OMT
HYDRAULIC COMPONENTS

AFR (15 bar)

FILTRI IN ASPIRAZIONE E SUL RITORNO

SUCTION AND RETURN FILTER SERIES

AFR CARATTERISTICHE TECNICHE *TECHNICAL DATA*

LA SERIE DI FILTRI AFR È CONFORME ALLE SEGUENTI NORME ISO:

-ISO 2941 - Oleoidraulica - Elementi filtranti - Verifica della resistenza allo schiacciamento o allo scoppio

-ISO 2942 - Oleoidraulica - Elementi filtranti - Verifica dell'integrità di fabbricazione e determinazione del punto di prima bolla

-ISO 2943 - Oleoidraulica - Elementi filtranti - Verifica della compatibilità dei materiali con i fluidi

-ISO 3723 - Oleoidraulica - Elementi filtranti - Verifica della resistenza alla deformazione assiale

-ISO 3724 - Oleoidraulica - Elementi filtranti - Verifica della resistenza a fatica per variazioni di portata

-ISO 3968 - Oleoidraulica - Filtri - Determinazione della perdita di carico in funzione della portata

-ISO 16889 - Oleoidraulica - Filtri - Metodo Multi-pass valutazione delle caratteristiche di filtrazione di un elemento filtrante

AFR FILTER SERIES IS SUITABLE TO THE FOLLOWING ISO STANDARDS:

-ISO 2941 - Hydraulic fluid power - Filter elements Verification of collapse / burst resistance

-ISO 2942 - Hydraulic fluid power - Filter elements Verification of fabrication integrity and determination of the first bubble point

-ISO 2943 - Hydraulic fluid power - Filter elements Verification of material compatibility with fluids

-ISO 3723 - Hydraulic fluid power - Filter elements Method for end load test

-ISO 3724 - Hydraulic fluid power - Filter elements Verification of flow fatigue characteristics

-ISO 3968 - Hydraulic fluid power - Filters - Evaluation of pressure drop versus flow characteristics

-ISO 16889 - Hydraulic fluid power - Filters - Multi-pass method for evaluating filtration performance of a filter element

MATERIALI (elementi filtranti)

Fondelli	Lamiera zincata
Tubo di sostegno	Lamiera zincata
Reti di supporto	Acciaio galvanizzato con rivestimento epossidico

MATERIALS (filter elements)

End caps	Galvanized sheet iron
Support tube	Galvanized sheet iron
Support mesh	Galvanized steel with epox coating

SETTI FILTRANTI

FILTRATION MATERIALS

Elementi filtranti Filter elements	Descrizione Description	Materiale Material	Grado di filtrazione (µm) Filtration (µm)	Rapporto ß / ß Ratio	
				ISO 4572 ßx≥200	ISO 16889 ßx(c)≥200
C10	Carta trattata / Treated paper	Fibre di cellulosa / Cellulose fibre	10	-	-
C25	Carta trattata / Treated paper	Fibre di cellulosa / Cellulose fibre	25	-	-
F03	Fibra inorganica / Inorganic fibre	Fibra di vetro / Glass fibre	3	3	5
F06	Fibra inorganica / Inorganic fibre	Fibra di vetro / Glass fibre	6	6	6
F10	Fibra inorganica / Inorganic fibre	Fibra di vetro / Glass fibre	10	10	9
F25	Fibra inorganica / Inorganic fibre	Fibra di vetro / Glass fibre	25	25	20
R60	Rete a maglia quadra / Square mesh	Aisi 304	60	-	-
R90	Rete a maglia quadra / Square mesh	Aisi 304	90	-	-
R250	Rete a maglia quadra / Square mesh	Aisi 304	250	-	-

SUPERFICI UTILI (cm^2) ELEMENTI FILTRANTI

FILTRATION AREA (cm^2) FILTER ELEMENTS

Elementi filtranti / Filter elements	CR 091	CR 111	CR 112	CR 171
C10 - C25	500	890	1380	4650
F03 - F06 - F10 - F25	380	820	1260	3780
R60 - R90 - R250	280	450	700	1860

MATERIALI (corpo)

Corpo	Alluminio
Coperchio	Alluminio
Guarnizioni	N: Nitrilica (Buna-N) V: Fluoroelastomero (viton)
Valvola di by-pass	Corpo (nylon)
Indicatore	Ottone

MATERIALS (housing)

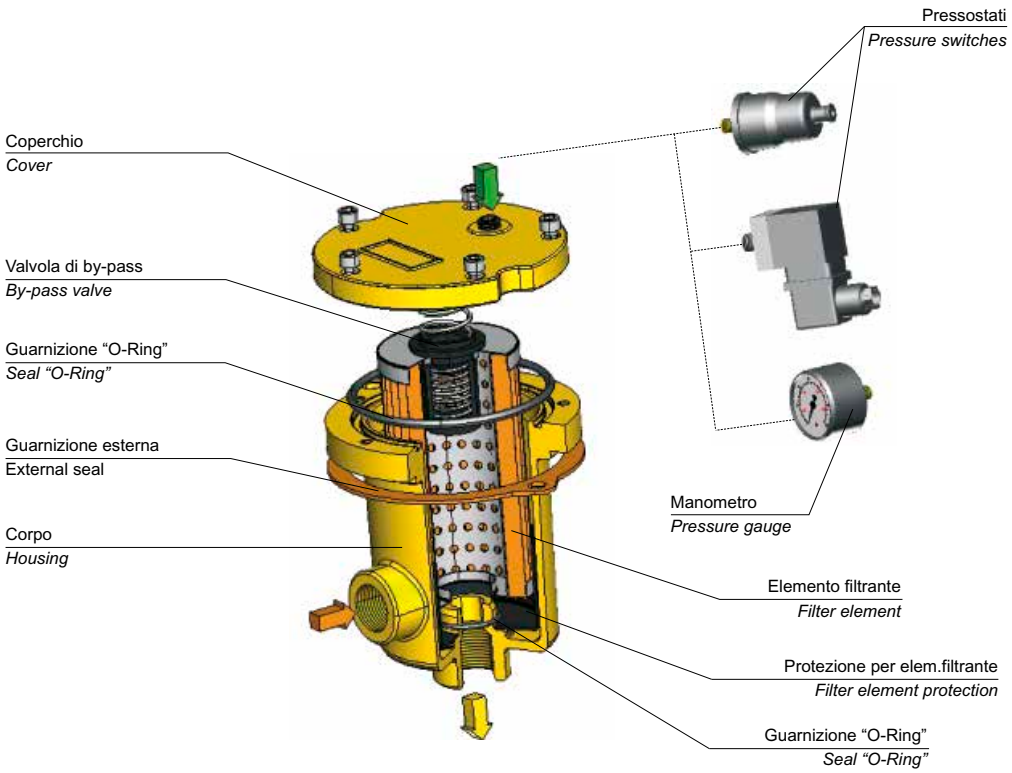
Housing	Aluminium
Cover	Aluminium
Seals	N: Nitrile (Buna-N) V: Fluoroelastomer (viton)
By-pass valve	Housing (nylon)
Indicator	Brass

CONDIZIONI DI ESERCIZIO

Pressioni corpo filtro	Pressione massima d'esercizio: 1.500.000 Pa (15 bar) Pressione di collaudo: 2.400.000 Pa (24 bar) Pressione di scoppio: 45.000.000 Pa (45 bar)
Temperatura d'esercizio	Da -25 a +95 °C
Pressioni di collasso degli elementi filtranti	1.000.000 Pa (10 bar)
Pressione taratura valvola di by-pass	Ritorno: 170.000 Pa ±10% (1.7 bar) (inizio apertura) Aspirazione: 25.000 Pa ±10% (0.25 bar) (inizio apertura)
Compatibilità con i liquidi - ISO 2943	Compatibili con oli minerali tipo (HH, HM, HR, HV, HG secondo ISO 6743/4)

WORKING CONDITIONS

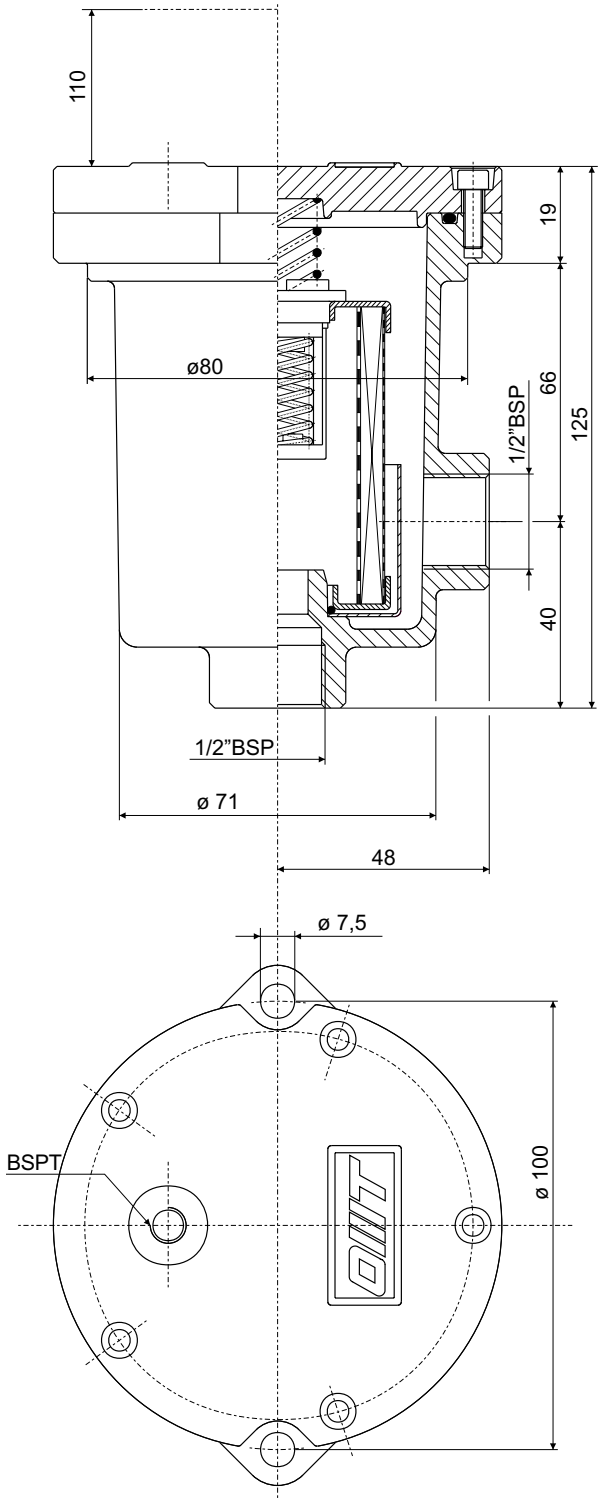
Filter pressure	Max working pressure: 1.500.000 Pa (15 bar) Test pressure: 2.400.000 Pa (24 bar) Bursting pressure: 45.000.000 Pa (45 bar)
Working temperature	-25 to +95 °C
Collapse pressure (filter element)	1.000.000 Pa (10 bar)
By-pass valve setting pressure	Return: 170.000 Pa ±10% (1.7 bar) (starting of opening) Suction: 25.000 Pa ±10% (0.25 bar) (starting of opening)
Compatibily with hydraulic fluids ISO 2943	Compatible with mineral oils type (HH, HM, HR, HV, HG according to ISO 6743/4)



AFR 30 CARATTERISTICHE DIMENSIONALI
SIZE FEATURES

Le portate sono state calcolate per avere una perdita di carico Δp ≤40.000 Pa (0.4 bar) per i filtri sul ritorno e Δp ≤0.000 Pa (0.1 bar) per i filtri in aspirazione.
I valori sono stati ottenuti con olio minerale avente viscosità cinematica 30 cSt e densità 860 kg/m^3.
(vedi note a pag.28)

Flows have been calculated just in order to obtain a pressure drop Δp ≤40.000 Pa (0.4 bar) for return lines and Δp ≤10.000 Pa (0.1 bar) for suction lines. The values have been obtained using mineral oil kinematic viscosity 30 cSt and 860 kg/m^3 density.
(See remarks on pag.28)

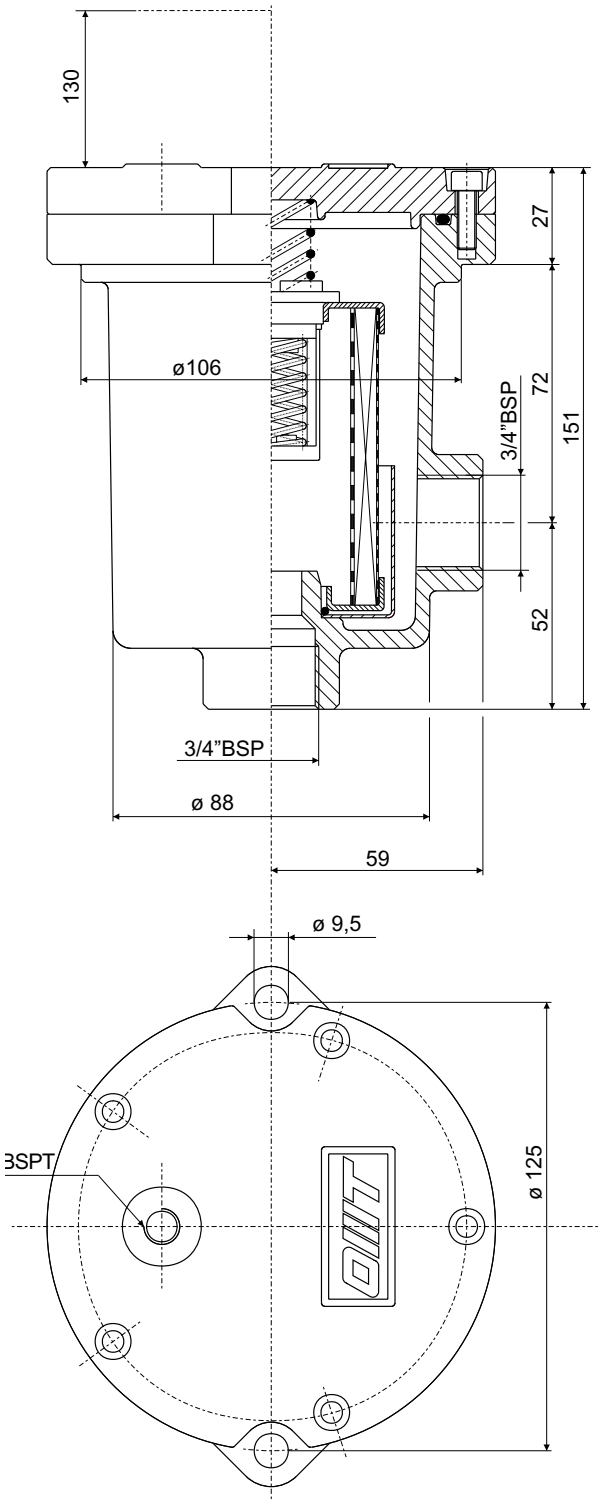


PORTATE CONSIGLIATE
RECOMMENDED FLOWS

AFR	Elemento filtrante Filter element	Portata / Flow (l/min)		Peso Weight (kg)
		Aspirazione Suction	Ritorno Return	
30	C10	5	16	0,700
30	C25	8	20	0,700
30	F03	-	9	0,700
30	F06	-	10	0,700
30	F10	-	13	0,700
30	F25	-	17	0,700
30	R60 / R90	12	30	0,700
30	R250	15	30	0,700

Le portate sono state calcolate per avere una perdita di carico Δp ≤40.000 Pa (0.4 bar) per i filtri sul ritorno e Δp ≤10.000 Pa (0.1 bar) per i filtri in aspirazione.
I valori sono stati ottenuti con olio minerale avente viscosità cinematica 30 cSt e densità 860 kg/m^3. (vedi note a pag.29)

Flows have been calculated just in order to obtain a pressure drop Δp ≤40.000 Pa (0.4 bar) for return lines and Δp ≤10.000 Pa (0.1 bar) for suction lines. The values have been obtained using mineral oil kinematic viscosity 30 cSt and 860 kg/m^3 density. (See remarks on pag.29)



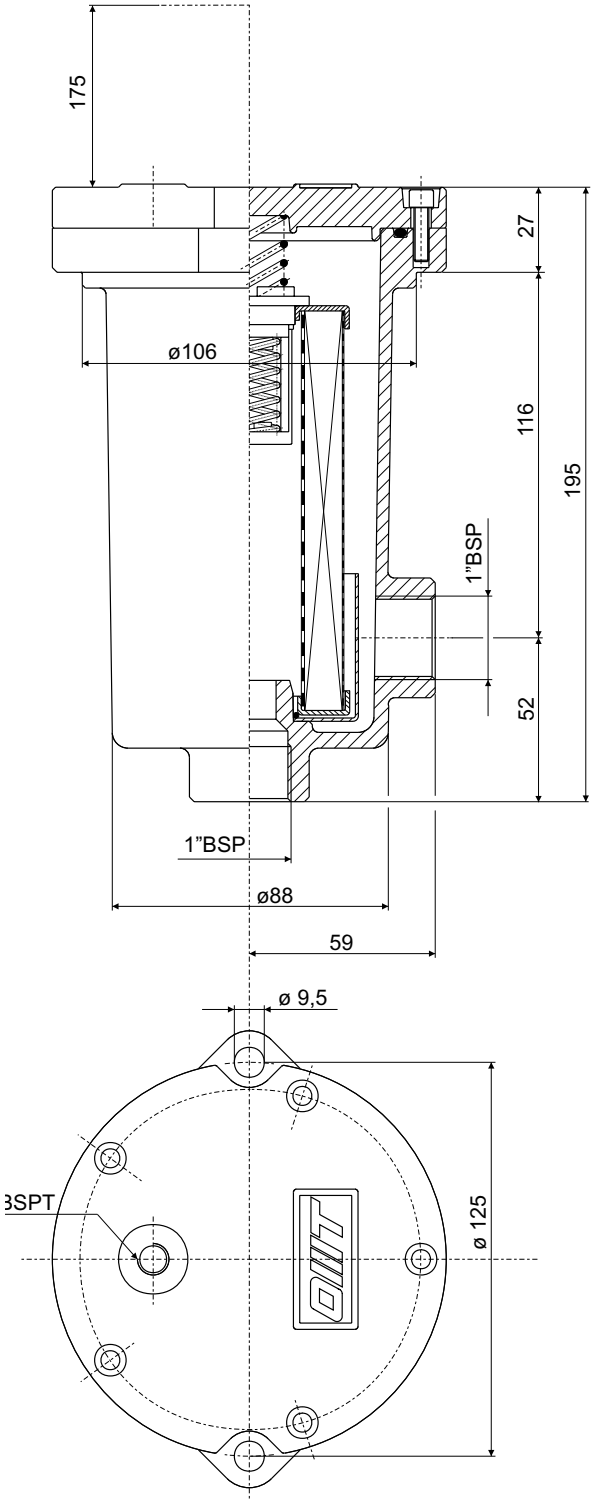
PORTATE CONSIGLIATE
RECOMMENDED FLOWS

AFR	Elemento filtrante Filter element	Portata / Flow (l/min)		Peso Weight (kg)
		Aspirazione Suction	Ritorno Return	
60	C10	15	49	1,200
60	C25	25	65	1,200
60	F03	-	27	1,200
60	F06	-	29	1,200
60	F10	-	32	1,200
60	F25	-	41	1,200
60	R60	27	68	1,200
60	R90	29	71	1,200
60	R250	30	71	1,200

AFR 100 CARATTERISTICHE DIMENSIONALI *SIZE FEATURES*

Le portate sono state calcolate per avere una perdita di carico Δp ≤40.000 Pa (0.4 bar) per i filtri sul ritorno e Δp ≤10.000 Pa (0.1 bar) per i filtri in aspirazione.
I valori sono stati ottenuti con olio Minerale avente viscosità cinematica 30 cSt e densità 860 kg/m^3. (vedi note a pag.30)

Flows have been calculated just in order to obtain a pressure drop Δp ≤40.000 Pa (0.4 bar) for return lines and Δp ≤10.000 Pa (0.1 bar) for suction lines. The values have been obtained using mineral oil kinematic viscosity 30 cSt and 860 kg/m^3 density. (See remarks on pag.30)



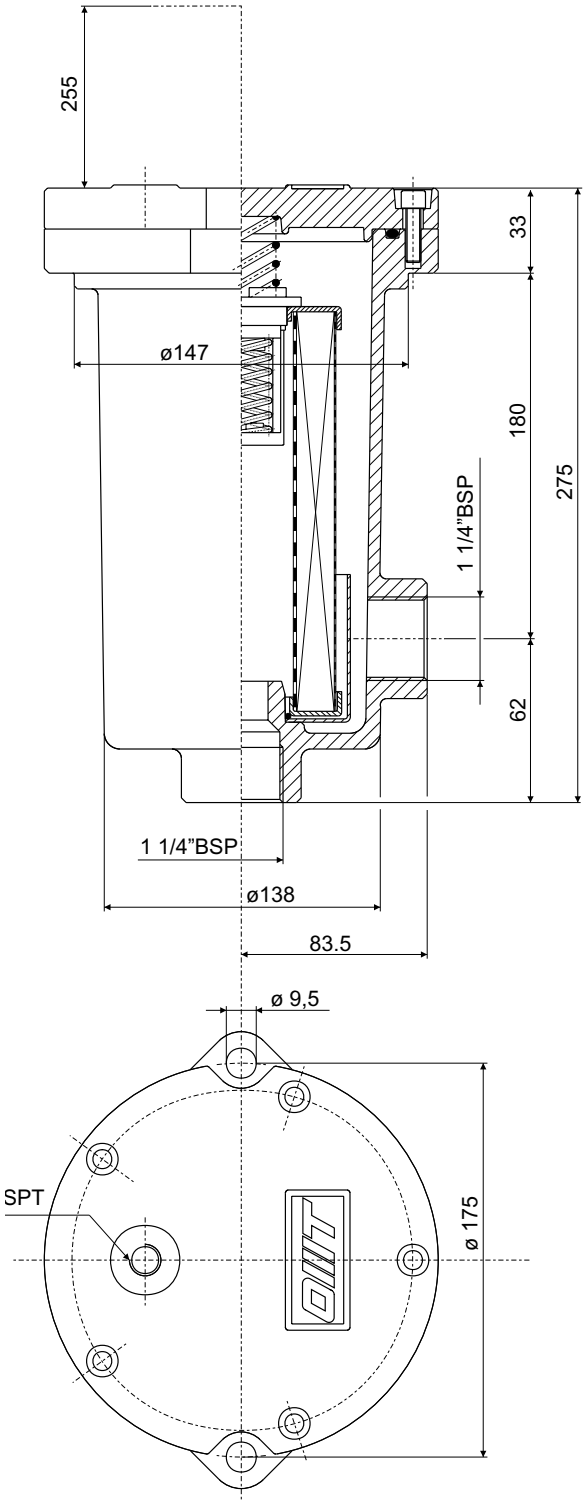
PORTATE CONSIGLIATE
RECOMMENDED FLOWS

AFR	Elemento filtrante Filter element	Portata / Flow (l/min)		Peso Weight (kg)
		Aspirazione Suction	Ritorno Return	
100	C10	22	85	1,450
100	C25	41	110	1,450
100	F03	-	36	1,450
100	F06	-	40	1,450
100	F10	-	56	1,450
100	F25	-	73	1,450
100	R60	47	110	1,450
100	R90	50	110	1,450
100	R250	50	110	1,450

AFR 180 CARATTERISTICHE DIMENSIONALI *SIZE FEATURES*

Le portate sono state calcolate per avere una perdita di carico Δp ≤40.000 Pa (0.4 bar) per i filtri sul ritorno e Δp ≤10.000 Pa (0.1 bar) per i filtri in aspirazione.
I valori sono stati ottenuti con olio Minerale avente viscosità cinematica 30 cSt e densità 860 kg/m^3. (vedi note a pag.31)

Flows have been calculated just in order to obtain a pressure drop Δp ≤40.000 Pa (0.4 bar) for return lines and Δp ≤10.000 Pa (0.1 bar) for suction lines. The values have been obtained using mineral oil kinematic viscosity 30 cSt and 860 kg/m^3 density. (See remarks on pag.31)



PORTATE CONSIGLIATE
RECOMMENDED FLOWS

AFR	Elemento filtrante Filter element	Portata / Flow (l/min)		Peso Weight (kg)
		Aspirazione Suction	Ritorno Return	
180	C10	53	150	3,5
180	C25	60	189	3,5
180	F03	-	94	3,5
180	F06	-	104	3,5
180	F10	-	123	3,5
180	F25	-	131	3,5
180	R60	69	200	3,5
180	R90	72	200	3,5
180	R250	80	200	3,5

AFR CADUTE DI PRESSIONE - CONFORMI A ISO 3968
PRESSURE DROPS - ACCORDING TO ISO 3968

La caduta di pressione del filtro completo si ottiene sommando la caduta di pressione del corpo filtro e quella dell'elemento filtrante.

Cadute di pressione nel corpo filtro

Le curve sono valide con olio minerale avente massa volumica di 860 kg/m^3. La caduta di pressione è direttamente proporzionale alla massa volumica.

Cadute di pressione negli elementi filtranti

Le curve sono valide con olio minerale avente viscosità cinematica di 30 cSt. La variazione di caduta di pressione è proporzionale alla viscosità cinematica.

The pressure drop of the complete filter is calculated by adding the pressure drop of the housing to the one of the filter element.

Pressure drops in the housing

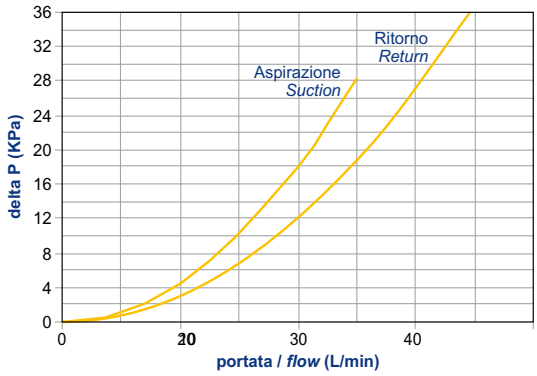
The graphics refer to the use of mineral oil with a mass density of 860 kg/m^3. The pressure drop is directly proportional to the mass density.

Pressure drops in the filter elements

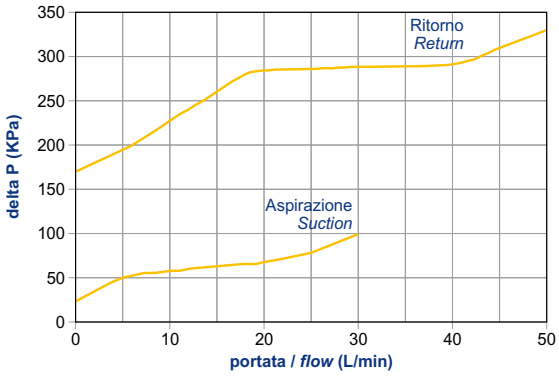
The graphics refer to mineral oil with a kinematic viscosity of 30 cSt. The variation of the pressure drop is proportional to the kinematic viscosity.

AFR serie/series 30

ΔP CORPI / ΔP HOUSINGS

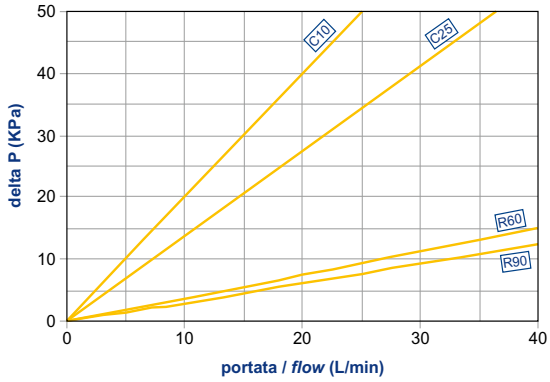


BY-PASS / BY-PASS

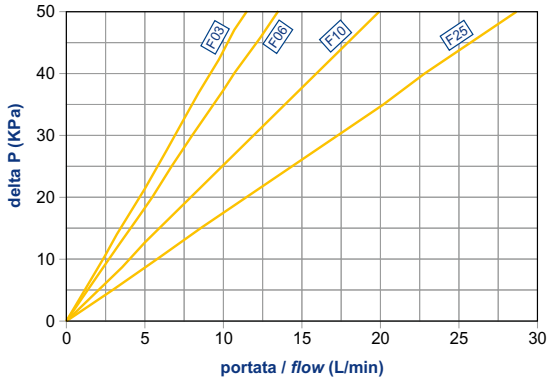


tipo CR091 (R) series

ΔP ELEMENTI (ritorno)

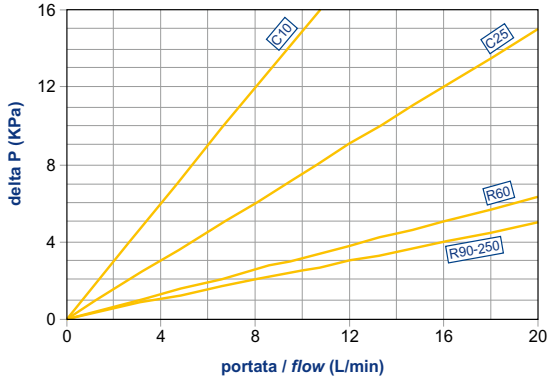


ΔP ELEMENTS (return)



tipo CR091 (A) series

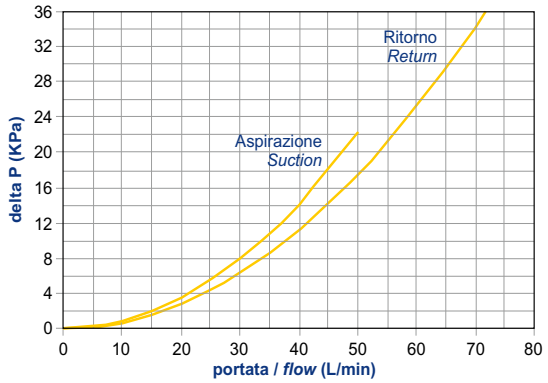
ΔP ELEMENTI (aspirazione)



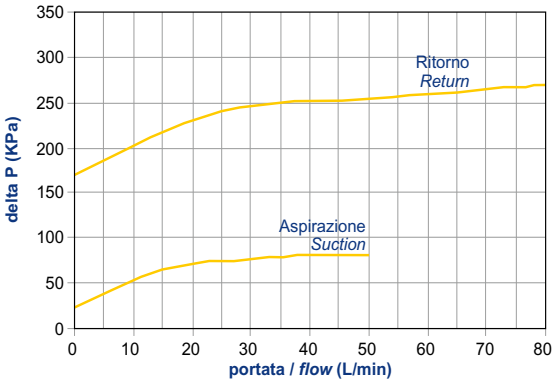
ΔP ELEMENTS (suction)

AFR serie/series 60

ΔP CORPI / ΔP HOUSINGS



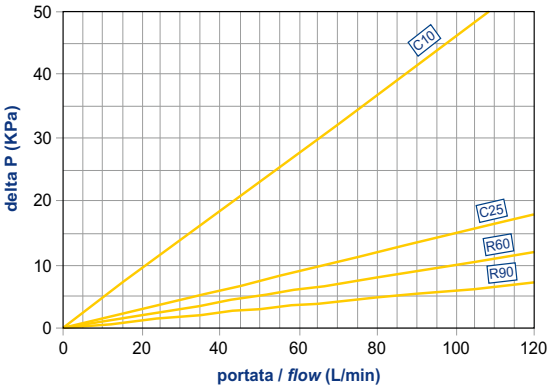
BY-PASS / BY-PASS

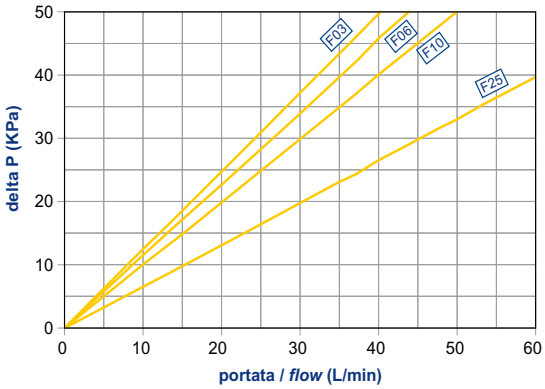


ΔP ELEMENTI (ritorno)

tipo CR111 (R) series

ΔP ELEMENTS (return)

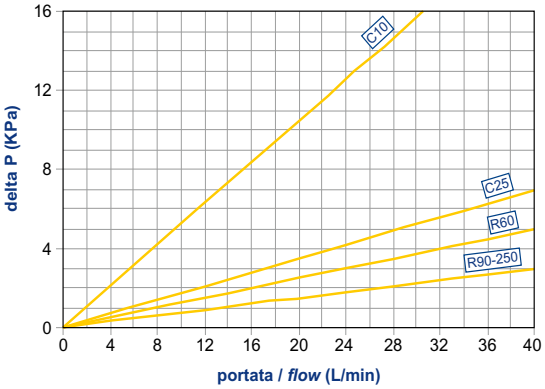




ΔP ELEMENTI (aspirazione)

tipo CR111 (A) series

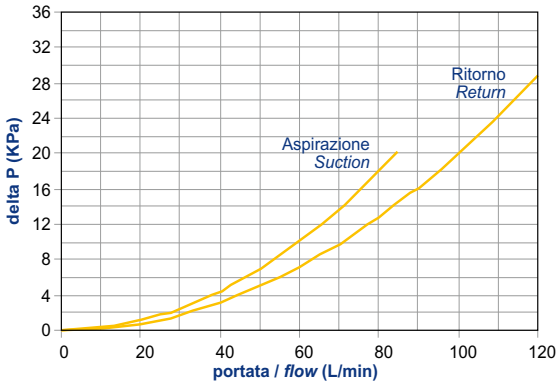
ΔP ELEMENTS (suction)



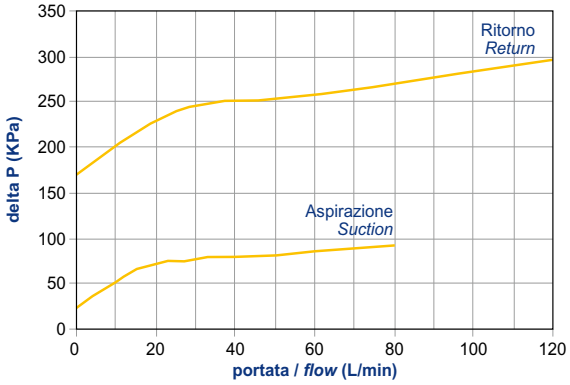
AFR CADUTE DI PRESSIONE - CONFORMI A ISO 3968
PRESSURE DROPS - ACCORDING TO ISO 3968

AFR serie/series 100

ΔP CORPI / ΔP HOUSINGS



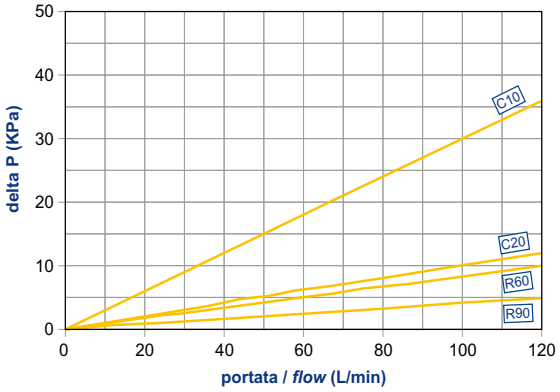
BY-PASS / BY-PASS

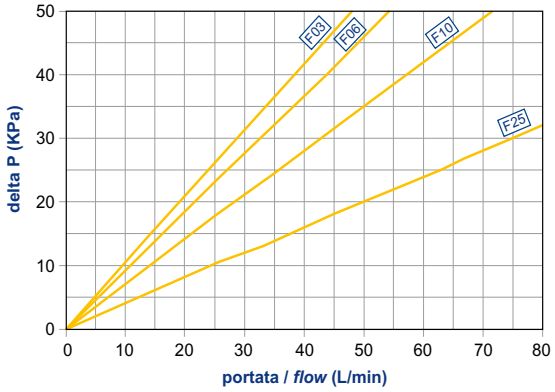


ΔP ELEMENTI (ritorno)

tipo CR112 (R) series

ΔP ELEMENTS (return)

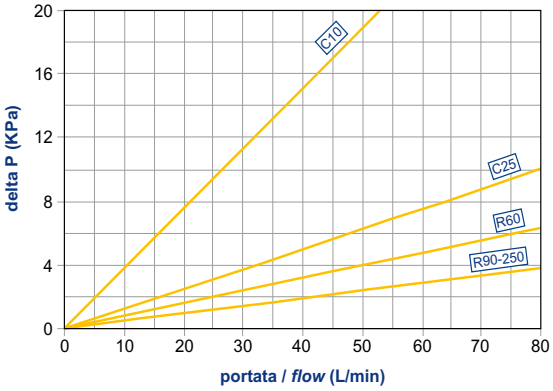




ΔP ELEMENTI (aspirazione)

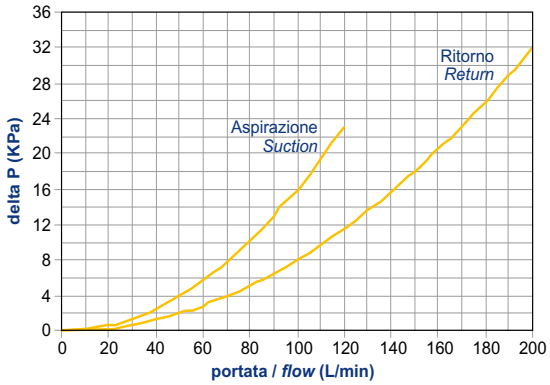
tipo CR112 (A) series

ΔP ELEMENTS (suction)

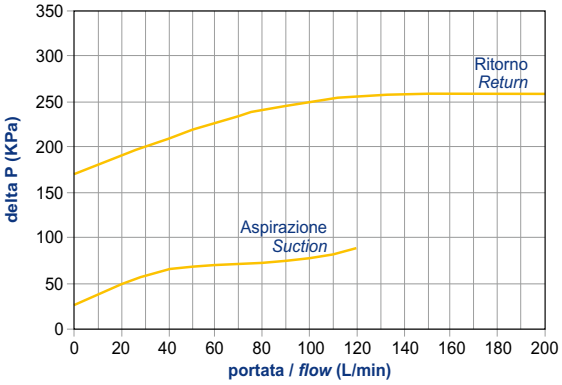


AFR serie/series 180

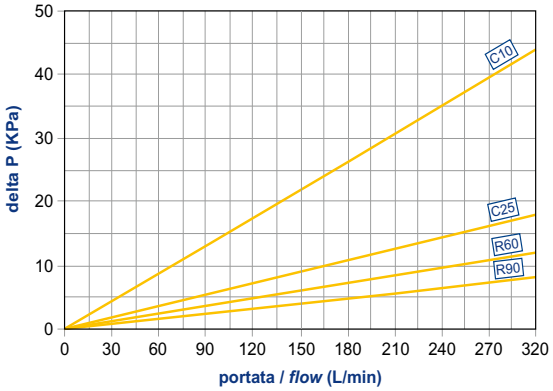
ΔP CORPI / ΔP HOUSINGS

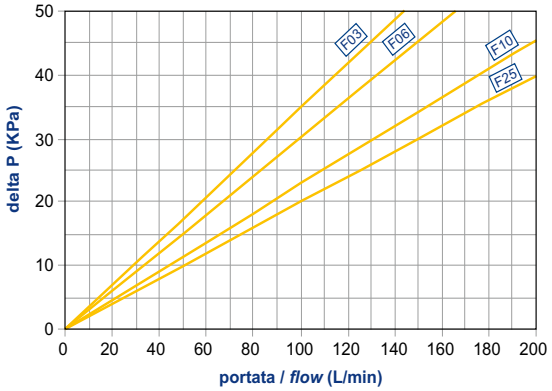


BY-PASS / BY-PASS

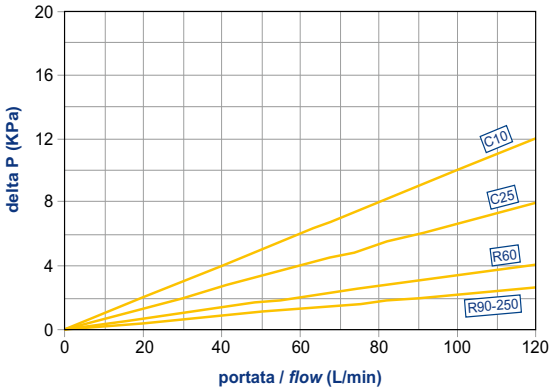


ΔP ELEMENTI (ritorno) — tipo CR171 (R) series — ΔP ELEMENTS (return)





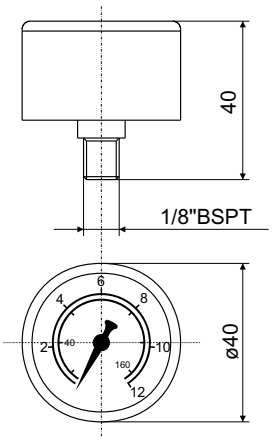
ΔP ELEMENTI (aspirazione) — tipo CR171 (A) series — ΔP ELEMENTS (suction)



AFR INDICATORI DI INTASAMENTO PER LINEE DI RITORNO
RETURN LINES CLOGGING INDICATORS

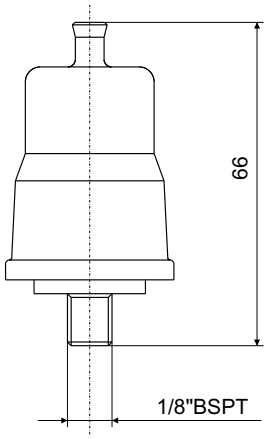
PV1

Manometro
Pressure gauge



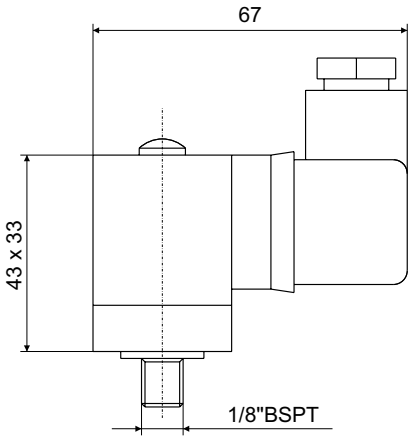
PE1 - PE2

Pressostato
con contatti N.A. o N.C.
Pressure switch
with contacts N.O. or N.C.



PE3

Pressostato
con contatti in scambio
Pressure switch
with changeover contacts



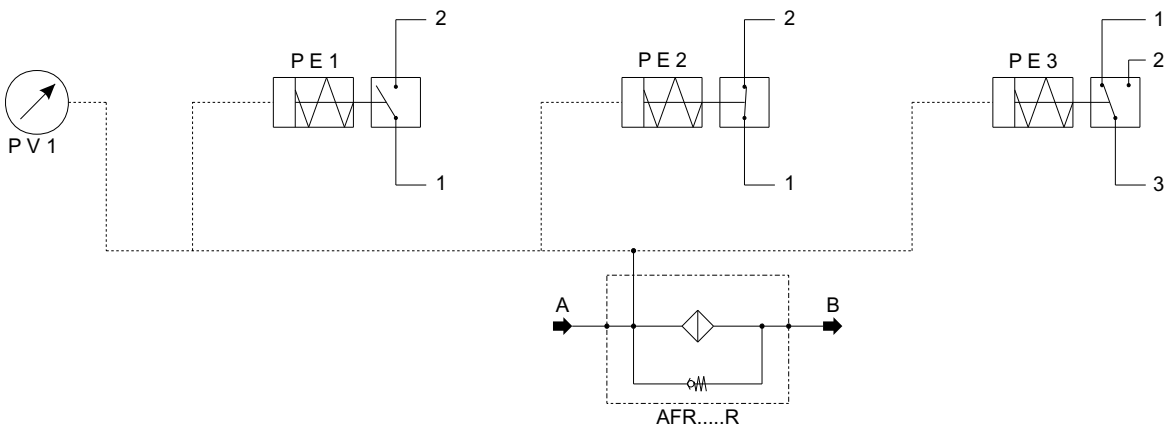
CARATTERISTICHE TECNICHE
TECHNICAL DATA

Codice Part number	Descrizione Description	Scala taratura Setting	Contatti elettrici Electrical Contacts	Tipo Type
PV1	visivo visual	0-120000 Pa (0-12 bar)	-	Puntuale On the spot
PE1	elettrico electrical	130000 Pa (1,3 bar)	N.A. / N.O.	
PE2			N.C.	
PE3			Scambio Changeover	

CARATTERISTICHE ELETTRICHE
ELECTRICAL DATA

Codice Part number	Tensione max di lavoro (V) Max feeder voltage (V)	Carico resistivo (A) Resistive load (A)	Carico induttivo (A) Inductive load (A)	Protezione (completo) Protection (complete)
PE1	C.A. 48	0,5	0,2	IP 00
PE2	C.A. 48	0,5	0,2	IP 00
PE3	C.A. 250	3	2	IP 65 DIN40050

SIMBOLOGIA / SIMBOLOGY



AFR CODICE PER L'ORDINAZIONE DEL FILTRO COMPLETO
HOW TO ORDER THE COMPLETE FILTER

AFR 100 F03 N R

Grandezza nominale filtro completo Nominal Size complete filter	Grandezza nominale Elemento filtrante Nominal size Replacement element
30	091
60	111
100	112
180	171

		Elemento filtrante Filtration Elements
-		Senza elemento filtrante Without filtration elements
C10	10 µm	Carta trattata con resine ßx≥2 Resin treated cellulose ßx≥2
C25	25 µm	Carta trattata con resine ßx≥2 Resin treated cellulose ßx≥2
F03	3 µm	Fibre inorganiche ßx≥200 Inorganic fibre ßx≥200
F06	6 µm	Fibre inorganiche ßx≥200 Inorganic fibre ßx≥200
F10	10 µm	Fibre inorganiche ßx≥200 Inorganic fibre ßx≥200
F25	25 µm	Fibre inorganiche ßx≥200 Inorganic fibre ßx≥200
R60	60 µm	Rete a maglia quadra (Aisi 304) Square mesh (Aisi 304)
R90	90 µm	Rete a maglia quadra (Aisi 304) Square mesh (Aisi 304)
R250	250 µm	Rete a maglia quadra (Aisi 304) Square mesh (Aisi 304)

	Guarnizioni Seals
N	Nitrile / Buna-N
V	Viton

	Valvola di By-pass By-pass valve
S	Senza by-pass Without by-pass
R	By-pass sul ritorno Return by-pass Δp 1,7 bar
A	By-pass in aspirazione Suction by-pass Δp 0,25 bar

Opzione A disponibile solo per elementi filtranti in rete e carta

A option available only for wire mesh and cellulose filter element

CR 112 F03 R

Codice per l'ordinazione dell'elemento filtrante di ricambio
How to order the replacement element

* Per l'ordinazione degli indicatori di intasamento, guardare pag. 32
* See page 32 for information how to order clogging indicators