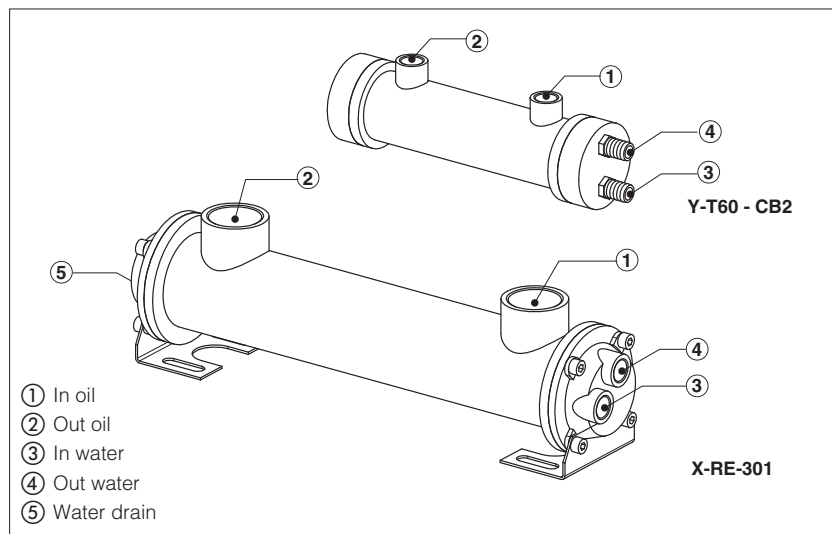


Heat exchangers

water-oil



Water-oil heat exchangers, shell and tube type, permit to cool the heat in hydraulic plants.

They can operate on return line of the main hydraulic circuit, or on a separate circuit dedicated to cooling.

Heat exchangers are designed to work in hydraulic systems with mineral oil or synthetic fluids having similar lubricating characteristics.

Max oil flow up to 200 lt/min
Pressure up to 12 bar

1 MODEL CODE	X-RE	-	301	**	-
X-RE = Water-oil heat exchanger (4 way circuit)					Synthetic fluid: Contact our technical office
Size : 200 , 301 , 302 , 502 Other sizes are available on request				Design number	
Y-T			60 - CB2	**	-
Y-T = Water-oil heat exchanger (2 way circuit)					Synthetic fluid: Contact our technical office
Size : 60 - CB2 80 - CB2				Design number	

2 MAIN CHARACTERISTICS

Installation position	Horizontal suggested (clamping on feet)	
Hydraulic connections	Size, see section 7 and 8. Protect the heat exchanger against pressure peaks on exhaust line with a by pass check valve setted at 4 - 5 bar	
Fluid	Hydraulic oil as per DIN 51524...535; for other fluids contact our technical office	
Recommended viscosity	15 ÷ 150 mm ² /sec at 40°C (ISO VG 15 ÷ 100)	
Fluid contamination class	ISO 19/16 achieved with in line filters at 25 μm and β ₂₅ ≥ 75 (recommended)	
Max working temperature	+99 °C	
Ambient temperature	from -20°C to +70°C	
Max pressure	Oil: 12 bar	Water: 12 bar
Materials	Body: carbon steel	Tubes: copper

3 PERFORMANCE - with oil temperature 55°C, water temperature 20°C

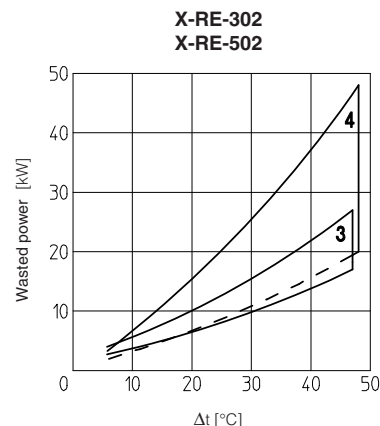
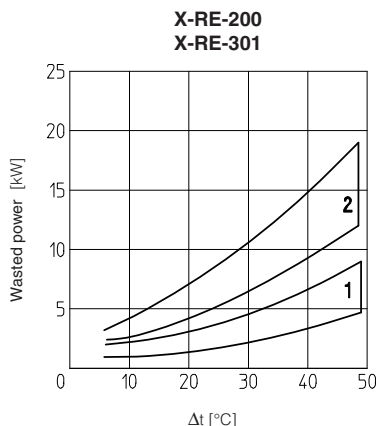
Model	Recommended oil flow	Cooling power @ ΔT = 35°C	Warning
X-RE-200	25 ÷ 75 l/min	3 ÷ 6 kW	Oil flow indicated in the table permits to obtain the best performance. Lower oil flow than minimum reduces the efficiency while higher oil flow increases the pressure drop (Δp) without efficiency improving.
X-RE-301	50 ÷ 120 l/min	8 ÷ 13 kW	
X-RE-302	60 ÷ 150 l/min	11 ÷ 18 kW	
X-RE-502	80 ÷ 200 l/min	17 ÷ 45 kW	
Y-T60-CB2	5 ÷ 30 l/min	1,3 ÷ 2,5 kW	
Y-T80-CB2	25 ÷ 60 l/min	3 ÷ 4,9 kW	

4 DIAGRAMS based on mineral oil ISO VG 46 at 50°C

4.1 Performance diagrams at maximum and minimum oil flow (with 1 l/min water flow for every kW to waste)

1 = X-RE-200
2 = X-RE-301

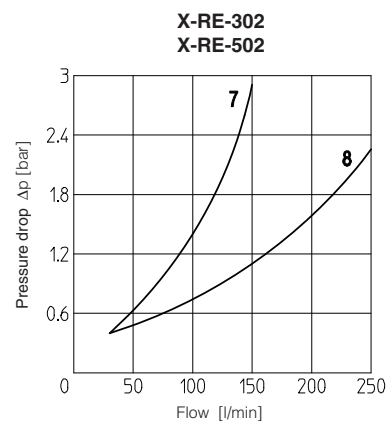
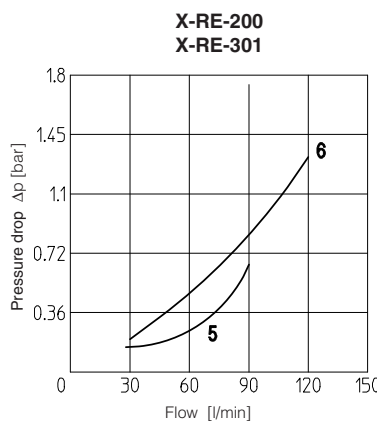
3 = X-RE-302
4 = X-RE-502



4.2 Pressure drop diagrams referred to oil flow

5 = X-RE-200
6 = X-RE-301

7 = X-RE-302
8 = X-RE-502

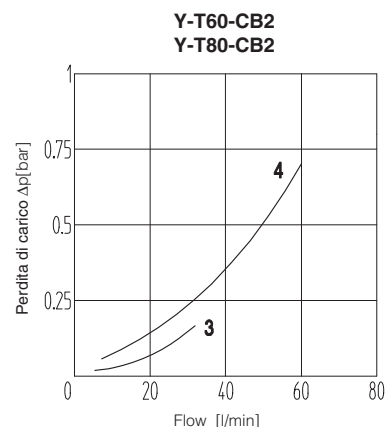
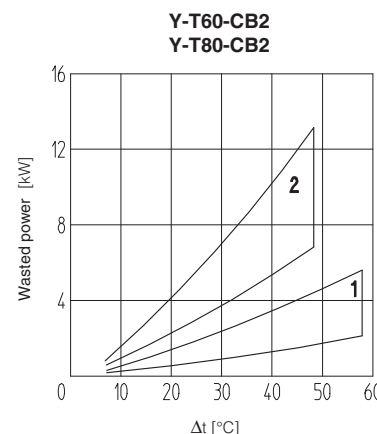


4.3 Performance diagrams at maximum and minimum oil flow (with 1 l/min water flow for every kW to waste)

1 = Y-T60-CB2
2 = Y-T80-CB2

4.4 Pressure drop diagrams referred to oil flow

3 = Y-T60-CB2
4 = Y-T80-CB2



5 HOW TO CHOOSE THE HEAT EXCHANGER

The total efficiency of modern hydraulic plants is about 70 - 80%, so 20 - 30% of installed power become heat and it must be wasted by the heat exchanger.

Generally when we choose a water-oil heat exchanger, it's a good rule to overdimension it by 15 - 20%, because the flow in the circuit is not constant and on the tubes of the water circuit, limestone leaves a deposit reduce the thermal efficiency.

Knowing the oil flow, the power to waste and the ΔT (the difference between oil inlet temperature and water inlet temperature), it's possible to determine the best heat exchanger on the diagrams. Proceed as follows:

- knowing the ΔT value, draw a vertical line from the ΔT axis
 - knowing the power to waste, draw an horizontal line from the wasted power axis
- Intersection point determines the appropriate heat exchanger.

6 MAINTENANCE

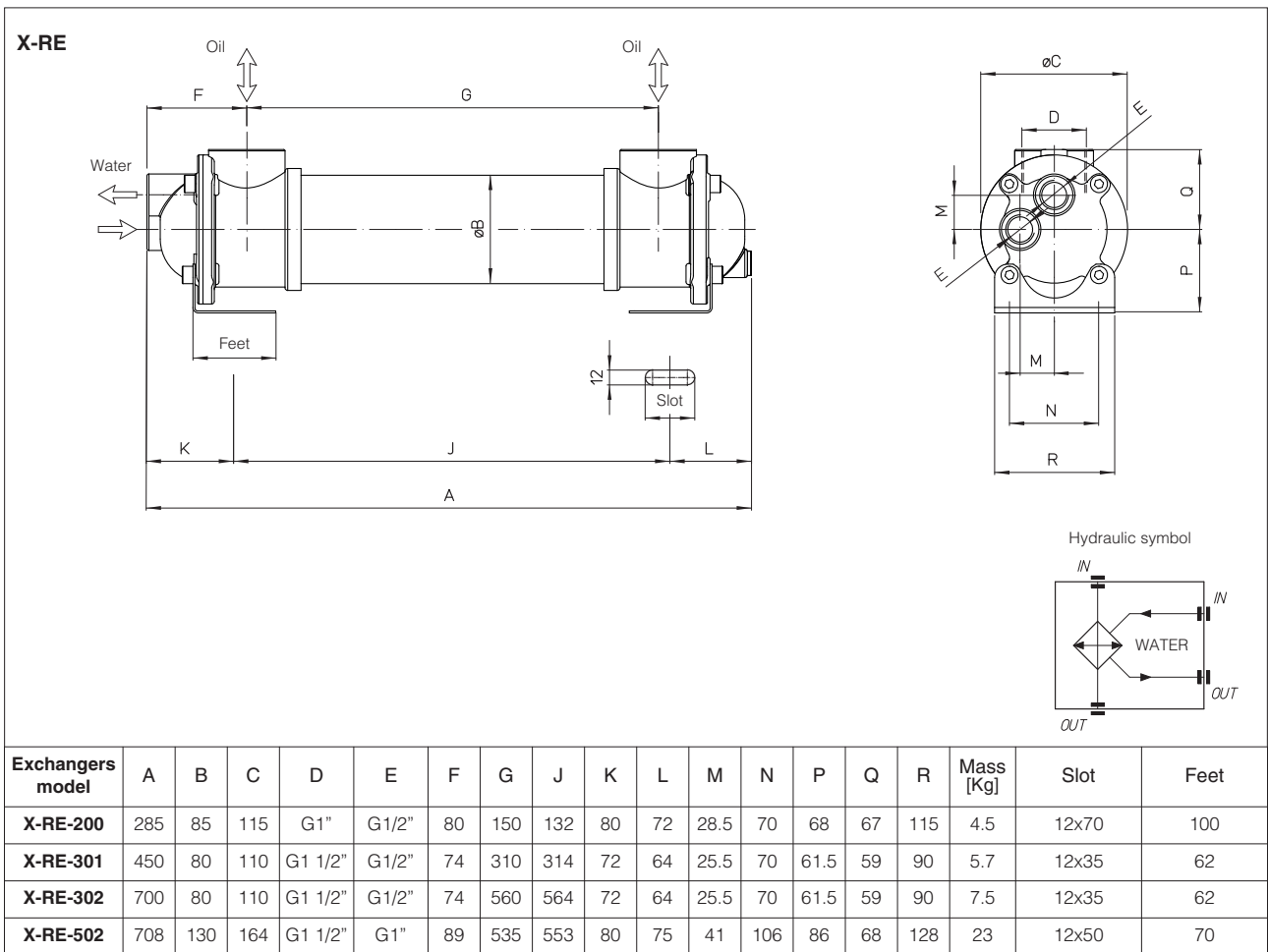
OIL SIDE CLEANING: on this side of the circuit, dirt can be removed with a detergent cleaner circulating against the stream: this operation it's takes from 10 to 30 minutes.

During this operation it's recommended to respect anti-pollution norms.

WATER SIDE CLEANING: to guarantee the maximum efficiency of the heat exchanger, it's recommended to inspect regularly the water circuit to eliminate limestone or other impurity inside the tubes.

To permit this operation it's necessary to remove two covers and start to clean the tubes with a descaler.

7 DIMENSIONS [mm]



8 DIMENSIONS [mm]

