SERVICE MANUAL OPTIMA 650 LVLP S

1. Usage as directed
Compressed air operated Paint Spray apparatus for normal pressure usage of 2,0 - 2,5 bar (28 - 35 PSI) for the application of fluid, spayable materials with regard to all manufacturer instructions. The user operates the Paint Spray apparatus by hand for coating of the work piece.

2. Connection data
- Max. permissible pressure 6,0 bar (85 PSI). Recommended working pressure 2,0 - 2,5 bar (28 - 35 PSI).
- Max. permissible material temperature in operation without gloves 40 ° Celsius.
- Max. permissible material temperature in operation with gloves 60 ° Celsius.

3. Material flow rate data:
The measurements are based on the following data:

	Working pressure:	2,5 bar (35 PSI)
	Size of nozzles:	1,4 mm
	Material viscosity:	18 s DIN 4mm/20 ° Celsius
Indicated data:	Material flow rate:	260 g / min

4. Air consumption
Air consumption for example in case of a Paint Spray apparatus with a nozzle size of 1,4 mm.

Round jet:	**Flat jet:**
2,0 bar (28 PSI) = 6,1 cbm / h = 102,0 l / min	2,0 bar (28 PSI) = 12,4 cbm / h = 208,0 l / min
2,5 bar (35 PSI) = 7,1 cbm / h = 119,0 l / min	2,5 bar (35 PSI) = 14,8 cbm / h = 247,0 l / min

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5. SERVICE MANUAL

5.1. Putting into operation

Air connection:	On the swivelling coupler 3648
Paint pot connection:	Suction pot is to be turned on pot connection.
Before first operation:	Operate Spray Gun with thinner to remove any oil from manufacturing.

5.2. Material flow adjustment
The quantity of material flow rate is regulated by turning the material adjustment screw no. 1393-9
- Clockwise rotation - turn adjustment screw to the right - decrease material flow.
- Counter clockwise rotation - turn adjustment screw to the left - increase material flow.

5.3. Regulation of spray jet width
The width of spray jet is infinitely variable from flat jet to round jet by turning fan adjustment screw no. 1393-18.
- Right-hand rotation (clockwise) _ **round jet**
- Left- hand rotation (counter clockwise) _ **flat jet.**

6. EXCHANGE OF COMPLETE NOZZLE SET

6.1. Dismantling of paint needle

a) Release lock nut material adjustment no. 1393-8
b) Unscrew material adjustment screw no. 1393-9
c) Take out needle tension spring no. 1143-9
c) Pull back trigger complete no. 1393-U6
e) Pull out paint needle complete no. 1393-U2 backwards.

6.2. Dismantling of fluid nozzle - air cap
a) Unscrew air cap no. 1395-U2
b) Release and unscrew fluid nozzle no. 1393-3 with a hexagonal wrench SW 14 mm.

6.3. Assembly
a) Screw in and tighten fluid nozzle no.1393-3
b) Mount air cap no. 1395-U2 and tighten it.
c) Insert paint needle no. 1393-U2
d) Mount needle tension spring no. 1143-9
e) Screw in material adjustment screw no 1393-9
f) The quantity of material flow rate is regulated by turning the material adjustment screw no. 1393-9.
g) Tighten lock nut material adjustment no. 1393-8

7. Needle seal no. 151-43
a) Dismantle trigger complete no. 1393-U6 by removing all locking washers at trigger pin no. 1393-12 and driving axis no. 1393-13
b) Remove needle as stated under point **6.1.**
c) Unscrew the needle tension screw no. 111-35
d) Exchange the needle seals no. 151-43, screw in needle tension screw no. 111-35, fit needle again, tighten needle tension screw slightly, needle must be movable by hand.

8. Over pressure
The normal operation pressure for using the Paint Spray apparatus **OPTIMA 650 LVLP S** is between 2,0 and 2,5 bar (28 - 35 PSI).
If over-pressure up to maximum 10 bar (142 PSI) **occurs short-time**, there is no danger of destruction of Paint Spray apparatus.

9. Maintenance and cleaning
a) Remove air cap no. 1395-U2 and clean fluid nozzle no. 1393-3 with cleaning brush supplied.
b) Clean clogged nozzle holes **only with the OPTIMA cleaning needle (order no. 345-48)**
NEVER USE ANY SHARP OBJECTS !!!
c) For cleaning the Paint Spray apparatus it is **very important to interrupt the air feed line (no air connection to Spray gun),** so that it is not possible to move the trigger inadvertently.
d) Use only the fitting thinner for the material to be sprayed. !
e) Pay attention to the instructions of varnish producer.

Lubrication: **Trigger bearing no. 1393-12, valve pin no. 1393-21 and paint needle no. 1393-U2 should be lubricated with oil daily.**

10. Pressure level of the working area
Technical equipment:
- Paint spray apparatus OPTIMA 650 I S with nozzle set complete
- Noise measurement at air pressure of 2,0 bar = 28 PSI (tested with liquid, air regulation valve on maximum position)
- Measurement and data's are based on the following rules of the measuring technique:
- Third regulation of law for security of equipment **D I N 4 5 6 3 5 p a r t 1 / 0 4 . 8 4**

Sound pressure level at the workshop place **76 dBa**

11. General safety instructions
In any case the spray gun has to be hold in such a way that the spray stream is directed away from the user.
In addition it has to be taken care, that the spraying direction is the same direction as the exhaust air of the spray booth.
Permissible deviation +/- 90 °.
Never spray against the exhaust direction ! **Never** use the spray gun in localities **without** exhaust air system.
It is only to be used in well ventilated areas with regard to health, fire and explosion dangers.
For - personal protective suits - the instructions of the paint manufacturers are to be considered.
Never direct the spray stream against human beings or animals

Solvents and thinner could provoke corrosive reactions in extreme cases. In case of interruptions of the work, especially quitting the working place, it is important to interrupt the air in the supply line (don't leave spray material rests in the used equipment).

Pay attention:
The use of halogen hydrocarbon may provoke chemical reactions of the Paint Spray apparatus, the aluminum paint cup or galvanic treated parts of the spray gun, which could be responsible for anoxidation of parts - a process which could happen in a form of explosion.
This is the reason for the user to **avoid in any case** solvents or thinner, which contains parts of the following substances:
- **Fluor hydrocarbons** **(FKW**):
- Trichlorfluormenthan (R-11)
- 1.1.2 - Trichlor - 1.2.2 - Fluorethan (R-113)
- 1.1.2.2 - Tetrachlor - 1.2 - Difluorethan (R-112)
- **Chloride hydrocarbons** **(CKW):**
- Tetrachlorethen - (Perchlorethylen)
- Trichlorethen - (Trichlorethylen)
- Dichlormethan - (Methylenchlorid)

These substances coming together with water change into acids, which corrode the surface of the spray gun and parts of it.
Never let your spray gun become contact with any acids or lacquer remove agents. Even repeated regenerated solvents can get acid-lade with increasing level of water. **So please take care, that you use solvents without acids**.
For damages which results from a **non-observance** of these instructions, **the manufacturer Bersch & Fratscher GmbH** is not able to give any liability.

12. Removal of your Paint Spray apparatus
The Paint Spray apparatus contains no materials with special waste disposals.

13. Available accessories
Gravity feed pots:

Suction pot 1000 ml

14. Trouble possibilities

Functional disturbance	**Possible cause**	**Repair**
14.1 Irregular spray jet:	Air cap no. 1395-U2 not tightened correctly.	Check the position of air cap, perhaps it is necessary to clean the air cap.
	Fluid nozzle is in a backward position.	The correct position of fluid nozzle is about in front of the air cap.
	Fluid nozzle no. 1393-3 not tightened completely.	Tighten fluid nozzle.
	Fluid nozzle is cracked at paint outlet.	Replace fluid nozzle no.1393-3
	Needle seal no. 151-43 with needle tension screw no. 111-35 not tightened.	Tighten needle tension screw no. 111-35 slightly with pin
14.2 Paint leaking from needle tension screw no. 111-35	Needle tension screw no. 111-35 not tightened.	Tighten needle tension screw no. 111-35 slightly.
	Needle seal no. 151-43 worn	Replace needle seal no. 151-43.
14.3 Paint dripping from fluid nozzle	Fluid nozzle cracked or worn	Replace fluid nozzle
	Needle tension screw no. 111-35 over tightened	Adjust needle tension screw so needle moves freely.
	Needle tension spring no.1143-9 weak	Replace spring no. 1143-9
14.4 Spray apparatus leaking air	Air valve (nylon) no.1230-17 is worn	Replace nylon valve no. 1230-17
14.5 Spray apparatus leaking air from fan adjustment screw	Fan adjustment screw worn-out	Replace fan adjustment screw no. 1393-18

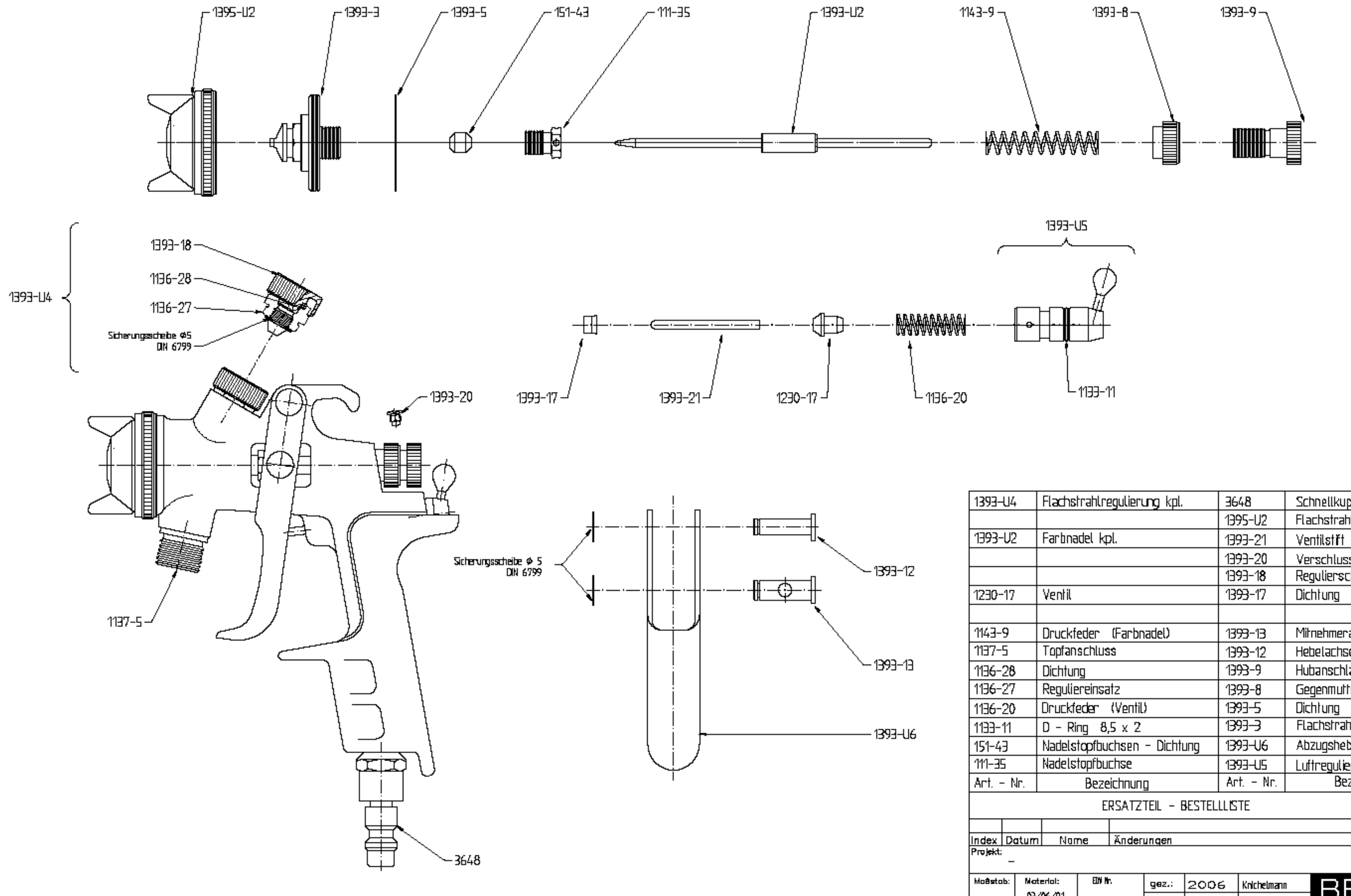
CE 06	DECLARATION OF CONFORMITY	Oberflächentechnik BEFRAG

We, manufacturer
BEFRAG
Bersch & Fratscher GmbH
Spezialfabrik für Lackiertechnik
63791 Karlstein

declare under our sole responsibility that the product
Paint Spray Gun OPTIMA 650 LVLP S

- Conform with the relevant regulations of the EC-machine guideline (98/37/EG), including their changes at this time period.
- Conform with further relevant regulations of the EC-machine guideline including their changes at this time period.
  ➔ Directive 94/9/EC – Equipment in explosion endangered environments. Use in zone 1; equipment of category 2
- following harmonized standards (or parts from this) were used.
  ➔ DIN EN 292 Part 1 and 2: Safety of machines, basic terms, general formation guiding.
  ➔ EN 349 Minimum distances to avoid stem presses.
  ➔ EN 23741 Noise formation
  ➔ EN 457 Noise protection regulations.
- following national technical standards and specifications were used.
  ➔ pr EN 614-1 Ergonomic formation basic principles.
  ➔ pr EN 349 Engineering safety regulations.
  ➔ pr EN 1953 Spraying apparatus for coating materials – Safety requirements.

Karlstein, den 01.09.2006 Unterschrift .....
(Bernward Keller, head of department spraying machines)



Art. - Nr.	Bezeichnung	Art. - Nr.	Bezeichnung
1393-U4	Flachstrahlregulierung kpl.	3648	Schnellkupplung, drehb. G1/4"
		1395-U2	Flachstrahlkopf kpl.
1393-U2	Farbnadel kpl.	1393-21	Ventilstift
		1393-20	Verschlussschraube
		1393-18	Regulierschraube
1230-17	Ventil	1393-17	Dichtung
1143-9	Druckfeder (Farbnadel)	1393-13	Mitnehmerachse
1137-5	Topfanschluss	1393-12	Hebelachse
1136-28	Dichtung	1393-9	Hubanschlagschraube
1136-27	Reguliereinsatz	1393-8	Gegenmutter
1136-20	Druckfeder (Ventil)	1393-5	Dichtung
1133-11	O - Ring 8,5 x 2	1393-3	Flachstrahldüse
151-43	Nadelstopfbuchsen - Dichtung	1393-U6	Abzugshebel kpl.
111-35	Nadelstopfbuchse	1393-U5	Luftregulierung kpl. mit O-Ring

ERSATZTEIL - BESTELLLISTE

Index	Datum	Name	Änderungen

Projekt: -

Maßstab:	Material: 03/06/01	DIN Nr.	gez.: 2006 Knichelmann / gepr.:	BEFRAG
			Diese Zeichnung ist unser Eigentum. Sie darf weder kopiert, noch dritten Personen mitgeteilt, noch anderweitig mißbräuchlich benützt werden. (§ 18 des Gesetzes vom 7.Juni 1909)	BERSCH & FRATSCHER GmbH 63791 Karlstein/Main Tel. 06188/787-0 Fax 7341

Ersatzteilzeichnung für OPTIMA 650 LVLP S — Z.-Nr. 1396