

Operation Manual

Cobra 2 – Automatic Spray Gun



E	P 1 – 12
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Operation Manual Cobra 2 Automatic Spraygun Important

Read and follow all instructions and Safety Precautions before using this equipment

CHARACTERISTICS

This automatic spray gun complies with ATEX regulations 94/9/EC, protection level II 2 G X, suitable to use in Zones 1 & 2.

This **Cobra 2** is a production spray gun suitable for use with automatic and semi-automatic machines in conventional, HVLP or Trans-Tech applications.

Cobra 2 has a ¼ turn Quick detachable device, so to reduce maintenance & set up time (SMED). To handle a wide range of coating materials the fluid passages are manufactured from high grade stainless steel.

This spray gun is supplied with an indexed air cap. You can leave your air cap capable of free rotation by removing the indexed plastic ring which is located by 2 pins on the air cap.

Pressure feed material supply can be re-circulating or direct.

The needle adjustment knob has 18 ratchet positions, allows fine and accurate fluid flow control.


SPECIFICATIONS & MATERIALS OF CONSTRUCTION

	Thread	Pressure
Fluid inlet & recirculation "P"	1/8 BSP	Max 7 Bars
Air inlet (Atom+Fan) "A" "F"	1/8 BSP	Max 7 Bars
Cylinder/trigger "Cyl"	1/8 BSP	4 to 7 bars
Maximum temperature in use	40° C	
Spray gun weight	950 gms	
Gun body	Aluminium hard anodized	
Tip / Needle / Spray head/ Base plate	Stainless steel 303	

EC Declaration of Conformity

We, ITW Finishing UK, Ringwood Rd, Bournemouth, Dorset, BH11 9LH, UK, as the manufacturer of the **Spray gun model COBRA**, declare, under our sole responsibility that the equipment to which this document relates is in conformity with the following standards or other normative documents:

BS EN 292-1 PARTS 1 & 2: 1991, BS EN 1953: 1999; and thereby conform to the protection requirements of Council Directive **98/37/EEC** relating to **Machinery Safety Directive**, and; **EN 13463-1:2001**, council Directive **94/9/EC** relating to **Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres protection level II 2 G X**.



B. Holt, General Manager
24th April 2007

ITW Finishing Systems and Products reserve the right to modify equipment specification without prior notice.

SAFETY WARNINGS



Fire and explosion

Solvents and coating materials can be highly flammable or combustible when sprayed. **ALWAYS** refer to the coating material supplier's instructions and COSHH sheets before using this equipment.



Users must comply with all local and national codes of practice and insurance company requirements governing ventilation, fire precautions, operation and house-keeping of working areas.



This equipment, as supplied, is NOT suitable for use with Halogenated Hydrocarbons.



Static electricity can be generated by fluid and/or air passing through hoses, by the spraying process and by cleaning non-conductive parts with cloths. To prevent ignition sources from static discharges, earth continuity must be maintained to the spray gun and other metallic equipment used. It is essential to use conductive air and/or fluid hoses.



Personal Protective Equipment



*Toxic vapours – When sprayed, certain materials may be poisonous, create irritation or are otherwise harmful to health. Always read all labels, safety data sheets and follow any recommendations for the material before spraying. **If in doubt, contact your material supplier.***



The use of respiratory protective equipment is recommended at all times. The type of equipment must be compatible with the material being sprayed.



Always wear eye protection when spraying or cleaning the spray gun.



Gloves must be worn when spraying or cleaning the equipment.

Training – Personnel should be given adequate training in the safe use of spraying equipment.

Misuse

Never aim a spray gun at any part of the body.

Never exceed the max. Recommended safe working pressure for the equipment.

The fitting of non-recommended or non-original spares may create hazards.

Before cleaning or maintenance, all pressure must be isolated and relieved from the equipment.

The product should be cleaned using a gun-washing machine. However, this equipment should not be left inside gun-washing machines for prolonged periods of time.

Noise Levels



The A-weighted sound level of spray guns may exceed 85 dB (A) depending on the set-up being used. Details of actual noise levels are available on request. It is recommended that ear protection is worn at all times when spraying.

Operating

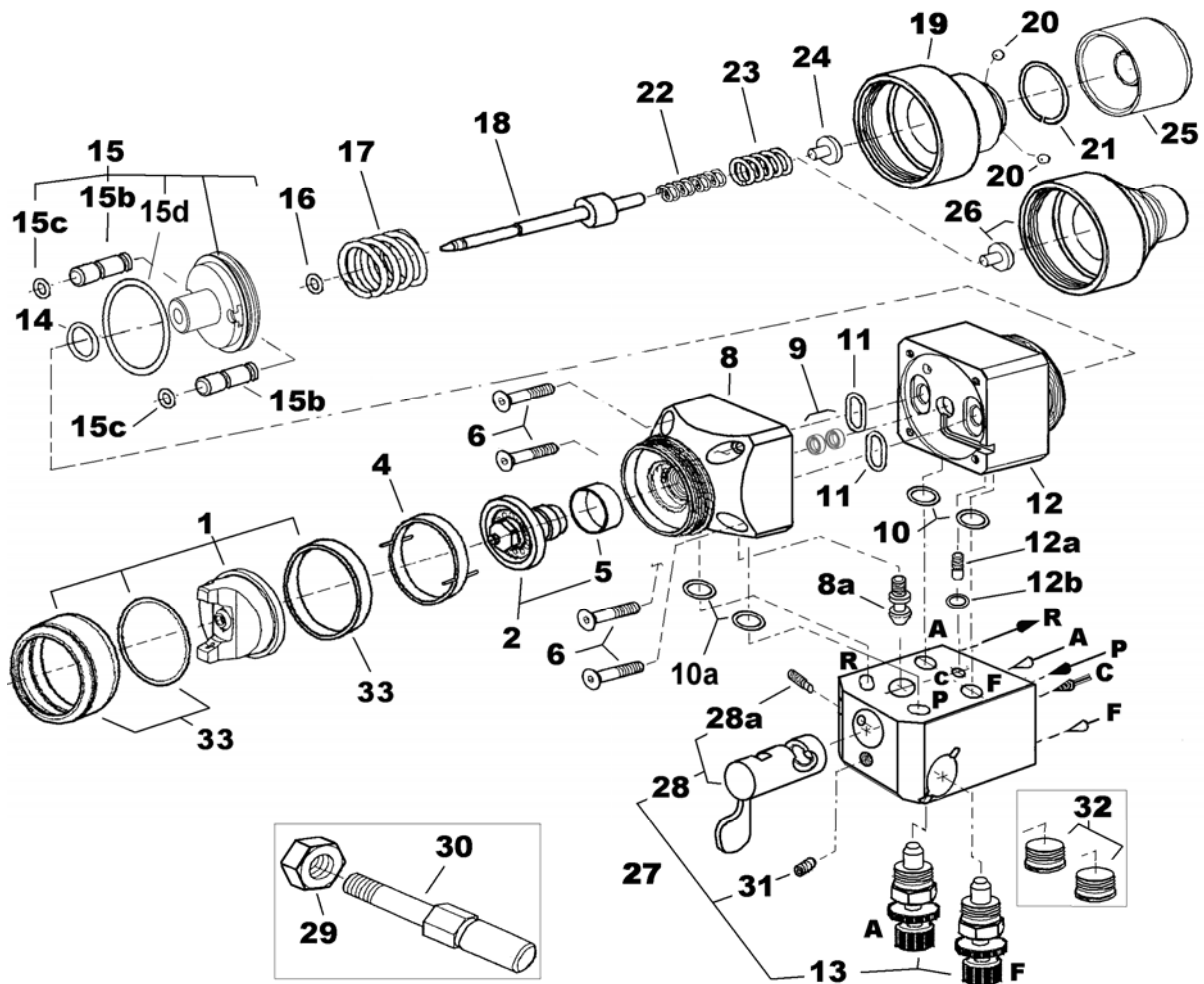
Spray equipment using high pressures may be subject to recoil forces. Under certain circumstances, such forces could result in repetitive strain injury to the operator.

LIST OF SPARE PARTS

For the arrangement of the parts, refer the exploded view at the end of the manual.

Rep	Ref	Description	Qty
1	SP-100-xxx-K SP-100-xxxIND-K	See chart and reference above. Air cap with retaining ring, seals and no indexing ring. Air cap with retaining ring, seals and indexing ring Rep4.	1
2	SP-200S-xx-K SP-259S-xx-K	Tip with air separator seal Ø 0,85 / 1,0 / 1,2 / 1,4 / 1,6 Ø 0,5 / 0,7 / 1,0 for Air cap 590	1
4	SPA-112	Locator ring for indexed air cap	1
5	SP-623-K5	Air separator seal, kit of 5	1
6	S-14192-K4	Screw M4 x 25 kit of 4 (Torx 20)	4
8	SPA-50	Spray head for Cobra 2	1
8a	SPA-51	Fixing rod on base plate	1
9	SPA-20-K2	Packing seal (Kit of 2) Gold	1
10	AGMD-119-K50	KIT of 50 O ring Viton	4
10a	AGMD-93-K5	KIT 5 O ring Teflon covered	
11	S-28221-K10	Nitrile O ring kit of 10	2
12	SPA-1-CBA2	Gun body for Cobra 2	1
12a	SPA-52	Locating air tube	1
12b	S-28223-K10	Nitrile O ring kit of 10	1
13	AGG-403	Air valve (Fan & Atomising air)	2
14	S-28220-K5	Gasket kit of 5	1
15	SPA-60-1-K	Piston with clips washer & piston for air valve & O ring Items 16 & 15c	1
15b		Piston for air valve	2
15c	S-28224-K10	KIT of 10 O ring for small piston.	2
15d	S-28225-K5	O Ring kit of 5	1
16	S-28219-K10	Kit of 10 Gasket.	1
17	SPA-13	Piston Spring	1
18	SPA-320-xx	Stainless steel needle 0,5/0,7/0,85/1,0/1,2/1,4/1,6	1
19	SPA-3	Housing	1
20	SPA-KK-1	Kit of ring and ball for ratchet	1
21			3
22	AGMD-110	Spring	1
23	AGMD-111	Spring	1
24	SPA-19	Washer	1
25	SPA-4	Adjusting knob	1
26*	SPA-7-K	Kit rear housing without adjustment (option F)	1
27	SPA-55-K	Base plate (no baseplate option G)	1
28	SPA-56-K	Fixing device (28,28a & 8a)	1
28a	SPA-59	Retaining screw of locking device	1
29*	SS-659-CD	Gun mounting bar Nut	
30*	AGGS-33	Gun mounting bar	
31	S-14193	M6 hexagon socket head cap screw, length 5,5	1
32*	SPA-111-K2	Kit of 2 plugs which replace manual air valve (13) (option P)	
33	SPK-102-K	Kit of retaining ring with gasket	1

*** OPTIONAL SPARE PARTS**



AIR CAP CHART AVAILABLE

Air cap	Type	Air Flow (L / min)	At Inlet Pressure (bar)	Fluid Flow (ml / min)	Pattern size (mm)
SP-100-430-K	Conventional	340	3,5	200 - 280	200
SP-100-443-K	Conventional	345	3,0	200 - 300	300
SP-100-497-K	Conventional	510	3,5	200 - 600	380
SP-100-505-K	H V L P	385	1,4	130 - 190	270
SP-100-510-K	Trans-Tech	283	2,0	160 - 220	270
SP-100-513-K	Trans-Tech	531	3,0	200 - 600	350
SP-100-522-K	Trans-Tech	410	2,0	200 - 600	350
SP-100-590-K	Trans-Tech	218	2,0	50 - 150	150

STANDARD COMBINATION RECOMMENDED.

Type		Conventional			HVLP		Trans-Tech					
Air Cap N°		430	443	497	500	505	510	513	522	523	590	591
TIP Ø in mm	0,5			X							X	X
	0,7									X	X	X
	0,85			X	X	X	X	X	X			
	1,0	X	X	X	X		X	X	X	X	X	X
	1,2	X	X	X	X	X	X	X	X			
	1,4			X			X	X	X			
	1,6					X	X	X	X			
	1,8			X			X		X			
Combination « X » are available and fitted as standard.												

Model Part Number

CBA2 - 522 - 12 - [FPG]
 = Type of gun - Air Cap - Ø Tip - [options]

Type of Gun

CBA2 – XXX– XX : Spray gun complete with connecting plate.

CBA2U – XXX – XX : Spray gun assembly, with paint recirculation.

Aircap and Ø Tip

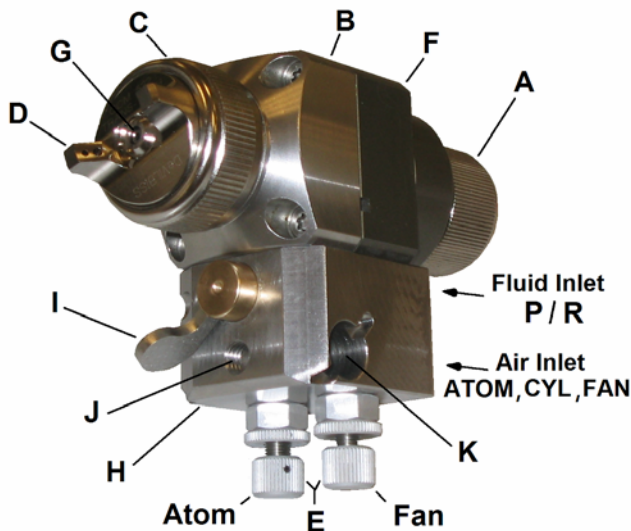
See table above

Options

F – No Needle Adjustment (26)

P – No airflow valves (13). Fitted with plugs (32)

G – Gun only No manifold (27)



A	Adjusting knob
B	Gun head
C	Baffle
D	Air Cap
E	Valve
F	Body
G	Fluid tip
H	Base plate
I	Base plate Locking lever
J	Support tightening screw
G	Support hole
H	Fluid inlet

INSTALLATION

HOSING :

Use separate filtered regulated air supplies for atomizing and cylinder air.

Connect all the air and fluid hoses at the back of the plate (1/8" BSP):
(See figure)

- Cylinder air 'C = Cyl' via a control valve. For fast cylinder operation the control valve should be fitted as close to the gun as possible or an additional quick exhaust valve installed in the line.

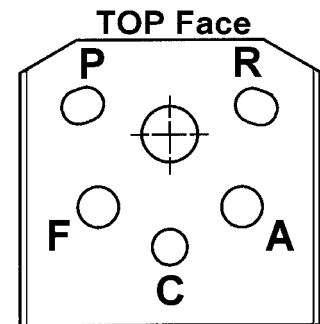
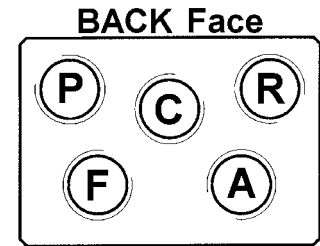
- Separated atomizing and fan "F" & "A" air supply.

- Material hose 'P'. If material re-circulation is required, complete the drilling of the fluid outlet hole 'R' using a Ø4,5mm drill.

For this operation, remove the fluid tip, drill through, deburr and then clean the internal fluid passages before reassembling.

Recommended hose size up to 10m (34ft) long :

Atomization Air=8mm, Cylinder Air=6mm, Material=9,5mm



Important : The Spray gun must be earthed to dissipate any electrostatic charges which may be created by fluid or air flows. This can be achieved through the Spray gun mounting, or conductive air/fluid hoses. Electrical bond from the spray gun to earth should be checked with an ohmmeter. A resistance of less than 10⁶ Ohms is recommended.



Important : To ensure that this equipment reaches you in first class condition, protective coatings have been used. Flush the equipment through with appropriate solvent before use. Fix the spray gun base plate using mounting stem ref.30 and secure it with nut ref.29..

SETTING

Check that the gun has all of the O-rings fitted on the sealing surface and check that the locking device (28) is in the correct position to lock the spray gun on to the connecting plate.

1. The ATOM 'A' air valve controls the atomizing air pressure.
2. The FAN 'F' valve reduces the spray pattern size.
3. Fluid flow is adjusted with the rear ratchet knob (25).

For the arrangement of the parts, refer the exploded view at the end of the manual.

START UP

1. Turn the needle adjusting knob (25) clockwise until the needle is fully closed.
2. Turn the FAN 'F' and ATOM 'A' air valves (13) counter-clockwise to be full open.
3. Use the air cap chart above to set the air pressure at the air regulator to achieve recommended pressures.
4. Turn the adjusting knob (25) counter clockwise to obtain the desired fluid flow.
5. Test spray. If the finish is too dry or fine, reduce the airflow by reducing the air inlet pressure or by screwing the valve ATOM 'A' (13) in clockwise, or increase the fluid flow using ratchet knob, rotating counter clockwise.

6. If the finish is too wet, turn the ratchet knob **(25)** in clockwise to reduce the fluid flow, or reduce the fluid pressure.
If the atomization is too coarse, increase inlet air pressure, or reduce fluid flow.
7. The pattern size can be reduced by turning adjusting valve **FAN 'F' (13)** clockwise.
8. The spray pattern will give the best results when perpendicular to the target.
9. The recommended spray distance is 150-220 mm (6" to 8").
10. Spray edges first. Overlap each stroke a minimum of 50%. Move gun at a constant speed.
11. Always turn off air and fluid supply and relieve pressure and clean down when gun is not in us.

PREVENTIVE MAINTENANCE



Turn off air and coating supply and relieve pressure in the supply lines, or disconnect from airline and fluid line.

1. Unlock the spray gun from the base plate, remove it, and if available re-attach an alternative gun. Now the spray gun maintenance can be done outside the spray booth while production is still continuing.
2. Remove air cap **(1)** and clean. If any of the holes in the cap are blocked with coating material use a toothpick to clean. Never use metal wire which could damage the cap and produce distorted spray patterns
3. Ensure the nozzle of the fluid tip **(2)** is clean and free from damage. Any build up of dried paint can distort the spray pattern.

REPLACEMENT OF PARTS

Turn off air and coating supply and relieve pressure in the supply lines, before any maintenance operation.

Tip (2) & needle (18)

Remove the air cap **(1)** by unscrewing its retaining ring counter- clockwise, remove the index ring if it remains on the gun head (if fitted and used).

Remove the tip **(2)** and its air separator ring **(3)** by unscrewing counter- clockwise with 10mm hexagonal spanner.

Unscrew the adjusting needle knob **(25)** fully in counter-clockwise rotation, push the needle from the front of the spray gun, carefully so to avoid damage the needle end, then pull out the needle **(18)** from the back.

If necessary, replace the needle and the tip, first refitting the tip with its air separator ring (recommended torque between 9,5 to 12 Nm).

Lubricate all the surface of the needle which will be in contact with the packing and o ring. Slide the needle into the spray gun from the back.

Fit the needle springs with its plastic pad **(22,23,24)** and replace the needle adjusting knob **(25)**.

Packing seal (9)

Unscrew the air cap **(1)**, tip **(2)** and its air separator ring **(3)**.

Unscrew the 4 screws **(6)** to disassemble the gun head **(8)**.

Push back the packing seal **(9)** using a 5,5mm diameter rod from the front of the gun head. Clean the packing location hole carefully with adequate solvent.

Fit a new packing seal **(9)** U face towards the fluid passage.

Fan & Atom air valve (13)



Before assembling, check the air valve is in fully open position by unscrewing it counter-clockwise.

Piston (15), o ring (16, 14 & 15c)

Unscrew the rear housing (19) at the back of the gun body counter clockwise, pull out the needle (18).

Use bent nose pliers “T” so to pull out the piston which has a 12mm internal groove for this purpose. Piston “P+W” and two valve “V” will go out at the same time.

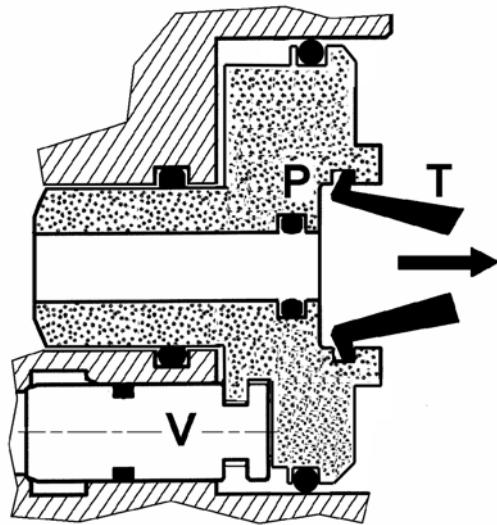
The ring “W” is located by pressing it onto the piston body and **can not be removed** from it.

The valve “V” can be removed easily from the piston ring.

We recommend to replace the full piston at the same time (Item number **SPA-60-K**).

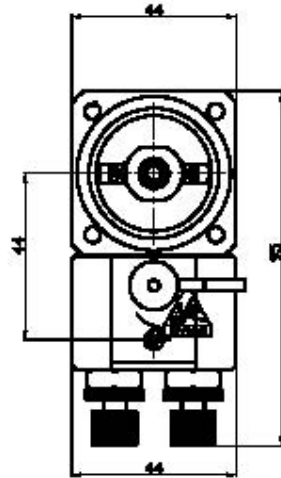
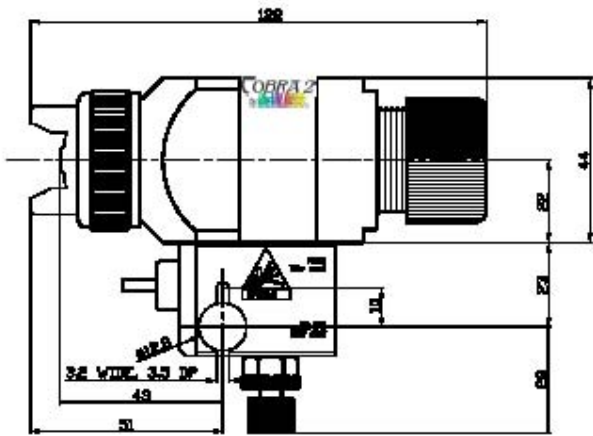
It's recommended to replace all the O-rings (14, 16 & 15c) in the gun body as soon you disassemble the Piston from the gun.

Slightly lubricate the piston lip before fitting again into the gun body.



OPTIONS

Rear housing without needle adjustment	
Part number: SPA-7-K This kit includes the back piece and washer to replace the part items 19, 20, 21, 24, 25, on the exploded view.	
Spray gun mounting bar	
Part number: AGGS-33	
Nut for mounting bar	
Part number: SS-659-CD	
Plug used when remote air control is required	
Part number: SPA-111-K2 , replace the air valve part (13)	



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