



**OFFICINE
MECCANICHE
GALLARATESI** S.p.A.

OMG DOXE metering pumps

reciprocating plunger and diaphragm process pumps,
designed to solve with the highest reliability
and precision any problem
associated with metering applications

- single acting for all models,
- double acting for piston
type pumping heads only.



B5Ai

06.05.03 rev. 1



multi-heads plunger pumps

piston pump
with heating jacket

triplex group

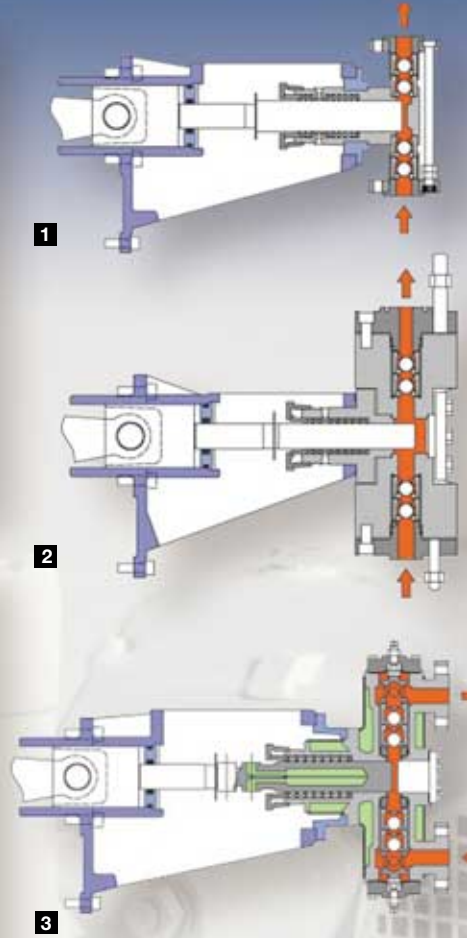
construction characteristics

- continuous capacity control 0 to 100% adjustable with pump at rest or in operation
- plunger stroke adjustable from 0 up to 70 mm
- plunger speed from 25 up to 140 strokes/minute
- metering accuracy better than 1% throughout the normal operating range of 10 to 100% capacity
- maximum liquid temperature for continuous operation:
300°C with metal pump head
80 to 100°C with ceramic plunger
150°C with diaphragms made of PTFE
50°C with PVC pump heads
- required NPSH, less than 0,3 bar abs., under normal operating conditions, for plunger pumps
- groupable in multiplex units, also with pumps of different series.
- manufactured in compliance with

API 675 std., not "lost motion" type and complying with European Directive "392/89/CEE machinery directive" and therefore marked CE

crank mechanism

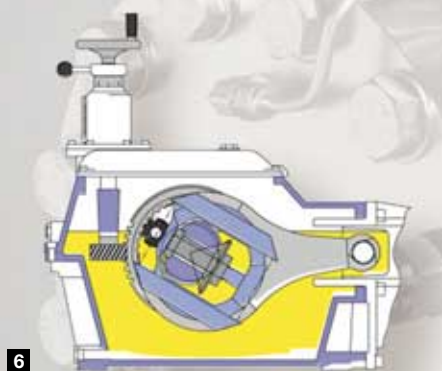
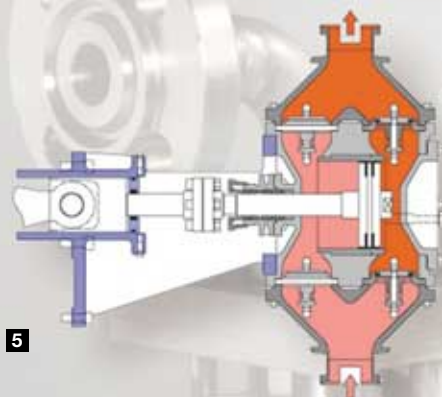
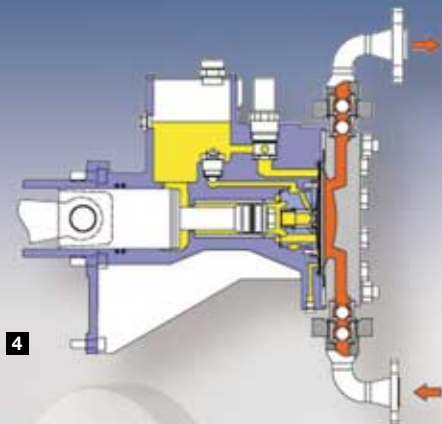
- differential type, with satellite and planetary gear system, with mechanical return stroke
- crankcase made of cast iron and completely enclosed, with oil splash lubrication, split in two sections to permit easy access
- available in two series:
DOXE-2 with max. allowable plunger thrust 10.000 N
DOXE-3 with max. allowable plunger thrust 30.000 N
- each mechanism can be supplied with stroke length adjustable either when the pump is at rest only (F type) or also while it is running (M type) or without capacity adjustment (FF type)



1. single acting, standard plunger pumping head
2. single acting plunger, pumping head for high pressure applications
3. single acting plunger, pumping head with jacket for high accuracy heating
4. double diaphragm pumping head
5. pumping head of double acting pump
6. crank mechanism of DOXE-M metering pumps

single acting, plunger type, pumping heads

- single or double ball check valves, upon request; only single, due to the dimensions, for the models 100x70 and 125x70
- high pressure type, with forged construction, easily replaceable valves
- high accuracy liquid heating type, with incorporated heating jacket, container enclosed valves and possibility of plunger and valves replacement without disconnecting the pipe system
- pump body made of metal or plastic materials, piston made of metal or ceramics
- flanged suction and discharge connections are standard
- packing for high pressure or high temperature are available

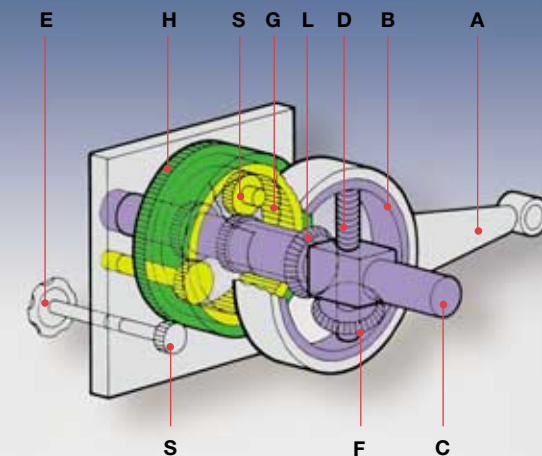


structural arrangement of the crank mechanism

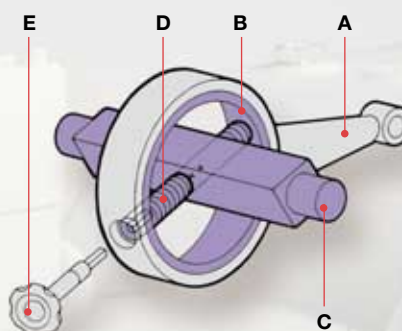
The piston stroke is adjusted by varying the eccentricity of connecting rod (A) actuated by shaft (C) through bush (B) by means of screw (D). For crank mechanism DOXE-F, the pump can be adjusted only when at rest, by turning screw (D) with handwheel (E). For crank mechanism DOXE-M the pump can be adjusted also while running by turning screw (D) by means of gear (F) connected to the handwheel (E) through a gear system.

In summary: if handwheel (E) is not turned, the violet coloured parts rotate as a unit with shaft (C); satellites (S) and crown wheel (G), indicated in yellow, rotate in neutral on its own axes and wheel (H), indicated in green, remains stationary and maintains constant the reciprocal angular position between satellites (S).

By actuating handwheel (E) the wheel (H) turns and the relative angular position between satellites (S) is adjusted and a reciprocal rotation is imparted to gears (L) and (F), which moves screw (D).



DOXE-M



DOXE-F



adjustment handwheel detail



three-heads group

double acting, plunger type, pumping heads

- cylinder liner inserted and easily replaceable
- piston and cylinder liner removable from pump body without disassembling
- valves with replaceable seats and removable without disassembling the pumping head
- standard construction material AISI 316 and AISI 304 stainless steels, for all parts in contact with the liquid; other materials available upon request

diaphragm type pumping heads

- diaphragms actuated by an hydraulic circuit with feeding and relief valves
- pump body made of metal or plastic materials; heating or cooling jackets can be supplied on request

- diaphragms made of elastomers, PTFE or metallic, always double to avoid liquids losses in case of failure of a single diaphragm

driving motors - speed reducers

- three phase, four poles, B5 or V1 flanged type electric motors are normally supplied with dimensions according to IEC standards; also B3 base assembled motors are normally provided
- speed reducers with cylindrical or worm-wheel gears and oil splash lubricated
- normal crankshaft speed 50, 70, 87,110 and 125 strokes/minute

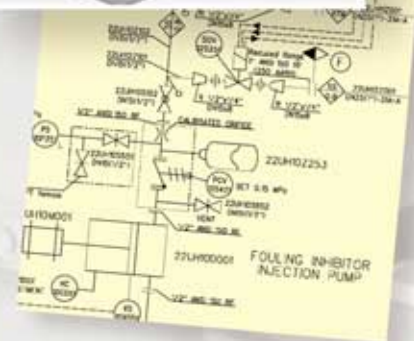
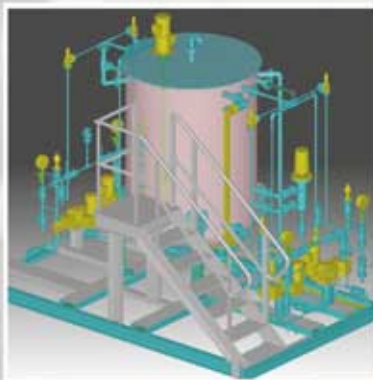
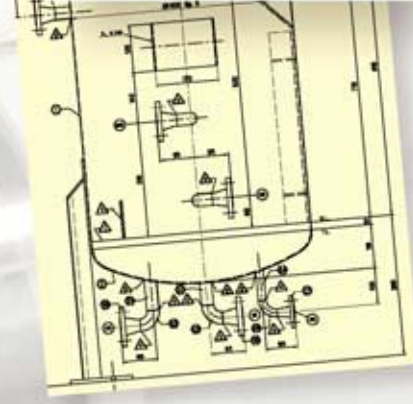
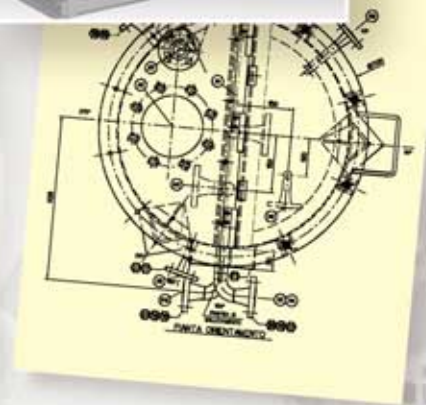
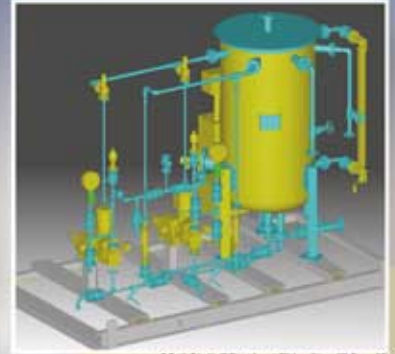
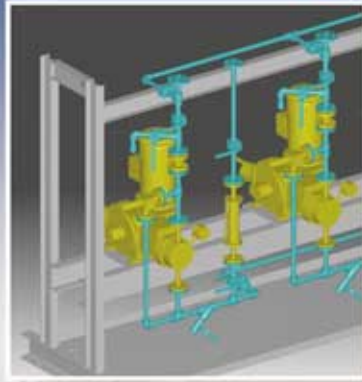
capacity control systems

- manual control, with pump at rest or in operation, by handwheel with lock knob; linear adjustment scale with

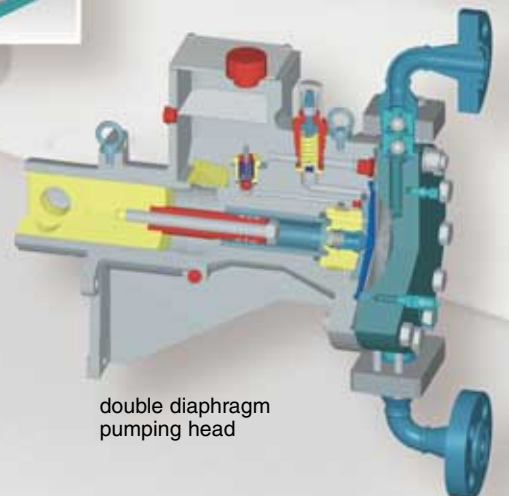
precision vernier

- automatic control with pneumatically actuated positioner; either from linear or non linear signal, normal range 3 to 15 psi, with emergency manual overdrive
- automatic control with positioner controlled by an electrically actuated monophasic servomotor and response potentiometer with emergency handwheel
- running speed adjustable by electric motor frequency variator (inverter) or by variable speed motor or variable speed gear reducer; speed adjustment by hand or automatic by electric or pneumatic signal
- batch impulses generator and pulsemeter to meter a predetermined liquid dose





Thanks to its decades-long experience in the dosing industry as well as to the skilled engineering resources, OMG can provide the most demanding clients and contractors with customer-tailored dosing solution and with complete chemical injection packages, matching all major international industry standards.



double diaphragm pumping head

tab. A / pump ratings and technical data

model plunger dia. x stroke	plunger area	volume	maximum capacity			max. admissible back pressure (2)		max. discharge pressure: bar with motors power:							flanges (3)	
			strokes min.	theor.	actual	DOXE-2	DOXE-3	0,55 kW	1,1 kW	2,2 kW	5,5 kW	7,5 kW	11 kW	UNI DN mm	ANSI nom. size	
				l/h	l/h (1)											bar
10 x 70	0,785	5,495	70 87 110	23 28,6 36,3	21 27 34	700	—	150 100 100	350 280 215	700 550 420	— — —	— — —	— — —	15	1/2"	
15 x 70	1,767	12,36	70 87 110	51,9 64,5 81,5	49 61 77	450	700	65 55 40	150 120 90	300 240 190	— 600 460	— — 680	— — —	15	1/2"	
20 x 70	3,141	21,98	70 87 110	92,3 114 145	87 108 137	270	700	35 30 20	85 70 53	170 135 110	400 350 270	600 480 380	— 700 550	15	1/2"	
25 x 70	4,908	34,35	70 87 110	144 179 227	137 170 185	175	550	20 18 15	55 44 34	110 270 70	400 215 170	600 300 240	550 460 360	20	3/4"	
30 x 70	7,068	49,47	70 87 110	208 258 327	195 245 310	120	380	15 13 10	37 30 24	77 62 48	185 150 120	265 200 165	380 320 250	20	3/4"	
35 x 70	9,616	67,31	70 87 110	283 351 444	270 333 420	90	300	11 9 7	27 21 17	56 45 35	135 110 90	190 155 120	290 230 180	25	1"	
40 x 70	12,56	87,92	70 87 110	369 459 580	350 436 550	70	220	8 7 5	21 16 13	44 34 27	110 85 65	150 120 95	220 180 140	25	1"	
50 x 70	19,63	137,4	70 87 110	577 717 907	550 680 860	40	140	— — —	13 10 8	27 22 17	70 55 44	95 77 60	140 110 90	25	1" (4)	
65 x 70	33,18	232,2	70 87 110	975 1211 1532	930 1150 1450	27	80	— — —	8 6 4	16 12 9	40 32 26	57 46 35	80 68 53	40	1 1/2"	
80 x 70	50,26	351,8	70 87 110	1477 1836 2322	1400 1745 2200	17	55	— — —	5 4 3	10 8 6	27 22 17	38 30 24	55 45 35	40	1 1/2"	
100 x 70	78,54	549,7	70 87 110	2309 2869 3628	2200 2730 3400	11	35	— — —	3 2,5 2	6 5 4	17 14 11	24 19 15	35 28 22	65	2 1/2"	
125 x 70	122,7	858,9	70 87 110	3607 4482 5669	3400 4260 5400	7	22	— — —	— — —	4 3 2	11 9 7	15 12 9	22 18 14	65	2 1/2"	

double acting pumping heads, piston type

125DEx70	122,7	1630	70 87 110	6845 8510 10760	6500 8100 10200	6	22	— — —	— — —	5 4 3	12 10 7,5	17 13 10	22 20 15	65	2 1/2"
160DEx70	201	2727	70 87 110	11450 14235 17990	10800 13500 17000	3,5	13	— — —	— — —	2,8 2,3 —	7 6 4,5	10 8 6,5	13 12 9	80	3"
200DEx70	314	4310	70 87 110	18100 22500 28440	17000 21370 27000	—	8,5	— — —	— — —	— — —	4,5 3,5 3	6 5 4	8,5 7,5 5,5	100	4"
250DEx70	490	6784	70 87 110	28490 35414 47770	27000 33650 45000	—	5,5	— — —	— — —	— — —	2,5 2 —	4 3 2	5,5 4,5 3,5	125	5"

(1) the volumetric efficiency of plunger type pumps may vary from 90% to 99%, according to pump working pressure, liquid handled, r.p.m., etc. The table is valid for plunger type pumps only. Double diaphragm type pumps have a volumetric efficiency of 90%; efficiency decreases by about 1% every 7÷8 bar increase of discharge pressure.

(2) for calculation of absorbed power of single acting pumps, the maximum discharge pressure must be considered. and not the maximum differential pressure; the maximum differential pressure must be considered on the contrary for double acting pumps.

(3) flanges are normally supplied in accordance with ANSI B16.5, 150 to 600 lbs, or DIN DN10 or DN 40, unless higher pressure is provided; upon request, flanges in accordance with other standards can be supplied.

(4) the diaphragm pumps DOXE-M mod. 50 DSx70, have flanges DN 40 or 1 1/2" nom. size

tab. B / construction materials for standard units

part / execution	316	PVC	H C
body	AISI 316	PVC	Hastelloy-C 276
plunger	AISI 316 or ceramics	ceramics	ceramics or Hastelloy-C 276
ball valves	AISI 316 o AISI 420	pyrex glass or ceramics	ceramics or Hastelloy-C 276
valve seats	AISI 316	PVC	Hastelloy-C 276
packing	NBR or PTFE + impregnater fiber	PTFE	PTFE

- double acting pumping heads of AISI 304 or AISI 316 stainless with piston rings and packing made of PTFE or impregnated fiber.
- double diaphragm pumps have process diaphragm made of PTFE and hydraulic diaphragm made of NBR + PTFE

tab. C / overall dimensions of plunger type pumps (in mm)

mod.	A	C	C1	C2	C3	E	E1	F	G	G1	H	I	I1	L	M	M1	P	R	S	T	T1
DOXE-2	205	505	765	335	595	180	350	180	380	420	120	350	370	13	40	286	170	132	30	30	18
DOXE-3	277	590	850	420	680	225	395	265	520	540	195	480	490	15	65	440	170	180	45	35	18

pumping head	D dimension		Z dimension	
	single check valves	double check valves	DOXE-2	DOXE-3
	inox	PVC	inox	PVC
10x70,15x70,20x70	132	114	172	154
25x70,30x70	150	138	204	188
35x70,40x70	176	160	246	230
50x70	191	213	261	283
65x70	236	244	328	
80x70	251	293	343	
100x70,125x70	371	402	(503)	
	only single check valves		N dimension	
125DEx70	545	155	155	725
160DEx70	605	170	170	725
200DEx70	690	170	170	
250DEx70	755	215	215	

mod. DOXE-2

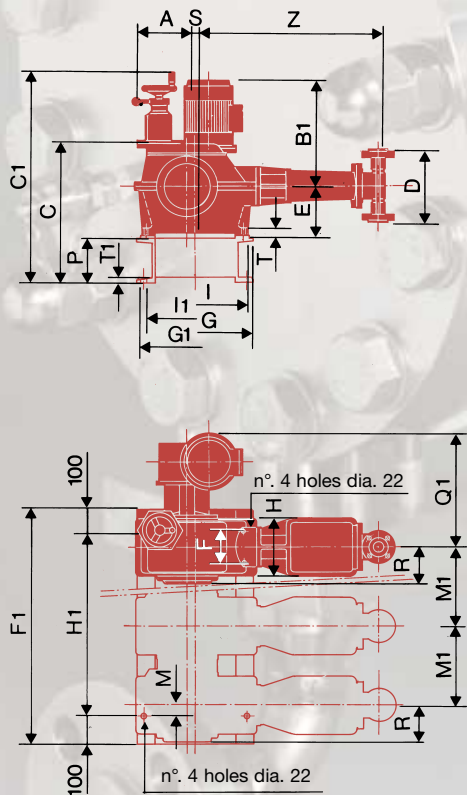
el.motor kW	B	B1	F1	F2	H1	H2	Q	Q1
1,1-1,5	—	410	565-1710	710-2140	365-1510	510-988	—	383-463
2,2-3	—	435	565-1710	710-2140	365-1510	510-988	—	446-523
4	—	435	565-1710	710-2140	365-1510	510-988	—	460-558
5,5 - 7,5	536-588	—	565-1710	710-2140	365-1510	510-988	482-660	—

mod. DOXE-3

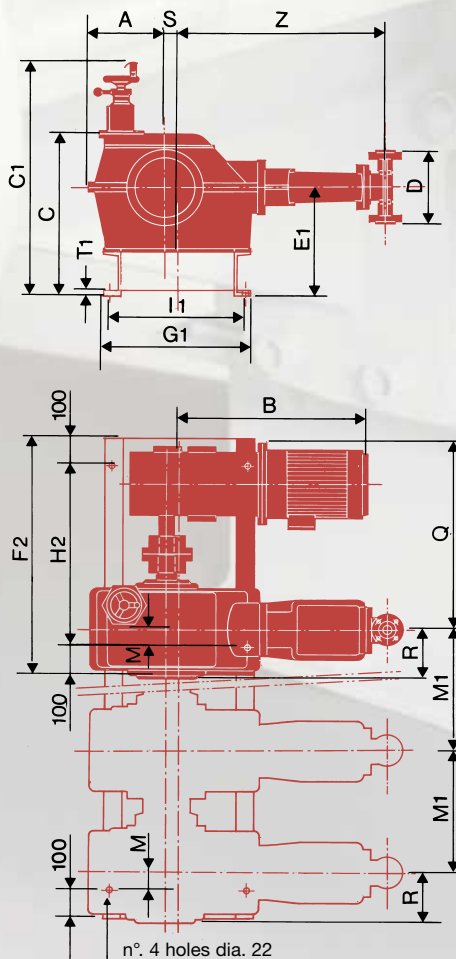
el.motor kW	B	F2	H2	Q
1,1-1,5	—	860-3060	660-1430	—
2,2-3	—	860-3060	660-1430	—
4	572	860-3060	660-1430	485-600
5,5-9,2	597-636	860-3060	660-1430	557-815
11-15	661-720	860-3060	660-1430	855-1022
18,5	661-720	860-3060	660-1430	914-1082

- all dimensions are in millimeters and are approximate • baseplates are always supplied with B3 motors and with multiplex groups; for large size groups also with B5 flanged motors
- the minimum space for pump disassembly = Z + 300 mm; for valve removal = D + 200 mm
- for diaphragm type pumps, overall dimensions must be always required to OMG

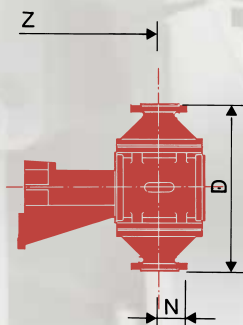
gear reducer flanged B5



gear reducer B3



double acting pumping head



Officine Meccaniche Gallaratesi, established in 1907,
has been manufacturing positive displacement pumps
for more than 90 years.

The company is highly specialized in design and production
of reciprocating plunger and diaphragm metering pumps
as well as complete package units including O.M.G. pumps.

In its field of activity, O.M.G. has always given priority
to reliable solutions, in order to satisfy
the most demanding requirements of advanced industrial
users and engineering companies.

The result of this choice is that today O.M.G.
can be ranked among the best known and technologically
advanced companies in the market.



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