Motor Driven Gear Pumps

User and Maintenance Manual

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Dropsa products can be purchased from Dropsa branches and authorized distributors, visit **www.dropsa.com/contact** or contact us **sales@dropsa.com**

1. INTRODUCTION

This user's and maintenance manual refers to motor-driven gear pumps 37000-3400000, 3410-
It is recommended that this manual is carefully kept in good condition and is always available to persons requiring to consult it.
To request further copies, updates or clarifications with respect to this manual contact the Engineering Department at Dropsa SpA.
The use of the pump referred to in this manual must be entrusted to qualified personnel with a knowledge of hydraulics and electrical systems.
The manufacturer reserves the right to update the product and/or the user's manual without the obligation to revise previous versions. It is however, possible to contact the Engineering Department for the latest revision in use. You can find additional copies and newer revisions of this document from our website http://www.dropsa.com. Alternatively contact one of our sales offices.
The pump, and any accessories mounted on it, should be carefully checked immediately on receipt and in the event of any discrepancy or complaint the Dropsa SpA Sales Department should be contacted without delay.
DROPSA S.p.A. declines to accept any responsibility for injuries to persons or damage to property in the event of the non-observance of the information presented in this manual.
Any modification to component parts of the system or the different destination of use of this system or its parts without prior written authorisation from DROPSA S.p.A. will absolve the latter from any responsibility for injury or damage to persons and/or property and will release them from all obligations arising from the guarantee.

Instructions for the correct ordering of the required model, and a list of importers, is shown in Section 4.

2. GENERAL DESCRIPTION

These new pump units have been designed as the result of over thirty years experience in the field of developing and manufacturing gear pumps.
The application possibilities are numerous; **the pumps are self-lubricating** and are able to operate with oils or any other fluid with proven lubricating capacity.
These pumps can therefore be utilised in the fields of lubrication, refrigeration, hydraulics and, more generally, for the circulation of fluids for machines, motors and linear motion applications; these units can also be employed on recirculating systems without the need for particularly fine filtering of the circulation fluid.
One of the most striking features of these pumps is the **high degree of silentness in operation,** obtained with the use of gears specially designed for this type of unit.
Also, thanks to particularly precise machining and finishing, a significant improvement has been achieved in efficiencies compared to all previous similar models produced.
To ensure an external seal the pumps have an **"O" ring** located between the pump body and the relative cover in addition to a lip seal on the main shaft.
The body of the pump is produced in hydraulic cast iron and the gears and relative shafts in chrome-nickel steel – carburized, hardened and ground.
The body of the low flow rate pump (up to 500 cc/min) is made of sintered steel; the shafts and gears in carburized and hardened steel with a seal on the main shaft.

WARNING
For all the motor-driven pumps we have shown the applied power to the motors in function of the maximum pressure demand indicated in the table. For higher pressures the motor must be suitably sized; accordingly, to obtain a quotation, state the voltage, the maximum operating pressure and if the service will be continuous or intermittent. (Max pressure = 30 bar for continuous service); (max. pressure = 60 bar for intermittent service); (For cylinder block versions from 1-30 bar it depends form delivery and kW). Working temperature of the fluid –20 - +100 degrees with low to medium velocity oil.
On request flameproof motors can be supplied in various voltages.
Request availability from Dropsa SpA.

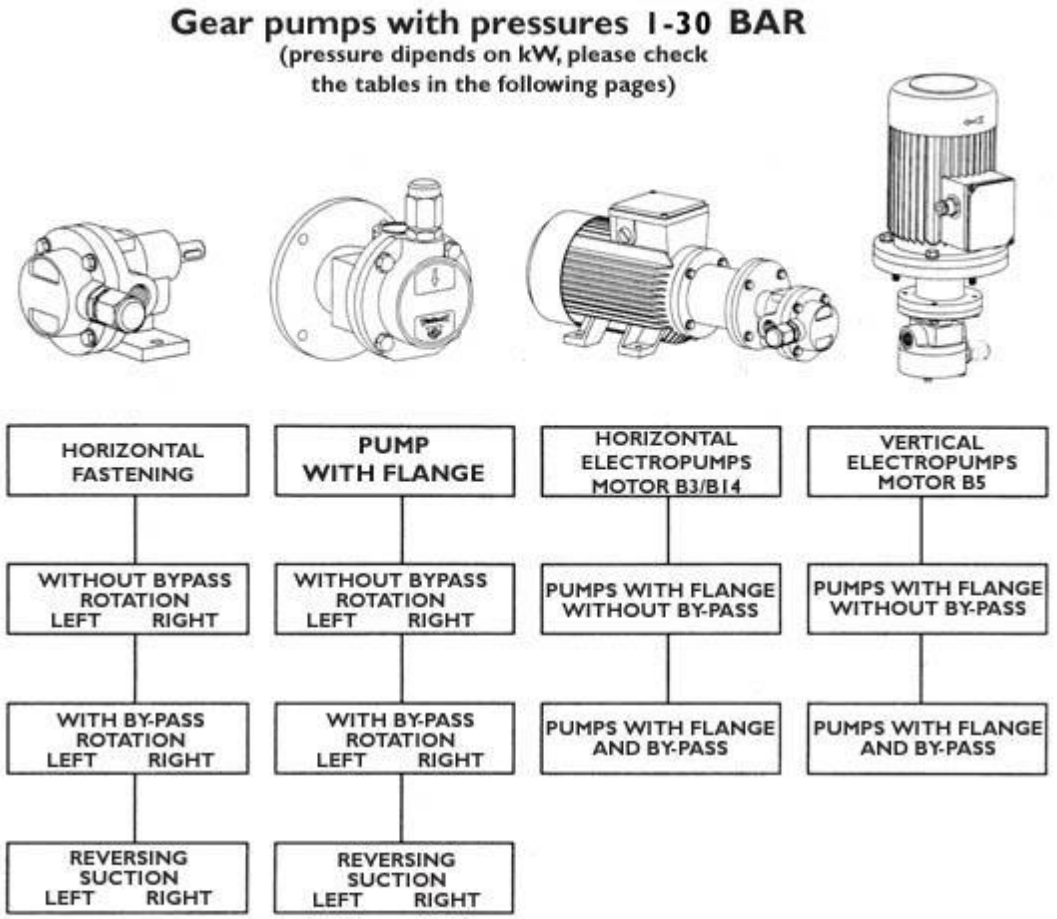
3. PRODUCT – MACHINE IDENTIFICATION

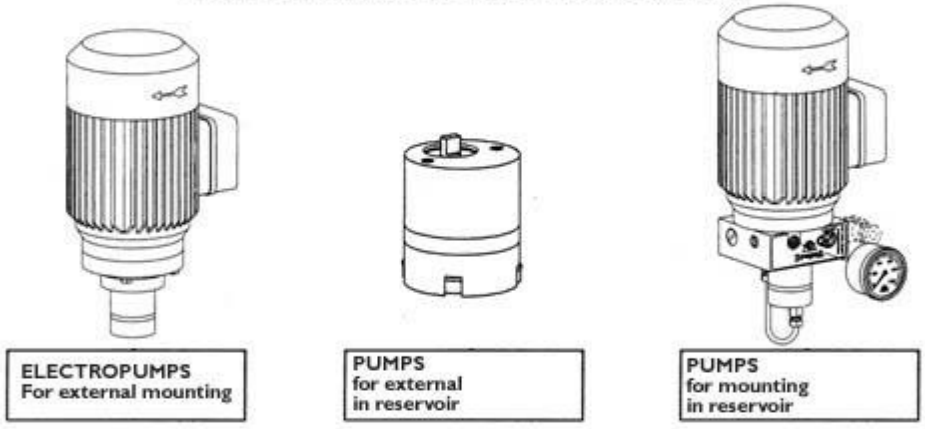
Pump identification label is located on the front side of the grease operating pump and contains pump serial number and details of its operating parameters.

4. TECHNICAL SPECIFICATION

See chapter 11 "ORDERING INFORMATION"

5. PUMP COMPONENTS





NOTE:
WITH WORKING PRESSURE OF 30 BAR
THE MAX LOSS OF DELIVERY IS WITHIN 9%
OF THE VALUE WITHOUT COUNTERPRESSURE (PRESSURE 0)

6. UNPACKING AND INSTALLING THE PUMP

6.1 UNPACKING

Once a suitable location has been found to install the unit remove the pump from the packaging. Check the pump has not been damaged during transportation or storage. No particular disposal procedures are necessary, however packing should be disposed of in accordance with regulations that may be in force in your area or state.

6.2 INSTALLING THE PUMP

Allow sufficient space for the installation, leaving minimum 100 mm (3.9 in.) around the unit.
In order to avoid unnatural posture for personnel install the machine in a comfortable and easy-to-reach location.
Do not install the unit in aggressive/explosive/inflammable environments or on vibrating surfaces.

WARNING: At the end of all the connecting operations, make sure that pipes and wires are safe from impacts and carefully fixed.

7. INSTRUCTIONS FOR USE

- After fixing the pump at its support, fill the tank with pure oil.
- Operate the pump until the oil comes out without air bubbles.
- Attach the tubing to the pump taking care of blowing compressed air inside to remove any dirt.
- Reactivate the pump until oil comes out from the pipes regularly and without bubbles.
- Attach piping to the lubrication points
- Always pay attention to the direction of rotation.
- In case of direct connection, run the engine for a few seconds checking the direction of rotation, if it is wrong to switch two power phases.
- The pump must not work with the wrong direction of rotation.
- In the event of a complete unit, pump with electric motor on support, they must be carefully balanced in both directions, to ensure that whole function silently.

8. TROUBLESHOOTING

DIAGNOSTIC TABLE

INDICATION	PROBABLE CAUSE	REMEDY
The pump does not deliver oil or does not deliver oil in the exact quantity prescribed	• Drawing in air due to the tank being empty	• Refill the tank and purge air from the system
	• The splash filter is dirty or blocked	• Wash the filter and blow it through with compressed air
	• The connections are loose	• Set all connections ensuring there are no leakages
	• Pump has deteriorated	• Replace the pump
	• Pressure regulating valve loose, so the oil returns immediately to the tank before flowing through the delivery valve	• Set the regulating screw until oil exits from the delivery
	• Release valve damaged	• Replace the valve
The pump does not deliver oil at the prescribed pressure	• Incorrect setting of the regulating valve	• To the pump outlet connect a tube approximately 30cm long with a manometer connected to the free end. Regulate the valve by means of turning the screw and reading the corresponding pressure value on the manometer
	• Presence of dirt under the by-pass valve	• Disassemble the valve and clean or replace it as necessary

9. MAINTENANCE PROCEDURE

The pumps require only minimal maintenance.
To facilitate maintenance it is suggested to install the pump in an easily accessible location
Periodically check piping joints to detect possible leaks.
The machine does not require any special tool for checking or maintenance tasks. However, it is recommended the use only of appropriate and in good conditions tooling, protective devices (gloves) and clothing (in according to current regulations) to avoid hazards to equipment or persons.

10. DISPOSAL

During maintenance or disposal of the machine care should be taken to properly dispose of environmentally sensitive items.
Refer to local regulations in force in your area.
When disposing of this unit, it is important to ensure that the identification label and all the other relative documents are also destroyed.

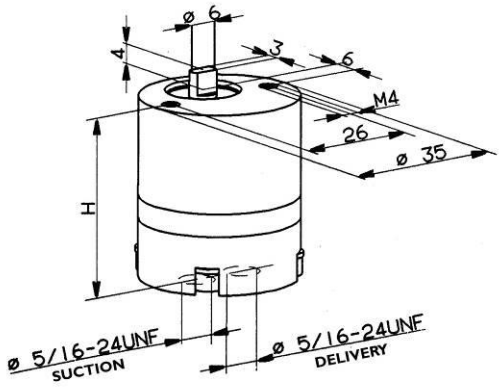
11. ORDERING INFORMATION

Gear pumps for low flow rates with pressures of 30-70 bar.

Gear pumps for low flow rates can also be supplied assembled to the motors.
3 sizes are available: 0.35 – 0.5 – 1.2 litres/min. at 1500 rpm.
The direction of rotation is indifferent; simply invert the suction and delivery tubes.
The service can be either continuous or intermittent.
The following standard power supplies are provided for:

- 220/380 V – 50 Hz
- 240/440 V – 60 Hz
- 415V _ 50 Hz

Other voltages and frequencies are available on request.
The motors have IP55 grade protection.
In addition, it is possible to order separately a suction filter c/w dip tube (400 mesh/cm^2, filtering grade 260) of an overall length of between 100 and 455 mm depending on the needs of different installations.
These gear pumps are suitable for operating with oils of a viscosity between 32 and 1000 cSt at fluid working temperatures in the range of –20 - +100 °C.
The maximum useful pressure in intermittent service is 70 bar; for this the design rotation speed of the pump is 1500 or 3000 rpm.



Assembly Part N°		Flow rate in litres/min	Dimension H
Pump for external	Pump in tank	a 1500 rpm	
3099127	3099129	0.35	38
3099004	3099130	0.5	40
3099131	3099133	1.2	47

Electropump for external installation

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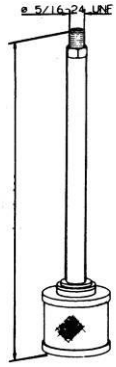
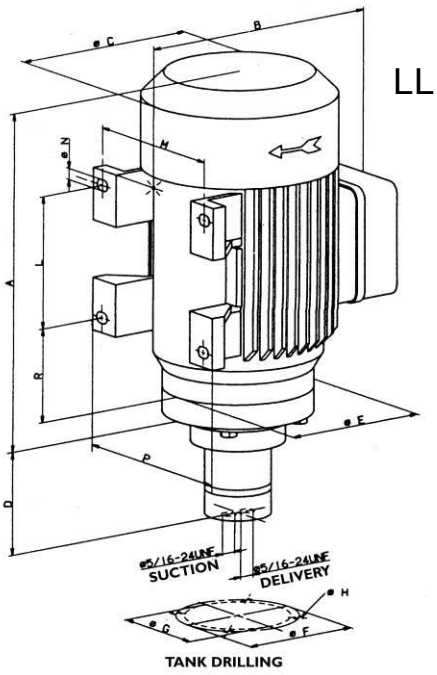


Suction max. high 19,68 inch (500 mm)

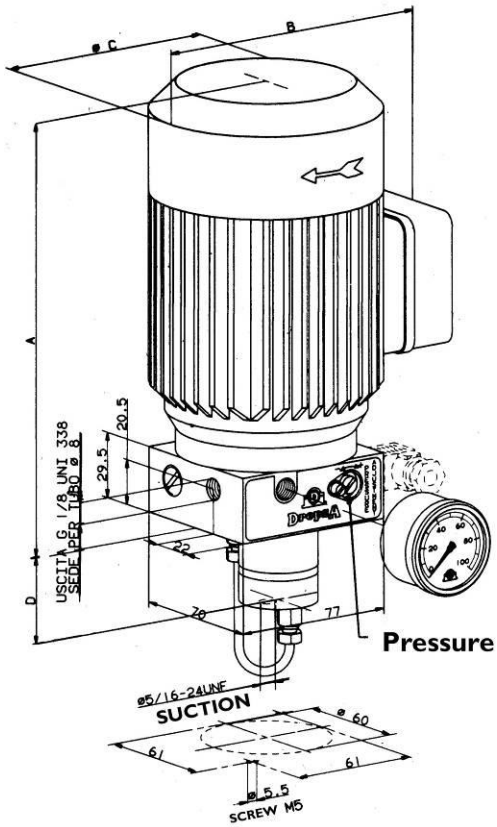


Suction filter assembly

Part N° 3088053 Length 165 mm
Part N°3088054 length 80 mm
Part N°3088055 length 415 mm
Part N°3088056 length 130 mm

Assembly Part N°	Motor power			Flow rate litres/min	Weight Kg	Dimensions in mm												
	size	kW	rpm			A	B	C	D	E	F	G	H	L	M	N	P	R
3405000	56	0.09	1500	0.50	3.7	171	137	104	56	80	65	56	5.5	71	90	6	106	36
3406000	63	0.25	3000	1.00	5.5	194	153	119	56	90	75	58	5.5	--	--	--	--	--
3407000	63	0.185	1500	0.50	5.5	194	153	119	56	90	75	58	5.5	--	--	--	--	--
3402002	56	0.09	1500	0.35	3.7	171	137	104	54	80	65	56	5.5	71	90	6	106	36

Electropump for reservoir installation



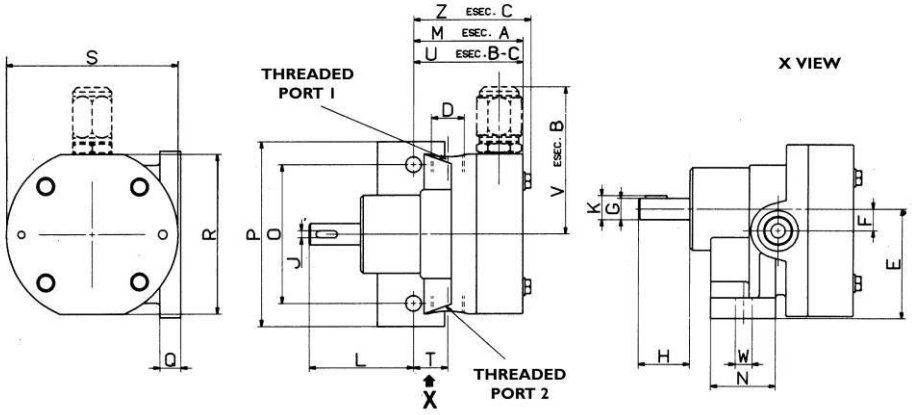
This assembly consists only of the motor and the gear pump.

	DropsA Line	By-pass setting	Standard setting	By-pass	Assembly	Motor power			Voltage	Flow rate litres/min	Dimensions			
						Size	kW	rpm			*A	*B	*C	D
Electric motor for continuous operation	01	2-20 bar	5 bar	with non-return valve	3404023	56	0.09	1500	220/380V-50 Hz	0.35	205	156	110	38
					3404022	56	0.09	1500	220/380V-50 Hz	0.50	205	156	110	40
					3404026	56	0.06	1500	110 V – 50 Hz	0.35	205	156	110	38
					3404046	56	0.06	1500	110 V – 50 Hz	0.50	205	156	110	40
	26	25-80 bar	70 bar/ 3 PH		3405099	56	0.09	1500	220/380V – 50 Hz	0.35	205	156	110	38
					3405101	56	0.09	1500	220/380V– 50 Hz	0.50	205	156	110	40
					3405121	56	0.06	1500	110 V – 50 Hz	0.35	205	156	110	38
					3415122	56	0.06	1500	110V – 50 Hz	0.50	205	156	110	40
Intermittent	33V	25-80 bar	50 bar/ 3 PH	with release valve	3405098	56	0.12	1500	220/380V-50 Hz	0.35	187	156	110	38
					3405100	56	0.12	1500	220/380V-50 Hz	0.50	187	156	110	40
					3405123	56	0.06	1500	110 V – 50 Hz	0.35	205	156	110	38
					3405124	56	0.06	1500	110 V – 50 Hz	0.50	205	156	110	40

* NON-STANDARD DIMENSIONS

This assembly is composed of a gear pump, an electric motor, a manometer and a valve block.
Thanks to a by-pass it is possible to regulate the working pressure in accordance with the requirements of the system to which the pump is connected.
Also included in the valve block is a non-return valve or alternatively a release valve so that it can be adapted for use with the different **DROPSA** systems (line 01, line 26, 33V System) or on other systems of a similar nature.
It is also possible to order separately an intake filter with a dip tube (400 mesh/cm2 filtering grade 260) of an overall length variable between 100 and 455 mm depending on the differing requirements of the installation).
THE MOTOR VOLTAGE MUST ALWAYS BE STATED AT THE TIME OF ORDERING.

Gear pumps and electro-gear pumps, (pumps with horizontal fastening)



Max Pressure = 30 bar for continuous working – Max Pressure =60 bar for intermittent working.
Fluid working temperature = 20÷100 ºC with low and medium oil viscosity.
Note: For pumps either with clockwise rotation or bi-rotational with suction on left side, connect suction line to threaded port 1 and delivery line to threaded port 2 ;
For pumps either with counter - clockwise rotation or bi-rotational with suction on right side connect suction line to threaded port 2 and delivery line to threaded port 1;

WITHOUT BY PASS

Liters	Rotation #		Weight kg	Gas D	Dimensions (mm)																	
	Left	Right			E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	Z
2 3,5	37036	37060 37021	0,9	1/4	40	8,7	10	25	3	11,2	44,5	45,5	25	48	65	8	60	60	14,5	…	…	6	…
10		37024	1,9	3/8	54	12,3	12	30	4	13,5	57	61	35	60	82	10	80	80	18,5	…	…	9,5	…
19	37040		3,2	1/2	65	15,2	14	32	5	16	67	73	44	74	96	10	90	98	25	…	…	9,5	…
32		37030	5	3/4	77,5	18,9	16	34	5	18,8	72	79	50	84	110	10,5	108	116	25	…	…	11,5	…

Looking at the pump from shaft side

WITH BY PASS

Liters	Rotation #		Weight	Gas	Dimensions (mm)																	
	Left	Right	kg	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	Z
2 3,5	37111	37061 37022	1	1/4	40	8,7	10	25	3	11,2	44,5	…	25	48	65	8	60	60	14,5	45,5	58	6	…
5,5 10	37039	37063 37025	2,1	3/8	54	12,3	12	30	4	13,5	57	…	35	60	82	10	80	80	18,5	61	78	9,5	…

Looking at the pump from shaft side

REVERSIBLE

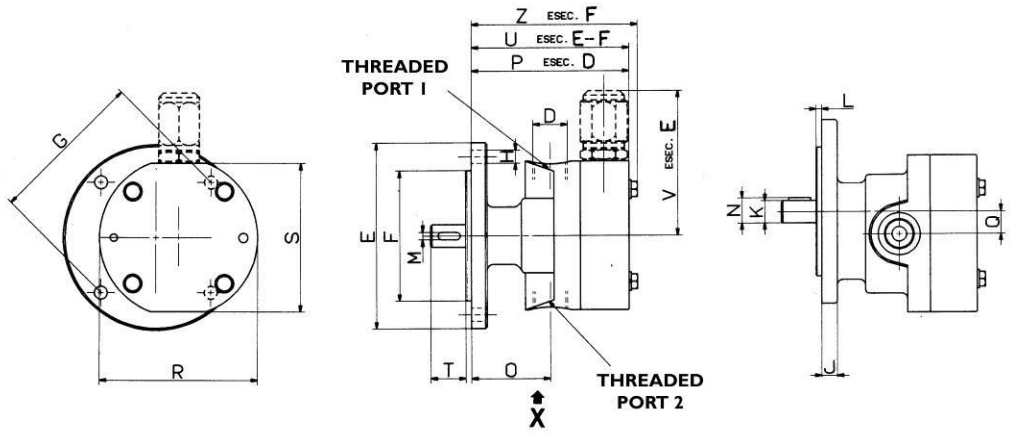
Liters	Sunction		Weight	Gas	Dimensions (mm)																	
	Left	Right	kg	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	Z
2 3,5	37070 37023		0,9	1/4	40	8,7	10	25	3	11,2	44,5	…	25	48	65	8	60	60	14,5	90	…	6	49,5
5,5 10	37071 37026		1,9	3/8	54	12,3	12	30	4	13,5	57	…	35	60	82	10	80	80	18,5	120,5	…	9,5	69

*** Please ask to nearest Dropsa for availability**

Dimensions and features may change without notice

NB. Use UNI - ISO 7/1 conical fittings in order to avoid blanking inlet passage

Gear pump and electro-gear pumps (pumps with flange)



Max Pressure = 30 bar for continuous working – Max Pressure =60 bar for intermittent working.

Fluid working temperature = 20÷100 ºC with low and medium oil viscosity.

Note: For pumps either with clockwise rotation or bi-rotational with suction on left side, connect suction line to threaded port 1 and delivery line to threaded port 2 ;

For pumps either with counter - clockwise rotation or bi-rotational with suction on right side connect suction line to threaded port 2 and delivery line to threaded port 1;

WITHOUT BY PASS

Liters	Rotation#		Weight	Gas	Dimensions (mm)																	
	Left	Right	kg	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	Z
2 3,5	37066	37054 37001	0,9	1/4	70	50	60	5,7	6,5	10	2	3	11,2	32	63	8,7	60	60	15	…	…	…
5,5 10	37068 37018	37056 37004	1,9	3/8	100	70	84	7	8,5	12	3	4	13,5	42,5	85	12,3	80	80	19	…	…	…
19		37007	3,2	1/2	120	90	100	7	9	14	3,5	5	16	53,5	102	15,2	98	90	26	…	…	…
26 32	37123	37058 37010	5	3/4	140	100	120	9	10	16	4	5	18	59	113	18,9	116	108	34	…	…	…
*45		37013	8	1	150	110	130	11,5	11	18	4	6	20,5	65,5	138,5	22,5	140	130	38	…	…	…

Looking at the pump from shaft side

WITH BY PASS

Liters	Rotation#		Peso	Gas	Dimensions (mm)																	
	Left	Right	kg	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	Z
2 3,5		37055 37002	1	1/4	70	50	60	5,7	6,5	10	2	3	11,2	32	…	8,7	60	60	15	63	58	…
5,5 10	37016	37057 37005	2,1	3/8	100	70	84	7	8,5	12	3	4	13,5	42,5	…	12,3	80	80	19	85	78	…
19	37082	37008	3,5	1/2	120	90	100	7	9	14	3,5	5	16	53,5	…	15,2	98	90	26	104	86	…
26 32		37059 37011	5,5	3/4	140	100	120	9	10	16	4	5	18	59	…	18,9	116	108	34	117	102,5	…
*45		37014	8,2	1	150	110	130	11,5	11	18	4	6	20,5	65,5	…	22,5	140	130	38	138,5	113	…

Looking at the pump from shaft side

REVERSIBLE

Liters	Sunction		Weight	Gas	Dimensions (mm)																	
	Left	Right	kg	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	Z
2 3,5	37067 37020	37003	0,9	1/4	70	50	60	5,7	6,5	10	2	3	11,2	32	…	8,7	60	60	15	63	…	67,5
5,5 10	37069 37006		1,9	3/8	100	70	84	7	8,5	12	3	4	13,5	42,5	…	12,3	80	80	19	87,5	…	92
19	37009		3,2	1/2	120	90	100	7	9	14	3,5	5	16	53,5	…	15,2	98	90	26	108,5	…	113,5
26 32	37083 37012		5	3/4	140	100	120	9	10	16	4	5	18	59	…	18,9	116	108	34	120,5	…	125

*** Please ask to nearest Dropsa for availability**

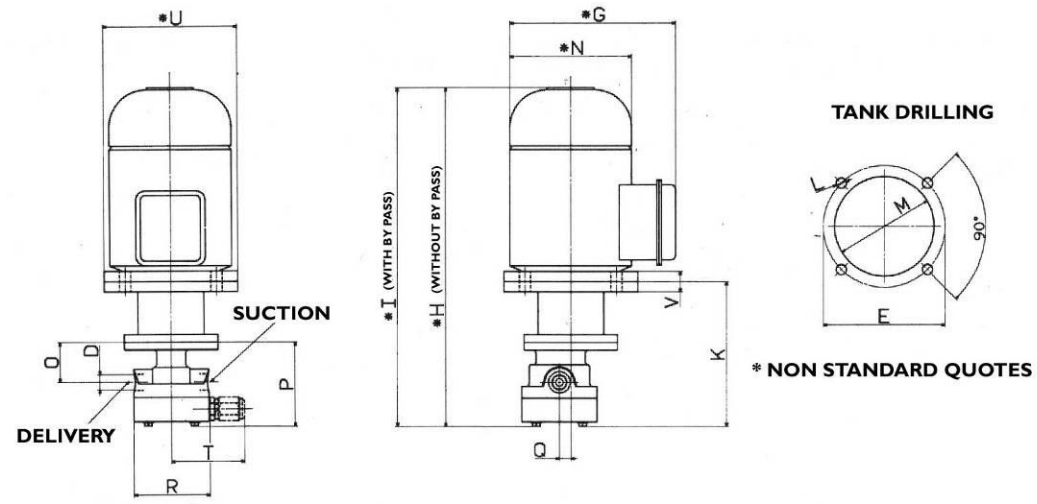
Dimensions and features may change without notice

NB. Use UNI - ISO 7/1 conical fittings in order to avoid blanking inlet passage

Vertical or horizontal application motor-driven pumps– motor type B5 4 pole

WITHOUT BY-PASS

Assembl. Part N.	Liters	Power KW	Press. max bar	Weight Kg	gas D	Dimensions (mm)														
						E	G	H	K	I	L	M	N	O	P	Q	R	T	U	V
3410110	2	0.185	26	8.6	1/4	115	148	306	118	---	9	95	11	32	63	8.7	60	---	140	23
3410112	3.5	0.25	20	8.6	1/4	130	167	333	126	---	9	110	129	32	63	8.7	60	---	160	23
3410114	5.5	0.25	13	10.4	3/8	130	167	355	148	---	9	110	129	42	85	12.3	80	---	160	23
3410118	10	0.25	7	10.4	3/8	130	167	355	148	---	9	110	129	42	85	12.3	80	---	160	23
3410120	10	0.55	15	12.9	3/8	165	187	392	159	---	11	130	149	42	85	12.3	80	---	200	28
3410122	19	0.55	8	15.7	1/2	165	187	437	202	---	11	140	149	53	102	15.2	90	---	200	28
3410124	19	0.75	11	17.2	1/2	165	187	437	202	---	11	140	149	53	102	15.2	90	---	200	28
3410126	26	0.75	8	19.5	3/4	165	187	451	214	---	11	150	149	59	113	18.9	108	---	200	28
3410128	26	1.1	12	25	3/4	165	210	473	214	---	11	150	172	159	113	18.9	108	---	200	28
3410130	32	0.75	6	19.5	3/4	165	187	451	214	---	11	150	149	59	113	18.9	108	---	200	28
3410132	32	1.1	10	25	3/4	165	210	473	214	---	11	150	172	59	113	18.9	108	---	200	28



THE MOTOR VOLTAGE MUST ALWAYS BE STATED AT THE TIME OF ORDERING

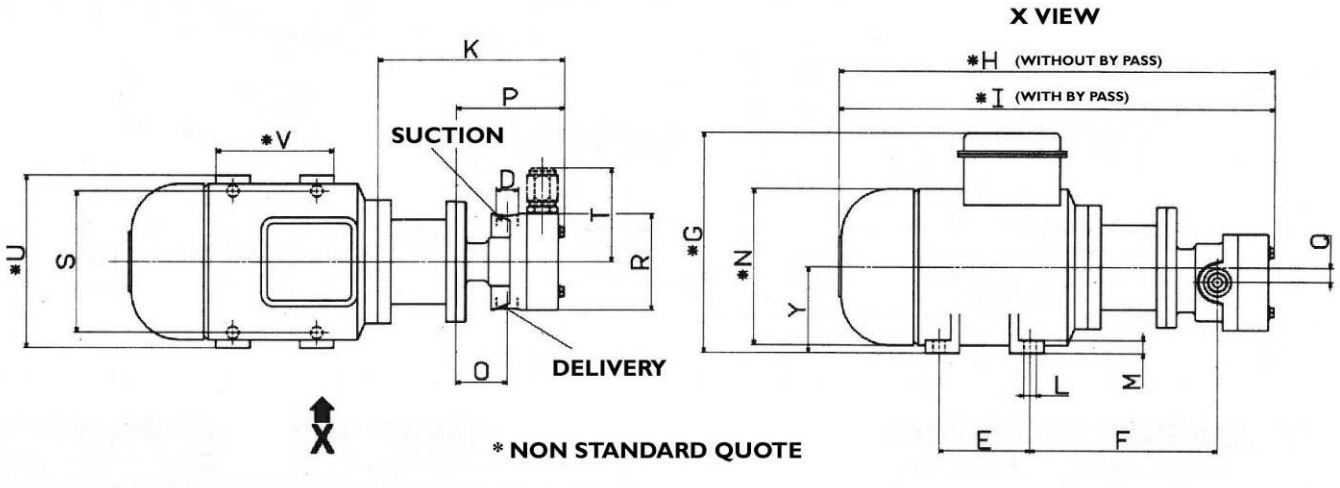
WITH BY-PASS

Assemb. Part N:	Liters	Pow. KW	Press.. max bar	Weight Kg	gas D	Dimensions (mm)														
						E	G	H	K	I	L	M	N	O	P	Q	R	T	U	V
3410111	2	0.185	26	8.7	1/4	115	148	---	118	306	9	95	111	32	63	8.7	60	58	140	23
3410113	3.5	0.25	20	8.7	1/4	130	167	---	128	333	9	110	129	32	63	8.7	60	58	160	23
3410119	10	0.25	7	10.6	3/8	130	167	---	148	355	9	110	129	42	85	12.3	80	78	160	23
3410121	10	0.55	15	13.1	3/8	165	187	---	159	392	11	130	149	42	85	12.3	80	78	200	28
3410123	19	0.55	8	16	1/2	165	187	---	204	439	11	140	149	53	104	15.2	90	86	200	28
3410125	19	0.75	11	17.5	1/2	165	187	---	204	439	11	140	149	53	104	15.2	90	86	200	28
3410127	26	0.75	8	20	3/4	165	187	---	218	455	11	150	149	59	117	18.9	108	102.5	200	28
3410129	26	1.1	12	25.5	3/4	165	210	---	218	477	11	150	172	59	117	18.9	108	102.5	200	28
3410131	32	0.75	6	20	3/4	165	187	---	218	455	11	150	149	59	117	18.9	108	102.5	200	28
3410133	32	1.1	10	25.5	3/4	165	210	---	218	477	11	150	172	59	117	18.9	108	102.5	200	28

Vertical or horizontal application motor-driven pumps–motor type B3/B14 4 pole

WITHOUT BY-PASS

Assemb. Part N.	Liters	Pow. KW	Press. max bar	Weight Kg	gas D	Dimensions (mm)																	
						E	F	G	H	K	I	Y	L	M	N	O	P	Q	R	S	T	U	V
3410011	2	0.185	26	8.6	1/4	80	127	155	306	118	-	63	7	8	111	32	63	8.7	60	100	-	120	100
3410012	3.5	0.25	20	8.6	1/4	90	140	173	333	126	-	71	7	9	129	32	63	8.7	60	112	-	136	110
3410027	5.5	0.25	13	10.4	3/8	90	150	173	355	148	-	71	7	9	129	42	85	12.3	80	112	-	136	110
3410013	5.5	0.55	29	12.9	3/8	100	166	192	392	159	-	80	9	10	149	42	85	12.3	80	125	-	155	125
3410028	10	0.25	7	10.4	3/8	90	150	173	355	148	-	71	7	9	129	42	85	12.3	80	112	-	136	110
3410014	10	0.55	15	12.9	3/8	100	166	192	392	159	-	80	9	10	149	42	85	12.3	80	125	-	155	125
3410029	19	0.55	8	15.7	1/2	100	203	192	437	204	-	80	9	10	149	53	102	15.2	98	125	-	155	125
3410015	19	0.75	11	17.2	1/2	100	203	192	437	204	-	80	9	10	149	53	102	15.2	98	125	-	155	125
3410030	26	0.75	8	19.5	3/4	100	210	192	451	218	-	80	9	10	149	59	113	18.9	116	125	-	155	125
3410016	26	1.1	12	25	3/4	100	216	216	473	218	-	90	9	11	172	59	113	18.9	116	140	-	174	128
3410031	32	0.75	6	19.5	3/4	100	210	192	451	218	-	80	9	10	149	59	113	18.9	116	125	-	155	125
3410017	32	1.1	10	25	3/4	100	216	216	473	218	-	90	9	11	172	59	113	18.9	140	140	-	174	128
3410032	45	1.1	7	28.5	1	100	222.5	216	494.5	239.5	-	90	9	11	172	65.5	138.5	22.5	140	140	-	174	128
3410018	45	2.2	15	48.5	1	140	238.5	238	570	248.5	-	100	12	12	196	65.5	138.5	22.5	140	160	-	196	170



THE MOTOR VOLTAGE MUST ALWAYS BE STATED AT THE TIME OF ORDERING

WITH BY-PASS

Assemb. Part N.	Liters	Pow. KW	Pres. max bar	Weight Kg	gas D	Dimensions (mm)																	
						E	F	G	H	K	I	Y	L	M	N	O	P	Q	R	S	T	U	V
3410019	2	0.185	26	8.7	1/4	80	127	155	-	118	306	63	7	8	111	32	63	8.7	60	100	58	120	100
3410020	3.5	0.25	20	8.7	1/4	90	140	173	-	126	333	71	7	9	129	32	63	8.7	60	112	58	136	110
3410033	5.5	0.25	13	10.6	3/8	90	150	173	-	148	355	71	7	9	129	42	85	12.3	80	112	78	136	110
3410021	5.5	0.55	29	13.1	3/8	100	166	192	-	159	392	80	9	10	149	42	85	12.3	80	125	78	155	125
3410034	10	0.25	7	10.6	3/8	90	150	173	-	148	355	71	7	9	129	42	85	12.3	80	112	78	136	110
3410022	10	0.55	15	13.1	3/8	100	166	192	-	159	392	80	9	10	149	42	85	12.3	80	125	78	155	125
3410035	19	0.55	8	16	1/2	100	203	192	-	206	439	80	9	10	149	53	104	15.2	98	125	86	155	125
3410023	19	0.75	11	17.5	1/2	100	203	192	-	206	439	80	9	10	149	53	104	15.2	98	125	86	155	125
3410036	26	0.75	8	20	3/4	100	210	192	-	222	455	80	9	10	149	59	117	18.9	116	125	102.5	155	125
3410024	26	1.1	12	25.5	3/4	100	216	216	-	222	477	90	9	11	172	59	117	18.9	116	140	102.5	174	128
3410037	32	0.75	6	20	3/4	100	210	192	-	222	455	80	9	10	149	59	117	18.9	116	125	102.5	155	125
3410025	32	1.1	10	25.5	3/4	100	216	216	-	222	477	90	9	11	172	59	117	18.9	116	140	102.5	174	128
3410038	45	1.1	7	29	1	100	222.5	216	-	239.5	494.5	90	9	11	172	65.5	138.5	22.5	140	140	113	174	128
3410026	45	2.2	15	49	1	140	238.5	238	-	248.5	570	100	12	12	196	65.5	138.5	22.5	140	160	113	196	170
3410067	60	2.2	11	52	1	140	238.5	238	-	248.5	570	100	12	12	196	65.5	138.5	22.5	140	160	113	196	170

12. DIMENSIONS

See tables in charter 11 "ORDERING INFORMATION"

13. HANDLING AND TRANSPORTATION

Prior to shipping, the equipment is carefully packed in a cardboard package. During transportation and storage, pay attention to the side on the cardboard packing. On receipt, check that the packing is not damaged. Then, storage the machine in a dry location.

14. OPERATING HAZARDS

It is necessary to carefully read about the instructions and the risks involved in the use of lubrication machines. The operator must know the machine functioning through the User and Maintenance Manual

Inflammability
The lubricant generally used in lubrication systems is not normally inflammable. However, it is advised to avoid contact with extremely hot substances or naked flames.

Pressure
Prior to any intervention, check the absence of residual pressure in any branch of the lubricant circuit as it may cause oil sprays when disassembling components or fittings.

15. PRECAUTIONS

No particular operating hazards characterize *Motor Driven Gear pumps*, except for the following precautions:

- Contact with fluid to break/open feed pipe. The operator must use appropriate protective clothing, gloves and take all necessary safety precautions (D. Lgs. 81/08).
- Awkward postures . Follow instruction in section 6.2**.**
- Contact with oil during refilling / maintenance. The operator must use appropriate protective clothing, gloves and take all necessary safety precautions (D. Lgs. 81/08).
- Using the wrong lubricants:

Fluids	Dangers
Lubricants containing abrasive components	Premature wear of pump
Lubricants containing silicon	Pump failure
Petrol – solvents – inflammable liquids	Fire – explosion –seal damage
Corrosive products	Pump damage - danger to persons
Water	Pump oxidization
Food Products	Contamination of the product