

CFS2

Polikarpov I-16 Aces Pack

Version 1.0



1.BACKGROUND ON INCLUDED AIRCRAFT

When the tiny I-16 flew for the first time in December 1933, it was far ahead of any other fighter design in the world, featuring retractable landing gear, a cantilever wing and variable pitch propeller. When the Spanish Civil War broke out, almost 500 were put into service with the Republicans, surprising the enemy with outstanding maneuverability, firepower and rate of climb, leading to the opposition nickname Rata(Rat) and friendly name Mosca(Fly).

Specification:

Wingspan.....9.00m
Length.....6.10m
Height.....2.57m
Empty Weight.....1,433kg
Maximum Weight...1,882kg
Powerplant.....Shvetsov M-63 air-cooled engine 1100hp x 1
Armament.....ShKAS 7.62 mm gun x 4, Bomb(100kg) x 2
Max Speed.....489 km/h (Alt. 4,850m)
Service Ceiling.....10,800 m
Range.....440 km, 700 km with Additional Tanks
Crew.....One

Armament List of Polikarpov I-16

Armament	Position	Caliber	Round/min (RPG)	Rounds	Velocity (m/sec)
PV-1 Machine Gun	Wing	7.62mm	780	900	
ShKAS Machine Gun	Wing	7.62mm	1,800	900	
ShKAS Machine Gun	Upper Nose	7.62mm	1,800	630	
Berezin UB Gun	Lower Head	12.7mm	700-800	----	840
ShVAK Cannon	Wing	20mm	750-800	150	

Variants of Polikarpov I-16 (Part I)

Specification	Tip 4	Tip 5 Early Build	Tip 5	Tip 6 Early Build	Tip 6
Wingspan (m)	9.00	9.00	9.00	9.00	9.00
Length (m)	5.90	6.0	6.0	6.0	6.0
Height (m)	2.57	2.57	2.57	2.57	2.57
Wing Area (Sqr.m)	14.54	14.54	14.54	14.54	14.54
Weight Empty (kg)	----	1040	1118	1260	1260
Weight Loaded (kg)	1354	1420	1535	1660	1660
Weight Take off (kg)					
Engine	M-22	RCF-3	M-25	M-25A	M-25A
Power (HP) @Altitude (m)	480@1500	630	700	730	730
Fuel(liter)	----	----	----	----	----
Max Speed (km/hr) @Altitude (m)	362 @3000	437 @3000	457 @2700	445 @3000	445 @3000
Cruise Speed (km/hr)	346	362	390	390	390
Landing Speed (km/hr)	107	110	117	----	----
Climb Rate(m/min) (m/min)	505* 1000/---- 3000/4.4 5000/9.9	1000/---- 3000/---- 5000/6.8	685* 1000/1.3 3000/4.0 5000/7.3	1000/---- 3000/---- 5000/7.0	1000/---- 3000/---- 5000/7.0
Ceiling (m)	7440	8800	9200	9100	9100
Range (m)	680	790	780	----	----
Armament 1.Nose 2.Wing					
	PV-1 7.62mm x 2	PV-1 7.62mm x 2	ShKAS 7.62mm x 2	ShKAS 7.62mm x 2	ShKAS 7.62mm x 2
Payloads			100kg bombs x 2		
Remarks 1.Propeller 2.Gunsight 3.Canopy 4.Tail Detail 5.Production Line 6.Phase	1.V-22 2.OP-1 3.Slid forward 4.Tail Skid 5.GAZ-39/ 21 6.1934-1935	1.Hamilton 2.OP-1 3.Slid forward 4.Tail Wheel 5.GAZ-39 6.Mar 1935	1.V-25 2.OP-1 3.Slid forward 4.Tail Skid 5.GAZ-21/153 6.Early 1936	1.V-25 2.OP-1 3.Open 4.Tail Skid 5.GAZ-21/153 6.Late 1937	1.V-25 2.PAK-1 3.Open 4.Tail Skid 5.GAZ-21/153 6.Late 1937

Variants of Polikarpov I-16 (Part II)

Specification	Tip 10	Tip 10 Later Build	Tip 12 (I-16P)	Tip 17	Tip 20
Wingspan (m)	9.00	9.00	9.00	9.00	
Length (m)	6.10	6.10	6.00	6.00	
Height (m)	2.57	2.57	2.57	2.57	
Wing Area (Sqr.m)	14.54	14.54	14.54	14.54	
Weight Empty (kg)	1327	1330	1160	1420	
Weight Loaded (kg)	1716	1720	1700	1810	
Weight Take off (kg)	----	----	----	----	
Engine	M-25A	M-25V	RCF-3	M-25V	
Power Take off (HP)	730	750	630	750	
Fuel(liter)	----	----	----	----	
Max Speed (km/hr) @Altitude (m)	445 @3000	448 @3160	431 @2400	425 @2700	
Cruise Speed (km/hr)	390	398	383	385	
Landing Speed (km/hr)	----	126	129	131	
Climb Rate(m/min) (m/min)	1000/---- 3000/---- 5000/7.0	725* 1000/---- 3000/3.40 5000/6.90	---- 1000/---- 3000/4.36 5000/8.00	---- 1000/---- 3000/4.36 5000/8.90	
Ceiling (m)	9100	8400	8300	8200	
Range (m)	----	525	520	417	
Armament 1.Nose 2.Wing	ShKAS 7.62mm x 2 ShKAS 7.62mm x 2	ShKAS 7.62mm x 2 ShKAS 7.62mm x 2	ShVAK 20mm x 2	ShKAS 7.62mm x 2 ShVAK 20mm x 2	
Payloads		100kg bombs x 2 or RS-82 x 6			
Remarks 1.Propeller 2.Gunsight 3.Canopy 4.Tail Detail 5.Production Line 6.Phase	1.V-25 2.PAK-1 3.Open 4.Tail Skid 5.GAZ-21 6.Dec 1937	1.AV-1 2.PAK-1a/ 1m 3.Open 4.Tail Wheel 5.---- 6.1938	1.AV-1 2.OP-1 3.Slid forward 4.Tail Skid 5.---- 6.1937	1.AV-1 2.PAK-1m 3.Open 4.Tail Skid 5.GAZ-21/153 6.Mar 1937	


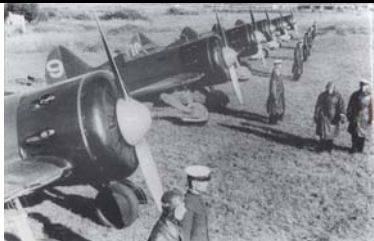


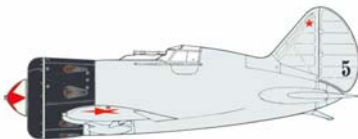


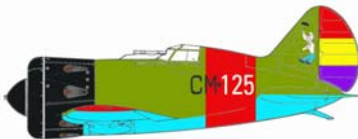
Variants of Polikarpov I-16 (Part III)










Specification	Tip 18	Tip 24	Tip 27	Tip 28	Tip 29
Wingspan (m)	9.00	9.00	9.00	9.00	9.00
Length (m)	6.0	6.10	6.10	6.10	6.10
Height (m)	2.57	2.57	2.57	2.57	2.57
Wing Area (Sqr.m)	14.54	14.54	14.54	14.54	14.54
Weight Empty (kg)	1433	1382	1336	1403	1545
Weight Loaded (kg)	1830	1882	1808	1988	1966
Weight Take off (kg)	----	----	----	----	----
Engine	M-62	M-63	M-62	M-63	M-63
Power Take off (HP)	1000	1100	1000	1100	1100
Fuel(liter)	----	----	----	----	----
Max Speed (km/hr) @Altitude (m)	461 @4400	489 @4850	----	463 @2000	470 @5500
Cruise Speed (km/hr)	413	410	----	427	419
Landing Speed (km/hr)	132	130.5	131	150	131
Climb Rate(m/min) (m/min)	926 1000/---- 3000/2.90 5000/5.40	---- 1000/---- 3000/3.40 5000/5.20	---- 1000/---- 3000/---- 5000/----	---- 1000/---- 3000/--- 5000/5.60	---- 1000/---- 3000/3.30 5000/5.80
Ceiling (m)	9300	10800	----	9900	9800
Range (m)	485	440 700 with Additional Tanks	458	----	440
Armament 1.Nose 2.Wing	ShKAS 7.62mm x 2 ShKAS 7.62mm x 2	ShKAS 7.62mm x 2 ShKAS 7.62mm x 2	ShKAS 7.62mm x 2 ShKAS 7.62mm x 2 ShVAK 20mm x 2	ShKAS 7.62mm x 2 ShKAS 7.62mm x 2 ShVAK 20mm x 2	ShKAS 7.62mm x 2 Berezin 12.7mm x1
Payloads	100kg bombs x 2 or RS-82 x 6	100kg bombs x 2 or RS-82 x 6		100kg bombs x 2 or RS-82 x 6	100kg bombs x 2 or RS-82 x 6
Remarks 1.Propeller 2.Gunsight 3.Canopy 4.Tail Detail 5.Production Line 6.Phase	1.AV-1 2.PAK-1m 3.Open 4.Skid/ Wheel 5.GAZ-19 6.1939	1.AV-1 2.PAK-1m 3.Open 4.Tail Wheel 5.GAZ-21/153 6.Mid 1940	1.AV-1 2.PAK-1m 3.Open 4.Tail Skid 5.---- 6.1939	1.AV-1 2.PAK-1m 3.Open 4. Tail Wheel 5.---- 6.1937	1.AV-1 2.PAK-1m 3.Open 4. Tail Wheel 5.GAZ-21/153 6.1940

Note:






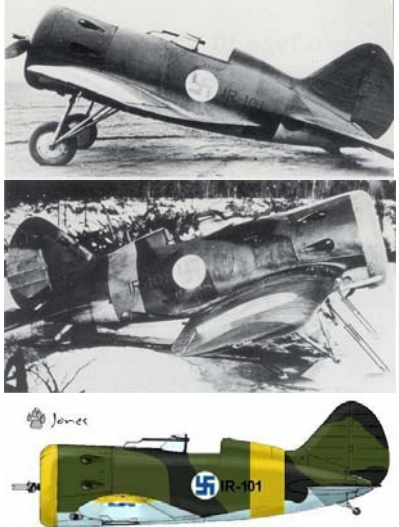
- 1.M-22 powerplant is a Soviet copy of the British Bristol Jupiter VI
- 2.the Soviet Union referred to Wright-Cyclone SGR-1820-F-3 as RCF-3
- 3.OP-1; Opticheskij Pritsel(Optical Gunsight)
- 4.PAK-1; Prizel Aviazionnyj Kollimatoryj(Aviation Gunsight), a copy of the French Clair gunsight
- 5.M-62 powerplant is a Soviet copy of the Wright-Cyclone SGR-1820-G-5
- 6.9450 of I-16 produced total

Colors and Markings of Polikarpov I-16 Tip 5











Type	Aces	Photo/ Graphic
Tip 5 USSR Yellow 9	Pilot unknown, 12nd IAP VMF-KBF(Baltic Fleet), USSR, August 1937 	 
Tip 5 USSR Black 5	Maior A. Blagoveschenskiy, 22nd IAP, USSR, May-June 1938 	
Tip 5 Spanish Republican CM-125	Manuel Fernández, Morales y Zarauza, 4ª Escuadrilla, Spain, 14 th August 1938 	 

<p>Tip 5 Nationalists Captured IW-1</p>	<p>Pilot unknown, Captured by Spanish Nationalist, Grupo IW, Madrid-Cuatro Vientos, Spain, 1939</p> 	 
<p>Tip 5 CAF-2105 (P-5806)</p>	<p>Lieutenant Liu Chi-Sheng, 21st PS, 4th PG, CAF, Wuhan area, China, 31st May 1938</p> 	 
<p>Tip 5 CAF-67 (P-5379)</p>	<p>Kapitan Gubenko Anton Alexeyevich, Russian Volunteer Group, CAF, China, 18th July 1938</p> 	 

Colors and Markings of Polikarpov I-16 Tip 6

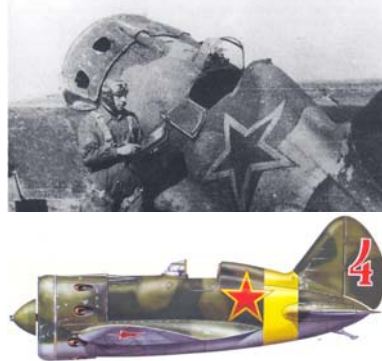
TySpe	Aces	Photo/ Graphic
Tip 6 USSR White 50	Pilot unknown, Baltic Fleet, USSR, August 1941 	
Tip 6 CAF-???? (P-????)	Lieutenant Wang Shou-Chang, 26 th PS, CAF, Hankou area, China, 3 rd August 1938 	
Tip 6 FAF-IR101	Pilot unknown, FAF Captured, Rompotti, Finland, March 1943 	

Colors and Markings of Polikarpov I-16 Tip 10

Type	Aces	Photo/ Graphic
Tip 10 Super Mosca Spanish Republican CM-225	<p>Lieutenant Salvaredo, 7a Escuadrilla, Militar, Spain, Autumn 1938</p> 	  
Tip 10 Super Mosca Spanish Republican Super Mosca CM-193	<p>José María Bravo, 3ª Escuadrilla, Spain, 1939</p> 	 
Tip 10 USSR Later Build White 16	<p>Snr Lieutenant A G Lomokin, 21 IAP, KBF, Gulf of Finland, 1942</p> 	  <p>7 I-16 'White 16' flown by Snr Lt A G Lomokin of 21 IAP, KBF, Gulf of Finland, 1942</p>

Tip 10
USSR
Red 4

Pilot unknown, Leningrad area, USSR, 1944



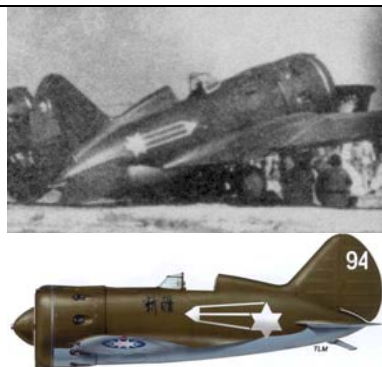
Tip 10
CAF-71
(P-????)

Major Sergey Ivanovich Gritsevets, Russian Volunteer Group, CAF, Hankou area, China, 29th April 1938



Tip 10
CAF-94
(P-????)

Pilot unknown, CAF, Sinkiang, China, 1940



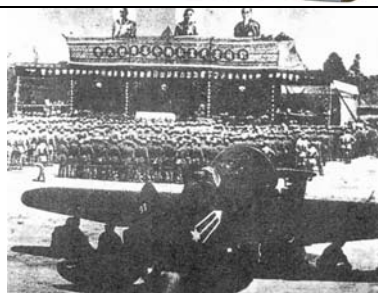
Tip 10
CAF-2423
(P-????)

Lieutenant Wei Ding-Shih, 24th PS, 5th PG, CAF,
China, Jun 1941



Tip 10
Later Build
CAF-94
(P-????)











Pilot unknown, Training unit, CAF, Sinkiang, China,
1944




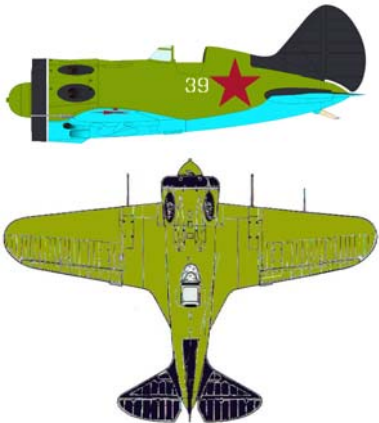


Colors and Markings of Polikarpov I-16 Tip 12 prototype/ 17

Type	Aces	Photo/ Graphic
Tip 12 prototype USSR	Pilot unknown, NII VVS unusual red/ silver colour scheme 	 
Tip 17 USSR White 28	Snr Lieutenant M Vasiliev, 4th Guards Regiment, Baltic Fleet, Stalingrad, Spring 1942 	 



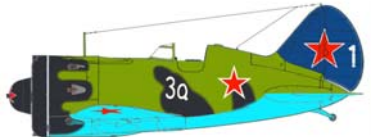

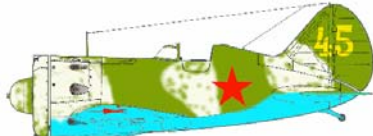
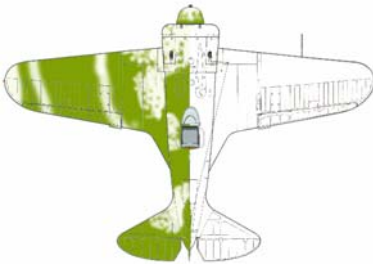



Colors and Markings of Polikarpov I-16 Tip 18/ 24

Type	Aces	Photo/ Graphic
Tip 18 USSR White 11	Boris Safonov, 72nd Aviation Regiment, Soviet Air Force, Murmansk, 1941 	 
Tip 18 USSR Yellow 13	S.G. Surzhenko, 72nd Aviation Regiment, Soviet Air Force, Murmansk, 1941 	  
Tip 24 USSR White 27	Lieutenant Krichevskiy, 254 th IAP, Leningrad Front, Soviet Air Force, 1941 	 

Colors and Markings of Polikarpov I-16 Tip 27/ 28

Type	Aces	Photo/ Graphic
Tip 27 USSR White 39	Pilot unknown, 161st or 163rd IAP, Soviet Air Force, Minsk, Summer 1941 	
Tip 28 USSR Red 1	Pilot unknown, 161st or 163rd IAP, Soviet Air Force, Minsk, Summer 1941 	

Colors and Markings of Polikarpov I-16 Tip 29

Type	Aces	Photo/ Graphic
Tip 29 USSR White 1	<p>Szhts. Slesarchuk, Gazin, Perevera , ? IAP, 7 IAK-PVO, Autumn 1941</p> 	 
Tip 29 Early Build USSR Yellow 45	<p>A. Pavlovskiy, 156 IAP, Winter 1941-42</p> 	 
Tip 29 Romania White 1	<p>Anti-I-16 Trainer, Royal Romanian Air Force, 11st Sep 1941</p> 	 

2.INSTALLATION

Just unzip the I16Aces.Zip to your "Combat Flight Simulator 2" directory.

3.THE AIRCRAFT

a. Models

FSDS 2.24 Multi-Resolution MDLs

Object Code Size	High	Medium	Low	No
Meters	0	25	50	75
Pixels	0	100	100	1

Moving Parts:	Key Definition
Propeller	"E"
Throttle Bar	"0"... "9" enable in FS2002 only
Cowl Flap	"Shift+E"/ "Ctrl+E"
Flap	"F"/ "V"
Fuselage Door	"D"
Landing Gear/ Main Wheel/ Tail Wheel	"G"
Aileron/ Rudder/ Elevator	"Joy stick"
Pilot/ Head/ Control Column/ Pedals	"Joy stick"

b. panel

2D panel image captured and modified from 3D Virtual Cockpit
uses CFS2 stock gauges and BR2 YaK-9U gauges

c.sound

alias A6M2_Zero\sound

d. texture

I16_01/ I16_02../ I16_06/ pilot_I16 uses 1024x1024 24-bit DXT1 Opaque format
weapons_I16 256x256 24-bit DXT1 Opaque format
prop_I16 uses 256x256 Extended 16-bit 444-4 format

e. I16_Ishak_Tip6.AIR file uses AirEd modified with stock A6M2_Zero.AIR

f. I16_Ishak_Tip5.dp files uses DPED110

4.COPYRIGHTS

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The original "**CFS2 Polikarpov I-16 Aces**" package may be located at www.flightsim.com, at www.simviation.com and at www.sim-outhouse.com

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5. REFERENCES

SITE

a. Colors and Markings

Early Polikarpov I-16 Variants

http://web.archive.org/web/20080112091951/www.brushfirewars.org/aircraft/polikarpov_i-16/polikarpov_i-16_1.htm

VVS Art Deco : Oddities of Camouflage 1934-41 The Polikarpov I-16 Fighter, Part I

<http://vvs.hobbyvista.com/Markings/I16/artdeco-i16.php>

Old Friends... Revisiting the I-16 Type 29

<http://vvs.hobbyvista.com/Markings/I16/type29/index.php>

Spanish Nationalist Air Force 1939-1952

<http://www.insigniamag.com/span17.html>

WINGS PALETTE/ Polikarpov I-16

<http://wp.scn.ru/en/ww2/f/317/10/0#8>

b. History

Air Aces Homepage

<http://users.accesscomm.ca/magnusfamily/airaces1.htm>

Boris Feoktistovich Safonov

<http://aerostories.free.fr/pilotes/URSS/safonov/>

Boris F. Safonov - Naval Aviation Ace

<http://www.elknet.pl/acestory/safonov/safonov.htm>

Chinese Aces of WW2

<http://www.acesofww2.com/china/China.htm>

Chinese biplane fighter aces – Liu Chi-Sheng

http://www.dalnet.se/~surfcity/china_chi-sheng.htm

Polikarpov I-16 «Mosca» In the Spanish Civil War

<http://usuarios.lycos.es/SANMARCA/iindex.htm>

Soviet biplane fighter aces - Anton Gubenko

http://www.dalnet.se/~surfcity/soviet_gubenko.htm

Soviet biplane fighter aces - Sergey Gritsevets

http://www.dalnet.se/~surfcity/soviet_gritsevets.htm

SOVIET UNION (VVS) ACES

<http://www.elknet.pl/acestory/soviet.htm>

The Soviet Air Forces in the Winter War

<http://www.winterwar.com/forces/SAF.htm>

U.S.S.R. - Sino-Japanese Conflict

<http://users.accesscomm.ca/magnusfamily/sinours.htm>

二戰電影中國系列之一/ 笕橋英烈傳(Traditional Chinese)

<http://wtaing.myweb.hinet.net/heroface/movie31.htm>

英烈千秋(Traditional Chinese)

<http://air.mnd.gov.tw/Publish.aspx?cnid=950&Level=3>

c. Model Kits

Aircraft Resource Center/ Model Article Archives/ Polikarpov I-16

http://www.aircraftresourcecenter.com/Gal-Fea%20Archives/Prop/Polikarpov_I-16/I-16.htm

Hobbycraft 1-48 Polikarpov I-16 Type 5

<http://perso.wanadoo.fr/manuel/I16.html>

Hobbycraft 1-48 Polikarpov I-16 Type 5 by Denis Moisan

<http://www.smhq.org/articles/polikarpov.html>

Polikarpov I-16 Gear Down(Japanese)

http://www5a.biglobe.ne.jp/~t_miyama/po16leg.html

d. Walk Around

Fighter Factory - Polikarpov I-16 Rata

<http://www.fighterfactory.com/airworthy-aircraft/polikarpov-i-16.php>

I-16 (global)

<http://users.swing.be/avions/engins2/1448.html>

Polikarpov I-16

<http://penio.narod.ru/Planes/USSR/I16/>

Polikarpov I-16 Ishak

http://www.geoghegan.us/i16/I-16_Review.htm

Polikarpov I-16 'Ishak' ('Rata')

<http://www.kiwiaircraftimages.com/i16.html>

POLIKARPOV I-16 "Mosca"

<http://www.terra.es/personal7/alfa-re02do/pagfot11.htm>

The Aircraft – Russia/ Polikarpov I-16 Ishak (Rata)

<http://www.nzfpm.co.nz/article.asp?id=i16>

BOOK

1. Polikarpov Fighters in action Pt.2/ Hanss-Heiri Stapfer/ Aircraft Number 162/ squadron/ signal publications/ U.S.A
2. Polikarpov's I-16 Fighter-Its Forerunners and Progeny/ Yefim Gordon/ RED STAR VOLUME 3/ Midland Publishing/ England

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