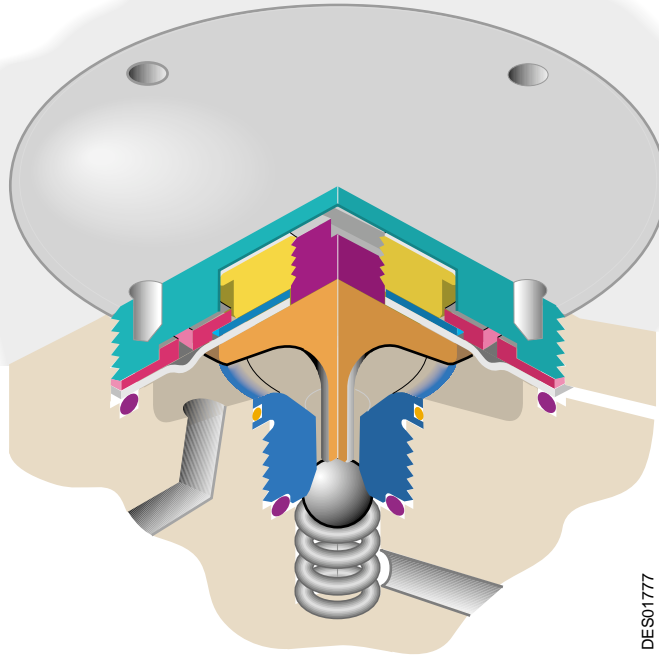




From February 1st, 2017 SAMES Technologies SAS becomes SAMES KREMLIN SAS
A partir du 1/02/17, SAMES Technologies SAS devient SAMES KREMLIN SAS



DES01777

User manual

**Ball point regulator
US version**

Stand-alone P/N : 1518698

Integral P/N : 1514104

FRANCE **SAMES Technologies** 13 Chemin de Malacher 38243 Meylan Cedex
Tel. 33 (0)4 76 41 60 60 - Fax. 33 (0)4 76 41 60 90 - www.sames.com

USA **Exel North America, Inc** 11998 Merriman Road, Livonia, Michigan, 48 150
Tel. (734) 261.5970 - Fax. (734) 261.5971 - www.sames.com

Any communication or copying of this document, in any form whatsoever, and any use or divulging of its contents is forbidden without express written permission from SAMES Technologies.

The descriptions and characteristics contained in this document may be changed without prior warning and are in no way binding on SAMES Technologies.

© SAMES Technologies 2001



WARNING : Sames Technologies is registered as a "Training Center" approved by the "Ministry of Employment".

Trainings with the aim of getting the necessary know-how to use and for the maintenance of your equipment can be organised all along the year.

A catalog is available upon request. Among the different training programmes proposed, you will be able to find the training which corresponds the best to your needs and production purposes. These trainings can be organised in your premises or in our training center based in our headquarters in Meylan.

Training Department :

Tel.: 33 (0)4 76 41 60 04

E-mail : formation-client@sames.com

Ball paint regulator US version

Stand-alone P/N : 1518698

Integral P/N : 1514104

1. Safety and health instructions- - - - -	4
2. Description - - - - -	4
2.1. <i>General description</i>	4
2.2. <i>Components</i>	4
3. Technical data - - - - -	5
3.1. <i>Dimensions (mm)</i>	5
3.2. <i>Operating characteristics</i>	5
3.3. <i>Main characteristics</i>	6
3.4. <i>Wash - Timing and consumption</i>	7
4. Fluid diagram - - - - -	8
5. Operation - - - - -	9
5.1. <i>Recommendations</i>	9
6. Tools - - - - -	10
7. Installation - - - - -	10
8. Settings - - - - -	10
9. Maintenance- - - - -	11
9.1. <i>Assembly / Disassembly</i>	11
9.1.1. <i>Assembly - Disassembly of the diaphragm kit</i>	11
9.1.2. <i>Assembly - Disassembly of the diaphragm</i>	11
9.1.3. <i>Assembly - Disassembly of the ball and seat</i>	11
9.2. <i>Cleaning</i>	12
10. Spare parts- - - - -	13

1. Safety and health instructions



CAUTION : For any and all maintenance, the operator **MUST** wear or use safety equipment per safety rules and regulations in force.

Prior to maintenance, one must flush and rinse the regulator, and blow it dry, [see § 3.4 page 7](#), an example of a rinsing sequence.

Supply valves installed upstream of the regulator must be closed.

Sames Technologies will not apply warranty to:

- Equipment which has not been maintained and cleaned up per Sames procedures,
- Equipment which has been outfitted with non-OEM parts.
- Equipment which has been modified without Sames knowledge and authorization.

2. Description

2.1. General description

The ball regulator was designed to regulate paint flow by setting its pressure at a determined location on the fluid line. There are two versions of the regulator:

- **Stand alone**, as an independent element to be installed on the paint supply line.
- **Integral**, within the manifold machined for the standard Dia. 47 mm regulator, of such applicators or equipment as the **PPH 605, 607, Accustat, Aquabell, 2-K blocks, Moduclean / Moduflow** with regulator, Etc....

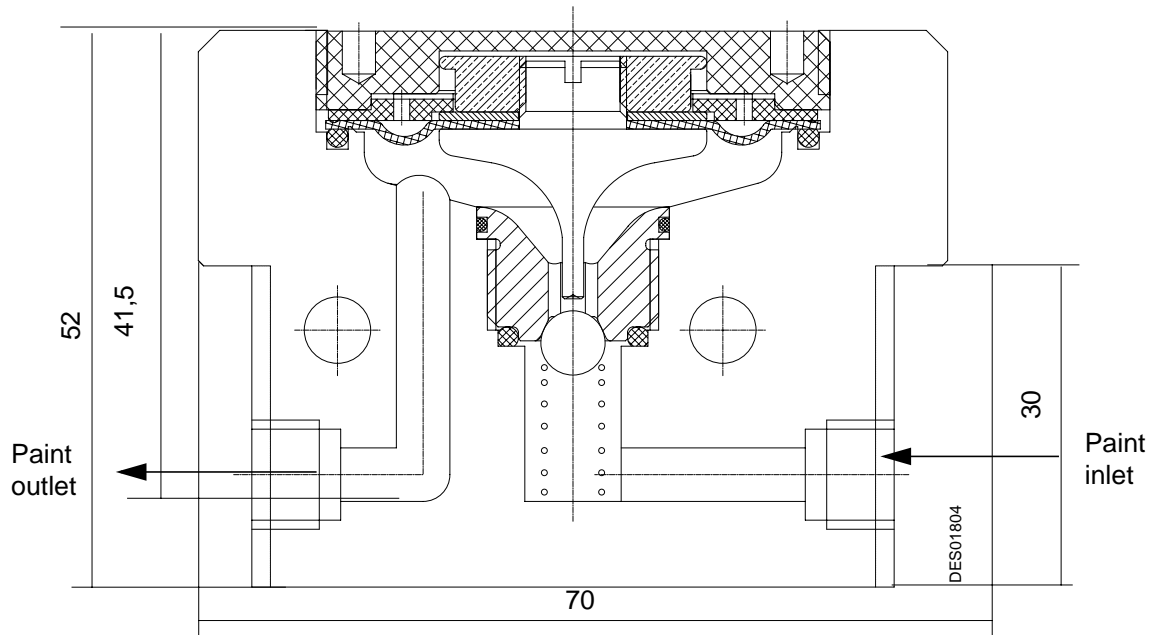
2.2. Components

Stand alone :

- Body
- Male elbow Dia: 1/4 1/8 NPT
 - **Integral ball regulator**
 - Cover, regulator
 - O-ring 41 x 1.78 (Viton)
 - O-ring 16 x 1.25 (Viton)
 - Seat (Stainless steel)
 - O-ring 10.5 x 2 (PTFE)
 - Ball (Stainless steel)
 - Spring
 - **Diaphragm kit, including:**
 - Nut, diaphragm tightening
 - Washer, diaphragm tightening (stainless steel)
 - Spacer, air distribution
 - Diaphragm, teflon (0.8mm)
 - Pusher, diaphragm (stainless steel)

3. Technical data

3.1. Dimensions (mm)



Note : The paint inlet and outlet are 1/8 NPSM threads

3.2. Operating characteristics

Weight		
	Body	-
	Diaphragm kit	36 g
	Nut	12 g
	Seat	12,5 g
Pilot air		
	Minimum pressure (to crack the regulator open)	15 psi (1 bar)
	Maximum pressure	90 psi (6 bar)
Paint		
	Pression maximum	10 bar
	Viscosité	44 à 127 mPa.s (milli Pascal x seconde)
Solvent and flushing air		
	Pressure	90psi +/- 15 psi (6 bar +/- 1 bar)
	Flushing air pressure = flushing solvent pressure	
Recommended flushing solvents according paints used		
	Solvent paints	Solvent materials (X42, MEK,...)
	Water based paints	D/I water + Butylglycol (10% min.) plus an eventual 0.1 to 0.2% amines

3.3. Main characteristics

Paint flow chart = f (pilot pressure)



WARNING : Each paint circuit has its own specific characteristics, which is a function of the nature (viscosity, thixotropy, temperature) of the material and of the pressure drop downstream the regulator.

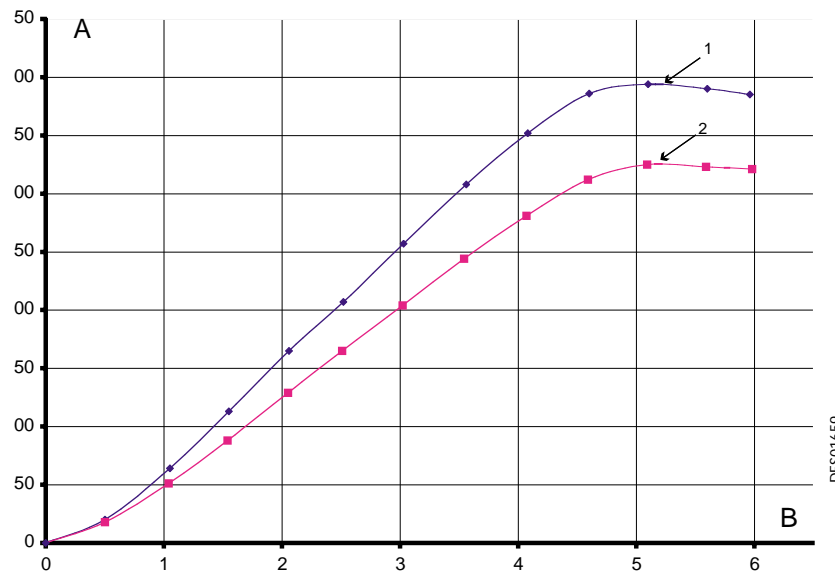
For example :

1 Set

- **PPH 607 DC W/O REG. (dual circuit without regulator)**
- Injector 1,5 mm
- Restrictor 0.9 and/or 1.2 mm
- Regulator installed on the **Moduclean** outlet
- 1.3 m paint hose Dia: 4x6

2 Paint

- Paint is a waterbased red Lucifer
- Viscosity: 120 mPa.s @ 17 °C
- Shearing rate 250 s-1



DES01659

1	Regulator and restrictor Dia: 1.2 mm
2	Regulator and restrictor Dia: 0.9 mm
A	Paint flow c.c.
B	Pilot air pressure (bar)

3.4. Wash - Timing and consumption



WARNING : The flushing data (duration and solvent consumption) are strongly influenced by the location of the regulator in the paint circuit, and by the type of material used.

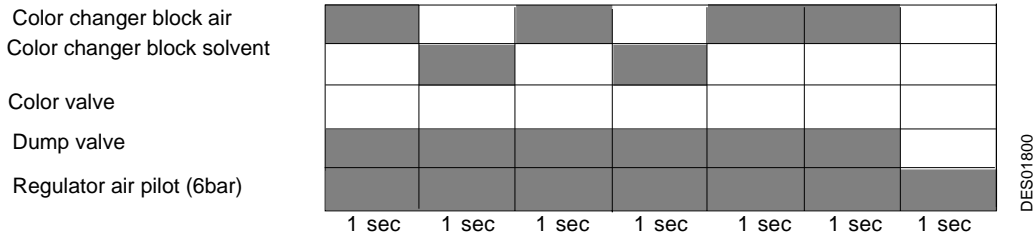
For example :

1 Set

- **PPH 607 DC W/O REG.**
- Injector 1.5 mm
- Restrictor 1.2 mm
- Regulator installed on **Moduclean** outlet
- 1.3 m paint hose 4/6

2 Paint

- Paint is a waterbased red Lucifer
- Viscosity : 120 mPa.s @ 17 °C
- Shearing rate : 250 s-1
- Solvent: D/I water + Butylglycol (10 %)



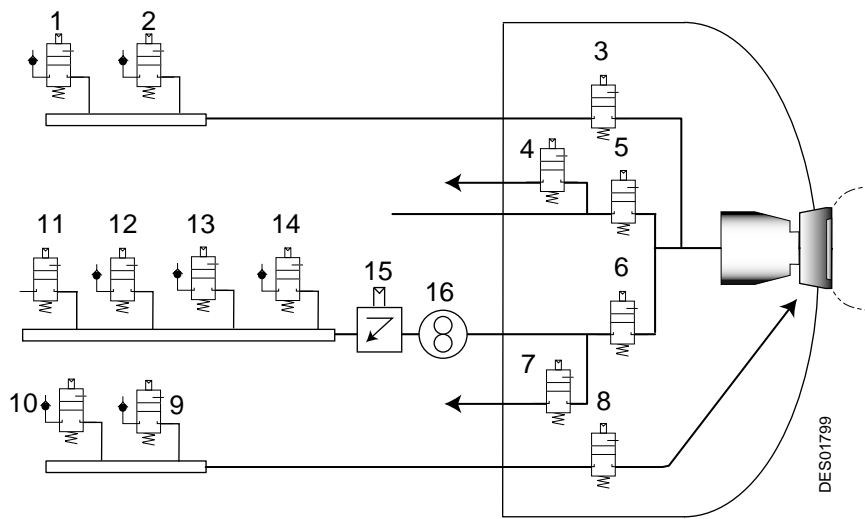
Solvent usage in cc' s.

Circuit flush : **80 cc' s.**

Complete flush (includes circuit + outside cup + injector): **98 cc' s.**

4. Fluid diagram

Example



1	Injector flush air valve
2	Injector flush solvent valve
3	Injector flush valve
4	Dump valve circuit 1
5	Supply valve circuit 1
6	Supply valve circuit 2
7	Dump valve circuit 2
8	External cup wash valve
9	External cup wash solvent valve
10	External cup wash air valve
11	Color changer air valve
12	Color changer solvent valve
13	Color valve 1
14	Color valve 2
15	Regulator
16	Paint flowmeter

5. Operation

At rest, with no pilot air pressure, the maximum leak tolerable is 5 cc.
The ball is sitting on the seat, keeping paint from flowing.

During operation, with a pilot air pressure (P), the ball is no longer sitting on the seat, and paint flows from inlet to outlet.

The mechanical efforts on the diaphragm are :

Paint outlet pressure + / - = Air pilot pressure

under the condition that inlet paint pressure is superior to pilot pressure, the paint pressure on the outlet is similar to the pilot air pressure.

The paint flow is the depending on the pressure drop downstream the paint circuit, which imposes to carefully select the injector size, restrictor size, hoses and tubes sizes.

The flow will also be affected by the very nature of the material (viscosity and temperature).



WARNING : This regulator regulates a pressure, not a flow.

5.1. Recommendations

Advice on sizing a system including this paint regulator



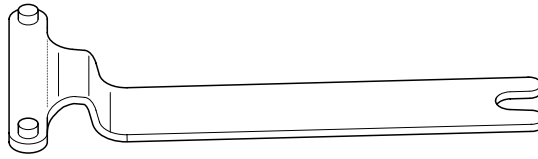
WARNING : It is essential to determine the two following operating points:

- High point = Highest pilot pressure = Maximum flow, and highest viscosity
- Low point = Lowest pilot pressure = Lowest flow, and lowest viscosity

Granted that the injectors / restrictors are properly sized, one must achieve:

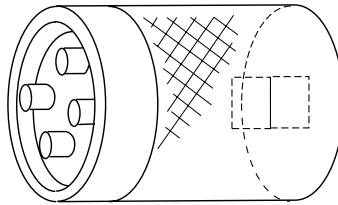
- A pilot pressure for the high point < 90 psi (6 bar)
- A pilot pressure for the low point > 15 psi (1 bar)

6. Tools



DES00018

Part number	Description	Qty	Sale unit
546351	Wrench, regulator cover	1	1



DES01776

Part number	Description	Qty	Sale unit
1403479	Tool, automatic torque control, regulator cover	1	1

7. Installation

(N/A)

8. Settings

Static identification of each color or family or colors with similar or close spraying features, (see RDS and RDSI documentation).

9. Maintenance

9.1. Assembly / Disassembly



CAUTION : The following operations may be carried out by only one operator, granted that he follows the safety and health instructions [see § 1 page 4](#).

Prior to any maintenance, the supply valves upstream the regulator **MUST BE CLOSED**.

9.1.1. Assembly - Disassembly of the diaphragm kit

Preliminary operations:

Rinse and flush the regulator, [see § 3.4 page 7](#).

On 605 / 607, remove external cover to easily access the regulator cover.

- Remove regulator cover with tool P/N: 546351.
- With a small pair of pliers, pull delicately the diaphragm kit out.

Assembly

- Check O-ring (41 x 1.78 Viton) for nicks or cuts. Replace it if necessary. Check for correct placement.
- Place the diaphragm kit in its location.
- Put the cover back on, and tighten it with tool P/N: 546351. Check correct torque with tool P/N: 1403479 and a torque wrench, to be 18 N.m.

9.1.2. Assembly - Disassembly of the diaphragm

- Remove diaphragm kit as described above
- Keep the nut of the kit in place with a 19 mm flat spanner.
- Loosen the diaphragm pusher with a screwdriver (reversed threads).
- Remove the diaphragm.

Re-installation

- Place the diaphragm on the diaphragm pusher. **The Teflon side is directed to the product.**
- Place the spacer.
- Place the diaphragm tightening disc, its flat side to the diaphragm.
- Put the cover over the assembly, and tighten gently (tightening torque: 10 N.m).

9.1.3. Assembly - Disassembly of the ball and seat

- Pull the diaphragm kit out
- Loosen the seat with a 4mm Allen key
- Take the ball and seat out gently with a small pair of pliers.

Reassembly

- Put a new teflon ring 10.5 x 2 at the bottom of the cavity.
- Put the spring in
- Put the ball in place.
- Put a new o-ring 16 x 1.25 on the seat, and the seat in place (tightening torque 10 N.m).



WARNING : Replace the o-ring 16 x 1.25 Viton every time the seat is disassembled.

9.2. Cleaning

The ball regulator needs to be flushed and rinsed with each color change, and at shift end, [see § 3.4 page 7](#).

The cover of the regulator may not (or insufficiently) be protected from overspray by the PPH cover: still, it must be cleaned up regularly.

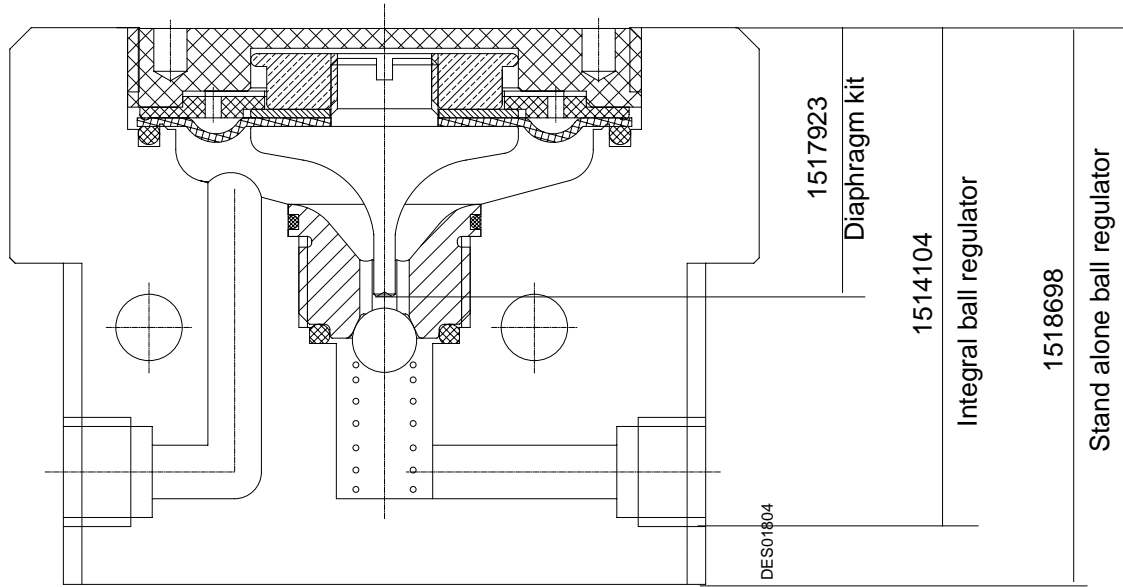


WARNING : Generally, each component must be cleaned individually every time the regulator is disassembled, following the same procedure.

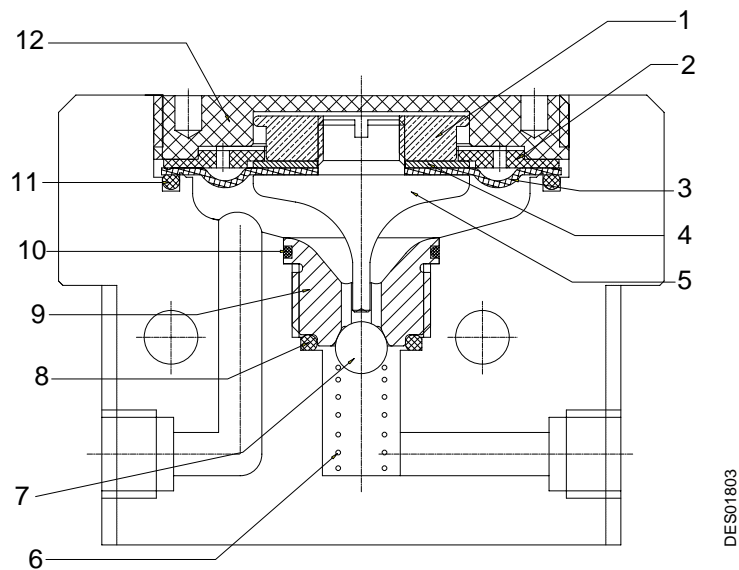
It is best done with a rag dipped in solvent, and then air blown dry

Remarks : Viton o-rings are not solvent resistant.

10. Spare parts

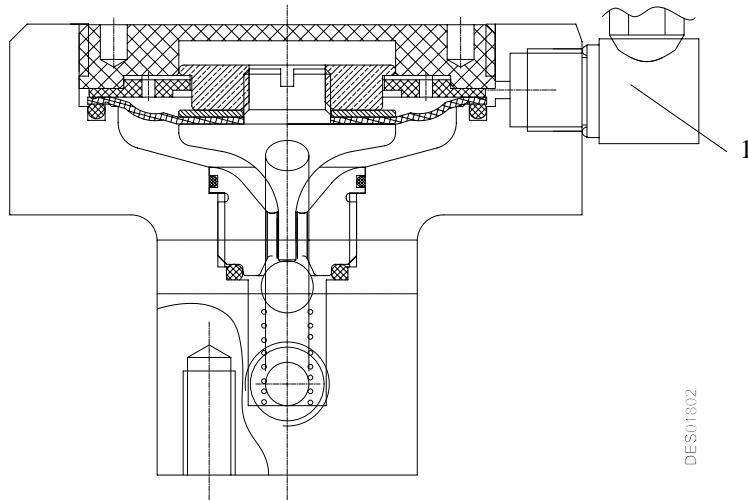


10. Spare parts (continued)



Item	Part number	Description	Qty	Sale unit
	1518698	Stand alone ball regulator	1	1
	1514104	Integral ball regulator	1	1
	1517923	Diaphragm kit: includes 1 - 2 - 3 - 4- 5	1	1
1	1404887	Nut, diaphragm tightening	1	1
2	1404883	Washer, diaphragm tightening	1	1
3	1408616	Diaphragm - teflon 0.8 mm	1	1
4	1404261	Spacer, air distribution	1	1
5	1411420	Pusher, diaphragm	1	1
6	Q2HRDC146	Spring	1	1
7	K6RKBL383	Ball, Dia: 6	1	1
8	J3TTCN007	O-ring - PTFE 10.5 x 2	1	2
9	1404886	Seat	1	1
10	J2FTDF200	O-ring - viton 16 x 1.25	1	1
11	J2FTDF416	O-ring - viton 41 x 1.78	1	1
12	1404885	Cover, regulator	1	1

10. Spare parts (continued)



Item	Part number	Description	Qty	Sale unit
1	F6RPDQ206	Male elbow D: 1/4 1/8NPT	1	1