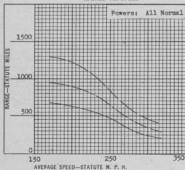


JACK 21

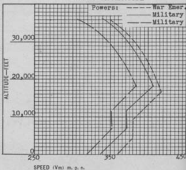
RANGE · SPEED · CLIMB

| KEY | CONDITION | WEIGHT (lb.) | FUEL LOAD (lb.) | BOMBS—CARGO (lb.) |
|-------|------------------|--------------|-----------------|-------------------|
| ————— | Normal Fighter | 7320 | 660 | None |
| ----- | Overload Fighter | 7734 | 951 | " |
| ----- | Overload Fighter | 8130 | 1347 | " |
| ----- | Normal Fighter | 7320 | 660 | " |

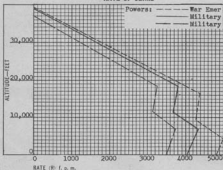
RANGE VS. SPEED



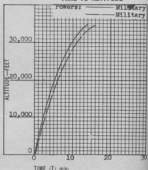
SPEED VS. ALTITUDE



RATE OF CLIMB



TIME TO ALTITUDE



PERFORMANCE AND CHARACTERISTICS

JACK 21

TAKE-OFF

| | Load | Feet |
|----------------------------|------|------|
| Runway Requirements | 7320 | 1000 |
| T. O. over 50' obstacle | | |
| Landing over 50' obstacle | | |

CLIMB-CEILING

| to 7320 lbs. | Feet | Min. |
|------------------------|------|------|
| Rate @ S. L. | 4875 | 1 |
| Rate @ 16,600 h. | 4380 | 1 |
| Time to 10,000 | | 2.3 |
| Time to 20,000 | | 5.1 |
| Service ceiling 38,800 | | |

AIRCRAFT

| | |
|-----------------------------------|---|
| Duty Fighter (Interceptor) | |
| Designation | Navies Model 21 |
| Description | Low wing monoplane |
| Mfg. | Mitsubishi |
| Engines | 1 Crew 1 |
| Construction | All metal; semi-monocoque fuselage, cantilever wing |

SPEED

| @ 7320 lbs. | Mph. | Knots | Altitude |
|-----------------------|------|-------|-----------|
| Maximum | 359 | 310 | @ S. L. |
| Maximum | 417 | 362 | @ 16,600' |
| Cruising - Combat | 318 | 275 | @ 1500' |
| Economical - Cruising | 171 | 147 | @ 1500' |

BOMBS-CARGO

| | No. | Size | Total Lbs. |
|---------|------|------|------------|
| Normal | None | | |
| Maximum | None | | |

ENGINES

| | H. P. | Altitude |
|-----------|-------|----------|
| Take-off | 1870 | S.L. |
| Normal | 1280 | 1500' |
| Military | 1695 | 6800 |
| | 1560 | 18,100 |
| War Power | 1940 | 4400 |
| | 1785 | 16,600 |

WEIGHTS

| | Lbs. |
|----------|------|
| Empty | |
| Gross | 7320 |
| Overload | 8130 |

FUEL

| | U. S. gal. | Imp. gal. |
|----------------------|------------|-----------|
| Built-in | 159 | 132 |
| Internal (Removable) | | |
| External (drop) | 66 | 55 |
| Maximum | 225 | 187 |

| | |
|---------------|----------------------------------|
| Mfg. | Mitsubishi |
| Model | Kasei 23 |
| Type | Radial |
| Cylinders | 14 Cooling Air (Fan Assist) |
| Supercharger | 2 Speed |
| Propeller | 4 BL.C.S. Diam. 10.825' |
| Fuel-Take-off | 92 Cruising 92 plus ADI |

RANGE AND RADIUS

| | Miles | | Speed | | Alt. feet | Fuel gal. | | Bombs lbs. | Cargo lbs. |
|------------------------------|-------|-------|-------|-------|-----------|-----------|------|------------|------------|
| | stat. | naut. | mph. | Knots | | U. S. | Imp. | | |
| Maximum range (maximum fuel) | 1300 | 1129 | 171 | 147 | 1500 | 225 | 187 | None | None |
| Range @ Combat | 405 | 353 | 313 | 270 | 1500 | 225 | 187 | None | None |
| Maximum range (normal fuel) | 670 | 582 | 171 | 147 | 1500 | 110 | 92 | None | None |
| Range @ Combat | 205 | 178 | 318 | 275 | 1500 | 110 | 92 | None | None |
| Radius () | | | | | | | | | |

DIMENSIONS

| | | | |
|--------|-------|-----------|-------------|
| Span | 35.4' | Length | 31.8' |
| Height | 13'0" | Wing area | 216 sq. ft. |

GENERAL DATA

JACK is cleanly designed with a smoothly streamlined cowling which is made possible by the use of the long shafted Kasei 23 engine. It was designed primarily as an interceptor which accounts for the short range and high rate of climb. It may possibly carry a 35 kg. bomb under each wing for air to air bombing.

JACK 21 may be equipped with arrester hook.



JACK 21**FIELDS OF FIRE**

FORWARD GUNS
"A", AND "B"

4-foot view from above

EXHAUST FLAME PATTERNS

REAR VIEW

VULNERABILITY

Auxiliary gas tank
Jettisonable

LEGEND

Fuel tanks, unprotected



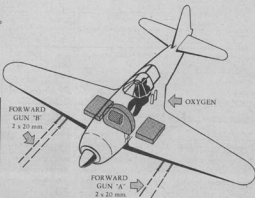
Fuel tanks, protected



Oil tanks, unprotected



Oil tanks, protected



FORWARD
GUN "B"
2 x 20 mm.

OXYGEN

FORWARD
GUN "A"
2 x 20 mm.

ARMAMENT**TACTICAL DATA**

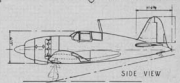
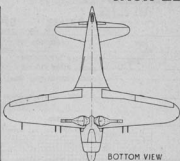
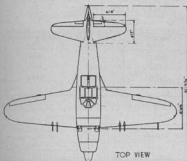
No armor or fuel tank protection have been found or indicated by documents.

| | No. | Size | Eds. Gun | Type |
|------|-----|-------|----------|--|
| Wing | 4 | 20 mm | 200 | Type 99 Fixed, (Oerlikon), belt fed One Nr.1 and one Nr.2 gun is mounted internally in each wing. |

DATE May 1945

RESTRICTED

JACK 21

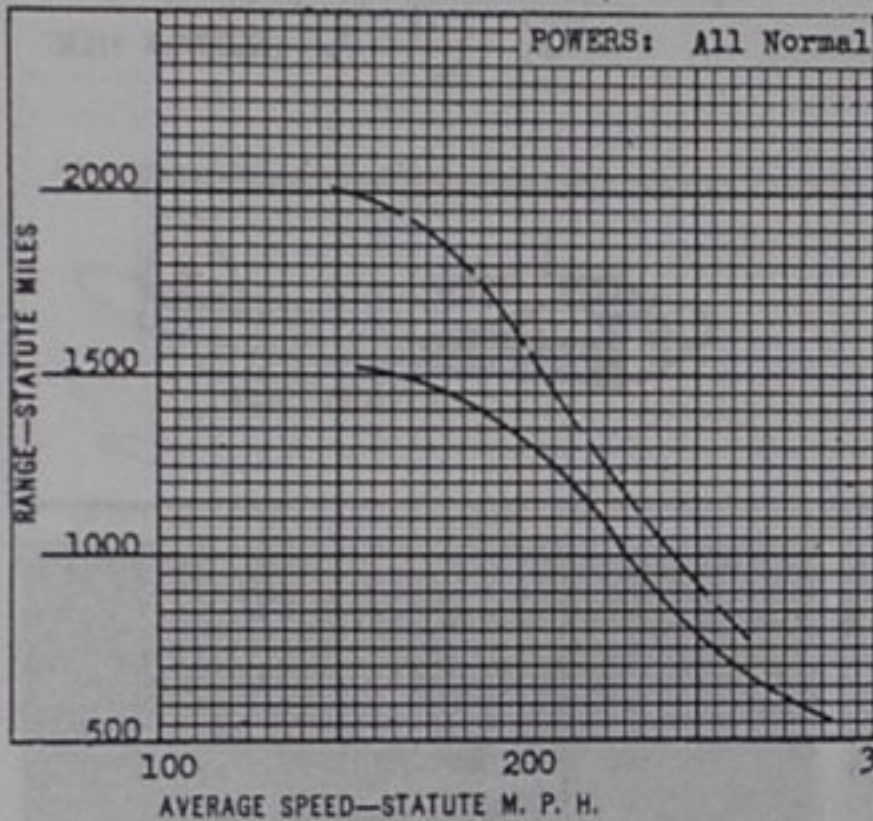


TONY 1

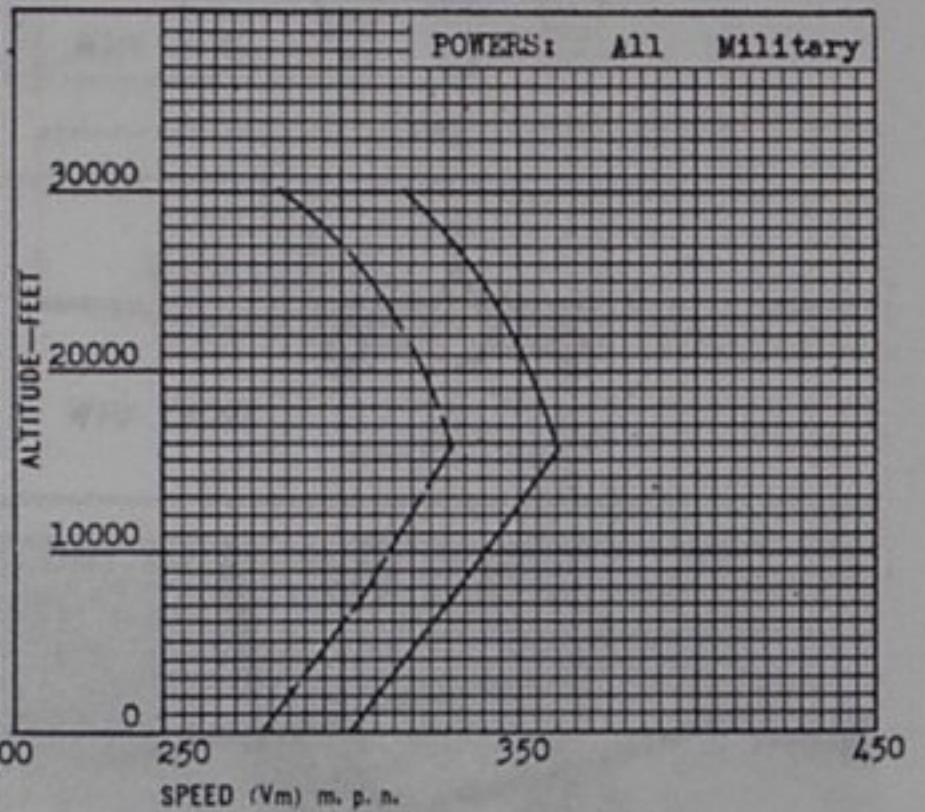
RANGE * SPEED * CLIMB

| KEY | CONDITION | WEIGHT (lb.) | FUEL LOAD (lb.) | BOMBS—CARGO (lb.) |
|-----------|------------------|--------------|-----------------|-------------------|
| ————— | NORMAL FIGHTER | 6982 | 1194 | None |
| - - - - - | OVERLOAD FIGHTER | 7682 | 1794 | None |

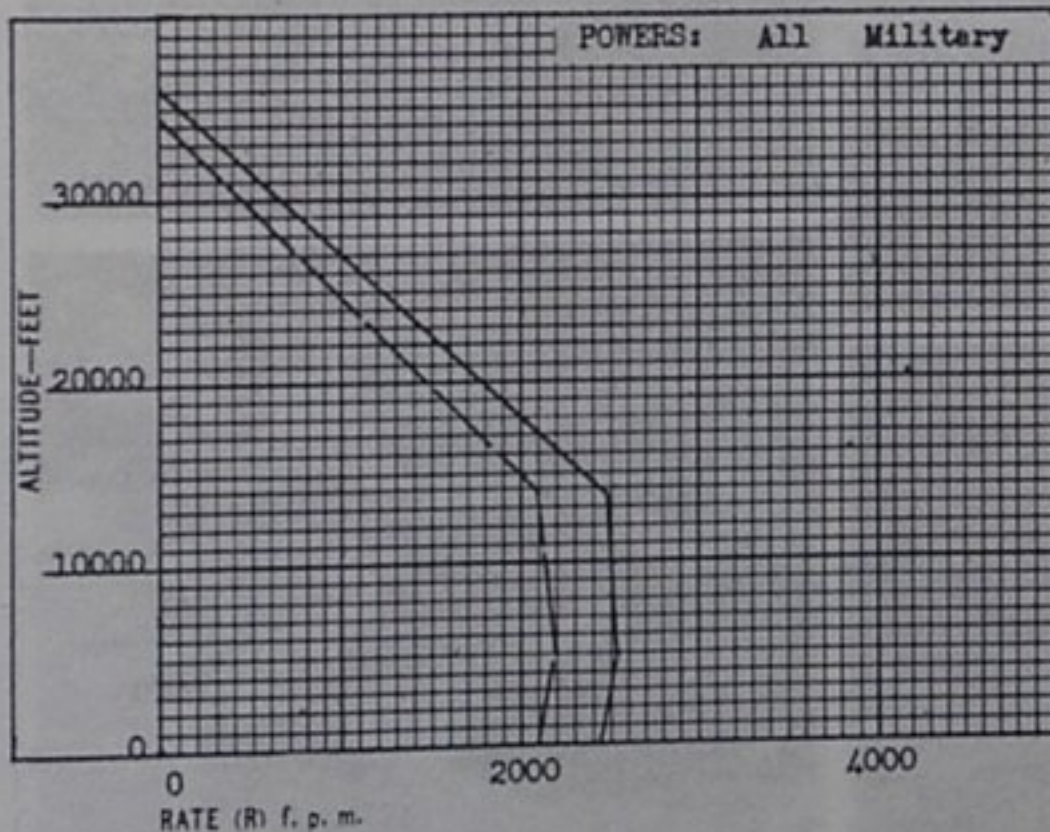
RANGE VS. SPEED



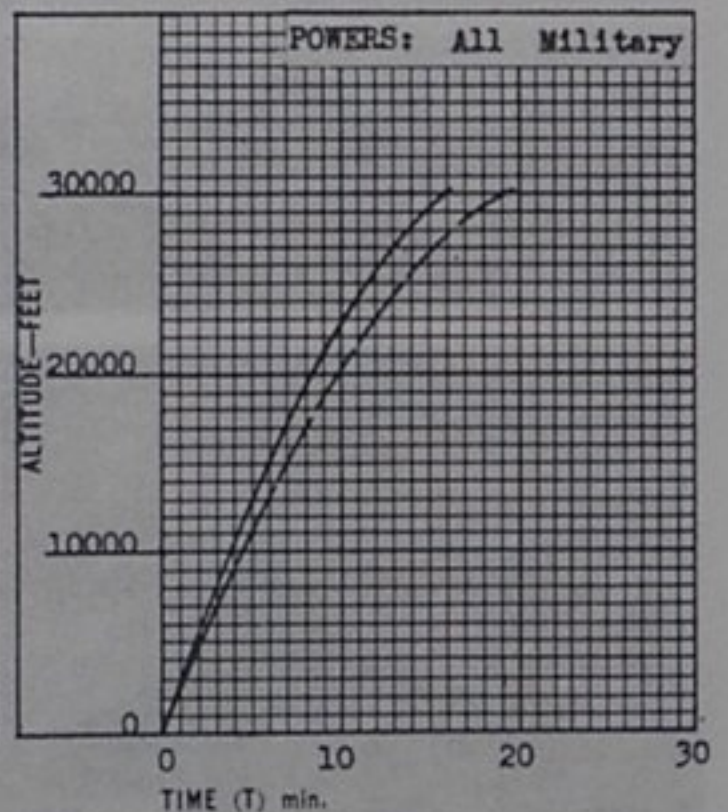
SPEED VS. ALTITUDE



RATE OF CLIMB



TIME TO ALTITUDE



PERFORMANCE AND CHARACTERISTICS

TONY 1

TAKE-OFF

| | Load | Feet |
|---------------------------|-------|------|
| T. O. calm | Gross | 744 |
| T. O. 25 kt. wind | Gross | 338 |
| T. O. over 50' obstacle | | |
| Landing over 50' obstacle | | |

CLIMB—CEILING

| @ 6982 lbs. | Feet | Min. |
|-------------------|---------|------|
| Rate @ S. L. | 2440 | 1 |
| Rate @ 13,800 ft. | 2470 | 1 |
| Time to 10,000' | | 4.0 |
| Time to 20,000' | | 8.45 |
| Service ceiling | 35,100' | |

AIRCRAFT

| | |
|--------------|--------------------|
| Duty | Fighter |
| Designation | Type 3, Ki 61 |
| Description | Low-wing Monoplane |
| Mfg. | Kawasaki |
| Engines | 1 Crew 1 |
| Construction | All metal |

SPEED

| @ 6982 lbs. | Mph. | Knts. | Altitude |
|--------------|------|-------|-----------|
| Maximum | 302 | 262 | @ S. L. |
| Maximum | 361 | 314 | @ 15,800' |
| Cruising 75% | 215 | 187 | 1,500' |
| Economical | | | |

BOMBS—CARGO

| | No. | Size | Total Lbs. |
|---------|-----|--------|------------|
| Normal | | None | |
| Maximum | 2 | 100 kg | 440 |

ENGINES

| | H. P. | Altitude |
|-----------------|---------------------|----------------|
| Take-off | 1160 | S.L. |
| Normal | 935 | 5,200' |
| | 940 | 13,200' |
| Military | 1030 | S.L. |
| | 1085 | 13,800' |
| War Emerg. | 1100 | 12,600' |
| Mfg. | Kawasaki | |
| Model | Type 2, 1100 HP | |
| Type | Inverted 60° V | |
| Cylinders | 12 | Cooling Liquid |
| Supercharger | 2 Speed hydraulic | |
| Propeller | 3 Blade Diam. 10.3' | |
| Fuel - Take-off | 92 | Cruising 92 |

WEIGHTS

| | Lbs. |
|----------|------|
| Empty | 5010 |
| Gross | 6982 |
| Overload | 7682 |

FUEL

| | U. S. gal. | Imp. gal. |
|----------------------|------------|-----------|
| Built-in | 199 | 165 |
| Internal (Removable) | | |
| External (drop) | 100 | 83 |
| Maximum | 299 | 248 |

RANGE AND RADII

| | Miles | | Speed | | Alt. feet | Fuel gal. | | Bombs lbs. | Cargo lbs. |
|---------------------------------------|-------|-------|-------|-------|-----------|-----------|------|------------|------------|
| | stgt. | naut. | mph. | Knts. | | U. S. | Imp. | | |
| Maximum range (maximum fuel) @ 75% VM | 2010 | 1745 | 148 | 128 | 1500 | 299 | 248 | None | None |
| Maximum range (normal fuel) @ 75% VM | 1625 | 1411 | 198 | 171 | 1500 | 299 | 248 | None | None |
| Radius () | 1520 | 1320 | 156 | 135 | 1500 | 199 | 165 | None | None |
| Radius () | 1195 | 1040 | 215 | 187 | 1500 | 199 | 165 | None | None |

DIMENSIONS

| | | | |
|--------|-------|-----------|------------|
| Span | 39.3' | Length | 28.9' |
| Height | | Wing area | 215 sq.ft. |



GENERAL DATA

TONY is equipped with leak proof internal tanks and armor is fitted behind and under the pilot. Because of better fuel and pilot protection this aircraft represents a distinct improvement in Jap fighters.

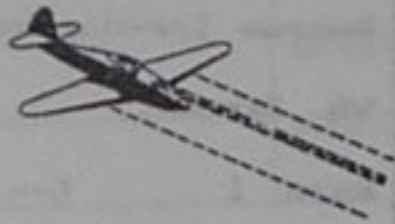
External wing racks may carry two 50 gallon fuel tanks or two 220 lb. bombs.

DATE December 1944

RESTRICTED

TONY 1

FIELDS OF FIRE



FORWARD GUNS
"A", AND "B"

3/4-front view from above

EXHAUST FLAME PATTERNS

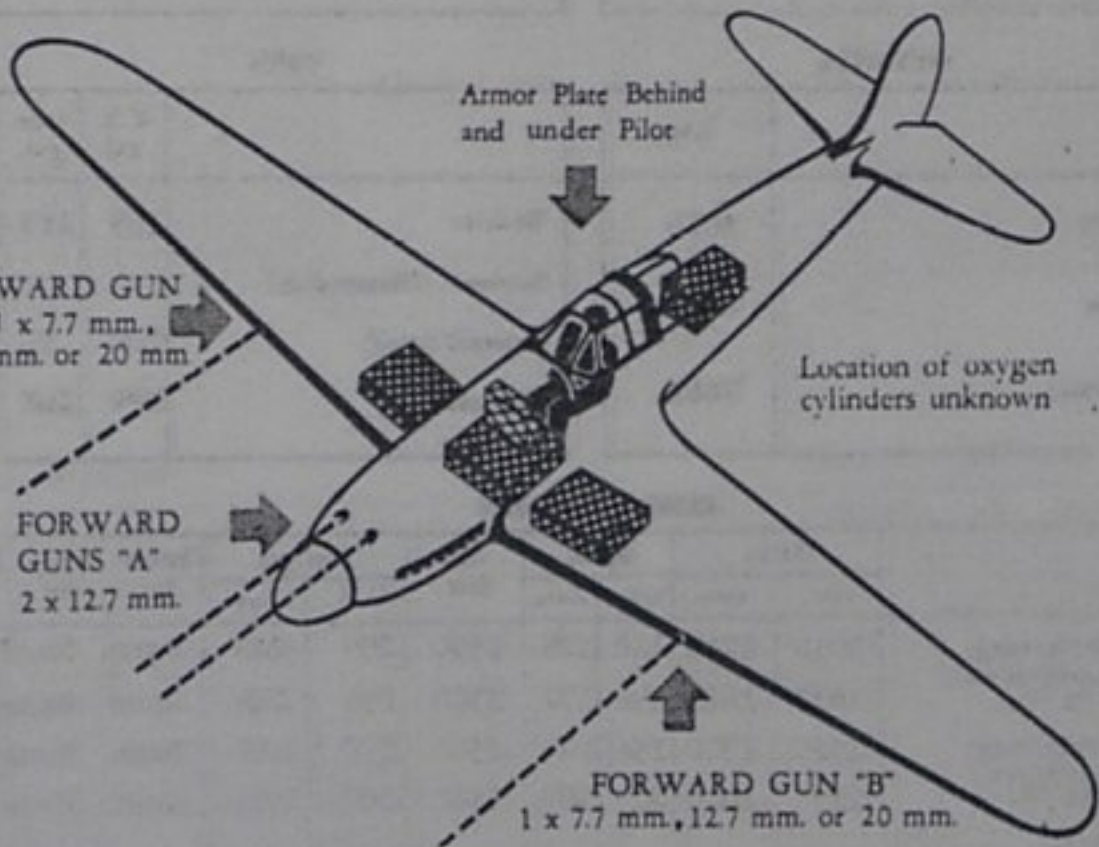


REAR VIEW

VULNERABILITY



Auxiliary gas tanks,
Jettisonable



LEGEND

- Fuel tanks, unprotected
- Fuel tanks, self-sealing
- Oil tanks, unprotected
- Oil tanks, self-sealing

ARMAMENT

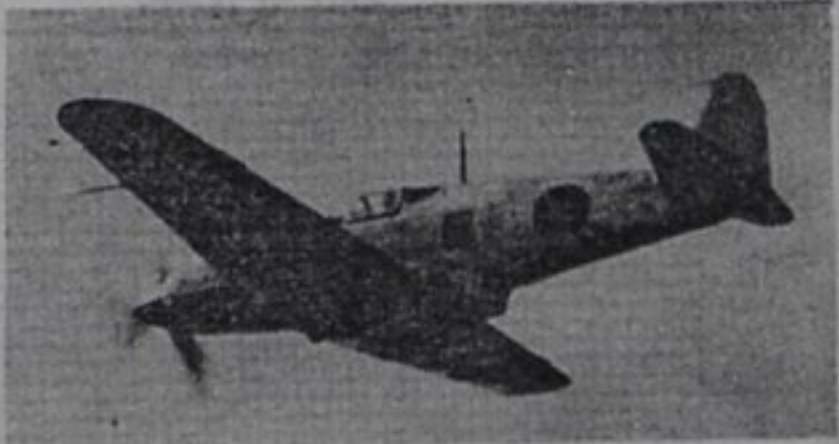
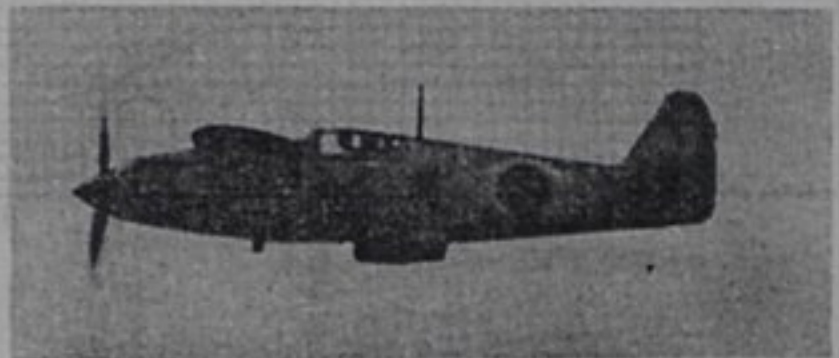
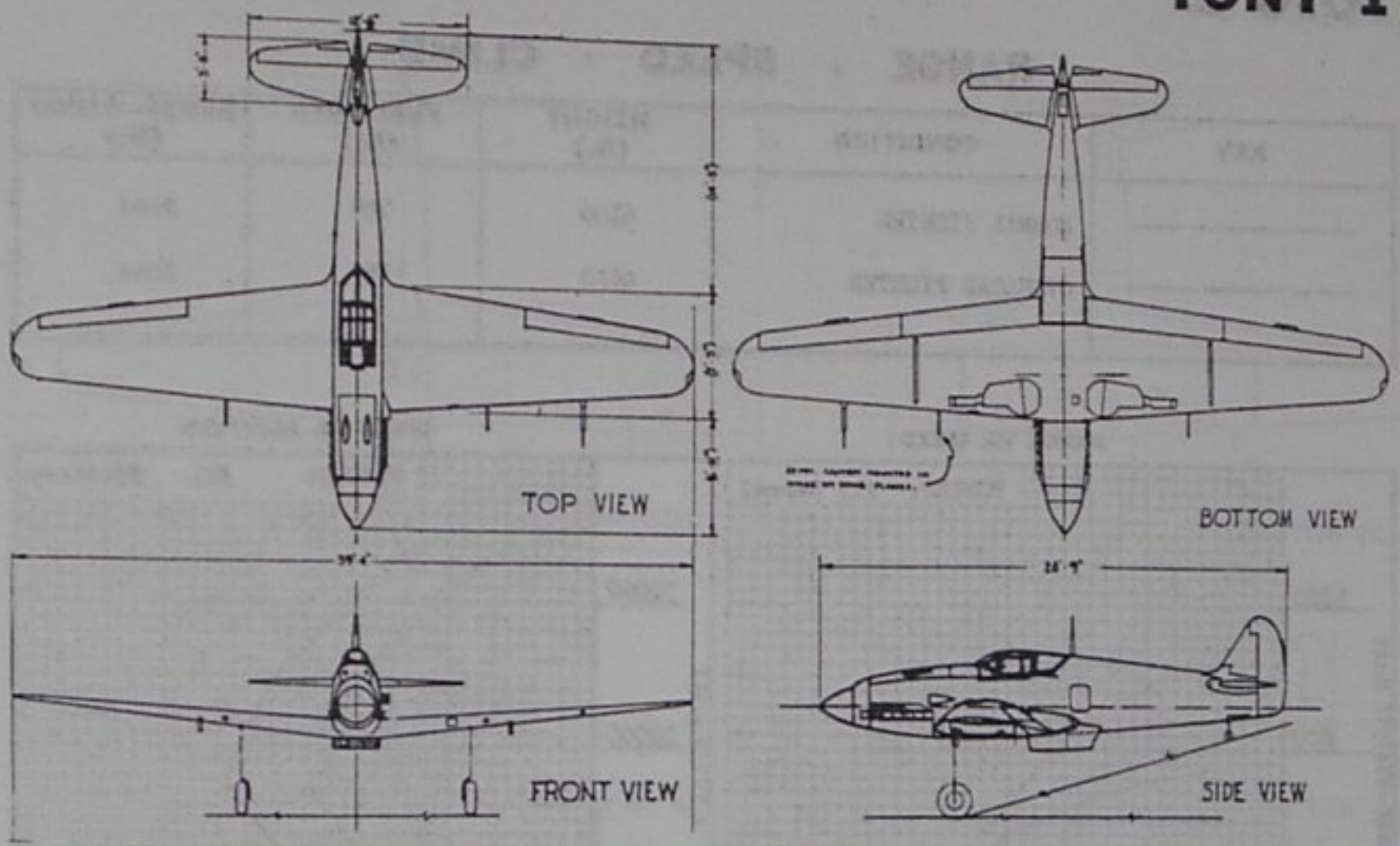
| | No. | Size | Rds. Gun. | Type | | No. | Size | Rds. Gun. | Type |
|---------|-----|---------|-----------|-------|------|-----|---------|-----------|-------|
| Forward | 2 | 12.7 mm | | Fixed | Tail | | | | |
| Top | | | | | Wing | 2 | 12.7 mm | | Fixed |
| Side | | | | | or | 2 | 20 mm | | Fixed |
| Bottom | | | | | | | | | |

TACTICAL DATA

Armor plate is used to protect the radiator.

154A-4

TONY 1



RESTRICTED

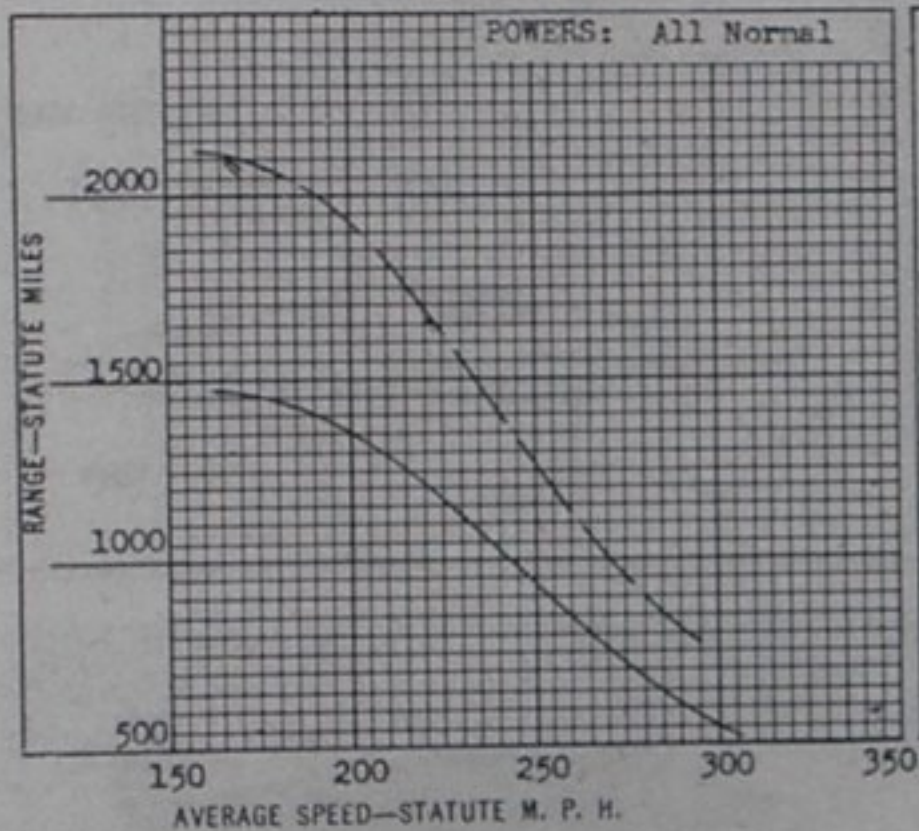
DATE December 1944

TONY 2

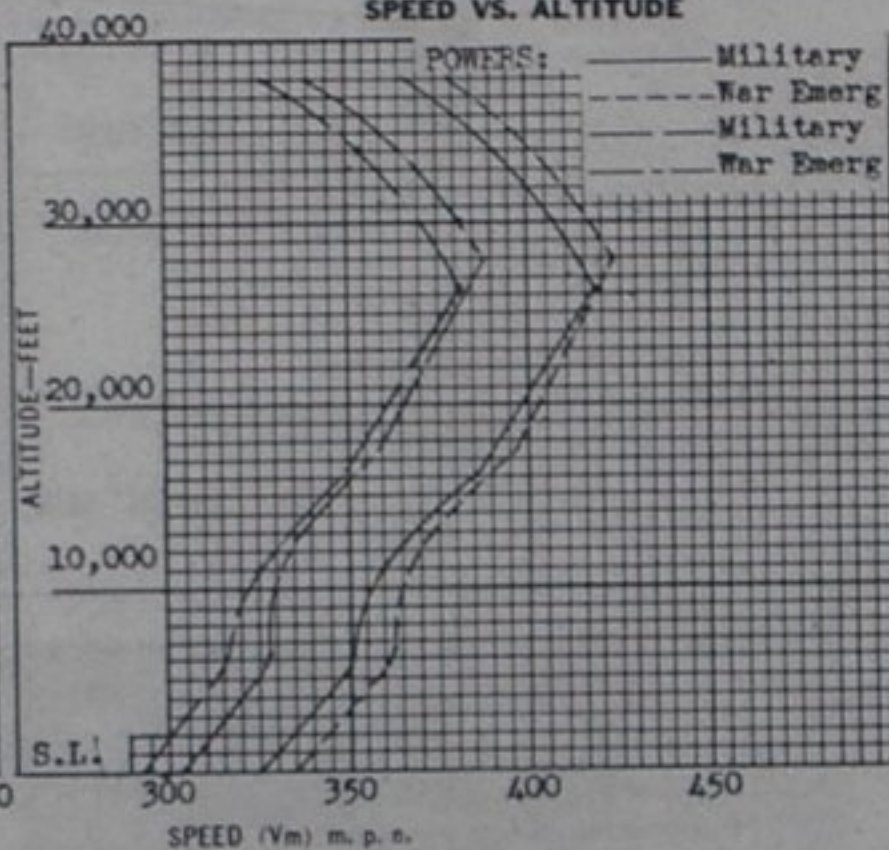
RANGE · SPEED · CLIMB

| KEY | CONDITION | WEIGHT (lb.) | FUEL LOAD (lb.) | BOMBS—CARGO (lb.) |
|-------|------------------|--------------|-----------------|-------------------|
| ———— | NORMAL FIGHTER | 7232 | 1196 | None |
| ----- | NORMAL FIGHTER | 7232 | 1196 | None |
| ———— | OVERLOAD FIGHTER | 7929 | 1830 | None |
| ----- | OVERLOAD FIGHTER | 7929 | 1830 | None |

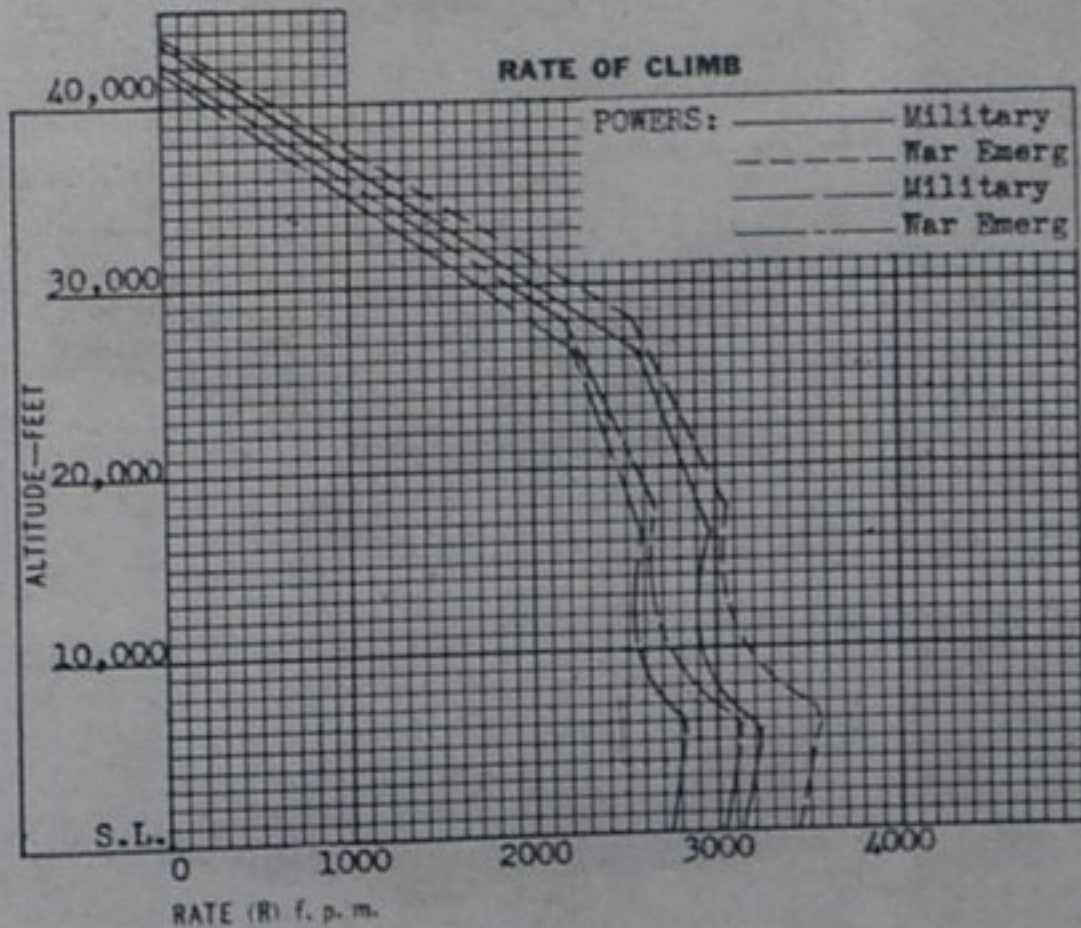
RANGE VS. SPEED



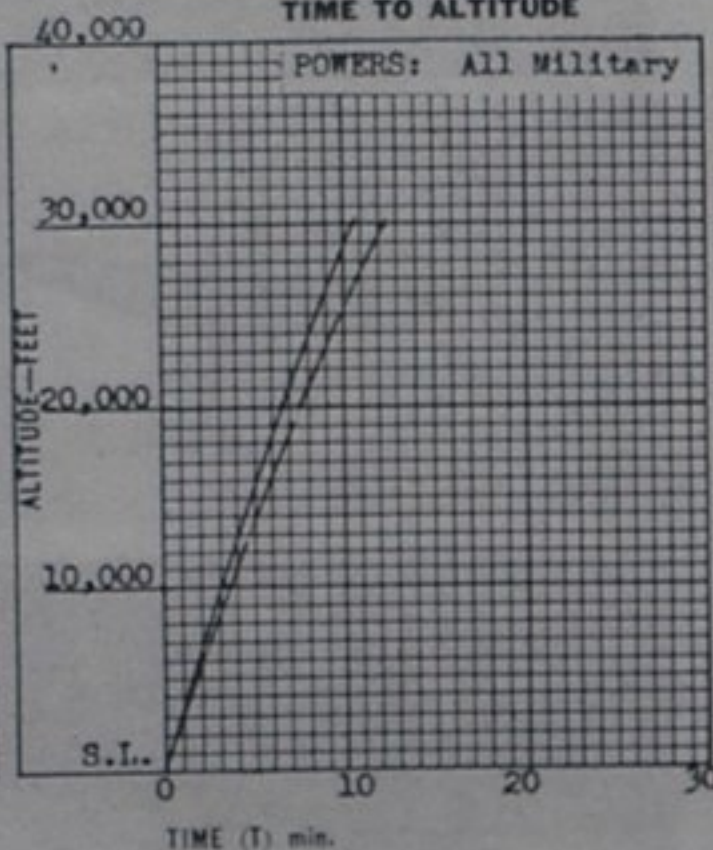
SPEED VS. ALTITUDE



RATE OF CLIMB



TIME TO ALTITUDE



PERFORMANCE AND CHARACTERISTICS

TONY 2

TAKE-OFF

| | Load | Feet |
|---------------------------|------|------|
| Runway Requirements | 7232 | 1000 |
| T.O. over 50' obstacle | | |
| Landing over 50' obstacle | | |
| * T.O. + 100% | | |

CLIMB—CEILING

| @ 7232 lbs. | Feet | Min. |
|-------------------------|------|------|
| Rate @ S.L. | 3120 | 1 |
| Rate @ 5550 ft. | 3230 | 1 |
| Time to 10,000' | | 3.2 |
| Time to 20,000' | | 6.6 |
| Service ceiling 43,300' | | |

AIRCRAFT

| |
|--------------------------------------|
| Duty Fighter |
| Designation Type 3, Model 2 Ki 61 |
| Description Low-wing Monoplane |
| Mfg. Kawasaki |
| Engines 1 Crew 1 |
| Construction All Metal |

SPEED

| @ 7232 lbs. | Mph. | Knts. | Altitude |
|-------------|------|-------|-----------|
| Maximum WE | 335 | 291 | @ S.L. |
| Maximum WE | 423 | 368 | @ 28,000' |
| Cruising | | | |
| Economical | | | |

BOMBS—CARGO

| | No. | Size | Total Lbs. |
|---------|-----|---------|------------|
| Normal | | | None |
| Maximum | 2 | 100 kg. | 440 |

ENGINES

| | H. P. | Altitude |
|------------|-------|----------|
| Take-off | 1380 | S.L. |
| Normal | | |
| Military | 1320 | 5550 |
| War Emerg. | 1440 | 5700 |

WEIGHTS

| | Lbs. |
|----------|------|
| Empty | 5260 |
| Gross | 7232 |
| Overload | 7929 |

FUEL

| | U.S. gal. | Imp. gal. |
|----------------------|-----------|-----------|
| Built-in | 199 | 162 |
| Internal (Removable) | | |
| External (drop) | 106 | 93 |
| Maximum | 305 | 255 |

Mfg. Kawasaki

Model Ha 140

Type Inverted 60° Vee

Cylinders 12 Cooling Liquid

Supercharger 2 Stage variable

Propeller 4 Blade^{speed} Diam. 10'
C.S.

Fuel - Take-off 92 Cruising 92

RANGE AND RADIUS

| | Miles | | Speed | | Alt. feet | Fuel gal. | | Bombs lbs. | Cargo lbs. |
|------------------------------|-------|-------|-------|-------|-----------|-----------|------|------------|------------|
| | stat. | naut. | mph. | Knts. | | U. S. | Imp. | | |
| Maximum range (maximum fuel) | 2120 | 1842 | 160 | 139 | 1500 | 305 | 255 | None | None |
| At 75% Vmax. | 1655 | 1436 | 221 | 192 | 1500 | 305 | 255 | None | None |
| Maximum range (normal fuel) | 1470 | 1276 | 163 | 141 | 1500 | 199 | 162 | None | None |
| At 75% Vmax. | 1130 | 893 | 229 | 199 | 1500 | 199 | 162 | None | None |
| Radius () | | | | | | | | | |
| Radius () | | | | | | | | | |

DIMENSIONS

| | | | |
|--------|-------|-----------|------------|
| Span | 39.3' | Length | 28.9' |
| Height | 9.2' | Wing area | 215 sq.ft. |



GENERAL DATA

Performance figures are based on fragmentary documentary evidence and resultant extrapolation of engine ratings.

Photographs are those of TONY 1. Airframe and dimensions are assumed to be the same.

TONY 2

FIELDS OF FIRE



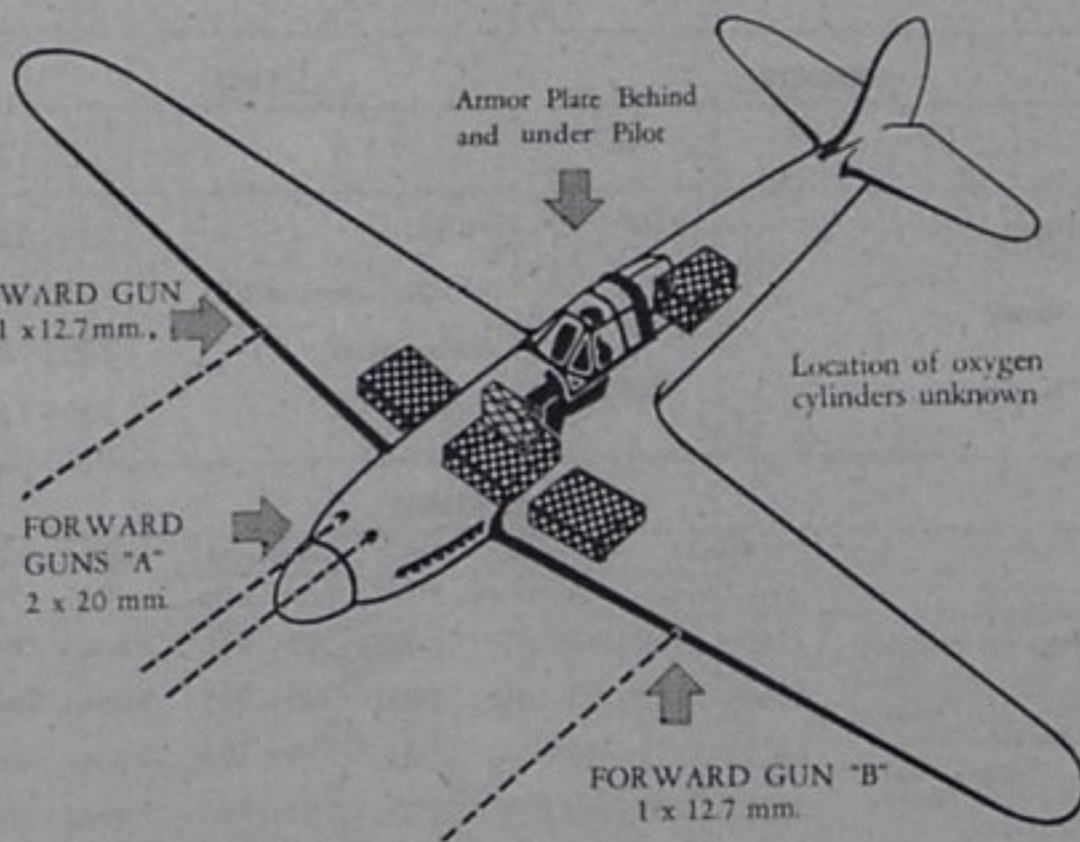
FORWARD GUNS
"A", AND "B"
3/4-front view from above

EXHAUST FLAME PATTERNS



REAR VIEW

VULNERABILITY



| LEGEND | |
|--------------------------|--|
| Fuel tanks, unprotected | |
| Fuel tanks, self-sealing | |
| Oil tanks, unprotected | |
| Oil tanks, self-sealing | |

ARMAMENT

| | No. | Size | Rds. Gun | Type | | No. | Size | Rds. Gun | Type |
|---------|-----|---------|----------|-------|------|-----|---------|----------|-------|
| Forward | 2 | 12.7 mm | 250 | Fixed | Tail | | | | |
| Cowl | 2 | or | | | | | | | |
| Top | 2 | 20 mm | 150 | Fixed | Wing | 2 | 12.7 mm | 200 | Fixed |
| | | | | | | 2 | or | | |
| Side | | | | | | 2 | 20 mm | 100 | Fixed |
| Bottom | | | | | | | | | |

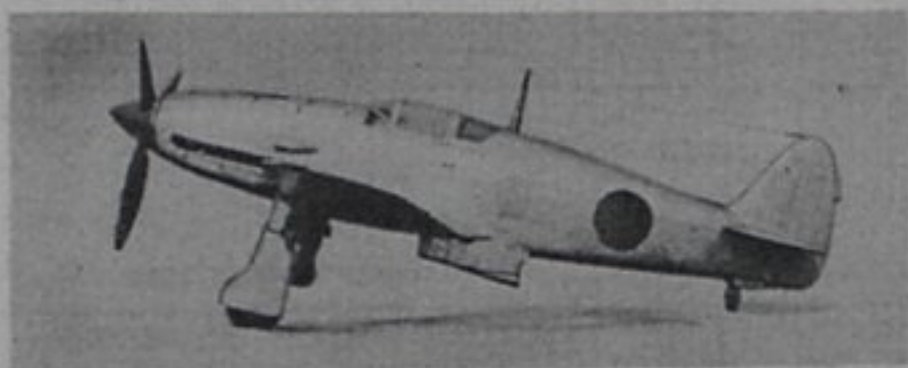
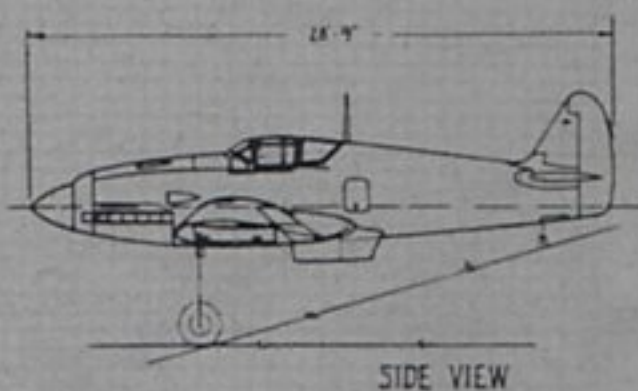
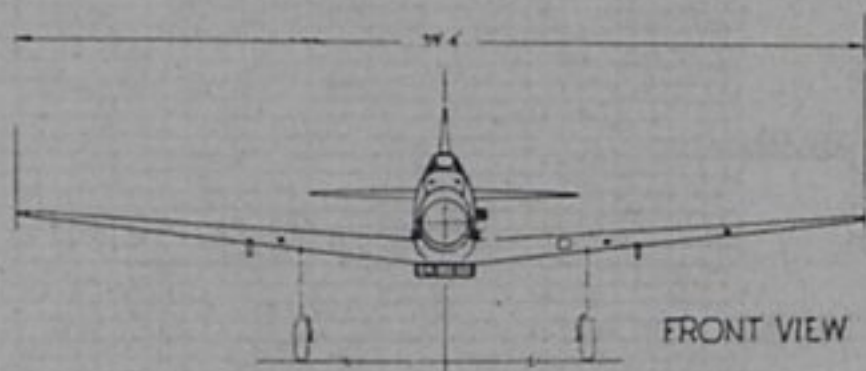
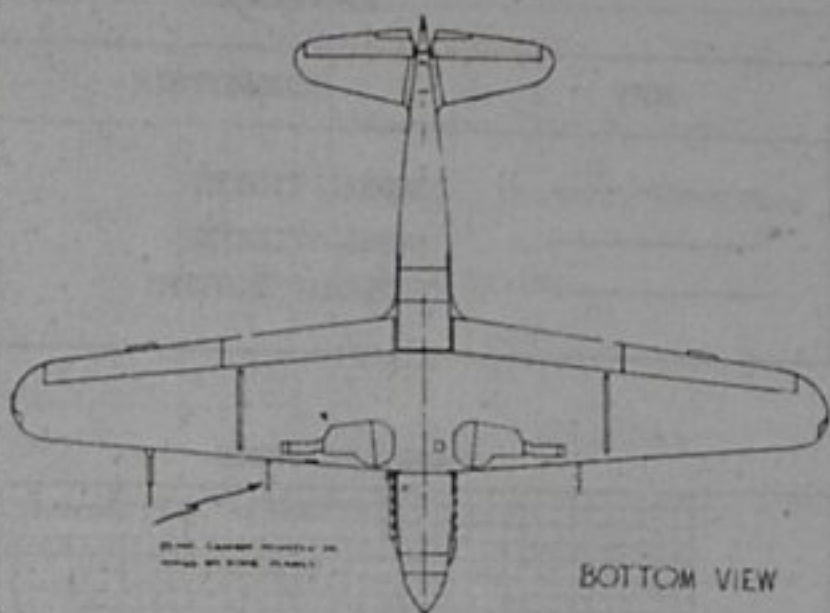
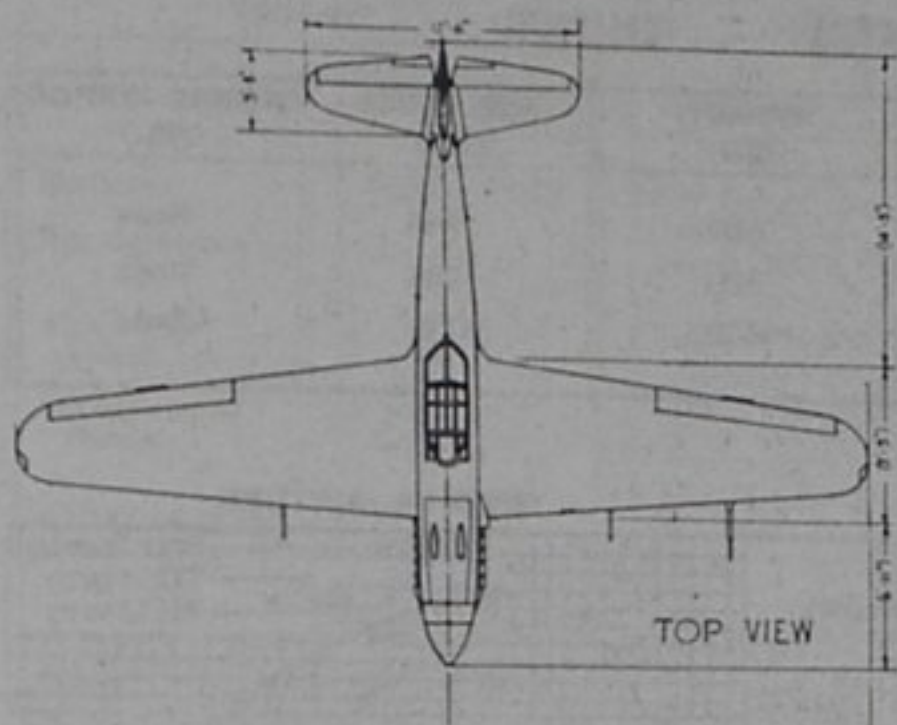
TACTICAL DATA

Armor plate is used to protect the radiator.

DATE March 1945

RESTRICTED

TONY 2

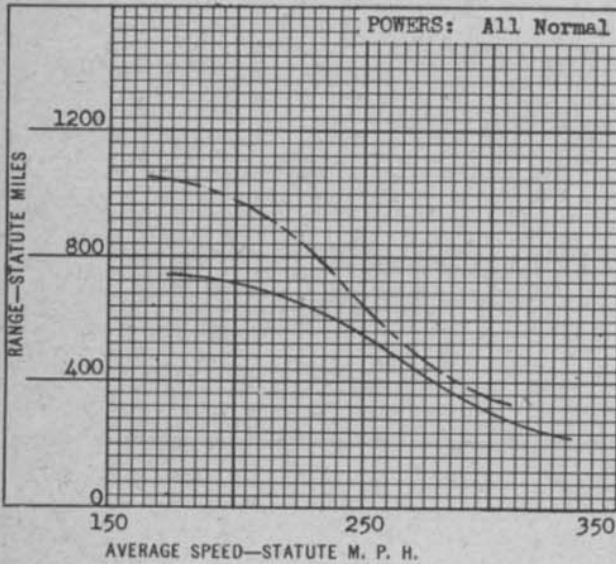


TOJO 2

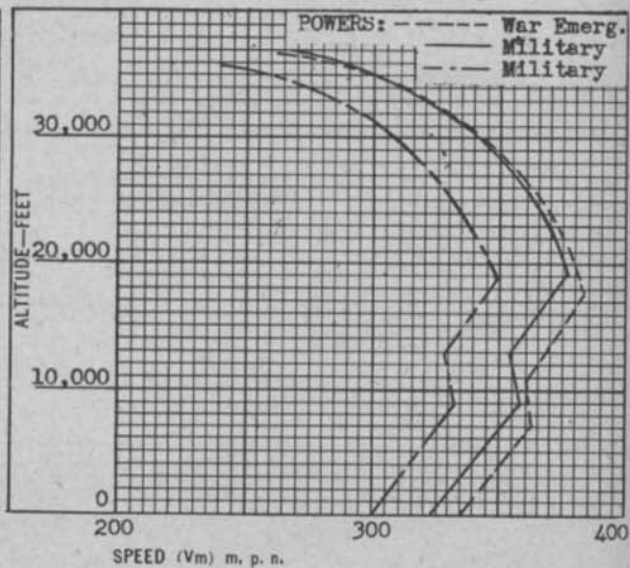
RANGE * SPEED * CLIMB

| KEY | CONDITION | WEIGHT (lb.) | FUEL LOAD (lb.) | BOMBS—CARGO (lb.) |
|-------|------------------|--------------|-----------------|-------------------|
| ----- | NORMAL FIGHTER | 6100 | 768 | None |
| ===== | NORMAL FIGHTER | 6100 | 768 | None |
| ----- | OVERLOAD FIGHTER | 6610 | 1182 | None |

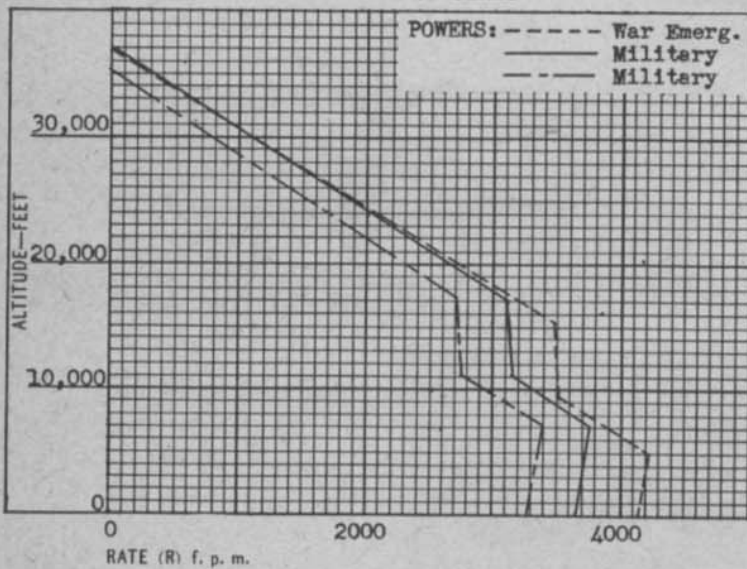
RANGE VS. SPEED



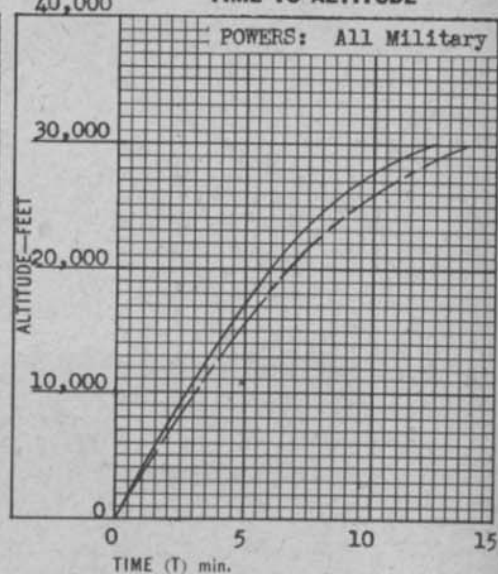
SPEED VS. ALTITUDE



RATE OF CLIMB



TIME TO ALTITUDE



PERFORMANCE AND CHARACTERISTICS

TOJO 2

TAKE-OFF

| | Load | Feet |
|---------------------------|------|------|
| Runway Requirements | 6100 | 990 |
| T. O. over 50' obstacle | | |
| Landing over 50' obstacle | | |
| * T.O. + 100% | | |

CLIMB—CEILING

| @ 6100 | lbs. | Feet | Min. |
|-------------------------|------|------|------|
| Rate @ S. L. | | 3640 | 1 |
| Rate @ 7000 | ft. | 4220 | 1 |
| Time to 10,000' | | | 2.8 |
| Time to 20,000' | | | 6.0 |
| Service ceiling 36,350' | | | |

AIRCRAFT

| | |
|--------------|--------------------------|
| Duty Fighter | |
| Designation | Type 2, Model 2 Ki 44 |
| Description | Low-wing Monoplane |
| Mfg. | Nakajima |
| Engines | 1 Crew 1 |
| Construction | All Metal |

SPEED

| @ 6100 | lbs. | Mph. | Knts. | Altitude |
|------------|------|------|-----------|----------|
| Maximum WE | 335 | 291 | @ S. L. | |
| Maximum WE | 383 | 332 | @ 17,400' | |
| Cruising | | | | |
| Economical | | | | |

BOMBS—CARGO

| | No. | Size | Total Lbs. |
|---------|------|------|------------|
| Normal | None | | |
| Maximum | | | |

ENGINES

| | H. P. | Altitude |
|-----------------------|---------|---------------|
| Take-off WE | 1500 | S.L. |
| Normal | | |
| Military | 1420 | 7000' |
| | 1300 | 17200' |
| War Emerg. | 1570 | 5000' |
| Mfg. Nakajima | | |
| Model Type 2, 1450 HP | | |
| Type Radial | | |
| Cylinders | 14 | Cooling Air |
| Supercharger 2 Speed | | |
| Propeller | 3 Blade | Diam. 10' |
| | C.S. | |
| Fuel—Take-off | 92 | Cruising 92 |
| | | Plus methanol |

WEIGHTS

| | Lbs. |
|----------|------|
| Empty | 4300 |
| Gross | 6100 |
| Overload | 6610 |

FUEL

| | U. S. gal. | Imp. gal. |
|----------------------|------------|-----------|
| Built-in | 128 | 106 |
| Internal (Removable) | | |
| External (drop) | 69 | 57 |
| Maximum | 197 | 163 |

RANGE AND RADIUS

| | Miles | | Speed | | Alt. feet | Fuel gal. | | Bombs lbs. | Cargo lbs. |
|------------------------------|-------|-------|-------|-------|-----------|-----------|------|------------|------------|
| | stat. | naut. | mph. | Knts. | | U. S. | Imp. | | |
| Maximum range (maximum fuel) | 1050 | 912 | 166 | 144 | 1500 | 197 | 163 | None | None |
| At 75% Vmax. | 810 | 703 | 230 | 200 | 1500 | 197 | 163 | None | None |
| Maximum range (normal fuel) | 740 | 643 | 174 | 151 | 1500 | 128 | 106 | None | None |
| At 75% Vmax. | 565 | 490 | 248 | 215 | 1500 | 128 | 106 | None | None |
| Radius () | | | | | | | | | |
| Radius () | | | | | | | | | |

DIMENSIONS

| | |
|--------------|-----------------------|
| Span 31' | Length 29.2' |
| Height 10.6' | Wing area 169 sq. ft. |



GENERAL DATA

A small compact aircraft that is a pronounced departure from previous Japanese design. Has an exceptional rate of climb and a high diving speed. One series was constructed with 40 mm wing cannon.

TOJO 2 PERFORMANCE AND CHARACTERISTICS

TAKE-OFF

| | Load | Feet |
|---------------------------|-------|------|
| T. O. calm | Gross | 545 |
| T. O. 25 kt. wind | Gross | 255 |
| T. O. over 50' obstacle | | |
| Landing over 50' obstacle | | |

CLIMB—CEILING

| @ 6,100 lbs. | Feet | Min. |
|-------------------------|------|------|
| Rate @ S. L. | 3940 | 1 |
| Rate @ 17,200 ft. | 3400 | 1 |
| Time to 10,000' | | 2.5 |
| Time to 20,000' | | 5.5 |
| Service ceiling 36,500' | | |

AIRCRAFT

| | |
|--------------|--------------------|
| Duty Fighter | |
| Designation | Type Ki-44 II |
| Description | Low-wing Monoplane |
| Mfg. | Nakajima |
| Engines | 1 Crew 1 |
| Construction | All Metal |

SPEED

| @ 6100 lbs. | Mph. | Knts. | Altitude |
|--------------|------|-------|-----------|
| Maximum | 325 | 282 | @ S. L. |
| Maximum | 376 | 326 | @ 17,200' |
| Cruising 75% | 248 | 215 | 1,500' |
| Economical | | | |

BOMBS—CARGO

| | No. | Size | Total Lbs. |
|---------|-----|-------------------|------------|
| Normal | | None | |
| Maximum | 2 | 30 kg. (possibly) | 144 |

ENGINES

| | H. P. | Altitude |
|------------|-------|----------|
| Take-off | 1500 | S.L. |
| Normal | | |
| Military | 1420 | 7,000 |
| War Emerg. | 1300 | 17,200 |

WEIGHTS

| | Lbs. |
|----------|------|
| Empty | 4300 |
| Gross | 6100 |
| Overload | 6610 |

FUEL

| | U.S. gal. | Imp. gal. |
|----------------------|-----------|-----------|
| Built-in | 128 | 106 |
| Internal (Removable) | | |
| External (drop) | 69 | 57 |
| Maximum | 197 | 163 |

Mfg. Nakajima HA-109

Model Type 2

Type Radial

Cylinders 14 Cooling Air

Supercharger 2 Speed

Propeller 3 blade GS11 diam. 10'

Fuel—Take-off 92 Cruising 92 (or 87 plus methanol)

RANGE AND RADII

| | Miles | | Speed | | Alt. feet | Fuel gal. | | Bombs lbs. | Cargo lbs. |
|---------------------------------------|-------|------|-------|-------|-----------|-----------|------|------------|------------|
| | stgr. | max. | mph. | Knts. | | U. S. | Imp. | | |
| Maximum range (maximum fuel) @ 75% VM | 1050 | 912 | 166 | 144 | 1500 | 197 | 163 | None | None |
| | 810 | 703 | 231 | 200 | 1500 | 197 | 163 | None | None |
| Maximum range (normal fuel) @ 75% VM | 740 | 643 | 174 | 151 | 1500 | 128 | 106 | None | None |
| | 565 | 490 | 248 | 215 | 1500 | 128 | 106 | None | None |
| Radius () | | | | | | | | | |
| Radius () | | | | | | | | | |

DIMENSIONS

| | | | |
|--------|--------|-----------|-------------|
| Span | 31' | Length | 29.2' |
| Height | 10' 8" | Wing area | 169 sq. ft. |

GENERAL DATA

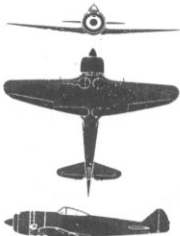
All performance estimated. TOJO has been seeing increasing service in all theaters patrolled by the JAAF. Not so maneuverable as ZEXE or OSCAR, it can still out-manuever most Allied fighters. Rate of climb and diving speed are highest of any Jap SSF except JACK. Two versions are known to exist but only TOJO 2 has been recovered. Very strong resemblance to P-47 especially P-47D with bubble canopy.

ARMAMENT

| | No. | Size | Rds. Gun. | Type | | No. | Size | Rds. Gun. | Type |
|------------|-----|--------|-----------|-------|------|-----|--------|-----------|-------|
| Forward or | 2 | 12.7mm | 250 | Fixed | Tail | | | | |
| Top | 2 | 7.7mm | 500 | Fixed | Wing | 2 | 12.7mm | 250 | Fixed |
| Side | | | | | | | | | |
| Bottom | | | | | | | | | |

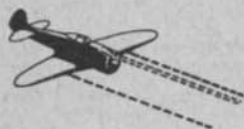
TACTICAL DATA

TOJO is restricted against snap rolls, spins, stalls and inverted flight at high speeds. This plane is equipped with armor plate behind the pilot and self-sealing fuel tanks which are ineffective against our .50 caliber fire.



TOJO 2

FIELDS OF FIRE



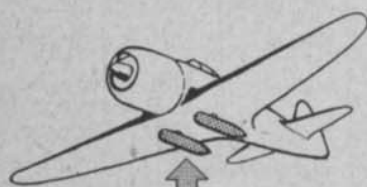
FORWARD GUNS
"A", AND "B"
¾-front view from above

EXHAUST FLAME PATTERNS



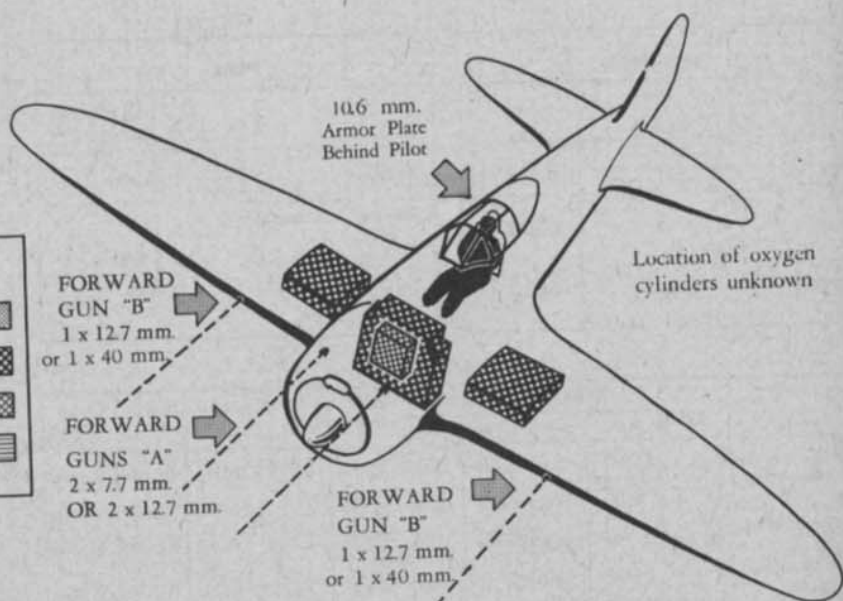
REAR VIEW

VULNERABILITY



Auxiliary gas tank
Jettisonable
Alternate arrangement:
one tank in center.

| LEGEND | |
|-------------------------|--|
| Fuel tanks, unprotected | |
| Fuel tanks, protected | |
| Oil tanks, unprotected | |
| Oil tanks, protected | |



ARMAMENT

| | No. | Size | Rds. Gun | Type | | No. | Size | Rds. Gun | Type |
|--------------|-----|--------------|----------|-------|------|-----|---------------|----------|-------|
| Forward Cowl | 2 | 7.7 mm or | 500 | Fixed | Tail | | | | |
| Top | 2 | 12.7 mm | 250 | Fixed | Wing | 2 | 12.7 mm or | 250 | Fixed |
| Side | | | | | | 2 | 40 mm | 10(?) | Fixed |
| Bottom | | | | | | | | | |

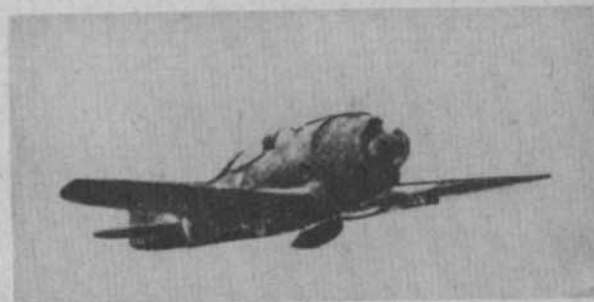
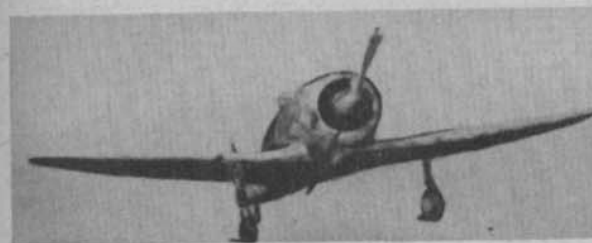
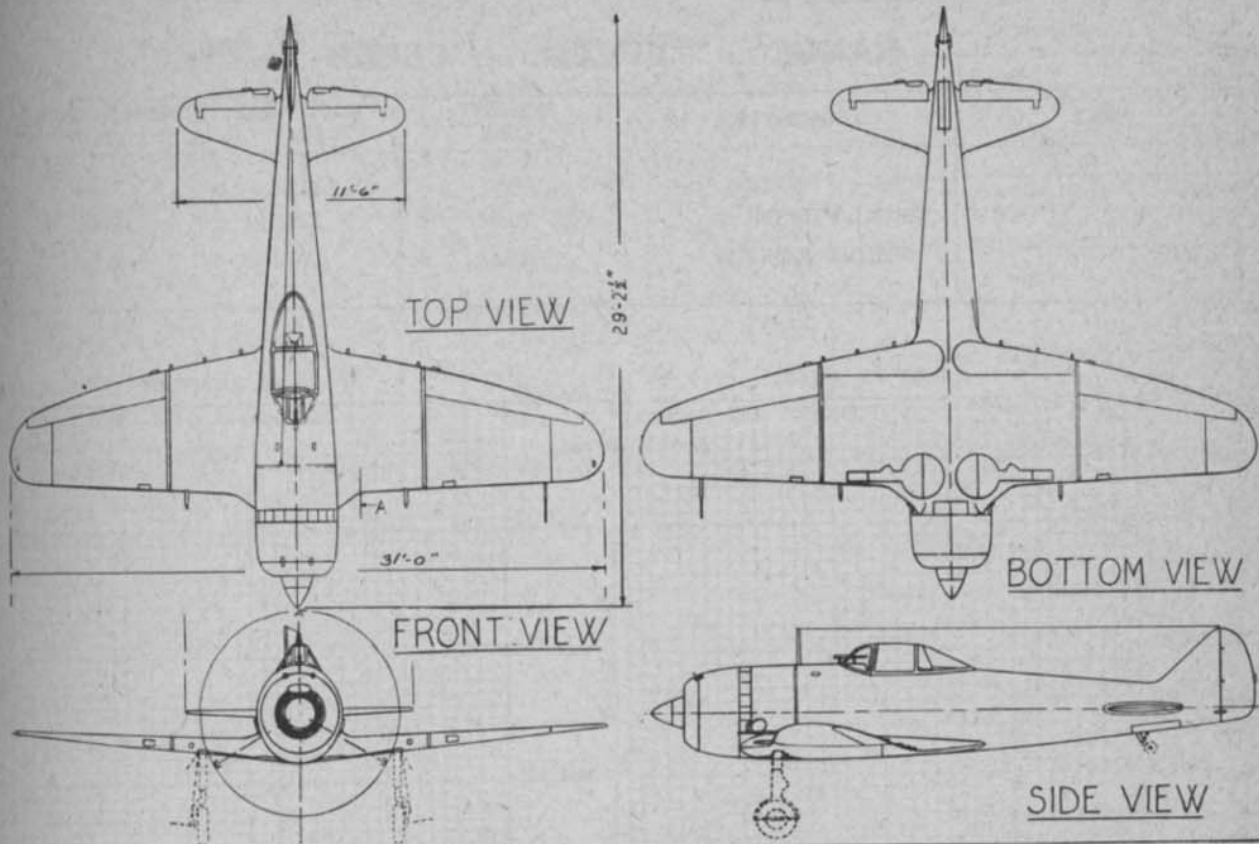
TACTICAL DATA

TOJO is restricted against snap rolls, spins, stalls and inverted flight at high speeds. This plane is equipped with armor plate behind the pilot and self sealing fuel tanks ineffective against .50 calibre fire.

DATE March 1945

RESTRICTED

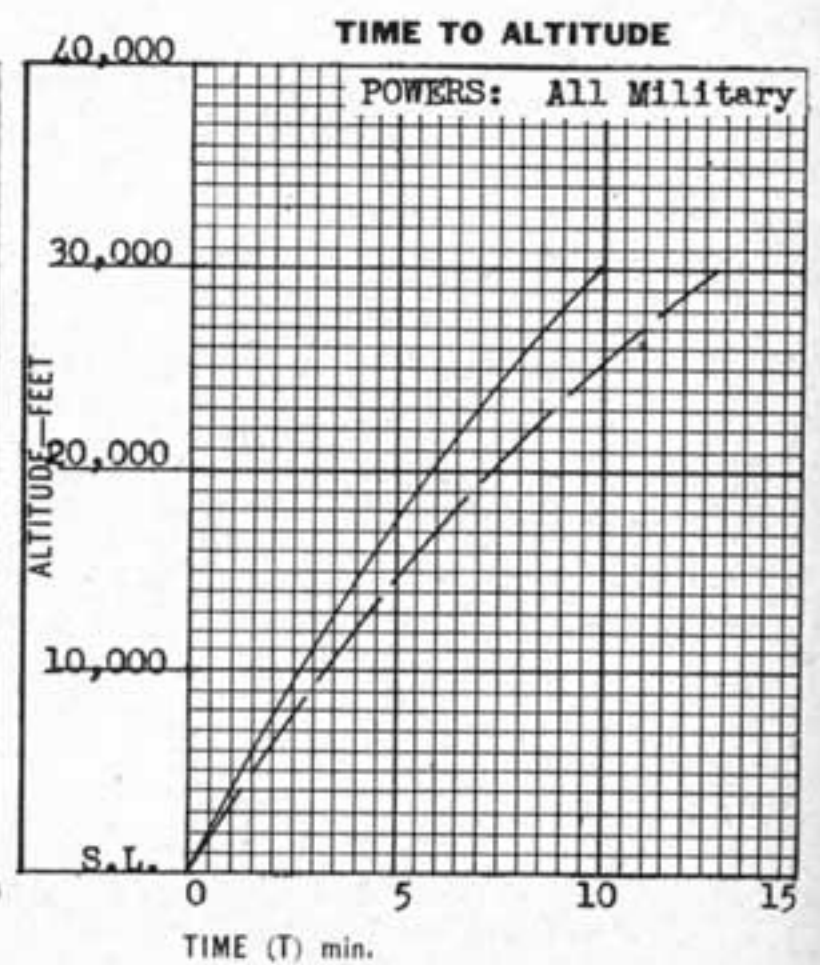
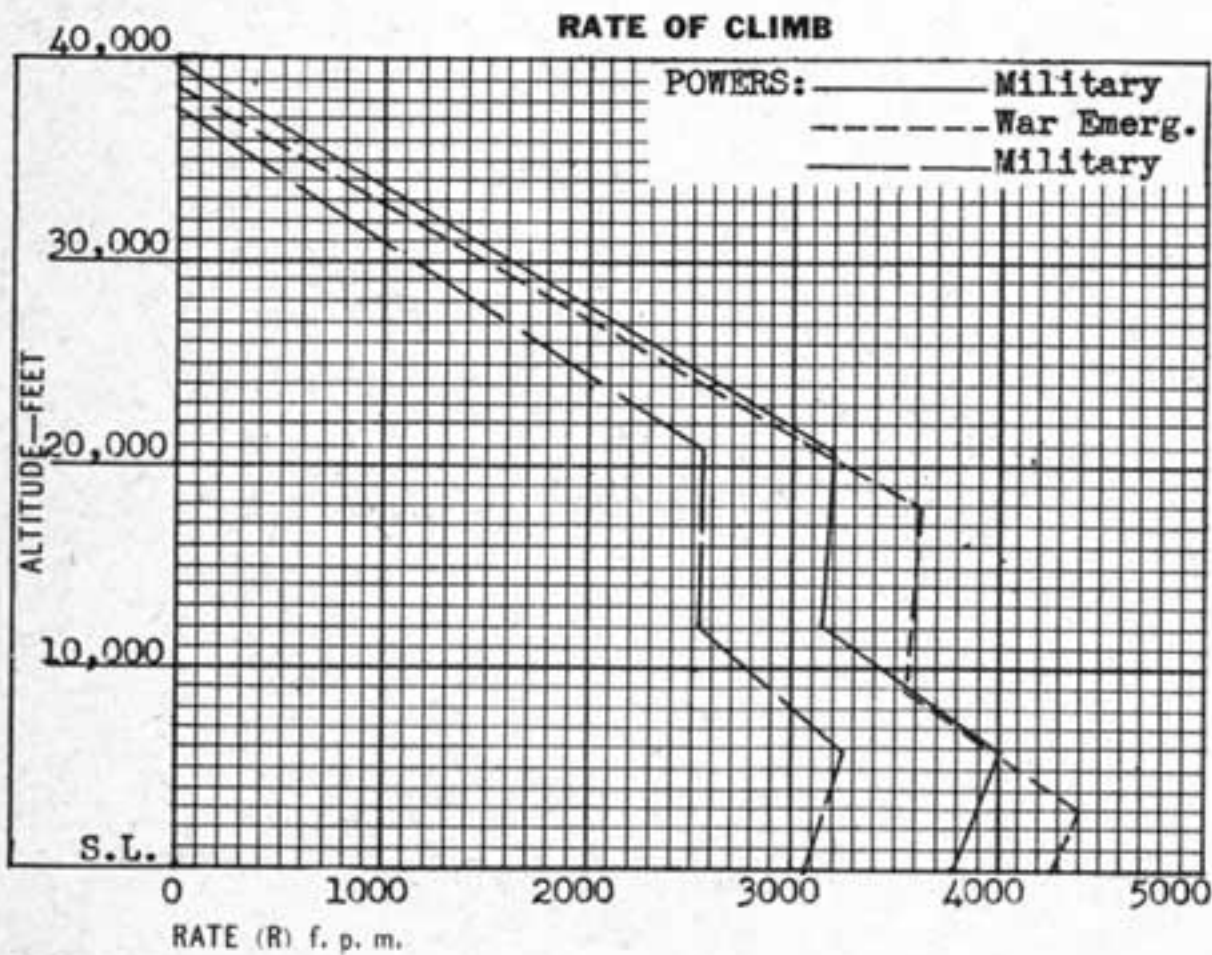
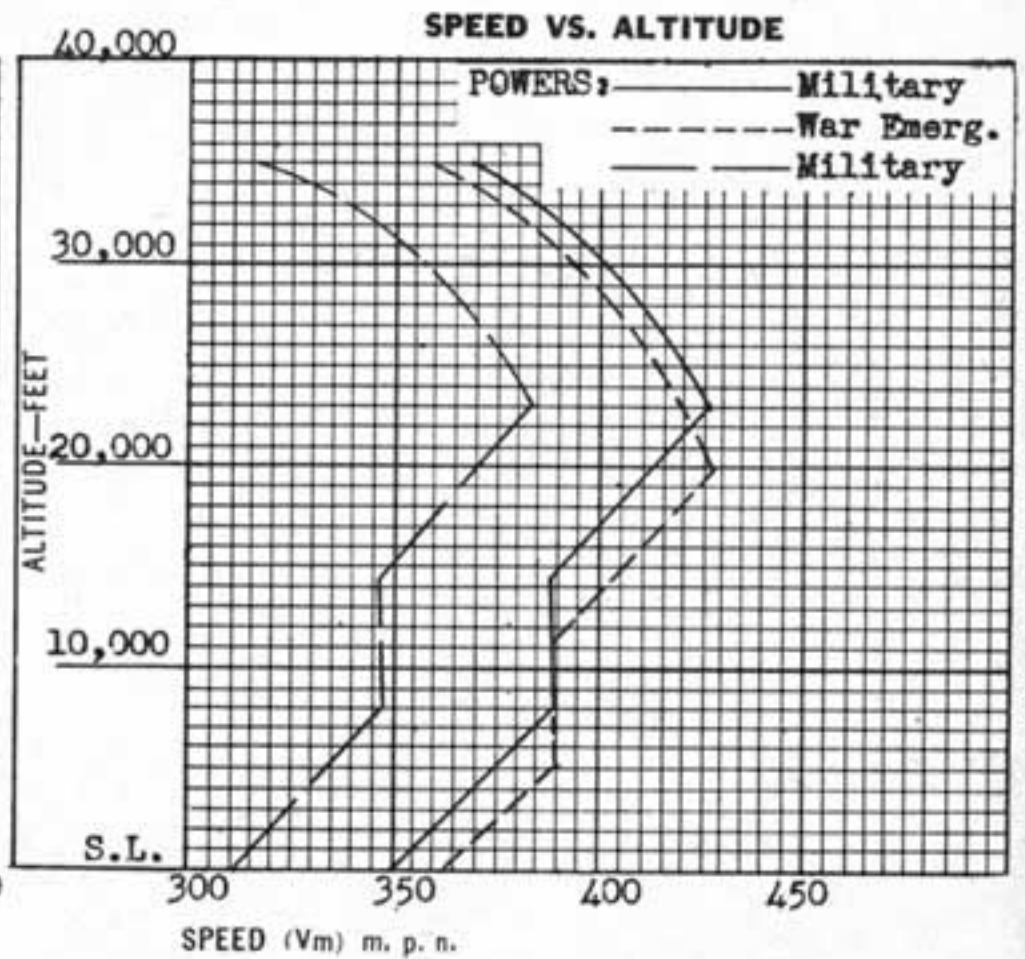
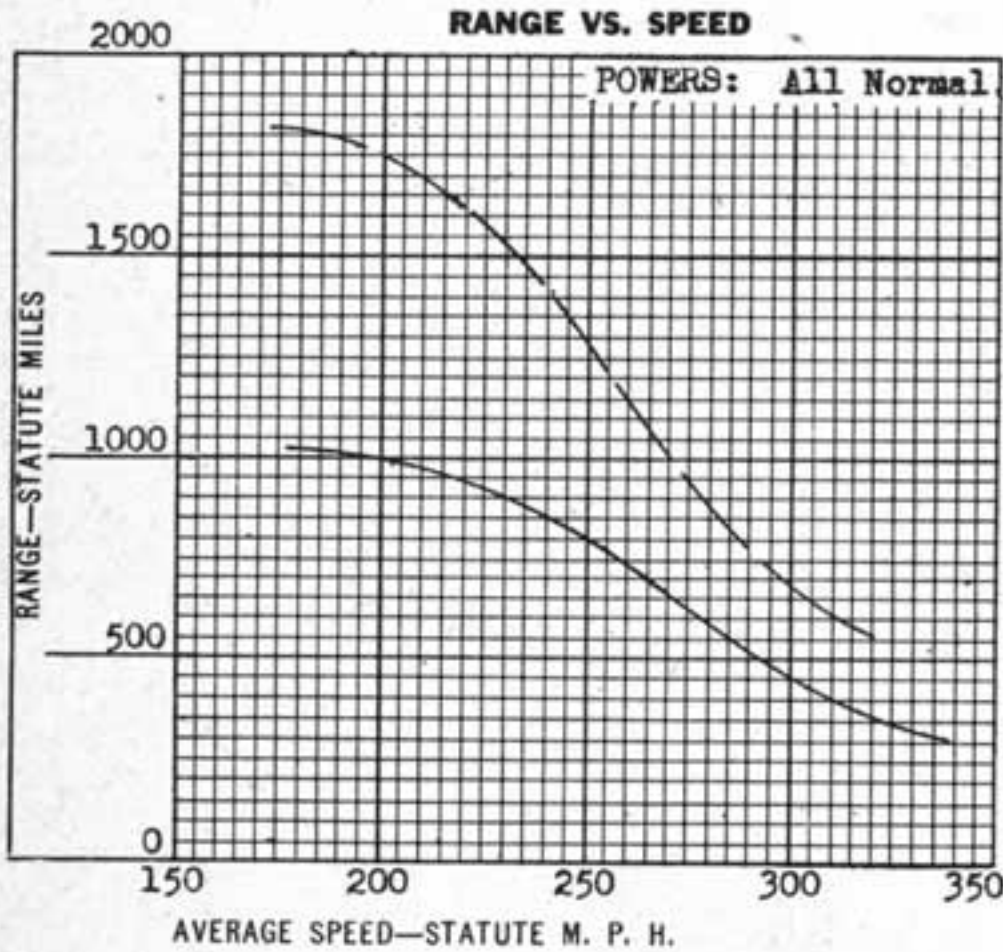
TOJO 2



FRANK 1

RANGE * SPEED * CLIMB

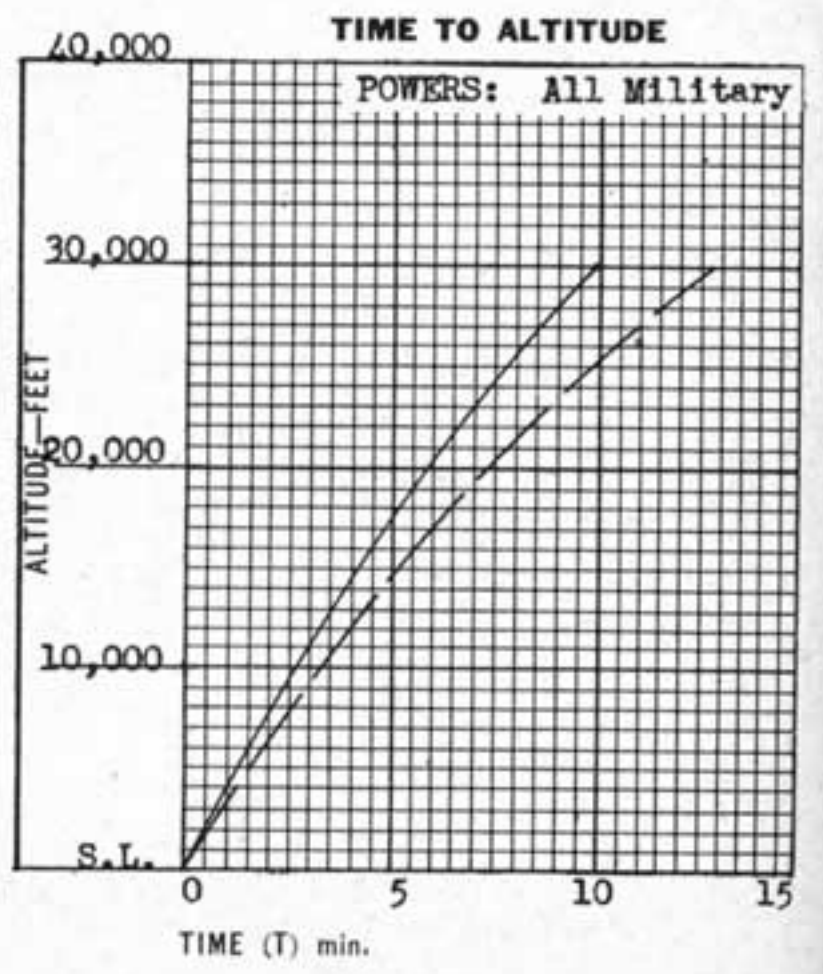
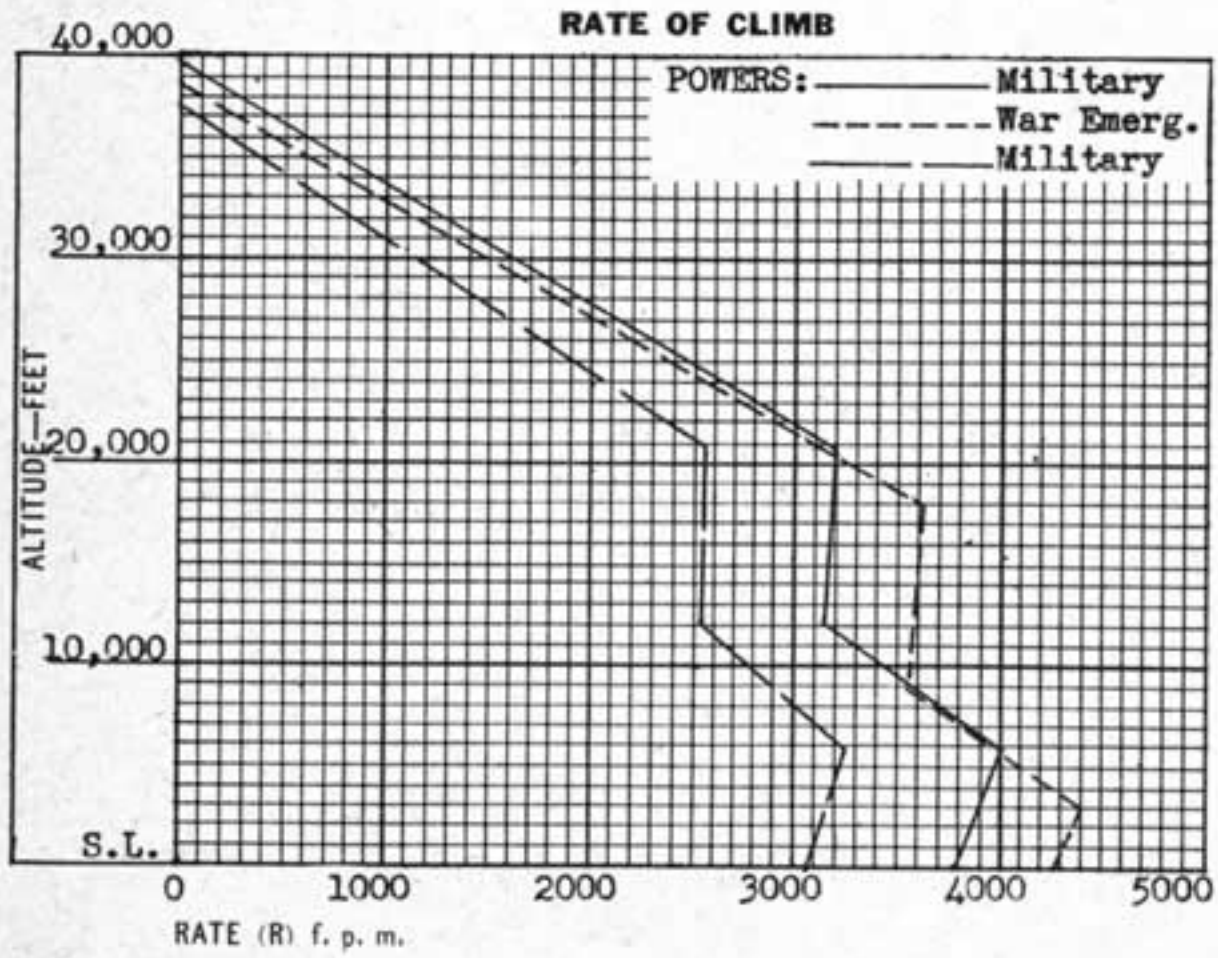
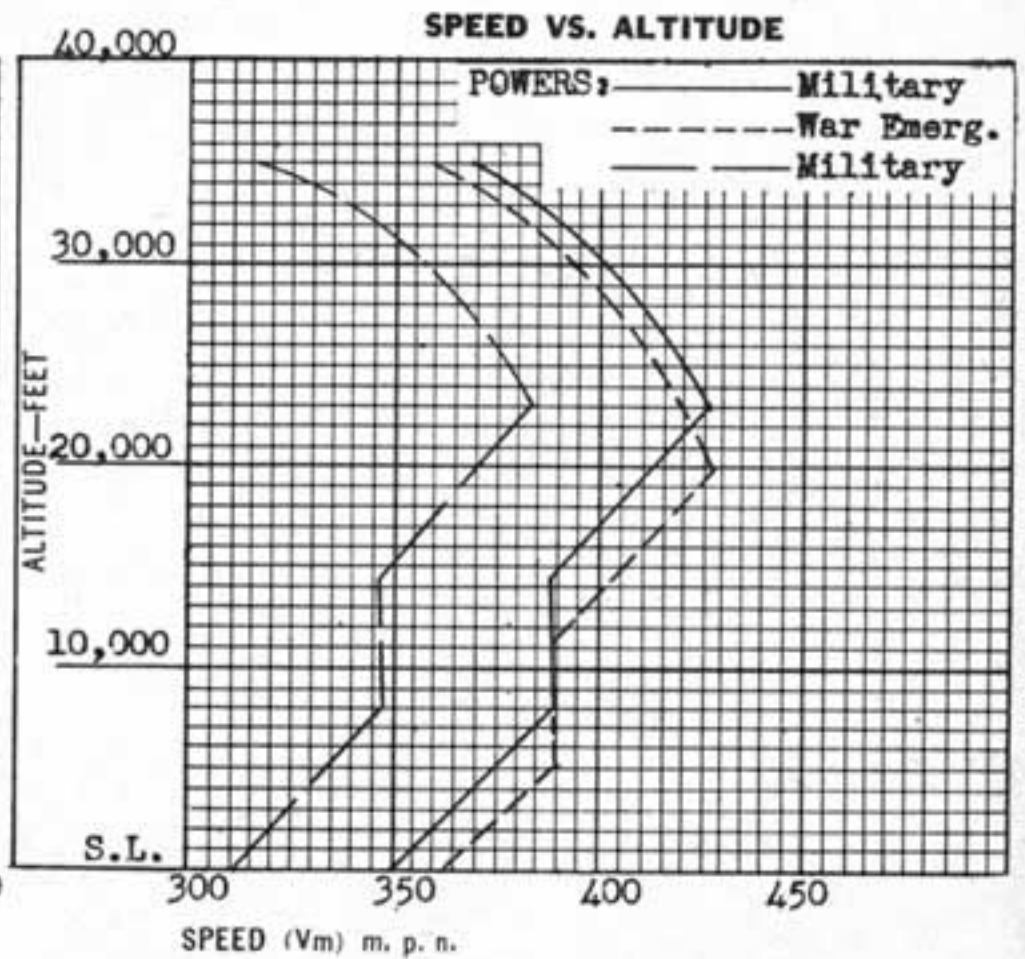
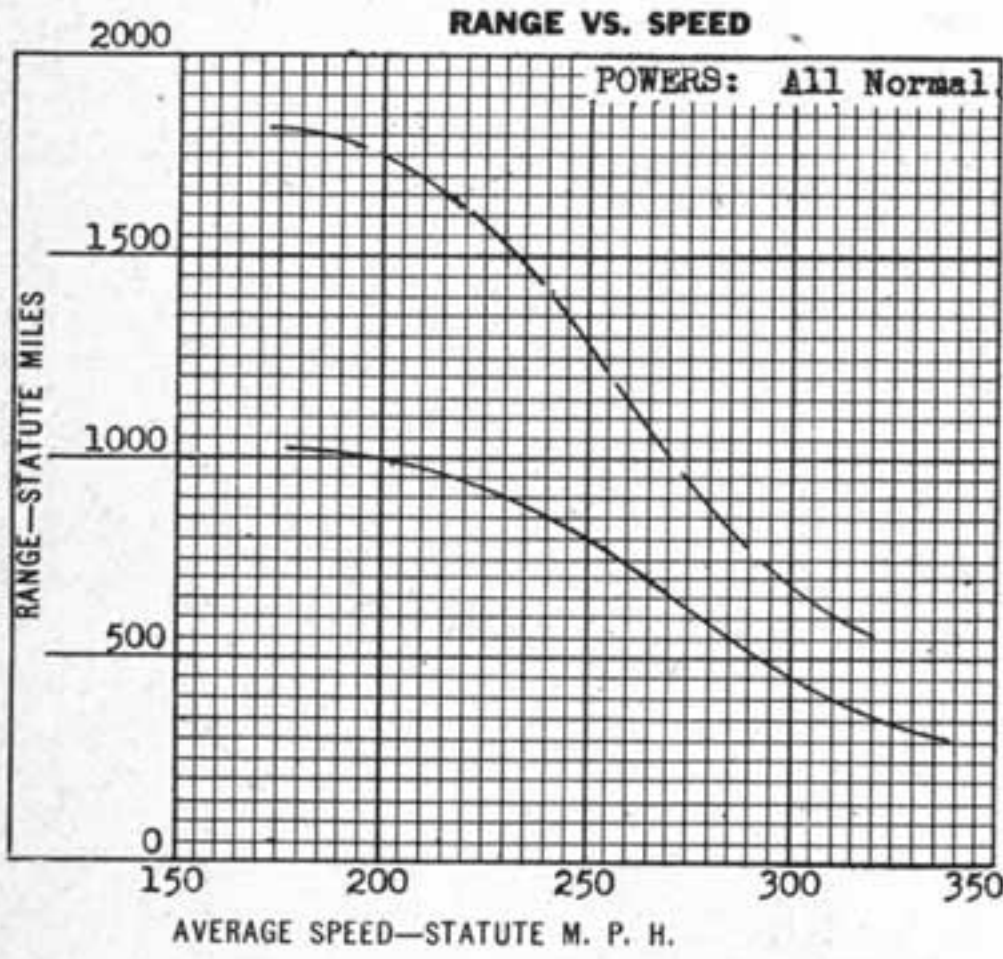
| KEY | CONDITION | WEIGHT (lb.) | FUEL LOAD (lb.) | BOMBS—CARGO (lb.) |
|-------|------------------|--------------|-----------------|-------------------|
| ————— | NORMAL FIGHTER | 7940 | 1110 | None |
| ----- | NORMAL FIGHTER | 7940 | 1110 | None |
| ----- | OVERLOAD FIGHTER | 9194 | 2088 | None |



FRANK 1

RANGE * SPEED * CLIMB

| KEY | CONDITION | WEIGHT (lb.) | FUEL LOAD (lb.) | BOMBS—CARGO (lb.) |
|-----------|------------------|--------------|-----------------|-------------------|
| ————— | NORMAL FIGHTER | 7940 | 1110 | None |
| - - - - - | NORMAL FIGHTER | 7940 | 1110 | None |
| ————— | OVERLOAD FIGHTER | 9194 | 2088 | None |



PERFORMANCE AND CHARACTERISTICS

FRANK 1

TAKE-OFF

| | Load | Feet |
|----------------------------|------|------|
| Runway Requirements | 7940 | 1460 |
| T. O. over 50' obstacle | | |
| Landing over 50' obstacle | | |
| * T.O. - 100% | | |

CLIMB—CEILING

| @ 7940 lbs. | Feet | Min. |
|------------------|---------|------|
| Rate @ S. L. | 3790 | 1 |
| War Emerg. | 4275 | 1 |
| Rate @ 20900 ft. | 3195 | 1 |
| WE @ 17900' | 3615 | 1 |
| Time to 10000' | | 2.6 |
| Time to 20000' | | 5.8 |
| 30000' | | 10.0 |
| Service ceiling | 38,800' | |

AIRCRAFT

| |
|--------------------------------|
| Duty Fighter |
| Designation Ki 84 |
| Description Low-wing Monoplane |
| Mfg. Nakajima |
| Engines 1 Crew 1 |
| Construction All Metal |

SPEED

| @ 7940 lbs. | Mph. | Knts. | Altitude |
|--------------|------|-------|-----------|
| Maximum | 350 | | @ S. L. |
| W.E.P. | 363 | | @ S.L. |
| Maximum | 426 | | @ 23,000' |
| W.E.P. | 427 | | @ 20,000' |
| Cruising 75% | 254 | | @ 1,500' |
| Economical | | | |

BOMBS—CARGO

| | No. | Size | Total Lbs. |
|---------|------|-------|------------|
| Normal | None | | |
| Maximum | 2 | 30 kg | 132 |

ENGINES

| | H. P. | Altitude |
|------------|--------|-----------|
| Take-off | 1970 | S.L. |
| | 2040 | 3,000' |
| Normal | 1850 | 17,900' |
| | (1765) | (S.L.) |
| Military | (1875) | (5,900') |
| | (1695) | (20,000') |
| War Emerg. | 1850 | 17,900' |

WEIGHTS

| | Lbs. |
|----------|------|
| Empty | |
| Gross | 7940 |
| Overload | 9194 |

FUEL

| | U.S. gal. | Imp. gal. |
|----------------------|-----------|-----------|
| Built-in | 185 | 154 |
| Internal (Removable) | | |
| External (drop) | 174 | 144 |
| Maximum | 359 | 298 |

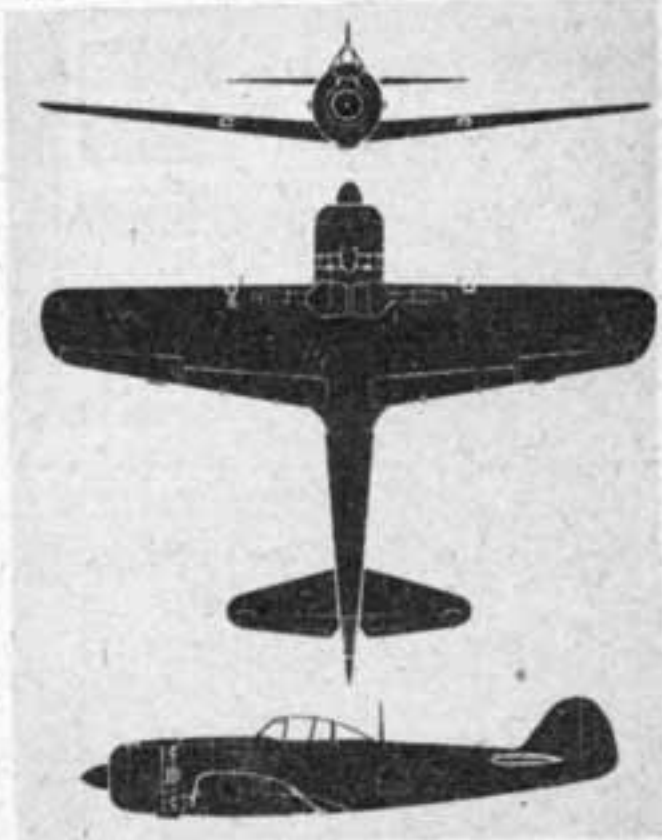
Mfg. Nakajima
 Model Ha 45 Model 21
 Type Radial
 Cylinders 18 Cooling Air
 Supercharger 2 Speed
 Propeller 4-Blade Diam. 10.16'
 C.S. Electric
 Fuel—Take-off 92 Cruising 92
 (Plus methanol)

RANGE AND RADIUS

| | Miles | | Speed | | Alt. feet | Fuel gal. | | Bombs lbs. | Cargo lbs. |
|------------------------------|-------|-------|-------|-------|-----------|-----------|------|------------|------------|
| | stat. | naut. | mph. | Knts. | | U. S. | Imp. | | |
| Maximum range (maximum fuel) | 1815 | 1575 | 173 | 150 | 1500 | 359 | 298 | None | None |
| | 1410 | 1225 | 241 | 209 | 1500 | 359 | 298 | None | None |
| Maximum range (normal fuel) | 1025 | 890 | 178 | 155 | 1500 | 185 | 154 | None | None |
| | 780 | 677 | 254 | 221 | 1500 | 185 | 154 | None | None |
| Radius () | | | | | | | | | |
| Radius () | | | | | | | | | |

DIMENSIONS

Span 37.1' Length 32.32'
 Height 11.17' Wing area 226 sq. ft.



GENERAL DATA

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

ENGINES

DESIGNATION

| | | | |
|-----------------------|------------------------------|------------------------------|---|
| Model Manufacturer | KASEI Model 21 Mitsubishi | KASEI Model 22 Mitsubishi | KASEI Model 23 & 23 K ^{**} Mitsubishi |
| Other designations | Ha 32 Model 21, (MKAP) | Ha 32 Model 22, (MKLQ) | Ha 32 Model 23, (MKLR) |

TYPE

| | | | |
|----------------------|--------|--------|--------------------|
| Cylinder arrangement | Radial | Radial | Radial |
| Coolant | Air | Air | Air (Fan Assisted) |
| Number of cylinders | 14 | 14 | 14 |

PERFORMANCE (HP/RPM/AMP/ALT)

| | | | |
|----------|--------------------------|--------------------------|--------------------------|
| Take-off | 1825/2600/47.7*/SL | 1825/2600/47.7*/SL | 1870/2600/47.7*/SL |
| W.E.P. | 1825/2600/47.7*/SL | 1825/2600/47.7*/SL | 1870/2600/47.7*/SL |
| W.E.P. | 1880/2600/47.7*/4400' * | 1880/2600/47.7*/4400' * | 1940/2600/47.7*/4400' * |
| W.E.P. | 1735/2600/47.7*/16800' * | 1735/2600/47.7*/16800' * | 1785/2600/47.7*/16600' * |
| Military | 1590/2500/41.7*/SL | 1550/2500/41.7*/SL | 1580/2500/41.7*/SL |
| Military | 1655/2500/41.7*/6900' | 1655/2500/41.7*/6900' | 1695/2500/41.7*/6900' |
| Military | 1520/2500/41.7*/18050' | 1520/2500/41.7*/18050' | 1560/2500/41.7*/18050' |

FUEL

| | | | |
|---------------------------------------|----------------|----------------|----------------|
| Cruise and normal T.O./Mil/ W.E.P. | 92 92 & ADI | 92 92 & ADI | 92 92 & ADI |
|---------------------------------------|----------------|----------------|----------------|

CHARACTERISTICS

| | | | |
|-------------------------|-------------------------|-------------------------|------------------------|
| Fuel metering system | 4 BBL. D.D. Float Carb. | 4 BBL. D.D. Float Carb. | Direct Injection Pump. |
| Compression ratio | 6.5 | 6.5 | 6.5 |
| Propeller ratio | .540 | .500 (Farman type) | .540 |
| Supercharger | 2 Speed | 2 Speed | 2 Speed |
| Ratio (s) | 7.0 & 9.118 | 7.0 & 9.118 | 7.0 & 9.118 |
| Imp. diam. - mm. in. | 320 12.6" | 320 12.6" | 320 12.6" |
| Diameter - mm. in. | 1340 52.7" | 1340 52.7" | 1340 52.7" |
| Bore/Stroke - mm. in. | 150/170 5.91"/6.69" | 150/170 5.91"/6.69" | 150/170 5.91"/6.69" |
| Displace. - ltr. cu.in. | 42.1 2570 | 42.1 2570 | 42.1 2570 |
| Dry wt. - kg. lbs. | 780 1720 | 750 1650 | 860 1895 |

INSTALLED IN

| | | | |
|-----------|--------------------|---------------------------|---------|
| Code name | BETTY 22 LIE 11 | EMILY 12, 22 & 32 (Trans) | JACK 11 |
|-----------|--------------------|---------------------------|---------|

REMARKS

| | | | |
|--|--|---------------|---|
| | | | ** Model 23 K ^{**} is same as Model 23 excepted for generator speed ratio increased to 2.438 |
| | | See page 890. | |

ENGINES

DESIGNATION

| | | | |
|-----------------------|------------------------------|------------------------------|--|
| Model Manufacturer | KASEI Model 21 Mitsubishi | KASEI Model 22 Mitsubishi | KASEI Model 23 & 23 Kō** Mitsubishi |
| Other designations | Ha 32 Model 21, (MK4P) | Ha 32 Model 22, (MK4Q) | Ha 32 Model 23, (MK4R) |

TYPE

| | | | |
|----------------------|--------|--------|--------------------|
| Cylinder arrangement | Radial | Radial | Radial |
| Coolant | Air | Air | Air (Fan Assisted) |
| Number of cylinders | 14 | 14 | 14 |

PERFORMANCE (HP/RPM/AMP/ALT)

| | | | |
|----------|--------------------------|--------------------------|--------------------------|
| Take-off | 1825/2600/47.7"/SL | 1825/2600/47.7"/SL | 1870/2600/47.7"/SL |
| W.E.P. | 1825/2600/47.7"/SL | 1825/2600/47.7"/SL | 1870/2600/47.7"/SL |
| W.E.P. | 1880/2600/47.7"/4400' * | 1880/2600/47.7"/4400' * | 1940/2600/47.7"/4400' * |
| W.E.P. | 1735/2600/47.7"/16800' * | 1735/2600/47.7"/16800' * | 1785/2600/47.7"/16600' * |
| Military | 1550/2500/41.7"/SL | 1550/2500/41.7"/SL | 1580/2500/41.7"/SL |
| Military | 1655/2500/41.7"/6900' | 1655/2500/41.7"/6900' | 1695/2500/41.7"/6900' |
| Military | 1520/2500/41.7"/18050' | 1520/2500/41.7"/18050' | 1560/2500/41.7"/18050' |

FUEL

| | | | |
|--|----------------|----------------|----------------|
| Cruise and normal T.O./Mil./ W.E.P. | 92 92 & ADI | 92 92 & ADI | 92 92 & ADI |
|--|----------------|----------------|----------------|

CHARACTERISTICS

| | | | |
|---------------------------|-------------------------|-------------------------|------------------------|
| Fuel metering system | 4 BBL. D.D. Float Carb. | 4 BBL. D.D. Float Carb. | Direct Injection Pump. |
| Compression ratio | 6.5 | 6.5 | 6.5 |
| Propeller ratio | .540 | .500 (Farman type) | .540 |
| Supercharger | 2 Speed | 2 Speed | 2 Speed |
| Ratio (s) | 7.0 & 9.118 | 7.0 & 9.118 | 7.0 & 9.118 |
| Imp. diam. - mm. in. | 320 12.6" | 320 12.6" | 320 12.6" |
| Diameter - mm. in. | 1340 52.7" | 1340 52.7" | 1340 52.7" |
| Bore/Stroke - mm. in. | 150/170 5.91"/6.69" | 150/170 5.91"/6.69" | 150/170 5.91"/6.69" |
| Displace. - ltr. cu.in. | 42.1 2570 | 42.1 2570 | 42.1 2570 |
| Dry wt. - kg. lbs. | 780 1720 | 750 1650 | 860 1895 |

INSTALLED IN

| | | | |
|-----------|--------------------|---------------------------|---------|
| Code name | BETTY 22 LIZ 11 | EMILY 12, 22 & 32 (Trans) | JACK 11 |
|-----------|--------------------|---------------------------|---------|

REMARKS

| | | | |
|--|--|---------------|--|
| | | | ** Model 23 Kō is same as Model 23 excepted for generator speed ratio increased to 2.438 |
| | | See page 890. | |