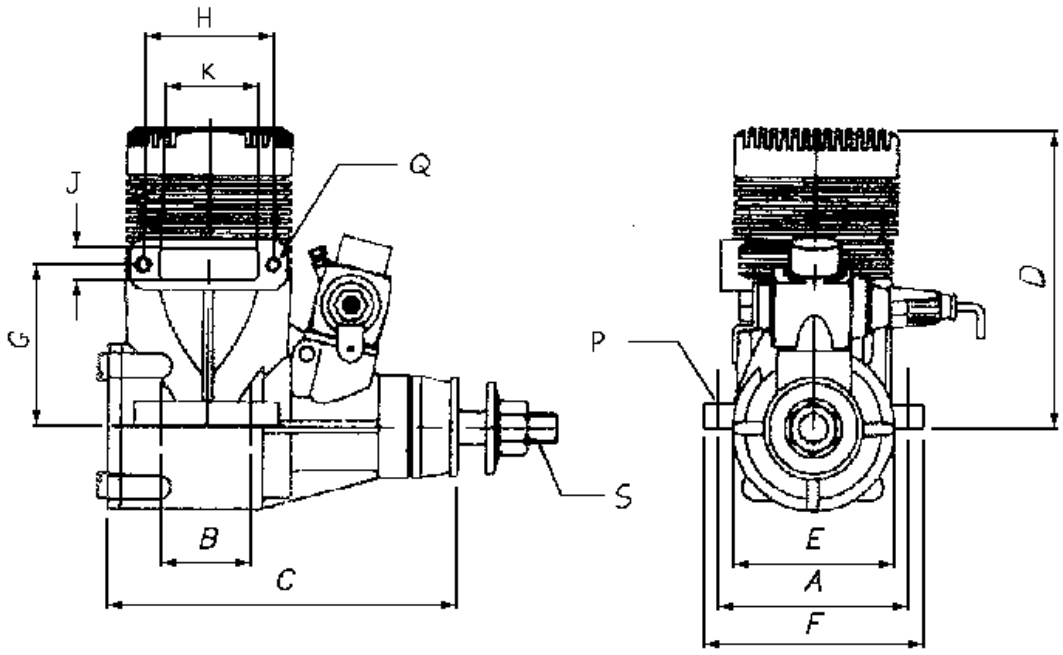
Rossi has been making engines since 1960. The factory incorporates the best Swiss CNC machinery that manufactures engines with the most precise tolerances from the best quality materials producing the highest quality engines. Rossi engines have superior performance and the longest life. Countless championship races have been won with Rossi engines, which have made the Rossi engines well known worldwide.

SPECIFICATION	23M40	27M46	27R45	67R53	32R60	154R65
DISPLACEMENT	6.5cc	7.6cc	7.5cc	8.5cc	10cc	11cc
BORE (mm)	21	22.5	22.41	22.41	23.88	24.83
STROKE (mm)	19	19	19	22.22	22.22	22.27
HP	1.9	2.2	2.1	2.3	2.8	3.5
RPM	17000	16500	16000	18000	16000	17000
PORTS	3	5	3	5	3	5
WEIGHT (g)	430	430	430	430	580	610

DIM.	A	B	C	D	E	F	G	H	J	K	P	Q	S
23M40	45	24	90	71	37.5	54.5	39.2	32	7.7	20.8	3.8D	3.5T	M8x1.25
27M46	45	24	90	71	37.5	54.5	39.2	32	7.7	20.8	3.8D	3.5T	M8x1.25
27R45	45	24	90	71	37.5	54.5	39.2	32	7.7	20.8	3.8D	3.5T	M8x1.25
67R53	45	24	90	71	37.5	54.5	39.2	32	7.7	20.8	3.8D	4T	M8x1.25
32R60	52	25	96	81	45	61.5	44.5	35.6	8.7	22.5	4.2D	4T	M8x1.25
154R65	52	25	96.5	85.4	45	61.5	44.5	42	8.7	22.5	4.2D	4.2D	M8x1.25

NOTE: "D" is for diameter, and "T" is for thread.



Instructions and Test Data for Rossi Engines

These instructions and the test data are created to assist you in selecting the best propeller, silencer, tuned pipe, glow plug and fuel for your application of the Rossi Engine(s). The test data is measured and recorded with the specified fuels, propellers, silencers, tuned pipes, and glow plugs.

FUELS
The tests are performed with these brands of fuels:

PowerMaster FAI: 20% oil, (80% methanol, 20% castor oil) and
PowerMaster Premium Sport: 10% nitro, 18% oil (1/3 castor and 2/3 synthetic blend).

Byron Fuels FAI: 18% oil, (20% castor, 80% synthetic blend) and
Byron Fuels Premium Sport: 10% nitro, 18% oil, (20% castor, 80% synthetic blend).

Morgan Fuels Omega FAI: 17% oil, (30% castor, 70% synthetic blend) and
Morgan Fuels Omega: 10% nitro, 17% oil, (30% castor, 70% synthetic blend).

Fuels recommended for Rossi engines should contain castor oil or a blend of castor and synthetic oil. Fuels with only synthetic oil are not recommended for Rossi engines. Higher nitro fuels ay be used for higher altitude locations to compensate for lack of oxygen. Add a 0.1mm or 0.2mm copper shim under the engine head in hot weather and for fuels with high nitro content to decompress the engine.

PROPELLERS
The propellers we used in our tests are the **Landing Products APC propellers**. Scrape the sharp edges of the propellers lightly with a knife and balance the props before use.

Considerations for propeller selection:

Many variables affect propeller performance. As you can see from the test data, low pitch propellers create greater **STATIC** thrust on the bench test. However, **DYNAMIC** thrust is different. When the engine is on an airplane in flight, its flying speed and drag affect propeller performance. Here is an easy-to-calculate relationship: The maximum possible speed (in miles per hour) of a propeller-driven airplane equals the propeller pitch in inches times the prop rpm in thousands.

For example per the test results:

14 - 4 prop @ 10,000 rpm : 4 X 10 = 40 mph -- maximum possible speed

12 - 6 prop @ 12,000 rpm : 6 X 12 = 72 mph -- maximum possible speed

12 -10 prop @ 9,800 rpm : 10 X 9.8 = 98 mph -- maximum possible speed

For this it is obvious the 14-4 prop tested on the Rossi 65 engine would be a good choice for a big scale model with plenty of wing area and lots of drag. But on a faster, low-drag R/C model, the 14-4 prop would be a bad choice in spite of its high static thrust. In other words, the propeller has to be chosen to suit the airplane and its range of flying speeds.

GLOW PLUGS
Glow plug selection is a trial-and-error process. It depends on several factors: engine, fuel, propeller, and weather conditions. The general rules are:

The hotter the fuel, the colder the plug should be.
The bigger the prop, the colder the plug should be.
The colder the weather, the hotter the plug should be.
The smaller the engine, the hotter the plug should be.

The glow plug controls the "timing" of combustion. If the plug type is too "hot", combustion starts too soon -- and much of the pressure energy from the burning fuel gets wasted in pushing down on a piston head that's still coming UP. If the plug is too "cold", combustion doesn't begin soon enough, and pressure energy gets wasted by being blown out the exhaust port. The reason that smaller engines require hotter glow plugs is that large engines have less cooling area in proportion to their displacement.

ENGINE BREAK IN
To break in a new engine mounted on an airplane or bench, open full throttle and run the engine on rich setting for approximately three minutes. Stop the engine and allow the engine to cool down. Re-start the engine and close the max needle ¼ turn. Run the engine for approximately three minutes. Stop the engine and allow the engine to cool down. Repeat these steps until the engine is close to the maximum RPM range. Avoid running the engine lean at all times. Check the engine head screws and tighten if loose.

CARBURETOR ADJUSTMENT
Rossi engine carburetors have two needles, adjustable for idle speed and maximum speed. The max speed setting is between 2 and 3 turns open from the closed position. First adjust the max speed with the throttle fully open. Next, close the throttle to run the engine at idle speed. The idle speed adjustment is based on where the highest rpm is achieved while the engine is idling. If the engine loads up and quits while idling, the idle adjust screw should be closed to make a leaner setting for the idle fuel mixture. If the idle screw is closed in too far, the engine will quit suddenly at idle. The idle screw is very sensitive and should only be changed in 1/8 of a turn increments to fine-tune the engine. After the idle adjustment, check the max speed and transition from low to high. When the idle mixture and max speed needles are adjusted, the engine will have fast response and transition from low to high speed.

If the carburetor does not adjust to run the engine reliably, check for air leaks at the carburetor and fuel system. Rossi engines rely on muffler pressure for fuel delivery. Any air leak from the fuel lines or fuel tank will affect the performance. Make sure the carburetor o-rings are all in good condition (max needle, idle screw, and neck o-rings) and the carburetor is pressed down firmly and secured on the engine with the lock nut.

TEST DATA
The test data for the Rossi engines were recorded in Los Angeles, California. The fuel, propeller, glow plug, silencer / tuned pipe combination is specified for each test. The ambient temperature and humidity, and the engine temperature range are recorded. The static thrust was measured using a digital scale when the engine is free to move on wheels. The rpm is measured with a digital tachometer. The engine temperature is measured at the engine head with a digital infrared temperature gage. The temperature range that these tests were done is from 70 to 85 degrees F, 35% to 45% humidity. The engine head temperature measures 220 to 270 degrees F. The tune pipe length is measured in the axis of the engine crankshaft from glow plug tip to the end of the pipe.

Rossi 27M46 Tested: FAI fuel, Rossi R5 glow plug, no head shim.

A) **Rossi 4011 Mini Tuned Silencer.**
B) **Performance Specialty Ultra Thrust Racing Muffler.**
C) **Custom Pipe Muffler #1.**
D) **Custom Cast Muffler #2.**

RPM AND STATIC THRUST TABLE				
Propeller	**A**	**B**	**C**	**D**
9 x 8	15400 RPM 2.07Kg(4.58lbs)	14300 RPM 1.99Kg(4.4lbs)	14300 RPM 1.92Kg(4.25lbs)	13700 RPM 1.81Kg(4lbs)
10 x 6	14500 RPM 2.65Kg(5.86lbs)	14500 RPM 2.72Kg(6lbs)	13900 RPM 2.49Kg(5.5lbs)	13100 RPM 2.27Kg(5.02lbs)
10 x 8	12450 RPM 2.17Kg(4.78lbs)	12000 RPM 1.84Kg(4.06lbs)	11800 RPM 1.91Kg(4.23lbs)	11250 RPM 1.83Kg(4.04lbs)
11 x 4	13900 RPM 3.01Kg(6.64lbs)	14250 RPM 3.21Kg(7.08lbs)	13300 RPM 2.63Kg(5.8lbs)	12600 RPM 2.15Kg(4.74lbs)
11 x 6	11580 RPM 2.42Kg(5.34lbs)	11100 RPM 2.27Kg(5.02lbs)	11200 RPM 2.4Kg(5.3lbs)	10700 RPM 1.85Kg(4.08lbs)
12 x 4	12100 RPM 2.81Kg(6.2lbs)	13300 RPM 2.96Kg(6.54lbs)	12000 RPM 2.66Kg(5.88lbs)	11000 RPM 2.43Kg(5.36lbs)
12.25x3.75	11700 RPM 2.94Kg(6.5lbs)	11200 RPM 2.70Kg(5.96lbs)	11000 RPM 2.89Kg(6.38lbs)	10600 RPM 2.67Kg(5.9lbs)

Rossi 27M46 Tune Pipe Tested: FAI fuel, Rossi R5 glow plug, no head shim.

RPM AND STATIC THRUST TABLE		
Propeller	**Rossi 6043 Pipe & 16023 Header**	**Length**
10 x 8	12000 RPM, 1.95Kg(4.30lbs)	21”
10 x 8	12200 RPM, 2.08Kg(4.60lbs)	20.5”
10 x 8	12500 RPM, 2.25Kg(4.98lbs)	20”
10 x 8	12800 RPM, 2.31Kg(5.10lbs)	19.5”
10 x 8	12900 RPM, 2.21Kg(4.88lbs)	19”
10 x 8	13000 RPM, 2.20Kg(4.86lbs)	18.5”
10 x 8	12900 RPM, 2.27Kg(5.02lbs)	18”
10 x 8	12900 RPM, 2.22Kg(4.90lbs)	17.5”

Rossi 27M46 Tune Pipe Tested: FAI fuel, Rossi R5 glow plug, no head shim.

RPM AND STATIC THRUST TABLE		
Propeller	**Rossi 6043 Pipe & 16023 Header**	**Length**
11 x 6	12300 RPM, 2.64Kg(5.84lbs)	19.5”
11 x 6	12600 RPM, 2.74Kg(6.06lbs)	19’
11 x 6	12300 RPM, 2.56Kg(5.66lbs)	18.5”

Rossi 27R45 Tested: FAI fuel, Rossi R4 glow plug, no head shim.

A) **Rossi 4011 Mini Tuned Silencer.**
B) **Bisson (BCM) 2845 Pitts Muffler.**

RPM AND STATIC THRUST TABLE		
Propeller	**A**	**B**
10 x 6	15000 RPM 3.46Kg(7.63lbs)	13000 RPM 2.13Kg(4.7lbs)
10 x 7	14200 RPM 2.62Kg(5.78lbs)	12800 RPM 2.06Kg(4.54lbs)
10 x 8	12500 RPM 2.11Kg(4.65lbs)	11800 RPM 1.82Kg(4.01lbs)
11 x 6	11700 RPM 2.39Kg(5.27lbs)	11500 RPM 2.3Kg(5.07lbs)

Rossi 27R45 Tune Pipe Tested: FAI fuel, Rossi R5 glow plug, no head shim.

RPM AND STATIC THRUST TABLE		
Propeller	**Rossi 6033 Pipe & 16023 Header**	**Length**
10 x 7	14100 RPM, 2.48Kg(5.47lbs)	19"
10 x 7	14100 RPM, 2.48Kg(5.47lbs)	18.5”
10 x 7	14200RPM, 2.57Kg(5.67lbs)	18”
10 x 7	14300 RPM, 2.59Kg(5.71lbs)	17.5”
10 x 7	14800 RPM, 2.77Kg(6.11lbs)	17”
10 x 7	14500 RPM, 2.54Kg(5.60lbs)	16.5”
10 x 7	13800 RPM, 2.3Kg(5.07lbs)	16”

Rossi 67R53 Tested: FAI fuel, Rossi R5 glow plug, no head shim.

A) **Rossi 4011 Mini Tuned Silencer.**
B) **Bisson (BCM) 2845 Pitts Muffler.**

RPM AND STATIC THRUST TABLE		
Propeller	**A**	**B**
10 x 6	15700RPM 2.99Kg(6.59lbs)	13500 RPM 2.25Kg(4.96lbs)
10 x 7	15000 RPM 2.87Kg(6.33lbs)	13000 RPM 2.19Kg(4.83lbs)
10 x 8	13600 RPM 2.34Kg(5.16lbs)	12300 RPM 2.05Kg(4.52lbs)
11 x 6	12200 RPM 2.45Kg(5.4lbs)	12000 RPM 2.54Kg(5.6lbs)
11 x 7	12000 RPM 2.66Kg(5.86lbs)	11500 RPM 2.53Kg(5.58lbs)

Rossi 67R53 Tune Pipe Tested: FAI fuel, Rossi R5 glow plug, no head shim.

RPM AND STATIC THRUST TABLE		
Propeller	**Rossi 6033 Pipe & 16023 Header**	**Length**
10 x 8	13800 RPM, 2.40 Kg (5.29 lbs)	19”
10 x 8	14000 RPM, 2.44 Kg (5.38 lbs)	18.5”
10 x 8	14100 RPM, 2.61 Kg (5.75 lbs)	18”
10 x 8	13800 RPM, 2.41 Kg (5.31 lbs)	17.5”
10 x 8	13600 RPM, 2.36 Kg (5.2 lbs)	17”

Rossi 32R60 Tested: 10% nitro fuel, Rossi R5 glow plug, no head shim.
Open Face Test with 11x8 prop measures 12200 RPM, 3.06 Kg Static Thrust.

A) **Rossi 6052 Mini Tuned Silencer.**
B) **Bisson (BCM) 2861 Pitts Muffler.**

RPM AND STATIC THRUST TABLE.		
Propeller	**A**	**B**
11 x 7	13000 RPM 3.08 Kg (6.79 lbs)	12000 RPM 2.72 Kg (6 lbs)
11 x 8	12500 RPM 3.12 Kg (6.88 lbs)	11400 RPM 2.74 Kg (6.04 lbs)
12 x 6	12400 RPM 3.65 Kg (8.05 lbs)	11300 RPM 3.25 Kg (7.17 lbs)
12 x 8	10800 RPM 3.3 Kg (7.28 lbs)	10500 RPM 2.99 Kg (6.59 lbs)
13 x 6	11200 RPM 3.64 Kg (8.02 lbs)	10600 RPM 3.32 Kg (7.32 lbs)

Rossi 32R60 Tune Pipe Tested: 10% nitro fuel, Rossi R5 glow plug, no head shim.

RPM AND STATIC THRUST TABLE		
Propeller	**Rossi 6033 Pipe & 16023 Header**	**Length**
11 x 8	12200 RPM, 2.95 Kg (6.50 lbs)	21.5”
11 x 8	12300 RPM, 2.99 Kg (6.59 lbs)	21”
11 x 8	12600 RPM, 3.11 Kg (6.86 lbs)	19.5”
11 x 8	13000 RPM, 3.21 Kg (7.08 lbs)	19”
11 x 8	13100 RPM, 3.24 Kg (7.14 lbs)	18.5”
11 x 8	13200 RPM, 3.54 Kg (7.80 lbs)	18”
11 x 8	13500 RPM, 3.60 Kg (7.94 lbs)	17.5”
11 x 8	13300 RPM, 3.46 Kg (7.63 lbs)	17”

Rossi 154R65 Tested: FAI fuel, Rossi R5 glow plug, no head shim.
Open Face Test with 12x8 prop measures 10700 RPM, 3.09 Kg Static Thrust.

A) **Rossi 6052 Mini Tuned Silencer.**
B) **Rossi 6053 Pitts Silencer.**
C) **MACs Products 6860 Muffler.**
D) **BCM 4091 Pitts Muffler.**
E) **Slimline 6016 Pitts Muffler**

RPM AND STATIC THRUST TABLE					
Propeller	**A**	**B**	**C**	**D**	**E**
12 x 6	12000 3.63 Kg (8.0 lbs)	10500 2.53 Kg (5.58 lbs)	10400 2.68 Kg (5.91 lbs)	11000 2.84 Kg (6.26 lbs)	10800 2.66 Kg (5.86 lbs)
12 x 8	10800 3.31 Kg (7.3 lbs)	9800 2.4 Kg (5.29 lbs)	9400 2.39 Kg (5.27 lbs)	9900 2.67 Kg (5.89 lbs)	9800 2.43 Kg (5.36 lbs)
12 x 10	9800 2.8 Kg (6.17 lbs)	9300 2.34 Kg (5.16 lbs)	8700 2.18 Kg (4.81 lbs)	9300 2.45 Kg (5.4 lbs)	9200 2.08 Kg (4.59 lbs)
13 x 4 W	11700 4.2 Kg (9.26 lbs)	10000 2.71 Kg (5.97 lbs)	10400 2.98 Kg (6.57 lbs)	10300 3.29 Kg (7.25 lbs)	10500 2.95 Kg (6.5 lbs)
13 x 6	11000 3.55 Kg (7.83 lbs)	10000 2.94 Kg (6.48 lbs)	9700 2.79 Kg (6.15 lbs)	10200 2.99 Kg (6.59 lbs)	10100 2.83 Kg (6.24 lbs)
14 x 4 w	10000 3.61 Kg (7.96 lbs)	9600 3.27 Kg (7.21 lbs)	9000 3.09 Kg (3.09 lbs)	9600 3.44 Kg (7.58 lbs)	9500 3.3 Kg (7.28 lbs)

Rossi 154R65 Tune Pipe Tested: 10% nitro fuel, Rossi R5 glow plug, no head shim.

RPM AND STATIC THRUST TABLE		
Propeller	**Rossi 6033 Pipe & 16023 Header**	**Length**
11 x 8	13000, 3.04 Kg (6.7 lbs)	19.5”
11 x 8	13200, 3.13 Kg (6.9 lbs)	19”
11 x 8	13300, 3.34 Kg (7.36 lbs)	18.5”
11 x 8	13200, 3.25 Kg (7.17 lbs)	18”
11 x 8	12600, 3.08 Kg (6.79 lbs)	17.5”