ORIFICES

Function

Orifices are used in hydraulic systems to restrict flow.

Sizing

To calculate the orifice diameter required to pass a desired flow at a specified pressure:

$$D = 0.23 \times \sqrt{(Q \div \sqrt{\Delta p})}$$

Where

D = orifice diameter in inches
Q = flow in US gallons per minute
Δp = differential pressure across orifice
And assuming: specific gravity = 1 and orifice coefficient = 0.63

To calculate the flow through an orifice of a known diameter at a specified pressure:

$$Q = (D \div 0.23)^2 \times \sqrt{\Delta p}$$

Where

Q = flow in US gallons per minute
D = orifice diameter in inches
Δp = differential pressure across orifice
And assuming: specific gravity = 1 and orifice coefficient = 0.63

To calculate the pressure drop (differential pressure) across an orifice of a known diameter at a specified flow:

$$\Delta p = [Q \div (D \div 0.23)^2]^2$$

Where

Δp = differential pressure across orifice
Q = flow in US gallons per minute
D = orifice diameter in inches
And assuming: specific gravity = 1 and orifice coefficient = 0.63

Conversions				
litre	÷	3.785	=	US gallon
millimetre	÷	25.4	=	inch
bar	×	14.5	=	psi