

1. HYDRAULIC & PNEUMATIC PRINCIPLES

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1. HYDRAULIC & PNEUMATIC PRINCIPLES

1. GENERALITIES

MICROS 60 instrument has been designed for simple mechanical operations.

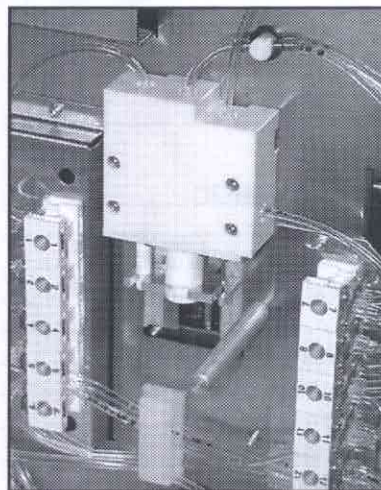
4 stepper motors provide movements to mechanical assemblies.

Pressure and vacuum are provided by the vacuum/waste syringe up and down movements (diag 1).

Liquid movements are achieved either by means of mechanical assembly movements (liquid



Diag.1



Diag.2

syringes diag 2) or pressure/vacuum and simultaneous action of specific valves.

• Dilution chambers (Diag .3)

WBC/HGB and RBC chambers are made of GRILAMID TR55 LY injected.

The diode and the cell of the spectrophotometer are glued on the WBC/HGB chamber.

Chamber positions can be modified in order to obtain the best sampling position possible.

Dilutions :

First dilution is carried out in the WBC/HGB chamber (with a bubbling phase).

The RBC blood sample is aspirated from this dilution.

Lyse is sent from the drain nipple of the WBC/HGB chamber.

Counts have a duration of 2 x 6 seconds.

(see procedures RAS 188 A and RAS 187 A for cycle hydraulic details)



Diag.3

Rinse :

To obtain the best rinse in the counting heads, diluent is sent from the liquid syringes. This is carried out before, between and after the two counts.

1. HYDRAULIC & PNEUMATIC PRINCIPLES

IMPORTANT

A window on the HGB/WBC chamber allows the needle to move down into the chamber and to inject reagents. As important light or variation of light can cause HGB result drifts, close instrument cover and door before running blood analyses.

Bubbling :

Insulators avoid polluted liquid overflows during bubbling phasis. they also allows an accurate adjustment of the bubbling volume.

MICROS 60 CT specifics :

- The piercing needle is equipped with two injectors to obtain a homogeneous diluent flow during needle rinsing phase (see procedures RAS 188 A and RAS 187 A).
- Atmosphere is provided to sample tubes to allow a correct aspiration of blood.

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1. HYDRAULIC & PNEUMATIC PRINCIPLES

2. MICROS 60 OT HYDRAULIC

Liquid circuits, hydropneumatic connections, as well as the transmission tubes used, are described in the following chart tables.

2.1. With bottles

2.1.1. Transmission tubes list

| DESIGNATION | PART NUMBER | DIAMETER | LENGTH | QUANTITY |
|------------------------|-------------|----------|--------|----------|
| SLEEVE HPS3 | DBD005A | 5-9 | | 0.5 |
| T CONNECTOR | EAB006B | 2.3 | | 3 |
| T CONNECTOR | EAB032A | 1.5 | | 1 |
| TUBE CAP | EAC017A | 2.5 | | 1 |
| TYGON TUBE 0.051" | EAE006A | 1.30 | 140 | 1 |
| TYGON TUBE 0.051" | EAE006A | 1.30 | 350 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 20 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 40 | 3 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 50 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 60 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 70 | 2 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 80 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 150 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 170 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 220 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 240 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 300 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 370 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 410 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 450 | 2 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 480 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 20 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 35 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 200 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 330 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 1080 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 20 | 2 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 50 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 60 | 2 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 120 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 140 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 150 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 190 | 1 |
| BLUE TYGON TUBE 0.090" | EAE036A | 2.28 | 1100 | 1 |
| SLEEVE | GAL098A | | | 30 |
| TUBE SHIELD | GBC088A | 4.4 | 30 | 1 |
| TUBE SHIELD | GBC088A | 4.4 | 60 | 1 |

1. HYDRAULIC & PNEUMATIC PRINCIPLES

3. MICROS 60 CT HYDRAULIC

3.1. With bottles

3.1.1. Transmission tubes list

| DESIGNATION | PART NUMBER | DIAMETER | LENGTH | QUANTITY |
|------------------------|-------------|----------|--------|----------|
| T CONNECTOR | EAB006B | 2.3 | | 4 |
| STRAIGHT CONNECTOR | EAB015A | 1.5/2.5 | | 3 |
| T CONNECTOR | EAB032A | 1.5 | | 2 |
| TUBE CAP | EAC017A | 2.5 | | 1 |
| TYGON TUBE 0.040" | EAE005A | 1.02 | 110 | 1 |
| TYGON TUBE 0.040" | EAE005A | 1.02 | 335 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 15 | 3 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 20 | 2 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 40 | 4 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 50 | 2 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 60 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 70 | 2 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 80 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 100 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 150 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 170 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 220 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 240 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 420 | 2 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 450 | 2 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 480 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 20 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 35 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 200 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 330 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 650 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 1080 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 20 | 2 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 50 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 60 | 3 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 120 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 140 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 150 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 190 | 1 |
| SILICONE TUBE | EAE025A | 1.5/3.5 | 50 | 2 |
| BLUE TYGON TUBE 0.090" | EAE036A | 2.28 | 1100 | 1 |
| SLEEVE | GAL098A | | | 32 |
| TUBE SHIELD | GBC088A | 4.4 | 30 | 1 |
| TUBE SHIELD | GBC088A | 4.4 | 60 | 1 |

1. HYDRAULIC & PNEUMATIC PRINCIPLES

3.1.2. Hydropneumatic connections

| CIRCUIT | FROM | SLEEVE | DIAMETER | LENGTH | TO | SLEEVE |
|------------------|-------------------------|--------|----------|-----------|-------------------------|--------|
| AIR | (atmosphere) | | 2.28 | 190 | Liquid valve 2_2 | |
| | Liquid valve 2_1 | Y | 2.28 | 50 | Waste-chamb_1 | Y |
| | Waste-chamb_2 | | 2.28 | 20 | cap EAC017A | |
| | (atmosphere) | | 2.28 | 60 | Liquid valve 3_2 | |
| | Liquid valve 3_1 | | 1.52 | 40 | T connector 2.3_1 | |
| DILUENT | Diluent input | | 2.05 | 330 | Liquid valve 11_1 | |
| | Liquid valve 11_3 | Y | 1.52 | 220 | temp sensor. xba281a | Y |
| | temp sensor. xba281a | Y | 1.52 | 40 | liquid syringes_3 | Y |
| | Liquid valve 11_2 | Y | 1.52 | 40 | Liquid valve 10_3 | Y |
| | Liquid valve 10_1 | Y | 1.52 | 70 | Liquid valve 7_3 | Y |
| | Liquid valve 7_1 | Y | 1.52 | 50 | Liquid valve 9_3 | Y |
| | Liquid valve 9_1 | Y | 1.52 | 420 | Needle rinsing block_2 | |
| | Liquid valve 9_2 | Y | 1.52 | 420 | T connector 1.5_2 | |
| | T connector 1.5_1 | | S1.5/3.5 | 50 | Needle rinsing block_3 | |
| | T connector 1.5_3 | | S1.5/3.5 | 50 | Needle rinsing block_4 | |
| | Liquid valve 7_2 | Y | 1.52 | 240 | T connector 2.3_1 | |
| | T connector 2.3_2 | | 1.52 | 50 | WBC/HGB chamber_3 | |
| | Liquid valve 10_2 | Y | 1.52 | 15 | Connector 1.5/2.5 | |
| | Connector 1.5/2.5 | | 1.02 | 110 | Connector 1.5/2.5 | |
| | Connector 1.5/2.5 | | 1.52 | 15 | liquid syringes_1 | Y |
| | liquid syringes_2 | Y | 1.52 | 15 | Connector 1.5/2.5 | |
| | Connector 1.5/2.5 | | 1.02 | 335 | needle_1 | |
| | Connector 1.5/2.5 | Y | | | needle_1 | Y |
| | Needle rinsing block_1 | | 1.52 | 100 | T connector 2.3_3 | |
| | T connector 2.3_2 | | 1.52 | 20 | Liquid valve 8_1 | |
| | Liquid valve 8_2 | | 2.05 | 650 | Waste-chamb_3 | |
| CLEAN | Clean bottle | | 2.28 | 1100 blue | Liquid valve 4_2 | Y |
| | Liquid valve 4_1 | Y | 1.52 | 450 | T connector 2.3_3 | |
| LYSE | Lyse bottle | | 2.05 | 1080 | Liquid valve 1_1 | |
| | Liquid valve 1_3 | | 1.52 | 150 | liquid syringes_4 | |
| | Liquid valve 1_2 | | 1.52 | 480 | WBC grounding connector | |
| | WBC grounding connector | | 1.52 | 20 | T connector 1.5_1 | |
| WBC/RBC counting | WBC/HGB chamber_2 | | 1.52 | 170 | RBC chamber_3 | |
| | RBC chamber_2 | | 1.52 | 450 | Liquid valve 6_2 | Y |
| | Liquid valve 6_1 | Y | 1.52 | 60 | Waste-chamb_4 | |
| DRAIN / BUBBLING | WBC/HGB Chamber_1 | | 1.52 | 40 | T connector 1.5_2 | |
| | WBC/HGB Chamber_1 | | gbc088a | 30 | T connector 1.5_2 | |
| | T connector 1.5_3 | | 1.52 | 80 | insulator WBC_1 | |
| | insulator WBC_2 | | 2.28 | 120 | Liquid valve 12_2 | Y |
| | Liquid valve 12_1 | Y | 2.05 | 35 | T connector 2.3_1 | |
| | RBC_1 chamber | | 1.52 | 70 | insulator RBC_1 | |
| | RBC_1 chamber | | gbc088a | 60 | insulator RBC_1 | |
| | insulator RBC_2 | | 2.28 | 150 | Liquid valve 13_2 | Y |
| | Liquid valve 13_1 | Y | 2.05 | 20 | T connector 2.3_2 | |
| | T connector 2.3_3 | | 2.05 | 200 | T connector 2.3_2 | |
| | T connector 2.3_3 | | 2.28 | 20 | Cell xba199a | Y |
| | Cell xba199a | Y | 2.28 | 60 | Waste-chamb_5 | Y |
| | T connector 2.3_1 | | 2.28 | 60 | Liquid valve 5_2 | Y |
| | Liquid valve 5_1 | | 2.28 | 140 | Waste ouput | |

NOTE

Read this table as follows in this example :

The Liquid valve 7_2 corresponds to output 2 of the valve number 7 (see attached pneumatic diagram).

1. HYDRAULIC & PNEUMATIC PRINCIPLES

3.2. Pack

3.2.1. Transmission tubes list

| DESIGNATION | PART NUMBER | DIAMETER | LENGTH | QUANTITY |
|--------------------|-------------|----------|--------|----------|
| T CONNECTOR | EAB006B | 2.3 | | 4 |
| STRAIGHT CONNECTOR | EAB015A | 1.5/2.5 | | 3 |
| T CONNECTOR | EAB032A | 1.5 | | 2 |
| TUBE CAP | EAC017A | 2.5 | | 1 |
| TYGON TUBE 0.040" | EAE005A | 1.02 | 110 | 1 |
| TYGON TUBE 0.040" | EAE005A | 1.02 | 335 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 15 | 3 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 20 | 2 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 40 | 4 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 50 | 2 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 60 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 70 | 2 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 80 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 100 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 150 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 170 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 220 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 240 | 1 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 420 | 2 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 450 | 2 |
| TYGON TUBE 0.060" | EAE007A | 1.52 | 480 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 20 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 35 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 200 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 590 | 1 |
| TYGON TUBE 0.081" | EAE008A | 2.05 | 650 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 20 | 2 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 50 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 60 | 3 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 120 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 150 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 190 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 510 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 550 | 1 |
| TYGON TUBE 0.090" | EAE009A | 2.28 | 1100 | 1 |
| SILICONE TUBE | EAE025A | 1.5/3.5 | 50 | 2 |
| SLEEVE | GAL098A | | | 33 |
| TUBE SHIELD | GBC088A | 4.4 | 30 | 1 |
| TUBE SHIELD | GBC088A | 4.4 | 60 | 1 |
| METALLIC SHEATH | GBC170A | 5.2 | 35 | 3 |

1. HYDRAULIC & PNEUMATIC PRINCIPLES

3.2.2. Hydropneumatic connections

| CIRCUIT | FROM | SLEEVE | DIAMETER | LENGTH | TO | SLEEVE |
|--------------------|------------------------|--------|----------|--------|------------------------|--------|
| AIR | (atmosphere) | | 2.28 | 190 | Liquid valve 2_2 | |
| | Liquid valve 2_1 | Y | 2.28 | 50 | Waste-chamb._1 | Y |
| | Waste-chamb._2 | | 2.28 | 20 | cap EAC017A | |
| | (atmosphere) | | 2.28 | 60 | Liquid valve 3_2 | |
| | Liquid valve 3_1 | | 1.52 | 40 | T Connector 2.3_1 | |
| DILUENT | Pack_3 (Diluent) | | 2.28 | 550 | Liquid valve 11_1 | Y |
| | Pack_3 (Diluent) | | gbc170a | | | |
| | Liquid valve 11_3 | Y | 1.52 | 220 | Temp. sensor xba281a | Y |
| | Temp. sensor xba281a | Y | 1.52 | 40 | Liquid syringes_3 | Y |
| | Liquid valve 11_2 | Y | 1.52 | 40 | Liquid valve 10_3 | Y |
| | Liquid valve 10_1 | Y | 1.52 | 70 | Liquid valve 7_3 | Y |
| | Liquid valve 7_1 | Y | 1.52 | 50 | Liquid valve 9_3 | Y |
| | Liquid valve 9_1 | Y | 1.52 | 420 | Needle rinsing block_2 | |
| | Liquid valve 9_2 | Y | 1.52 | 420 | T Connector 1.5_2 | |
| | T Connector 1.5_1 | | S1.5/3.5 | 50 | Needle rinsing block_3 | |
| | T Connector 1.5_3 | | S1.5/3.5 | 50 | Needle rinsing block_4 | |
| | Liquid valve 7_2 | Y | 1.52 | 240 | T Connector 2.3_1 | |
| | T Connector 2.3_2 | | 1.52 | 50 | Bac WBC/HGB_3 | |
| | Liquid valve 10_2 | Y | 1.52 | 15 | connector1.5/2.5 | |
| | connector1.5/2.5 | | 1.02 | 110 | connector1.5/2.5 | |
| | connector 1.5/2.5 | | 1.52 | 15 | Liquid syringes_1 | Y |
| | Liquid syringes_2 | Y | 1.52 | 15 | connector 1.5/2.5 | |
| | connector 1.5/2.5 | | 1.02 | 335 | Needle_1 | |
| | connector 1.5/2.5 | Y | | | Needle_1 | Y |
| | Needle rinsing block_1 | | 1.52 | 100 | T Connector 2.3_3 | |
| | T Connector 2.3_2 | | 1.52 | 20 | Liquid valve 8_1 | |
| | Liquid valve 8_2 | | 2.05 | 650 | Waste-chamb._3 | |
| CLEAN | Pack_1 (Clean) | | 2.28 | 510 | Liquid valve 4_2 | Y |
| | Pack_1 (Clean) | | gbc170a | | | |
| | Liquid valve 4_1 | Y | 1.52 | 450 | T Connector 2.3_3 | |
| LYSE | Pack_2 (Lyse) | | 2.05 | 590 | Liquid valve 1_1 | |
| | Pack_2 (Lyse) | | gbc170a | | | |
| | Liquid valve 1_3 | | 1.52 | 150 | Liquid syringes_4 | |
| | Liquid valve 1_2 | | 1.52 | 480 | WBCgrounding connec. | |
| Comptage WBC/RBC | WBC grounding connect. | | 1.52 | 20 | T Connector 1.5_1 | |
| | Bac WBC/HGB_2 | | 1.52 | 170 | RBC chamber_3 | |
| | RBC chamber_2 | | 1.52 | 450 | Liquid valve 6_2 | Y |
| | Liquid valve 6_1 | Y | 1.52 | 60 | Waste-chamb._4 | |
| EVACUAT° / Bullage | Bac WBC/HGB_1 | | 1.52 | 40 | T Connector 1.5_2 | |
| | Bac WBC/HGB_1 | | gbc088a | 30 | T Connector 1.5_2 | |
| | T Connector 1.5_3 | | 1.52 | 80 | insulator WBC_1 | |
| | insulator WBC_2 | | 2.28 | 120 | Liquid valve 12_2 | Y |
| | Liquid valve 12_1 | Y | 2.05 | 35 | T Connector 2.3_1 | |
| | RBC chamber_1 | | 1.52 | 70 | insulator RBC_1 | |
| | RBC chamber_1 | | gbc088a | 60 | insulator RBC_1 | |
| | insulator RBC_2 | | 2.28 | 150 | Liquid valve 13_2 | Y |
| | Liquid valve 13_1 | Y | 2.05 | 20 | T Connector 2.3_2 | |
| | T Connector 2.3_3 | | 2.05 | 200 | T Connector 2.3_2 | |
| | T Connector 2.3_3 | | 2.28 | 20 | CELL xba199a | Y |
| | CELL xba199a | Y | 2.28 | 60 | Waste-chamb._5 | Y |
| | T Connector 2.3_1 | | 2.28 | 60 | Liquid valve 5_2 | Y |
| | Liquid valve 5_1 | | 2.28 | 1100 | Pack_4 (Waste) | |

NOTE

Read this table as follows in this example :

The Liquid valve 7_2 corresponds to output 2 of the valve number 7 (see attached pneumatic diagram)

1. HYDRAULIC & PNEUMATIC PRINCIPLES

3.3. Hydraulic cycle description

3.3.1. Atmosphere circuit

3.3.2. Diluent circuit

3.3.3. Clean circuit

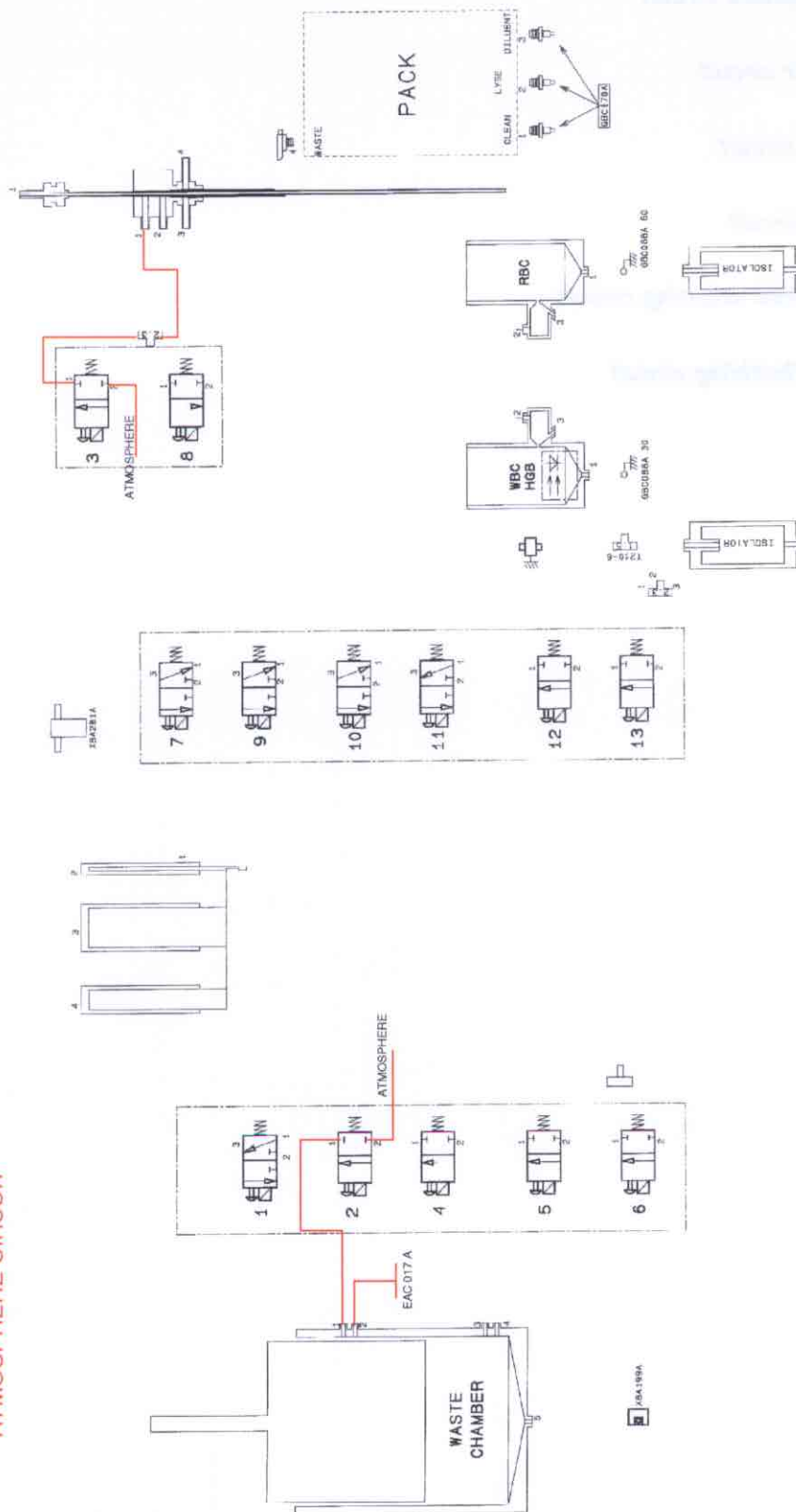
3.3.4. Lyse circuit

3.3.5. WBC/RBC counting circuit

3.3.6. Drain/bubbling circuit

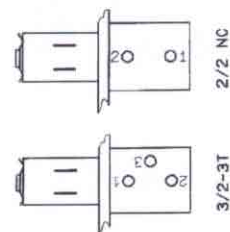
1. HYDRAULIC & PNEUMATIC PRINCIPLES

ATMOSPHERE CIRCUIT

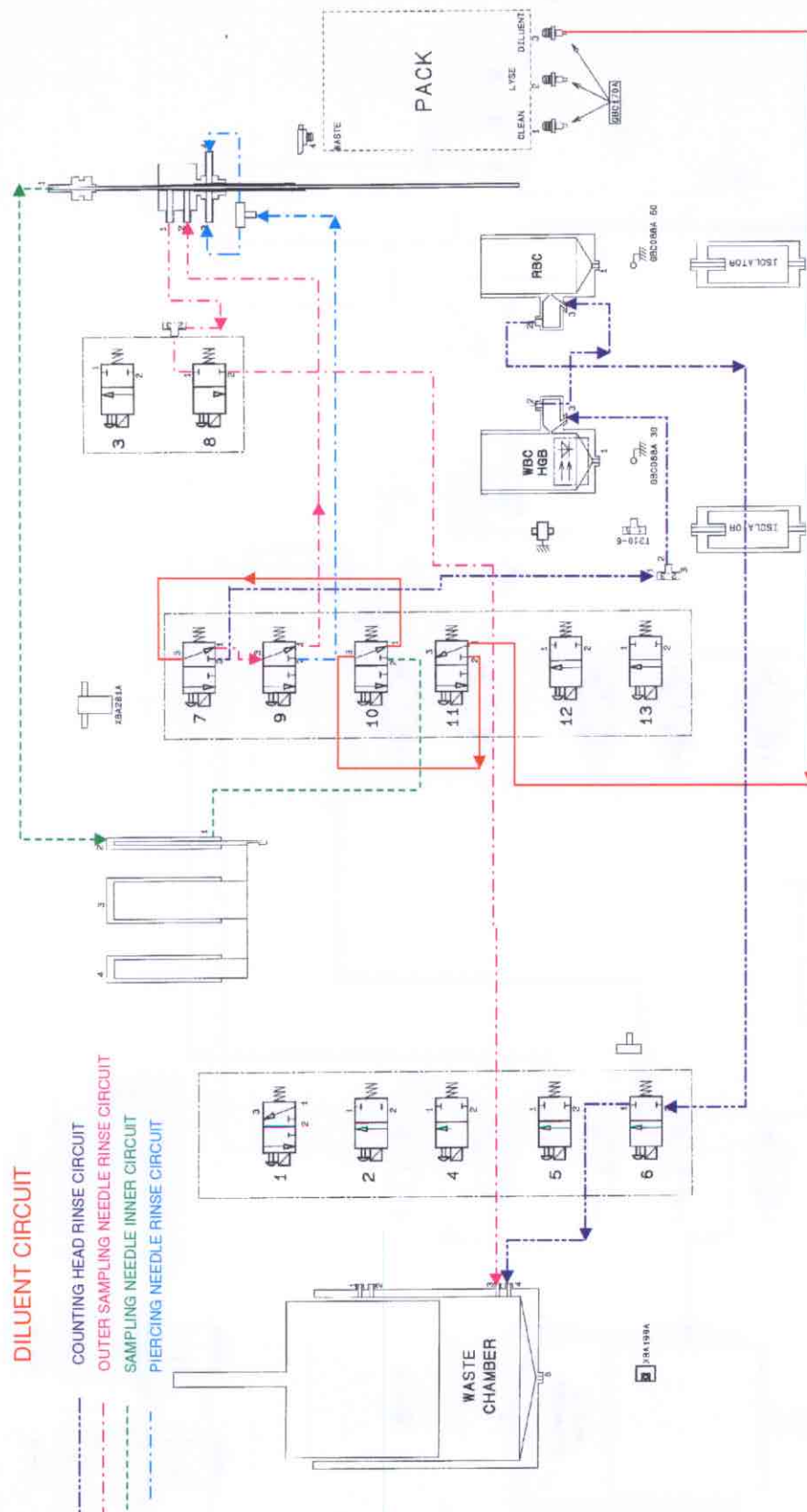


| Transmission | Input | Output | Pressure (bar) |
|--------------|--------|--------|----------------|
| 0.010" | 0.010" | 0.010" | 1.14 |
| 0.020" | 0.020" | 0.020" | 1.36 |
| 0.030" | 0.030" | 0.030" | 1.52 |
| 0.040" | 0.040" | 0.040" | 1.68 |
| 0.050" | 0.050" | 0.050" | 1.84 |
| 0.060" | 0.060" | 0.060" | 2.00 |
| 0.070" | 0.070" | 0.070" | 2.16 |
| 0.080" | 0.080" | 0.080" | 2.32 |
| 0.090" | 0.090" | 0.090" | 2.48 |
| 0.100" | 0.100" | 0.100" | 2.64 |

C: tube Cristal
P: tube Polyurethane
T: tube Tygon
S: tube Silicone
V: tube Viton

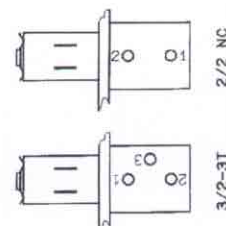


1. HYDRAULIC & PNEUMATIC PRINCIPLES

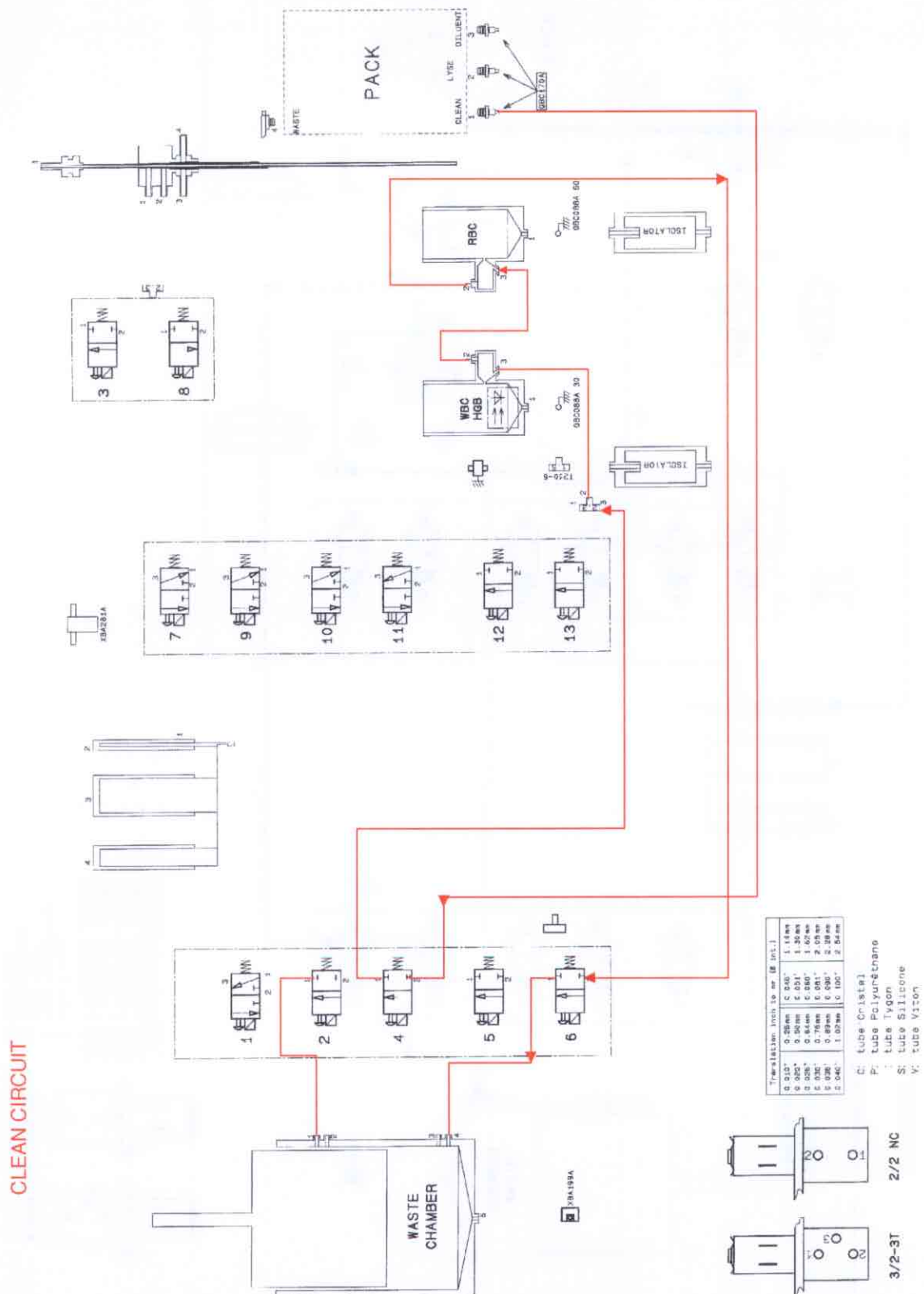


| Transmission Inch to mm (8 Int.1) | | | |
|-----------------------------------|--------|--------|--------|
| 0.015" | 0.25mm | 0.045" | 1.14mm |
| 0.020" | 0.50mm | 0.051" | 1.30mm |
| 0.025" | 0.64mm | 0.059" | 1.50mm |
| 0.030" | 0.76mm | 0.067" | 1.70mm |
| 0.035" | 0.89mm | 0.075" | 1.90mm |
| 0.040" | 1.02mm | 0.083" | 2.10mm |
| 0.045" | 1.14mm | 0.091" | 2.30mm |
| 0.050" | 1.27mm | 0.100" | 2.54mm |

C: tube Cristal
P: tube Polyurethane
T: tube Tygon
S: tube Silicone
V: tube Viton

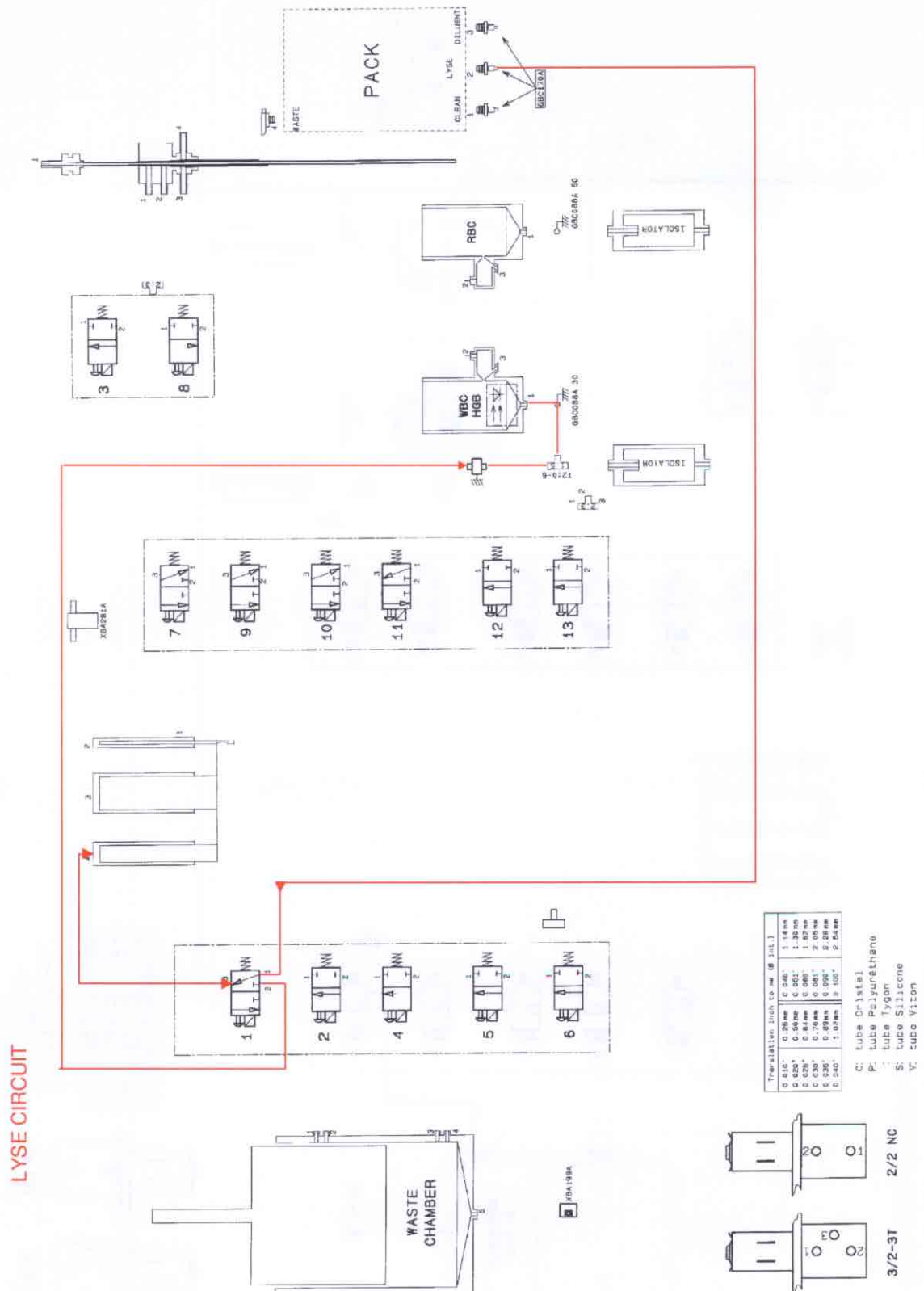


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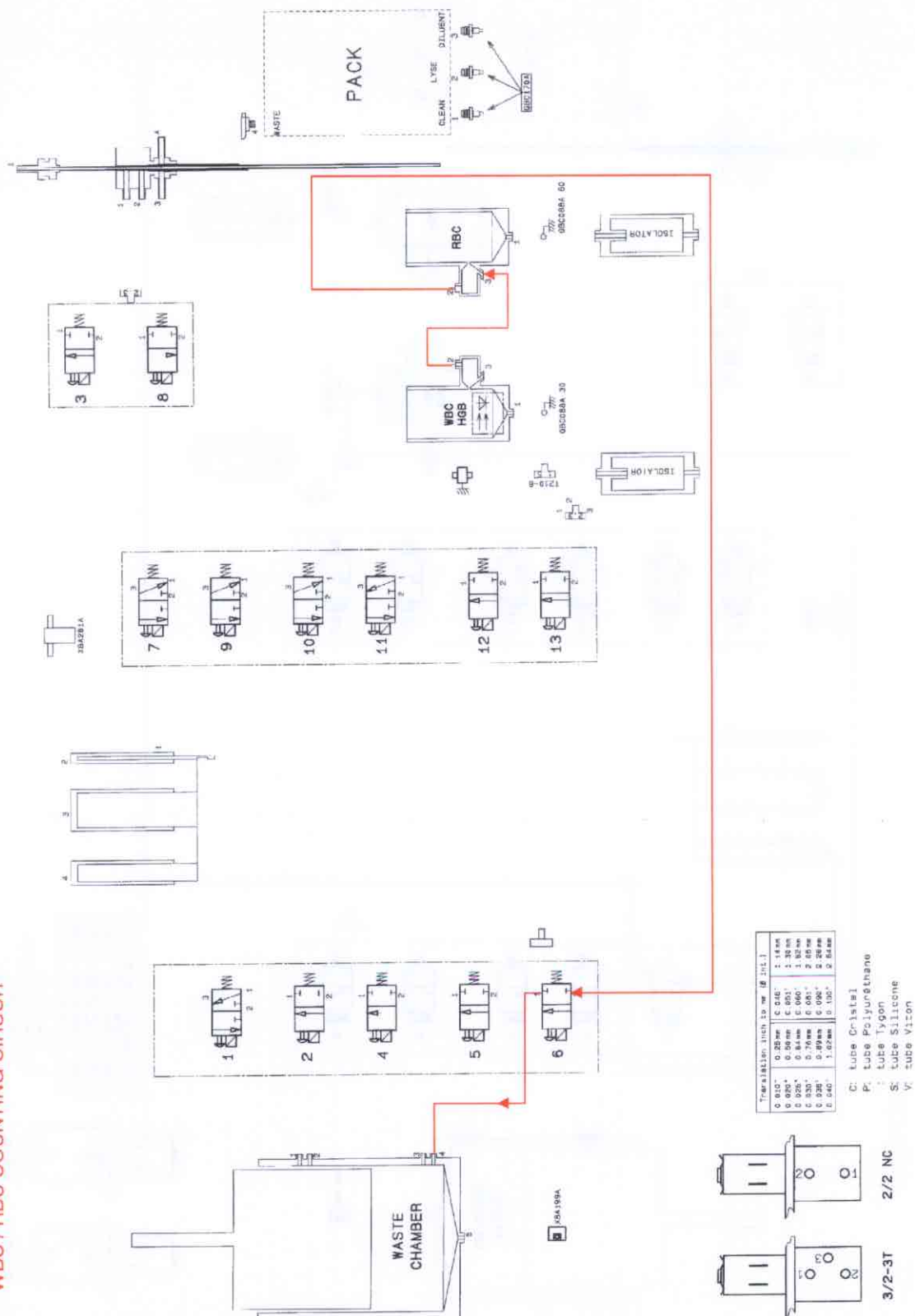
RAA 011 A Ind.D

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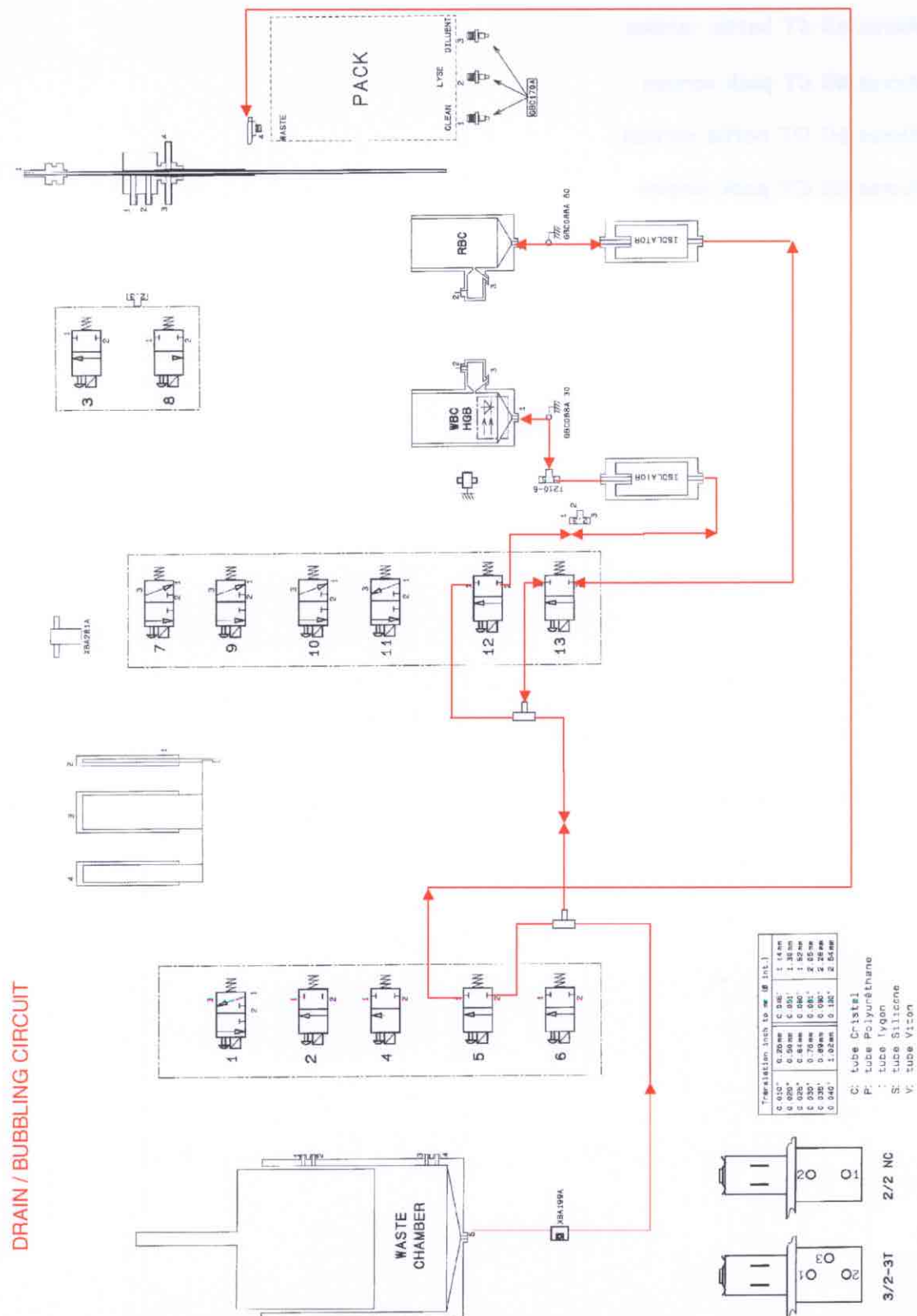


1. HYDRAULIC & PNEUMATIC PRINCIPLES

WBC / RBC COUNTING CIRCUIT



01/07/99



1. HYDRAULIC & PNEUMATIC PRINCIPLES

4. PNEUMATIC DIAGRAMS

- 4.1. Micros 60 CT bottle version
- 4.2. Micros 60 CT pack version
- 4.3. Micros 60 OT bottle version
- 4.4. Micros 60 OT pack version