MICRO ELECTRO PUMPS 1G

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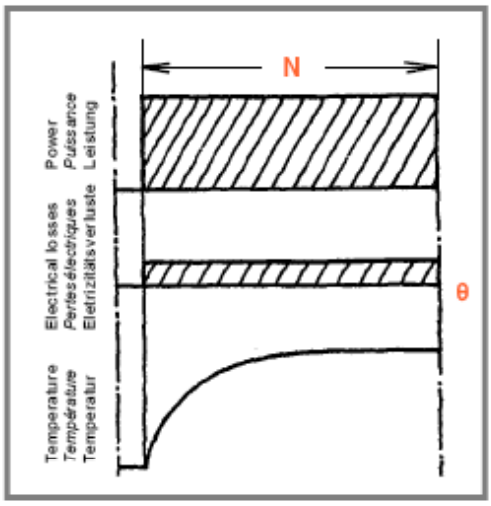
SALES ORGANISATION.

Representative chart

DUTY TYPES DIRECT CURRENT MOTORS

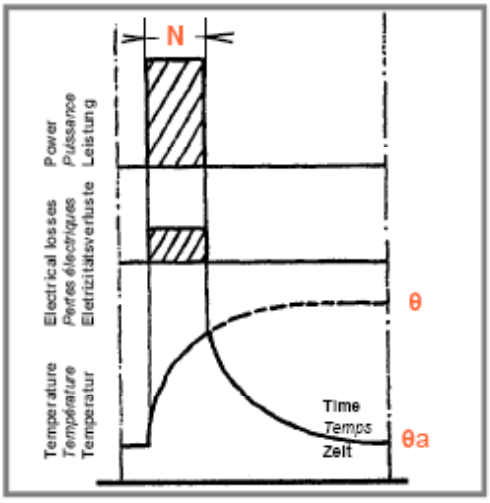
S1
Continuous Duty

Duty type consisting of working at a constant load during a certain time long enough to reach the thermal equilibrium.



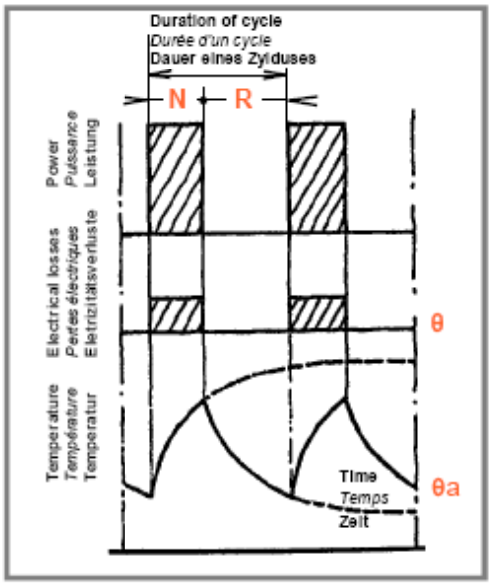
S2
Temporary Duties

Duty types consisting of working at constant load during a determined period shorter than the one necessary for reaching the thermal equilibrium, followed by a rest the duration of wich should be long enrough to reach the same temperature as the cooling medium.



S3
Periodical intermittent Duties

Types of dutiesconsisting of a series of identical cycles each of them including a working time at constant load and a rest time, the durations being not sufficient for reaching the thermal equilibrium during the heating periods as well as the cooling periods.



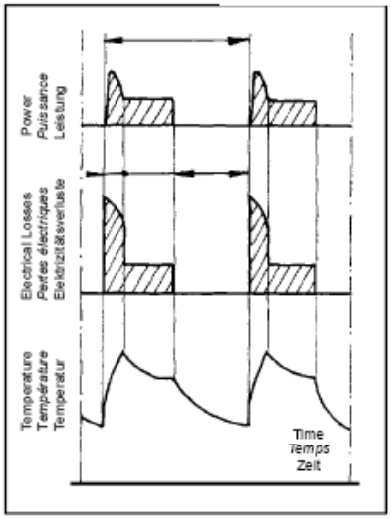
Legend:
- N: Working at nom. load
- R: Rest
- D: Starting
- θ: Temperture during Continuous Duty
- θa: Temperature of cooling medium

DUTY TYPES
DIRECT CURRENT MOTORS

S4

Intermittent starting Duties

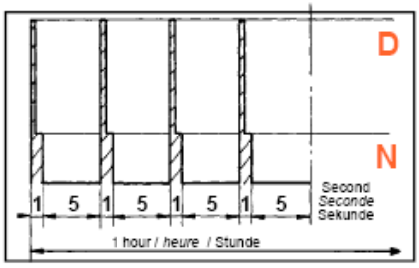
Types of duties consisting of a series of identical cycles ,each of them including a starting time, a working time at constant load and a rest time. The working time and the rest time are short enough not to reach the thermal equilibrium during a cycle.
In these duties, the motor stops either due to the natural slowing-down after switching off or by means of a brake such as a mechanical brake which does not cause complementary heating-up of the coils.



S4a

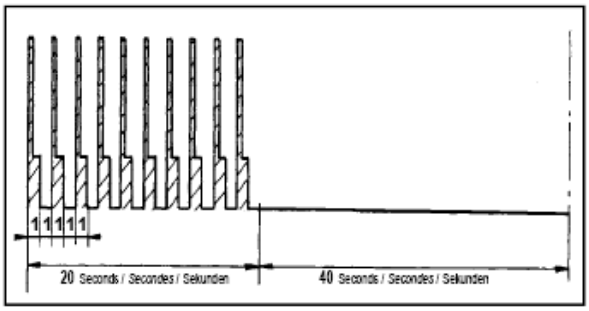
Specific Duties

Determines the number of startings per hour according to the S4 cycle here after mentioned :
- 1 second of working time
- 5 seconds of rest time.



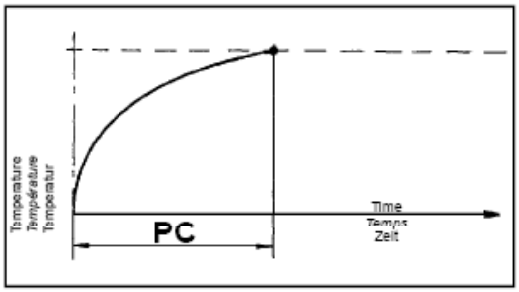
S4b

Determines the number of startings per hour according to the S4 cycle here after mentioned :
- 1 second of working time
- 1 second of rest time during 20 seconds;
- 40 seconds of rest time.



PC

Critical moment at permanent functioning S2 under load in minutes before destruction.

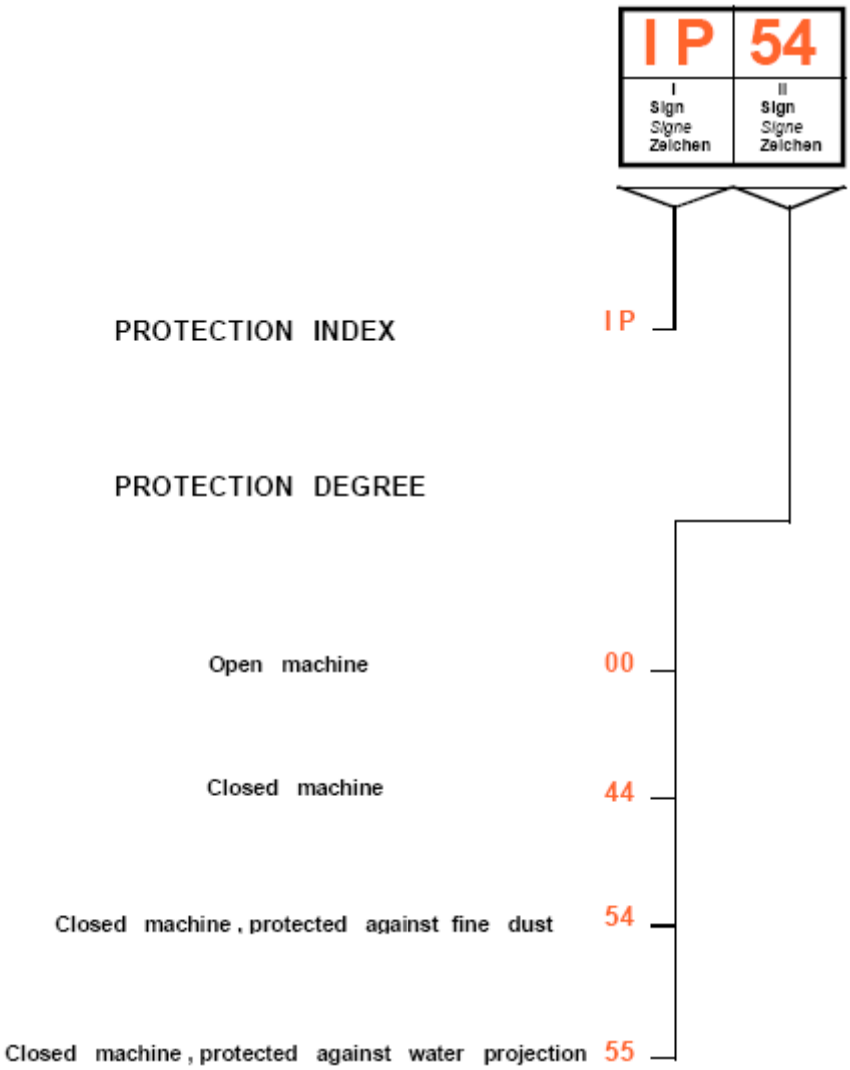


Legend :

N Working at nom. load
R Rest
D Starting
θ Temperature during Continuous Duty
θa Temperature of cooling medium

Documentation :
French Standards NFC 51 111
German Standards VDE 530-1

PROTECTION and TIGHTNESS of the DIRECT CURRENT and ALTERNATIVE CURRENT MOTORS



DIRECT CURRENT.

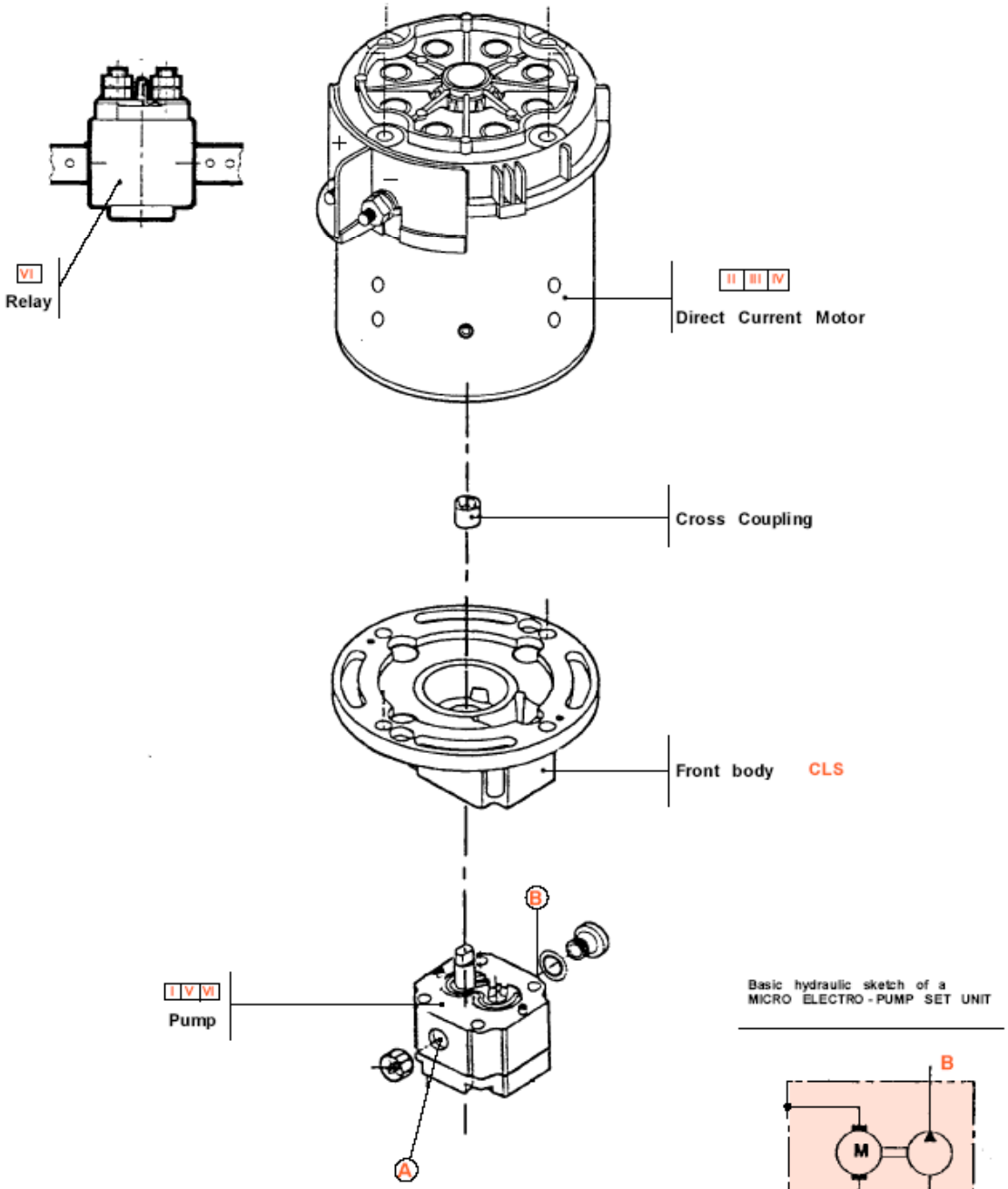
Code *Code* Kode	Power *Puissance* kW Leistung		Flow *Débit* Fördermenge
	12 V	24 V	
FE	0,175	0,175	0,2 to - *à* - bis 12 l / min
* KE		0,6	
HE	0,8	1	
AE	1,1	1,2	

* Voltage / *Tension* / Spannung 24 and / *et* / und 48 V

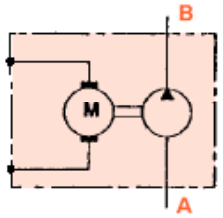
DIRECT CURRENT.

CODIFICATION (F.T R 0127)

01	HE	2	C	100	T	R	XX	X
I Sign Signe Zeichen	II Sign Signe Zeichen	III Sign Signe Zeichen	IV Sign Signe Zeichen	V Sign Signe Zeichen	VI Sign Signe Zeichen	VII Sign Signe Zeichen	VIII Sign Signe Zeichen	IX Sign Signe Zeichen



Basic hydraulic sketch of a MICRO ELECTRO - PUMP SET UNIT



TECHNOLOGICAL COMPOSITION of MICRO ELECTRO - PUMPS

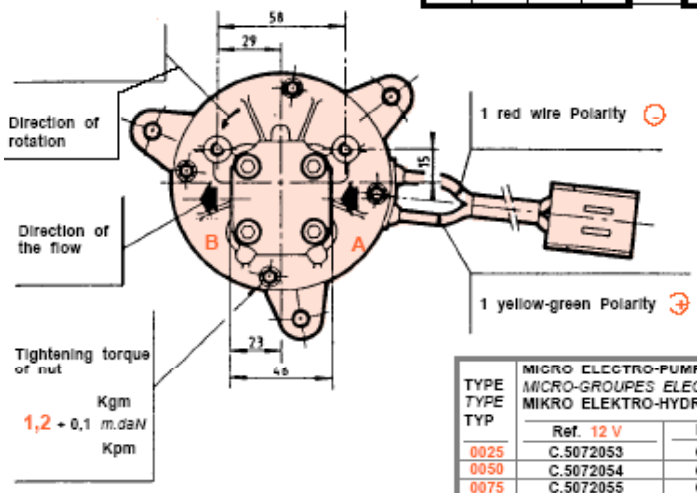
Ports - *Orifices* - Anschlüsse	
A - B	M 14 x 150

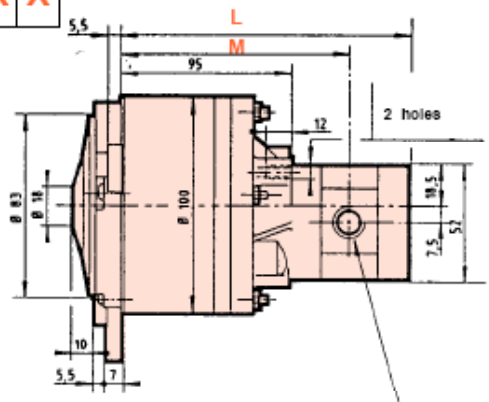
DIRECT CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	FE	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

(F.T R 0127)





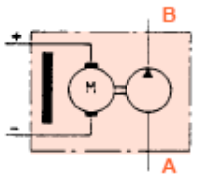
Threaded ports : INLET and OUTLET
M 14 x 1,50 effective depth 12

PUMP TYP	Capacity cc / cubic		Maxi Pressure BAR	PSI
TYPE de POMPE	Capacité cm 3 / t	cubic inch	Pression Maxi BAR	PSI
PUMPE TYP	Fördervolumen cm 3 / U	cubic inch	Höchstdruck BAR	PSI
0025	0,25	0,015	250	3630
0050	0,50	0,031	160	2320
0075	0,75	0,046	110	1600
0100	1	0,062	85	1230
0125	1,25	0,078	65	940
0150	1,50	0,093	55	800
0200	2	0,125	40	580

M	L
111,2	138,4
114,4	144,8
118,6	153,3

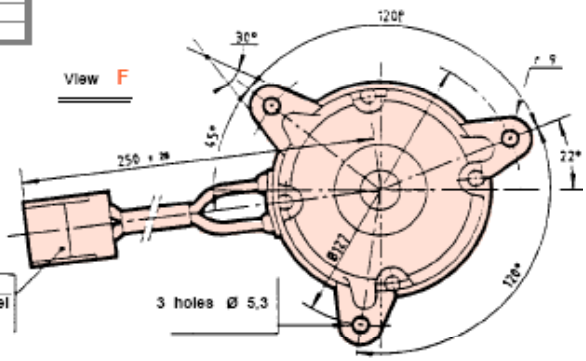
TYPE TYPE TYP MIKRO ELEKTRO-HYDROPUMPEN MICRO ELECTRO-PUMPS MICRO-GROUPES ELECTRO-POMPES	Ref. 12 V	Ref. 24 V
0025	C.5072053	C.5072060
0050	C.5072054	C.5072061
0075	C.5072055	C.5072062
0100	C.5072056	C.5072063
0125	C.5072057	C.5072064
0150	C.5072058	C.5072065
0200	C.5072059	C.5072066

SYMBOL



" PRONER " Connector Ref. 84 1326 Grei

View F



PERFORMANCES Characteristics of Flow - Pressure - Power - Intensity - see Data sheets F.T 00 869 2/3 - 3/3

working **TEMPERATURE** from - 15 °C to + 80 °C

FLUID Mineral hydraulic oil I.S.O VG 27 to 68 cSt
Motor oil SAE 10 W 30
For any other fluid , please consult our Technical Departments

WORKING Horizontal or vertical position

MICRO ELECTRO - PUMPS

SERIES 0

DIRECT CURRENT 0,175 kW

ACCESSORIES

MOTOR D.C Electric motor with permanent magnets
Ref. : 12 V : 109 519 -
24 V : 109 399 -

Nominal power periodical and intermittent
Duty S3 (10% of 10 min)
12 V: 0,175 kW - 24 V: 0,175 kW
other duties , see curves on next page
Protection (linking excepted) : IP 44
Standard NF C 51 115

PUMP This electro pump unit is fitted with a Series 0 Pump Type : P 1 CLS 0000 F L 40 C15 of capacity : 0,25 - 0,50 - 0,75 - 1 - 1,25 - 1,50 - 2 cc/rev
see data sheet F.T 00 386

RELAY (OPTION) , see data sheet F.T 00 039

ADAPTATOR (OPTION) for Inlet and Outlet ports
see data sheet F.T 10 702

For CODIFICATION , see data sheet F.T R 0127

MASS of the electro pump unit : 2 Kg

NOTA Fixing of the Micro Electro-Pump unit by using a collar support around the Motor (Supplied by the customer)

DIRECT CURRENT.

CODIFICATION

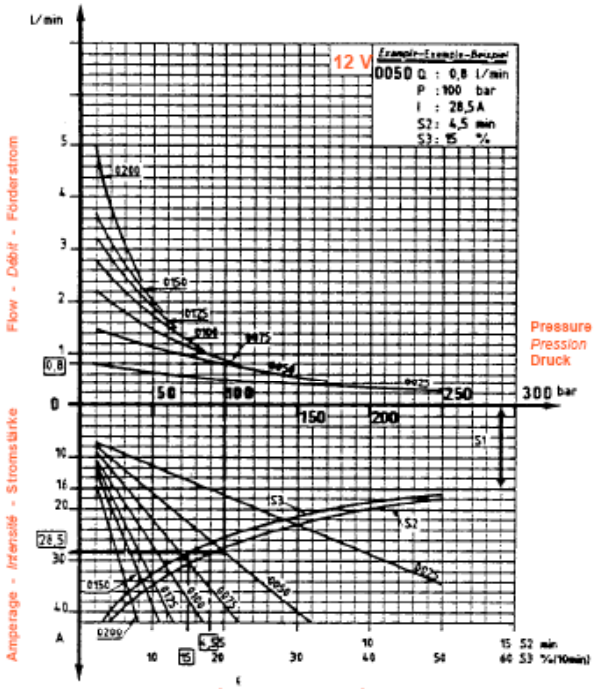
I	II	III	IV	V	VI	VII	VIII	IX
01	FE	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

(F.T R 0127)

DIRECT CURRENT MOTOR NOMINAL POWER S3 (10 % of 10 min) 0,175 kW

Reference 109 519

Code FE 1

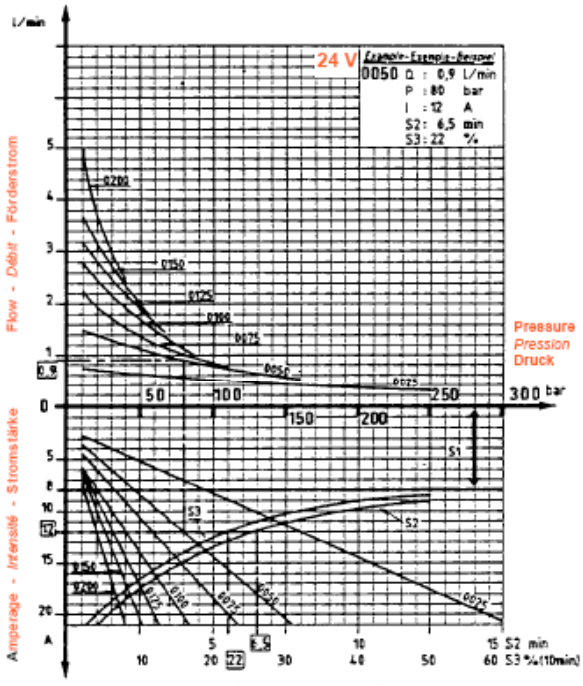


Duty Service Betrieb	up to jusqu'à bis
S1	16 A

DIRECT CURRENT MOTOR NOMINAL POWER S3 (10 % of 10 min) 0,175 kW

Reference 109 399

Code FE 2



Duty Service Betrieb	up to jusqu'à bis
S1	8 A

Flow variation in l/min , for a supplied tension (U) of 1 V variation .

$$\Delta Q = 0{,}26 \times Q \times \frac{\Delta U}{U}$$

l / min cm3 / t Volt

EXAMPLE

Pump : 0,5 cc / rev *cm3 / t* cm3 / U Voltage : 12 V

$$\Delta Q = Q\ n.al \times \frac{\Delta U}{U} \times Q$$

$$\Delta Q = 0{,}26 \times \frac{1}{12} \times 0{,}5 = 0{,}010$$

TYPE TYPE TYP	Flow Débit l/min Förderstrom 12 V	24 V
0025	0,065	0,033
0050	0,13	0,065
0075	0,195	0,098
0100	0,26	0,13
0125	0,325	0,163
0150	0,39	0,195
0200	0,50	0,25

S1 : Continuous Duty
S2 : Temporary Duty (min)
S3 : Periodical Intermittent Duty (10% of 10 min)
IU : starting Amperage 12 V : 100 Amp.
24 V : 60 Amp.

Curves drawn with a constant tension : Oil SHELL Tellus T46 Viscosity 46 cSt (±10%) at 40 °C

Test temperature : Oil 40 °C
Ambient 20 °C

Characteristics given as an indication

Reading example

ELECTRO - HYDRAULIC CHARACTERISTICS

MOTOR TYPE FE 12 - 24 V 0,175 kW

DIRECT CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	FE	Sign Signe Zeichen	C	Sign Signe Zeichen	T		XX	X

(F.T R 0127)

DIRECT CURRENT ELECTRIC MOTOR
with permanents magnets

References :	II Signe	III Signe
12 V : 109 519	FE	1
24 V : 109 399	FE	2

NOMINAL POWER DUTY S3
12 and 24 V : 0,175 kW

Charts drawn with a constant tension

Oil SHELL Tellus T 46
Viscosity 46 cSt (± 10 %) at 40 °C
Test temperature : Oil 40 °C
Ambient 20 °C

Q
Flow in l / min
Débit en l / min
Fördermenge
in l / min

I
Amperage
Intensité en Ampères
Stromstärke
in Ampere

S1 Permanent
Permanent
Dauerbetrieb

S2 min

S3 % (10 min)

PUMPS *POMPES* PUMPEN		12 V PRESSURE - *PRESSION* - DRUCK								24 V PRESSURE - *PRESSION* - DRUCK							
		5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI	5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI
0025	Q	0,8	0,65	0,55	0,5	0,4	0,35	0,3	0,2	0,8	0,65	0,55	0,5	0,4	0,35	0,3	0,2
	I	8,6	12	14	17	20	22	26	34	4,5	5,8	7	8,3	10	11	12,7	17
	S2	S1	S1	S1	S1	9,5	8	5,5	2,8	S1	S1	S1	S1	9,5	8	5,5	2,8
	S3					37	30	19	8					37	30	19	8
0050	Q	1,5	1,15	0,9	0,75	0,65	0,55	0,45		1,5	1,15	0,9	0,75	0,65	0,55	0,45	
	I	9	17	22	30	35	40	46		4,6	8,4	11	15	17,5	20	23	
	S2	S1	S1	8	4	2,5	1,5	0,15		S1	S1	8	4	2,5	1,5	0,15	
	S3			30	14	7,5	3					30	14		3		
0075	Q	2,35	1,4	1,15	0,85	0,7				2,35	1,4	1,15	0,85	0,7			
	I	9,4	22	30	40	50				4,7	11	15	20	25			
	S2	S1	8	4	1,5	0,05				S1	8	4	1,5	0,05			
	S3		30	14	3						30	14	3	3,9			
0100	Q	3	1,75	1,25	1					3	1,75	1,25	1				
	I	9,7	28	40	50					4,8	14	19,5	25				
	S2	S1	4,7	1,6	0,05					S1	4,7	1,6	0,05				
	S3		17	3,5							17	3,5					
0125	Q	3,5	1,9	1,3						3,5	1,9	1,3					
	I	10	34	48						4,9	16,5	23,5					
	S2	S1	3,2	0,1						S1	3,2	0,1					
	S3		10								10						
0150	Q	4	2							4	2						
	I	10,5	40							5,1	19,5						
	S2	S1	1,6							S1	1,6						
	S3		3,5								3,5						
0200	Q	5,5	2							5,5	2						
	I	12	50							6	25						
	S2	S1	0,05							S1	0,05						
	S3																

MAIN ELECTRO - HYDRAULIC CHARACTERISTICS
OF MICRO ELECTRO -PUMPS

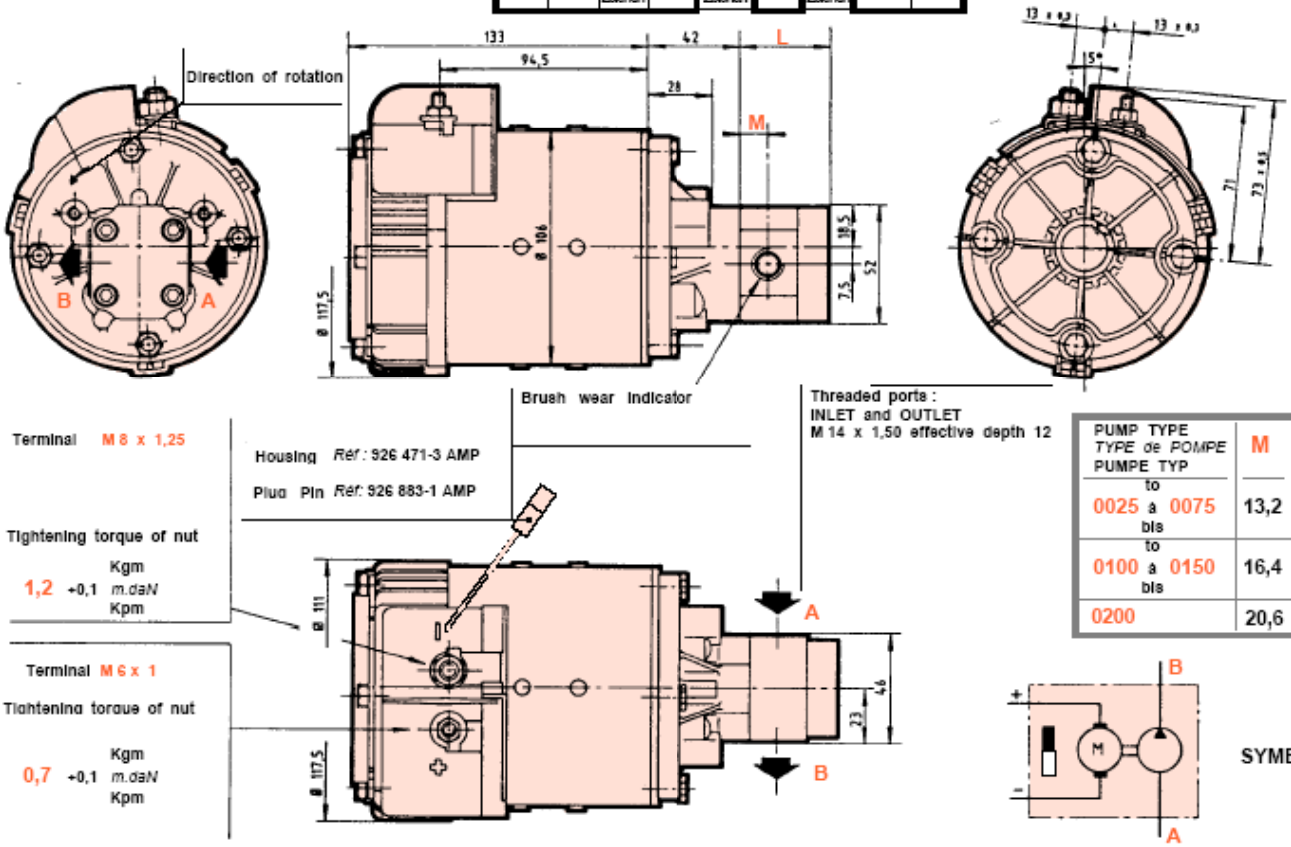
MOTOR FE 12 V : 0,175 kW
24 V : 0,175 kW

DIRECT CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	KE	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

(F.T R 0026)



PUMP TYPE *TYPE de POMPE* PUMPE TYP	M	L
to 0025 a 0075 bis	13,2	40,6
to 0100 a 0150 bis	16,4	47
0200	20,6	55,5

SYMBOL

PERFORMANCES Characteristics of Flow - Pressure - Power - Intensity - see data sheets F.T 00 167 2/3 - 3/3

working **TEMPERATURE** from - 15 °C to + 80 °C

FLUID Mineral hydraulic oil I.S.O VG 27 to 68 cSt
Motor oil SAE 10 W 30
For any other fluid , please consult our Technical Departments

WORKING Horizontal or vertical position

MICRO ELECTRO - PUMPS

SERIES 0 DIRECT CURRENT S1

DUTY

24 V : 0,6 kW 48 V : 0,6 kW

ACCESSORIES

MOTOR D.C electric motor with permanent magnets with brush wear indicator
(Damaged brush sets , contact with)
Ref. : 24 V : 111 048 -
48 V : 111 049 -
Nominal power Duty continuous S1
24 V : 0,6 kW - 48 V : 0,6 kW
other duties , see curves on next page
Protection (linking excepted) : IP 44
Standard VDE 530-1 and NF C 51 115

PUMP This Electro pump unit is fitted with a Series 0 Pump Type : P 1 CLS 0000 F L 40 C15 of capacity : 0,25 - 0,50 - 0,75 - 1 - 1,25 - 1,50 - 2 cc/rev
see data sheet F.T 00 386

RELAY (OPTION) , see data sheet F.T 00 039

ADAPTATOR (OPTION) for Inlet and Outlet ports
see data sheet F.T 10 702

For CODIFICATION , see data sheet F.T R 0127

MASS of the electro pump unit : 3,4 Kg

NOTA Fixing of the Micro Electro-Pump unit by using a collar support around the Motor (Supplied by the customer)

DIRECT CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	KE	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

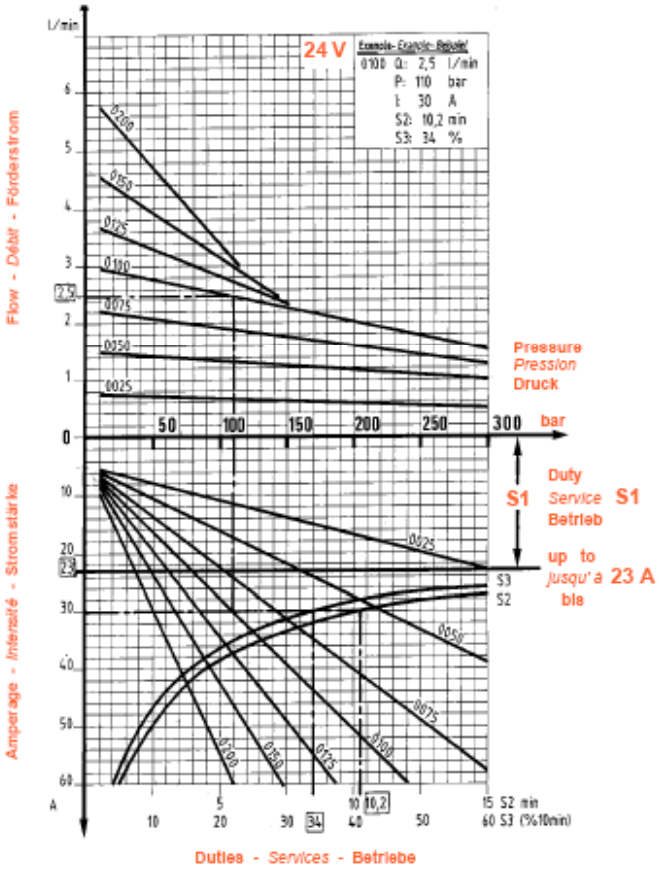
(F.T R 0127)

DIRECT CURRENT MOTOR NOMINAL POWER S1 0,6 kW

Reference 111 048

Code KE | 2

II	III
Sign Signe Zeichen	Sign Signe Zeichen

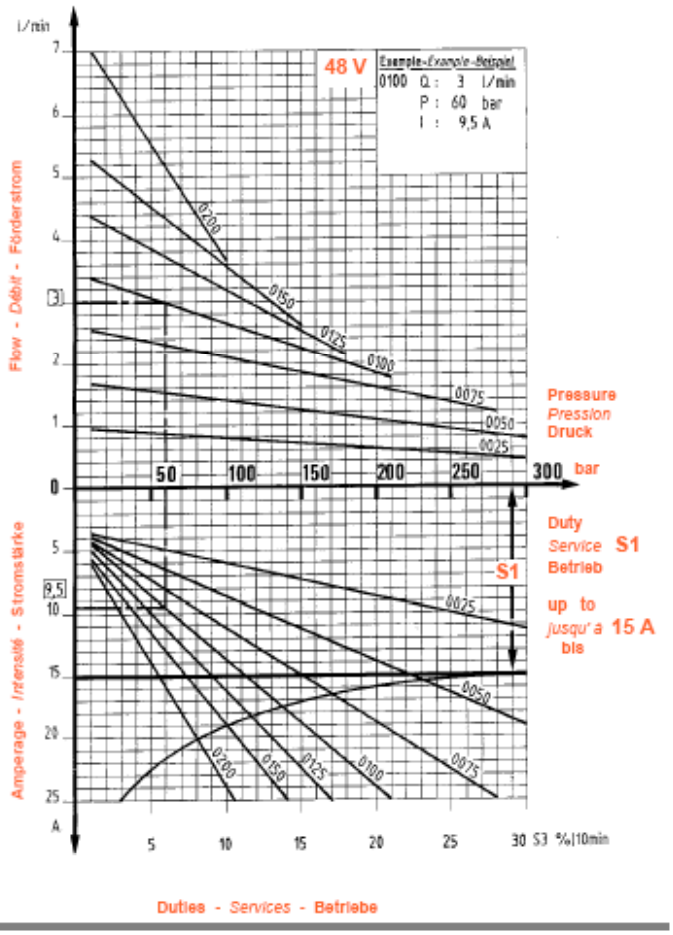


DIRECT CURRENT MOTOR NOMINAL POWER S1 0,6 kW

Reference 111 049

Code KE | 4

II	III
Sign Signe Zeichen	Sign Signe Zeichen



S1 : Continuous Duty
S2 : Temporary Duty (min)
S3 : Periodical Intermittent Duty (10% of 10 min)

ID : Starting Amperage 24 V : 460 Amp.
48 V : 380 Amp.

Curves drawn with a constant tension : Oil SHELL Tellus T46
Viscosity 46 cSt (± 10%) at 40 °C

Test temperature : Oil 40 °C
Ambient 20 °C

Characteristics given as an indication

Reading example

ELECTRO - HYDRAULIC CHARACTERISTICS

MOTOR TYPE KE 24 V : 0,6 kW 48 V : 0,6 kW DUTY S1

DIRECT CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	KE	Sign Signe Zeichen	C	Sign Signe Zeichen	T		XX	X

(F.T R 0127)

DIRECT CURRENT ELECTRIC MOTOR with permanents magnets with brush wear indicator

References :	II Signe	III Signe
24 V : 111 048	KE	2
48 V : 111 049	KE	4

Charts drawn with a constant tension

Oil SHELL Tellus T 46
Viscosity 46 cSt (± 10 %) at 40 °C
Test temperature : Oil 40 °C
Ambient 20 °C

Q
Flow in l / min
Débit en l / min
Fördermenge in l / min

I
Amperage
Intensité en Ampères
Stromstärke in Ampere

S1 Permanent
Permanent
Dauerbetrieb

PUMPS *POMPES* PUMPEN		24 V PRESSURE - *PRESSION* - DRUCK								48 V PRESSURE - *PRESSION* - DRUCK							
		5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI	5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI
0025	Q	0,8	0,75	0,7	0,65	0,6	0,55	0,5	0,45	1	0,95	0,8	0,7	0,65	0,6	0,55	0,5
	I	7,5	10	13	15,5	17	18	19,5	21	3,4	4,7	6	7,3	8	8,7	9,2	10
	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1
0050	Q	1,7	1,55	1,4	1,2	1,15	1,1	1	0,9	1,7	1,55	1,4	1,25	1,15	1,1	1	0,9
	I	7,7	12,5	18	23	25,5	28,5	31	34	3,6	6	8,6	11,2	12,5	14	15	16,5
	S1	S1	S1	S1	S1	S1				S1	S1	S1	S1	S1	S1	S1	
0075	Q	2,5	2,3	2,05	1,8	1,7	1,6	1,5	1,45	2,6	2,35	2,1	1,85	1,7	1,6	1,5	1,35
	I	8	15	23	34	34	38	42	45,5	3,8	7,3	11,2	15	17	19	20,8	22,6
	S1	S1	S1	S1	S1					S1	S1	S1	S1				
0100	Q	3,35	3	2,65	2,25	2	1,85			3,4	3,1	2,65	2,25	2,05	1,8		
	I	8,5	18	28	38	42,5	48			4	8,6	13,8	19	20,5	24		
	S1	S1	S1	S1						S1	S1	S1					
0125	Q	4,3	3,75	3,1	2,55	2,2				4,5	3,8	3,2	2,5	2,2			
	I	8,8	20	38	43	49				4,2	10	16,2	22,5	25			
	S1	S1	S1							S1	S1						
0150	Q	5,5	4,5	3,5						5,4	4,5	3,55					
	I	9	23,5	39						5	11,8	19					
	S1	S1	S1							S1	S1						
0200	Q	7	5,5	3,8						7,2	5,5	3,6					
	I	10,5	28	58						5	14	24					
	S1	S1	S1							S1	S1						

MAIN ELECTRO - HYDRAULIC CHARACTERISTICS OF MICRO ELECTRO -PUMPS

MOTOR KE — 24 V : 0,6 kW / 48 V : 0,6 kW

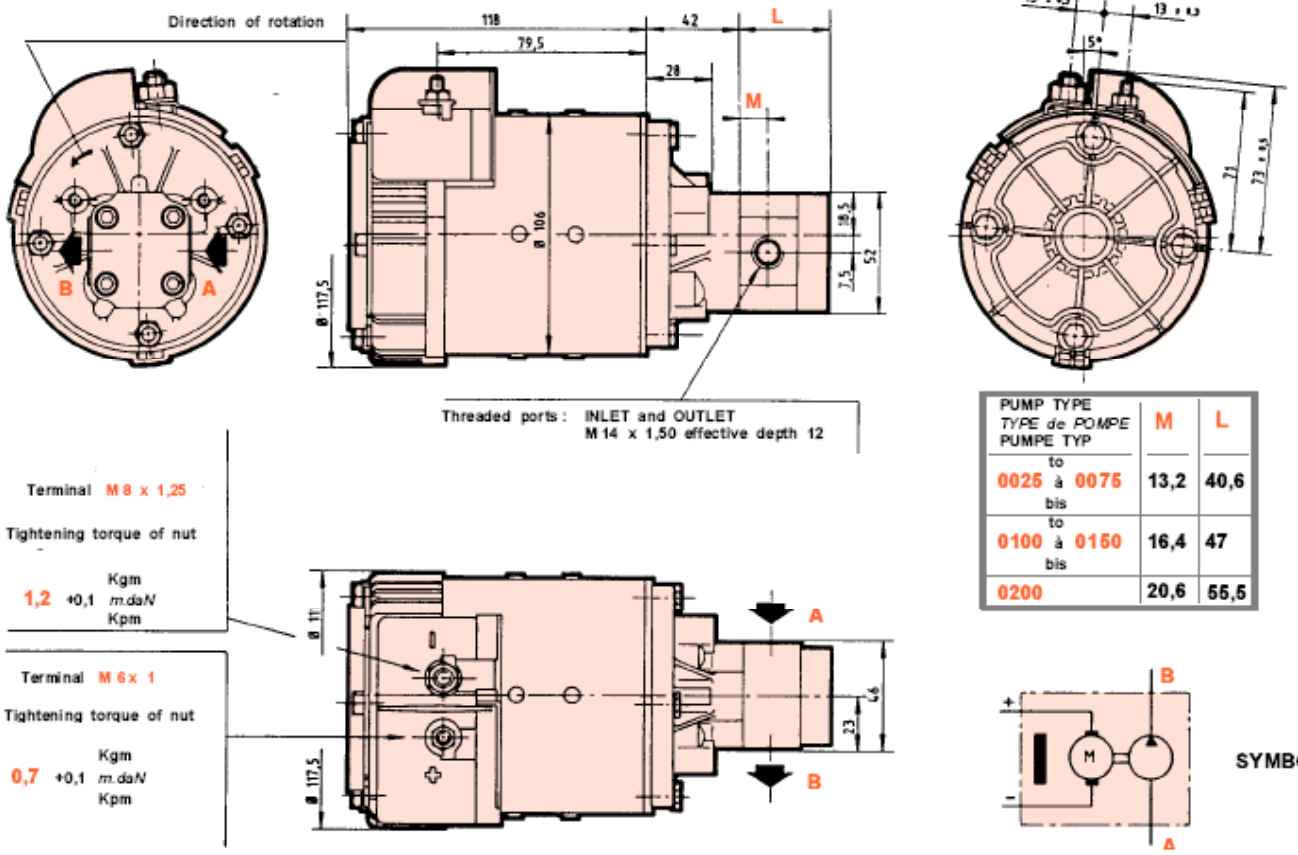
DUTY S1

DIRECT CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	HE	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

(F.T R 0127)



PUMP TYPE *TYPE de POMPE* PUMPE TYP	M	L
to 0025 à 0075 bis	13,2	40,6
to 0100 à 0150 bis	16,4	47
0200	20,6	55,5

SYMBOL

PERFORMANCES Characteristics of Flow - Pressure - Power - Intensity - see data sheets F.T 00 970 2/3 - 3/3

working **TEMPERATURE** from - 15 °C to + 80 °C

FLUID Mineral hydraulic oil I.S.O VG 27 to 68 cSt
Motor oil SAE 10 W 30
For any other fluid , please consult our Technical Departments

WORKING Horizontal or vertical position

MICRO ELECTRO - PUMPS

SERIES 0

DIRECT CURRENT 12 V : 0,8 kW
24 V : 1 kW

ACCESSORIES

MOTOR D.C electric motor with permanent magnets
Ref. : 12 V : 109 510 -
24 V : 109 500 -

Nominal power periodical and intermittent
Duty **S3** (10% of 10 min)
12 V : 0,8 kW - 24 V : 1 kW
other duties , see curves on next page
Protection (linking except) : IP 44
Standard VDE 530-1 and NF C 51 115

PUMP This Electro pump unit is fitted with a Series 0 Pump Type : P 1 CLS 0000 F L 40 C15 of capacity : 0,25 - 0,50 - 0,75 - 1 - 1,25 - 1,50 - 2 cc/rev
see data sheet F.T 00 386

RELAY (OPTION) , see data sheet F.T 00 039

ADAPTATOR (OPTION) for Inlet and Outlet ports
see data sheet F.T 10 702

For CODIFICATION , see data sheet F.T R 0127

MASS of the electro pump unit : 3,7 Kg

NOTA Fixing of the Micro Electro-Pump unit by using a collar support around the Motor (Supplied by the customer)

DIRECT CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	HE	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

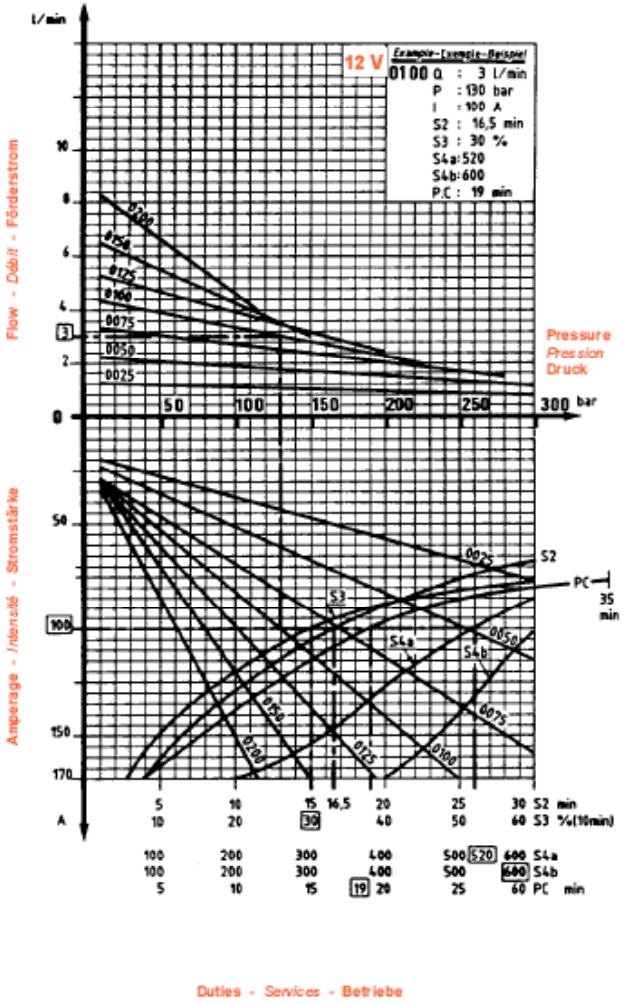
(F.T R 0127)

DIRECT CURRENT MOTOR NOMINAL POWER S3 (10 % of 10 min) 0,8 kW

Reference 109 510

Code HE 1

II	III
Sign Signe Zeichen	Sign Signe Zeichen

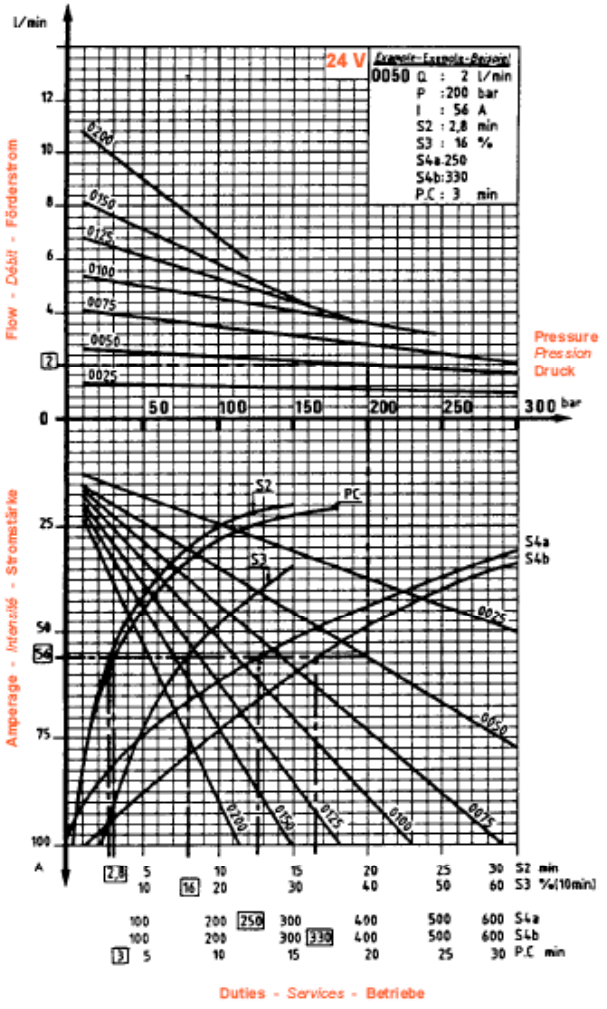


DIRECT CURRENT MOTOR NOMINAL POWER S3 (10 % of 10 min) 1 kW

Reference 109 500

Code HE 2

II	III
Sign Signe Zeichen	Sign Signe Zeichen



S1 : Continuous Duty
S2 : Temporary Duty (min)
S3 : Periodical Intermittent Duty (10% of 10 min)
S4a - S4b : Intermittent Starting Duty

P.C : Critical Moment (min)
ID : Starting Amperage 12 V : 300 Amp.
24 V : 320 Amp.

Curves drawn with a constant tension : Oil SHELL Tellus T46
Viscosity 46 cSt (± 10%) at 40 °C

Test temperature : Oil 40 °C
Ambient 20 °C

Characteristics given as an indication

Reading example

ELECTRO - HYDRAULIC CHARACTERISTICS

MOTOR TYPE HE

12 V : 0,8 kW
24 V : 1 kW

DIRECT CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	HE	Sign Signe Zeichen	C	Sign Signe Zeichen	T		XX	X

(F.T R 0127)

DIRECT CURRENT ELECTRIC MOTOR with permanents magnets

References :	II Signe	III Signe
12 V : 109 510	HE	1
24 V : 109 500	HE	2

Charts drawn with a constant tension

Oil SHELL Tellus T 46
Viscosity 46 cSt (± 10 %) at 40 °C
Test temperature : Oil 40 °C
Ambient 20 °C

Q Flow in l / min — *Débit en l / min* — Fördermenge in l / min

I Amperage — *Intensité en Ampères* — Stromstärke in Ampere

S1 Permanent — *Permanent* — Dauerbetrieb

S2 min

S3 % (10 min)

S4a Number of start / hour, 1 sec. work, 5 sec.stop — *Nb de démarrage / h, 1 sec. travail, 5 sec. arrêt* — Anzahl der Anläufe / h, 1 Sek. Arbeit, 5 Sek. Stillstand

S4b Number of start / hour, 1 sec. work, 1 sec. stop during 20 sec. Rest 40 sec. — *Nb de démarrage / h, 1 sec. travail, 1 sec. arrêt pendant 20 sec. Repos 40 sec.* — Anzahl der Anläufe / h, 1 Sek. Arbeit, 1 Sek. Stillstand während 20 Sek. Ruhe 40 Sek.

PC (min) Continous working breaking point — *(min) Point critique en fonctionnement ininterrompu* — (min) Kritischer Punkt bei durchgehendem Betrieb

PUMPS *POMPES* PUMPEN		12 V PRESSURE - *PRESSION* - DRUCK								24 V PRESSURE - *PRESSION* - DRUCK							
		5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI	5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI
0025	Q	1,2	1,1	1	0,98	0,95	0,9	0,85	0,8	1,65	1,3	1,15	1,1	1,08	1,05	1	1
	I	18	28	38	48	54	60	64	70	12	18	25	31	34	37,5	40	43
	S2	30	30	30	30	30	30	30	30	15	15	10,5	7,8	6,7	6,2	5,4	4,8
	S3	60	60	60	60	60	60	60	54	30	30	30	30	30	28	25,5	23
	S4a	600	600	600	600	600	600	600	600	600	600	600	600	550	480	450	410
	S4b	600	600	600	600	600	600	600	600	600	600	600	600	600	540	490	450
	PC	35	35	35	35	35	35	35	35	18	18	13	9	7,7	6,7	6	5,4
0050	Q	2,3	2,05	1,9	1,7	1,6	1,5	1,4	1,3	2,6	2,45	2,3	2,15	2,05	2	1,9	1,85
	I	22	37	54	70	77	85	94	100	13	23,5	35	45	50	56	61	66,5
	S2	30	30	30	30	25,5	22	19	16,5	15	11	6,7	4,5	3,5	2,8	2,4	2
	S3	60	60	60	60	60	46	36	30	30	30	30	22	19	16	13,5	11,5
	S4a	600	600	600	600	600	600	560	520	600	600	540	390	315	230	205	160
	S4b	600	600	600	600	600	600	600	600	600	600	580	435	380	330	290	250
	PC	35	35	35	35	35	26,5	22	19	18	13	7,4	5	4	3,5	2,7	2,2
0075	Q	3,3	2,9	2,6	2,3	2,1	2	1,8	1,6	4,15	3,8	3,45	3,1	2,95	2,75	2,6	2,4
	I	25	46	69	91	102	114	125	136	14,5	28	42,5	58	65	73	80	88
	S2	30	30	29	19	15,7	13	10,8	8,6	15	8,7	4,8	2,7	2	1,4	1,2	0,8
	S3	60	60	60	36	28	23	18	14	30	30	23,5	15	12	10	7,2	6,8
	S4a	600	600	600	560	510	450	410	370	600	580	410	235	170	110	65	30
	S4b	600	600	600	600	600	565	535	510	600	600	450	315	255	200	150	115
	PC	35	35	35	22	18,2	15,4	12,5	10,5	18	8,2	5,3	3	2,2	1,5	1,15	0,9
0100	Q	4,3	3,9	3,4	2,85	2,6	2,3	2		5,5	5	4,55	4,1	3,85	3,6	3,35	
	I	26	53	87	112	126	149	156		15	32	50	70	78,5	88	97	
	S2	30	30	22,5	13,6	10,5	7,7	5,6		15	7,2	3,5	1,7	1,2	0,7	0,6	
	S3	60	60	50	23,5	17	12	8		30	30	18	10,4	8,5	6,5	5	
	S4a	600	600	600	460	405	355	290		600	580	300	130	75	28	5	
	S4b	600	600	600	570	535	500	450		600	600	370	220	160	95	35	
	PC	35	35	26	15,6	12,5	8,6	6,4		18	8,2	4	1,8	1,3	0,9	0,8	
0125	Q	5,4	4,7	3,9	3,15	2,7				6,9	6,15	5,3	4,45	4			
	I	26,5	62	100	138	157				15,5	37	61	85	96			
	S2	30	30	16,5	8,5	5,5				15	5,8	2,5	0,8	0,7			
	S3	60	60	30	13,2	8				30	27	13,5	7,2	5,5			
	S4a	600	600	520	370	290				600	480	200	40	5			
	S4b	600	600	600	510	450				600	515	280	120	50			
	PC	35	35	19	10	6,5				18	6,5	2,7	1	0,9			
0150	Q	6,68	5,6	4,35	3					8,3	7,2	5,9	4,65				
	I	27	70	118	170					16,5	42	72	100				
	S2	30	28,5	11,8	4					15	2,7	1,6	0,5				
	S3	60	60	20	5,5					30	23	10,4	4,5				
	S4a	600	600	430	200					600	400	115	5				
	S4b	600	600	550	400					600	450	205	30				
	PC	35	35	14	4					18	5,2	1,7	0,6				
0200	Q	8,6	6,6	4,55						11	9	6,85					
	I	28	85	150						17,5	52	91					
	S2	30	21,5	6,5						15	3,4	0,7					
	S3	60	44	9,5						30	17,5	6,5					
	S4a	600	600	320						600	295	20					
	S4b	600	600	470						600	360	90					
	PC	35	25	7,6						18	3,7	0,9					

MAIN ELECTRO - HYDRAULIC CHARACTERISTICS OF MICRO ELECTRO -PUMPS

MOTOR HE — 12 V : 0,8 kW — 24 V : 1 kW

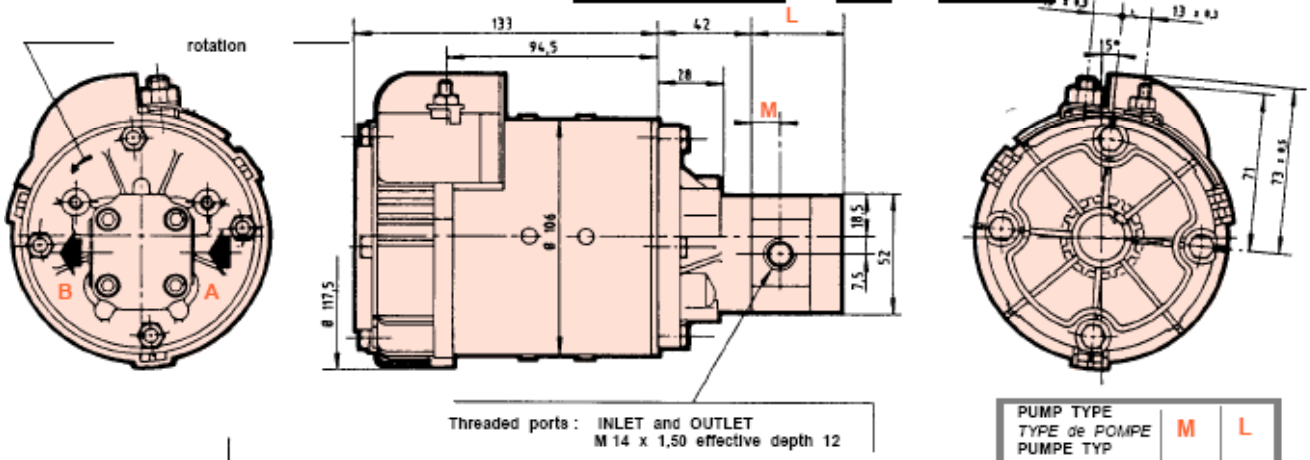
JTEKT HPI

DIRECT CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	AE	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

(F.T R 0127)



PUMP TYPE *TYPE de POMPE* PUMPE TYP	M	L
to 0025 a 0075 bis	13,2	40,6
to 0100 a 0150 bis	16,4	47
0200	20,6	55,5

Terminal M 8 x 1,25

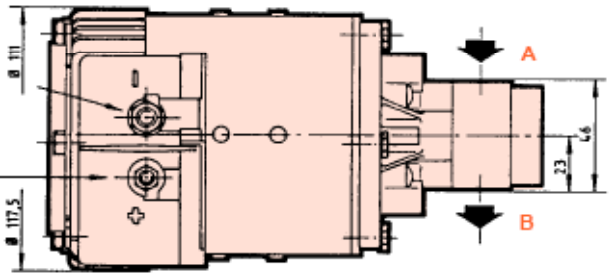
Tightening torque of nut

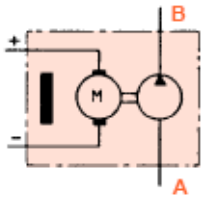
Kgm 1,2 +0,1 *m.daN* Kpm

Terminal M 6 x 1

Tightening torque of nut

Kgm 0,7 +0,1 *m.daN* Kpm





SYMBOL

PERFORMANCES Characteristics of Flow - Pressure - Power - Intensity - see data sheets F.T 00 974 2/3 - 3/3

working **TEMPERATURE** from - 15 °C to + 80 °C

FLUID Mineral hydraulic oil I.S.O VG 27 to 68 cSt
Motor oil SAE 10 W 30
For any other fluid , please consult our Technical Departments

WORKING Horizontal or vertical position

MICRO ELECTRO - PUMPS

SERIES 0

DIRECT CURRENT 12 V : 1,1 kW
24 V : 1,2 kW

ACCESSORIES

MOTOR D.C Electric motor with permanent magnets
Ref. : 12 V : 109 511 -
24 V : 109 512 -

Nominal power Periodical and Intermittent Duty S3 (10% of 10 min)
12 V : 1,1 kW - 24 V : 1,2 kW
other duties , see curves on next page
Protection (linking excepted) : IP 44
Standard VDE 530-1 and NF C 51 115

PUMP This Electro pump unit is fitted with a Series 0 Pump Type : P 1 CLS 0000 F L 40 C15 of capacity : 0,25 - 0,50 - 0,75 - 1 - 1,25 - 1,50 - 2 cc/rev
see data sheet F.T 00 386

RELAY (OPTION) , see data sheet F.T 00 039

ADAPTATOR (OPTION) for Inlet and Outlet ports
see data sheet F.T 10 702

For CODIFICATION , see data sheet F.T R 0127

MASS of the electro pump unit : 3,8 Kg

NOTA Fixing of the Micro Electro-Pump Unit by using a collar support around the Motor (Supplied by the customer)

DIRECT CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	AE	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

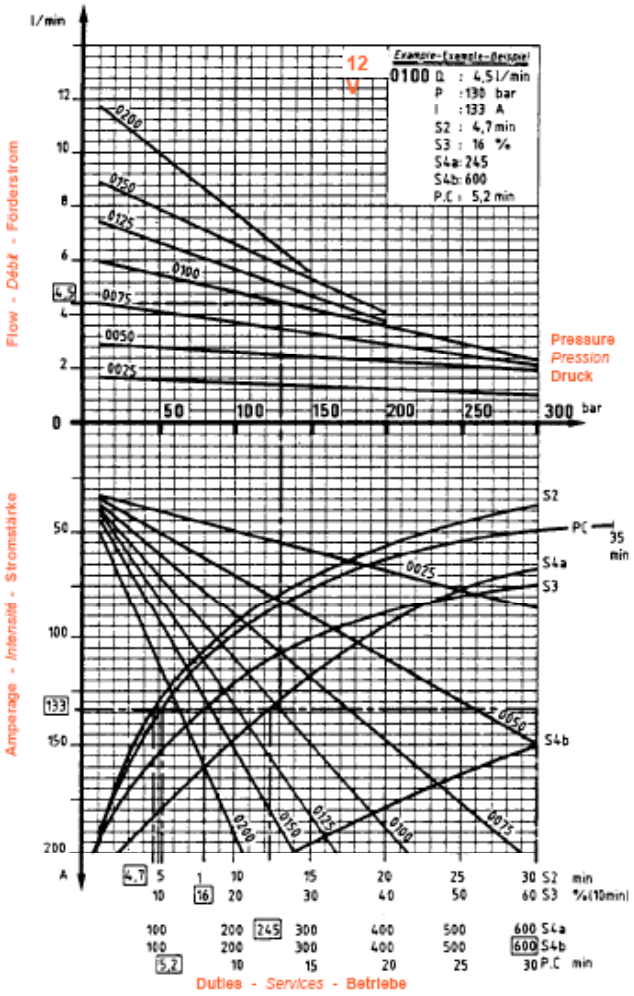
(F.T R 0127)

DIRECT CURRENT MOTOR 1,1 kW
NOMINAL POWER
S3 (10 % of 10 min)

Reference 109 511

Code AE 1

II	III
Sign Signe Zeichen	Sign Signe Zeichen

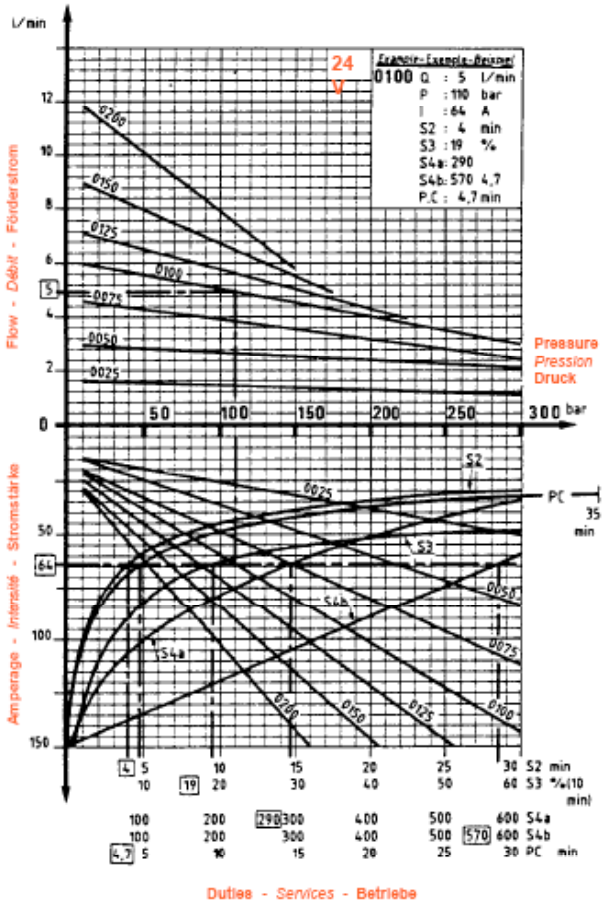


DIRECT CURRENT MOTOR 1,2 kW
NOMINAL POWER
S3 (10 % of 10 min)

Reference 109 512

Code AE 2

II	III
Sign Signe Zeichen	Sign Signe Zeichen



S1 : Continuous Duty
S2 : Temporary Duty (min)
S3 : Periodical Intermittent Duty (10% of 10 min)
S4a - S4b : Intermittent Starting Duty

P C : Critical Moment (min)
I D : Starting Amperage 12 V : 460 Amp.
24 V : 380 Amp.

Curves drawn with
a constant tension : Oil SHELL Tellus T46
Viscosity 46 cSt (± 10%) at 40 °C

Test temperature : Oil 40 °C
Ambient 20 °C

Characteristics given as an indication

Reading example

ELECTRO - HYDRAULIC CHARACTERISTICS

MOTOR TYPE AE

12 V : 1,1 kW
24 V : 1,2 kW

DIRECT CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	AE	Sign Signe Zeichen	C	Sign Signe Zeichen	T		XX	X

(F.T R 0127)

DIRECT CURRENT ELECTRIC MOTOR with permanents magnets

References :	II Signe	III Signe
12 V : 109 511	AE	1
24 V : 109 512	AE	2

Charts drawn with a constant tension

Oil SHELL Tellus T 46
Viscosity 46 cSt (± 10 %) at 40 °C
Test temperature : Oil 40 °C
Ambient 20 °C

Q — Flow in l / min — *Débit en l / min* — Fördermenge in l / min

I — Amperage — *Intensité en Ampères* — Stromstärke in Ampere

S1 Permanent — *Permanent* — Dauerbetrieb

S2 min

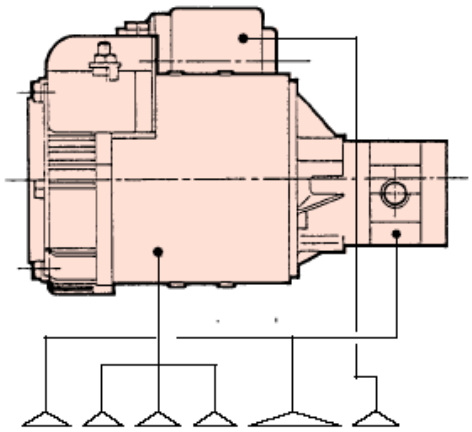
S3 % (10 min)

PUMPS *POMPES* PUMPEN		12 V PRESSURE - *PRESSION* - DRUCK								24 V PRESSURE - *PRESSION* - DRUCK							
		5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI	5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI
0025	Q	1,7	1,6	1,4	1,35	1,3	1,25	1,2	1,15	1,6	1,5	1,4	1,35	1,33	1,3	1,25	1,2
	I	30	40	48	58	64	68	73	77	14	19	26	32	35	38	41	44
	S2	30	28,5	24	21,5	20	15,5	14	13	30	30	30	23	19	15,5	11,5	10,5
	S3	60	60	60	60	60	60	60	54	30	30	30	30	60	60	60	60
	S4a	600	600	600	600	600	600	530	490	600	600	600	600	600	550	510	470
	S4b	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
	PC	35	35	30	22	20	18	16,5	15	35	35	35	29	22	18	14,5	12,5
0050	Q	4,5	4,15	3,7	3,4	3,2	3	2,8	2,6	3	2,9	2,7	2,55	2,48	2,36	2,28	2,2
	I	33	60	90	118	133	148	162	176	16	25	37	49	55	60	65	70
	S2	30	24	15	10,5	9	7,5	6,5	5	30	30	17	8,5	6,5	4,8	3,7	2,8
	S3	60	60	60	39	31	25	20,5	17	60	60	60	60	35	26	17	14
	S4a	600	600	560	420	375	330	290	260	600	600	570	430	390	330	280	240
	S4b	600	600	600	600	600	600	600	600	600	600	600	600	600	600	560	520
	PC	35	29	17	12	9,5	8	6,9	5,5	35	35	20,5	10,2	7,6	5,7	4,5	3,5
0075	Q	4,5	4,15	3,7	3,4	3,2	3	2,8	2,6	4,6	4,25	3,8	3,45	3,3	3,1	3	2,8
	I	33	60	90	118	133	148	162	176	18	32	48	64	72	80	88	96
	S2	30	19	11	6,3	4,7	3,5	2,5	1,7	30	22	8	4	2,8	2	1,5	1
	S3	60	60	39	21	16	11,5	8	5	60	60	54	18	13,5	10,5	8	6,2
	S4a	600	600	420	300	230	200	160	115	600	600	420	290	230	190	150	115
	S4b	600	600	600	600	600	600	510	410	600	600	600	560	510	460	410	350
	PC	35	21,7	12	7	5,2	4	2,7	1,9	35	26	10	4,5	3,2	2,4	1,7	1,2
0100	Q	6	5,6	4,8	4,2	3,8	3,55	3,2		6,1	5,65	5,1	4,5	4,25	3,9	3,8	3,5
	I	34	70	110	148	165	185	205		20	38	60	80	90	100	110	120
	S2	30	15	7,5	3,5	2,2	1,5	0,5		30	15	4,8	2	1,2	0,8	0,5	0,3
	S3	60	60	25	11,5	7	3,5	1		60	60	24	10,5	7,5	5,8	4	2,7
	S4a	600	600	335	200	140	80			600	540	330	190	135	95	60	40
	S4b	600	600	600	600	460	340			600	600	600	460	390	320	250	180
	PC	35	17,1	8	3,8	2,4	1,7			35	17	5,8	2,5	1,5	1,2	0,5	0,35
0125	Q	7,6	6,8	5,6	4,7	4,2				7,6	6,6	5,8	5	4,7	4,3	3,8	
	I	35	82	133	183	208				22	46	72	96	108	120	132	
	S2	29	12,5	4,7	1,5	0,5				30	10	2,7	1	0,5	0,3	0,2	
	S3	60	48	16	3,5	1				60	60	14	6,5	4,2	3	1,5	
	S4a	600	470	255	100					600	460	250	115	75	40	20	
	S4b	600	600	600	380					600	600	520	350	275	180	100	
	PC	32,6	14,2	5,3	1,7					35	8	3,5	1,2	0,6	0,35	0,25	
0150	Q	9,1	7,9	6,6	5,3					9,1	7,9	6,7	5,5	4,9			
	I	39	92	152	212					24	52	84	114	130			
	S2	28	10	3,2	0,5					30	6,5	1,7	0,3	0,1			
	S3	60	36	9,7	0,5					60	36	9	3,2	1,8			
	S4a	600	410	190						600	380	170	55	25			
	S4b	600	600	590						600	600	435	230	120			
	PC	32,6	11,2	3,5						35	8	2,1	0,35	0,25			
0200	Q	12	9,9	7,7						12,1	10	7,8	5,8				
	I	40	112	190						28	62	100	140				
	S2	28	7	1,2						30	4,2	0,7	0,2				
	S3	60	23,5	3						60	20	6,5	1,3				
	S4a	600	320	75						600	290	20	10				
	S4b	600	600	330						600	570	90	40				
	PC	35	35	35						35	5	0,9	0,25				

MAIN ELECTRO - HYDRAULIC CHARACTERISTICS OF MICRO ELECTRO -PUMPS

MOTOR AE — 12 V : 1,1 kW — 24 V : 1,2 kW

DIRECT CURRENT.



0 1	HE	1	C	075	T	R	XX	X
I Sign	II Sign	III Sign	IV Sign	V Sign	VI	VII Sign	VIII Sign	IX Sign

PUMP TYPE

Series 0

GENERATION 1

MOTOR TYPE

	12 Volts	24 Volts	
Direct Current (Duty S3 10 % of 10 min)	0,175 kW	0,175 kW	FE
	0,8 kW	1 kW	HE
	1,1 kW	1,2 kW	AE
Direct Current (Duty S1)	0,6 kW	0,6 kW	KE
Special Motor			**
without Motor			XX

VOLTAGE

12 Volts =	1
24 Volts =	2
48 Volts =	4
Special Voltage	*
without Motor	X

CURRENT

Direct	C
without Motor	X

Motor with thermo-switch : consult out technical departments .

X without tank

DECOMPRESSION DEVICE

XX without decompression

RELAY (Mounting with braid)

X without Relay

R with Relay

TYPE of SHAFT

T Tang

PUMP CAPACITY

025	0,25	cc / rev	0,015	Cubic / inch
050	0,50	cc / rev	0,030	Cubic / inch
075	0,75	cc / rev	0,045	Cubic / inch
100	1	cc / rev	0,060	Cubic / inch
125	1,25	cc / rev	0,075	Cubic / inch
150	1,50	cc / rev	0,090	Cubic / inch
200	2	cc / rev	0,120	Cubic / inch

CODIFICATION OF MICRO ELECTRO - PUMP SETS

DIRECT CURRENT VERSION 1G SERIES 0

ALTERNATING CURRENT.

Three - Phase

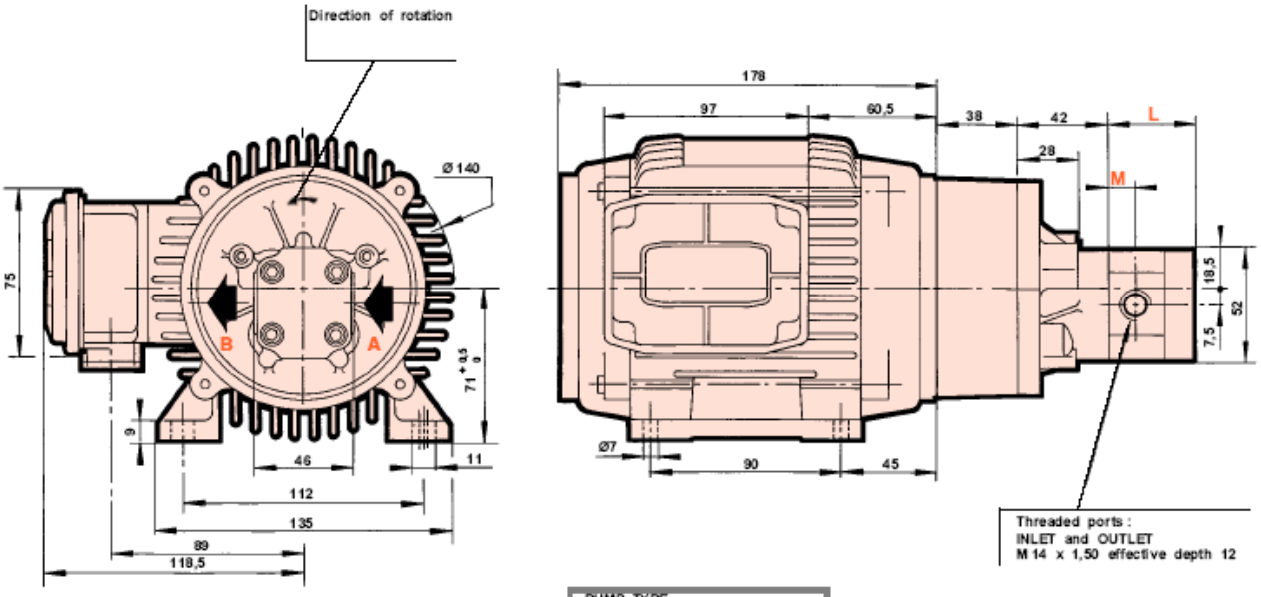
Type *Type* Typ	Power *Puissance* Leistung kW	
	S1	S3
71	0,26 0,50	0,55 0,75 1,10
80	0,95	

ALTERNATING CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	Sign *Signe* Zeichen	6	T	Sign *Signe* Zeichen	T	X	XX	X

(F.T R 0181)



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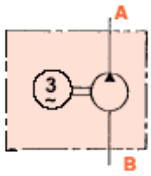


PUMP TYPE *TYPE de POMPE* PUMPE TYP	M	L
to 0025 à 0075 bis	13,2	40,6
to 0100 à 0150 bis	16,4	47
0200	20,6	55,5

PERFORMANCES Characteristics of Flow - Pressure - Power - Intensity see curves on the reverse side

working **TEMPERATURE** from - 15 °C to + 80 °C

FLUID Mineral hydraulic oil I.S.O VG 27 to 68 cSt
Motor oil SAE 10 W 30
For any other fluid , please consult our technical departments

WORKING Horizontal or vertical position

ACCESSORIES

MOTOR Three - Phase 50 Hz
Voltage 220 / 380 V -
Insulation class F - Heating 80 °C
Protection of Motor : tight to water pipe and to fine dusts IP 55
Tropicalized on requiest -
Motor in accordance with the BRITISH STANDARD BS 4999

PUMP This electro pump unit is fitted with a Series 0 Pump Type : P 1 CLS 0000 F L 40 C15 of capacity : 0,25 - 0,50 - 0,75 - 1 - 1,25 - 1,50 - 2 cc/rev
see data sheet F.T 00 386

ADAPTATOR (OPTION) for Inlet and Outlet ports
see data sheet F.T 10 702

For CODIFICATION , see data sheet F.T R 0181

MASS of the electro pump set unit : ≃ 9 Kg

MICRO ELECTRO - PUMPS

SERIES 0

THREE-PHASE TYPE 71 DUTY S3

ALTERNATING CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	Sign Signe Zeichen	6	T	Sign Signe Zeichen	T			

(F.T R 0181)

Concerned Motors are Dimensions are in accordance with the BRITISH STANDARD BS 4999 -

Characteristics of the following tables are available for voltages 220 / 380 V - THREE - PHASE 50 Hz and 60 Hz - Insulation class F - Heating 80 °C -

Protection of Motors : Tight to water pipe and to fine dusts IP 55 - Tropicalized on request -

For Pumps charactéristics , see Data sheet F.T 00 386

The Max. pressure is indicated at max. flow - speed of the Motor under load - Oil viscosity 46 cSt (5,6 °E)

MICRO ELECTRO - PUMPS

SERIES 0

THREE-PHASE TYPE 71 DUTY S3

II Sign Signe Zeichen	Voltage Tension Spannung III Sign Signe Zeichen	Ref.	Speed Vitesse Drehzahl rev / min t / min U / min	Power Puissance Leistung kW	Duty Service E.D	Frequency Frequence Frequenz Hz	NB Nota Nota	Mass Masse Masse Kg
NB	6	112 476	3000	0,55	S3	50	not cooled - Non ventilé - nicht belüftet	4,4
NG	6	112 423	3000	0,80	S3	50	not cooled - Non ventilé - nicht belüftet	6
NH	6	112 120	3000	1,10	S3	60	not cooled - Non ventilé - nicht belüftet	6,9

ALTERNATING CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	NG	6	T	Sign Signe Zeichen	T			

(F.T R 0181)

PUMPS POMPES PUMPEN		PRESSURE - PRESSION - DRUCK									
		5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	125 bar 1810 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI	280 bar 4060 PSI
0025	Q	0,75	0,74	0,73	0,73	0,72	0,72	0,71	0,71	0,70	0,70
	I	1,00	1,05	1,10	1,12	1,15	1,17	1,20	1,22	1,25	1,30
	S3	50	50	50	50	50	50	50	50	50	50
	dBa	50	52	53	54	54	55	55	56	56	56
0050	Q	1,50	1,45	1,43	1,42	1,41	1,40	1,38	1,35	1,32	1,28
	I	1,00	1,07	1,20	1,25	1,30	1,35	1,40	1,50	1,60	1,70
	S3	50	50	50	44	35	27	21	17	14	10
	dBa	52	54	55	56	56	57	57	58	58	59
0075	Q	2,25	2,18	2,10	2,05	2,00	1,95				
	I	1,00	1,09	1,30	1,40	1,50	1,60				
	S3	50	50	35	24	17	12				
	dBa	53	56	57	58	58	59				
0100	Q	3,00	2,85	2,80	2,75						
	I	1,00	1,12	1,40	1,55						
	S3	50	50	22	14						
	dBa	55	59	60	61						
0125	Q	3,75	3,55	3,45							
	I	1,10	1,20	1,50							
	S3	50	44	14							
	dBa	57	61	61							
0150	Q	4,50	4,20	3,90							
	I	1,10	1,30	1,70							
	S3	50	35	10							
	dBa	58	62	63							
0200	Q	6,00	5,50								
	I	1,10	1,40								
	S3	50	21								
	dBa	59	63								

Q
Flow in l / min
Débit en l / min
Fördermenge in l / min

I
Amperage
Intensité en Ampères
Stromstärke in Ampere

DUTIES
SERVICES
E.D
S3 % (10 min)

dBa
Noise at 1 meter
Bruit à 1 mètre
Schalldruck bei
1 Meter Abstand

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	NH	6	T	Sign Signe Zeichen	T			

(F.T R 0181)

PUMPS POMPES PUMPEN		PRESSURE - PRESSION - DRUCK									
		5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	125 bar 1810 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI	280 bar 4060 PSI
0025	Q	0,75	0,74	0,73	0,73	0,72	0,72	0,71	0,71	0,70	0,70
	I	1,10	1,15	1,20	1,22	1,25	1,27	1,30	1,32	1,35	1,40
	S3	50	50	50	50	50	50	50	50	50	50
	dBa	52	53	54	55	55	56	56	57	57	57
0050	Q	1,50	1,47	1,45	1,44	1,43	1,42	1,40	1,37	1,34	1,30
	I	1,10	1,17	1,30	1,35	1,40	1,45	1,50	1,60	1,70	1,80
	S3	50	50	50	50	50	43	38	32	27	21
	dBa	54	55	56	57	57	58	58	59	59	60
0075	Q	2,25	2,20	2,15	2,13	2,10	2,05	2,00	1,90	1,85	
	I	1,10	1,20	1,40	1,50	1,60	1,80	1,95	2,10	2,30	
	S3	50	50	50	39	32	24	19	15	11	
	dBa	56	57	58	59	59	60	61	62	63	
0100	Q	3,00	2,95	2,90	2,85	2,80	2,75	2,70			
	I	1,10	1,25	1,50	1,65	1,80	2,10	2,40			
	S3	50	50	38	28	20	14	10			
	dBa	58	60	61	62	62	63	64			
0125	Q	3,75	3,60	3,55	3,50	3,45					
	I	1,20	1,30	1,70	1,95	2,20					
	S3	50	50	28	18	12					
	dBa	60	62	62	63	64					
0150	Q	4,50	4,30	4,10	4,00						
	I	1,20	1,40	1,90	2,20						
	S3	50	50	20	12						
	dBa	61	63	64	65						
0200	Q	6,00	5,70	5,40							
	I	1,20	1,60	2,30							
	S3	50	37	10							
	dBa	62	64	66							

Q
Flow in l / min
Débit en l / min
Fördermenge in l / min

I
Amperage
Intensité en Ampères
Stromstärke in Ampere

DUTIES
SERVICES
E.D
S3 % (10 min)

dBa
Noise at 1 meter
Bruit à 1 mètre
Schalldruck bei
1 Meter Abstand

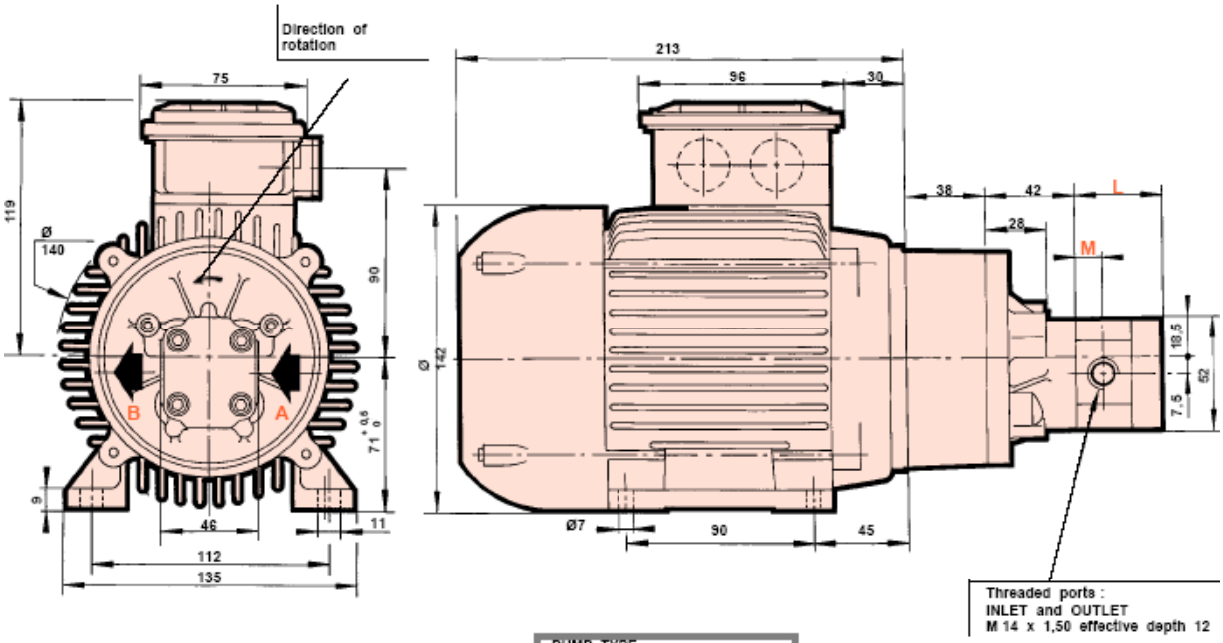
MAIN ELECTRO - HYDRAULIC CHARACTERISTICS OF MICRO ELECTRO PUMPS

ALTERNATING CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	Sign Signe Zeichen	6	T	Sign Signe Zeichen	T	X	XX	X

(F.T R 0181)



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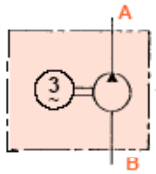


PUMP TYPE *TYPE de POMPE* PUMPE TYP	M	L
to 0025 à 0075 bis	13,2	40,6
to 0100 à 0150 bis	16,4	47
0200	20,6	55,5

PERFORMANCES Characteristics of Flow - Pressure - Power - Intensity see curves on the reverse side

working **TEMPERATURE** from - 15 °C to + 80 °C

FLUID Mineral hydraulic oil I.S.O VG 27 to 68 cSt
Motor oil SAE 10 W 30
For any other fluid , please consult our technical departments

WORKING Horizontal or vertical position

ACCESSORIES

MOTOR Three - Phase 50 Hz
Voltage 220 / 380 V -
Insulation class F - Heating 80 °C
Protection of Motor : tight to water pipe and to fine dusts IP 55
Tropicalized on request -
Motor in accordance with the BRITISH STANDARD BS 4999

PUMP This electro pump unit is fitted with a Series 0 Pump Type : P 1 CLS 0000 F L 40 C15 of capacity : 0,25 - 0,50 - 0,75 - 1 - 1,25 - 1,50 - 2 cc/rev
see data sheet F.T 00 386

ADAPTATOR (OPTION) for Inlet and Outlet ports
see data sheet F.T 10 702

For CODIFICATION , see data sheet F.T R 0181

MASS of the electro pump set unit: ≃ 7,7 to 9,3 Kg

MICRO ELECTRO - PUMPS

SERIES 0 THREE-PHASE

TYPE 71 DUTY S1

ALTERNATING CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	Sign Signe Zeichen	6	T	Sign Signe Zeichen	T			

(F.T R 0181)

Concerned Motors are Dimensions are in accordance with the BRITISH STANDARD BS 4999 -

Characteristics of the following tables are available for voltages 220 / 380 V - THREE - PHASE 50 Hz and 60 Hz - Insulation class F - Heating 80 °C -

Protection of Motors : Tight to water pipe and to fine dusts IP 55 - Tropicalized on request -

For Pumps characteristics , see Data sheet F.T 00 386

The Max. pressure is indicated at max. flow - speed of the Motor under load - Oil viscosity 46 cSt (5,6 °E)

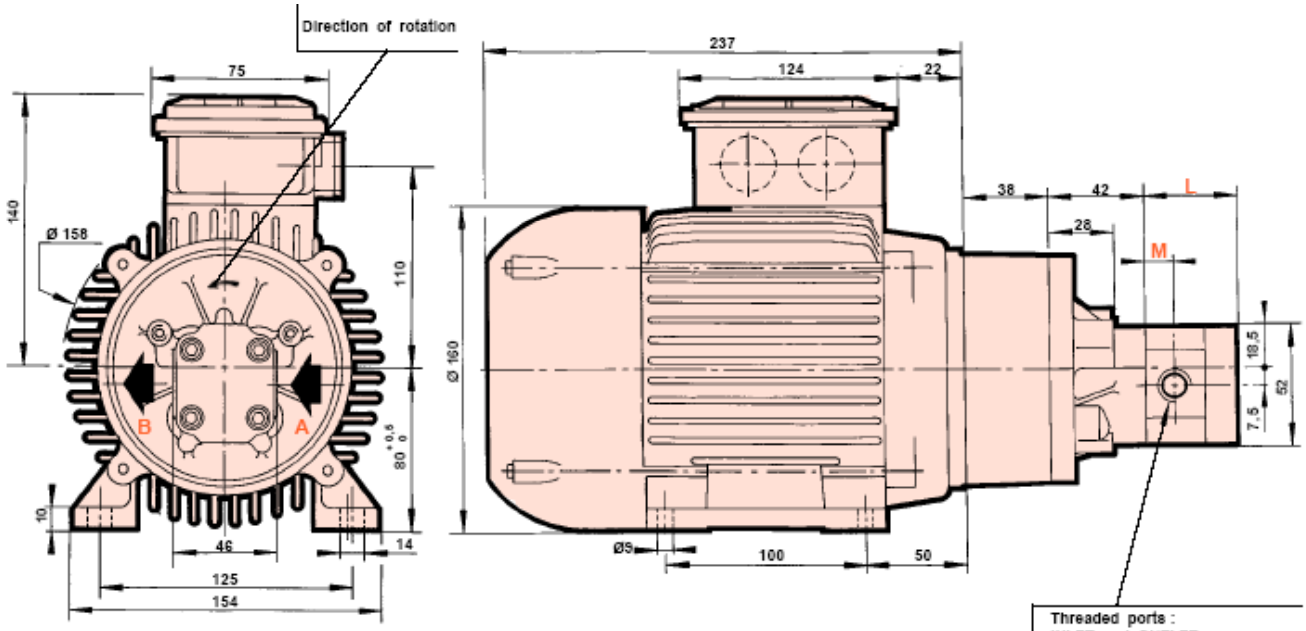
MICRO ELECTRO - PUMPS

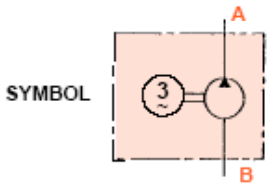
SERIES 0 THREE-PHASE

TYPE 71 DUTY S1

II Sign Signe Zeichen	Voltage *Tension* Spannung III Sign Signe Zeichen	Ref.	Speed *Vitesse* Drehzahl rev / min *t / min* U / min	Power *Puissance* Leistung kW	Duty *Service* E.D	Frequency *Frequence* Frequenz Hz	NB *Nota* Nota	Mass *Masse* Masse Kg
NA	6	*112 484*	*1500*	*0,26*	*S1*	*50*	air cooled - *Ventilé* - belüftet	*5,7*
NC	6	*112 485*	*1500*	*0,50*	*S1*	*50*	air cooled - *Ventilé* - belüftet	*7,3*

ALTERNATING CURRENT.





PUMP TYPE *TYPE de POMPE* PUMPE TYP	M	L
to 0025 a 0075 bis	13,2	40,6
to 0100 a 0150 bis	16,4	47
0200	20,6	55,5

PERFORMANCES Characteristics of Flow - Pressure - Power - Intensity see curves on the reverse side

working **TEMPERATURE** from - 15 °C to + 80 °C

FLUID Mineral hydraulic oil I.S.O VG 27 to 68 cSt
Motor oil SAE 10 W 30
For any other fluid , please consult our technical departments

WORKING Horizontal or vertical position

ACCESSORIES

MOTOR Three - Phase 50 Hz
Voltage 220 / 380 V -
Insulation class F - Heating 80 °C
Protection of Motor : tight to water pipe and to fine dusts IP 55
Tropicalized on requiest -
Motor in accordance with the BRITISH STANDARD BS 4999

PUMP This electro pump unit is fitted with a Series 0 Pump Type : P 1 CLS 0000 F L 40 C15 of capacity : 0,25 - 0,50 - 0,75 - 1 - 1,25 - 1,50 - 2 cc/rev
see data sheet F.T 00 386

ADAPTATOR (OPTION) for Inlet and Outlet ports
see data sheet F.T 10 702

For CODIFICATION , see data sheet F.T R 0181

MASS of the electro pump set unit: ≃ 13 Kg

MICRO ELECTRO - PUMPS

SERIES 0 THREE-PHASE

TYPE 80 DUTY S1

ALTERNATING CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
01	PC	6	T	Sign Signe Zeichen	T			

(F.T R 0181)

Concerned Motors are Dimensions are in accordance with the BRITISH STANDARD BS 4999 -

Characteristics of the following tables are available for voltages 220 / 380 V - THREE - PHASE 50 Hz and 60 Hz - Insulation class F - Heating 80 °C -

Protection of Motors : Tight to water pipe and to fine dusts IP 55 - Tropicalized on request -

For Pumps characteristics , see Data sheet F.T 00 386

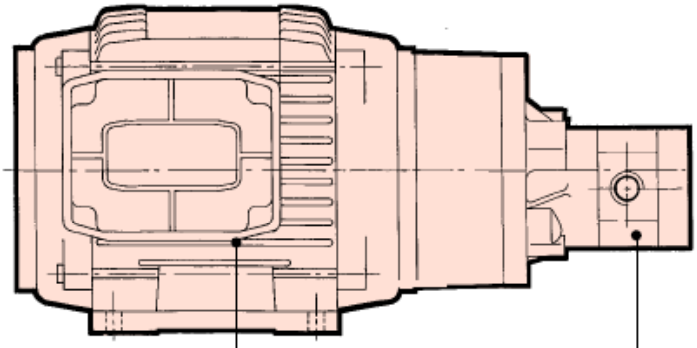
The Max. pressure is indicated at max. flow - speed of the Motor under load - Oil viscosity 46 cSt (5,6 °E)

MICRO ELECTRO - PUMPS

SERIES 0 THREE-PHASE TYPE 80 DUTY S1

II Sign Signe Zeichen	Voltage Tension Spannung III Sign Signe Zeichen	Ref.	Speed Vitesse Drehzahl rev / min t / min U / min	Power Puissance Leistung kW	Duty Service E.D	Frequency Frequence Frequenz Hz	NB Nota Nota	Mass Masse Masse Kg
PC	6	112 486	1500	0,95	S1	50	air cooled - Ventilé - belüftet	10,6

ALTERNATING CURRENT.



0 1	NA	6	T	075	T	X	XX	X
I Sign	II Sign	III Sign	IV Sign	V Sign	VI	VII Sign	VIII Sign	IX Sign

PUMP TYPE

Series 0

GENERATION 1

MOTOR TYPE according to F.T R 0184

VOLTAGE

220 - 230 Volts - 60 Hz	3
110 - 115 Volts - 60 Hz	5
230 - 400 Volts - 50 Hz	6
230 - 400 Volts - 60 Hz	7
100 Voltz - 50 Hz	8
220 - 230 Volts - 50 Hz	9
Special Voltage	*
without Motor	X

CURRENT

Three - phase	T
Single phase	M
without Motor	X

ATTENTION in case of a mounting without electric motor, specify the bell housing and coupling references after the Codification.

X without tank

DECOMPRESSION DEVICE

XX without decompresion

RELAY

X without relay

TYPE of SHAFT

T Tang

PUMP CAPACITY

025	0,25 cc / rev	0,015 Cubic / inch
050	0,50 cc / rev	0,030 Cubic / inch
075	0,75 cc / rev	0,045 Cubic / inch
100	1 cc / rev	0,060 Cubic / inch
125	1,25 cc / rev	0,075 Cubic / inch
150	1,50 cc / rev	0,090 Cubic / inch
200	2 cc / rev	0,120 Cubic / inch

CODIFICATION OF MICRO ELECTRO - PUMP SETS

ALTERNATING CURRENT VERSION 1G SERIES 0

DIRECT CURRENT and ALTERNATING

Relay

Braid

Bell Housings

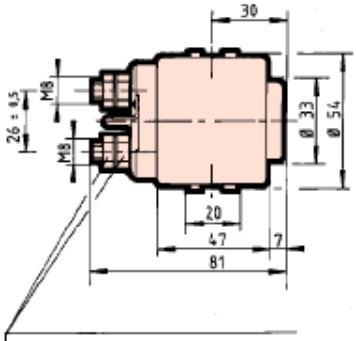
Coupling

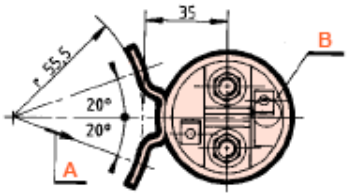
DIRECT AND ALTERNATING CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
						S		

(F.T R 0127)

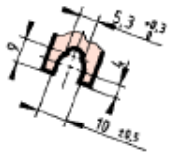




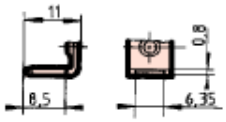
2 Terminals M 8 x 1,25 (Contact)

Tightening torque 0,8 $^{+0,3}_{0}$ Kgm / m.daN / Kpm 5,7 $^{+2,1}_{0}$ lb / ft

View A



View B



SYMBOL

Approximative weight : 0,7 Kg

References : 12 V 111 056 24 V 111 057

RELAY

GENERAL CHARACTERISTICS

PROTECTION : IP54 Excepted connections (DIN 40 050)

ENVIRONEMENT : 96 h Salt spray

UTILIZATION : Intermittent duty

FUNCTION : Normally opened (mono-contact)

working TEMPERATURE from - 30 to + 60 °C

ELECTRO - TECHNICAL CHARACTERISTICS

at ambient temp : 20 °C $^{+5°}_{-0°}$

MINI ENERGIZING VOLTAGE U ≤ U Nominal - 30 %	8,4 V	16,8 V
NOMINAL VOLTAGE (U)	12 V	24 V
MAXI VOLTAGE (U) U = U Nominal + 20 %	14,4 V	28,4 V
NOMINAL ENERGIZING POWER	30 W	25 W
MAXI TEMPERATURE of the Coil	120 °C	120 °C
INSULATION CLASS	A (VDE 110 § 5)	
ENDURANCE	≥ 30 000 cycles 3 sec. 200 Amp. / min	
PROTECTION	I P 54	

CHARACTERISTICS for the USE
see figures on the verso of the data sheet

DIRECT AND ALTERNATING CURRENT.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
						S		

(F.T R 0127)

Duties for Amperage ≤ 100 A. in contact

	8,4 V	9,6 V	10,8 V	12 V	12,6 V	13,2 V	14,4 V
	- 30 %	- 20 %	- 10 %	Rated voltage *Tension Nominale* Nennspannung	+ 5 %	+ 10 %	+ 20 %
	16,8 V	19,2 V	21,6 V	24 V	25,2 V	26,4 V	28,8 V
S2	see - *voir* - Siehe S1						
S3	see - *voir* - Siehe S1						
S4a	600	600	600	600	600	600	600
S4b	600	600	600	600	600	600	600
P.C							

Duties for Amperage ≥ 100 A. in contact depending : 1°) of the Tension 2°) of the Power

		8,4 V	9,6 V	10,8 V	12 V	12,6 V	13,2 V	14,4 V
		- 30 %	- 20 %	- 10 %	Rated voltage *Tension Nominale* Nennspannung	+ 5 %	+ 10 %	+ 20 %
	INTENSITY *INTENSITE* STROMSTÄRKE	16,8 V	19,2 V	21,6 V	24 V	25,2 V	26,4 V	28,8 V
S2	200 A	1	1	1	1	0,80	0,70	0,50
	300 A	0,50	0,50	0,50	0,50	0,50	0,50	0,50
	500 A	0,15	0,15	0,15	0,15	0,15	0,15	0,15
S3	200 A	10	10	7	5	3	2,50	2
	300 A	5	5	5	5	3	2,50	2
	500 A	1,50	1,50	1,50	1,50	1,50	1,50	1,50
S4a	200 A	600	600	600	600	480	420	300
	300 A	300	300	300	300	300	300	300
	500 A	40	40	40	40	40	40	40
S4b	200 A	600	600	600	600	480	420	300
	300 A	350	350	350	350	350	350	350
	500 A	60	60	60	60	60	60	60
P.C	200 A	2,50	2,50	2,50	2,50	2,50	2,10	1,60
	300 A	0,70	0,70	0,70	0,70	0,70	0,70	0,70
	500 A	0,20	0,20	0,20	0,20	0,20	0,20	0,20

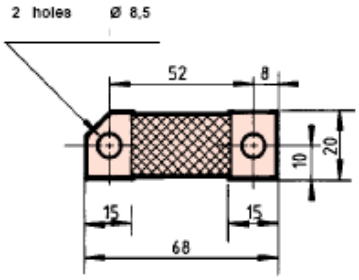
* Duties according to norms NF. C 51 111-
VDE 530.1

* S1 Continuous Duty
* S2 Temporary Duties (min)
* S3 Periodical Intermittent Duties (% of 10 min)
* S4 a Number of start / hour
1 Second work - 5 Seconds stop
* S4 b Number of start / hour
1 Second work - 1 Second stop
during 20 Seconds - Rest 40 Seconds
P.C Continuous working breaking point (min)

CHARACTERISTICS for the USE of RELAY

DIRECT AND ALTERNATING CURRENT.

BRAID (not insulated) Reference 101 809

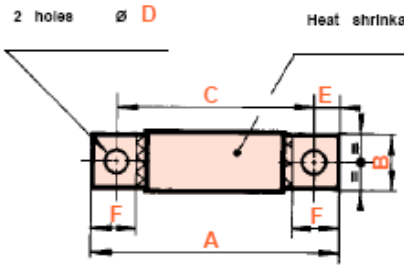


Approximative weight : 0,020 kg

section of the wire : S = 16 mm2

Standard Utilization on Mini Power Packs	
Motors	D I - B I - B L - C L

BRAID (Insulated)



Approximative weight : 0.025 / 0.035 kg

Section of the wire : S = 16 mm2

Dimensions - *References* - Referenzen							References *References* Referenzen
A	B	C	Ø D	E	F	G	
87	18	72	8,5	7,5	15	2,5	105 400 *
120	20	100	10	10	20	2,5	110 628 *
68	20	52	8,5	8	15	2,5	111 091 *

* Utilization on special request

110 628	
Utilization on Micro Power Packs	
Utilisation sur Micro - Centrales (ATTENTION : *Livré non montée*) Verwendung auf Mikro - Aggregaten (ACHTUNG : separat geliefert)	
Motors *Moteurs* Motoren	HE - AE

UTILIZATION :

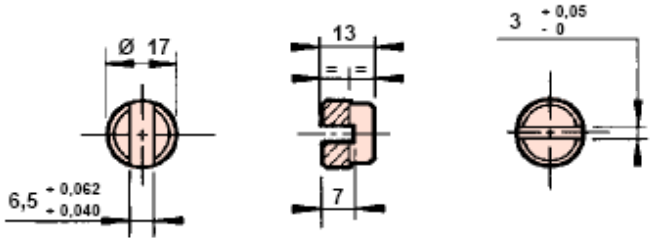
Connection between motor terminal and relay terminal

BRAID

DIRECT AND ALTERNATING CURRENT.

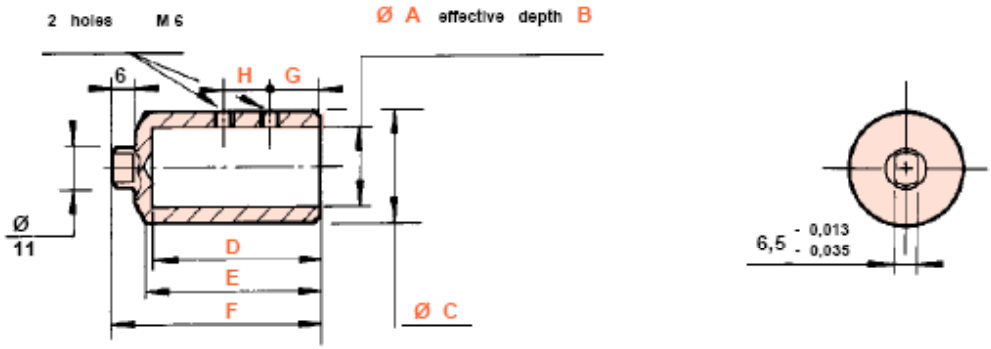
COUPLING

Reference : 107 866



Approximate weight : 0,015 Kg

MOTOR COUPLING



Approximate weight : 0,125 Kg

Ø A	B	Ø C	D	E	F	G	H	Unit N° N° Ensembles Gruppen Nr.
14 +0,059 +0,032	32	22	38	42	56	12	13	E. 5070950
19 +0,059 +0,032	41	32	42	42	56	15	15	E. 5070951

The here above mentioned Unit References include the cross coupling and the equipped coupling sleeve .

COUPLING for MICRO ELECTRO PUMPS and MICRO POWER PACKS with THREE and SINGLE PHASE MOTOR

DIRECT AND ALTERNATING CURRENT.

TYPE of MOTOR / TYPE de MOTEUR / MOTOR TYP	Dimensions of the flange / Dimensions de la Bride / Flanschabmessungen	Ø A F8	Ø B	Ø C	Ø D	Unit N° / N° Ensembles / Gruppen Nr.
71	85 x 70 x 110	70 $^{+0,060}_{+0,030}$	63,5 $^{0}_{-0,05}$	110 $\pm^{0,5}_{1}$	89,5	E. 5072374
80	100 x 80 x 120	80 $^{+0,060}_{+0,030}$	63,5 $^{0}_{-0,05}$	120 $\pm^{0,5}_{1}$	89,5	E. 5072375

UTILIZATION : Micro Electro Pumps and Micro Power Packs

The bell housings of cast iron allow the adaptation to AC motors (three phase or single phase) fitted with flanges Type B 14 - B 34

The here-above mentioned units include : bell housing and screws

For the coupling, revert to Data sheets F.T 00 073

BELL HOUSING for MICRO ELECTRO PUMPS and MICRO POWER PACKS

MICRO ELECTRO PUMPS 3G.

CONTENTS.

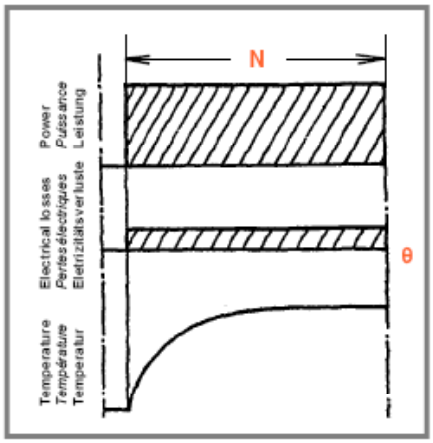
MICRO ELECTRO PUMPS 3G.

Representative chart

DUTY TYPES DIRECT CURRENT MOTORS

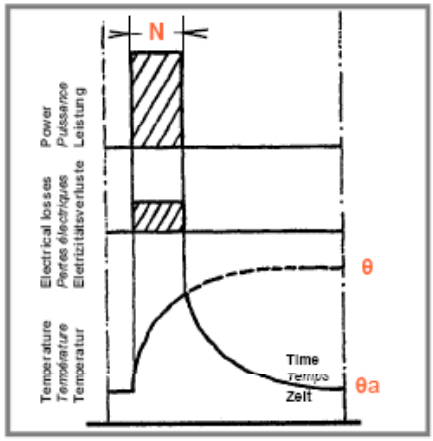
S1
Continuous Duty

Duty type consisting of working at a constant load during a certain time long enough to reach the thermal equilibrium.



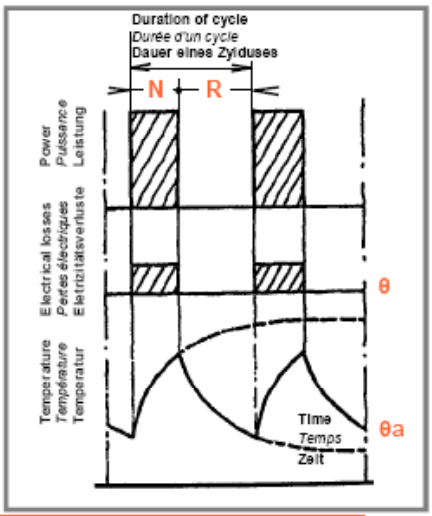
S2
Temporary Duties

Duty types consisting of working at constant load during a determined period shorter than the one necessary for reaching the thermal equilibrium, followed by a rest the duration of wich should be long enrough to reach the same temperature as the cooling medium.



S3
Periodical intermittent Duties

Types of dutiesconsisting of a series of identical cycles each of them including a working time at constant load and a rest time, the durations being not sufficient for reaching the thermal equilibrium during the heating periods as well as the cooling periods.



Legend:
N: Working at nom. load
R: Rest
D: Starting
θ: Temperture during Continuous Duty
θa: Temperature of cooling medium

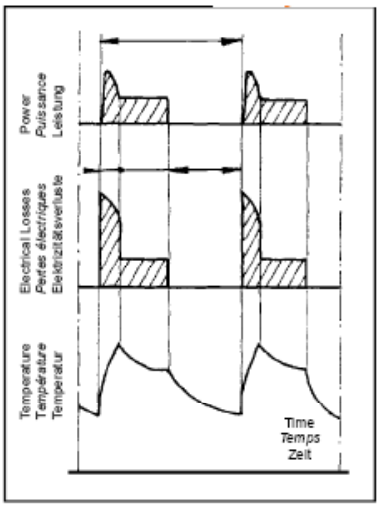
MICRO ELECTRO PUMPS 3G.

DUTY TYPES
DIRECT CURRENT MOTORS

S4

Intermittent starting Duties

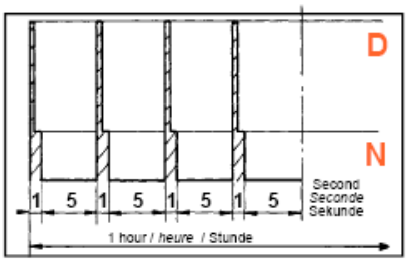
Types of duties consisting of a series of identical cycles ,each of them including a starting time, a working time at constant load and a rest time. The working time and the rest time are short enough not to reach the thermal equilibrium during a cycle.
In these duties, the motor stops either due to the natural slowing-down after switching off or by means of a brake such as a mechanical brake which does not cause complementary heating-up of the coils.



S4a

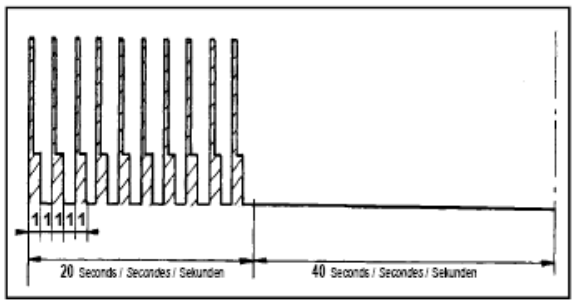
Specific Duties

Determines the number of startings per hour according to the S4 cycle here after mentioned :
- 1 second of working time
- 5 seconds of rest time.



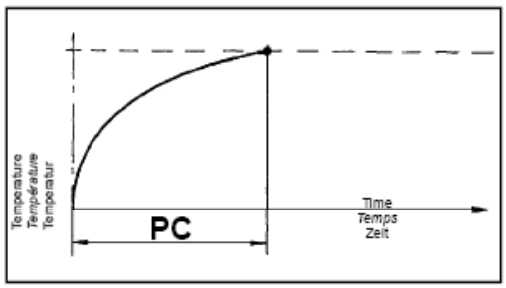
S4b

Determines the number of startings per hour according to the S4 cycle here after mentioned :
- 1 second of working time
- 1 second of rest time during 20 seconds;
- 40 seconds of rest time.



PC

Critical moment at permanent functioning S2 under load in minutes before destruction.



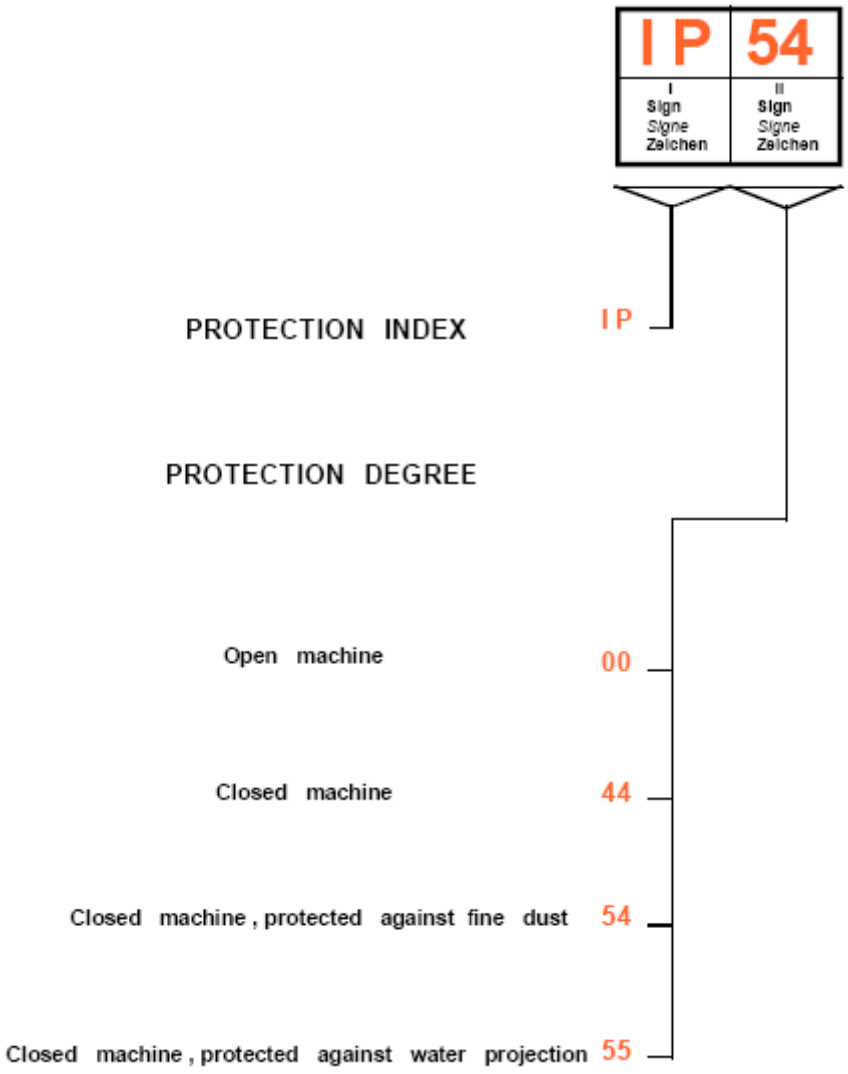
Legend :

N Working at nom. load
R Rest
D Starting
θ Temperature during Continuous Duty
θa Temperature of cooling medium

Documentation :
French Standards NFC 51 111
German Standards VDE 530-1

PROTECTION and TIGHTNESS of the DIRECT CURRENT and ALTERNATIVE CURRENT MOTORS

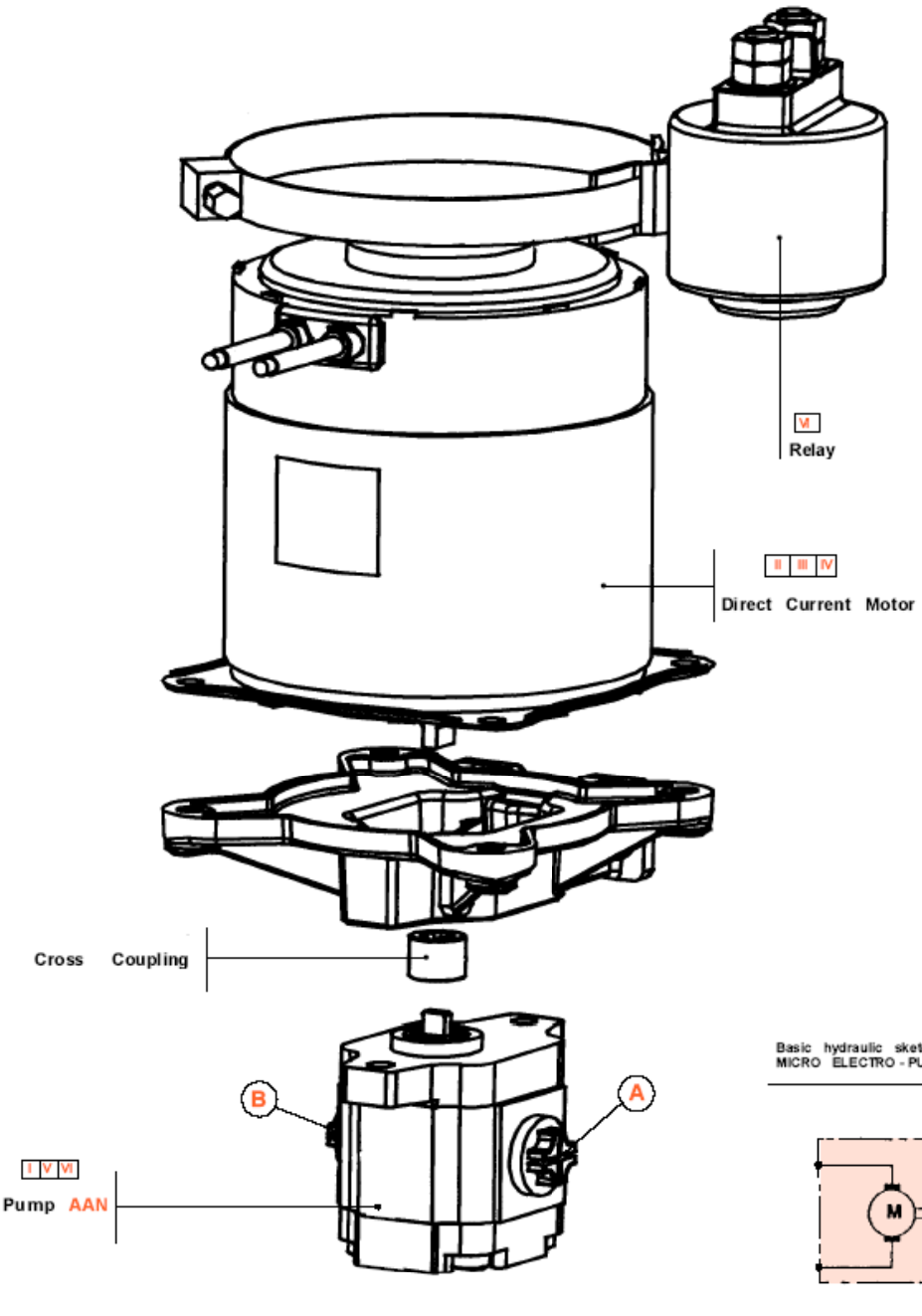
Extract from Standard NF C 51 - 115 see data sheet F.T R 0164



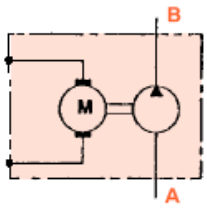
PROVISOIRE.

CODIFICATION (F.T R 0250)

03	MF	2	C	100	T	R	XX	X
I Sign Signe Zeichen	II Sign Signe Zeichen	III Sign Signe Zeichen	IV Sign Signe Zeichen	V Sign Signe Zeichen	VI Sign Signe Zeichen	VII Sign Signe Zeichen	VIII Sign Signe Zeichen	IX Sign Signe Zeichen



Basic hydraulic sketch of a MICRO ELECTRO - PUMP SET UNIT



TECHNOLOGICAL COMPOSITION of MICRO ELECTRO - PUMPS

VERSION 3G

Ports - *Orifices* - Anschlüsse	
A - B	M 14 x 150

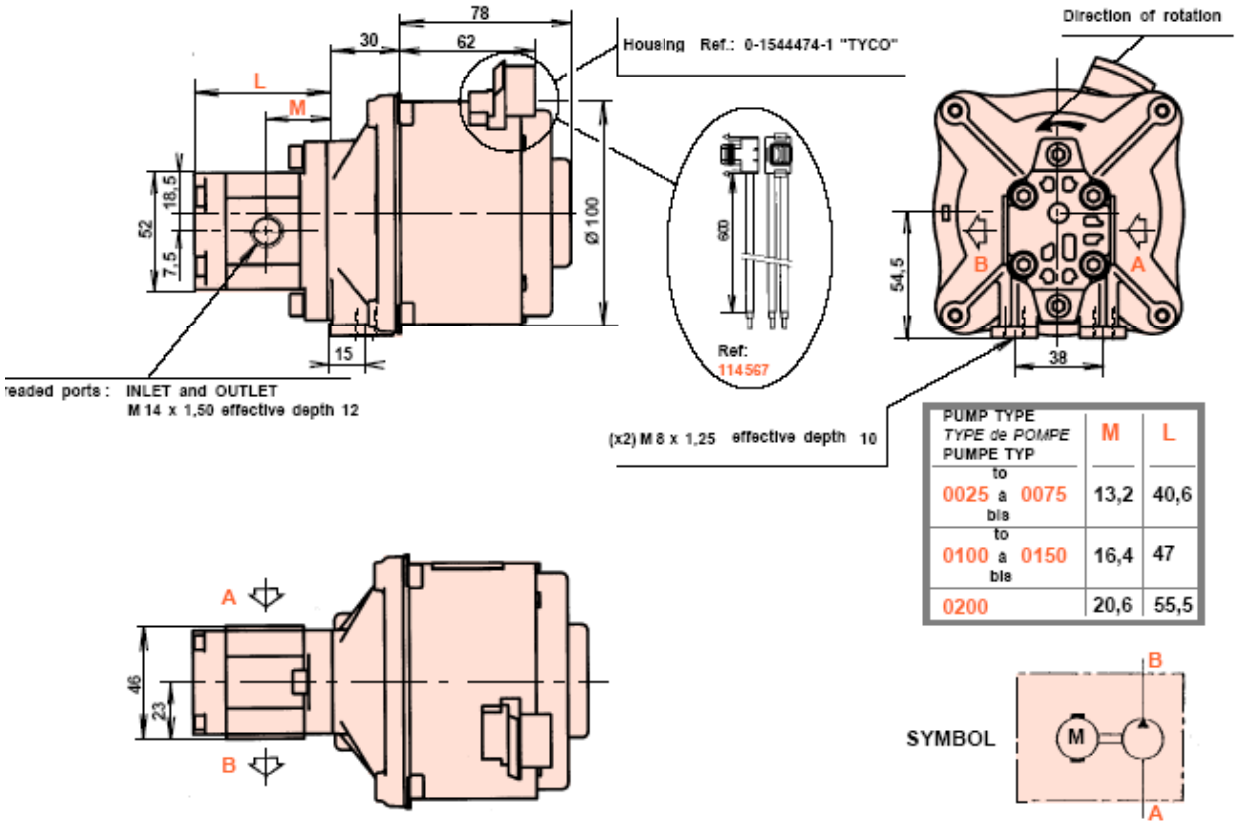
JTEKT HPI

MICRO ELECTRO PUMPS.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
03	MF	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

(F.T R 0250)



PUMP TYPE *TYPE de POMPE* PUMPE TYP	M	L
to 0025 a 0075 bis	13,2	40,6
to 0100 a 0150 bis	16,4	47
0200	20,6	55,5

SYMBOL

PERFORMANCES Characteristics of Flow - Pressure - Power - Intensity - see data sheets F.T 00 10 147 2/3 - 3/3

working **TEMPERATURE** from - 15 °C to + 80 °C

FLUID Mineral hydraulic oil I.S.O VG 27 to 68 cSt
Motor oil SAE 10 W 30
For any other fluid , please consult our Technical Departments

WORKING Horizontal or vertical position

MICRO ELECTRO - PUMPS

SERIES 0 DIRECT CURRENT 12 V - 24 V: 0,4 kW

ACCESSORIES

MOTOR D.C Electric motor with permanent magnets
Ref. : 12 V : 114 223 -
24 V : 114 224 -

Nominal power Periodical and intermittent Duty S3 (10% of 10 min)
12 V : 0,4 kW - 24 V : 0,4 kW
other duties , see curves on next page
Protection (linking excepted) : IP 44
Standard VDE 530-1 and NF C 51 115

PUMP This Electro pump unit is fitted with a Series 0 Pump Type : P 1 AAN 0000 F L 40 C15 of capacity : 0,25 - 0,50 - 0,75 - 1 - 1,25 - 1,50 - 2 cc/rev
see data sheet F.T 00 289

RELAY (OPTION) , see data sheet F.T 00 039

ADAPTATOR (OPTION) for Inlet and Outlet ports
see data sheet F.T 10 702

For CODIFICATION , see data sheet F.T R 0250

MASS of the electro pump unit : 2,6 Kg

NOTA Fixing of the Micro Electro-Pump Unit by using a collar support around the Motor (Supplied by the customer)

MICRO ELECTRO PUMPS.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
03	MF	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

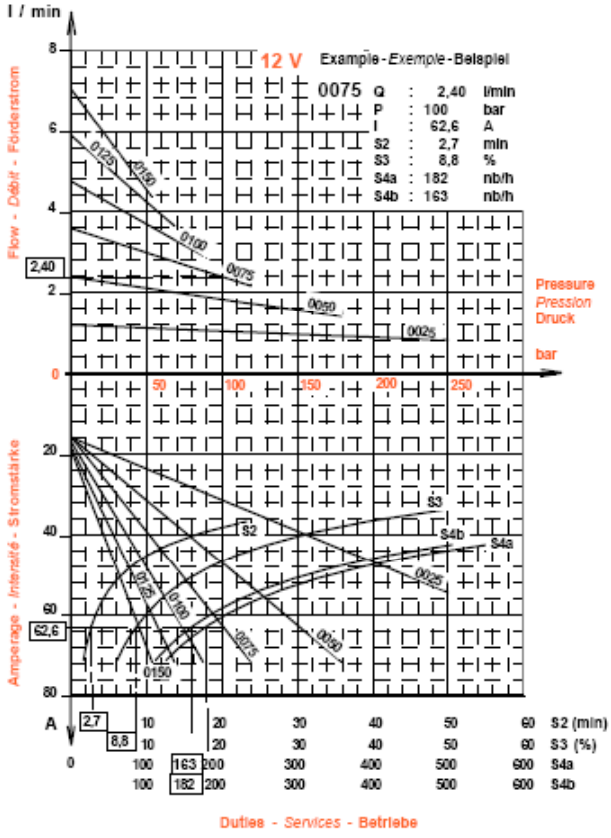
(F.T R 0250)

DIRECT CURRENT MOTOR
NOMINAL POWER
S3 (10 % of 10 min) 0,4 kW

References 114223

Code MF | 1

II	III
Sign Signe Zeichen	Sign Signe Zeichen

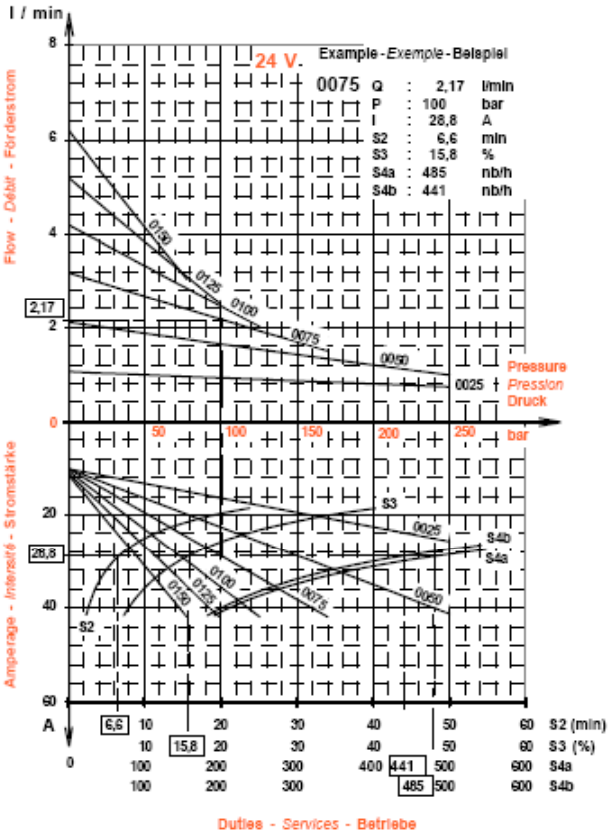


DIRECT CURRENT MOTOR
NOMINAL POWER
S3 (10 % of 10 min) 0,4 kW

References 114224

Code MF | 2

II	III
Sign Signe Zeichen	Sign Signe Zeichen



S1 : Continuous Duty
S2 : Temporary Duty (min)
S3 : Periodical Intermittent Duty (10% of 10 min)
S4a - S4b : Intermittent Starting Duty

P C : Critical Moment (min)

Curves drawn with
a constant tension : Oil SHELL Tellus T46
Viscosity 46 cSt (± 10%) at 40 °C

Test temperature : Oil 40 °C
Ambient 20 °C

Characteristics given as an indication

Reading example

MICRO ELECTRO PUMPS.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
03	MF	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

(F.T R 0250)

DIRECT CURRENT ELECTRIC MOTOR
with permanents magnets

References :	II Signe	III Signe
12 V: 114 223	MF	1
24 V: 114 224	MF	2

MAIN ELECTRO - HYDRAULIC CHARACTERISTICS OF MICRO ELECTRO - PUMPS

MOTOR MF 12 V : 0,4 kW
24 V : 0,4 kW

Q Flow in l / min
Débit en l / min
Fördermenge in l / min

I Amperage
Intensité en Ampères
Stromstärke in Ampere

S1 Permanent
Permanent
Dauerbetrieb

S2 min

S3 % (10 min)

S4a
Number of start / hour
1 sec. work
5 sec. stop
Nb de démarrage / h
1 sec. travail
5 sec. arrêt
Anzahl der Anläufe / h
1 Sek. Arbeit
5 Sek. Stillstand

S4b
Number of start / hour
1 sec. work
1 sec. stop during 20 sec.
Rest 40 sec.
Nb de démarrage / h
1 sec. travail
1 sec. arrêt pendant 20 sec.
Repos 40 sec.
Anzahl der Anläufe / h
1 Sek. Arbeit
1 Sek. Stillstand während 20 Sek.
Ruhe 40 Sek.

PC
(mn)
Continous working breaking point
(mn)
Point critique en fonctionnement ininterrompu
(mn)
Kritischer Punkt bei durchgehendem Betrieb

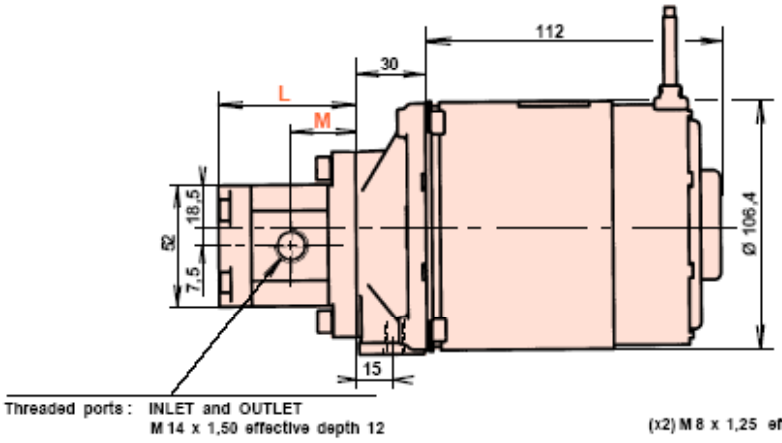
PUMPS *POMPES* PUMPEN		12 V PRESSURE - *PRESSION* - DRUCK								24 V PRESSURE - *PRESSION* - DRUCK							
		5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI	5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI
0025	Q	1,19	1,12	1,04	0,96	0,93	0,89	0,85	0,82	1,05	0,99	0,92	0,86	0,83	0,80	0,77	0,74
	I	16,7	23,6	31,4	39,1	43	46,8	50,7	54,5	10,5	13,3	16,3	19,4	21	22,5	24,1	25,6
	S2	30	30	30	18,1	12,4	8,8	6,4	4,7	30	30	30	20,6	16,5	13,5	11,1	9,3
	S3	50	50	50	33	25,3	19,8	15,9	12,9	50	50	50	36,4	30,9	26,6	23,1	20,3
	S4a	600	600	600	600	533	417	332	269	600	600	600	600	600	600	600	600
	S4b	600	600	600	600	488	380	301	243	600	600	600	600	600	600	600	586
0050	Q	2,37	2,11	1,83	1,57	1,43	185 bar Maxi			2,09	1,88	1,64	1,42	1,31	1,20	1,09	0,99
	I	17,4	31,4	47	62,5	70,3				10,8	16,4	22,6	28,8	31,9	35	38,1	41,2
	S2	30	30	8,6	2,7	1,7				30	30	13,4	6,6	4,9	3,8	3	2,4
	S3	50	50	19,6	8,8	6,3				50	50	26,4	15,8	12,7	10,4	8,7	7,4
	S4a	600	600	412	182	130				600	600	600	485	374	295	238	195
	S4b	600	600	376	163	116				600	600	600	442	345	276	224	186
0075	Q	3,53	2,99	2,40	120 bar Maxi					3,12	2,67	2,17	1,69	170 bar Maxi			
	I	18,2	39,2	62,6						11,1	19,5	28,8	38,2				
	S2	30	17,9	2,7						30	20,4	6,6	3				
	S3	50	32,7	8,8						50	36,2	15,8	8,7				
	S4a	600	600	182						600	600	485	237				
	S4b	600	600	163						600	600	441	224				
0100	Q	4,65	3,70	85 bar Maxi						4,11	3,32	2,45	125 bar Maxi				
	I	20,1	48,2							11,9	23,1	35,6					
	S2	30	7,8							30	12,6	3,6					
	S3	50	18,3							50	25,3	10,1					
	S4a	600	383							600	600	284					
	S4b	600	349							600	600	266					
0125	Q	5,73	4,25	65 bar Maxi						5,07	3,83	95 bar Maxi					
	I	22,2	57,2							12,7	26,7						
	S2	30	3,9							30	8,3						
	S3	50	11,3							50	18,6						
	S4a	600	235							600	590						
	S4b	600	212							600	531						
0150	Q	6,78	4,55	55 bar Maxi						6	4,15	75 bar Maxi					
	I	23,9	68							13,4	31						
	S2	30	1,9							30	5,4						
	S3	50	6,9							50	13,5						
	S4a	600	143							600	402						
	S4b	600	128							600	370						
0200	Q																
	I																
	S2																
	S3																
	S4a																
	S4b																

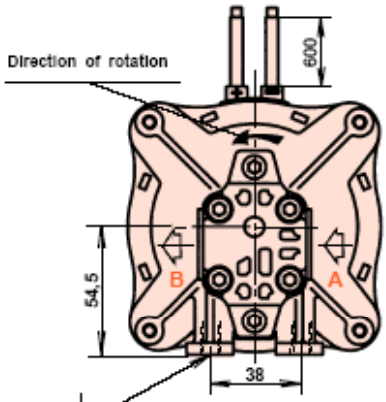
MICRO ELECTRO PUMPS.

CODIFICATION

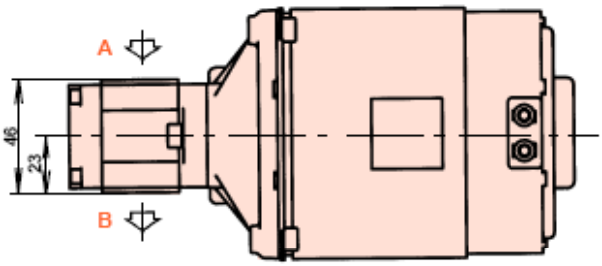
I	II	III	IV	V	VI	VII	VIII	IX
03	HF	2	C	Sign *Signe* Zeichen	T	Sign *Signe* Zeichen	XX	X

(F.T R 0250)

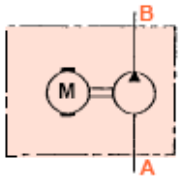




PUMP TYPE *TYPE de POMPE* PUMPE TYP	M	L
to 0025 a 0075 bis	25,2	52,6
to 0100 a 0150 bis	28,4	59
0200	32,6	67,5



SYMBOL



PERFORMANCES Characteristics of Flow - Pressure - Power - Intensity - see data sheets F.T 00 10 149 2/3 - 3/3

working **TEMPERATURE** from - 15 °C to + 80 °C

FLUID Mineral hydraulic oil I.S.O VG 27 to 68 cSt
Motor oil SAE 10 W 30
For any other fluid , please consult our Technical Departments

WORKING Horizontal or vertical position

MICRO ELECTRO - PUMPS

SERIES **0** DIRECT CURRENT **24 V:1 kW**

ACCESSORIES

MOTOR D.C Electric motor with permanent magnets
Ref. : 24 V : 114 225 -

Nominal power Periodical and intermittent Duty **S3** (10% of 10 min)
24 V : 1 kW
other duties , see curves on next page
Protection (linking excepted) : IP 44
Standard VDE 530-1 and NF C 51 115

PUMP This Electro pump unit is fitted with a Series 0 Pump Type : P 1 AAN 0000 F L 40 C01 of capacity : 0,25 - 0,50 - 0,75 - 1 - 1,25 - 1,50 - 2 cc/rev
see data sheet F.T 00 289

RELAY (OPTION) , see data sheet F.T 00 039

ADAPTATOR (OPTION) for Inlet and Outlet ports
see data sheet F.T 10 702

For CODIFICATION , see data sheet F.T R 0250

MASS of the electro pump unit : 4 Kg

NOTA Fixing of the Micro Electro-Pump Unit by using a collar support around the Motor (Supplied by the customer)

MICRO ELECTRO PUMPS.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
03	HF	2	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

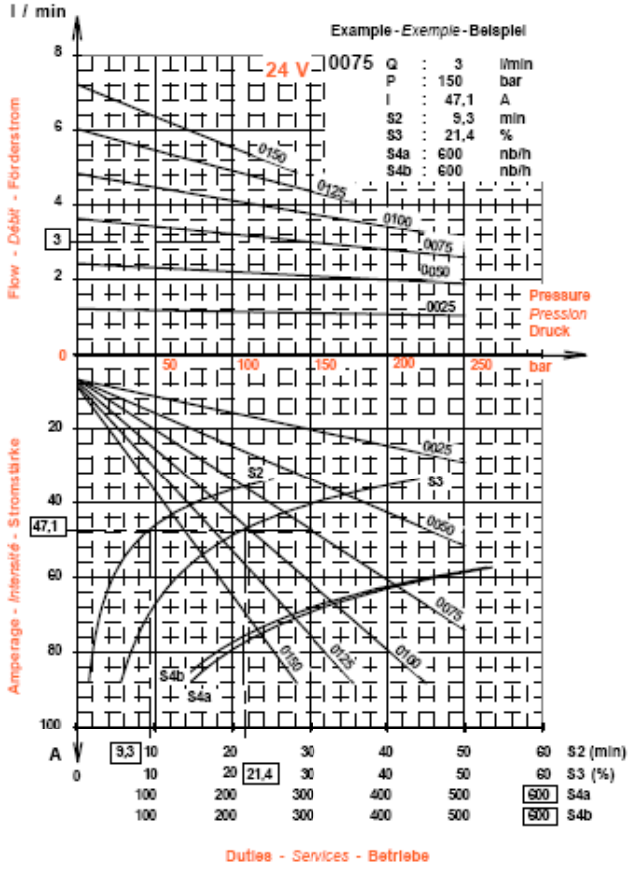
(F.T R 0250)

DIRECT CURRENT MOTOR
NOMINAL POWER
S3 (10 % of 10 min) 1 kW

References
114225

Code HF | 2

II	III
Sign Signe Zeichen	Sign Signe Zeichen



S1 : Continuous Duty
S2 : Temporary Duty (min)
S3 : Periodical Intermittent Duty (10% of 10 min)
S4a - S4b : Intermittent Starting Duty

P C : Critical Moment (min)

Curves drawn with
a constant tension : Oil SHELL Tellus T46
Viscosity 46 cSt (± 10%) at 40 °C

Test temperature : Oil 40 °C
Ambient 20 °C

Characteristics given as an indication

Reading example

MICRO ELECTRO PUMPS.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
03	HF	2	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

(F.T R 0250)

DIRECT CURRENT ELECTRIC MOTOR
with permanents magnets

References : II Signe III Signe

24 V: 114 225 HF 2

MAIN ELECTRO - HYDRAULIC CHARACTERISTICS OF MICRO ELECTRO - PUMPS

MOTOR HF 24 V : 1 kW

PUMPS *POMPES* PUMPEN		24 V PRESSURE - *PRESSION* - DRUCK							
		5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI
0025	Q	1,21	1,18	1,14	1,10	1,09	1,07	1,05	1,03
	I	7,3	11,3	15,7	20,2	22,4	24,6	26,8	29
	S2	30	30	30	30	30	30	30	30
	S3	50	50	50	50	50	50	50	50
	S4a	600	600	600	600	600	600	600	600
	S4b	600	600	600	600	600	600	600	600
0050	Q	2,41	2,31	2,20	2,1	2,04	1,99	1,94	1,89
	I	7,7	15,8	24,7	33,6	38,1	42,6	47	51,5
	S2	30	30	30	25,1	17,4	12,5	9,4	7,2
	S3	50	50	50	44,2	33,8	26,6	21,5	17,7
	S4a	600	600	600	600	600	600	600	600
	S4b	600	600	600	600	600	600	600	600
0075	Q	3,62	3,42	3,21	3	2,9	2,8	2,7	2,6
	I	8,1	20,2	33,7	47,1	53,8	60,5	67,3	74
	S2	30	30	25	9,3	6,3	4,5	3,3	2,5
	S3	50	50	44,1	21,4	16,1	12,5	10	8,1
	S4a	600	600	600	600	600	451	328	245
	S4b	600	600	600	600	600	440	313	230
0100	Q	4,8	4,47	4,12	3,77	3,59	3,42	3,25	225 bar Maxi
	I	9,3	25,4	43,3	61,3	70,2	79,2	88,2	
	S2	30	30	11,9	4,3	2,9	2	1,5	
	S3	50	50	25,6	12,2	9,1	7	5,6	
	S4a	600	600	600	435	287	200	144	
	S4b	600	600	600	424	272	184	130	
0125	Q	5,98	5,47	4,91	4,37	4,11	175 bar Maxi		
	I	10,4	30,6	53	75,4	86,6			
	S2	30	30	6,6	2,3	1,6			
	S3	50	50	16,7	7,8	5,8			
	S4a	600	600	600	232	152			
	S4b	600	600	600	216	138			
0150	Q	7,14	6,37	5,53	140 bar Maxi				
	I	11,4	36,8	65					
	S2	30	19,2	3,6					
	S3	50	36,4	10,8					
	S4a	600	600	364					
	S4b	600	600	350					
0200	Q								
	I								
	S2								
	S3								
	S4a								
	S4b								

Q Flow in l / min
Débit en l / min
Fördermenge in l / min

I Amperage
Intensité en Ampères
Stromstärke in Ampere

S1 Permanent
Permanent
Dauerbetrieb

S2 min

S3 % (10 min)

S4a
Number of start / hour
1 sec. work
5 sec. stop
Nb de démarrage / h
1 sec. travail
5 sec. arrêt
Anzahl der Anläufe / h
1 Sek. Arbeit
5 Sek. Stillstand

S4b
Number of start / hour
1 sec. work
1 sec. stop during 20 sec.
Rest 40 sec.
Nb de démarrage / h
1 sec. travail
1 sec. arrêt pendant 20 sec.
Repos 40 sec.
Anzahl der Anläufe / h
1 Sek. Arbeit
1 Sek. Stillstand während 20 Sek.
Ruhe 40 Sek.

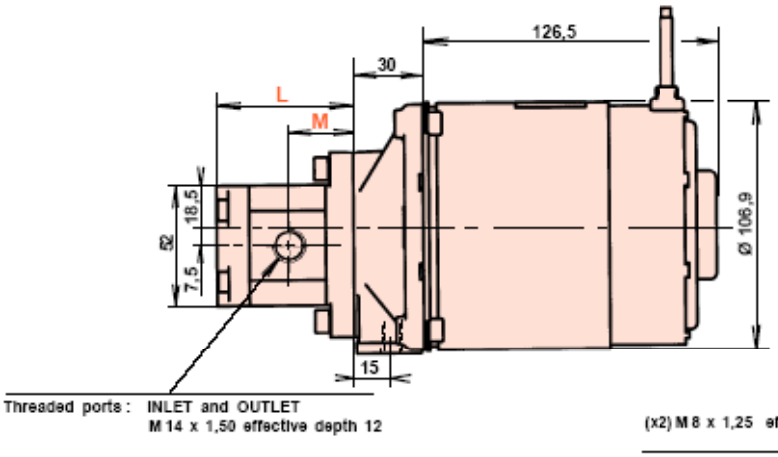
PC
(min)
Continous working breaking point
(min)
Point critique en fonctionnement ininterrompu
(min)
Kritischer Punkt bei durchgehendem Betrieb

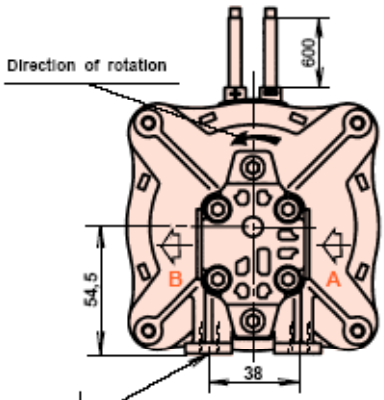
MICRO ELECTRO PUMPS.

CODIFICATION

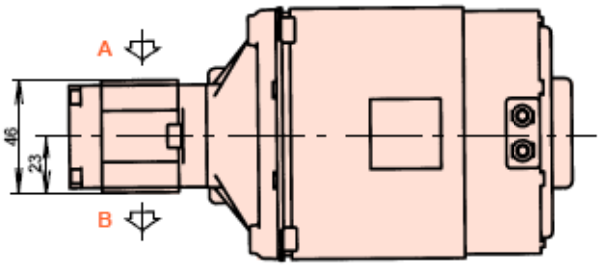
I	II	III	IV	V	VI	VII	VIII	IX
03	AF	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

(F.T R 0250)

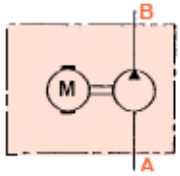




PUMP TYPE *TYPE de POMPE* PUMPE TYP	M	L
to 0025 à 0075 bis	25,2	52,6
to 0100 à 0150 bis	28,4	59
0200	32,6	67,5



SYMBOL



PERFORMANCES Characteristics of Flow - Pressure - Power - Intensity - see data sheets F.T 00 10 148 2/3 - 3/3

working TEMPERATURE from - 15 °C to + 80 °C

FLUID Mineral hydraulic oil I.S.O VG 27 to 68 cSt
Motor oil SAE 10 W 30
For any other fluid , please consult our Technical Departments

WORKING Horizontal or vertical position

MICRO ELECTRO - PUMPS

SERIES 0 DIRECT CURRENT 12 V: 0,9 kW
24 V: 1,2 kW

ACCESSORIES

MOTOR D.C Electric motor with permanent magnets
Ref. : 24 V : 114 227 -

Nominal power Periodical and intermittent
Duty S3 (10% of 10 min)
12 V: 0,9 kW - 24 V: 1,2 kW
other duties , see curves on next page
Protection (linking excepted) : IP 44
Standard VDE 530-1 and NF C 51 115

PUMP This Electro pump unit is fitted with a Series 0 Pump Type : P 1 AAN 0000 F L 40 C01 of capacity : 0,25 - 0,50 - 0,75 - 1 - 1,25 - 1,50 - 2 cc/rev
see data sheet F.T 00 289

RELAY (OPTION) , see data sheet F.T 00 039

ADAPTATOR (OPTION) for Inlet and Outlet ports
see data sheet F.T 10 702

For CODIFICATION , see data sheet F.T R 0250

MASS of the electro pump unit : 4,2 Kg

NOTA Fixing of the Micro Electro-Pump Unit by using a collar support around the Motor (Supplied by the customer)

MICRO ELECTRO PUMPS.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
03	AF	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

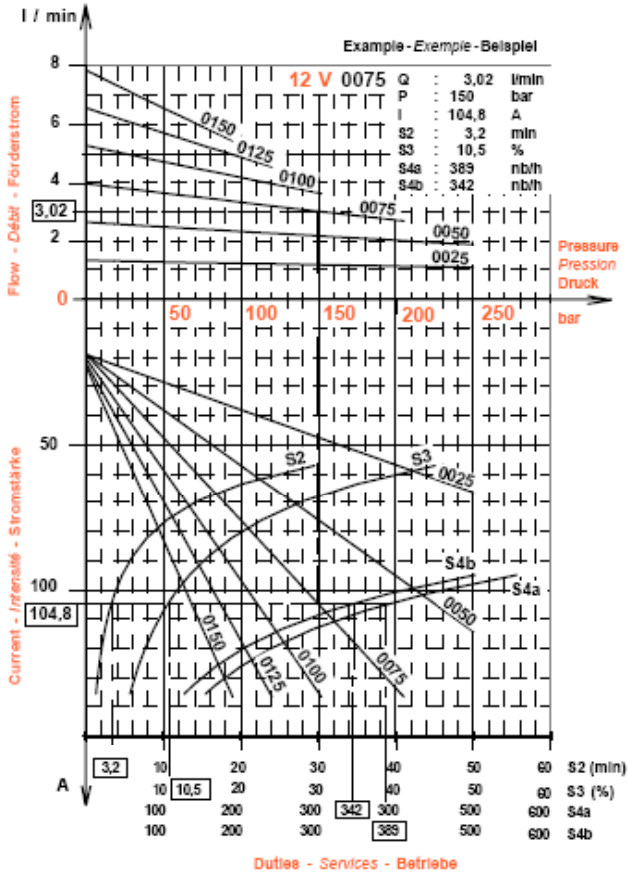
(F.T R 0250)

DIRECT CURRENT MOTOR
NOMINAL POWER
S3 (10 % of 10 min) 0,9 kW

References 114226

Code AF | 1

II	III
Sign Signe Zeichen	Sign Signe Zeichen

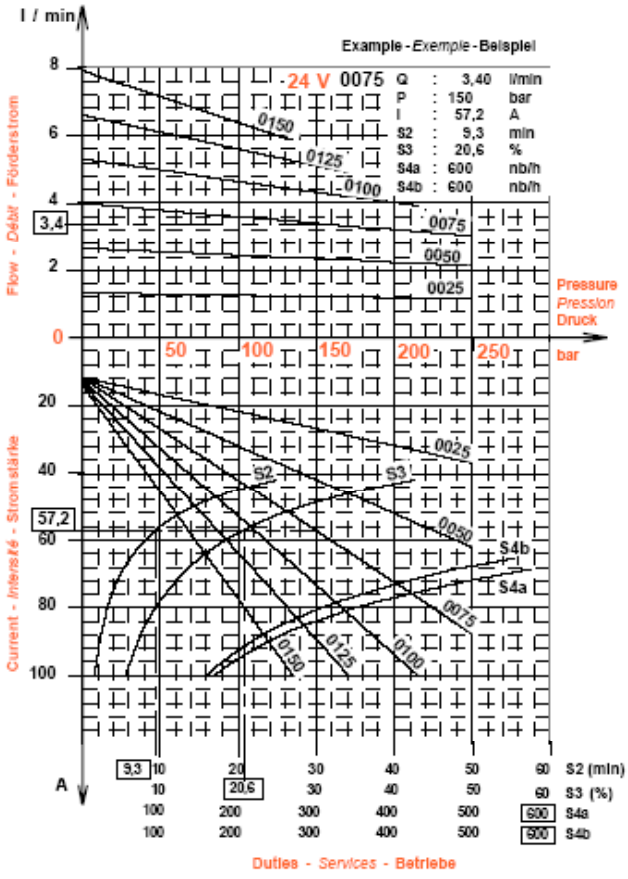


DIRECT CURRENT MOTOR
NOMINAL POWER
S3 (10 % of 10 min) 1,2 kW

References 114227

Code AF | 2

II	III
Sign Signe Zeichen	Sign Signe Zeichen



S1 : Continuous Duty
S2 : Temporary Duty (min)
S3 : Periodical Intermittent Duty (10% of 10 min)
S4a - S4b : Intermittent Starting Duty

P C : Critical Moment (min)

Curves drawn with
a constant tension : Oil SHELL Tellus T46
Viscosity 46 cSt (± 10%) at 40 °C

Test temperature : Oil 40 °C
Ambient 20 °C

Characteristics given as an indication

Reading example

MICRO ELECTRO PUMPS.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
03	AF	Sign Signe Zeichen	C	Sign Signe Zeichen	T	Sign Signe Zeichen	XX	X

(F.T R 0250)

DIRECT CURRENT ELECTRIC MOTOR with permanents magnets

References :	II Signe	III Signe
12 V: 114 226	AF	1
24 V: 114 227	AF	2

MAIN ELECTRO - HYDRAULIC CHARACTERISTICS OF MICRO ELECTRO - PUMPS

MOTOR AF 12 V : 0,9 kW
24 V : 1,2 kW

PUMPS *POMPES* PUMPEN		12 V PRESSURE - *PRESSION* - DRUCK								24 V PRESSURE - *PRESSION* - DRUCK							
		5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI	5 bar 72 PSI	50 bar 725 PSI	100 bar 1450 PSI	150 bar 2175 PSI	175 bar 2540 PSI	200 bar 2900 PSI	225 bar 3260 PSI	250 bar 3630 PSI
0025	Q	1,32	1,27	1,22	1,18	1,15	1,13	1,11	1,08	1,32	1,29	1,25	1,22	1,20	1,19	1,17	1,15
	I	20	28,5	37,9	47,4	52,1	56,9	61,6	66,3	12,2	16,7	21,7	26,8	29,3	31,8	34,3	36,8
	S2	30	30	30	30	30	29,9	22,4	17,1	30	30	30	30	30	30	30	30
	S3	50	50	50	50	50	45,5	37,6	31,5	50	50	50	50	50	50	50	50
	S4a	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
	S4b	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
	PC									35	35	35	35	35	35	35	35
0050	Q	2,63	2,48	2,33	2,17	2,10	2,02	1,95	1,88	2,64	2,55	2,44	2,34	2,29	2,24	2,19	2,14
	I	20,9	38	57,1	76,1	85,6	95,2	104,7	114,2	12,7	21,8	31,9	42	47	52,1	57,2	62,2
	S2	30	30	29,5	10,4	6,8	4,6	3,3	2,4	30	30	30	24,7	17,3	12,5	9,3	7,1
	S3	50	50	45,1	22,6	17,1	13,3	10,6	8,6	50	50	50	42,4	32,5	25,6	20,6	16,9
	S4a	600	600	600	600	600	551	390	285	600	600	600	600	600	600	600	595
	S4b	600	600	600	600	600	497	344	245	600	600	600	600	600	600	600	553
	PC									35	35	35	27	19	13	10	7
0075	Q	3,93	3,64	3,33	3,02	2,87	2,72	205 bar Maxi		3,96	3,78	3,59	3,4	3,3	3,21	3,12	3,02
	I	21,8	47,6	76,2	104,8	119,1	133,5			13,2	26,8	42	57,2	64,8	72,4	80	87,6
	S2	30	30	10,3	3,2	2	1,3			30	30	24,7	9,3	6,3	4,4	3,2	2,4
	S3	50	50	22,6	10,5	7,7	5,9			50	50	42,3	20,6	15,4	11,9	9,4	7,6
	S4a	600	600	600	389	245	163			600	600	600	600	600	485	350	260
	S4b	600	600	600	342	209	135			600	600	600	600	567	410	306	234
	PC									35	35	27	10	7	5	3	2
0100	Q	5,21	4,72	4,18	3,65	150 bar Maxi				5,26	4,97	4,64	4,32	4,16	4,01	215 bar Maxi	
	I	24,2	58,6	96,8	135					14,4	32,7	53	73,2	83,4	93,5		
	S2	30	26,9	4,3	1,3					30	30	11,9	4,3	2,8	2		
	S3	50	42,4	12,7	5,7					50	50	24,6	11,5	8,5	6,5		
	S4a	600	600	518	156					600	600	600	467	305	210		
	S4b	600	600	465	129					600	600	600	396	271	193		
	PC									35	35	13	4	3	2		
0125	Q	6,48	5,70	4,87	120 bar Maxi					6,56	6,09	5,59	5,09	170 bar Maxi			
	I	26,7	69,6	117,4						15,8	38,6	63,9	89,2				
	S2	30	14,3	2,2						30	30	6,6	2,3				
	S3	50	28	8						50	50	15,9	7,3				
	S4a	600	600	600						600	600	600	245				
	S4b	600	600	600						600	600	600	222				
	PC									35	35	7	2				
0150	Q	7,72	6,56	95 bar Maxi						7,84	7,13	6,37	135 bar Maxi				
	I	28,9	82,9							16,9	45,6	77,4					
	S2	30	7,6							30	19,1	3,6					
	S3	50	18,5							50	35	10,1					
	S4a	600	600							600	600	389					
	S4b	600	600							600	600	337					
	PC									35	21	4					
0200	Q																
	I																
	S2																
	S3																
	S4a																
	S4b																
	PC																

Q — Flow in l / min
Débit en l / min
Fördermenge in l / min

I — Amperage
Intensité en Ampères
Stromstärke in Ampere

S1 — Permanent
Permanent
Dauerbetrieb

S2 — min

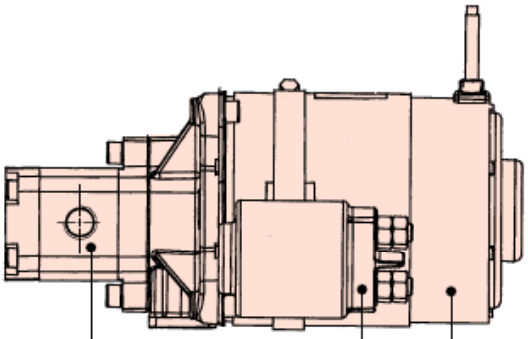
S3 — % (10 min)

S4a
Number of start / hour
1 sec. work
5 sec.stop
Nb de démarrage / h
1 sec. travail
5 sec. arrêt
Anzahl der Anläufe / h
1 Sek. Arbeit
5 Sek. Stillstand

S4b
Number of start / hour
1 sec. work
1 sec. stop during 20 sec.
Rest 40 sec.
Nb de démarrage / h
1 sec. travail
1 sec. arrêt pendant 20 sec.
Repos 40 sec.
Anzahl der Anläufe / h
1 Sek. Arbeit
1 Sek. Stillstand während 20 Sek.
Ruhe 40 Sek.

PC
(min)
Continous working breaking point
(min)
Point critique en fonctionnement ininterrompu
(min)
Kritischer Punkt bei durchgehendem Betrieb

MICRO ELECTRO PUMPS.



0 3	MF	1	C	075	T	R	XX	X
I Sign	II Sign	III Sign	IV Sign	V Sign	VI	VII Sign	VIII Sign	IX Sign

PUMP TYPE

Series 0

GENERATION

3

MOTOR TYPE

Direct Current (Duty S3 10 % of 10 min)

12 Volts		24 Volts		
0,4	kW	0,4	kW	MF
		1	kW	HF
0,9	kW	1,2	kW	AF

Special Motor **

without Motor XX

VOLTAGE

12 Volts = 1

24 Volts = 2

Special Voltage *

without Motor X

CURRENT

Direct C

without Motor X

PUMP CAPACITY

025	0,25	cc / rev	0,015 Cubic / inch
050	0,50	cc / rev	0,030 Cubic / inch
075	0,75	cc / rev	0,045 Cubic / inch
100	1	cc / rev	0,060 Cubic / inch
125	1,25	cc / rev	0,075 Cubic / inch
150	1,50	cc / rev	0,090 Cubic / inch
200	2	cc / rev	0,120 Cubic / inch

TYPE of SHAFT

T Tang

RELAY

X without Relay

R with Relay

DECOMPRESSION DEVICE

XX without decompression

X without tank

CODIFICATION OF MICRO ELECTRO - PUMP SETS

DIRECT CURRENT VERSION 3G SERIES 0

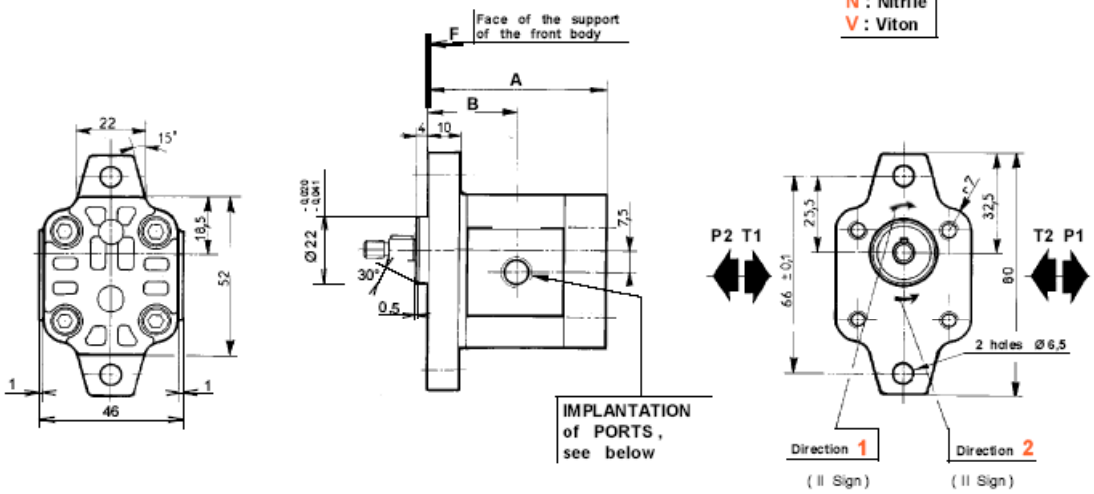
MICRO ELECTRO PUMPS.

" BASIC " CATALOGUE

P	II Sign	AA	N	0	VI Sign	F	L	IX Sign	IX Sign	XI Sign	XII Sign

For CODIFICATION , see data sheet F.T R 0149

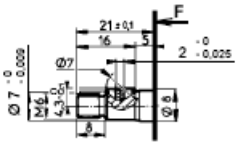
N : Nitrile
V : Viton



CHOICE of the Capacity (VI Sign)	Dimensions A	B
025 050 075	52,6	25,2
100 125 150	59	28,4
200	67,5	32,6

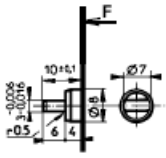
CHOICE of DRIVING SHAFTS

20 (IX - X Sign)
B01 (XI Sign)



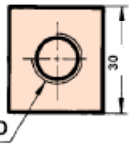
Maxi transmissible torque
0,5 m.daN

40 (IX - X Sign)
C01 (XI Sign)



Maxi transmissible torque
0,6 m.daN

IMPLANTATION of PORTS (VII Sign)	Capacity (VI Sign)	INLET (T) Ø C	INLET (T) D	OUTLET (P) Ø C	OUTLET (P) D
F (Threaded) Ø C effective depth D	025 to 200	M 14 x 150	12	M 14 x 150	12



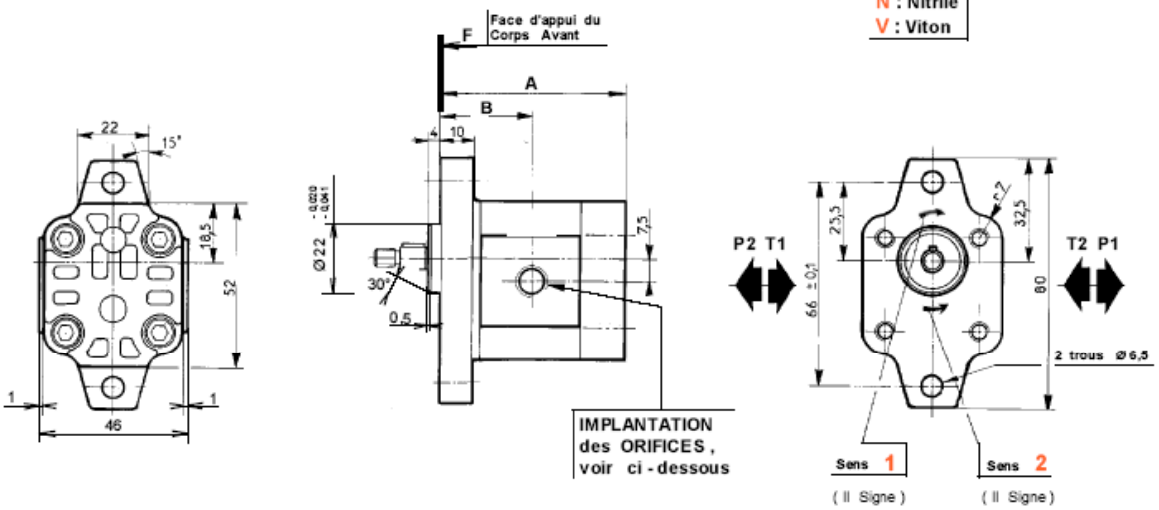
HYDRAULIC GEAR PUMPS SERIES 0 TYPE AAN

MICRO ELECTRO PUMPS.

P	II Signe	AA	N	0	VI Signe	F	L	IX Signe	IX Signe	XI Signe	XII Signe

Pour CODIFICATION , voir Fiche Technique F.T R 0149

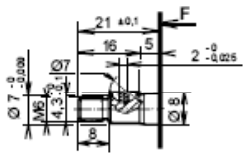
N : Nitrile
V : Viton



CHOIX de la Capacité (VI Signe)	Cotes A	Cotes B
025 050 075	52,6	25,2
100 125 150	59	28,4
200	67,5	32,6

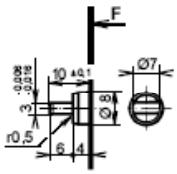
CHOIX des ARBRES d' ENTRAINEMENT

20 (IX - X Signe)
B01 (XI Signe)

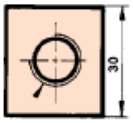


Couple maxi transmissible
0,5 m.daN

40 (IX - X Signe)
C01 (XI Signe)

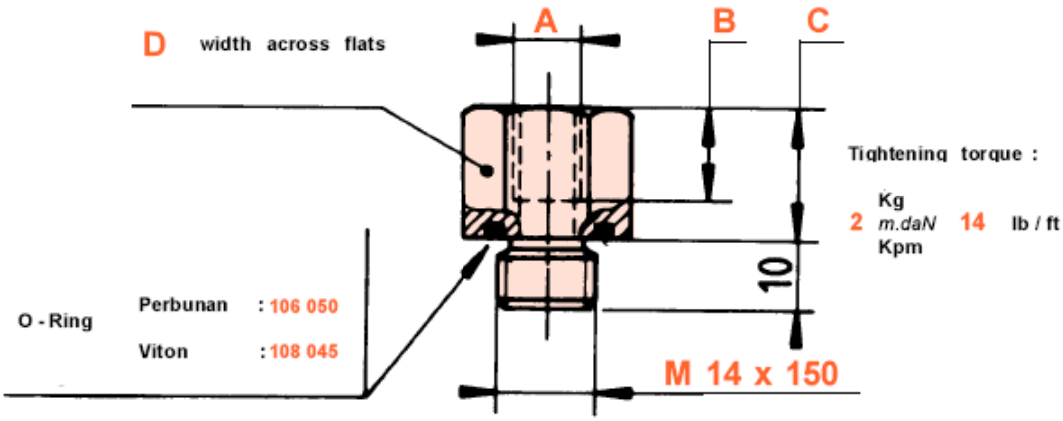


Couple maxi transmissible
0,6 m.daN

IMPLANTATION des ORIFICES (VII Signe)	Capacité (VI Signe)	ASPIRATION (T) Ø C	ASPIRATION (T) D	REFOULEMENT (P) Ø C	REFOULEMENT (P) D
F (Taraudée)  Ø C prof. utile D	025 à 200	M 14 x 150	12	M 14 x 150	12

POMPES HYDRAULIQUES A ENGRENAGE SERIE 0 TYPE AAN

MICRO ELECTRO PUMPS.



Unit N° *N° Ensemble* Nr der Einheit Perbunan	Adaptor N° *N° Adaptateur* Nr Adapter	Port *Orifice* Öffnung A	B	C	D	Unit N° *N° Ensemble* Nr der Einheit Viton
E5061680	108 003	without - *Sans* - ohne	21		21	E5061720
E5059250	107 744	M 10 x 100	10	16	21	E5061510
E5072584	109 772	M 14 x 150	12	20	21	E5072585
E5060460	109 705	M 16 x 150	12	20	21	E5061550
E5072200	109 496	M 18 x 150	12	20	26	E5072201
E5059260	107 745	1 / 4" BSP - *Gaz* - R	10	20	21	E5061520
E5061670	108 004	1 / 8" BSP - *Gaz* - R	10	14,5	21	E5061710
E5063190	108 124	3 / 8" BSP - *Gaz* - R	12	20	26	E5074289
E5061700	108 006	1 / 4" Briggs	12	20	21	E5061740
E5059270	107 746	7 /16" 20 UNF - 2B	14	20	21	E5061530
E5059280	107 747	1 / 2" 20 UNF - 2B	14	20	21	E5061540
E5064410	108 282	9 /16" 18 UNF - 2B	13	20	21	E5064420

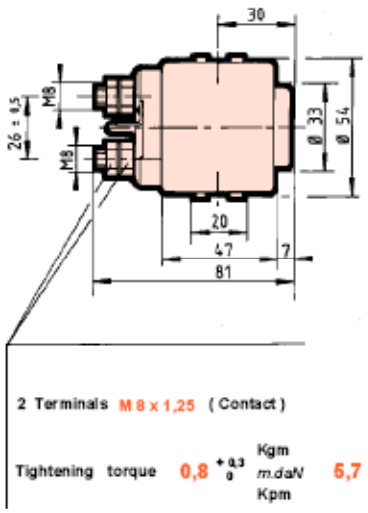
ADAPTOR **M 14 x 150**

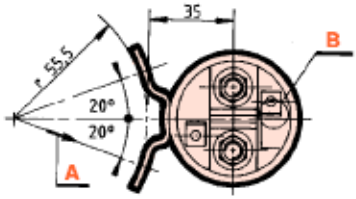
MICRO ELECTRO PUMPS.

CODIFICATION

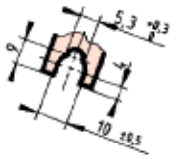
I	II	III	IV	V	VI	VII	VIII	IX
						R		

(F.T R 0250)

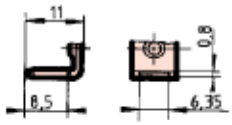




View A



View B



2 Terminals M 8 x 1,25 (Contact)

Tightening torque 0,8 $^{+0,3}_{0}$ Kgm / m.daN / Kpm 5,7 $^{+2,1}_{0}$ lb / ft

SYMBOL

Approximative weight : 0,7 Kg

References : 12 V 111 056 24 V 111 057

RELAY

GENERAL CHARACTERISTICS

PROTECTION : IP54 Excepted connections (DIN 40 050)

ENVIRONEMENT : 96 h Salt spray

UTILIZATION : Intermittent duty

FUNCTION : Normally opened (mono-contact)

working TEMPERATURE from - 30 to + 60 °C

ELECTRO - TECHNICAL CHARACTERISTICS

at ambient temp : 20 °C $^{+5°}_{-0°}$

MINI ENERGIZING VOLTAGE U-4, U Nominal - 30 %	8,4 V	16,8 V
NOMINAL VOLTAGE (U)	12 V	24 V
MAXI VOLTAGE (U) U = U Nominal + 20 %	14,4 V	28,4 V
NOMINAL ENERGIZING POWER	30 W	25 W
MAXI TEMPERATURE of the Coil	120 °C	120 °C
INSULATION CLASS	A (VDE 110 § 5)	
ENDURANCE	≥ 30 000 cycles 3 sec. 200 Amp. / min	
PROTECTION	IP 54	

CHARACTERISTICS for the USE

see figures on the verso of the data sheet

MICRO ELECTRO PUMPS.

CODIFICATION

I	II	III	IV	V	VI	VII	VIII	IX
						R		

(F.T R 0250)

Duties for Amperage ≤ 100 A. in contact

	8,4 V	9,6 V	10,8 V	12 V	12,6 V	13,2 V	14,4 V
	- 30 %	- 20 %	- 10 %	Rated voltage *Tension Nominale* Nennspannung	+ 5 %	+ 10 %	+ 20 %
	16,8 V	19,2 V	21,6 V	24 V	25,2 V	26,4 V	28,8 V
S2	see - *voir* - Siehe S1						
S3	see - *voir* - Siehe S1						
S4a	600	600	600	600	600	600	600
S4b	600	600	600	600	600	600	600
P.C							

Duties for Amperage ≥ 100 A. in contact depending : 1°) of the Tension 2°) of the Power

		8,4 V	9,6 V	10,8 V	12 V	12,6 V	13,2 V	14,4 V
		- 30 %	- 20 %	- 10 %	Rated voltage *Tension Nominale* Nennspannung	+ 5 %	+ 10 %	+ 20 %
	INTENSITY *INTENSITE* STROMSTÄRKE	16,8 V	19,2 V	21,6 V	24 V	25,2 V	26,4 V	28,8 V
S2	200 A	1	1	1	1	0,80	0,70	0,50
	300 A	0,50	0,50	0,50	0,50	0,50	0,50	0,50
	500 A	0,15	0,15	0,15	0,15	0,15	0,15	0,15
S3	200 A	10	10	7	5	3	2,50	2
	300 A	5	5	5	5	3	2,50	2
	500 A	1,50	1,50	1,50	1,50	1,50	1,50	1,50
S4a	200 A	600	600	600	600	480	420	300
	300 A	300	300	300	300	300	300	300
	500 A	40	40	40	40	40	40	40
S4b	200 A	600	600	600	600	480	420	300
	300 A	350	350	350	350	350	350	350
	500 A	60	60	60	60	60	60	60
P.C	200 A	2,50	2,50	2,50	2,50	2,50	2,10	1,60
	300 A	0,70	0,70	0,70	0,70	0,70	0,70	0,70
	500 A	0,20	0,20	0,20	0,20	0,20	0,20	0,20

* Duties according to norms NF. C 51 111-
VDE 530.1

* S1 Continuous Duty
* S2 Temporary Duties (min)
* S3 Periodical intermittent Duties (% of 10 min)
* S4 a Number of start / hour
1 Second work - 5 Seconds stop
* S4 b Number of start / hour
1 Second work - 1 Second stop
during 20 Seconds - Rest 40 Seconds
P.C Continuous working breaking point (min)

CHARACTERISTICS for the USE of RELAY