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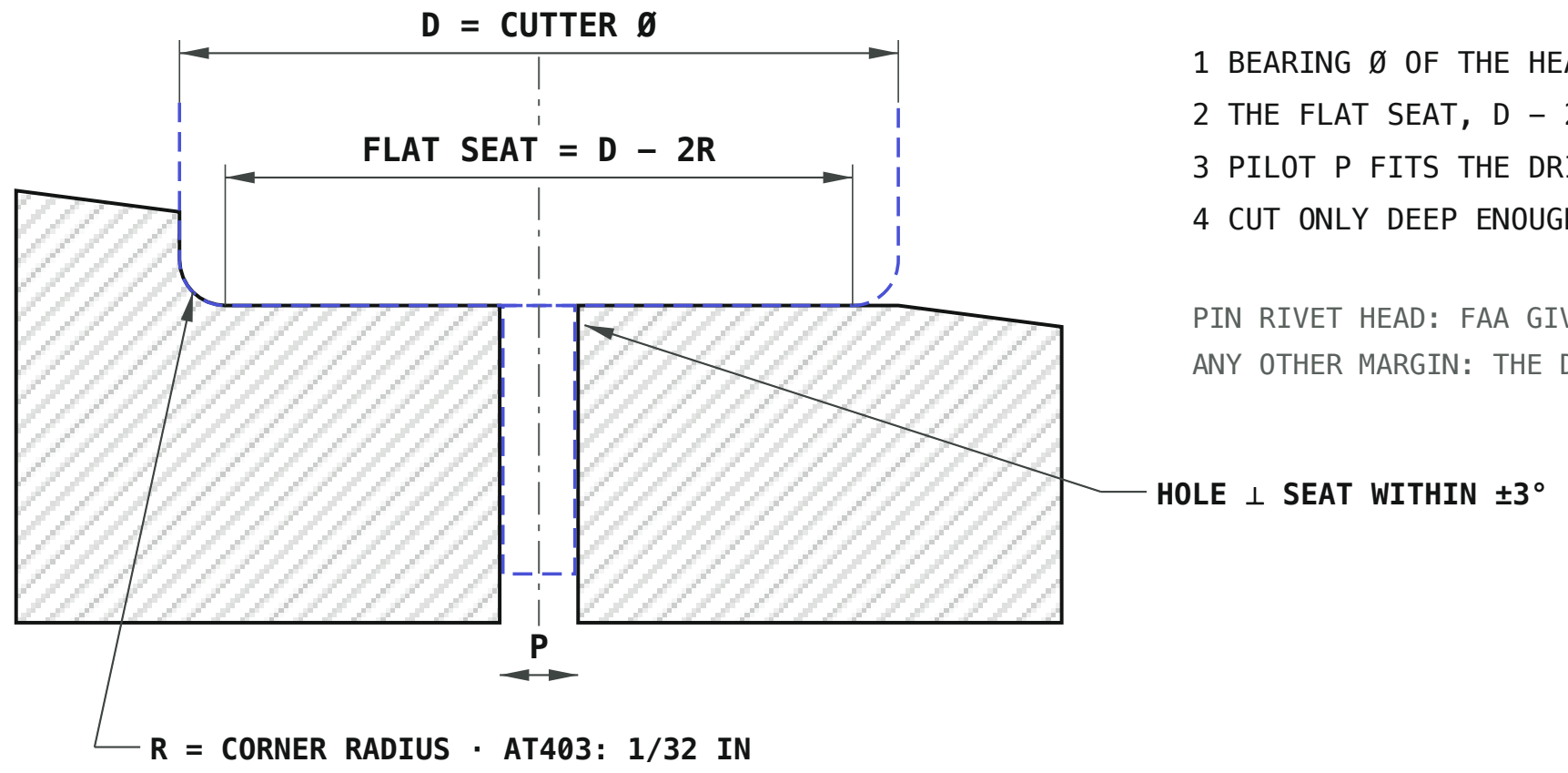
Spotface Size Chart: Bearing Diameter & Cutter

Bearing Ø · flat seat D − 2R · pilot · ±3°

REFERENCE DRAWING — NOT APPROVED DATA · THE SRM ALWAYS GOVERNS

SECTION A

THE SEAT · ENLARGED



READING THE CHART

FOUR CHECKS

1 BEARING Ø OF THE HEAD, NUT, WASHER OR COLLAR
2 THE FLAT SEAT, D − 2R, COVERS IT ALL ROUND
3 PILOT P FITS THE DRILLED HOLE
4 CUT ONLY DEEP ENOUGH TO CLEAN UP

PIN RIVET HEAD: FAA GIVES 1/16 IN OVER THE HEAD Ø
ANY OTHER MARGIN: THE DRAWING OR THE SRM

NOTES

1. Dimensions in inches. Do not scale: the SRM sets the values.
2. For reference. The applicable manual always governs.
3. Based on AC 43.13-1B 7-39 · TO 1-1A-1.

REVISIONS

REV	DESCRIPTION	YEAR
D	Revised	2026

The Aviation Point. Structural repair reference

TITLE			
Spotface sizes			
DRAWING NO. TAP-DWG-131	REV D · 2026	SCALE NTS	SHEET 1 OF 1
APPLIES TO Spotface seats			
DO NOT SCALE DRAWING			

Geometry: a cutter with radiused corners leaves a flat seat of D - 2R. R = 1/32 in on the AT403 (maker's page). Not to scale.

Bearing diameter to cover, by fastener

Fastener	Size	Hole Ø, in	Bearing Ø max, in (mm)	Smallest AT403 back cutter · D × P · flat, in	Margin, in
MS20470 universal head	1/16 in	—	0.131 (3.33)	— (no pilot this small in the AT403 list)	—
MS20470 universal head	3/32 in	#40 · 0.098	0.196 (4.98)	— (no AT403 on a 3/32 in pilot covers it)	—
MS20470 universal head	1/8 in	#30 · 0.1285	0.262 (6.65)	AT403-3 · 3/8 × 1/8 · flat 0.312 *	0.047
MS20470 universal head	5/32 in	#21 · 0.159	0.328 (8.33)	AT403-4 · 7/16 × 5/32 · flat 0.375 *	0.044
MS20470 universal head	3/16 in	#11 · 0.191	0.394 (10.01)	AT403-5 · 1/2 × 3/16 · flat 0.438 *	0.040
MS20470 universal head	7/32 in	—	0.459 (11.66)	— (hole not on our rivet drill chart)	—
MS20470 universal head	1/4 in	F · 0.257	0.525 (13.33)	AT403-7 · 5/8 × 1/4 · flat 0.562 *	0.030 † → AT403-8
MS20470 universal head	5/16 in	—	0.656 (16.66)	— (hole not on our rivet drill chart)	—
MS20470 universal head	3/8 in	—	0.787 (19.99)	— (hole not on our rivet drill chart)	—
HL18 shear head	5/32 in	≈ 0.1635	0.262 (6.65)	AT403-3B · 3/8 × 5/32 · flat 0.312 *	0.043
HL18 shear head	3/16 in	≈ 0.1895	0.315 (8.00)	AT403-4B · 7/16 × 3/16 · flat 0.375 *	0.058
HL18 shear head	1/4 in	≈ 0.2495	0.412 (10.46)	AT403-5B · 1/2 × 1/4 · flat 0.438	0.026 † → AT403-6B
HL20 tension head	5/32 in	≈ 0.1635	0.322 (8.18)	AT403-4 · 7/16 × 5/32 · flat 0.375 *	0.046
HL20 tension head	3/16 in	≈ 0.1895	0.377 (9.58)	AT403-5 · 1/2 × 3/16 · flat 0.438 *	0.058
HL20 tension head	1/4 in	≈ 0.2495	0.440 (11.18)	AT403-6B · 9/16 × 1/4 · flat 0.500	0.060
HL70 collar	5/32 in	≈ 0.1635	0.292 (7.42)	AT403-3B · 3/8 × 5/32 · flat 0.312 *	0.013 † → AT403-4
HL70 collar	3/16 in	≈ 0.1895	0.307 (7.80)	AT403-3C · 3/8 × 3/16 · flat 0.312 *	0.004 † → AT403-4B
HL70 collar	1/4 in	≈ 0.2495	0.412 (10.46)	AT403-5B · 1/2 × 1/4 · flat 0.438	0.026 † → AT403-6B
HL70 collar	5/16 in	≈ 0.3125	0.518 (13.16)	AT403-7B · 5/8 × 5/16 · flat 0.562	0.044
HL86 collar	5/32 in	≈ 0.1635	0.287 (7.29)	AT403-3B · 3/8 × 5/32 · flat 0.312 *	0.018 † → AT403-4
HL86 collar	3/16 in	≈ 0.1895	0.307 (7.80)	AT403-3C · 3/8 × 3/16 · flat 0.312 *	0.004 † → AT403-4B
HL86 collar	1/4 in	≈ 0.2495	0.412 (10.46)	AT403-5B · 1/2 × 1/4 · flat 0.438	0.026 † → AT403-6B
HL86 collar	5/16 in	≈ 0.3125	0.518 (13.16)	AT403-7B · 5/8 × 5/16 · flat 0.562	0.044
HL75 self-aligning collar	5/32 in	≈ 0.1635	0.365 (9.27)	AT403-4 · 7/16 × 5/32 · flat 0.375 *	0.003 † none larger on this pilot
HL75 self-aligning collar	3/16 in	≈ 0.1895	0.365 (9.27)	AT403-4B · 7/16 × 3/16 · flat 0.375 *	0.008 † → AT403-5
HL75 self-aligning collar	1/4 in	≈ 0.2495	0.475 (12.06)	AT403-6B · 9/16 × 1/4 · flat 0.500	0.025 † → AT403-7
HL75 self-aligning collar	5/16 in	≈ 0.3125	0.620 (15.75)	AT403-8B · 3/4 × 5/16 · flat 0.688	0.068
AN3 hex head	3/16 in	0.190	0.377 (9.58)	AT403-5 · 1/2 × 3/16 · flat 0.438 *	0.058
AN4 hex head	1/4 in	F · 0.257	0.440 (11.18)	AT403-6B · 9/16 × 1/4 · flat 0.500 *	0.053
AN5 hex head	5/16 in	O · 0.316	0.502 (12.75)	AT403-7B · 5/8 × 5/16 · flat 0.562 *	0.057

Educational reference only, not approved data. Always consult the applicable SRM, AMM, or AC 43.13-1B and your certifying authority.

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Fastener	Size	Hole Ø, in	Bearing Ø max, in (mm)	Smallest AT403 back cutter · D × P · flat, in	Margin, in
AN6 hex head	3/8 in	V · 0.377	0.565 (14.35)	AT403-9 · 7/8 × 3/8 · flat 0.812 *	0.246
AN7 hex head	7/16 in	—	0.627 (15.93)	— (no 7/16 in pilot in the AT403 list)	—
AN8 hex head	1/2 in	—	0.752 (19.10)	— (no 1/2 in pilot in the AT403 list)	—
MS21042 nut, no washer	#2	0.086	0.167 (4.24)	— (no pilot this small in the AT403 list)	—
MS21042 nut, no washer	#4	0.112	0.206 (5.23)	— (no 0.112 in pilot in the AT403 list)	—
MS21042 nut, no washer	#6	0.138	0.244 (6.20)	AT403-3 · 3/8 × 1/8 · flat 0.312 *	0.055
MS21042 nut, no washer	#8	0.164	0.290 (7.37)	AT403-3B · 3/8 × 5/32 · flat 0.312 *	0.015 † → AT403-4
MS21042 nut, no washer	#10	0.190	0.330 (8.38)	AT403-4B · 7/16 × 3/16 · flat 0.375 *	0.042
MS21042 nut, no washer	1/4 in	F · 0.257	0.420 (10.67)	AT403-5B · 1/2 × 1/4 · flat 0.438 *	0.011 † → AT403-6B
MS21042 nut, no washer	5/16 in	O · 0.316	0.520 (13.21)	AT403-7B · 5/8 × 5/16 · flat 0.562 *	0.039
MS21042 nut, no washer	3/8 in	V · 0.377	0.620 (15.75)	AT403-9 · 7/8 × 3/8 · flat 0.812 *	0.191

Bayonet back spotface cutters, AT403 list

Part number	D, in	Pilot P, in	Flat seat, in
AT403-1	1/4	3/32	0.1875
AT403-1B	1/4	1/8	0.1875
AT403-2	5/16	1/8	0.2500
AT403-2B	5/16	5/32	0.2500
AT403-3	3/8	1/8	0.3125
AT403-3B	3/8	5/32	0.3125
AT403-3C	3/8	3/16	0.3125
AT403-4	7/16	5/32	0.3750
AT403-4B	7/16	3/16	0.3750
AT403-5	1/2	3/16	0.4375
AT403-5B	1/2	1/4	0.4375
AT403-6	9/16	3/16	0.5000
AT403-6B	9/16	1/4	0.5000
AT403-7	5/8	1/4	0.5625
AT403-7B	5/8	5/16	0.5625
AT403-8	3/4	1/4	0.6875
AT403-8B	3/4	5/16	0.6875
AT403-9	7/8	3/8	0.8125
AT403-10	1	3/8	0.9375

Key points

- **Full bearing** for head and nut (AC 43.13-1B 7-39).
- **Pin rivet head:** spotface 1/16 in over the head (FAA p. 4-49).
- **Hole ⊥ seat within ±3°** unless the drawing says otherwise.
- **AT403 = back cutter:** it cuts the far face; both sides must be reachable.

Step by step

1. Read the bearing Ø and the hole.
2. Pick D with D − 2R ≥ bearing Ø + pilot gap (D − 1/16 in for the AT403).
3. Pilot to the hole, not the nominal size.
4. Cut only to clean up (the SRM sets depth); check the seat.

MAIN SOURCES · FAA-H-8083-31B, Aviation Maintenance Technician Handbook: Airframe, Chapter 4 · FAA AC 43.13-1B CHG 1, Chapter 7 · TO 1-1A-1 / NAVAIR 01-1A-1, General Manual for Structural Repair · ATS, AT403 bayonet spotface cutter and AT404 back cutter pilot · Fastener data sheets on this site

SCAN · OPEN THIS GUIDE
theaviationpoint.com/standard-practices/spotface-sizes/

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