCE

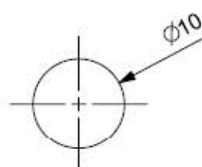
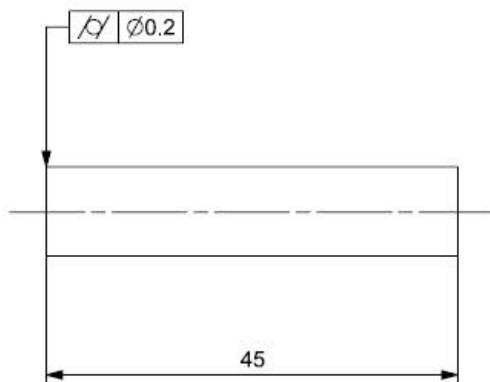
0.	± 0.1
0.0	± 0.08
0.00	± 0.05
0.000	± 0.01

NOTE(GENERAL)

- 1.GENERAL CHAMFER : C0.3(MAX)
- 2.GENERAL ROUND : R0.5(MAX)
- 3.GENERAL SURFACE : 6.3S

NOTE(ETC)

- 1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT
- 2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFORMITY AND THERE IS SWELLING DELAMINATION ETC



CAD/CAM응용CNC가공양성

	NAME	DATE
DRAW	SANGUK PARK	19.01.01
DESIGN		
CHECK		
APPRV	SANGUK PARK	19.01.02

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM

PROJECT NAME	APOLO ROCKET
PART NAME	D10 ASSEMBLY PIN
PART NO	APL-D10ASSEMPIN-001
MATERIAL	MC 나이론
FINISH	도장(락카)
QTY	40EA
SCALE	1:1
SIZE	A3

TOLERANCE

0.	± 0.1
0.0	± 0.08
0.00	± 0.05
0.000	± 0.01

NOTE(GENERAL)

- 1.GENERAL CHAMFER : C0.3(MAX)
- 2.GENERAL ROUND : R0.5(MAX)
- 3.GENERAL SURFACE : 6.3S

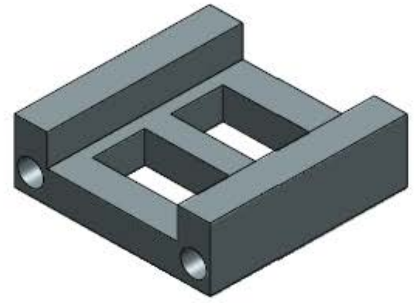
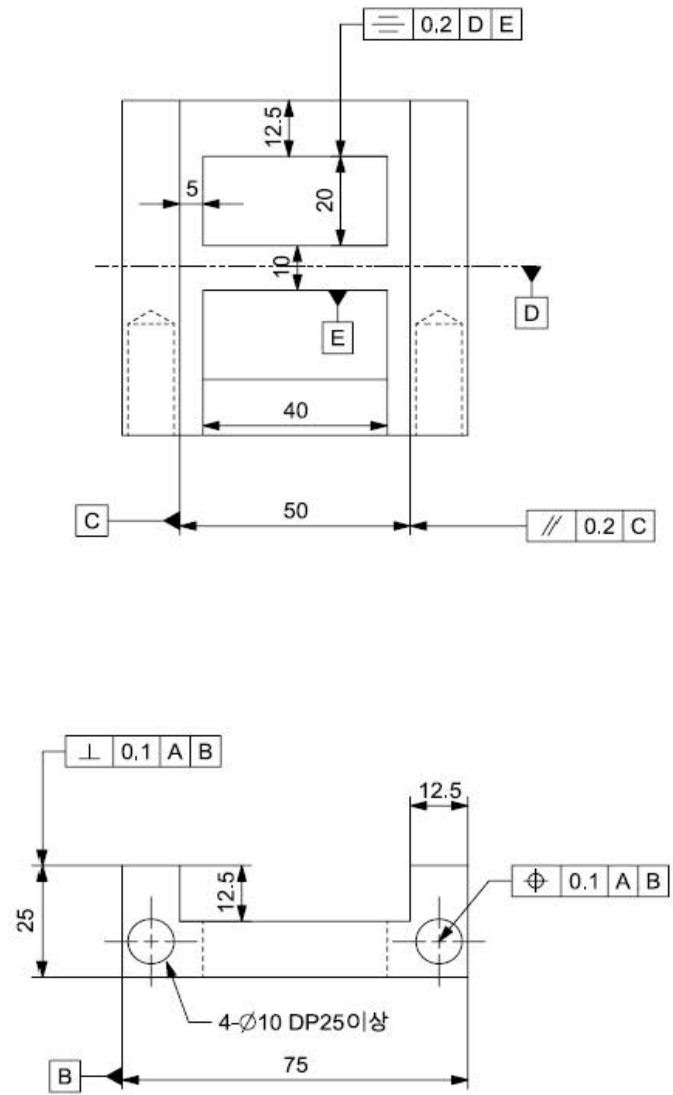
NOTE(ETC)

1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT

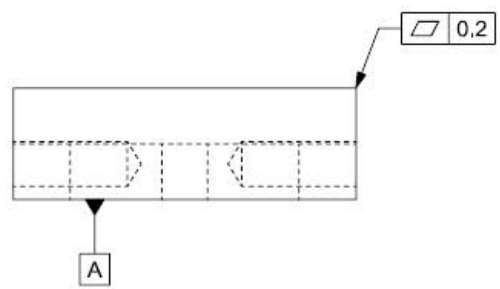
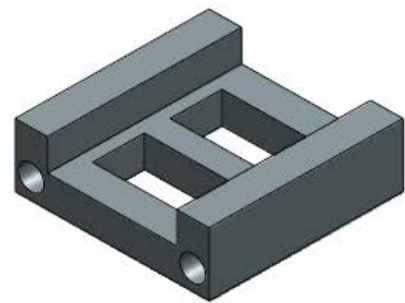
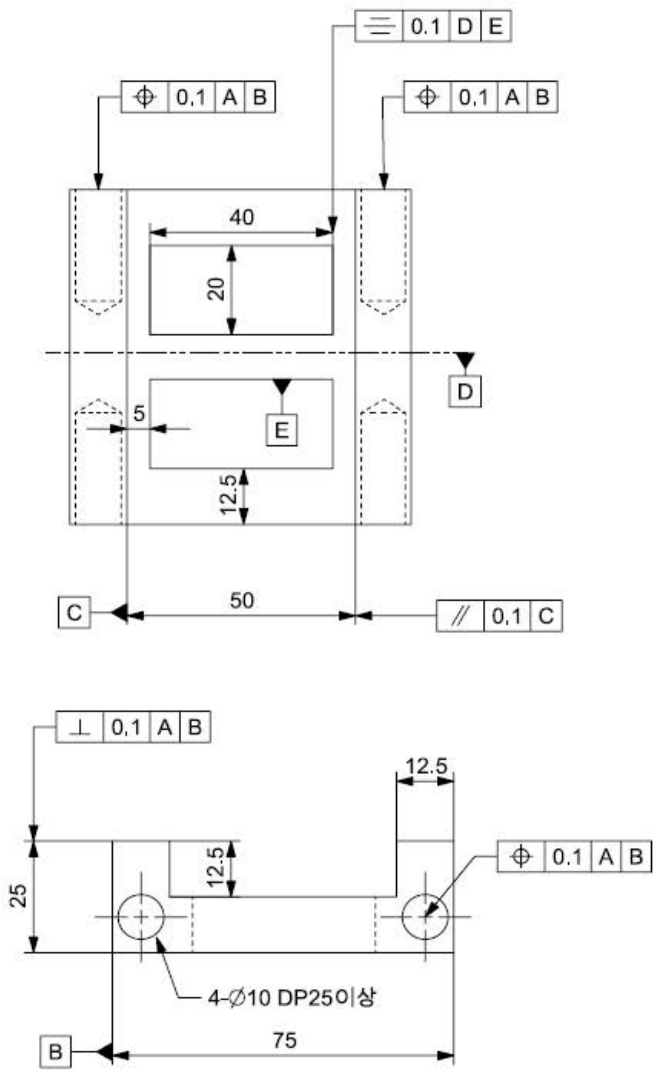
2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFROMITY AND THERE IS SWELLING DELAMINATION ETC

부품도(2D DRAFTING)

사용프로그램 : NX8.5



CAD/CAM응용CNC가공양성		
	NAME	DATE
DRAW	SANGUK PARK	19.01.01
DESIGN		
CHECK	DAEKYU LEE	19.01.02
APPRV	SANGUK PARK	19.01.02
UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM		
PROJECT NAME	APOLO ROCKET	
PART NAME	BASE	
PART NO	APL-BASE-001	
MATERIAL	MC 나이론	
FINISH	도장(락카)	
QTY	1EA	
SCALE	1:1	
SIZE	A3	
TOLERANCE		
0.	± 0.1	
0.0	± 0.08	
0.00	± 0.05	
0.000	± 0.01	
NOTE(GENERAL)		
1.GENERAL CHAMFER : C0.3(MAX)		
2.GENERAL ROUND : R0.5(MAX)		
3.GENERAL SURFACE : 6.3S		
NOTE(ETC)		
1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT		
2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFROMITY AND THERE IS SWELLING DELAMINATION ETC		



CAD/CAM응용CNC가공양성

	NAME	DATE
DRAW	SANGUK PARK	19.01.01
DESIGN		
CHECK	DAEKYU LEE	19.01.02
APPRV	SANGUK PARK	19.01.02

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM

PROJECT NAME	APOLO ROCKET	
PART NAME	BASE	
PART NO	APL-BASE-002	
MATERIAL	MC 나이론	
FIN SH	도장(락카)	
QTY	4EA	
SCALE	1:1	
SIZE	A3	

TOLERANCE

0.	± 0.1
0.0	± 0.08
0.00	± 0.05
0.000	± 0.01

NOTE(GENERAL)

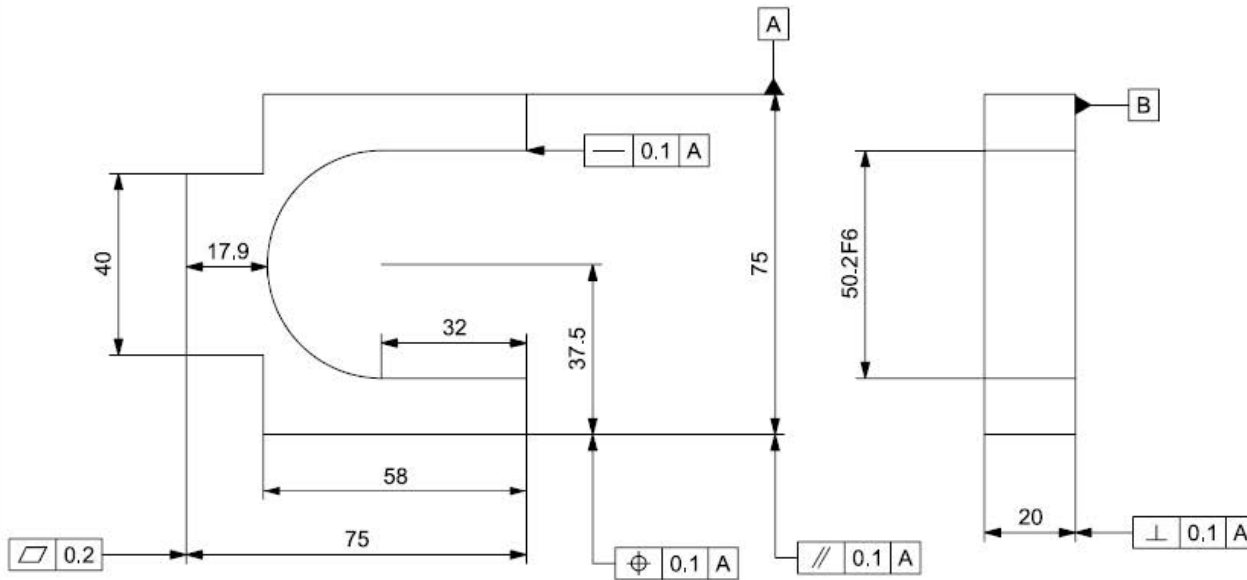
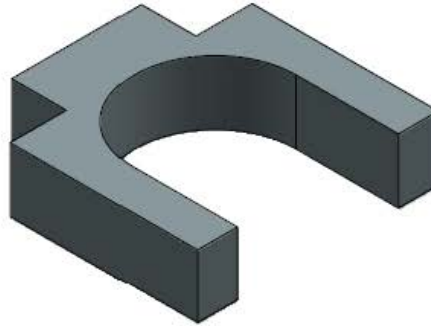
- 1.GENERAL CHAMFER : C0.3(MAX)
- 2.GENERAL ROUND : R0.5(MAX)
- 3.GENERAL SURFACE : 6.3S

NOTE(ETC)

- 1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT
- 2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFORMITY AND THERE IS SWELLING DELAMINATION ETC

부품도(2D DRAFTING)

사용프로그램 : NX8.5



CAD/CAM응용CNC가공양성

	NAME	DATE
DRAW	SANGUK PARK	19.01.01
DESIGN		18.12.31
CHECK	SEOJUN LEE	19.01.02
APPRV	SANGUK PARK	19.01.02

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM

PROJECT NAME	APOLO ROCKET
PART NAME	ARM
PART NO	APL-ARM-001
MATERIAL	MC 나이론
FINISH	도장(락카)
QTY	2EA
SCALE	1:1
SIZE	A3

TOLERANCE

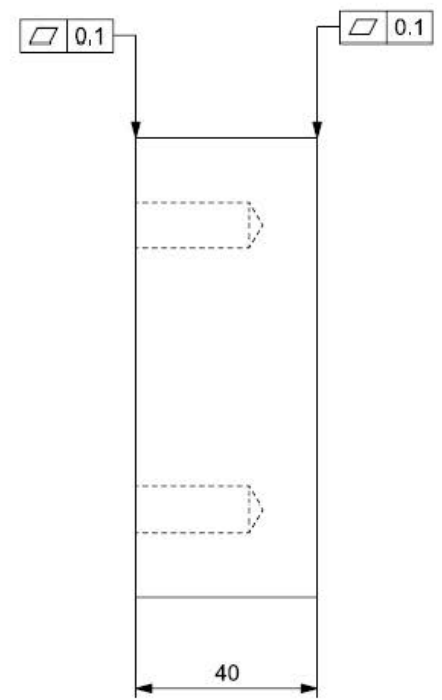
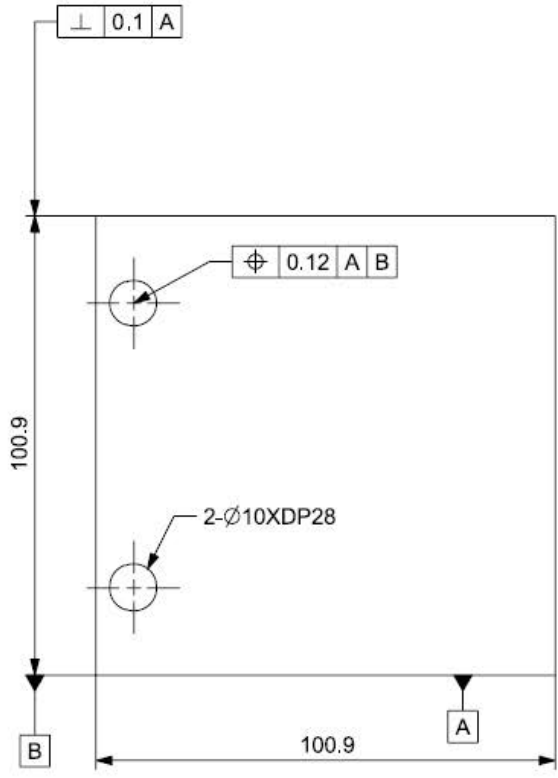
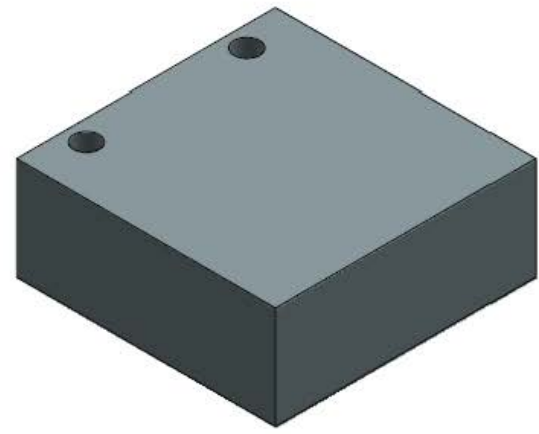
0.	± 0.1
0.0	± 0.08
0.00	± 0.05
0.000	± 0.01

NOTE(GENERAL)

- 1.GENERAL CHAMFER : C0.3(MAX)
- 2.GENERAL ROUND : R0.5(MAX)
- 3.GENERAL SURFACE : 6.3S

NOTE(ETC)

- 1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT
- 2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFROMITY AND THERE IS SWELLING DELAMINATION ETC



CAD/CAM응용CNC가공양성

	NAME	DATE
DRAW	SANGUK PARK	19.01.01
DESIGN		
CHECK		
APPRV	SANGUK PARK	19.01.02

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN MM

PROJECT NAME	APOLO ROCKET
PART NAME	BON BASE
PART NO	APL-BONBASE-001
MATERIAL	MC 나이론
FINISH	도장(락카)
QTY	1EA
SCALE	1:1
SIZE	A3

TOLERANCE

0.	± 0.1
0.0	± 0.08
0.00	± 0.05
0.000	± 0.01

NOTE(GENERAL)

- 1.GENERAL CHAMFER : C0.3(MAX)
- 2.GENERAL ROUND : R0.5(MAX)
- 3.GENERAL SURFACE : 6.3S

NOTE(ETC)

- 1.BURR, SCRATC AND USAGE PROBIEMS WILL NOT
- 2.DEGREE OF POST-PROCESSING AFTER THE GLOSS UNIFORMITY AND THERE IS SWELLING DELAMINATION ETC

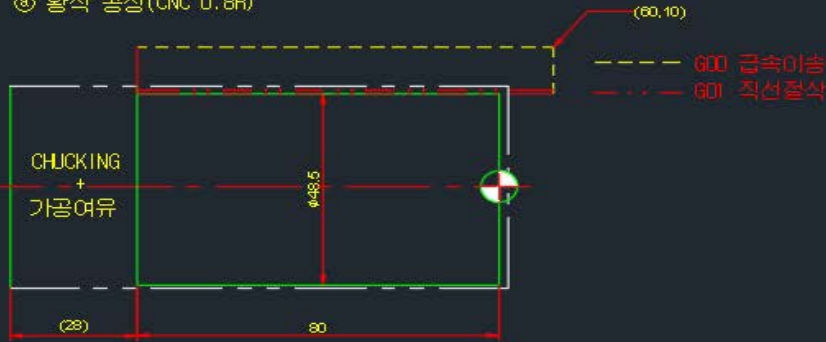


가공 공정계획

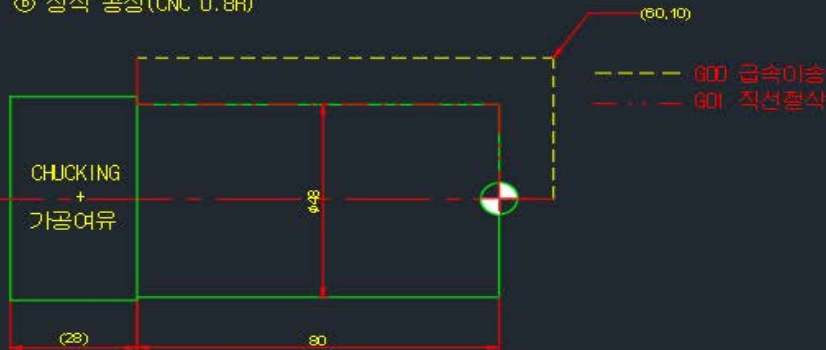
가공 공정 계획 분야

가공계획

㉔ 황삭 공정(CNC 0.8R)



㉕ 정삭 공정(CNC 0.8R)



㉖ DRILL 공정(φ8 DRILL)



- 소재 : φ52.3 X 110mm
- 척킹길이 : 85mm이상 조에서 떨어질 것(가공길이 80mm / 여유 5mm이상)
- 공구
 - CNC선반 : 황삭바이트(0.8R) / 정삭바이트(0.4R)
 - 범용선반 : 홈바이트(꼭3)
 - MCT : φ8 DRILL X 날장50mm 이상
- 기계제원
 - CNC : SKT100(6 INCH) / FANUC OT
 - 범용선반 : hwacheon / Binch
 - MCT : HYYNDAI WIA F400 / FANUC i series
- 가공순서
 - CNC - BODY 외형 가공(φ48)
 - 범용선반 - 절단(홈)
 - MCT - DRILLING
- 측정계기
 - 버니어 캘리퍼스
 - 다이얼 게이지
 - 외경마이크로미터
- 유의사항
 - 끼워맞춤 방식으로 조립됨으로 축은 - 공차로 가공
 - DRILL 자리 위치도 정확히 세팅후 가공



프로그래밍

&

검증분야

가공프로그램 작성 및 수정

CIMCO Edit v7.5 - [엔타이틀기]

판잡기 NC 기능 백플롯 파일 비교 전송 CNC-Calc

백플롯 파일 백플롯 단위 백플롯 설정

확대 축소 3차원도오버 리셋 상부 중단 좌측 부단부 거리 측정 회전 3D 뷰기

공구경로 모드 공구 설정 공구 선택

출리드 / 모험 / 재설정 / 출리드 / 출리드

Fanuc 타닝 (G-Code A) 기타

이전 찾기 다음 찾기

다음 공구 교환 전의 공구교환

라인/블록 번호로 가기

공구경로 통계자료

4 X

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184 G00 X-1. Z3. ;
185 G01 X-1. Z0. F0.2;
186 G01 X55. Z0. F0.2;
187 G00 X55. Z3. ;
188 G28 U0. W0. ;
189 T0100;
190
191
192 N2; (ROUGH CUTTING 0.8R)
193 G50 S3000;
194 G96 S150 M3;
195 T0100;
196 T0101;
197 G00 X63. Z10. ;
198 G00 X50. Z10. ;
199 G01 X50.3 Z-86. F0.2;
200 G01 X55. Z-86. F0.2;
201 G00 X55. Z3. ;
202 G01 X48.5 Z3. F0.2;
203 G01 X48.5 Z-86. F0.2;
204 G01 X55. Z-86. F0.2;
205 G00 X55. Z10. ;
206 G28 U0. W0. ;
207 T0100;
208
209 N3; (FINISH CUTTING 0.4R)
210 G40;
211 G28 U0. W0. ;
212 G50 S3000;
213 G96 S180 M3;
214 T0300;
215 T0303;
216 G00 X63. Z10. ;
217 G00 X-1. Z10. ;
218 G01 X-1. Z0. F0.08;
219 G01 X47.6 Z0. F0.08;
220 G01 X48. Z-0.2 F0.08;
221 G01 X48. Z-86. F0.08;
222 G01 X55. Z-86. F0.08;
223 G28 U0. W0. ;
224 T0300;
225 M5;
226 M30;
227
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시뮬레이터 확인

TURBO CANVAS 3.5 [LATHE]

파일 설정 시뮬레이션 검증 조작기 DNC통신 윈도우 도움말

공작물 단면측정 달기

X 좌표 : 반경치 직경치

No.	Line Type	DX	DZ	Length	Radius	Thread Pitch
1	직선	52.300	0.000	26.150	-	-
2	직선	0.000	24.000	24.000	-	-
3	직선	4.900	0.000	2.150	-	-
4	직선	0.000	85.800	85.800	-	-
5	직선	0.399	0.200	0.282	-	-
6	직선	47.600	0.000	23.800	-	-
7	직선	0.000	110.000	110.000	-	-



가공 결과물

18 CAD/CAM응용CNC

