UT Local Box

Answers to the questions regarding P&ID update

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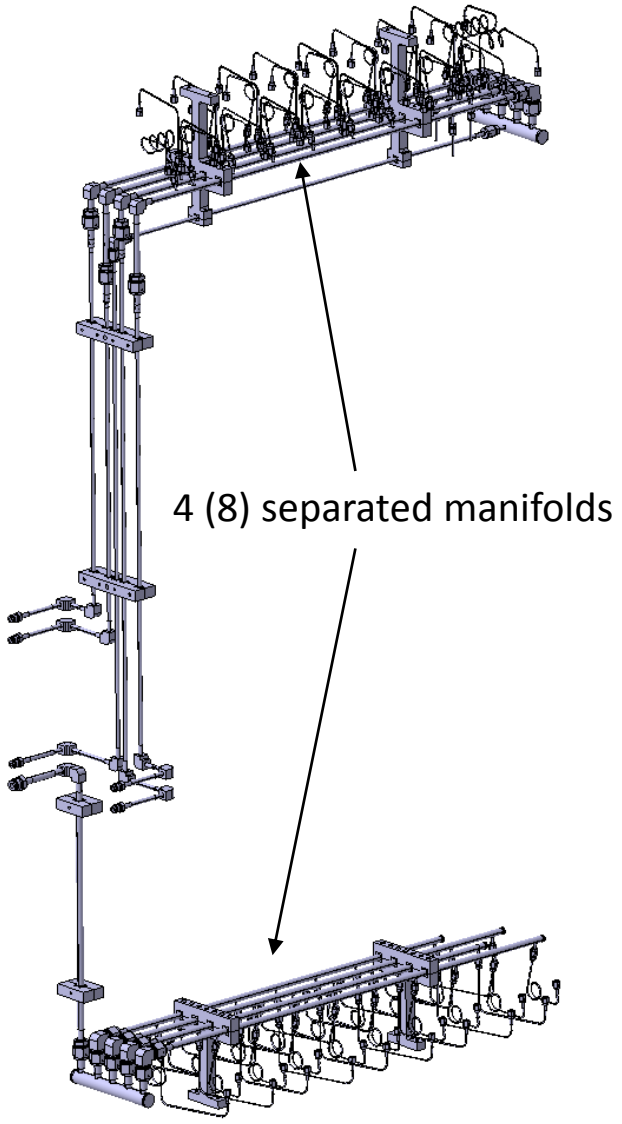
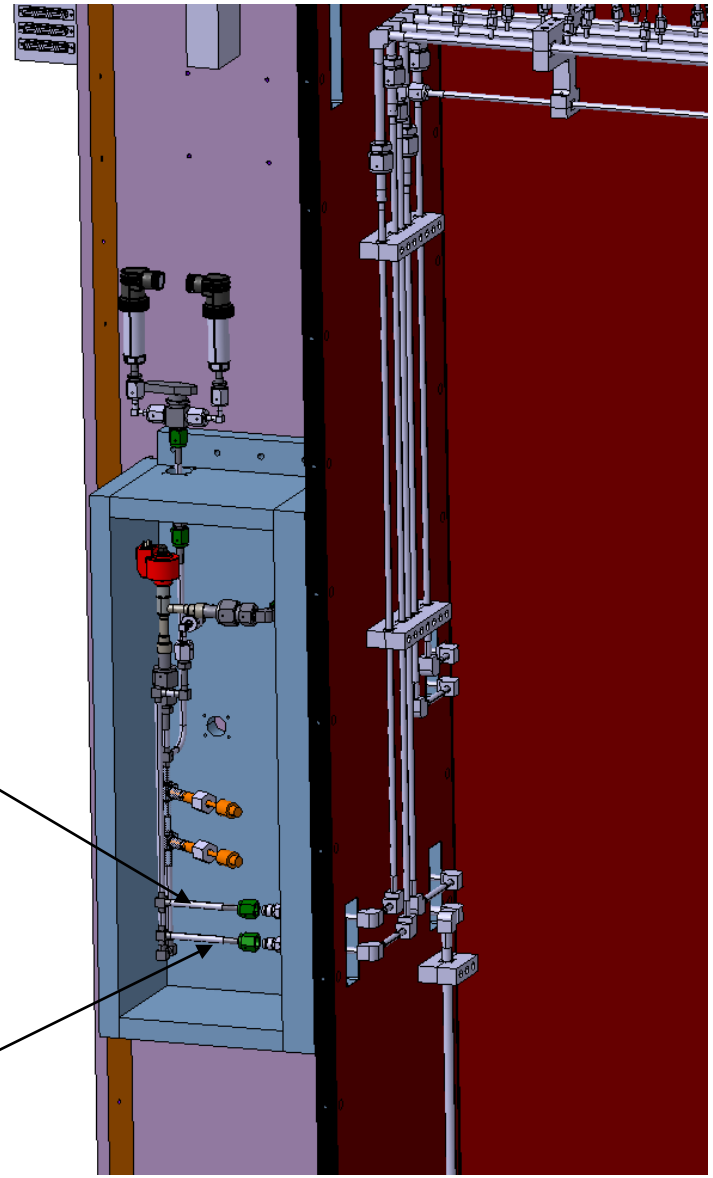
Cooling distribution inside the detector box

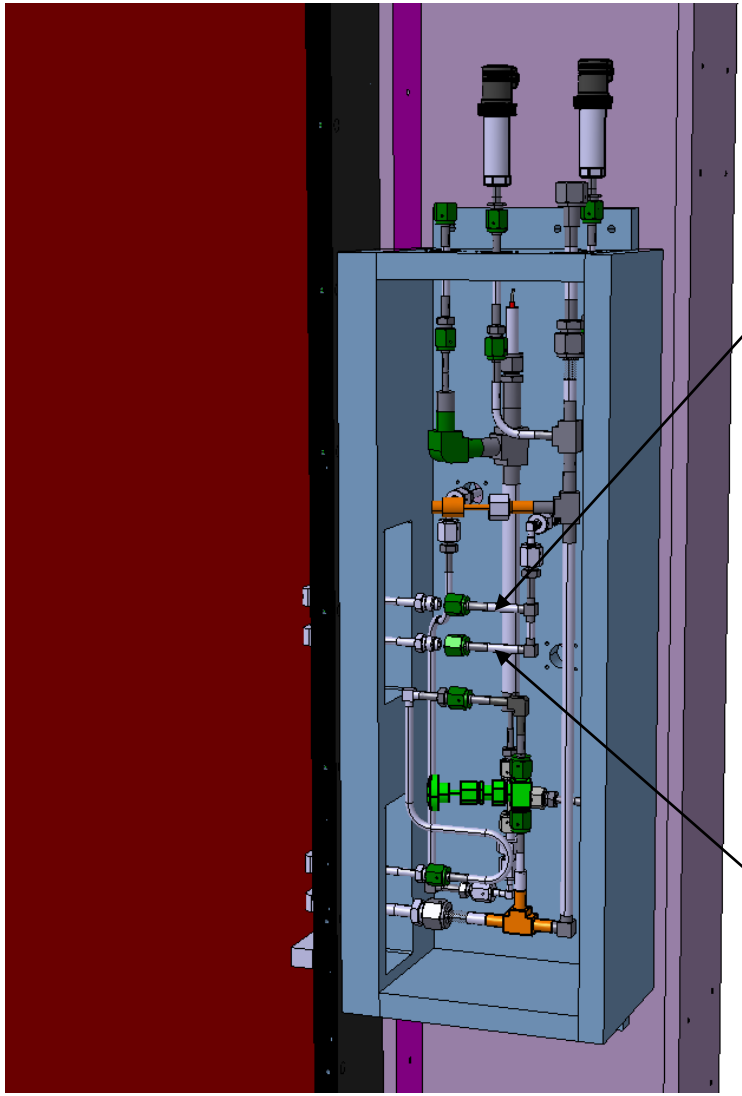
Internal distribution system is divided in 4 manifolds on the top and 4 on the bottom



Splitting of the inlet line to 4 manifolds inside detector box

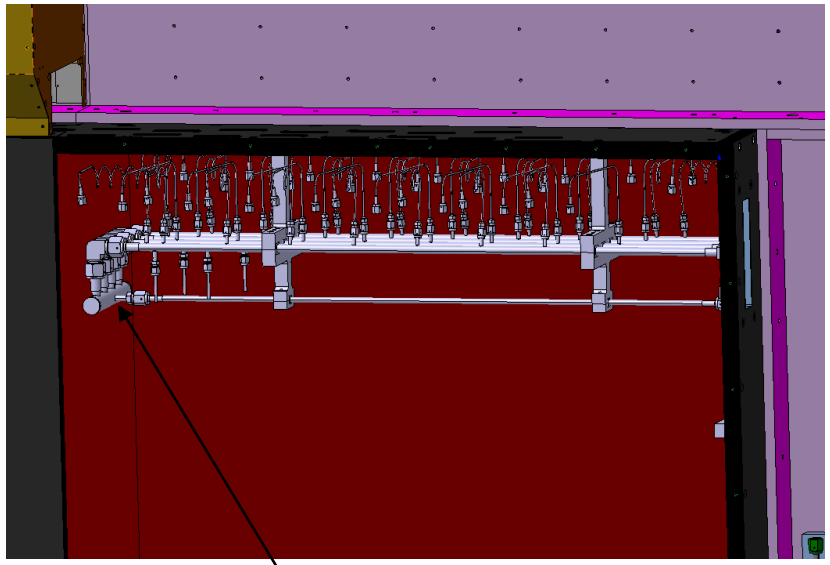
It was decided that the inlet line will be divided already at the level of the local box



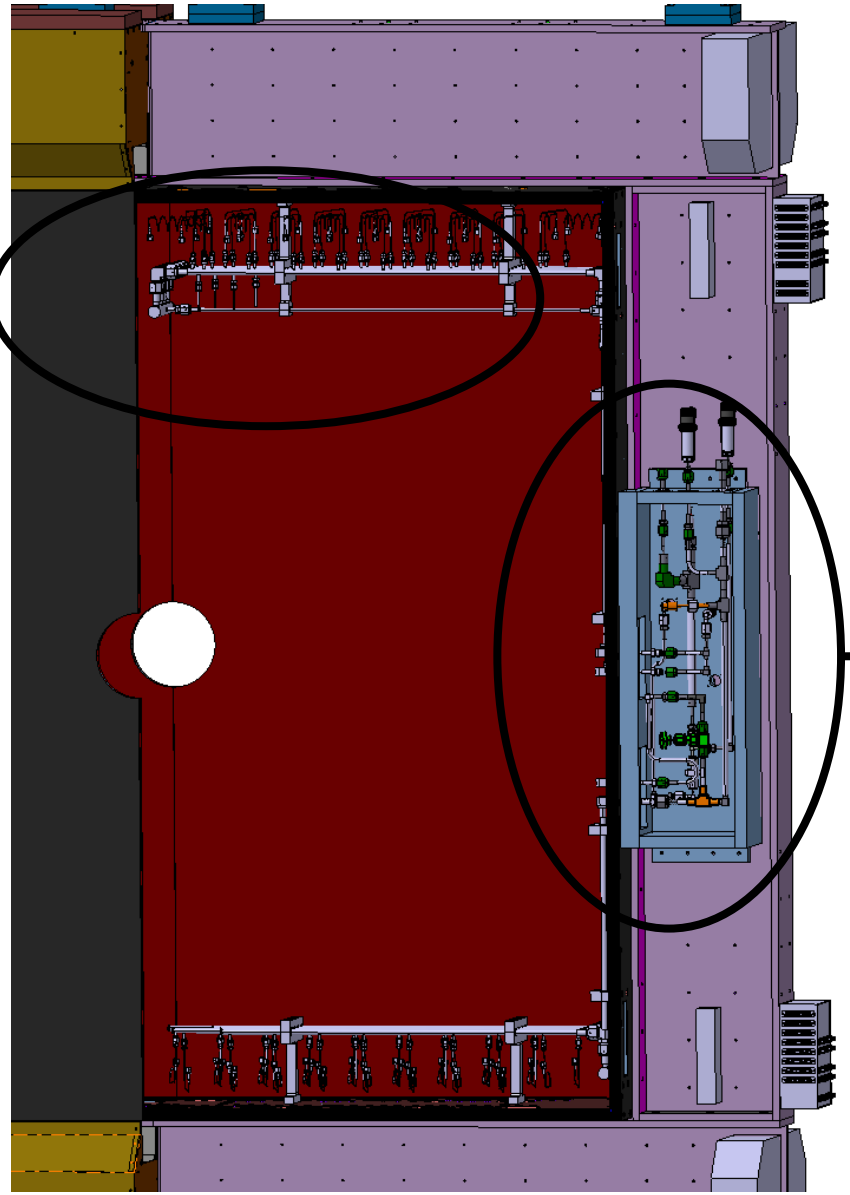


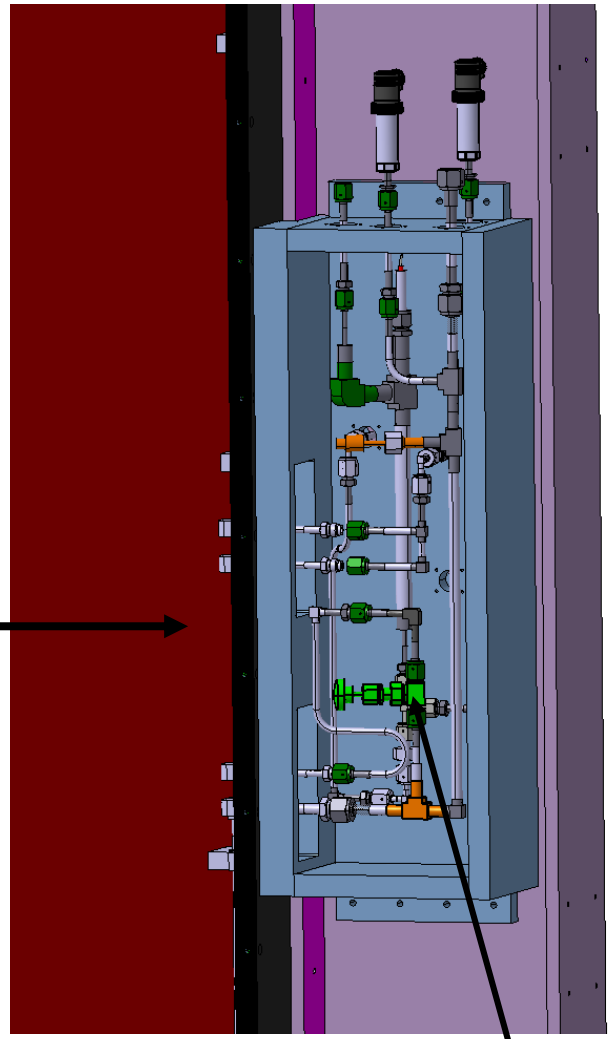
Bypass valve on the return line

In order **to equally distribute the flow of the CO2 among the staves**, the bypass line with the valve was introduced on the return line.



Going to the return line

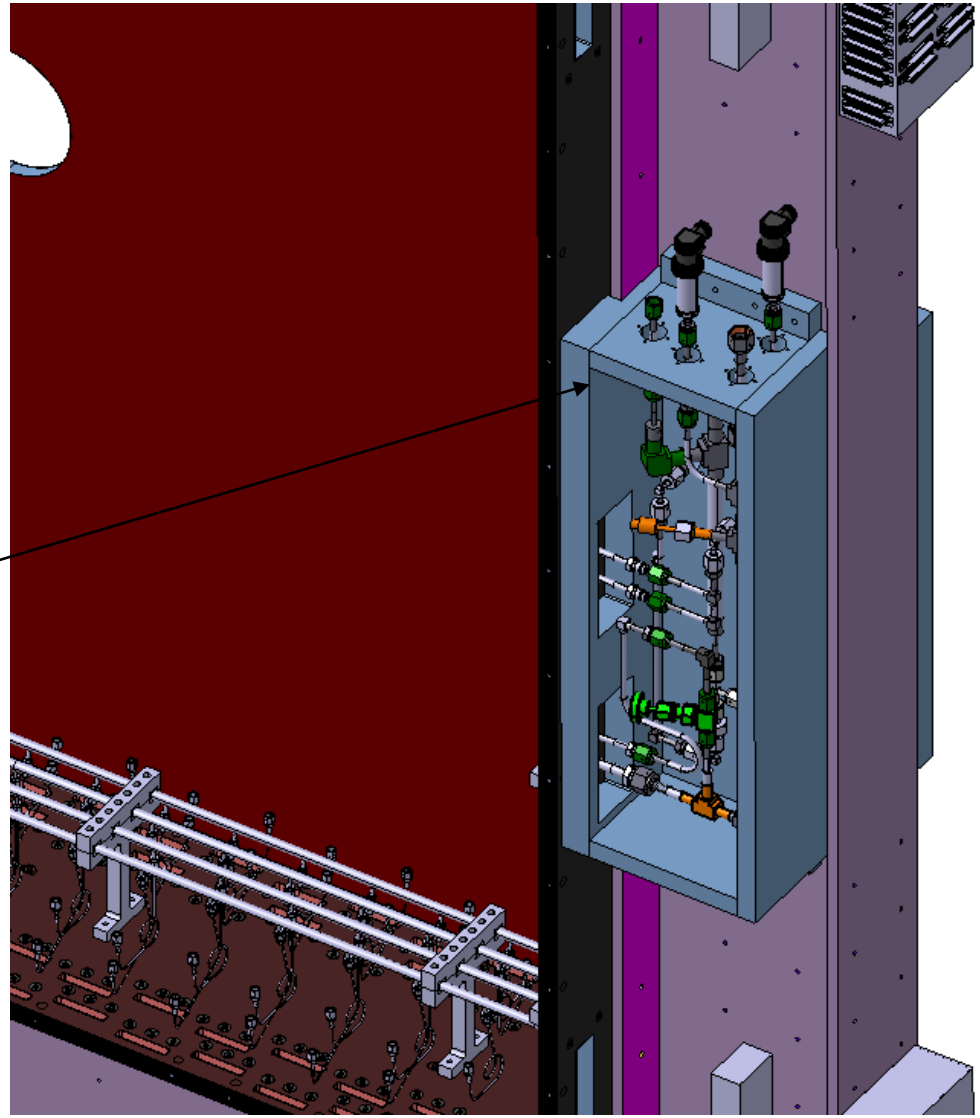




SS-31RVCR4-P-31027

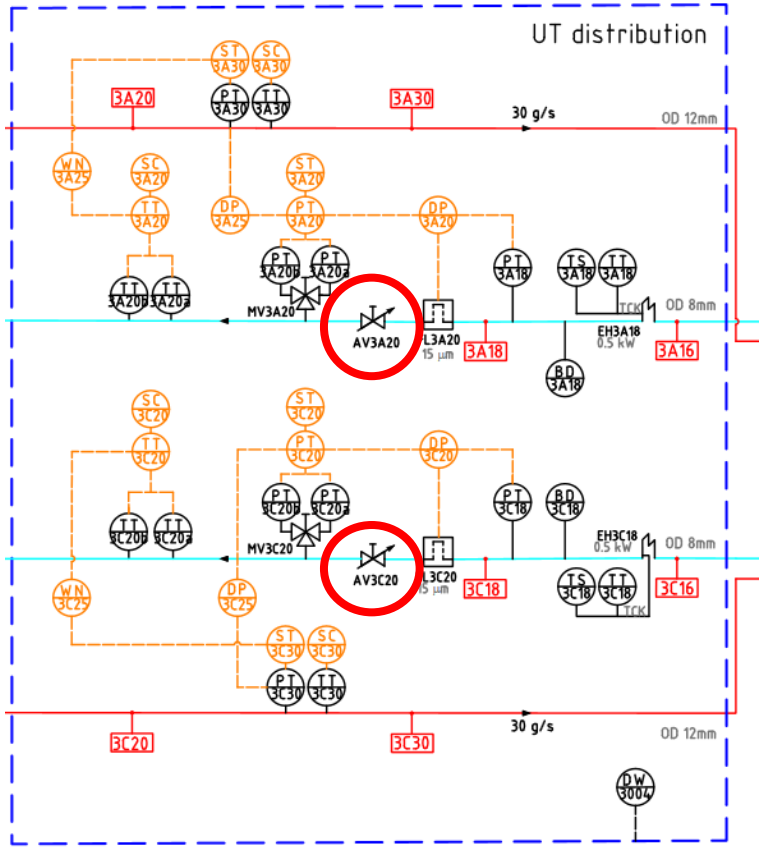
Insulation of the pipes in the local box

Local box will be attached to the C-frame and in contact with the detector box – no need of insulating pipes between the local box and the detector box.



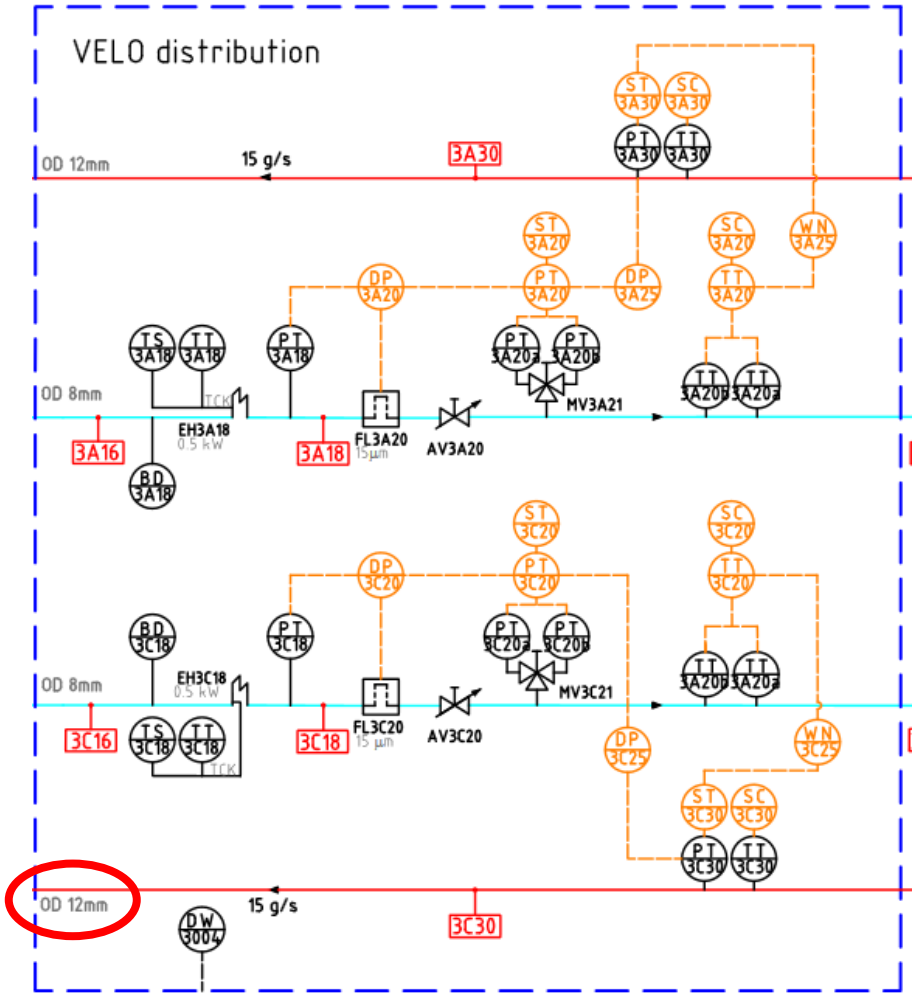
Questions regarding P&ID

1. What kind of valves are AV3A20 and AV3C20?



Questions regarding P&ID

2. Sizes of the pipes for the local box?



Velo JB to LB transfer lines

- Max flow per line (1/2 detector): 29 g/s
- Max power per line (1/2 detector) 3 kW (2.5 detector + enthalpy heater)
- Non-concentric
- Max lengths (JB to furthest LB)

supply: 7000 mm

return: 7000 mm

- Chosen diameters

Supply: 8 mm (6 mm ID)

Return: 10 mm OD (8 mm ID)

- Calculations for return lines by Tym:
  8 mm ID Case: Return Frictional dP = 140 mbar \ dT = 0.38 K | ANNULAR
  6 mm ID Case: Return Frictional dP = 495 mbar \ dT = 1.32 K | ANNULAR

1/2 Velo flow	17	g/s
1/2 Velo power	1.1	kW
1/2 Velo + heat leaks power	1.5	kW
Pipe volumes Velo		
ID inlet	6	mm
A inlet	28.26	mm2
L inlet	7000	mm
V inlet	197820	mm3
Volume x 2 lines	0.40	liters
ID return	8	mm
A return	50.24	mm2
L return	7000	mm
V return	351680	mm3
Volume x 2 lines	0.70	liters
Total volume for Velo transfer lines	1.10	