



Lock-On Modern Air Combat
Check-lists

Russian aircraft Annexes.

**Not suited for Real Operations
For Lomac use only.**

Each lomac aircraft will have its checklists volume.
Use the checklists as an in flight aide for aircraft handling and
procedures, systems managment and weapons delivery
techniques.

CONTENTS

Annexes

Annexes are quick inflight references for aircraft and weapons systems. The annexes are common to Russian aircraft. Su27 - Su33 - Mig29 and Su25.

1. Contents
2. Russian Display Phonetics - pronunciation of the russian words and translation in english.
3. Nagging Nadia phonetics and translation.
4. SPO-15 RWS quick reference.
5. Russian Air to Air missiles.
6. Russian Air to Ground missiles.
7. Russian Dumb bombs and unguided rockets.
8. Nato missiles and AAA threat ranges.

See also additional volumes

- Su27 main checklists
- Su33 main checklists
- Mig29 main checklists
- Su25 main checklists
- A10 main checklists
- F15 main checklist
- Nato aircraft annexes
- Navigation in Crimea (Map and airbase charts)

RUSSIAN DISPLAYS PHONETICS

Note:

If you fly with the russian displays, you need to memorize the correct pronunciation of the russian terms. Here's a glossary of term used, their occidental pronunciation and english translation and where used.

<u>Russian:</u>	<u>Pronounce:</u>	<u>English:</u>	<u>Where used:</u>
НАВ	Nav	NAV	Primary Navigation mode - Dead Reckoning
МАРШ	Marsh	ENROUTE	Secondary Nav mode from wpt to wpt.
ВОЗВ	Vozv	RTN to IAF	Secondary Nav mode - Initial Approach Fix
ПОС	Pos	LANDING / ILS	Secondary Nav mode - ILS Landing
Т	Teplotelengator	THERMAL	EOS system activated and operating
И	Izloutchenie	RADAR	Radar activated and operating
ДВБ	Devebe	BVR	Air Air Master Mode - Beyond Visual Range
ОБЗ	Obzor	Scan	BVR Submode - Scan
СНП	Snp	TWS	BVR Submode - Track While Scan
ДРЛО	Drlo	DLink	BVR Submode - Awacs Datalink
БВБ	Bevebe	CAC	Air Air Master Mode - Close Air Combat
ВС	vs	VS	CAC Submode - Vertical Scan
СТР	Strelba	Boresight	CAC Submode - Radar Boresight mode
ШЛЕМ (ИКТВ)	Shlem	Helmet	CAC Submode - Helmet mounted display
ФИО	Fio	LMA	CAC Submode - Longitudinal Missile Aiming
АТК	Ataka	Attack	Auto Tracking one target
ЗЕМЛЯ	Zemlya	Ground	Air to Ground master mode.
ПР	Pe-er	Shoot	Shoot cue - Lanuche authorized
ОТВ	O-te-ve	Do not shoot	Reject shooting cue (unaccurate solution)
СВОЙ	Svoy	Ours	IFF call when you're locking a friendly
Р	R	R	Radar Ready indication (HUD in VS mode)
ПУСК	Pousk	Launch	Missile Launch Warning.
ТРИМ	Trim	Trim	Neutral Trim Indicator
ФОРС	Fors (Forsazh)	Afterburner	Lights ON when afterburner are engaged.
АВТО	Af-to	Autopilot	Light ON when autopilot is engaged.
Н-СТАБ	Ash-stab	Altitude hold	Light ON when Altitude stabilisation engaged
САУ	Saou	ACS	AutomaticControl System failure
ГИДРО	Gid-ro	Hydro	Hydraulic failure.
ТОРЛИО	Top-li-vo	Fuel	When light ON, you are on reserve Fuel.
РЛС	Rls	Radar	Radar failure warning light.
ОЛС	Ols	EOS	EOS failure warning light.
СПО	Spo	RWS	Radar warning system failure light.
СПП	Spp	Launch	Missile launch warning system failure.
АП	Ap	ECM	Active jamming indicator.

NAGGING NADIA PHONETICS

Phonetics:

Smotri tablo

Смотри табло

Predelniy ougol ataki

Предельный угол атаки

Avariinyi ostatok topliva

Аварийный остаток топлива

Predelnaya peregrouzka

Предельная перегрузка

Pousk razreshon

Пуск разрешен

Pojar lyevovo dvigatyelya

Пожар левого двигателя

Pojar pravovo dvigatyelya

Пожар правого двигателя

Predelnaya skorost

Предельная скороств

Vysota opasnaya

Высота опасная

Sbros oboroty lyevovo dvigatyelya

Сбрось обороты левого двигателя

Sbros oboroty pravovo dvigatyelya

Сбрось обороты правого двигателя

Translation:

Warning -> Warning panel

Maximum angle of attack

Bingo Fuel

Maximum G

Launch authorized

Left engine fire

Right engine fire

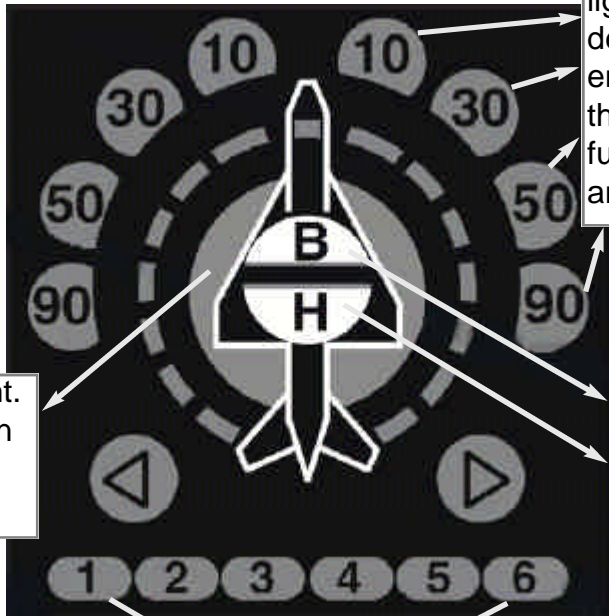
Minimum or Maximum speed

Pull up

Throttle back left engine

Throttle back right engine

SPO-15 BERYOZA - RWS



Flashing azimuth lights - Bearing in degrees of radar emissions. Note the 90° lights use-full when beaming an emitter

Emitter is above you

Emitter is below you

Steady lock light. Comes on when your aircraft is locked-on

1. Airborne Radar
2. Short Range Sams
3. Medium Range Sams
4. Long Range Sams
5. Early Warning radar
6. Awacs

Note RWS:

Keep the RWS constantly in sight during mission. It's very easy to miss a radar sweep.

Note Missile Launch:

The end of the audio warning for missile launch does not mean the missile has stopped tracking. The missile tracks as long as the ПУСК launch light is illuminated.

AIR TO AIR MISSILES

1. BVR (ДББ) Missiles

P-33 (R-33E - AA9 Amos) Long range guided missile designed to intercept cruise missile. Carried by the Mig-31.

P-33	R-33E	AA-9 Amos	Initial radio - SARH	max 160km
------	-------	-----------	----------------------	-----------

P-23 (R-23 - AA7 Apex) Old missile Low PK carried by the Mig-23

P-23P	R-23R	AA-7A Apex	SARH Medium range	max 25 - 35 km
-------	-------	------------	-------------------	----------------

P-23T	R-23T	AA-7B Apex	Infrared Medium rangemax 25 - 35 km	
-------	-------	------------	-------------------------------------	--

P-27 (R-27 - AA10 Alamo) Primary russian AAM. Effective against highly manoeuvring aircraft, helicopters and cruise msl.
All aspects - all weather - ECM resistant.

P-27P	R-27R	AA-10A Alamo	SARH Medium range	max 10 - 80 km
-------	-------	--------------	-------------------	----------------

P-27T	R-27T	AA-10B Alamo	Infrared Medium range	max 10 - 72 km
-------	-------	--------------	-----------------------	----------------

Fire an IR version (P-27T) right after the Radar version (P-27P) for max kill probability.

P-27P3	R-27RE	AA-10C Alamo	SARH Long range	max 30 - 170 km
--------	--------	--------------	-----------------	-----------------

P-27T3	R-27TE	AA-10D Alamo	Infrared Long range	max 15 - 120 km
--------	--------	--------------	---------------------	-----------------

P3 and T3 have a new boost sustain motor for longer range

P-27IM	R-27EM	AA-10 Alamo	SARH improved for low alt	max 20 - 120 km
--------	--------	-------------	---------------------------	-----------------

P-27AI	R-27AE	AA-10 Alamo	Initial radio - Final ARH	max 20 - 120 km
--------	--------	-------------	---------------------------	-----------------

P-77 (R-77 - AA12 Adder) New generation medium range AAM - Amraamski
Effective against fighters, bombers, choppers, sams
All aspects - all weather - ECM resistant.

P-77	R-77	AA-12 Adder	Initial radio - Final ARH	Max 90km
------	------	-------------	---------------------------	----------

2. CAC (БББ) Missiles

P-60 (R-60 - AA8 Aphid) First generation all aspect IR AAM. Carried by all russian aircraft and helicopter.

P-60	R-60	AA-8 Aphid	Infrared	Max 10 km.
------	------	------------	----------	------------

P-73 (R-73 - AA11 Archer) New generation all aspect IR AAM. Off boresight capable (60° off) - Wide angle gimbals - Highly agile - all aspects

P-73	R-73	AA-8 Archer	Infrared	Max 30 km.
------	------	-------------	----------	------------

AIR TO GROUND MISSILES

Note:

Air to Ground weapons are only carried by the Su-25 and Su-33 and Mig-29. the Su-27 can only carry Air to Air weapons.

X-25 (Kh25 - AS9 Karen) (Kh25MP - AS10)

Same as Kh-29 but smaller warhead, shorter range.
Effective against radar site, command posts, light tgt
Carried by: Su17, Su25, Su39, Mig27, Su24, Su34

X-25L	Semi Active Laser homing	launch from 200 to 5000m	range: 10 - 20km
X-25T	TV or passive IR homing	launch from 200 to 5000m	range: 2 - 20km
X-25MP	Anti Radar homing	launch from 200 to 5000m	range: 40 - 60km

X-29 (Kh29 - AS14 Kedge)

General purpose tactical missile effective against hardened targets (Shelter, Runways, Ships, bridges)
Carried by: Su25, Su33, Su39, Mig27, Su17, 24, 34

X-29L	Semi Active Laser homing	launch from 200 to 5000m	range: 8 - 10km
X-29TE	TV or passive IR homing	launch from 200 to 5000m	range: 20 - 30km

X-31 (Kh31 - AS12 Kegler)

Anti-ship and later anti-radar missile. the Kh-31 is a fire and forget AGM. The anti radar is effective against most SAM, ATC, EWR radars. The anti-ship is effective against ship up to 4500tons displacement.
Carried by: Su25, Su33, Su39, Su24, Su34

X-31A	Anti-Ship ARH	launch from 50 to 15000m	range: 5 - 50km
X-31P	Anti-Radar	launch from 50 to 15000m	range: 5 - 100km

X-35 (Kh35 - AS17 Krypton)

Sea-skimming transonic anti-ship missile effective against ship up to cruiser class. Standoff range
Carried by: Su33

X-35	Inertial guidance - ARH	launch from medium altitude	range: 130km
------	-------------------------	-----------------------------	--------------

X-41 (Kh41 - AS)

Sea-skimming supersonic anti-ship missile effective against cruiser class ships. Fire and forget and ECM resistant. Carried by: Su33

X-41	Inertial guidance - ARH	launch from medium altitude	range: 200km
------	-------------------------	-----------------------------	--------------

X-59 (Kh59 - AS13 Kingbolt)

Carried by: Su33, Su24, Su34

X-59	Inertial guidance - ARH	launch from medium altitude	range: 115km
------	-------------------------	-----------------------------	--------------

AIR TO GROUND BOMBS & ROCKETS

1. Free fall general purpose bombs:

Destroying targets by blast - effective against various facilities and soft targets

FAB-250	250 kg	speed release: 500 - 1000km/h	Alt : 300 - 5000m
FAB-500	500kg	speed release: 500 - 1000km/h	Alt : 300 - 5000m
FAB-1500	1500 kg	speed release: 500 - 1000km/h	Alt : 300 - 5000m

2. Free fall blast fragmentation bombs:

Effective against personnel and lightly armored vehicles, convoys, parked aircraft

OFAB-250	250 kg	speed release: 500 - 1000km/h	Alt : 500 - 5000m
----------	--------	-------------------------------	-------------------

3. Free fall retarded blast fragmentation bombs:

Effective against personnel and lightly armored vehicles, convoys, parked aircraft

PB-250	250 kg	speed release: 500 - 1000km/h	Alt : 100 - 300m
--------	--------	-------------------------------	------------------

4. Free fall concrete penetrating bombs:

Effective against hardened bunkers and runways

BetAB-500ShP	500 kg	speed release: 550 - 1100km/h	Alt : 150 - 500m
--------------	--------	-------------------------------	------------------

5. Free fall incendiary bombs:

Effective against personnel, industrial facilities, POL.

ZAB-500	500 kg	speed release: 500 - 1000km/h	Alt : 300 - 5000m
---------	--------	-------------------------------	-------------------

6. Free fall cluster bombs:

Effective against tanks, sam sites.

RBK-500	500 kg	speed release: 500 - 1000km/h	Alt : 50 - 300m
KMGU	pod	speed release: 500 - 900km/h	Alt : 50 - 150m

7. Guided bombs:

Effective against fixed ground targets. Fitted with a blast or armour-piercing war-head.

KAB-500KR	500 kg	TV Guided	Daytime	550 - 1100km/h	Alt : 500 - 5000m
KAB-500L	500 kg	Infrared	Nighttime	550 - 1100km/h	Alt : 500 - 5000m
KAB-1500L	1500kg	Laser	All cond.	550 - 1100km/h	Alt : 500 - 5000m

8. Unguided rockets:

Rockets should be fired at speeds between 600 and 1000km/h in a 10-30° dive.

S-8	Calibre: 80mm	Range: 2000m	Error: 6m	Soft target
S-13OF	Calibre: 132mm	Range: 3000m	Error: 9m	Light armored vehicles
S-13T	Calibre: 132mm	Range: 3000m	Error: 9m	Runway, Shelters
S-24	Calibre: 240mm	Range: 3000m	Error: 9m	Fragmentation head
S-25O	Calibre: 250mm	Range: 2000m	Error: 6m	Soft targets
S-25OF	Calibre: 250mm	Range: 2000m	Error: 6m	Light armored vehicles
S-25OFM	Calibre: 250mm	Range: 2000m	Error: 6m	Hardened facilities

NATO MISSILES AND AAA SPECS

Air to Air Missiles

Missile	Homing	Rng (km)	RWS Warning	Pk
AIM-120 Amraam	Command, Inertial & Active radar	50	warning when msl becomes active	high
AIM-7 Sparrow	Semi active radar	45	aircraft lock-on	low
AIM-9 Sidewinder	Infrared	8	no warning	high

SAMs

Missile	Homing	Rng (km)	Engagment Altitude	Nbr
Hawk	Command guidance	2 to 32	60m to 13700m	3 x 3
Patriot	Command guidance	3 to 160	60m to 24000m	4 x 4
Roland	Command guidance	0.5 to 6.3	10m to 5500m	Reload
Sea Sparrow RIM-7M (Ship)	Command guidance	1.5 to 55	classified	4 x 2
SM1 Standard SM2 (Ship)	Semi - active radar	35 150	classified	Fast reload
Stinger (manpad)	Infrared	4	0 to 3500m	variable
Avenger	Infrared	7	0 to 3500m	4x 2

AAA

AAA	Homing	Rng (km)	Engagment Altitude	Calibre
Gepard	Radar guided	3	3000m	35mm
CIWS Phalanx (Ship)	Radar guided	classified	classified	20mm
Vulcan	Radar guided	2.6	2600m	20mm

Note:

Range greatly depends on several factors such as aspect angle, altitude, speed of the launch vehicle. Please refer to the Lomac operating handbooks