

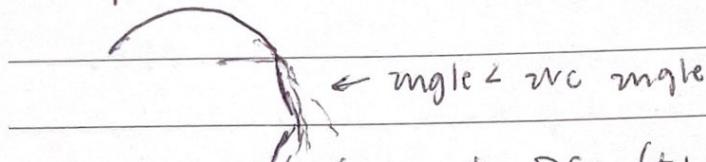
~~SP~~ 24-3A05
Spherical Joint Inserts

3/20/24

Purpose: extend rotational range

Annoying: angle of diagonal

- square to tilt stock



feed B2DG (5th) turn
Speed ~~RPMT~~ 470 RPM ^{30 thou passes}

- compound to 90° (only change compound)

$\sim 90^\circ \pm 23^\circ$ good for roughing

Steps ★ check tool height! ★ remove compound
windmills 800 RPM, 1 feed breakish

1) turn to OD 41 tool

★ gentle touch-off

2) initial tool plunge to 0.375 ?

3) ~~add~~ 5° to get angle and go to 0.375 ~~0.375~~

4) turn down right side boss (pliers) ^{go to about}
~~first > turn left side~~ ^{20 thou less than}
^(0.29) ^{not}

5) drill w/ carbide $1/4"$ (no need ~~for~~ to center drill) 3

→ split point (cutting edge goes int into center)

→ center and allard → 525 RPM → coolant down flute
→ per first → clear chips (orient so gravity brings
coolant thru flute)

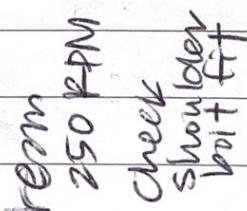
→ to zero, eyeball point to edge

→ lock Z-axis

→ peck plunge

→ coolant!

→ go slow



measure
at 0.640

- slow X out to prevent burr

- last pass go to 0.305

- deburr - test fit

→ increase RPM near end and have smn else coolant

→ ~~increase~~ increase RPM more

→ leave tool in valley for while to reduce chatter

- pmt-off 80 to 115 RPM in increments

→ go slow! otherwise burn tool!

→ at ~~0.805~~ 0.85" (account for tool width)

↓
keep going
if needed

init: 0.750" \times $\rightarrow 0.736 - .002$
 1" stick-out $\rightarrow 0.7421 \quad 0.7491$
 $\rightarrow 3$ thou off file $0.7358 \quad \cancel{0.7410}$
 $\rightarrow 0.7400$

1st pass

\rightarrow go to depth of cut turn

\rightarrow set θ before turning

\rightarrow measure after and $\cancel{\theta}$ add/subt DRO accordingly

\rightarrow go to $0.695 - 0.837 \approx (0.695 + 0.125)$

0.7441

0.7398

0.7357

mag pass
- turn down to 0.625

0.7357

- 0.625

0.1107

30 thou passes

go to ± 0.29

0.7357

~~0.7330~~ ~~0.7057~~ ~~0.7120~~
~~0.7300~~ ~~0.6757~~ ~~0.6800~~
~~0.7270~~ ~~0.6457~~ ~~0.6500~~
~~0.7240~~ ~~0.6157~~ ~~0.6400~~
~~0.7210~~ ~~0.4000~~ STOP!
~~0.7180~~
~~0.7150~~

~~0.7120~~ ~~0.7360~~
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3/22/14

fix angle
(doesn't fit over)

turning
left side ~~up~~ yoke side
RM 0.4065 11 turn pass

3/23/24

0.3970

~~0.3870~~ -0.3860

0.3824

turn

③ 6.74 0.7400
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24-3A05

Spherical Joint Inserts (Upright) Spines

4/17/24

Steps

- 1) face (600 RPM)
- 2) turn to OD (start max) to Z, .29 (470 RPM) BD26
- 3) angle (5.32°) (390 - 490 RPM increments)
- 4) turn to .625 (Z) to Z, .29 (Z < max Z)
- 5) part-off (80-115 increments)
- 6) turn to smallest OD
- 7) drill (not split point so center drill small divot then peck w/
lots of coolant) 525 RPM (600 RPM actually)

①

OD

Smaller OD to Z

male boss length

.7493

.7354

.3939

.7416

.7100

.3822

.7361

.6600

.7359

.6500

.7290

.6249

angle

Smaller OD (X38)

.7359

.6483

.70

~~.6200~~, .6257

.65

.6244

.65

.5

.45

.43

.4385

② OD

Smaller OD

.742

.6405

.736

(no lock!)

.6244

.624

.3129