FOSWORKS COBRA-260

100 WATT CENTRE OFF ESC

SILENT OPERATION - HIGH FREQ SMOOTH START
CENTRE OFF 1 X CHANNEL CONTROL
3 SELECTABLE POWER CURVES ADJUSTABLE INERTIA
COMPACT SIZE - DIRECTIONAL CONSTANT LIGHTS
EMERGENCY STOP FEATURE COMPATIBLE WITH ALL
BRUSHED DC MOTOR TYPES INCLUDING CORELESS
POWER PROTECTOR IF CONTROL IS NOT CENTRED WHEN
SWITCHING ON. SYSTEM RESET

RIC High Frequency, Microprocessor ESC. 60 mm x 27mm x 12mm. INPUT 6 - 28 volts. OUTPUT 0 - 28 volts up to 14 A Peak
SV BEC = up to 400mA on Rx pins. Maximum continuous 100 Watts
N.B. BEFORE USE always make sure the Tx is centered correctly.
ALWAYS MAKE SURE THE BATTERY IS FULLY CHARGED BEFORE USE

Technical note: standard servo protocol is provided by r/c systems based on a pulse variation from 1 to 2 milliseconds, with the centre position therefore being at 1.5ms. In practice, with manufacturing tolerances and with cheaper designs, this can vary significantly, which is why the calibration facility is provided on the Cobra. In some cases, where the signal is a long way outside the specification, the Cobra may not be able to calibrate. If this happens, please contact us for advice. If changing operating voltage or Tx hand piece servo throw, ALWAYS re-calibrate the system.

SETTING UP THE COBRA-260

N.B. The COBRA-260 must be connected to a receiver which is bound to its transmitter. For power curve setting see overleaf.

Factory default values: Bi-directional, Stop position at 1.50 ms, Full Forward at 1.95 ms, Full reverse at 1.05 ms, Inertia control period 1 second, power curve 1.

CALIBRATION.
1. Turn on your transmitter, then turn on your loco.
2. The red LED will flash quickly for 2.5 seconds. Press and release SET-UP button to enter calibration within this period.
3. If there is no button press in this time, the Cobra will start normal operation.
4. If the SET-UP button has been pressed in this time, the LED will be fully ON.
5. To alter INERTIA, press and release the SET-UP button.
6. The LED will now flash rapidly. Press & hold down the SET-UP button for the length of time you wish the inertia to act - up to a maximum of 31 secs. (If you do not wish to change the Inertia, just release the SET-UP button within 1 second).
   The LED will be fully on during this set up time. Then, once the INERTIA time is set, release the SET-UP button. Once the SET-UP button is released you can power down the Cobra if you do not wish to change any other settings.
   OR, The LED will now flash slowly with equally spaced flashes. if you do wish to change other setting proceed to setting the STOP, FULL FWD & FULL REV settings.
7. Ensure the knob is at the Centre STOP (zero power) position. Then press & release SET-UP button.
8. The LED will now flash slowly with unequal flashes mostly ON. Put the stick or knob fully FORWARD (full power) and press and release the SET-UP button.
9. The LED will now flash slowly with unequal flashes mostly OFF. Put the stick or knob fully REVERSE (full power) and press and release the SET-UP button.
10. The COBRA-260 will now restart with the new settings and is ready for action.

RETURNING INERTIA SETTING TO ZERO. This can be achieved by a system reset. See pg # 3.

N.B. Resetting the system will lose all non standard settings such as a special setting for an emergency stop.
POWER CURVE SETTING.
The COBRA-260 has three power curves which can easily be set by the user.
2. Slow start, and a more rapid rise at higher power up to full power.
3. Straight line up to half power for shunting.

TO SET THE POWER CURVE.
1. With everything switched ON and settled, & with the large regulator knob in the middle ie OFF position, observe the COBRA-260. It will be flashing in groups of 1, 2 or 3 flashes.
2. To change the setting, press and hold the SET-UP button until the LED stays on constantly.
3. Then release the SET-UP button and the setting will change to the next curve. The COBRA-260 will again flash in groups of 1, 2 or 3 flashes to indicate the new curve selected. For example, if the Cobra was initially on curve 2 and you want to select curve 1, then perform both steps 2 & 3 twice, to get the power curve at setting # 1.

POWER PROTECTOR - If you have turned on the handpiece with the regulator knob away from the off position, the COBRA-260 will not give you power until you have returned the regulator to off, then there is a one second delay.
If you find that the control is too abrupt or too sluggish, you can adjust the power curve on the COBRA-260 as shown above.

WIRING UP THE LOCO
The recommended wiring method is shown in Page # 4. How to wire sound is shown with a sound system.
The 100W COBRA-260 requires a suitable fuse for protection. For maximum protection use a 3 amp fast blow fuse for smaller locos - 0 gauge or Gauge 1 tank engines. A 6 amp fast blow fuse should be used for larger locos. RCS installation kits are fitted with 3 or 6 amp Polyswitch™ auto reset fuses.
The three wire white, red and black cable plugs into the receiver. Connect the Cobra servo plug into your receiver the correct way around (black to negative) on the following pins:Rx102-Ch.1 pins, Lemon Ch # 1, The large 4 way terminal block is for connections to the motor (2 centre terminals) and outside terminals for connection to the power supply, polarity is very important on the power input, incorrect connection will blow the fuse and possibly damage the COBRA-260.

LED LIGHTS. The LED lighting connections are shown on page # 4 using the COBRA-260 5V power supply. This is subject to a total maximum current draw of 300mA. Otherwise operation of the COBRA-260 will be affected. Suitable current limiting resistors must be fitted.

INCANDESCENT LIGHTS. These can draw considerably more power than LED’s. They cannot use the 5 volt supply. Supply the positive side of the lighting circuit directly from the LOCO battery or via a suitable voltage reduction device. (All incandescent bulbs must match the supply voltage)
The RL & FL terminals on the COBRA-260 provide switches to -ve (ground). Maximum load is 2A each.

NOTES:
Unidirectional forward operation - if at step 7, the stick or knob is set to the lowest position, and at step 8 and 9 is set to the same maximum position, the COBRA-260 will operate in the Forward direction only, within the set speed range.
Unidirectional reverse operation - if at step 7 and 8, the stick or knob is set to the lowest position, and at step 9 is set to the maximum position, the COBRA-260 will operate in the reverse direction only, within the set speed range.
OPERATION.
Power up the transmitter, THEN the locomotive. Wait 3 seconds for the controller to settle.

POWER PROTECTOR. If you have turned on the handset with the regulator away from the off position, the Cobra will not give you power until you have returned the regulator knob to fully off, FORWARDS. Twist knob to the right (CW). The locomotive should respond smoothly to your movement of the regulator control; the further you push the stick or twist the knob, the faster it goes. Same for reverse.

SLOW DOWN - STOP. Twist the knob to the left (CCW) to reduce speed.

REVERSING. When changing direction, you must pause at zero momentarily, or the COBRA-260 will read the action as an emergency stop. To accelerate in reverse twist the knob to the left (CCW).

SLOW DOWN - STOP. Twist the knob to the right (CW) to reduce speed.

EMERGENCY STOP. Move the regulator quickly to the opposite direction and the COBRA-260 will bring the power to zero within 2 seconds, giving a controlled but rapid stop. The regulator must then be returned to zero momentarily to restart.

If you find that the control is too abrupt or too sluggish, then you can adjust the power curve on the Cobra as shown on page #2.

RESET SYSTEM TO FACTORY SETTINGS.
To perform a factory reset:
1 With the COBRA-260 de-energised, press and hold the SET-UP push button.
2 Then power up the unit, with the SET-UP push button still pressed.
3 The LED will flash slowly for 10 seconds, and then go fully on.
4 Then release the SET-UP push button. The unit will reload all factory default calibration values into non-volatile memory, and then restart normally.

If the push button is released before the end of ten seconds, the unit will restart with no change to the previous setting.
WIRING THE COBRA-260 ESC by FOSWORKS.

HOW TO CONNECT BASIC POWER & LIGHTS.

When adding other features such as triggering sound systems, information and wiring examples will be provided with the add on’s chosen.

Use the lighting outputs to control a # RELAY-1v3 for easy wiring of USAT® and LGB® locos.

Use the simple # PnP-BATT kit for Aristo Craft® and Bachmann® locos fitted with PnP sockets.

A suitable fuse must be used for system protection. A 5 amp fast blow fuse should be used for most locos.

RCS installation kits are fitted with Polyswitch® solid state auto reset fuses.

Do not exceed 7 amps without checking with us. For use up to 50 watts with COBRA-260.

JST connectors are also supplied with most RCS Installation kits.

TwIn Diversity Antennas

Three wire cable. These can come in various combinations such as White/Red/Black or Orange/Red/Brown. Shown below as Black/Orange/Black.

Ensure plugs are correctly located. Orange/White wire towards top/front of RX.

Be aware that auto bind Rx’s have a different servo pin layout.

SERVO LEADS FROM ESC
THREE WIRE W/WHITE TRACE
SETS SPEED & DIRECTION.

COBRA-260

RED WIRE GOES TO BATTERY +

IN-LINE JST CABLES ARE AVAILABLE SEPARATELY SEE WEBSITE

FUSES
One Orange Polyswitch mean a 3 amp version
Two orange Polyswitches means a 6 amp version.