

## Shop, Jet Engine Inspection and Maintenance. FAC: 2116

CATCODE: 211157

OPR: AF/A4L

OCR: N/A

1.1. **Description.** This shop maintains and stores aircraft engines, gas turbine compressors, and engine accessories. Major functions performed in the shop are disassembly, inspection, repair, replacement, technical order compliance, and assembly of engine components. A typical shop has a high-bay, direct engine maintenance work area with overhead crane; a direct and indirect support area for non-powered support equipment; accessories such as after burners, thrust reversers, compressor balancing, and modules; parts supply; tool room; training room; spare engines; cleaning room; bearing room; computer room; and administrative support.

1.2. **Requirements Determination.** This facility is necessary to provide maintenance for aircraft jet engines.

1.3. **Scope Determination.** Use the following formula to determine space requirements:

**Figure 1.1. Calculating Space Requirements for Jet Inspection and Maintenance Shop.**

$$X = A \times B \times C \times D / E$$

Where:

X = Total space requirements

A = Support space (see Table 1.1.)

B = Work flow, average flow days per engine (see Table 1.1.)

C = Workload, one-half the number of installed engines in authorized aircraft (USAF PD, include Queen Bee workloads)

D = Engine work space area (double the engine length times quadruple the engine width, see Table 1.1.)

E = Average number of workdays per month (22 days)

Use the formula for each type of engine to be maintained, and add the results to determine the shop's total space requirements. Example: for the J85 engine, divide the product of A(2), B(16), C(102), and D(13) by E(22) for an X value of 1,930 m<sup>2</sup> (20,770 ft<sup>2</sup>).

1.4. **Dimensions.** See paragraph 1.3 above.

1.5. **Design Considerations.** Locate facilities to comply with explosives safety standards. The engine maintenance areas require a ceiling height that accommodates the installation of a bridge crane system and monorail system with a minimum overhead clearance of 4.58 m (15 ft) as measured from the floor level to the bottom of the hoist hook. The work bays should be set up in the shop under the bridge crane to adequately perform engine maintenance and

module separation/installation. Adequate space is needed in front of engine stands to allow for maneuvering and transferring of engines from trailers to stands.

**Table 1.1. Space Requirements for Jet Engine Intermediate Maintenance Shop.**

Type Engine <sup>1,2,3</sup>	Support Factor	Flow Days	Gross Area (D)	
	(A)	(B)	m <sup>2</sup>	ft <sup>2</sup>
TF30	2.0	15	65	695
TF33 (B-52)	0.8	14	38	410
TF33 (other)	1.4	20	41	438
TF34	1.4	17	37	396
TF39	0.8	24	105	1,129
TF41	6.4	6	24	253
F100 (F-16)	3.3	9	48	515
F100 (F-15)	2.3	9	48	515
F110 (F-16)	1.9	16	48	515
F110 (F-15)	1.3	16	48	515
F101	3.0	6	39	420
type - F-117	3.0	9	75	792
J33	2.0	14	26	275
J57	1.2	14	34	367
J60	2.0	12	10	107
J69	3.0	10	5	56
J75	1.2	15	53	570
J79	1.2	15	43	459
J85	2.0	16	13	140
T53	3.0	8	6	61
T56	1.2	12	31	332
T58	3.0	11	7	71
T64	3.0	12	9	92
T76	2.0	16	28	305
T400	3.0	7	16	170
Gas Turbine Compressors under 1,270 mm (50 inches)	4.0	variable	variable	
Gas Turbine Compressors over 1,270 mm (50 inches)	3.0	variable	variable	

**NOTES:**

1. In addition to the basic formula, use the following factors to adjust space requirements for units organized as a standard 72 PAA wing. These factors provide smaller units sufficient overhead and trim larger units of excessive space. Use a multiplication factor of 1.3 for units less than 72 PAA, and 0.85 for those units greater than 72 PAA. A 72 PAA engine shop should generally include 10 work bays; a 24 PAA should generally have 4 work bays.
2. For units organized as composite wings, use the basic formula for each engine type in the unit. The multiplication factors for PAA size do not apply.
3. For engine types not shown, contact MAJCOM/A4M for latest guidance.