



LEAFLET OF SHAFT DRAWINGS

SLIDE SHAFT

SPINDLE SHAFT

ROLL SHAFT

GENERAL MACHINERY SHAFT



NIPPON BEARING CO.,LTD.

2833 chiya,Ojiya-city,Niigata-pref.,947-8503 JAPAN
Phone : 81-258-82-0011 Fax : 81-258-81-1135

NB Corporation of America

939 A.C.E. Drive,Wood Dale,IL 60191
Phone : (630) 227-1112 Fax : (630) 227-1118
Toll Free : (800) 521-2045

Western Regional Office

2157 O'Toole Ave.,Suite D,San Jose,CA 95131
Phone : (408) 435-1800 Fax : (408) 435-1850
Toll Free : (888) 562-4175

Eastern Regional Office

41 Orchard Street Ramsey,NJ 07446
Phone : 201-236-3886 (Main) Fax : 201-236-5112
Toll Free : (800) 981-8190

<http://www.nbcorporation.com>
info@nbcorporation.com

NB Europe B.V.

Spinnerij 57,1185 ZS Amstelveen,THE NETHERLANDS
Phone : ++31-20-453-4901 Fax : ++31-20-453-6730
<http://www.nbeurope.com>
info@nbeurope.com

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Please use this leaflet as a guideline to explore your machining requirements.



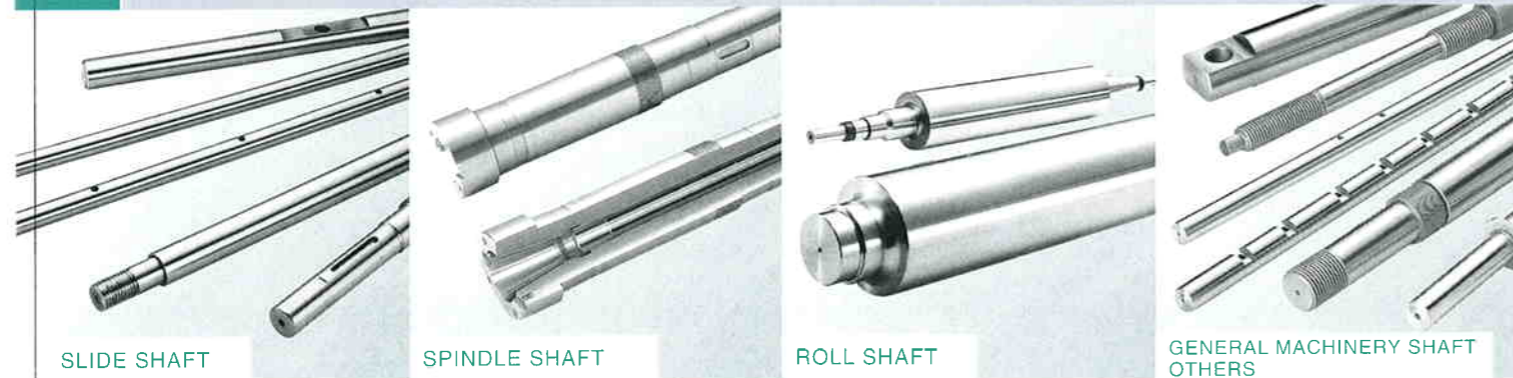
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SHAFT

List of shaft machining specifications

In most cases, slide shafts, spindle shafts, and roll shafts require machining. The following charts show a range of machining. Machining example sheets shall give a better idea about NB's machining ability and skills that should meet customers' expectations.



SLIDE SHAFT

SPINDLE SHAFT

ROLL SHAFT

GENERAL MACHINERY SHAFT
OTHERS

SHAFT 1	material	SUJ 2	SUS440C or equivalent	SUJ 2 hollow shaft	customer request
SHAFT 2	hardness	60 HRC or more	56 HRC or more	60 HRC or more	depends on material
SHAFT 3	outer diameter tolerance	g6 or to be specified	g6 or to be specified	g6 or to be specified	g6 or to be specified

SHAFT 4 a range and specifications of machining

range of machining

maximum diameter	650mm
maximum length	6000mm
surface roughness	0.4 Ra or less
straightness	0.01mm/300mm
concentricity	0.01mm/300mm
squareness	0.01mm/300mm
cylindricity	0.01mm/300mm

internal surface grinding

the straight / tapered portion of the inner spindle can be ground

deep hole machining

hole diameter	maximum length of hole	
	non through hole	through hole
Φ2~2.5mm	200	400
Φ3~3.5mm	300	600
Φ4~8mm	500	1000
Φ9~10mm	750	1500
Φ10~32mm	850	1700
Φ30~80mm	2000	4000

screw machining

Triangular and trapezoidal screws can be handled

matched parts

Special nuts matching a given shaft
Tapered portion of the inner and outer diameter matching a given shaft

general machining

Center tapping	Plate groove
Screw machining	Spot hardening
Flat surface machining	V groove machining
Step diameter machining	Key groove machining

surface treatment

Industrial chrome plating
Low temperature black chrome plating
Customer request

thermal-spraying ceramic-coating

suitable for parts that require wear and corrosion resistance

1 standard material for coating

high carbon chromium bearing steel (SUJ2)
chrome molybdenum steel (SCM415,435)
carbon steel for machinery (S45C)
martensite stainless steel (SUS440C or equivalent)
austenite stainless steel (SUS303,304)
steel alloy for tools (SKS3,SK4)

2 standard ceramic for thermal-spraying

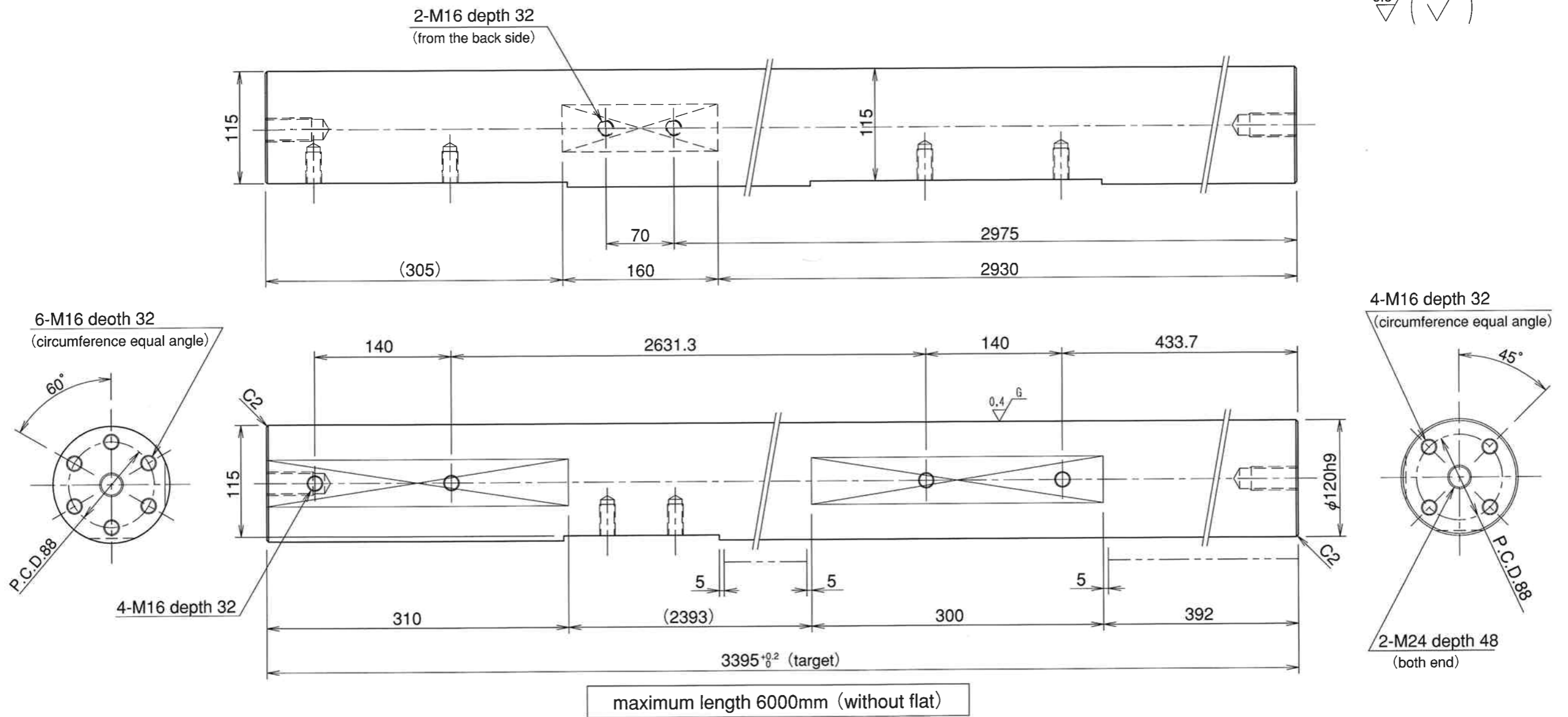
main component TiO₂ titanium dioxide
characteristics
maximum temperature 540°C
color : black
wear resistance
fine coating
fine surface finish by grinding

SLIDE SHAFT

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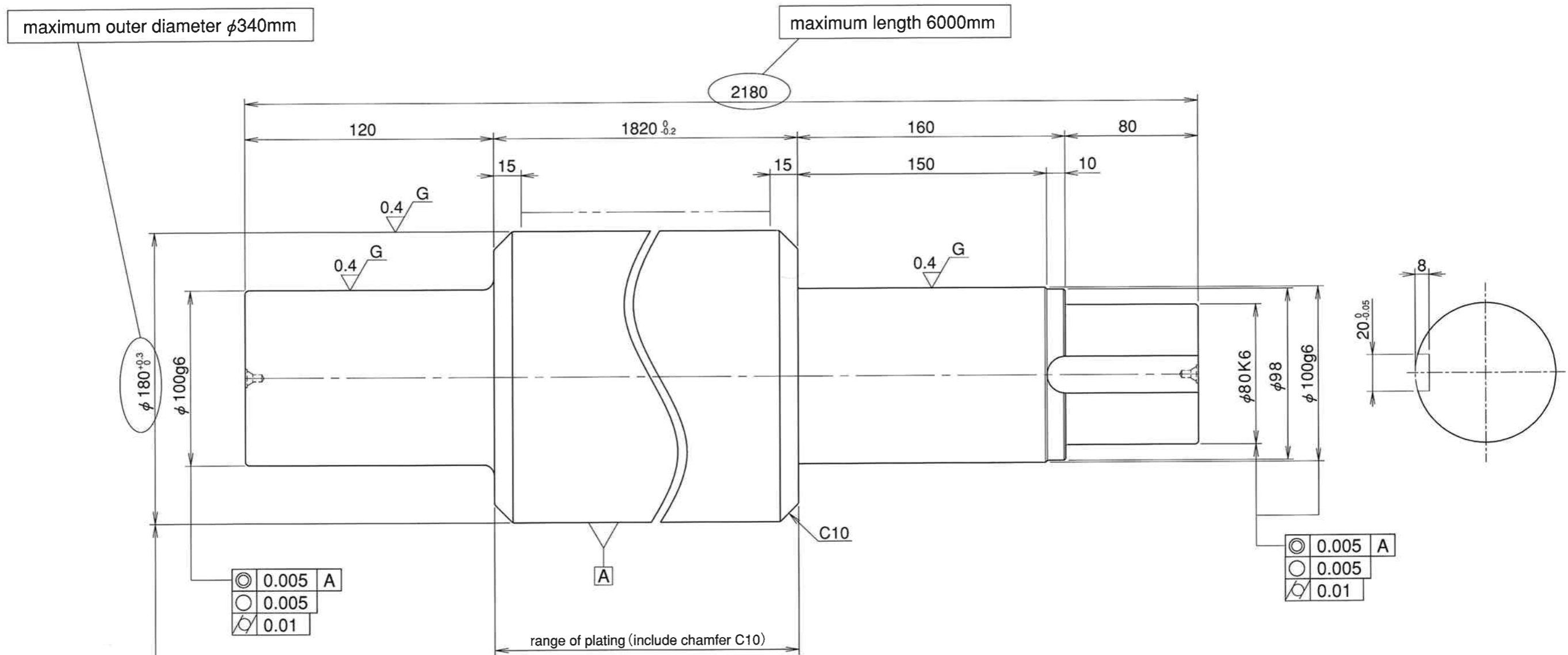
This drawing is example of machining.

6.3 / (✓)



Note
 • - - - - induction hardening and tempering
 hardness HRC 60 or more

This drawing is example of machining.

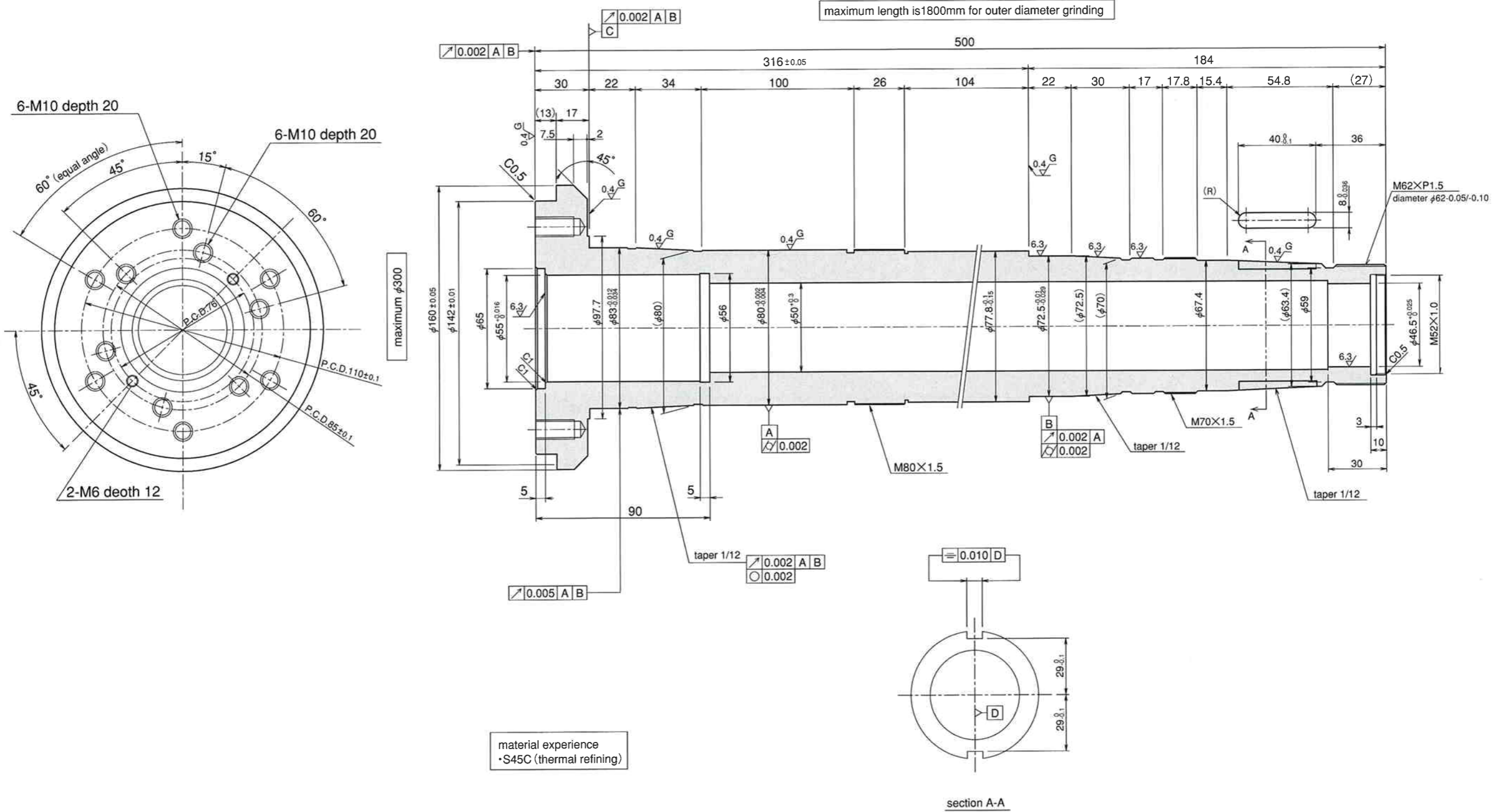


Note

- - - - - hardness :Hs92+/-2, effective hardness depth 3mm or more
- $\phi 180$ portion hard chrome plating with grinding, depth 30~40 μm

maximum length 4500L,
plating hardness HV900 or more

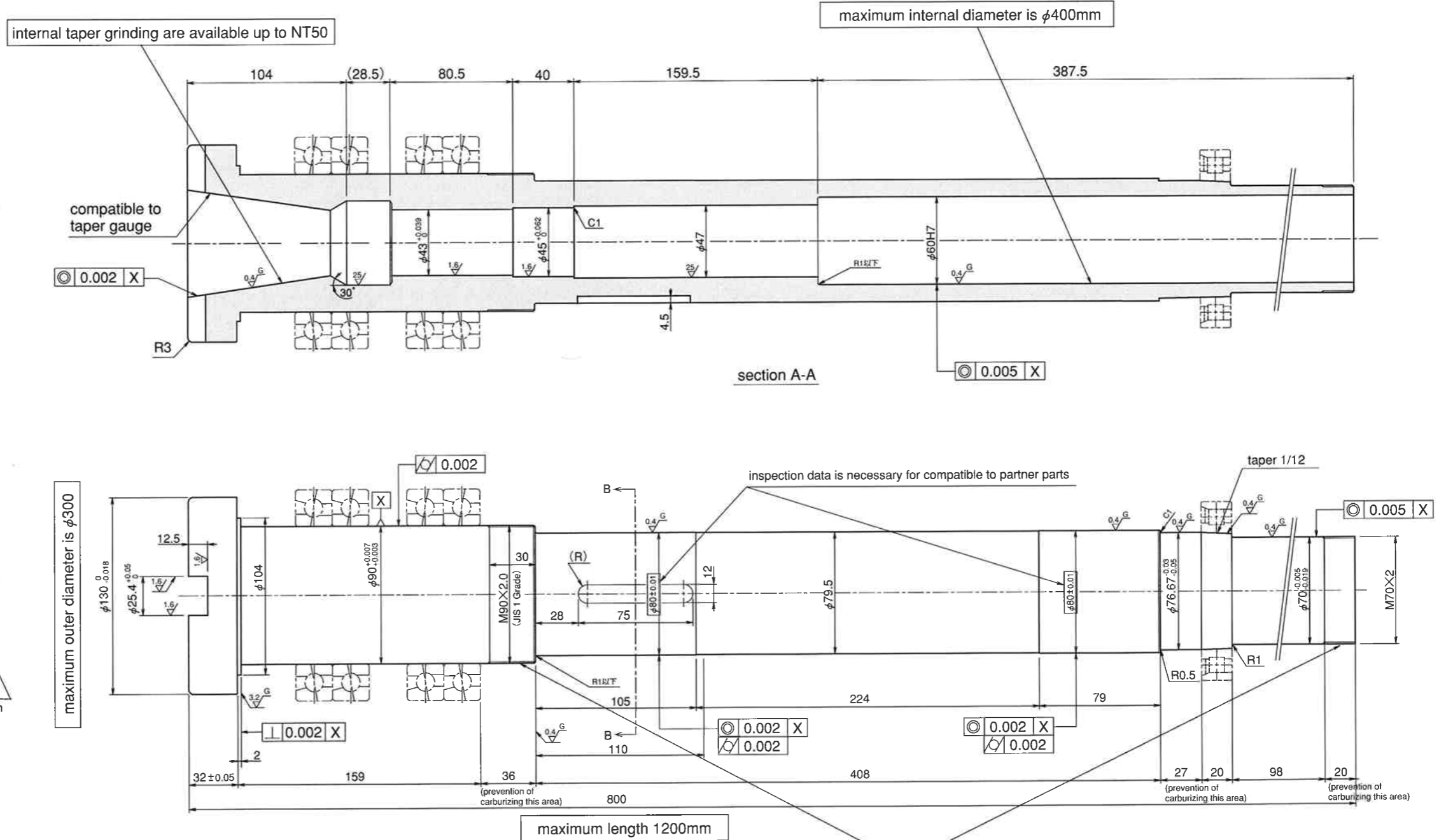
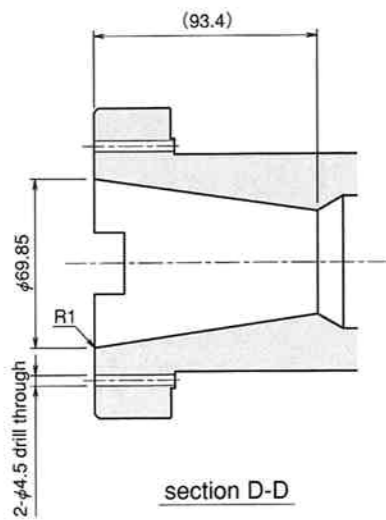
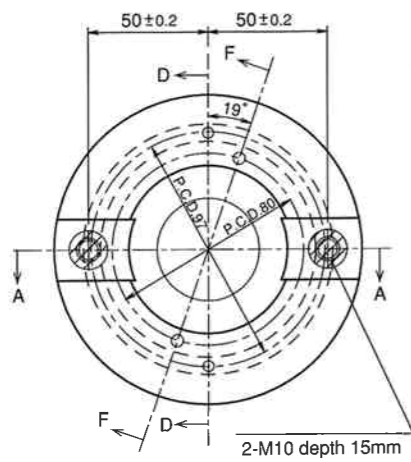
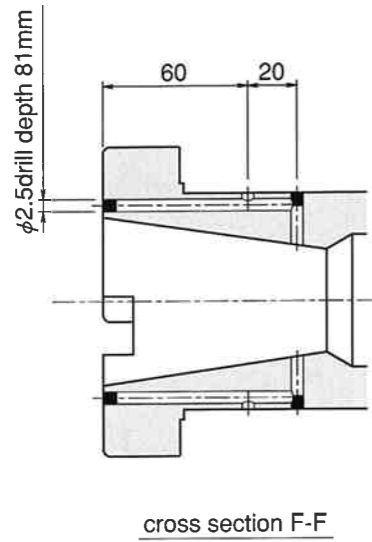
This drawing is example of machining.



SPINDLE ①

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This drawing is example of machining.



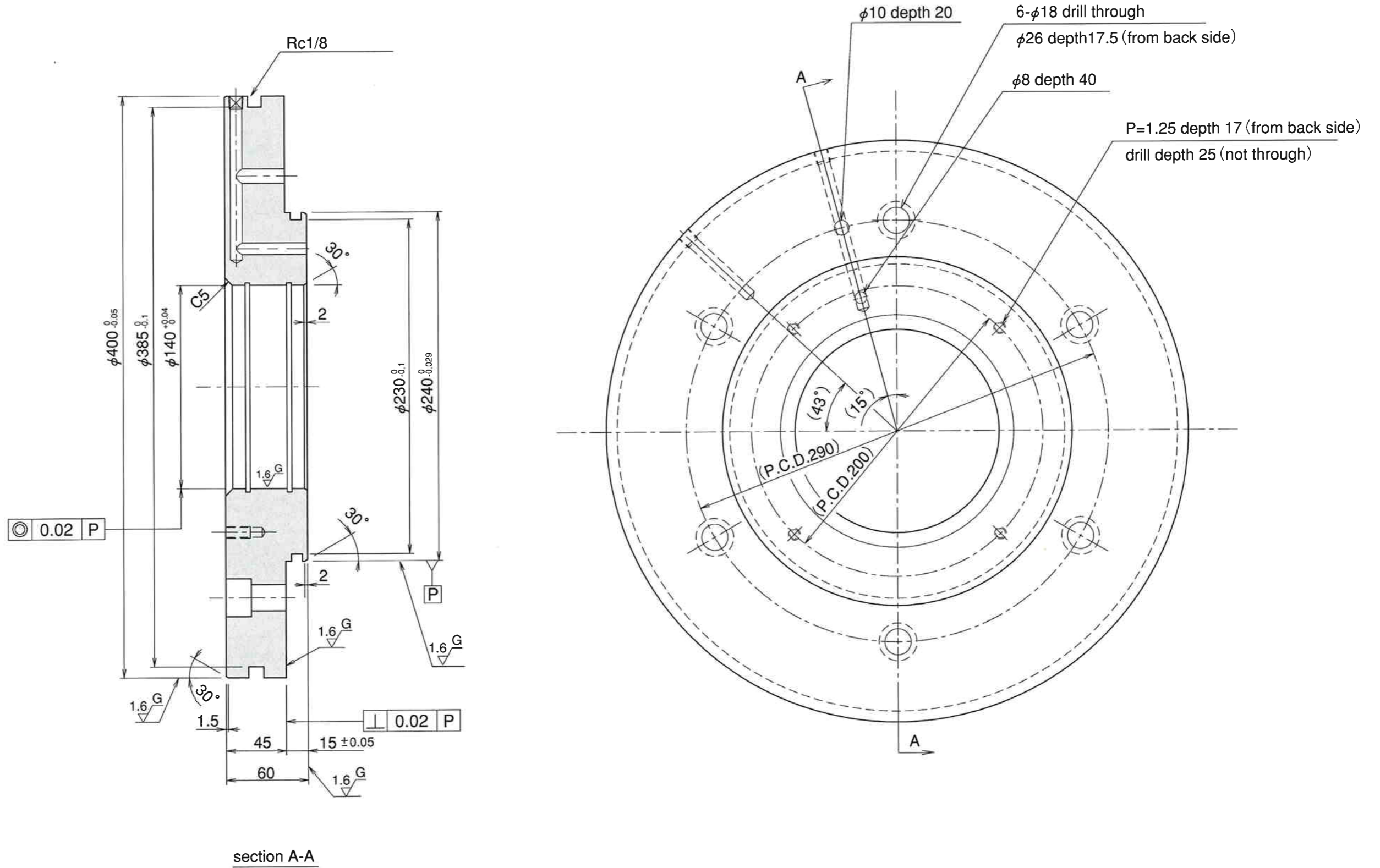
•prevention of carburizing is available
 •hardness of carburizing is HRC62 +/- 2 and it's depth is 1.5 to 2mm

material experience
 •SCM415 (carburizing and quenching)
 •SCM420 (carburizing and quenching)
 •SACM645 (nitriding treatment)

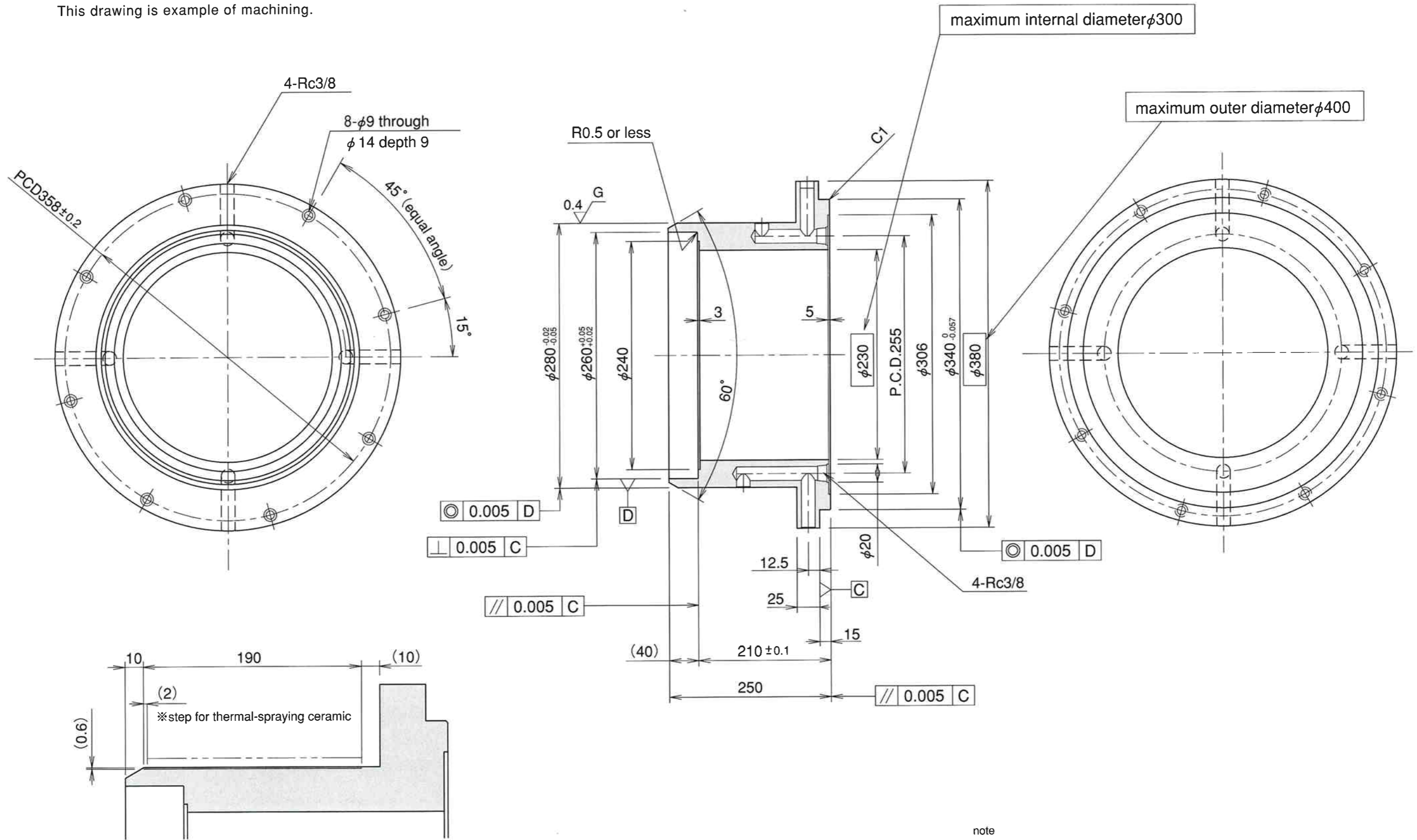
FLANGE

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This drawing is example of machining.



This drawing is example of machining.



detail drawing of thermal-spraying ceramic range

note

- annealing
- - - - surface roughness Ra=0.4a or lower after thermal-spraying