



Cert. No. LRQ 0963008

ISO 9001

# spirax/sarco

TI-P795-02

CH Issue 4

## Type 20 and Type 40

## Sizing

## Direct Steam Injection Humidifiers

### Product selection

The best diffusion of steam into the air flow is achieved by spreading the outlet nozzles of the lance(s) evenly within the duct, vertically and horizontally.

This is achieved by following the example through the five steps below.

#### Step 1 - The known data

Duct size	1 800 mm high and 1 800 mm wide
Steam pressure	1.5 bar g
Required maximum steam flowrate	110 kg/h
Spirax Sarco valve connection	Screwed
Valve actuation	Electric
Actuator voltage	24 Vac 50 / 60 Hz
Control signal	VMD

#### Step 2 - Select the lance

Select the recommended number of lances required from Table 1 to match the known duct height.

Table 1

Duct height in mm	Number of lances
up to 1 000	1
1 000 - 1 700	2
1 700 - 2 200	3
2 200 - 2 600	4
2 600 and above	5

Number of recommended lances required = 3

#### Step 3 - Select the lance model

Select the lance model from Table 2 to match the known duct width.

#### Duct width in mm

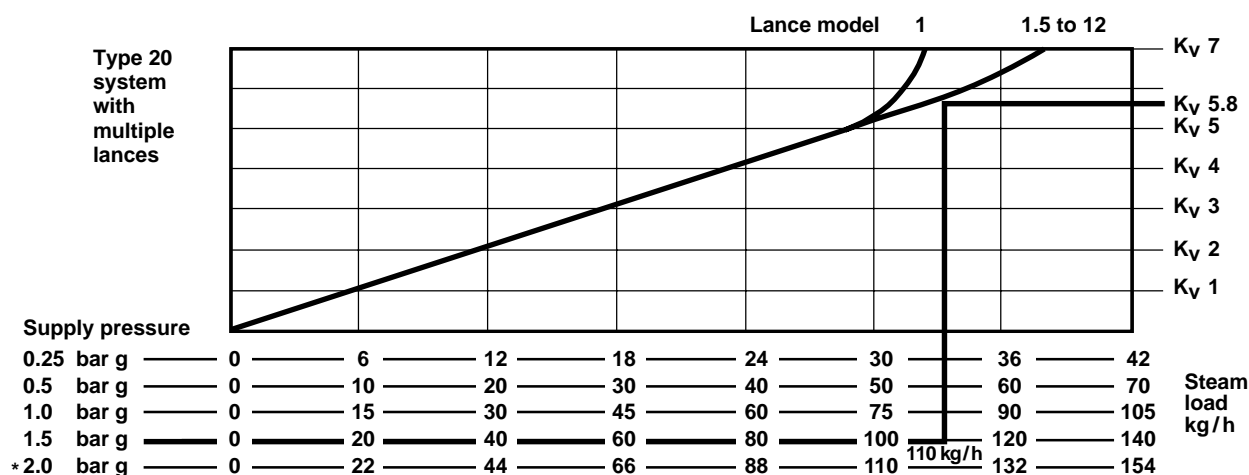
Table 2

	450	630	900	1 200	1 470	1 780	2 080	2 380	2 690	3 000	3 300	3 610	3 950
Maximum	450	630	900	1 200	1 470	1 780	2 080	2 380	2 690	3 000	3 300	3 610	3 950
Minimum	280	450	630	900	1 200	1 470	1 780	2 080	2 380	2 690	3 000	3 300	3 610
Lance model	1	1.5	2	3	4	5	6	7	8	9	10	11	12

Recommended lance model = 6

#### Step 4 - Select the system

Select the system that will handle the known capacity (Type 20 or Type 40) to obtain the required valve  $K_V$ . See overleaf and the example below:



\* Recommended maximum inlet steam pressure to separator for quiet operation of the humidifier. For operating pressures above 2 bar g consult Spirax Sarco.

It will be seen that the Type 20 system for multiple lances requires a  $K_V$  value of 5.8

#### Step 5 - Select the control valve and separator

Having selected the required valve  $K_V$ , the actual valve size and actuator can now be found from the chart headed 'Valve selection' on TI-P795-03. Always select the next highest valve  $K_{VS}$  to the  $K_V$  required.

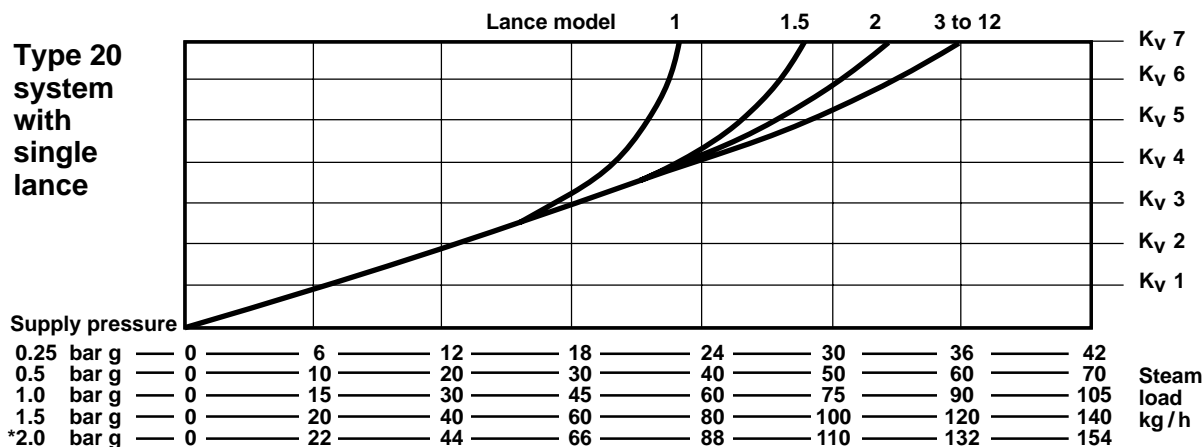
Recommended control valve is a DN20 LE31 with screwed BSP connections.  
Recommended actuator is an EL3502SE for 24 V operation VMD control signal.

#### Final product selection and specification from the above example:

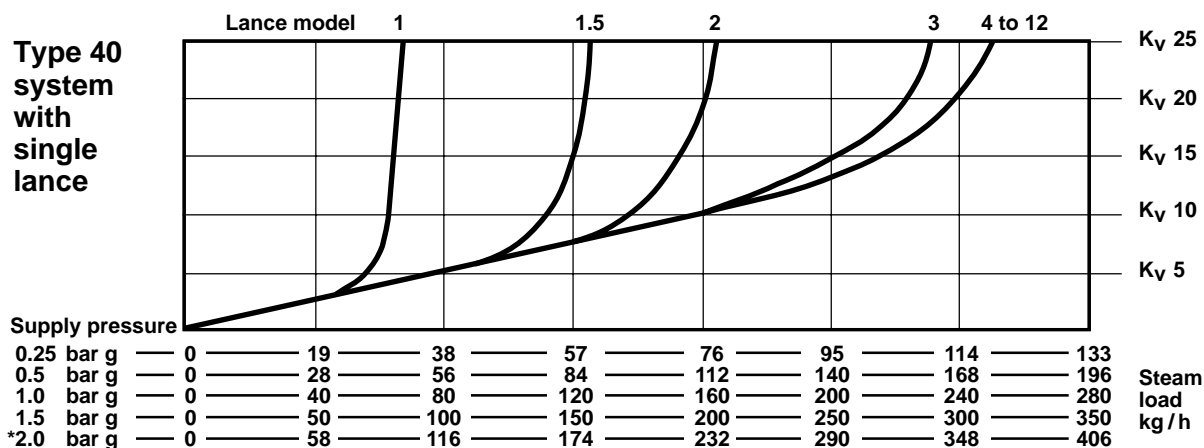
1 x Spirax Sarco S.I. humidifier for 110 kg / h at 1.5 bar g; 1 x Type 20 separator with DN20 LE31 valve screwed BSP, with EL3502SE actuator for 24 V operation VMD control signal, and 3 x Type 20 model 6 lances.

# System sizing

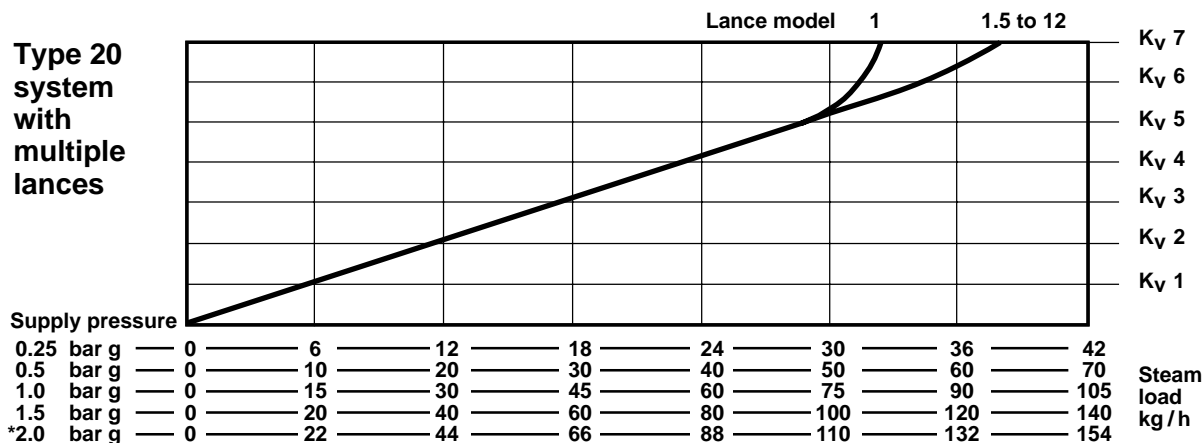
## Type 20 system with single lance



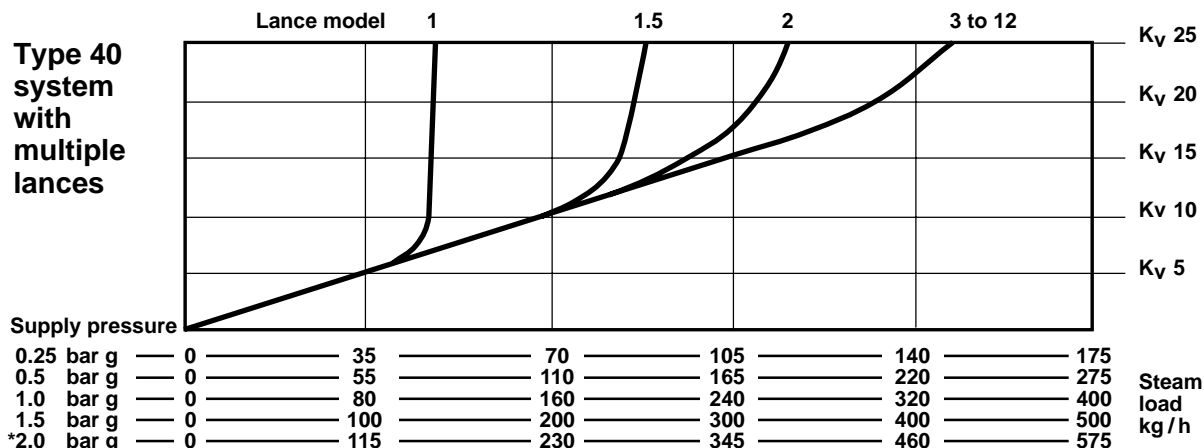
## Type 40 system with single lance



## Type 20 system with multiple lances



## Type 40 system with multiple lances



\* Note: 2.0 bar g is the maximum recommended inlet steam pressure to the separator for quiet operation of the humidifier. For operating pressures above 2 bar g consult Spirax Sarco.