

Polikarpov R-5

A/C Type: Army Recon / Close Support Plane
 Engine(s): BMW VI M-17F, (No F.I.)
 Eng. Pwr: 680 - 730 HP Liquid Cooled
 A/C Crew: Pilot, observer / bomb-aimer / gunner

Max Speed: 152 MPH at 9,800 Feet
 Max Ceiling: 19,500 / 16,800 / NA Feet

Defense Factor: 5 Size Modifier: + 0
 Damage Factor: 5 / 8 Endurance: 240
 Cockpit View: Fair Blind Area: 6:00 line low

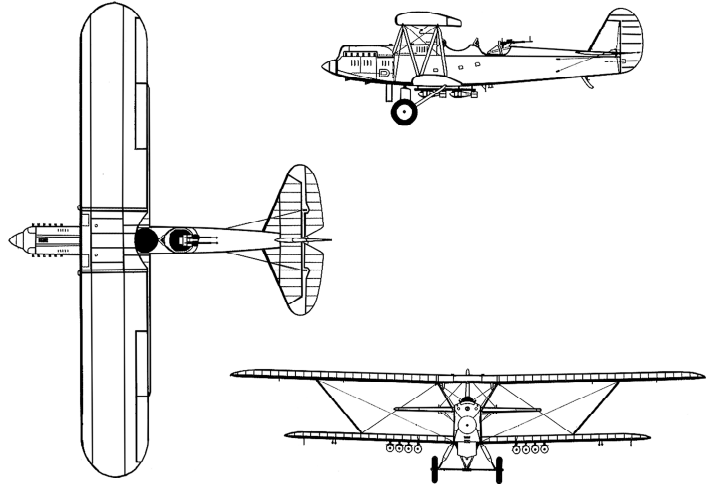
Protection: Cockpit +0 Fuel +0 Engine +0

Climb Decel / Dive Accel: 3.0 / 1.0
 Weight and Load Limit: 880 / 3 - NA (notes)

Wpn. Stations	Weight	Allowed Loads
1, 2, 3, 4	110 (notes)	Bombs
Bay 5	440	Bombs
6, 7, 8, 9	110 (notes)	Bombs

Country: Russia

Service Entry Date: March 1931



Class: L

Victory Points: 2 - 4

AIRCRAFT PERFORMANCE CHART

Altitude Levels	Band	Minimum Speed	Maximum Speed	Maximum Dive Spd.	Min. TT (1)	Min. HT (2)	Min. BT (3)	Min. ET	Altitude Band	Levels	Average Rate Of Climb
43+	UH	—	—	—	—	—	—	—	UH	43+	—
37 - 42	EH	—	—	—	—	—	—	—	EH	37 - 42	—
31 - 36	VH	—	—	—	—	—	—	—	VH	31 - 36	—
25 - 30	HI	—	—	—	—	—	—	—	HI	25 - 30	—
19 - 24	MH	1.5	2.5	5.0	2.0	3.0	3.5	—	MH	19 - 24	200
13 - 18	ML	1.5	3.0	5.0	2.0	3.0	3.5	—	ML	13 - 18	600
7 - 12	LO	1.5	3.0	5.0	2.0	2.5	3.0	—	LO	7 - 12	1,000
1 - 6	VL	1.0	2.5	4.5	1.5	2.5	3.0	—	VL	1 - 6	1,200

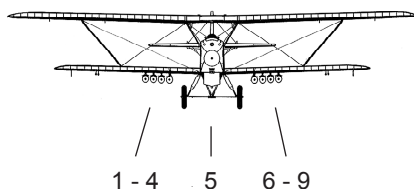
FIRE POWER CHART

Gun	Type Weapons	Ammo	Criticals
N1	<u>One 7.62mm PV-1</u>	14	4
DG	Twin 7.62mm DA	(6 x 3)	4
(DG)	One 7.62mm ShKAS	10	4

GUN ATTACK FACTORS

Range	N1	—	Twin DG	—	(DG)
0	4	—	6	—	7
1	3	—	4	—	5
2	2	—	2	—	3
3	1	—	2	—	2
4	1	—	2	—	2
5	1	—	1	—	1
6	—	—	—	—	—
7	—	—	—	—	—

WEAPON STATIONS



POWER VERSUS SPEED CHART

Levels	Band	1.0 - 4.5	5.0 - 7.5	8.0 - 9.5	10.0 +	Band
25 - 30	HI	—	—	—	—	HI
19 - 24	MH	1.0	—	—	—	MH
13 - 18	ML	2.0	—	—	—	ML
7 - 12	LO	2.5	—	—	—	LO
1 - 6	VL	3.0	—	—	—	VL
Banking FPs:		2	3	6	—	
Side Slip FPs:		2	4	6	—	

NOTES & VARIANTS

R-5: This was an early 1930s Army support plane that saw action well into WW-II. May have skis for winter operations from snow covered fields. Observer may not man DG if aiming or dropping bombs. Observer has morse code radio for artillery spotting missions and hand held camera for recon missions. Fixed landing gear. Fixed pitch propeller. No flaps, Telescope gunsight. No other radios.

Loads: Normal = 880 lbs. Can be over-loaded to 1,320 lbs. If so, HT+ rates cause overstress checks until load ≤ 880 lbs. Stations 1 to 4 and 6 to 9 may each carry two 55 lb. or one 110 lb. bomb. Pairs of stations may each carry one bomb of up to 220 lbs. Stations 3 and 4 and stations 6 and 7 may be paired to carry one bomb of up to 550 lbs. in an overload condition. Bay 5 can carry sixteen 22 lb. AP bombs internally, or have an external rack fitted for four 55 lb. to 110 lb. bombs.

1941 Upgrades: Many fitted with ShKAS dorsal gun (D10 ≤ 6). Some converted to carry one RS 75 or RS 82 rocket each on stations 1 to 4 and 6 to 9 (D10 ≤ 4).

DEFENSIVE GUN ARCS

DG: 03 - 09, 6+ to 6- except 6:00 line = 6+ to AC.

Polikarpov I-16 Type 17

A/C Type: Short Range Day Fighter
 Engine(s): One Shvetsov M-25V (No F.I.)
 Eng. Pwr: 650 - 775 HP, Radial Air Cooled
 A/C Crew: Pilot

Max Speed: 264 MPH at 9,800 Feet
 Max Ceiling: 26,200 / 21,900 / NA Feet

Defense Factor: 5 Size Modifier: +0
 Damage Factor: 4 / 6 Endurance: 85
 Cockpit View: Fair Blind Area: Rear Low

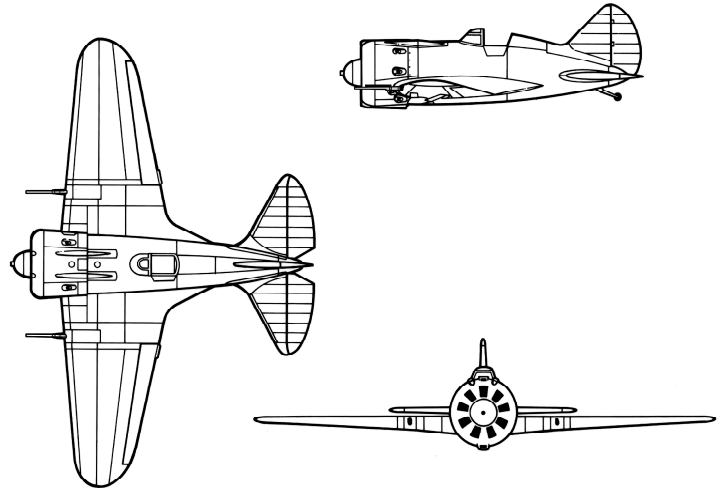
Protection: Cockpit +1 Fuel +0 Engine +0

Climb Decel / Dive Accel: 3.0 / 1.0
 Weight and Load Limit: 440 / 2 - NA

Wpn. Stations	Weight	Allowed Loads
1, 2	220	Bombs, rockets

Country: Russia

Service Entry Date: March 1939



Class: F

Victory Points: 3 - 6

AIRCRAFT PERFORMANCE CHART

Altitude Levels	Band	Minimum Speed	Maximum Speed	Maximum Dive Spd.	Min. TT (2)	Min. HT (3)	Min. BT (3)	Min. ET (4)	Altitude Band	Levels	Average Rate Of Climb
43+	UH	—	—	—	—	—	—	—	UH	43+	—
37 - 42	EH	—	—	—	—	—	—	—	EH	37 - 42	—
31 - 36	VH	—	—	—	—	—	—	—	VH	31 - 36	—
25 - 30	HI	3.0	4.5	9.0	4.5	5.5	7.0	8.0	HI	25 - 30	300
19 - 24	MH	2.5	5.0	9.0	3.5	5.0	6.0	7.0	MH	19 - 24	600
13 - 18	ML	2.5	5.0	8.0	3.5	4.5	5.5	6.5	ML	13 - 18	1,200
7 - 12	LO	2.0	5.0	7.5	3.0	4.5	5.0	6.0	LO	7 - 12	2,200
1 - 6	VL	2.0	5.0	7.0	2.5	4.0	4.5	5.5	VL	1 - 6	2,400

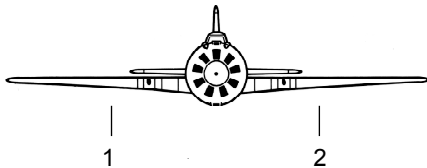
FIRE POWER CHART

Guns	Type Weapons	Ammo	Criticals
N1	One 7.62mm ShKAS	12	4
N2	One 7.62mm ShKAS	12	4
W1-L	One 20mm ShVAK	6	2
W2-R	One 20mm ShVAK	6	2

GUN ATTACK FACTORS

Range	N1	N2	W1	W2	(Total)
0	9	9	27	27	72
1	7	7	20	20	54
2	4	4	13	13	34
3	3	3	9	9	24
4	2	2	6	6	16
5	1	1	4	4	10
6	—	—	3	3	6
7	—	—	—	—	—

WEAPON STATIONS



POWER VERSUS SPEED CHART

Levels	Band	1.0 - 4.5	5.0 - 7.5	8.0 - 9.5	10.0 +	Band
31 - 36	VH	—	—	—	—	VH
25 - 30	HI	3	—	—	—	HI
19 - 24	MH	5	2	—	—	MH
13 - 18	ML	6	3	—	—	ML
7 - 12	LO	7	4	—	—	LO
1 - 6	VL	8	5	—	—	VL
Banking FPs:		1	2	3	5	
Side Slip FPs:		1	2	4	6	

NOTES & VARIANTS

I-16 Type 17: This was a cannon armed development of the Type 10 replacing its light 7.62mm wing guns with 20mm cannons to provide better bomber killing potential. Due to a shortage of cannons, very few were built. Basically one in ten (D10 ≤ 1 to have). They were usually doled out in small numbers to various air defense units. Radios for squadron leaders only. Rudimentary instruments (+20 to any disorientation rolls). Flaps only have landing or up settings. Simple gunsight. Ring and bead backup sight.

Loads: Starting August 1941, some modified to add stations 1 and 2 for one bomb of up to 220 lbs. or up to three rails each for RS 75 or RS 82 rockets, (D10 ≤ 2 for modification, -1 per month after August).

Unstable Platform: If pilot not veteran or gifted, +05 to all attack LH, and stall/spin related percentile rolls. Difficult to land, +10 LH to landing attrition rolls.

Hurricane Mk.IIB (Russia)

A/C Type: RAF Lend-Lease Fighter-Bomber
 Engine(s): One Rolls Royce Merlin XX, (No F.I.)
 Eng. Pwr: 1160-1300 HP, Liquid Cooled
 A/C Crew: Pilot

Max Speed: 294 MPH at 18,000 Feet
 Max Ceiling: 28,600 / 24,000 / 18,200 Feet

Defense Factor: 5 Size Modifier: +0
 Damage Factor: 9 / 14 Endurance: 95
 Cockpit View: Fair Blind Area: Rear

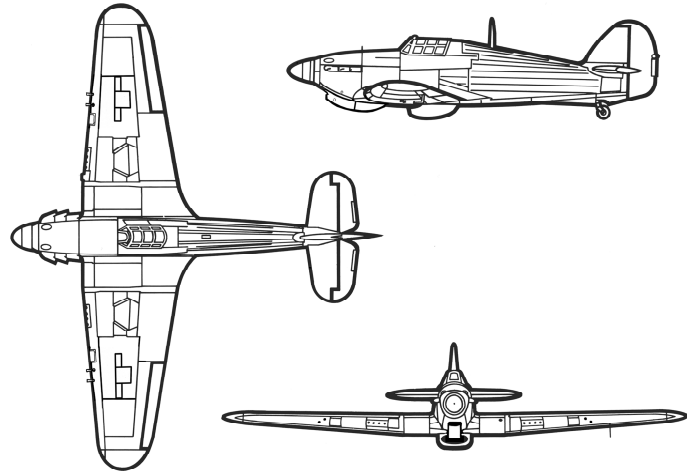
Protection: Cockpit +2 Fuel +2 Engine +0

Climb Decel / Dive Accel: 3.0 / 1.0
 Weight and Load Limit: 1,000 / 2 - 5

Wpn. Stations	Weight	Allowed Loads
2, 3	500	Bombs
1, 4	65	3 x RS Rockets

Country: Russia (lend-lease)

Service Entry Date: October 1941



Class: F

Victory Points: 4 - 8

AIRCRAFT PERFORMANCE CHART

Altitude Levels	Band	Minimum Speed	Maximum Speed	Maximum Dive Spd.	Min. TT (2)	Min. HT (3)	Min. BT (4)	Min. ET (5)	Altitude Band	Levels	Average Rate Of Climb
43+	UH	—	—	—	—	—	—	—	UH	43+	—
37 - 42	EH	—	—	—	—	—	—	—	EH	37 - 42	—
31 - 36	VH	—	—	—	—	—	—	—	VH	31 - 36	—
25 - 30	HI	2.5	5.0	10.5	3.5	4.5	5.5	6.5	HI	25 - 30	400
19 - 24	MH	2.0	5.5	10.5	3.0	4.5	5.0	6.0	MH	19 - 24	900
13 - 18	ML	2.0	5.5	10.0	2.5	4.0	4.5	5.5	ML	13 - 18	1,400
7 - 12	LO	2.0	5.0	9.0	2.5	3.5	4.5	5.0	LO	7 - 12	1,800
1 - 6	VL	1.5	4.5	8.0	2.5	3.0	4.0	4.5	VL	1 - 6	2,400

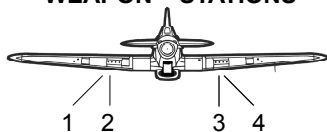
FIRE POWER CHART

Guns	Type Weapons	Ammo	Criticals
W1-L	Three Browning .303	9	4
W2-L	Three Browning .303	9	4
W3-R	Three Browning .303	9	4
W4-R	Three Browning .303 (Feb. 1942)	9	4
W1-L	One 12.7mm UBS	7	3
W2-L	One 20mm ShVAK	5	2
W3-R	One 20mm ShVAK	5	2
W4-R	One 12.7mm UBS	7	3

GUN ATTACK FACTORS

Range	W1	W2	W3	W4	(Totals)
0	19 / 11	19 / 27	19 / 27	19 / 11	76 / 76
1	14 / 8	14 / 20	14 / 20	14 / 8	56 / 56
2	10 / 6	10 / 13	10 / 13	10 / 6	40 / 38
3	6 / 4	6 / 9	6 / 9	6 / 4	24 / 26
4	4 / 3	4 / 6	4 / 6	4 / 3	16 / 18
5	3 / 2	3 / 4	3 / 4	3 / 2	12 / 12
6	- / 1	- / 3	- / 3	- / 1	- / 8
7	—	—	—	—	- / -

WEAPON STATIONS



POWER VERSUS SPEED CHART

Levels	Band	1.0 - 4.5	5.0 - 7.5	8.0 - 9.5	10.0 +	Band
31 - 36	VH	—	—	—	—	VH
25 - 30	HI	3 / 4	1 / 2	—	—	HI
19 - 24	MH	5 / 6	2 / 3	—	—	MH
13 - 18	ML	6 / 7	3 / 4	—	—	ML
7 - 12	LO	6 / 7	3 / 4	—	—	LO
1 - 6	VL	6 / 7	—	—	—	VL
Banking FPs:		2	3	4	6	
Side Slip FPs:		3	4	6	8	

NOTES & VARIANTS

Hurricane Mk.IIB (Russian): "Lend-lease" Hurricanes with tropical dust filters reached Murmansk in September 1941. They were initially flown in combat by RAF instructors of Nos. 81 and 134 Squadrons. Russian pilots took over the flying early in 1942. Most were committed to action on the Finnish front. Stations 2 and 3 may carry one bomb of up to 500 lbs (drop tanks were not supplied to Russia). Stations 1 and 4 available beginning March 1942 each for two or three rails for RS 75 or RS 82 rockets. Ring and bead backup sight.

Bad Fuel: Soviet supplied fuel was quite poor and inconsistent in quality, ranging from 75 to 87 octane. As the Mk.IIB's Merlin engine was intended for 100 octane fuel, its performance on Russian fuel was significantly reduced and this is accounted for in this ADC's data.

Soviet Guns: Beginning February 1942 many Hurricanes were refitted with Soviet guns as British supplied guns wore out. (D10 ≤ 2, minus 2 to roll per month after February). If so, use gun data to right of slashes.

Lavochkin La-5F

A/C Type: Standard Day Fighter (Boosted)
 Engine(s): One Shvetsov M-82F, (No F.I.)
 Eng. Pwr: 1450 - 1700 HP, Radial Air Cooled
 A/C Crew: Pilot

Max Speed: 367 MPH at 20,500 Feet
 Max Ceiling: 31,200 / 25,600 / NA Feet

Defense Factor: 5 Size Modifier: +0
 Damage Factor: 9 / 14 Endurance: 115
 Cockpit View: Fair Blind Area: Rear Low

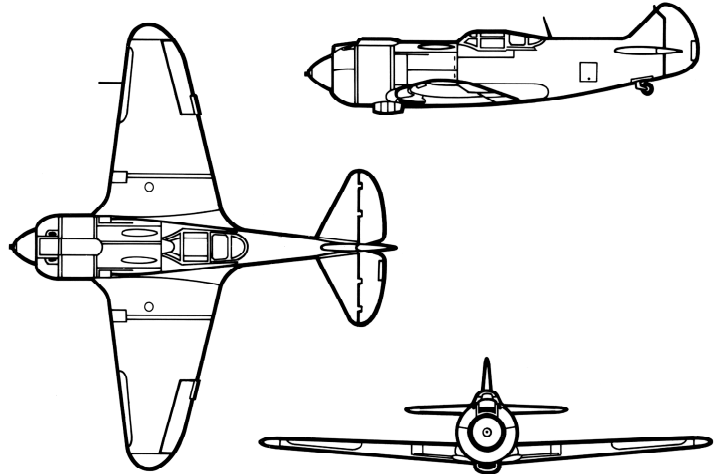
Protection: Cockpit +1 Fuel +1 Engine +0

Climb Decel / Dive Accel: 3.0 / 1.0
 Weight and Load Limit: 440 / 2 - NA

Wpn. Stations	Weight	Allowed Loads
1, 2	220	Bomb

Country: Russia

Service Entry Date: December 1942



Class: F

Victory Points: 4 - 9

AIRCRAFT PERFORMANCE CHART

Altitude Levels	Band	Minimum Speed	Maximum Speed	Maximum Dive Spd.	Min. TT (4)	Min. HT (5)	Min. BT (6)	Min. ET (7)	Altitude Band	Levels	Average Rate Of Climb
43+	UH	—	—	—	—	—	—	—	UH	43+	—
37 - 42	EH	—	—	—	—	—	—	—	EH	37 - 42	—
31 - 36	VH	3.5	6.0	10.0	5.0	7.0	8.5	10.0	VH	31 - 36	300
25 - 30	HI	3.0	6.5	10.5	4.5	6.5	7.5	9.0	HI	25 - 30	700
19 - 24	MH	3.0	7.0	10.5	4.0	6.0	7.0	8.0	MH	19 - 24	1,500
13 - 18	ML	2.5	7.0	10.5	3.5	5.5	6.5	7.5	ML	13 - 18	2,600
7 - 12	LO	2.5	7.0	10.0	3.5	5.0	5.5	6.5	LO	7 - 12	2,900
1 - 6	VL	2.0	7.0	9.0	3.0	4.5	5.0	6.0	VL	1 - 6	3,100

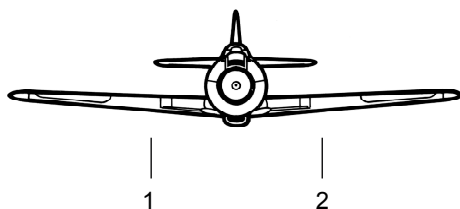
FIRE POWER CHART

Guns	Type Weapons	Ammo	Criticals
N1	<u>One 20mm ShVAK</u>	8	2
N2	<u>One 20mm ShVAK</u>	8	2

GUN ATTACK FACTORS

Range	N1	N2	—	—	(Total)
0	24	24	—	—	48
1	18	18	—	—	36
2	12	12	—	—	24
3	8	8	—	—	16
4	6	6	—	—	12
5	4	4	—	—	8
6	3	3	—	—	6
7	—	—	—	—	—

WEAPON STATIONS



POWER VERSUS SPEED CHART

Levels	Band	1.0 - 4.5	5.0 - 7.5	8.0 - 9.5	10.0 +	Band
37 - 42	EH	—	—	—	—	EH
31 - 36	VH	2 / 4	1 / 2	—	—	VH
25 - 30	HI	4 / 6	2 / 3	—	—	HI
19 - 24	MH	6 / 8	3 / 4	—	—	MH
13 - 18	ML	7 / 9	4 / 5	—	—	ML
7 - 12	LO	8 / 10	5 / 6	—	—	LO
1 - 6	VL	8 / 10	5 / 6	—	—	VL
Banking FPs:		2	2	4	6	
Side Slip FPs:		3	4	5	7	

NOTES & VARIANTS

La-5F: This was an improved La-5 having the M-82F engine. Produced from late 1942 to March 1943 and still common in early 1944 its engine had improved supercharging and fuel metering, which increased climb performance and range. Engine prone to over-heating (see below). Canopy could be locked open before battle. If so, cockpit vis. = good, +1 decel each turn. Rudimentary instruments (+20 to disorientation rolls). Starting March 1943 Cockpit prot. = +2. Flight leads had two-way radios. Wingmen had receivers only. Stations 1 and 2 available for one bomb of up to 220 lbs. Combat flaps. Slatted wings. Simple gunsight. Ring and bead backup sight.

Engine Problems: M-82F engine prone to over-heating in combat. If emergency power used for more than 15 game turns, roll D100. If result ≥ 95 an engine crit. hit occurs (+5 per turn of emergency power over 16 turns used in same combat).