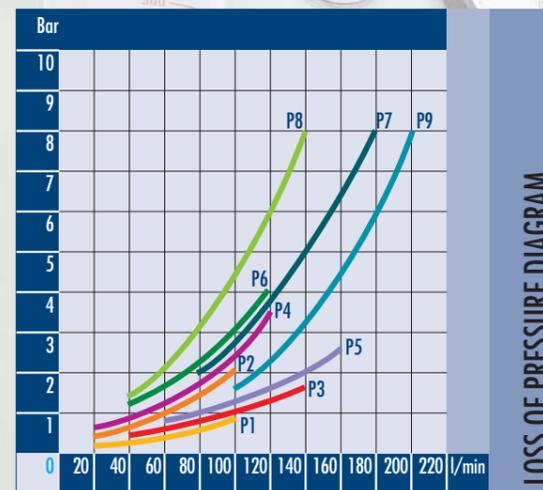
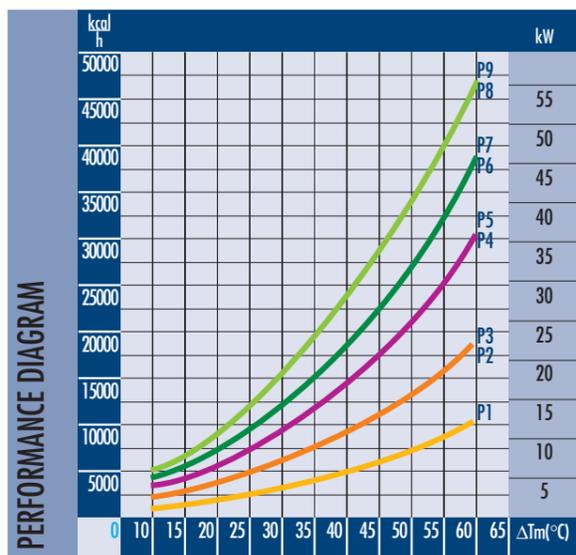


inspectable
water side

MS 84 P outside the tank



The following features make this the most widely used series:

- Checkable water circuit, ensuring compatibility with all types of industrial water system.
- 4-flow-water circuit allowing for increased thermal yield with no increase in water consumption or, alternatively, to obtain the same thermic yield with a lower water consumption.
- The particular configuration of the tube bundle provides higher thermic yields, even with comparatively limited exchange surfaces and dimensions.

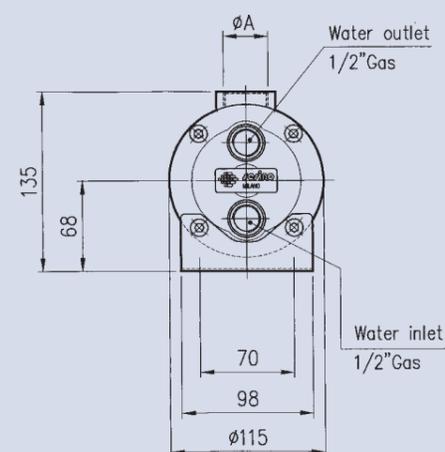
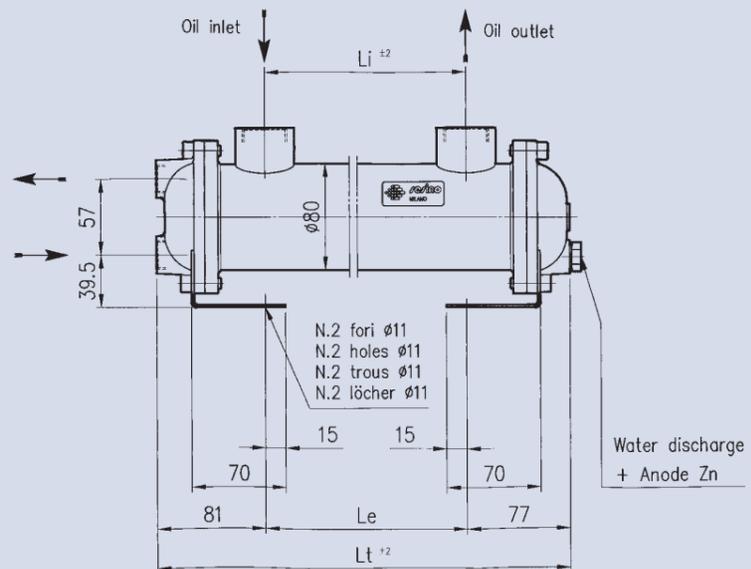
The exchange surfaces range from 0,2 to 3,6 m², covering all the thermic exchanges, which are generally used in the hydraulic field. To avoid any form of corrosion, it is necessary to ensure that the water rate is not greater than to the following values:

45 l/min for MS 84 110 l/min for MS 134

If such values do not provide a good thermic yield, please consult our Technical Department.

cSt	22	30	46	68	100	150	220
f	0,4	0,6	1	1,5	2,3	3,3	4,6

CORRECTION FACTOR



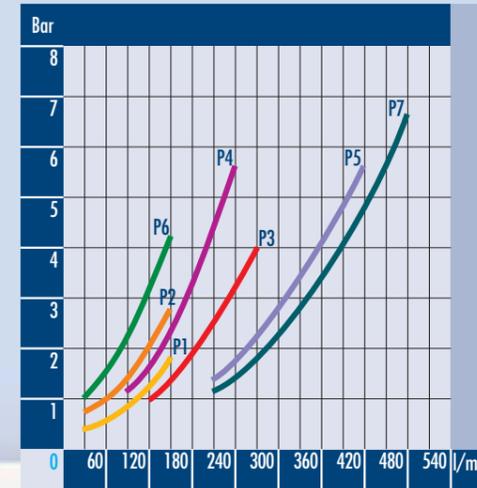
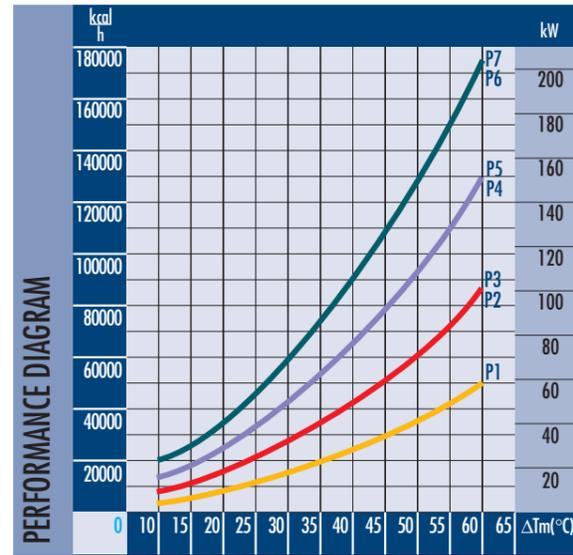
Head gaskets: OR 3325

Dimensions and technical characteristics are not binding



Type	Oil flow l/min	kW dissipated with oil = 50°C, 46 cSt, H ₂ O= 15°C	Weight kg	Dimensions			
				Ø A	Li	Le	Lt
MS 84 P1	30 - 80	4 - 4,5	4,5	1" gas	150	150	308
MS 84 P2	20 - 60	7 - 8,0	6,3	1" gas	310	310	468
MS 84 P3	50 - 100	7 - 8,0	6,5	1 1/2" gas	310	325	478
MS 84 P4	30 - 80	14 - 16,0	9,0	1" gas	560	560	718
MS 84 P5	80 - 130	14 - 16,0	9,0	1 1/2" gas	560	575	728
MS 84 P6	40 - 90	17 - 20,0	10,8	1 1/2" gas	715	730	883
MS 84 P7	100 - 160	17 - 20,0	10,8	1 1/2" gas	715	730	883
MS 84 P8	60 - 110	20 - 23,0	12,3	1 1/2" gas	870	885	1.038
MS 84 P9	140 - 190	20 - 23,0	12,3	1 1/2" gas	870	885	1.038

TABLE



The following features make this the most widely used series:

- Checkable water circuit, ensuring compatibility with all types of industrial water system.
- 4-flow-water circuit allowing for increased thermal yield with no increase in water consumption or, alternatively, to obtain the same thermic yield with a lower water consumption.
- The particular configuration of the tube nest provides higher thermic yields, even with comparatively limited exchange surfaces and dimensions.

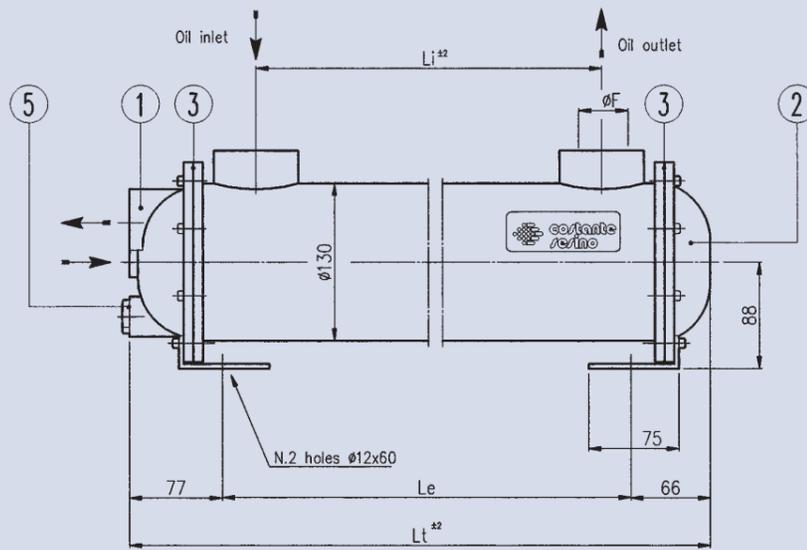
The exchange surfaces range from 0,2 to 3,6 m², covering all the thermic exchanges, which are generally used in the hydraulic field. To avoid any form of corrosion, it is necessary to ensure that the water rate is not greater than to the following values:

45 l/min for MS 84 110 l/min for MS 134

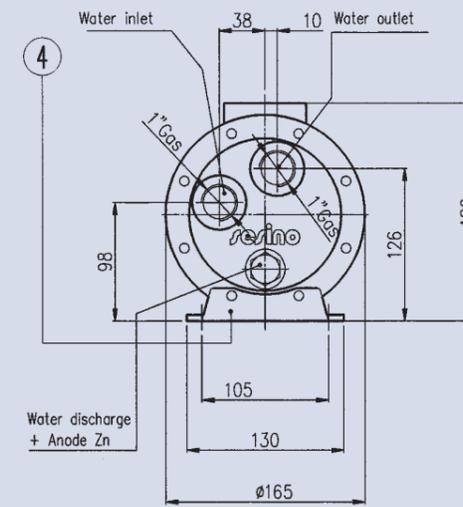
If such values do not provide a good thermic yield, please consult our Technical Department.

cSt	22	30	46	68	100	150	220
f	0,4	0,6	1	1,5	2,3	3,3	4,6

CORRECTION FACTOR



Head gaskets: OR 4512



Dimensions and technical characteristics are not binding

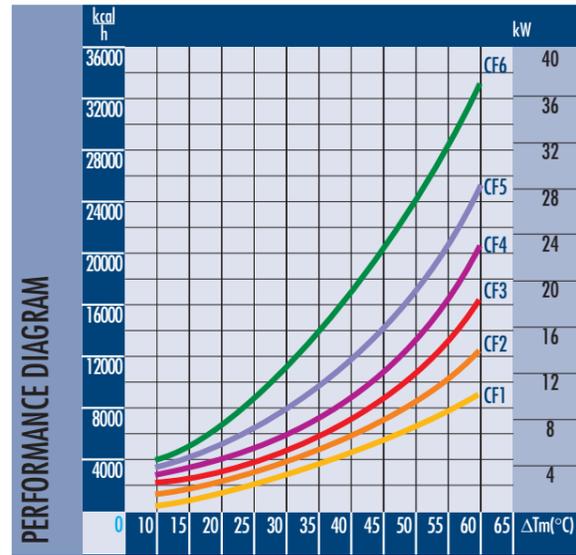


Type	Oil flow l/min	kW dissipated with oil = 50°C, 46 cSt, H2O=15°C	Weight kg	Dimensions			
				ϕF	Li	Le	Lt
MS 134 P1	30 - 100	19 - 23	16,4	1 1/2" gas	285	286 - 384	480
MS 134 P2	40 - 130	33 - 37	22,6	1 1/2" gas	535	536 - 634	730
MS 134 P3	120 - 250	33 - 37	23,0	2" gas	520	536 - 634	730
MS 134 P4	80 - 250	48 - 56	30,7	1 1/2" gas	845	846 - 944	1.040
MS 134 P5	200 - 400	48 - 56	30,9	2" gas	830	846 - 944	1.040
MS 134 P6	30 - 120	70 - 75	40,0	1 1/2" gas	1.145	1.146 - 1.244	1.340
MS 134 P7	200 - 500	70 - 75	39,5	2" gas	1.130	1.146 - 1.244	1.340

TABLE

inspectable
water side

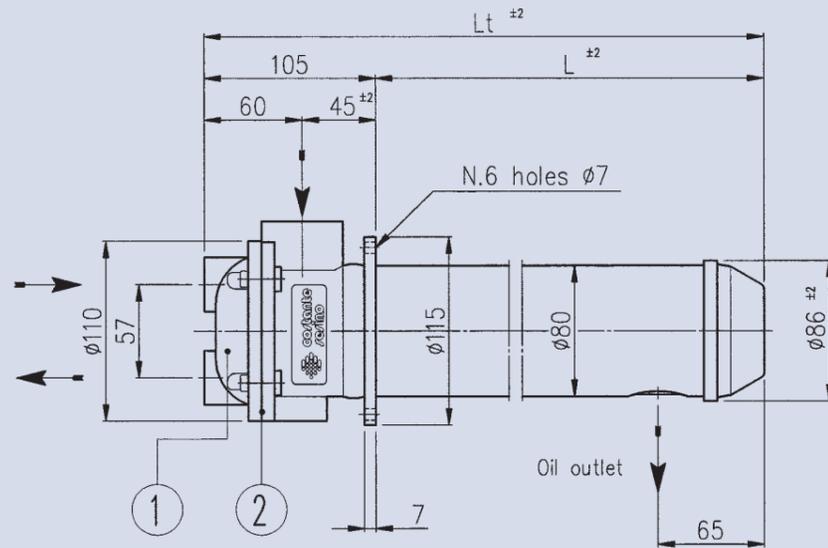
MS 84 CF inside the tank



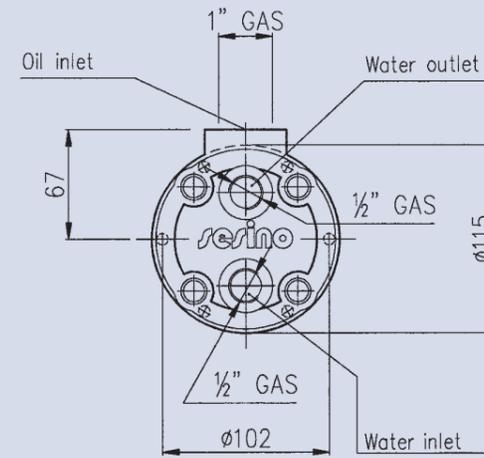
These have the same features as the exchangers in the series MS 84 B and MS 134 P. They are fitted inside the oil tank by means of a flange, welded on the exchanger, which must interface with a counter-flange, welded on the tank wall. These exchangers are used when it is necessary to reduce the dimensions of the gearcase. The pipe fitting for oil inlet is always outside the tank. The exchangers can be checked only from one side, outside the tank, in correspondence with the head and the pipe fittings for oil inlet and outlet. As internal cleaning is not always easy, we recommend the use of the outside the tank version, if the cooling water is particularly dirty. The exchange surfaces range from 0,2 a 3,7 m². To avoid any form of corrosion, it is necessary that the water rate be not greater than the following values:
 45 l/min for MS 84 110 l/min for MS 134
 If such values do not provides a good thermic yield, please consult our Technical Department.

cSt	22	30	46	68	100	150	220
f	0,4	0,6	1	1,5	2,3	3,3	4,6

CORRECTION FACTOR



Head gaskets: OR 3325



Dimensions and technical characteristics are not binding

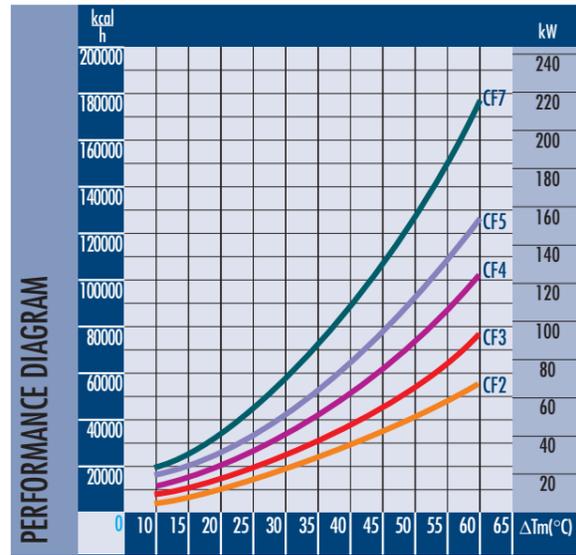


Type	Oil flow l/min	kW dissipated with oil = 50°C, 46 cSt, H2O= 15°C	Weight kg	Dimensions	
				L	Lt
MS 84 CF1	25 - 70	3 - 4	3,5	145	250
MS 84 CF2	25 - 70	5 - 6	4,3	215	320
MS 84 CF3	60 - 120	7 - 8	5,2	290	395
MS 84 CF4	40 - 100	8 - 9	6,1	365	470
MS 84 CF5	80 - 200	10 - 12	7,3	465	57
MS 84 CF6	60 - 150	14 - 16	8,6	620	725

TABLE

inspectable
water side

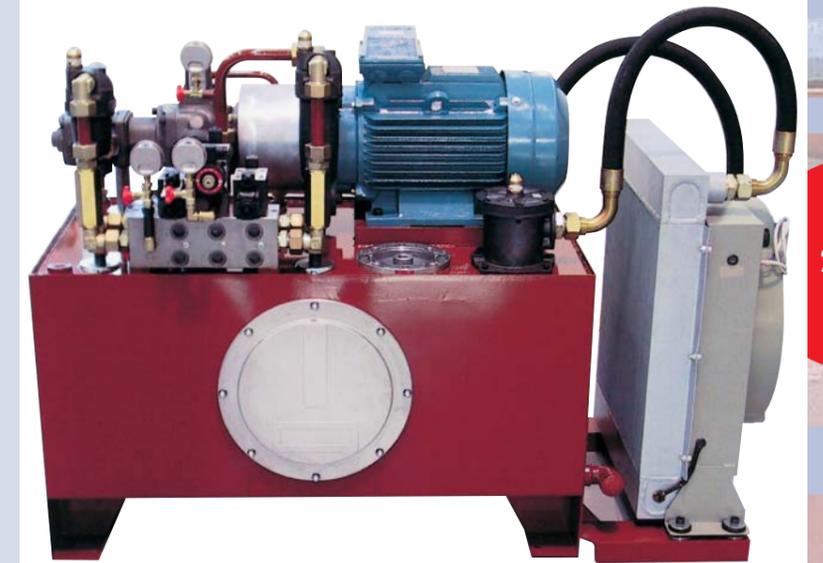
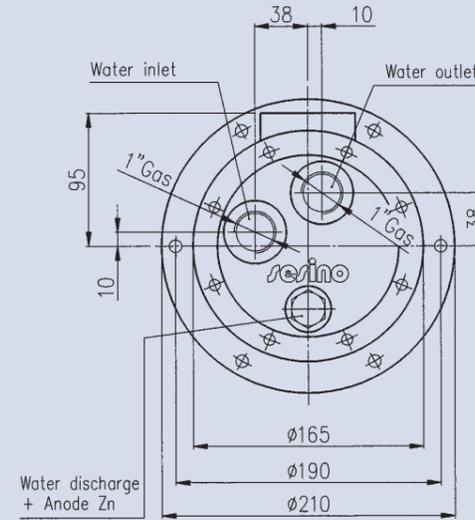
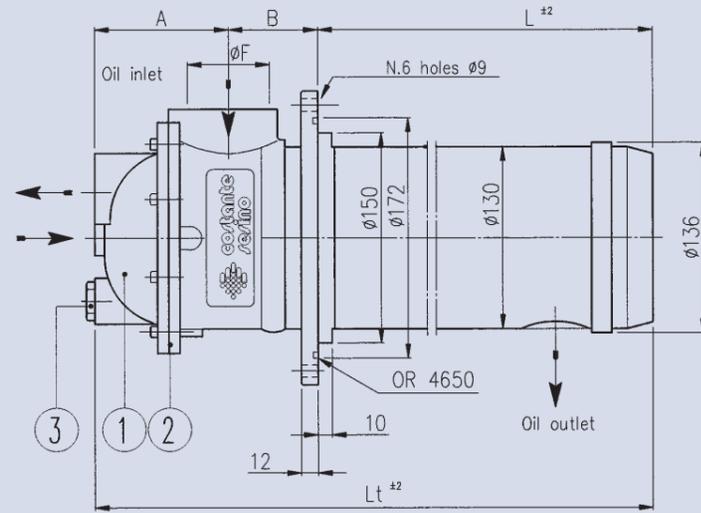
MS 134 CF inside the tank



These have the same features as the exchangers in the series MS 84 B and MS 134 P. They are fitted inside the oil tank by means of a flange, welded on the exchanger, which must interface with a counter-flange, welded on the tank wall. These exchangers are used when it is necessary to reduce the dimensions of the gearcase. The pipe fitting for oil inlet is always outside the tank. The exchangers can be checked only from one side, outside the tank, in correspondence with the head and the pipe fittings for oil inlet and outlet. As internal cleaning is not always easy, we recommend the use of the outside the tank version, if the cooling water is particularly dirty. The exchange surfaces range from 0,2 a 3,7 m². To avoid any form of corrosion, it is necessary that the water rate be not greater than the following values:
 45 l/min for MS 84 110 l/min for MS 134
 If such values do not provides a good thermic yield, please consult our Technical Department.

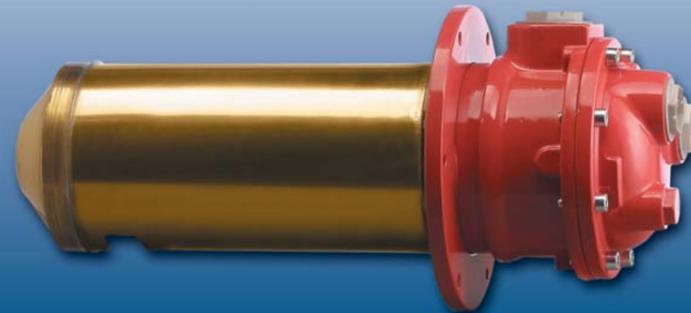
cSt	22	30	46	68	100	150	220
f	0,4	0,6	1	1,5	2,3	3,3	4,6

CORRECTION FACTOR



Head gaskets: OR 4512

Dimensions and technical characteristics are not binding

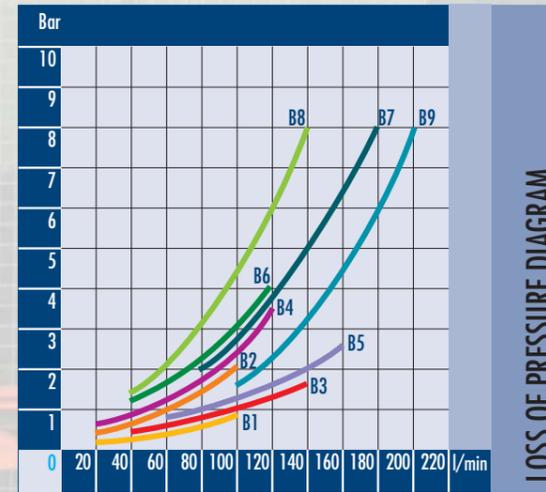
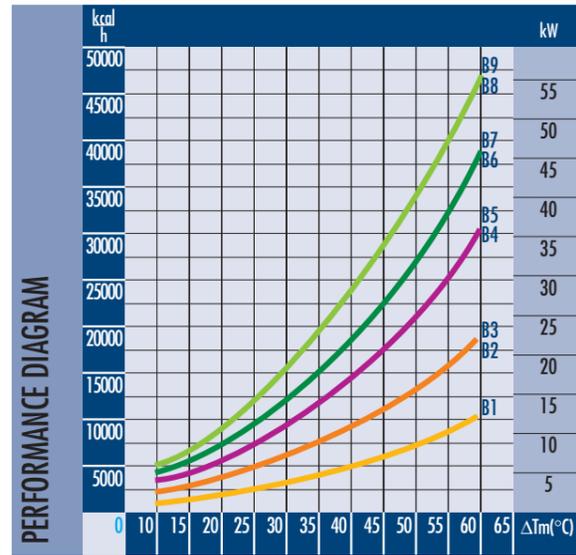


Type	Oil flow		kW dissipated with oil = 50°C, 46 cSt, H2O= 15°C	Weight kg	Dimensions				
	l/min				F	A	B	L	Lt
MS 134 CF2	50 - 150		17 - 21	16,7	1 1/2" gas	80	68	314	462
MS 134 CF3	100 - 250		22 - 28	20,8	2" gas	88	60	465	613
MS 134 CF4	150 - 350		30 - 37	24,8	2" gas	88	60	635	783
MS 134 CF5	150 - 300		40 - 49	29,3	2" gas	88	60	817	965
MS 134 CF7	200 - 400		51 - 62	41,6	2" gas	88	60	1.135	1.283

TABLE

inspectable
water side

MS 84/2 B marine use



This version is recommended for a use with sea water. These exchangers are built with the following materials:

- Tube bundle: Coppernickel 90/10
- Tube plates: brass
- Shell: steel
- Heads: bronze

As sea water is full of impurities, this series of exchangers can be checked from the water side; after the disassembly of the two heads it is possible to check inside the tubes and to clean them.

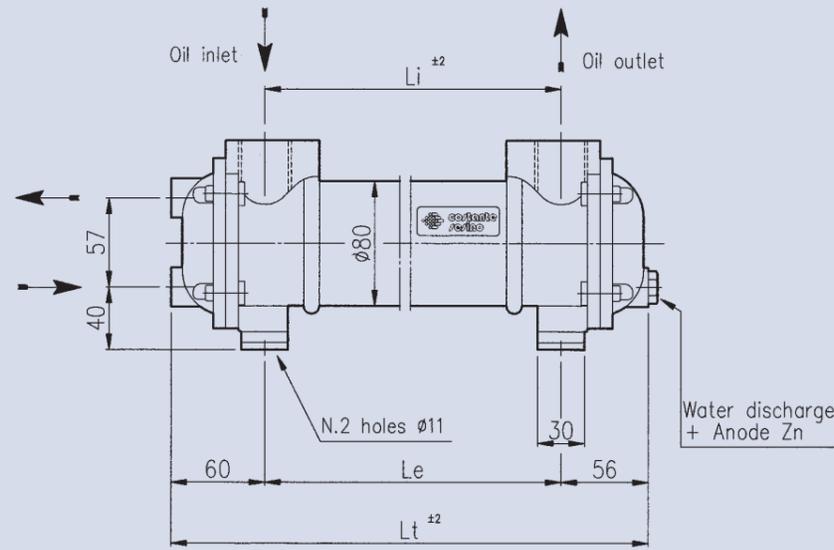
To avoid any form of corrosion, it is necessary that the cooling water rate be between the following values:

MS 84/2 30-80 l/min MS 134 35-100 l/min

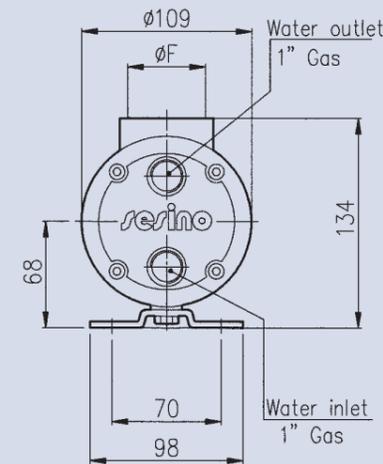
If such values do not provide a good thermic yield, please consult our Technical Department. The exchangers with tube nest can be used with other fluids where compatibility with copper and its alloys, is necessary. For every application, with the exception of oil cooling, it is recommended to consult our Technical Department.

cSt	22	30	46	68	100	150	220
f	0,4	0,6	1	1,5	2,3	3,3	4,6

CORRECTION FACTOR



Head gaskets: OR Ø 78x2,5



Dimensions and technical characteristics are not binding

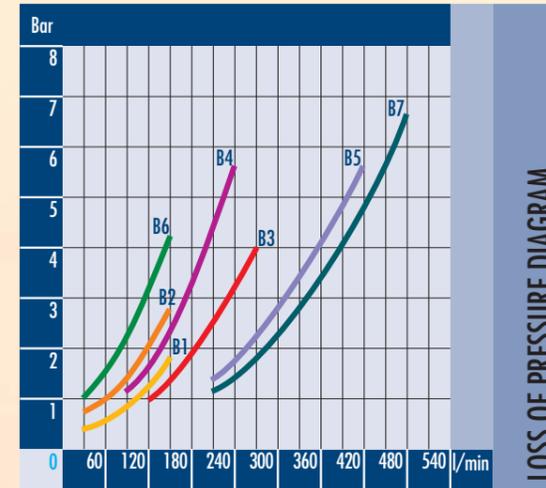
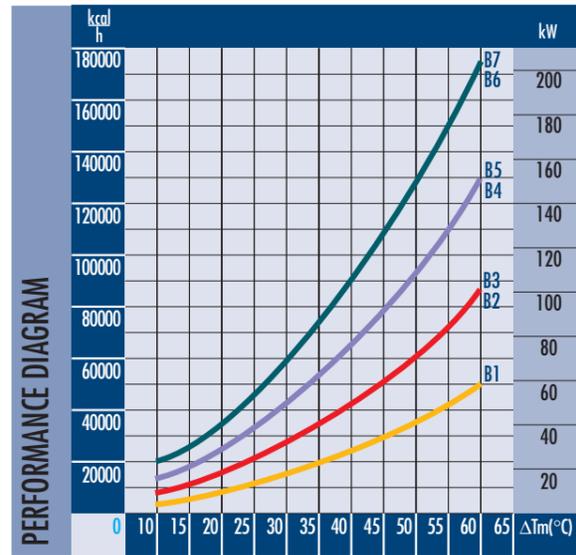


Type	Oil flow l/min	kW dissipated with oil = 50°C, 46 cSt, H ₂ O= 15°C	Weight		Dimensions		
			kg	ø F	l	Le	Lt
MS 84/2 B1	30 - 80	4 - 4,5	4,5	1" gas	150	150	270
MS 84/2 B2	20 - 60	7 - 8,0	6,3	1" gas	310	310	430
MS 84/2 B3	50 - 100	7 - 8,0	6,5	1 1/2 gas	310	325	445
MS 84/2 B4	30 - 80	14 - 16,0	9,0	1" gas	560	560	680
MS 84/2 B5	80 - 130	14 - 16,0	9,0	1 1/2 gas	560	575	695
MS 84/2 B6	40 - 90	17 - 20,0	10,8	1 1/2 gas	715	730	850
MS 84/2 B7	100 - 160	17 - 20,0	10,8	1 1/2 gas	715	730	850
MS 84/2 B8	60 - 110	20 - 23,0	12,3	1 1/2 gas	870	885	1.005
MS 84/2 B9	140 - 190	20 - 23,0	12,3	1 1/2 gas	870	885	1.005

TABLE

inspectable
water side

MS 134 B marine use



This version is recommended for a use with sea water. These exchangers are built with the following materials:

- Tube bundle: Coppernickel 90/10
- Tube plates: brass
- Shell: steel
- Heads: bronze

As sea water is full of impurities, this series of exchangers can be checked from the water side; after the disassembly of the two heads it is possible to check inside the tubes and to clean them.

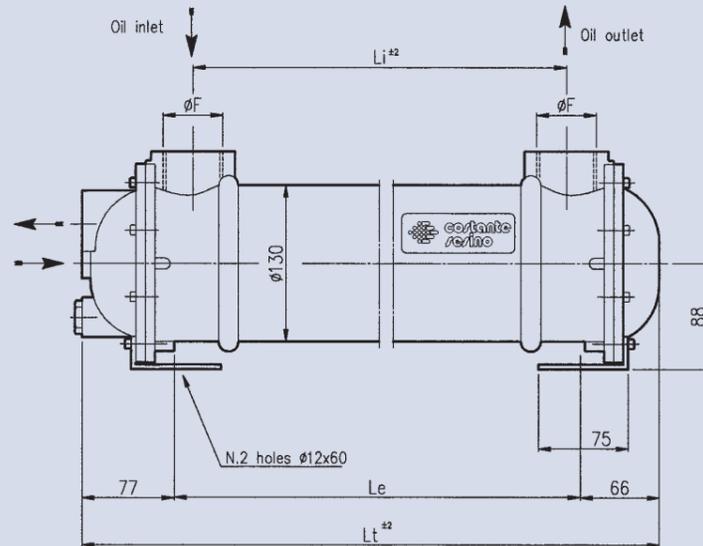
To avoid any form of corrosion, it is necessary that the cooling water rate be between the following values:

MS 84/2 30-80 l/min MS 134 35-100 l/min

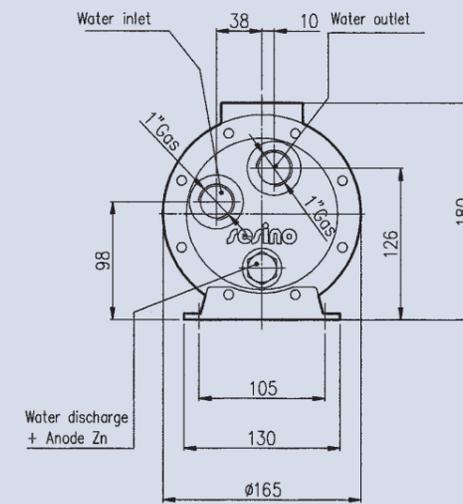
If such values do not provide a good thermic yield, please consult our Technical Department. The exchangers with tube nest can be used with other fluids where compatibility with copper and its alloys, is necessary. For every application, with the exception of oil cooling, it is recommended to consult our Technical Department.

cSt	22	30	46	68	100	150	220
f	0,4	0,6	1	1,5	2,3	3,3	4,6

CORRECTION FACTOR



Head gaskets: OR 4512



Dimensions and technical characteristics are not binding

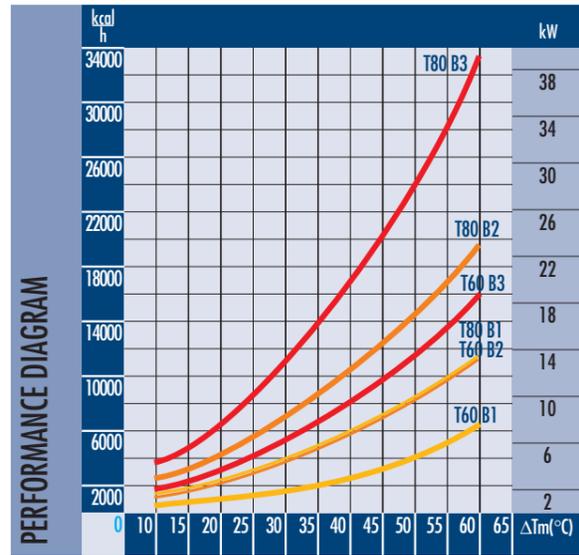


Type	Oil flow l/min	kW dissipated with oil = 50°C, 46 cSt, H2O= 15°C	Weight kg	Dimensions			
				Ø F	L	Le Lt	
MS 134 B1	30 - 100	19 - 23	16,4	1" 1/2 gas	285	246 - 344	440
MS 134 B2	40 - 130	33 - 37	22,6	1" 1/2 gas	535	496 - 594	690
MS 134 B3	120 - 250	33 - 37	23,0	2" gas	520	496 - 594	590
MS 134 B4	80 - 250	48 - 56	30,7	1" 1/2 gas	845	806 - 904	1.000
MS 134 B5	200 - 400	48 - 56	30,9	2" gas	830	806 - 904	1.000
MS 134 B6	30 - 120	70 - 75	40,0	1" 1/2 gas	1.145	1.106 - 1.204	1.300
MS 134 B7	200 - 500	70 - 75	39,5	2" gas	1.130	1.106 - 1.204	1.300

TABLE

not inspectable
water inside

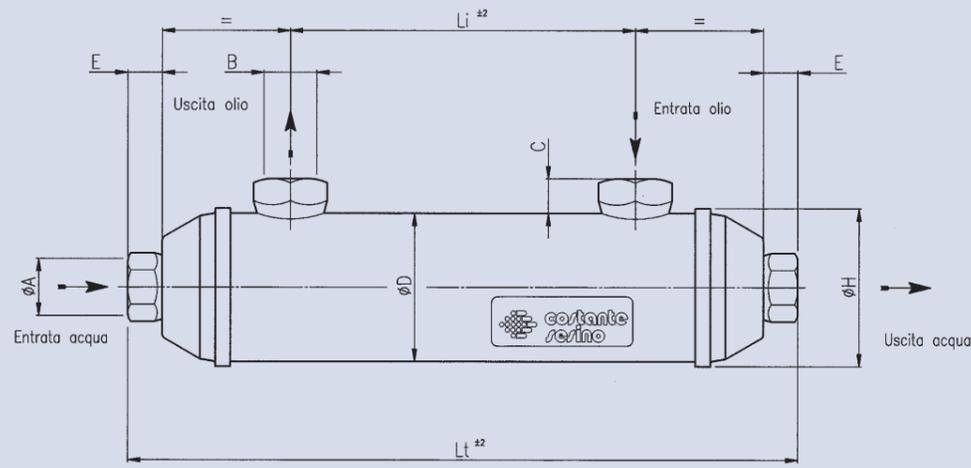
T60-80 B outside the tank



LOSS OF PRESSURE DIAGRAM

cSt	22	30	46	68	100	150	220
f	0,4	0,6	1	1,5	2,3	3,3	4,6

CORRECTION FACTOR



Dimensions and technical characteristics are not binding

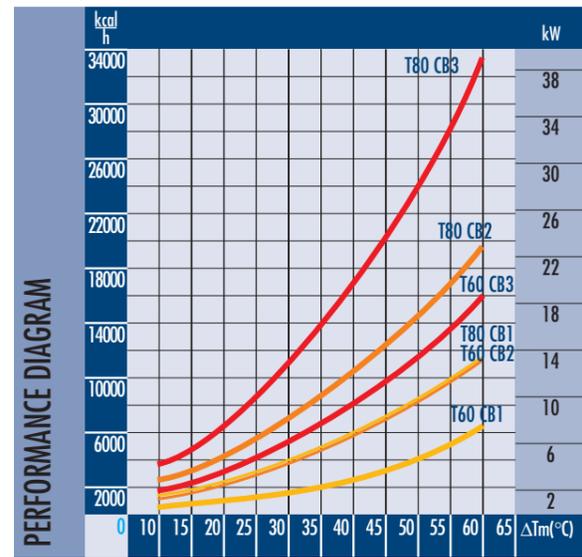


Type	Oil flow l/min	kW dissipated with oil = 50°C, 46 cSt, H2O= 15°C	Weight kg	Dimensions							
				Lt	∅ D	∅ A	∅ B	∅ H	Li	C	E
T60 B1	5 - 30	2,0 - 2,5	1,7	278	60	1/2" gas	1/2" gas	65	140	17	17
T60 B2	5 - 30	3,0 - 4,0	2,5	398	60	1/2" gas	1/2" gas	65	260	17	17
T60 B3	5 - 30	4,0 - 5,0	3,6	578	60	1/2" gas	1/2" gas	65	440	17	17
T80 B1	20 - 50	4,0 - 4,5	3,0	300	80	1/2" gas	3/4" gas	85	120	19	17
T80 B2	20 - 60	6,5 - 7,5	4,8	460	80	1/2" gas	3/4" gas	85	280	19	17
T80 B3	30 - 80	9,0 - 10,0	7,7	710	80	1/2" gas	3/4" gas	85	530	19	17

TABLE

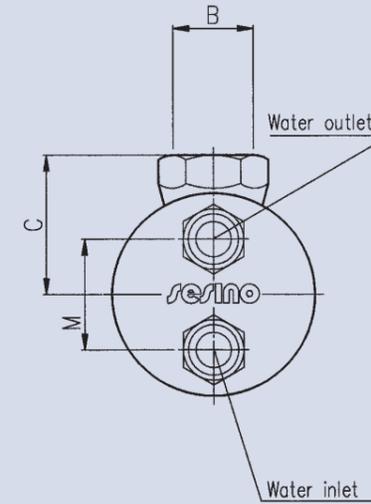
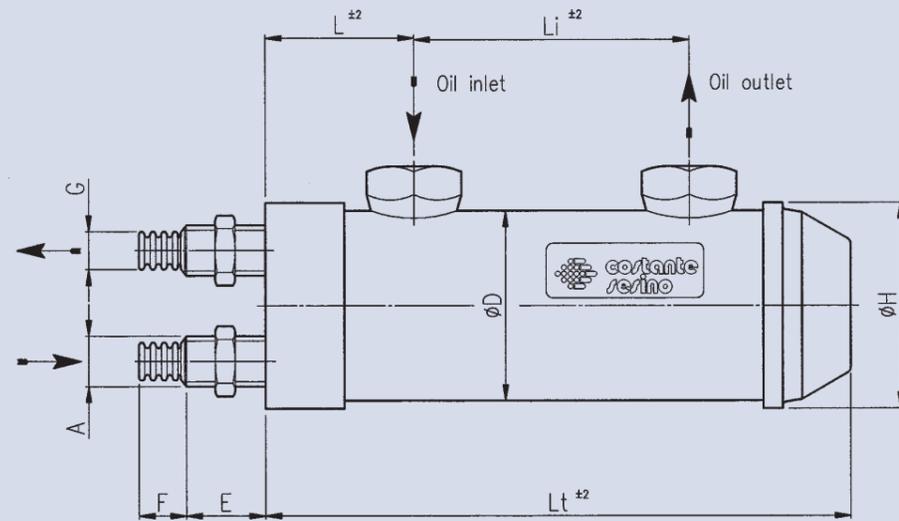
not inspectable
water inside

T60-80 CB outside the tank



cSt	22	30	46	68	100	150	220
f	0,4	0,6	1	1,5	2,3	3,3	4,6

CORRECTION FACTOR



37

Dimensions and technical characteristics are not binding

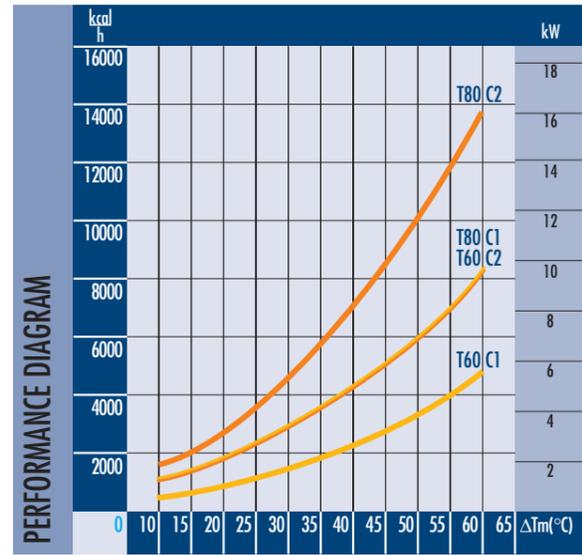


Type	Oil flow l/min	kW dissipated with oil = 50°C, 40 cSt H2O= 15°C	Weight kg	Dimensions											
				Lt	∅D	∅A	∅B	∅H	Li	∅G	M	C	L	F	E
T60 CB1	5 - 30	2,0 - 2,5	1,9	235	60	3/8" gas	1/2" gas	65	140	12	35	47	47	17	20
T60 CB2	5 - 30	3,0 - 4,0	2,6	355	60	3/8" gas	1/2" gas	65	260	12	35	47	47	17	20
T60 CB3	5 - 30	4,0 - 5,0	3,8	535	60	3/8" gas	1 1/2" gas	65	440	12	35	47	47	17	20
T80 CB1	20 - 50	4,0 - 4,5	3,2	255	80	1/2" gas	3/4" gas	85	120	17	45	65	60	20	20
T80 CB2	20 - 60	6,5 - 7,5	5,1	415	80	1/2" gas	3/4" gas	85	280	17	45	65	60	20	20
T80 CB3	30 - 80	9,0 - 10,0	8,0	665	80	1/2" gas	3/4" gas	85	530	17	45	65	60	20	20

TABLE

not inspectable
water inside

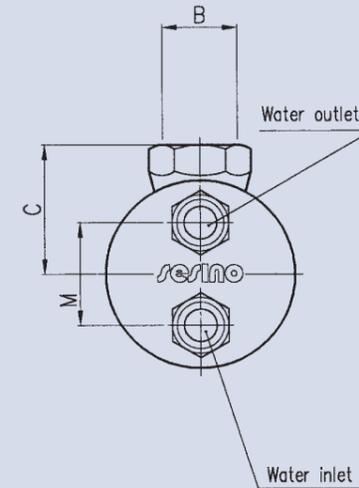
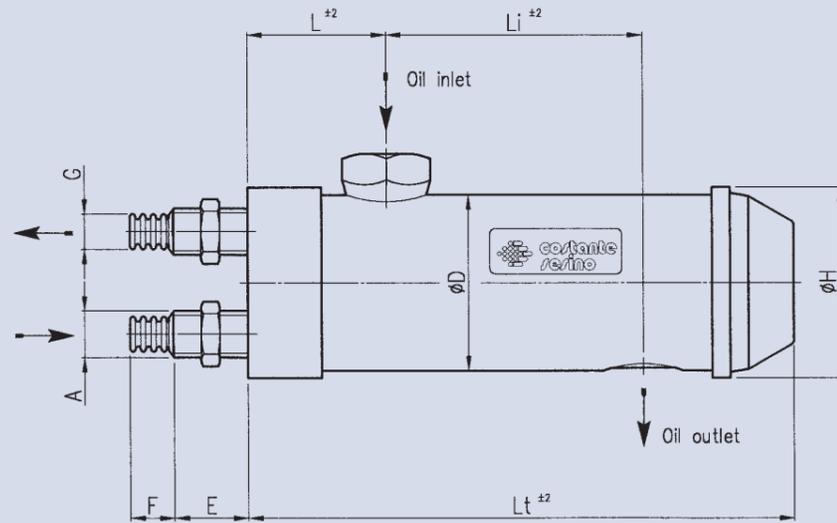
T60-80 C inside the tank



LOSS OF PRESSURE DIAGRAM

cSt	22	30	46	68	100	150	220
f	0,4	0,6	1	1,5	2,3	3,3	4,6

CORRECTION FACTOR



41



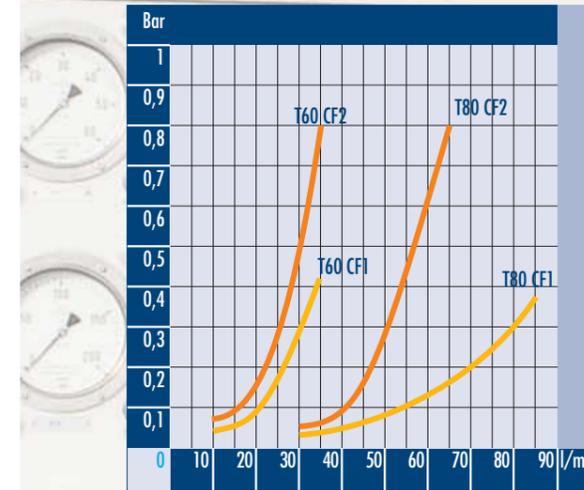
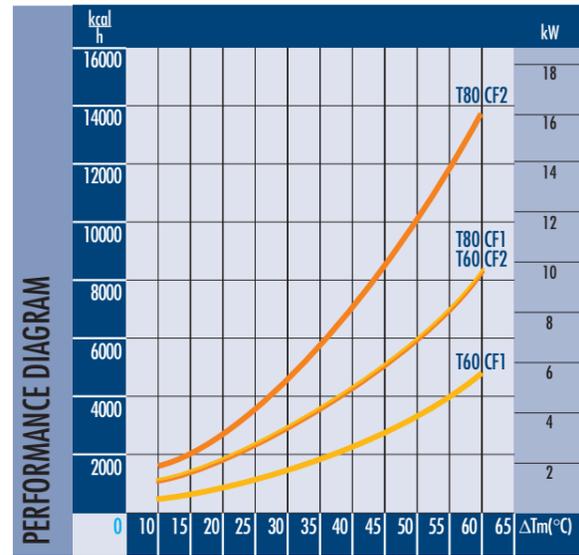
Dimensions and technical characteristics are not binding

Type	Oil flow l/min	kW dissipated with oil = 50°C, 40 cSt H2O= 15°C	Weight kg	Dimensions											
				Lt	∅D	∅A	∅B	∅H	Li	∅G	M	C	L	F	E
T60 C1	5 - 30	1,5 - 2	1,5	185	60	3/8" gas	1/2" gas	65	87	12	35	47	47	17	20
T60 C2	5 - 30	2,0 - 3	2,1	285	60	3/8" gas	1/2" gas	65	187	12	35	47	47	17	20
T80 C1	30 - 80	3,0 - 4	2,6	205	80	1/2" gas	3/4" gas	85	80	17	45	65	60	20	20
T80 C2	20 - 50	5,0 - 6	3,7	305	80	1/2" gas	3/4" gas	85	180	17	45	65	60	20	20

TABLE

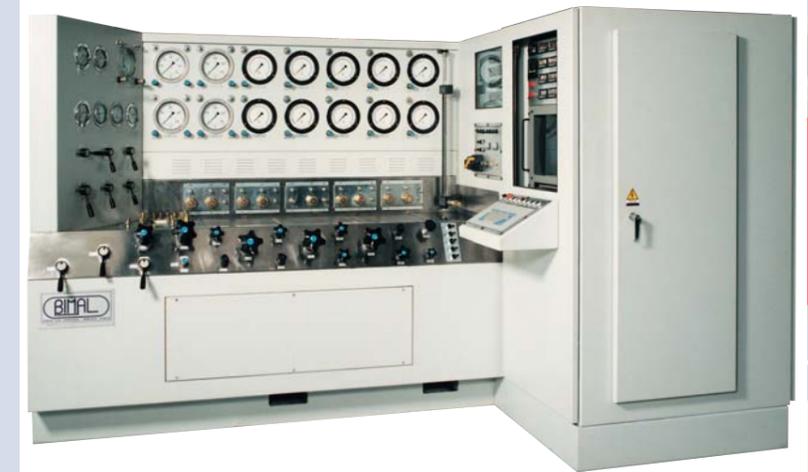
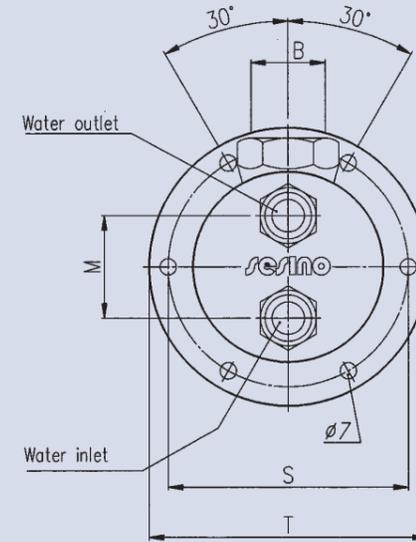
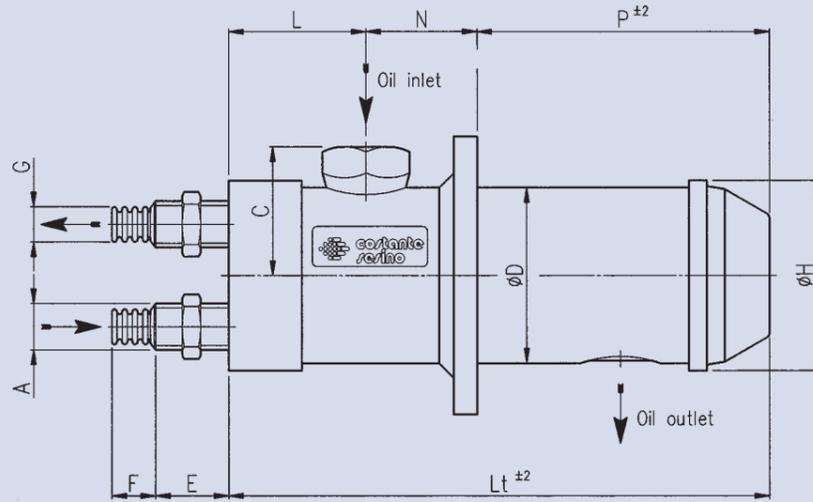
not inspectable
water inside

T60-80 CF inside the tank



cSt	22	30	46	68	100	150	220
f	0,4	0,6	1	1,5	2,3	3,3	4,6

CORRECTION FACTOR



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Dimensions and technical characteristics are not binding



Type	Oil flow		Weight	Dimensions														
	l/min	50°C, 40 cSt H2O= 15°C		kg	Lt	∅D	∅A	∅B	∅H	P	∅G	∅S	∅T	N	M	C	L	F
T60 CF1	5 - 30	1,5 - 2	1,5	185	60	3/8" gas	1/2" gas	65	100	12	82	95	38	35	47	47	17	20
T60 CF2	5 - 30	2,0 - 3	2,1	285	60	3/8" gas	1/2" gas	65	100	12	82	95	38	35	47	47	17	20
T80 CF1	30 - 80	3,0 - 4	2,6	205	80	1/2" gas	3/4" gas	85	105	17	102	115	40	45	65	60	20	20
T80 CF2	20 - 50	5,0 - 6	3,7	305	80	1/2" gas	3/4" gas	85	205	17	102	115	40	45	65	60	20	20

TABLE