PLUNGER METERING PUMPS

SPRING RETURN

SERIES **R**

OBL

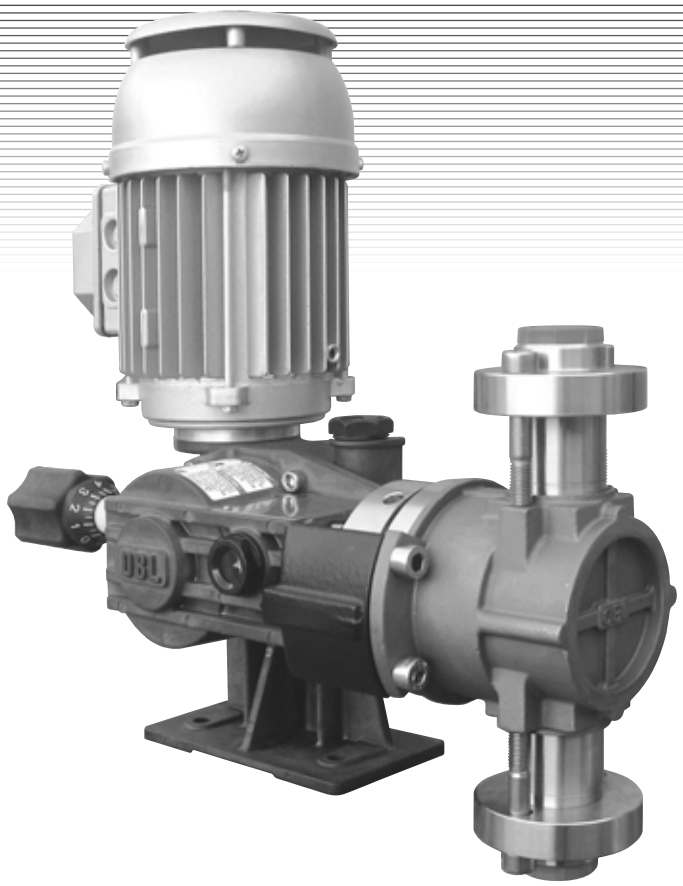
GB ENGLISH

CE

IMPORTANT NOTICE

Industrial pump for professional use only.
These instruction are for skilled personnel only.

> OPERATING MANUAL



Type	RBA	RBB	RCC	RIE	RH
MOTORS	SPECIAL 0,20 kW 0,30 kW	SPECIAL 0,20 kW 0,30 kW	UNEL-MEC 0,37 kW	SPECIAL 0,20 kW 0,30 kW 0,37 kW	UNEL-MEC 0,37 kW
COLOUR	BLACK	BLACK	BLACK	BLACK	GRAY RAL 7001
L/h Max	300	300	300	300	620

JOB N°				
PUMP TYPE				
ELECTRIC ACTUATOR TYPE				
OVERALL DIMENSIONS				
SECTIONAL DRAWING				
ITEM				
N° SERIES				

INDEX

CAUTION!

INFORMATION FOR CUSTOMERS

OBL s.r.l. welcome pumps despatched to our premises for servicing.

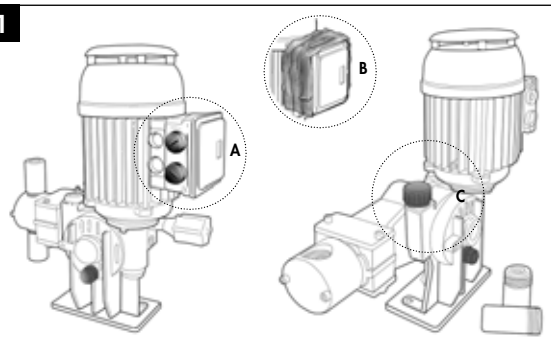
Contact OBL customer care **before** sending goods back to us (Tel: +39-02-26919.1, e-mail: info@obl.it)

MANDATORY CONDITIONS TO ACCEPT GOODS

- **EACH** item **MUST** be cleaned and sent with relevant declaration stating pumped chemical
- **PUMPS: DISASSEMBLE both valve units and fix them to the pump**
- Goods shall be sent to OBL DDU/DDP with relevant shipping note
- Pack goods properly to avoid damage in transit
- State the following: brief mis-functioning description; contact person, direct phone number and e-mail address

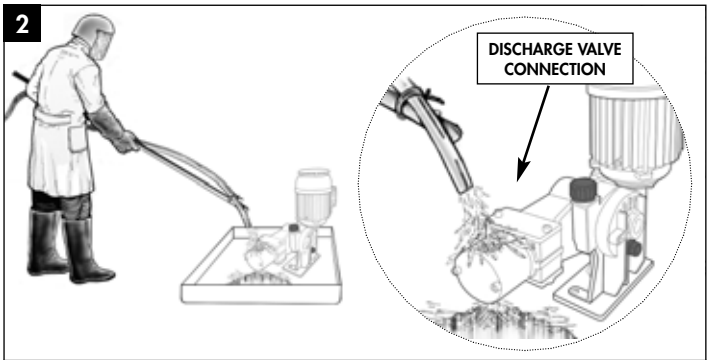
HOW TO SAFELY CLEAN PUMPS

1



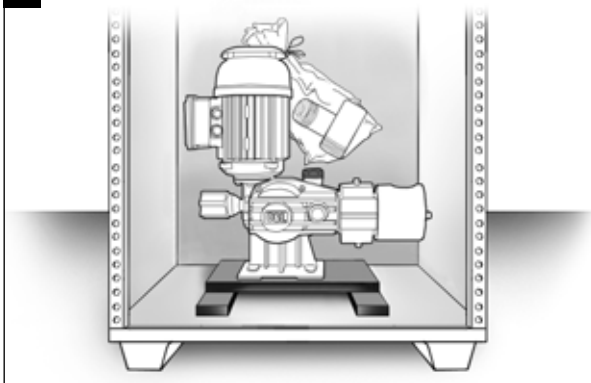
- ***A**: Fix terminal box cover and shut cable holes with suitable plugs.*
- ***B**: If no plugs are available use weather proof tape.*
- ***C**: Replace breathing plug with blind one; If no blind plugs are available **drain lubricant oil from pump casing**.*

2



- *If water is not suitable to clean pumped chemical (e.g. concentrated sulphuric acid), use proper cleaning fluid.*
- *Dismantle both valve units and clean them separately.*
- *Place pump in an area suitable to collect cleaning fluid.*
- *Keep away from pump to be cleaned (two meters).*
- *Clean pump aiming cleaning fluid into discharge valve connection.*
- *Carry on cleaning till removing scaling and all traces of pumped chemical.*
- *Collect cleaning fluid and have it picked-up by companies authorised for its safe disposal.*

3



- *Pack safely goods to avoid damages during transport (e.g. palletised crate).*
- *Fix firmly pumps/goods inside the packing to avoid shocks during transport.*
- *Properly cleaned valve units must be shipped with relevant pump; place them into plastic bag and fix it firmly to relevant pump.*
- *Each pump MUST BE shipped with relevant declaration stating pumped chemical (fill in copy of the statement on the right).*

EQUIPMENT DATA

FILL IN ONE FORM FOR EACH EQUIPMENT

METERING PUMP TYPE:

SERIAL No.:

OBL JOB No.:

FLUID HANDLED:

ANOMALY DESCRIPTION

SENDER CLEANING DECLARATION

WE: *(SENDER COMPANY NAME)*

DECLARE THAT THE EQUIPEMENT SHIPPED TO YOU FOR SERVICING AND/OR OVERHAUL HAS BEEN PREVIOUSLY PROPERLY CLEANED. THEREFORE WE CONSIDER THAT INTO IT THERE ARE NO TRACES OF PRODUCT DANGEROUS FOR YOUR STAFF HEALTH.
THE SENDER IS TAKING FULL RESPONSIBILITY CONCERNING FAULSE INFORMATIONS ABOUT CLEANING AND FLUID HANDLED.
THIS FORM PROPERLY FILLED IN IS MANDATORY TO GET STARTED OPERATION ON EQUIPMENT.
THE EQUIPMENT WILL BE REJECTED AND SENT BACK AT SENDER'S CHARGES (UNREPAIRED) IN CASE:
- MISSING OF CLEANING DECLARATION PROPERLY FILLED IN; AFTER 5 WORKING DA YS FROM RECEPTION DATE
- FINDING OF CHEMICAL PRODUCT INSIDE OR CLEANING RESULTS INADEQUATE

PLACE AND DATE: SIGNATURE AND STAMP

PERSON:

PHONE No.:

FAX No.:

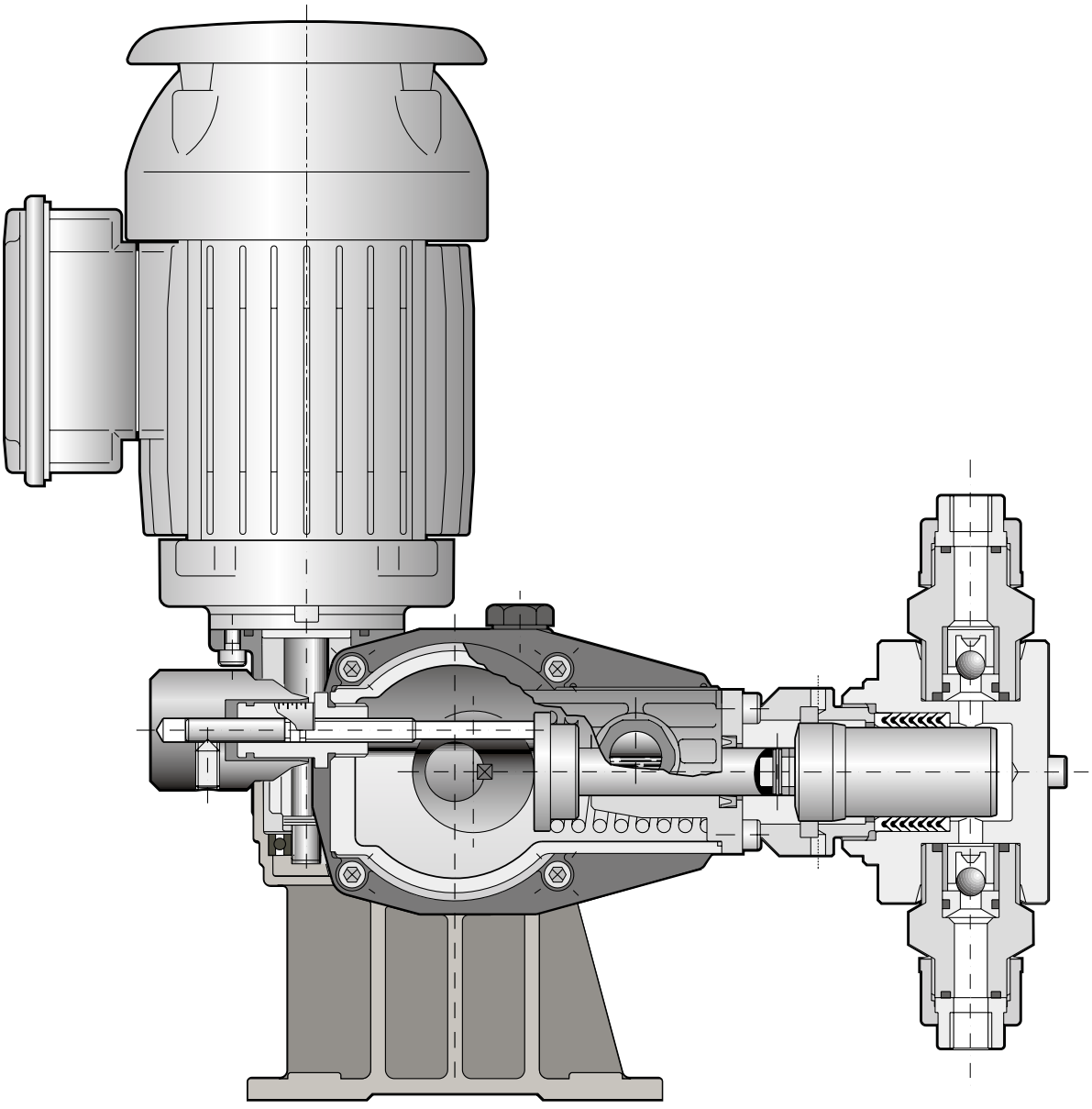
E-MAIL:

SAFETY DIRECTIONS

WARNING: It is customer's/end-user's responsibility to comply with safety at work standards and local laws.
GOODS CLEANING: Cleaning operator must be given all necessary means and facilities for safe operation and goods preservation. When pumps are being used for dangerous chemicals (e.g. acids) select accordingly cleaning fluid.

These directions do not replace standards and laws for safety at work.
OBL takes no responsibility whatsoever for damages to goods or human beings.

Date.....Ref.....Subject.....



MODEL NUMBER

RBB 25 A 70 TL FA ZC

LEGENDA	
PUPM TYPE	
Ø PLUNGER	
A	AISI-316L CONSTRUCTION
P	PVC CONSTRUCTION
STROKES PER MINUTE	
ZC	OBL ELECTRIC ACTUATOR
W	3-15 PSI PNEUMATIC ACTUATOR
F	UNI-DIN FLANFED CONNECTIONS
FA	ANSI FLANGED CONNECTIONS
...	= 0 ÷ 10 BAR STANDARD VERSION (NO NEED OF MODEL NO.)
TL	= 10 ÷ 40 BAR

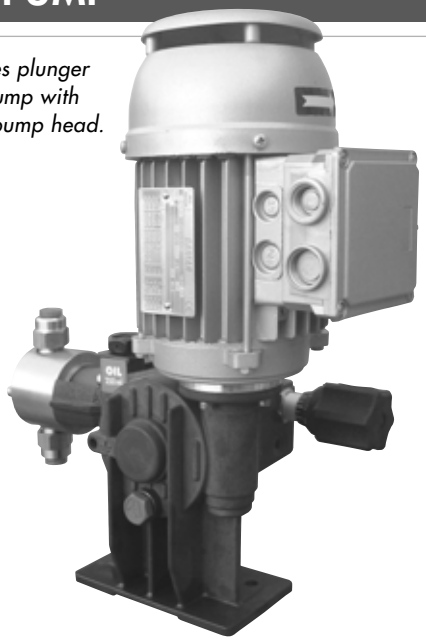
RBA

PLUNGER METERING PUMP

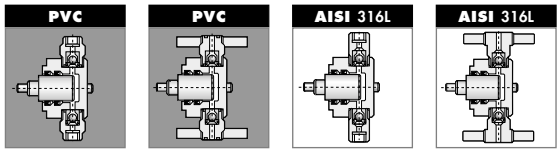
TECHNICAL DATA

TYPE	STROKES/1	MAX FLOW RATE l/h	VALVES PUMPHEAD MATERIALS		MAX PRESS. BAR		MOTORS kW		THREADED CONNECTIONS	
			AAF-ACE-PAE PCB-AAE-ACV PAF-PCV-ACF	PCE PCF	3PH	1PH	3PH	1PH	A	P WITH RING NUT
50 Hz										
RBA16	36	**5**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA16	50	**7**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA16	70	**11**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA16	95	**15**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA16	115	**18**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA25	50	**20**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA25	70	**30**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA25	95	**38**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA25	115	**45**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA30	50	**30**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA30	70	**40**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA30	95	**55**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA30	115	**65**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA43	50	**55**	CM8	VP 8,5	10	10	0,30	0,24	3/8" g.f.- BSPF	
RBA43	70	**90**	CM8	VP 8,5	10	10	0,30	0,24	3/8" g.f.- BSPF	
RBA43	95	**115**	CM8	VP 8,5	10	10	0,30	0,24	3/8" g.f.- BSPF	
RBA43	115	**150**	CM8	VP 8,5	10	10	0,30	0,24	3/8" g.f.- BSPF	
RBA50	50	**80**	CM9	VP 8,5	10	10	0,30	0,24	1/2" g.f.- BSPF	
RBA50	70	**120**	CM9	VP 8,5	10	8	0,30	0,24	1/2" g.f.- BSPF	
RBA50	95	**160**	CM9	VP 8,5	10	7	0,30	0,24	1/2" g.f.- BSPF	
RBA50	115	**200**	CM9	VP 8,5	9	6	0,30	0,24	1/2" g.f.- BSPF	
RBA62	50	**125**	CM11	VP11	10	5	0,30	0,24	1/2" g.f.- BSPF	
RBA62	70	**175**	CM11	VP11	7	4	0,30	0,24	1/2" g.f.- BSPF	
RBA62	95	**250**	CM11	VP11	6	3,5	0,30	0,24	1/2" g.f.- BSPF	
RBA62	115	**300**	CM11	VP11	5	3	0,30	0,24	1/2" g.f.- BSPF	
60 Hz										
RBA16	30	**4,5**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA16	43	**6,5**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA16	60	**9**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA16	84	**13**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA16	118	**18**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA25	40	**16**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA25	60	**24**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA25	84	**33**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA25	118	**45**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA30	43	**24**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA30	60	**34**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA30	84	**48**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA30	118	**65**	CM7	VP7	10	10	0,20	0,24	3/8" g.f.- BSPF	
RBA43	43	**50**	CM8	VP 8,5	10	10	0,30	0,24	3/8" g.f.- BSPF	
RBA43	60	**78**	CM8	VP 8,5	10	10	0,30	0,24	3/8" g.f.- BSPF	
RBA43	84	**100**	CM8	VP 8,5	10	10	0,30	0,24	3/8" g.f.- BSPF	
RBA43	118	**150**	CM8	VP 8,5	10	10	0,30	0,24	3/8" g.f.- BSPF	
RBA50	43	**70**	CM9	VP 8,5	10	10	0,30	0,24	1/2" g.f.- BSPF	
RBA50	60	**102**	CM9	VP 8,5	10	8	0,30	0,24	1/2" g.f.- BSPF	
RBA50	84	**140**	CM9	VP 8,5	10	7	0,30	0,24	1/2" g.f.- BSPF	
RBA50	118	**200**	CM9	VP 8,5	9	6	0,30	0,24	1/2" g.f.- BSPF	
RBA62	43	**105**	CM11	VP11	10	5	0,30	0,24	1/2" g.f.- BSPF	
RBA62	60	**152**	CM11	VP11	7	4	0,30	0,24	1/2" g.f.- BSPF	
RBA62	84	**205**	CM11	VP11	6	3,5	0,30	0,24	1/2" g.f.- BSPF	
RBA62	118	**300**	CM11	VP11	5	3	0,30	0,24	1/2" g.f.- BSPF	

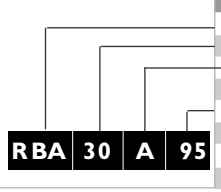
• ***RBA*** *series plunger metering pump with* ***AISI 316L*** *pump head.*



PUMP HEADS OVERVIEW



MODEL NUMBER



KEY TO SYMBOLS

PUMP MODEL
Ø PLUNGER
A AISI-316L VERSION
P PVC VERSION
STROKES PER MINUTE
Z OBL ELECTRIC ACTUATOR
W 3÷15 PSI PNEUMATIC ACTUATOR
F UNI-DIN FLANGED CONNECTIONS

PUMP HEADS MATERIALS OF CONSTRUCTION

PARTS	PAE	PAF	PCE	PCF	PCB	PCV	AAF	AAE	ACE	ACV	ACF
LIQUID END	PVC	PVC	PVC	PVC	PVC	PVC	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L
PLUNGER	AISI-316L	AISI-316L	CERAMIC	CERAMIC	CERAMIC	CERAMIC	AISI-316L	AISI-316L	CERAMIC	CERAMIC	CERAMIC
VALVE SEAT	AISI-316L	AISI-316L	PVC	PVC	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L
VALVE GUIDE	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP
VALVE	AISI-316L	AISI-316L	PIREX	PIREX	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L
VALVE CONTAINER	PVC	PVC	PVC	PVC	PVC	PVC	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L
PLUNGER PACK	EPDM	FPM	EPDM	FPM	EPDM	VULKOL.	FPM	EPDM	EPDM	VULKOL.	FPM

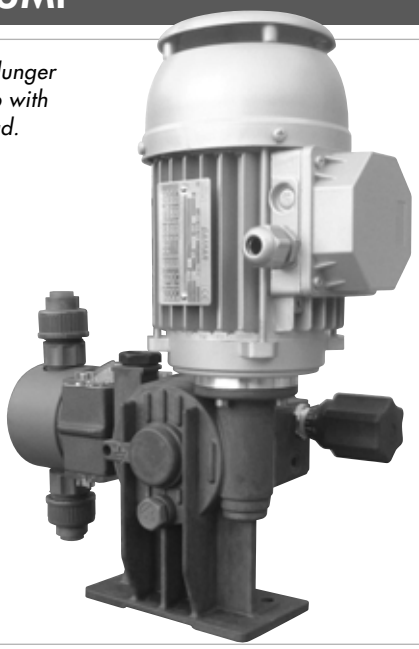
RBB

PLUNGER METERING PUMP

TECHNICAL DATA

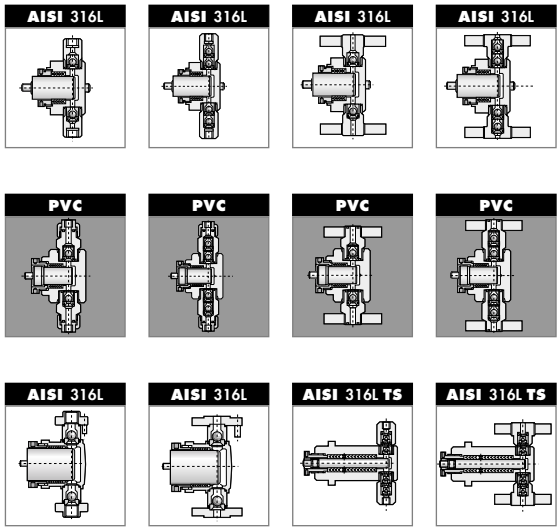
TYPE	STROKES/1	MAX FLOW RATE l/h	VALVES A	VALVES P	MAX PRESSURE BAR A	MAX PRESSURE BAR A TL	MAX PRESSURE BAR P	MOTORS kW 3PH	MOTORS kW 1PH *	THREADED CONNECTIONS A-ATL	THREADED CONNECTIONS P WITH RING NUT
50 Hz											
RBB 6	50	**0,8**	CML5	CCX5	-	40	10	0,20	0,24	1/4" g.f.- BSPF	
RBB 6	70	**1,2**	CML5	CCX5	-	40	10	0,20	0,24	1/4" g.f.- BSPF	
RBB 6	95	**1,8**	CML5	CCX5	-	40	10	0,20	0,24	1/4" g.f.- BSPF	
RBB 6	115	**2,2**	CML5	CCX5	-	40	10	0,20	0,24	1/4" g.f.- BSPF	
RBB10	36	**2**	CML5	CCX5	10	40	10	0,20	0,24	1/4" g.f.- BSPF	
RBB10	50	**3**	CML5	CCX5	10	40	10	0,20	0,24	1/4" g.f.- BSPF	
RBB10	70	**4**	CM7	VPX5	10	40	10	0,20	0,24	3/8" g.f.- BSPF	1/4" g.f.- BSPF
RBB10	95	**5,5**	CM7	VPX5	10	40	10	0,20	0,24	3/8" g.f.- BSPF	1/4" g.f.- BSPF
RBB10	115	**7**	CM7	VPX5	10	40	10	0,20	0,24	3/8" g.f.- BSPF	1/4" g.f.- BSPF
RBB16	36	**5**	CM7	VP7	10	40	10	0,20	0,24	3/8" g.f.- BSPF	
RBB16	50	**7**	CM7	VP7	10	40	10	0,20	0,24	3/8" g.f.- BSPF	
RBB16	70	**11**	CM7	VP7	10	40	10	0,20	0,24	3/8" g.f.- BSPF	
RBB16	95	**15**	CM7	VP7	10	40	10	0,20	0,24	3/8" g.f.- BSPF	
RBB16	115	**18**	CM7	VP7	10	40	10	0,20	0,24	3/8" g.f.- BSPF	
RBB25	36	**15**	CM7	VP7	10	30	10	0,20	0,24	3/8" g.f.- BSPF	
RBB25	50	**20**	CM7	VP7	10	30	10	0,20	0,24	3/8" g.f.- BSPF	
RBB25	70	**30**	CM7	VP7	10	30	10	0,20	0,24	3/8" g.f.- BSPF	
RBB25	95	**38**	CM7	VP7	10	25	10	0,20	0,24	3/8" g.f.- BSPF	
RBB25	115	**45**	CM7	VP7	10	20	10	0,20	0,24	3/8" g.f.- BSPF	
RBB30	36	**20**	CM7	VP7	10	30	10	0,30	0,24	3/8" g.f.- BSPF	
RBB30	50	**30**	CM7	VP7	10	30	10	0,30	0,24	3/8" g.f.- BSPF	
RBB30	70	**40**	CM7	VP7	10	28	10	0,30	0,24	3/8" g.f.- BSPF	
RBB30	95	**55**	CM7	VP7	10	23	10	0,30	0,24	3/8" g.f.- BSPF	
RBB30	115	**65**	CM7	VP7	10	20	10	0,30	0,24	3/8" g.f.- BSPF	
RBB43	36	**40**	CM7	VP7	10	12	10	0,30	0,24	3/8" g.f.- BSPF	
RBB43	50	**55**	CM7	VP7	10	12	10	0,30	0,24	3/8" g.f.- BSPF	
RBB43	70	**90**	CM7	VP7	10	12	10	0,30	0,24	3/8" g.f.- BSPF	
RBB43	95	**115**	CM7	VP7	10	12	10	0,30	0,24	3/8" g.f.- BSPF	
RBB43	115	**150**	CM9	VP 8,5	10	-	10	0,30	0,24	1/2" g.f.- BSPF	
RBB50	36	**58**	CM11	VP11	10	-	10	0,30	0,24	1/2" g.f.- BSPF	
RBB50	50	**80**	CM11	VP11	10	-	10	0,30	0,24	1/2" g.f.- BSPF	
RBB50	70	**120**	CM11	VP11	10	-	10	0,30	0,24	1/2" g.f.- BSPF	
RBB50	95	**160**	CM11	VP11	9	-	9	0,30	0,24	1/2" g.f.- BSPF	
RBB50	115	**200**	CM11	VP11	7	-	7	0,30	0,24	1/2" g.f.- BSPF	
RBB62	36	**90**	VM13,5	VP11	7	-	7	0,30	-	3/4" g.f.- BSPF	1/2" g.f.- BSPF
RBB62	50	**125**	VM13,5	VP11	7	-	7	0,30	-	3/4" g.f.- BSPF	1/2" g.f.- BSPF
RBB62	70	**175**	VM13,5	VP11	6	-	6	0,30	-	3/4" g.f.- BSPF	1/2" g.f.- BSPF
RBB62	95	**250**	VM13,5	VP11	5	-	5	0,30	-	3/4" g.f.- BSPF	1/2" g.f.- BSPF
RBB62	115	**300**	VM13,5	VP11	4	-	4	0,30	-	3/4" g.f.- BSPF	1/2" g.f.- BSPF
60 Hz											
RBB 6	43	**0,7**	CML5	CCX5	-	40	10	0,20	0,24	1/4" g.f.- BSPF	
RBB 6	60	**1**	CML5	CCX5	-	40	10	0,20	0,24	1/4" g.f.- BSPF	
RBB 6	84	**1,5**	CML5	CCX5	-	40	10	0,20	0,24	1/4" g.f.- BSPF	
RBB 6	118	**2,2**	CML5	CCX5	-	40	10	0,20	0,24	1/4" g.f.- BSPF	
RBB10	30	**1,6**	CML5	CCX5	10	40	10	0,20	0,24	1/4" g.f.- BSPF	
RBB10	43	**2,5**	CML5	CCX5	10	40	10	0,20	0,24	1/4" g.f.- BSPF	
RBB10	60	**3,4**	CM7	VPX5	10	40	10	0,20	0,24	3/8" g.f.- BSPF	1/4" g.f.- BSPF
RBB10	84	**4,8**	CM7	VPX5	10	40	10	0,20	0,24	3/8" g.f.- BSPF	1/4" g.f.- BSPF
RBB10	118	**7**	CM7	VPX5	10	40	10	0,20	0,24	3/8" g.f.- BSPF	1/4" g.f.- BSPF
RBB16	43	**6**	CM7	VP7	10	40	10	0,20	0,24	3/8" g.f.- BSPF	
RBB16	60	**9,5**	CM7	VP7	10	40	10	0,20	0,24	3/8" g.f.- BSPF	
RBB16	84	**13**	CM7	VP7	10	40	10	0,20	0,24	3/8" g.f.- BSPF	
RBB16	118	**18**	CM7	VP7	10	40	10	0,20	0,24	3/8" g.f.- BSPF	
RBB25	43	**16**	CM7	VP7	10	30	10	0,20	0,24	3/8" g.f.- BSPF	
RBB25	60	**24**	CM7	VP7	10	30	10	0,20	0,24	3/8" g.f.- BSPF	
RBB25	84	**33**	CM7	VP7	10	27	10	0,20	0,24	3/8" g.f.- BSPF	
RBB25	118	**45**	CM7	VP7	10	20	10	0,20	0,24	3/8" g.f.- BSPF	
RBB30	43	**24**	CM7	VP7	10	30	10	0,30	0,24	3/8" g.f.- BSPF	
RBB30	60	**34**	CM7	VP7	10	30	10	0,30	0,24	3/8" g.f.- BSPF	
RBB30	84	**48**	CM7	VP7	10	25	10	0,30	0,24	3/8" g.f.- BSPF	
RBB30	118	**65**	CM7	VP7	10	20	10	0,30	0,24	3/8" g.f.- BSPF	
RBB43	43	**50**	CM7	VP7	10	12	10	0,30	0,24	3/8" g.f.- BSPF	
RBB43	60	**78**	CM7	VP7	10	12	10	0,30	0,24	3/8" g.f.- BSPF	
RBB43	84	**100**	CM7	VP7	10	12	10	0,30	0,24	3/8" g.f.- BSPF	
RBB43	118	**150**	CM9	VP 8,5	10	-	10	0,30	0,24	1/2" g.f.- BSPF	
RBB50	43	**70**	CM11	VP11	10	-	10	0,30	0,24	1/2" g.f.- BSPF	
RBB50	60	**102**	CM11	VP11	10	-	10	0,30	0,24	1/2" g.f.- BSPF	
RBB50	84	**140**	CM11	VP11	9	-	9	0,30	0,24	1/2" g.f.- BSPF	
RBB50	118	**200**	CM11	VP11	7	-	7	0,30	0,24	1/2" g.f.- BSPF	
RBB62	43	**105**	VM13,5	VP11	7	-	7	0,30	-	3/4" g.f.- BSPF	-
RBB62	60	**152**	VM13,5	VP11	6	-	6	0,30	-	3/4" g.f.- BSPF	-
RBB62	84	**205**	VM13,5	VP11	5	-	5	0,30	-	3/4" g.f.- BSPF	-
RBB62	118	**300**	VM13,5	VP11	4	-	4	0,30	-	3/4" g.f.- BSPF	-

• ***RBB*** *series plunger metering pump with* ***PVC*** *pump head.*



* ***Pressure with singlephase motor decreases by 25% for size: RBB25-30-43ATL - RBB50 A/P.***

PUMP HEADS OVERVIEW



MODEL NUMBER

RBB 30 P 95

KEY TO SYMBOLS

	PUMP MODEL
	Ø PLUNGER
A	AISI-316L VERSION
P	PVC VERSION
	STROKES PER MINUTE
Z	OBL ELECTRIC ACTUATOR
W	3÷15 PSI PNEUMATIC ACTUATOR
F	UNI-DIN FLANGED CONNECTIONS
...	= 0 ÷ 10 BAR STANDARD VERSION (NO NEED OF MODEL NO.)
TL	= 10 ÷ 40 BAR

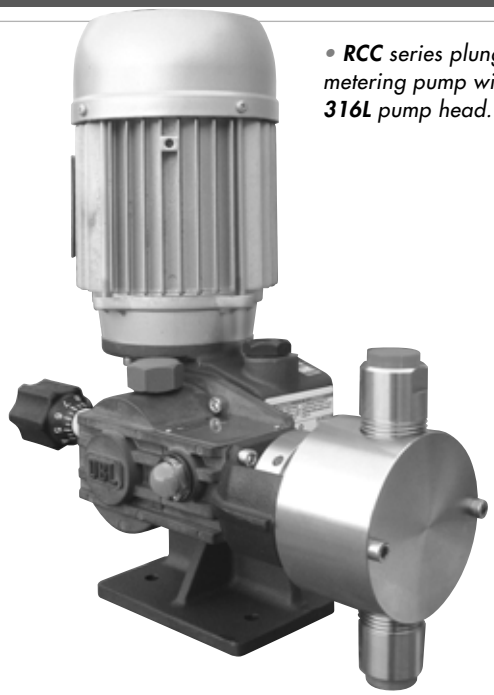
PUMP HEADS MATERIALS OF CONSTRUCTION

PARTS	A	P	P11	A TL	AC
LIQUID END	AISI-316L	PVC	PVC	AISI-316L	AISI-316L
PLUNGER	AISI-316L	CERAMIC	CERAMIC	AISI-316L	CERAMIC
PLUNGER PACK	PTFE	PTFE	PTFE	PTFE	PTFE
VALVE SEAT	AISI-316L	CERAMIC/PVC	AISI-316L	AISI-316L	AISI-316L
VALVE GUIDE	PP	PP	PP	AISI-316L	PP
VALVE	AISI-316L	CERAMIC/PIREX	AISI-316L	AISI-316L	AISI-316L
VALVE SEAL	FPM	FPM	FPM	FPM	FPM

RCC PLUNGER METERING PUMP

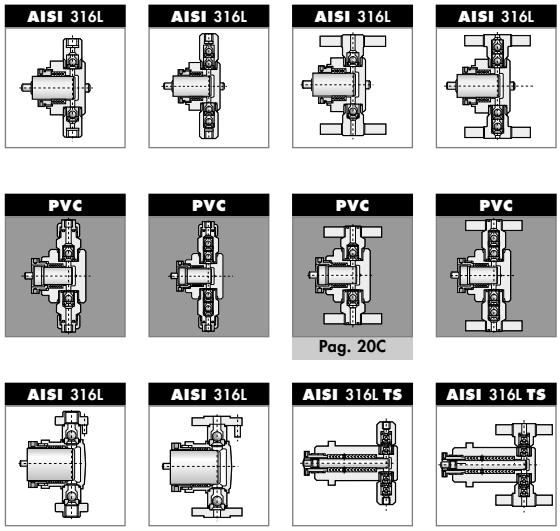
TECHNICAL DATA

TYPE	STROKES/1	MAX FLOW RATE l/h	VALVES		MAX PRESSURE BAR			CONNECTIONS THREADED		CONNECTIONS FLANGED	
			A	P	A	A TL	P	A-ATL	P	A-ATL	P
50 Hz											
RCC 6	50	0,8	CML5	CCX5	-	40	10	1/4" g.f. BSPF		DN15	
RCC 6	70	1,2	CML5	CCX5	-	40	10	1/4" g.f. BSPF		DN15	
RCC 6	95	1,8	CML5	CCX5	-	40	10	1/4" g.f. BSPF		DN15	
RCC 6	115	2,2	CML5	CCX5	-	40	10	1/4" g.f. BSPF		DN15	
RCC10	36	2	CML5	CCX5	10	40	10	1/4" g.f. BSPF		DN15	
RCC10	50	3	CML5	CCX5	10	40	10	1/4" g.f. BSPF		DN15	
RCC10	70	4	CM7	VPX5	10	40	10	3/8" g.f.- BSPF	1/4" g.f.- BSP	DN15	
RCC10	95	5,5	CM7	VPX5	10	40	10	3/8" g.f.- BSPF	1/4" g.f.- BSP	DN15	
RCC10	115	7	CM7	VPX5	10	40	10	3/8" g.f.- BSPF	1/4" g.f.- BSP	DN15	
RCC16	36	5	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC16	50	7	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC16	70	11	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC16	95	15	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC16	115	18	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC25	36	15	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC25	50	20	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC25	70	30	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC25	95	38	CM7	VP7	10	35	10	3/8" g.f. BSPF		DN15	
RCC25	115	45	CM7	VP7	10	30	10	3/8" g.f. BSPF		DN15	
RCC30	36	20	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC30	50	30	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC30	70	40	CM7	VP7	10	35	10	3/8" g.f. BSPF		DN15	
RCC30	95	55	CM7	VP7	10	26	10	3/8" g.f. BSPF		DN15	
RCC30	115	65	CM7	VP7	10	22	10	3/8" g.f. BSPF		DN15	
RCC43	36	40	CM9	VP 8,5	10	12	10	1/2" g.f. BSPF		DN15	
RCC43	50	55	CM9	VP 8,5	10	12	10	1/2" g.f. BSPF		DN15	
RCC43	70	90	CM9	VP 8,5	10	12	10	1/2" g.f. BSPF		DN15	
RCC43	95	115	CM9	VP 8,5	10	12	10	1/2" g.f. BSPF		DN15	
RCC43	115	150	CM9	VP 8,5	10	-	10	1/2" g.f. BSPF		DN15	
RCC50	36	58	CM11	VP11	10	-	10	1/2" g.f. BSPF		DN15	
RCC50	50	80	CM11	VP11	10	-	10	1/2" g.f. BSPF		DN15	
RCC50	70	120	CM11	VP11	10	-	10	1/2" g.f. BSPF		DN15	
RCC50	95	160	CM11	VP11	9	-	9	1/2" g.f. BSPF		DN15	
RCC50	115	200	CM11	VP11	8	-	8	1/2" g.f. BSPF		DN15	
RCC62	36	90	VM13,5	VP11	10	-	10	3/4" g.f.- BSPF	1/2" g.f.- BSP	DN20	DN15
RCC62	50	125	VM13,5	VP11	7	-	7	3/4" g.f.- BSPF	1/2" g.f.- BSP	DN20	DN15
RCC62	70	175	VM13,5	VP11	6	-	6	3/4" g.f.- BSPF	1/2" g.f.- BSP	DN20	DN15
RCC62	95	250	VM13,5	VP11	5	-	5	3/4" g.f.- BSPF	1/2" g.f.- BSP	DN20	DN15
RCC62	115	300	VM13,5	VP11	4	-	4	3/4" g.f.- BSPF	1/2" g.f.- BSP	DN20	DN15
60 Hz											
RCC 6	43	0,7	CML5	CCX5	-	40	10	1/4" g.f. BSPF		DN15	
RCC 6	60	1	CML5	CCX5	-	40	10	1/4" g.f. BSPF		DN15	
RCC 6	84	1,5	CML5	CCX5	-	40	10	1/4" g.f. BSPF		DN15	
RCC 6	118	2,2	CML5	CCX5	-	40	10	1/4" g.f. BSPF		DN15	
RCC10	30	1,6	CML5	CCX5	10	40	10	1/4" g.f. BSPF		DN15	
RCC10	43	2,5	CML5	CCX5	10	40	10	1/4" g.f. BSPF		DN15	
RCC10	60	3,4	CM7	VPX5	10	40	10	3/8" g.f.- BSPF	1/4" g.f.- BSP	DN15	
RCC10	84	4,8	CM7	VPX5	10	40	10	3/8" g.f.- BSPF	1/4" g.f.- BSP	DN15	
RCC10	118	7	CM7	VPX5	10	40	10	3/8" g.f.- BSPF	1/4" g.f.- BSP	DN15	
RCC16	43	6	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC16	60	9,5	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC16	84	13	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC16	118	18	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC25	43	16	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC25	60	24	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC25	84	33	CM7	VP7	10	35	10	3/8" g.f. BSPF		DN15	
RCC25	118	45	CM7	VP7	10	30	10	3/8" g.f. BSPF		DN15	
RCC30	43	24	CM7	VP7	10	40	10	3/8" g.f. BSPF		DN15	
RCC30	60	34	CM7	VP7	10	35	10	3/8" g.f. BSPF		DN15	
RCC30	84	48	CM7	VP7	10	26	10	3/8" g.f. BSPF		DN15	
RCC30	118	65	CM7	VP7	10	22	10	3/8" g.f. BSPF		DN15	
RCC43	43	50	CM9	VP 8,5	10	12	10	1/2" g.f. BSPF		DN15	
RCC43	60	78	CM9	VP 8,5	10	12	10	1/2" g.f. BSPF		DN15	
RCC43	84	100	CM9	VP 8,5	10	12	10	1/2" g.f. BSPF		DN15	
RCC43	118	150	CM9	VP 8,5	10	-	10	1/2" g.f. BSPF		DN15	
RCC50	43	70	CM11	VP11	10	-	10	1/2" g.f. BSPF		DN15	
RCC50	60	102	CM11	VP11	10	-	10	1/2" g.f. BSPF		DN15	
RCC50	84	140	CM11	VP11	9	-	9	1/2" g.f. BSPF		DN15	
RCC50	118	200	CM11	VP11	8	-	8	1/2" g.f. BSPF		DN15	
RCC62	43	105	VM13,5	VP11	10	-	10	3/4" g.f.- BSPF	1/2" g.f.- BSP	DN20	DN15
RCC62	60	152	VM13,5	VP11	8	-	8	3/4" g.f.- BSPF	1/2" g.f.- BSP	DN20	DN15
RCC62	84	205	VM13,5	VP11	6	-	6	3/4" g.f.- BSPF	1/2" g.f.- BSP	DN20	DN15
RCC62	118	300	VM13,5	VP11	5	-	5	3/4" g.f.- BSPF	1/2" g.f.- BSP	DN20	DN15



• ***RCC*** *series plunger metering pump with* ***AISI 316L*** *pump head.*

PUMP HEADS OVERVIEW



Pag. 20C

MODEL NUMBER

RCC | 30 | A | 95 | TL | FA

KEY TO SYMBOLS	
PUMP MODEL	
Ø PLUNGER	
A	AISI-316L VERSION
P	PVC VERSION
	STROKES PER MINUTE
Z	OBL ELECTRIC ACTUATOR
W	3÷15 PSI PNEUMATIC ACTUATOR
FA	ANSI FLANGED CONNECTIONS
...	= 0 ÷ 10 BAR STANDARD VERSION
TL	= 10 ÷ 40 BAR

PUMP HEADS MATERIALS OF CONSTRUCTION

PARTS	A	A-TL	P	P11
LIQUID END	AISI-316L	AISI-316L	PVC	PVC
PLUNGER	AISI-316L	AISI-316L	CERAMIC	CERAMIC
PLUNGER PACK	PTFE	PTFE	PTFE	PTFE
VALVE SEAT	AISI-316L	AISI-316L	PVC	AISI-316L
VALVE GUIDE	PP	AISI-316L	PP	PP
VALVE	AISI-316L	AISI-316L	PIREX	AISI-316L
VALVE SEAL	FPM	FPM	FPM	FPM

RIE

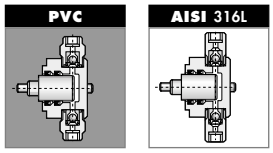
PLUNGER METERING PUMP

TECHNICAL DATA

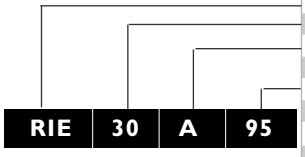
TYPE	STROKES/1	MAX FLOW RATE l/h	VALVES PUMPHEAD MATERIALS AAF-ACE-PAE PCB-AAE-ACV PAF-PCV-ACF	VALVES PUMPHEAD MATERIALS PCE PCF	MAX PRESS. MAX BAR 3PH	MAX PRESS. MAX BAR 1PH	MOTORS kW 3PH	MOTORS kW 1PH	THREADED CONNECTIONS A	THREADED CONNECTIONS P WITH RING NUT
50 Hz										
RIE 16	36	**5**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 16	50	**7**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 16	70	**11**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 16	95	**15**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 16	115	**18**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 25	50	**20**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 25	70	**30**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 25	95	**38**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 25	115	**45**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 30	50	**30**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 30	70	**40**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 30	95	**55**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 30	115	**65**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 43	50	**55**	CM8	VP 8,5	12	10	0,30	0,24	3/8" g.f.- BSPF	
RIE 43	70	**90**	CM8	VP 8,5	12	10	0,30	0,24	3/8" g.f.- BSPF	
RIE 43	95	**115**	CM8	VP 8,5	12	10	0,30	0,24	3/8" g.f.- BSPF	
RIE 43	115	**150**	CM8	VP 8,5	12	10	0,30	0,24	3/8" g.f.- BSPF	
RIE 50	50	**80**	CM9	VP 8,5	10	10	0,37	0,24	1/2" g.f.- BSPF	
RIE 50	70	**120**	CM9	VP 8,5	10	8	0,37	0,24	1/2" g.f.- BSPF	
RIE 50	95	**160**	CM9	VP 8,5	10	8	0,37	0,24	1/2" g.f.- BSPF	
RIE 50	115	**200**	CM9	VP 8,5	10	7	0,37	0,24	1/2" g.f.- BSPF	
RIE 62	50	**125**	CM11	VP11	10	8	0,37	0,24	1/2" g.f.- BSPF	
RIE 62	70	**175**	CM11	VP11	10	6	0,37	0,24	1/2" g.f.- BSPF	
RIE 62	95	**250**	CM11	VP11	10	5	0,37	0,24	1/2" g.f.- BSPF	
RIE 62	115	**300**	CM11	VP11	10	4	0,37	0,24	1/2" g.f.- BSPF	
2RIE 62	70	**350**	CM11	VP11	10	6	0,37	0,24	1" g.f.- BSPF	
2RIE 62	95	**500**	CM11	VP11	10	5	0,37	0,24	1" g.f.- BSPF	
2RIE 62	115	**600**	CM11	VP11	10	4	0,37	0,24	1" g.f.- BSPF	
60 Hz										
RIE 16	30	**4,5**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 16	43	**6,5**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 16	60	**9**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 16	84	**13**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 16	118	**18**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 25	40	**16**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 25	60	**24**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 25	84	**33**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 25	118	**45**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 30	43	**24**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 30	60	**34**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 30	84	**48**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 30	118	**65**	CM7	VP7	12	10	0,20	0,24	3/8" g.f.- BSPF	
RIE 43	43	**50**	CM8	VP 8,5	12	10	0,30	0,24	3/8" g.f.- BSPF	
RIE 43	60	**78**	CM8	VP 8,5	12	10	0,30	0,24	3/8" g.f.- BSPF	
RIE 43	84	**100**	CM8	VP 8,5	12	10	0,30	0,24	3/8" g.f.- BSPF	
RIE 43	118	**150**	CM8	VP 8,5	12	10	0,30	0,24	3/8" g.f.- BSPF	
RIE 50	43	**70**	CM9	VP 8,5	10	10	0,37	0,24	1/2" g.f.- BSPF	
RIE 50	60	**102**	CM9	VP 8,5	10	8	0,37	0,24	1/2" g.f.- BSPF	
RIE 50	84	**140**	CM9	VP 8,5	10	8	0,37	0,24	1/2" g.f.- BSPF	
RIE 50	118	**200**	CM9	VP 8,5	10	7	0,37	0,24	1/2" g.f.- BSPF	
RIE 62	43	**105**	CM11	VP11	10	8	0,37	0,24	1/2" g.f.- BSPF	
RIE 62	60	**152**	CM11	VP11	10	6	0,37	0,24	1/2" g.f.- BSPF	
RIE 62	84	**205**	CM11	VP11	10	5	0,37	0,24	1/2" g.f.- BSPF	
RIE 62	118	**300**	CM11	VP11	10	4	0,37	0,24	1/2" g.f.- BSPF	

• ***RIE*** *series plunger metering pump with* ***AISI 316L*** *pump head.*

PUMP HEADS OVERVIEW



MODEL NUMBER



KEY TO SYMBOL

- PUMP MODEL
- Ø PLUNGER
- A — AISI-316L VERSION
- P — PVC VERSION
- STROKES PER MINUTE

PUMP HEADS MATERIALS OF CONSTRUCTION

PARTS	PAE	PAF	PCE	PCF	PCB	PCV	AAF	AAE	ACE	ACV	ACF
LIQUID END	PVC	PVC	PVC	PVC	PVC	PVC	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L
PLUNGER	AISI-316L	AISI-316L	CERAMIC	CERAMIC	CERAMIC	CERAMIC	AISI-316L	AISI-316L	CERAMIC	CERAMIC	CERAMIC
VALVE SEAT	AISI-316L	AISI-316L	PVC	PVC	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L
VALVE GUIDE	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP
VALVE	AISI-316L	AISI-316L	PIREX	PIREX	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L
VALVE CONTAINER	PVC	PVC	PVC	PVC	PVC	PVC	AISI-316L	AISI-316L	AISI-316L	AISI-316L	AISI-316L
PLUNGER PACK	EPDM	FPM	EPDM	FPM	EPDM	VULKOL.	FPM	EPDM	EPDM	VULKOL.	FPM

1 GENERAL CHARACTERISTICS

1.1 DESCRIPTION OF THE PUMP

• The plunger metering pump with spring return is the simplest machine in **OBL**'s production range.

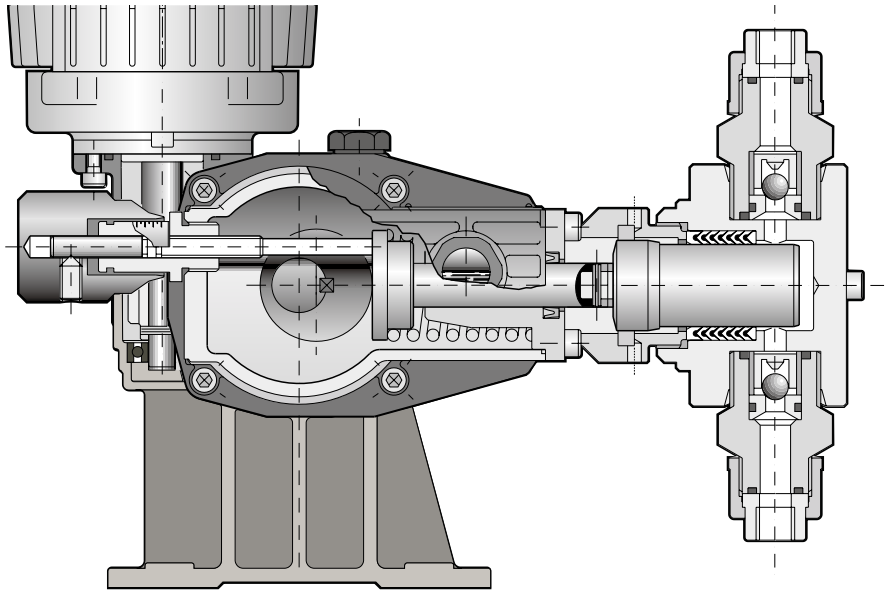
• The discharge state of the plunger is determined by the thrust of the eccentric, while the return stroke, i.e. the suction stage, is governed by the spring.

• The flow rate adjustment knob acts on the plunger stroke.

• **OBL** metering pumps belong to the family of the reciprocating displacement pumps.

• They are characterized by an adjustable displacement.

Fig. 1



1.2 FLOW RATE

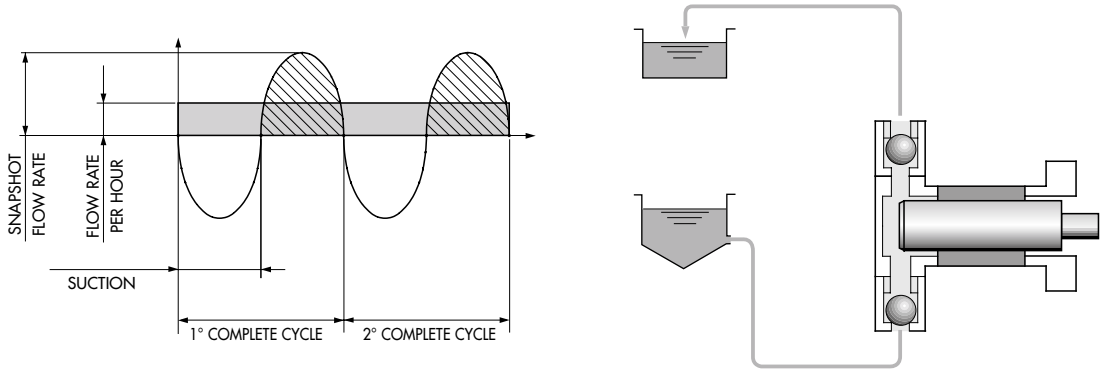
• All pumps of the "**R**" series are adjustable, in both standstill and running state, from **0** up to the max. flow rate indicated on the rating plate. (*Pumps with automatic flow rate control can be adjusted only when the pump is running*).

• Because of its reciprocating motion, the metering pump generates a pulsating flow.

• The operating cycle of a single pump is described in fig. **2**.

• The flow rate is therefore determined by the reciprocating motion of the plunger and by the opening/closing of the suction and discharge valves.

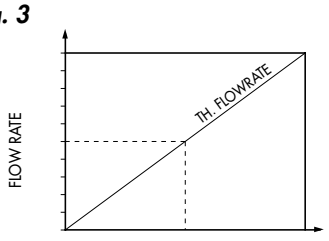
Fig. 2



Theoretical flow rate

The theoretical flow rate corresponds exactly to the volume displaced by the plunger during its motion.
Its graphic representation is a diagonal straight line whose progression is determined by the plunger stroke increasing (*figure **3***).

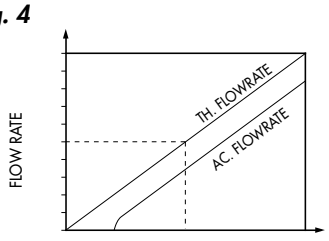
Fig. 3



Actual flow rate

The actual flow rate is inevitably less than the theoretical flow rate because of the losses due to the reaction time of the valves.
The ratio between these two flow rates determines the volumetric efficiency of the pump.
The efficiency depends on pump size, pump head type , liquid to be pumped, viscosity of the liquid, working pressure, etc. (*figure **4***).

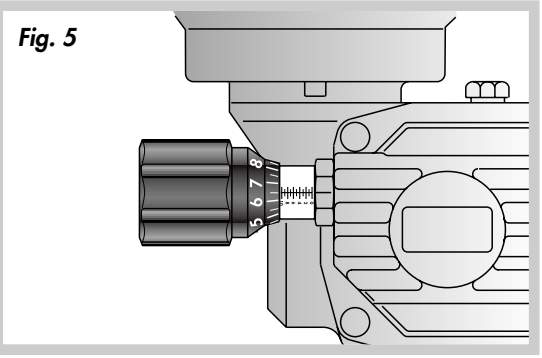
Fig. 4



1.3 MANUAL ADJUSTMENT

ADJUSTMENT OF FLOW RATEBY MEANSOF A MICROMETER KNOB

Fig. 5



• In "**R**" pumps, the adjustment of the flow rate is performed by means of a micrometer knob 0 to 100% of the max. rated capacity (*fig.* ***5***).

1.4 MOTOR CHARACTERISTICS

• Motors installed in **R** series pumps.

Table A

TIPO	THREEPHASE				SINGLEPHASE			
	kW	SIZE	FLANGE	POLES	kW	SIZE	FLANGE	POLES
RBA	0,20-0,30	63	**OBL** Design	4	0,24	63	**OBL** Design	4
RBB	0,20-0,30	63	**OBL** Design	4	0,24	63	**OBL** Design	4
RCC	0,37	71	STD B14	4	0,37	71	STD B14	4
RIE	0,20-0,30-0,37	63	**OBL** Design	4	0,24	63	**OBL** Design	4
RH	0,37	71	STD B5	4	0,37	71	STD B5	4

2 INSTALLATION

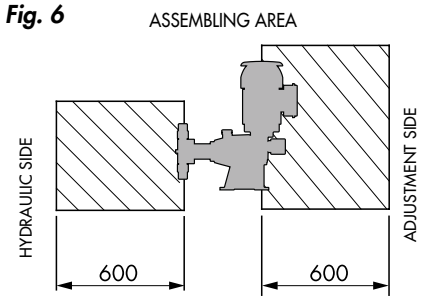
2.1 INSTRUCTIONS FOR A PROPER INSTALLATION

• Provide with suitable clearance areas and safe access for operation and maintenance, in particular in front of the hydraulic side and of the adjustment knob (*fig.* ***6***).

• If the pump is installed outdoors, a shelter is recommended, specially when the pump is equipped with electric actuators or other delicate devices.

• **PVC** pump heads can work properly only at ambient temperature and metered liquid temperatures below **40°C**. If necessary, provide suitable protection from sun rays and check the temperature of the metered liquid.

Fig. 6



2.2 FIXING OF THE PUMP

• Make sure that the baseplate is stable and even.

• Fix the pump to the baseplate using the specific anchor holes in the pump feet.

• Make sure that the pump valve axis is perfectly upright.

• Before connecting the piping to the pump, it is absolutely necessary to flush the pipelines with water, especially the suction line and relevant feed tank.

This preliminary flushing is often underestimated by the installator; if this operation is not properly carried out, the pump will become a collector of all foreing matters contained in the pipeline and tank, such as weld drops, gasket scraps, soil and other stuff.

• Make sure that the pipeline fittings and flanges are perfectly tight and in particular that no air enters the suction line, as this would hinder the priming of the pump.

2.3 SUCTION LINE

• A proper installation and sizing of the suction line are of particular importance for a correct operation of the pump. The following factors shall be taken into account:

A) Pipe inside diameter

The pipe Inner Diameter will be chosen as a function of the pump flow rate (*see table* ***B***).The pump connections are oversized, in order to cover all applications.

B) Length of the piping

The suction piping length should be as short as possible, while the height shall not exceed **3** m.

C) Arrangement of the suction line

With regard to the arrangement of the suction line see (*Fig.* ***7*** *below*).

Table B

Relationship between flow rate and pipe size (valid for water)

Max flow rateL/h	Pipe size
0÷15	Ø 4x6
0÷30	Ø 1/4"
0÷125	Ø 3/8"
0÷200	Ø 1/2"
0÷300	Ø 3/4"
0÷500	Ø 1"
0÷650	Ø 1" 1/2

Fig. 7

WRONG	RIGHT
Wrong Risk of clogging of pump valves	***Right***
Wrong In the highest point of the piping the fluid vein breaks	***Right*** WITH FILTER FOOT VALVE
Wrong Pipe size not in according with table **A**	***Right*** Pipe size is in according with table ***A***
Wrong Irregular suction	***Right***
Wrong	***Right***
Wrong	***Right***
Wrong	***Recommended installation*** ***Recommended installation*** ***Acceptable***

2.4 SUCTION SIDE FILTER

• The installation of a filter on the suction side is always recommended, particularly when the liquid to be metered contains suspended particles.

CAUTION!
A small-sized filter hinders suction side flow till clogging pipeline; Use Y -filters with a size larger than the suction pipe diameter.

• The characteristics of the filter screen depend on the kind of liquid and pump flow rate. For liquids with viscosity not exceeding 200 cps see table **C**.

• To avoid sucking solid content, especially when dosing chemicals with suspension, do not suck from tank bottom; suction point is to be at least 10 cms. from tank bottom (see page 8 fig.**7**).

Table C

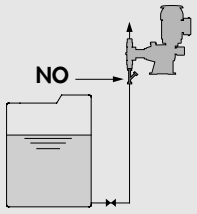
Flow rate L/h	Mesch
1÷15	100
15÷50	60
100÷300	40
300÷600	30

Examples of installation of the filter

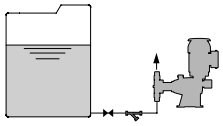
WRONG	RIGHT

Fig. 8

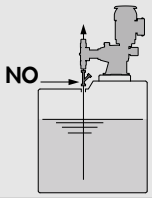
Wrong



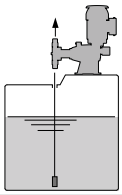
Right



Wrong



Right



2.5 SUCTION PIPING FOR VISCOUS LIQUIDS

• Specific technical information is required for the installation of pumps intended for metering viscous liquids.

• For this kind of application we recommend stainless steel pumpheads.
Spring-loaded discharge valves are also recommended in the event of high-viscosity liquids.

• The suction piping must have an adequate diameter; as a rule, for high-viscosity liquids (2000 cps), select the size immediately above the diameter of the pump suction connections.

• In any case, when viscous liquids are to be metered choose for the pipe at least the same size as that of the pump connections.

Table D

Strokes/1'	cp max execution "A"
95÷104	500
70÷86	1000
50÷63	2000
36÷42	3000

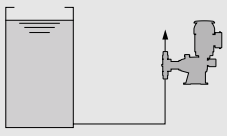
Relationship between strokes per minute "SPM" and viscosity of the liquid "cp" (Stainless steel pump head).

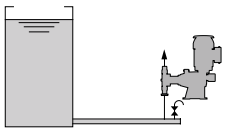
Examples of installation for viscous liquids

WRONG	RIGHT

Fig. 9

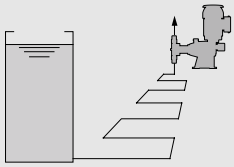
Wrong

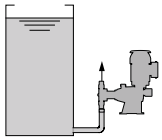




Recommended

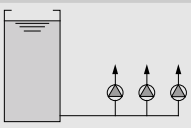
Wrong

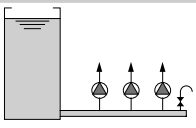




Recommended

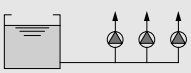
Wrong

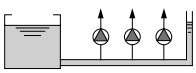




Right
Flow rate 0÷50 L/h

Wrong





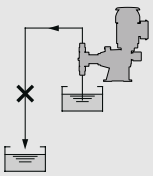
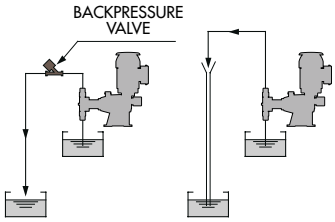
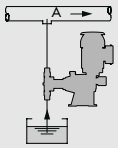
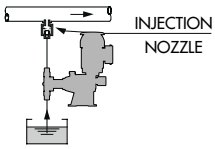
Right
Flow rate 50÷650 L/h

2.6 DISCHARGE LINE

• When the free surface of the liquid in the suction side tank is above discharge-side tank level, an uncontrollable flow from the suction side tank to the discharge side tank will occur.

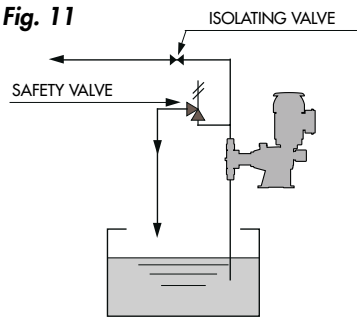
• To prevent this natural passage of liquid, the discharge pressure must always be at least 0,3 Kg/cmq, higher than the suction pressure, in case of small flow rates 0,5 Kg/cmq.

• If for any reason this condition cannot be complied with the plant it is necessary to create a backpressure by means of a suitable valve, or better to highten the discharge pipe so as to prevent the siphoning effect (fig.**10**).

WRONG	RIGHT
Fig. 10	
Wrong *Siphoning.* *Uncontrollable flow rate* 	 ***Right***
Wrong *Failing a back pressure valve, the flow in pipeline "A" draws the product from the tank in an uncontrolled way.* 	 ***Right***

2.7 SAFETY VALVE

Fig. 11



CAUTION !
Plunger metering pumps absolutely need the installation of a relief valve; a pressure higher than the rating plate value would break the mechanism.

• The safety valve has to be installed immediately after the discharge connection, anyhow before the on-off valve.

• The relief valve setting (set pressure) must not exceed the pump max. pressure value.

• The safety valve protects the pump from:

Excessive pressure (pressure higher than the rated value).

Operator mistakes (for ex., on-off valve closed on the discharge line when the pump is running).

Obstruction of the discharge piping (reduction in section clogging).

• A relief valve is absolutely necessary when an on-off valve is fitted on the discharge line (fig.**11**).

The installation of a safety valve is always essential both because of the above reasons and for the safety regulation for accident at work.

2.8 INSTALLATION OF THE PULSATION DAMPENER

• The pulsation damper is an important element for a proper operation of the metering pumps.
The installation of a pulsation damper offers several advantages because this device:

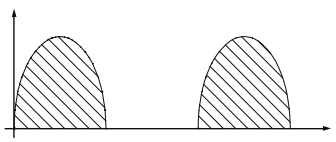
- Protetects the metering pump against pressure peaks, thus increasing the duration of life of the pump.
- Prevents vibrations all along the discharge line.
- Pump noise level reduction.
- Makes the flow linear.

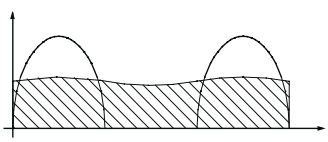
The pulsating flow, which is a negative characteristic of all metering pumps, can therefore be prevented by installing a pulsation damper on th discharge line (fig. **12**).

Examples of installation of the pulsation damper

Fig. 12/A

Flow rate diaphragm (without dampener)

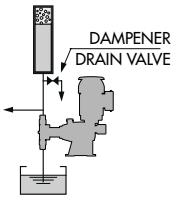


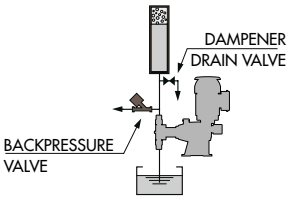


Flow rate diaphragm (with dampener)

Fig. 12/B

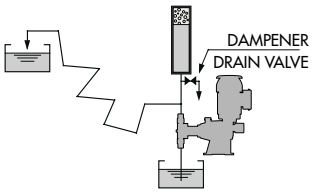
Installation with working pressure higher than 1 bar

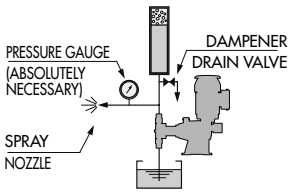




Installation with working pressure lower 1 bar

Discharge line too long and winding





Spray nozzle installation

Dampener types

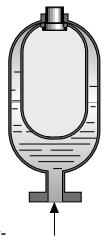
Bottle dampener

- Is made up of a cylindrical-shape barrel developed in its height.
- Dampener volume: about 35 times the pump swept volume
.

Advantages:
- It does not need precharge because is self-adjusting.

Disadvantages:
- It has to be regenerated periodically by releasing the liquid through the drain valve in order to restore the air absorbed by the liquid.

Bladder type dampener



- The liquid is separed from the relieving chamber by a diaphragm.
- Dampener volume: about 8 times the pump swept volume.

Advantages:
- Small volume.
- No need for periodic inflation because the gas is contained in the bladder.

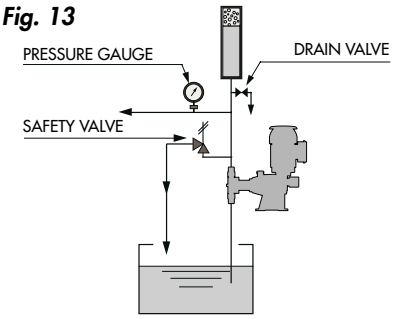
Disadvantages:
- It is necessary to know prior the working pressure in order to determine the damper precharge.

2.9 INSTALLATION OF THE PRESSURE GAUGE

- In order to check if the metering pump operates correctly, it is essential to install a pressure gauge on the discharge line (*fig.* ***13***).

- The pressure gauge shows the actual working pressure of the metering pump. This value must not exceed the max. allowed pressure of the pump.

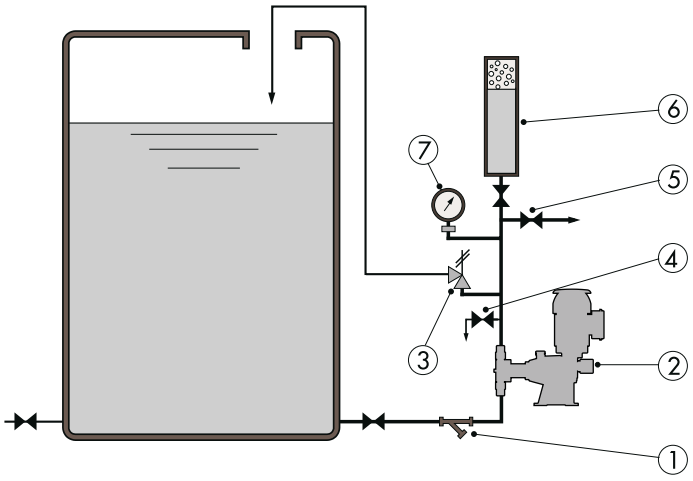
Fig. 13



2.10 STANDARD PLANT ARRANGEMENT

- Figure **14** shows the indications for a correct installation of the metering pumps.

Fig. 14



1 - "Y" filter

2 - Metering pump

3 - Safety valve

4 - Drain valve

5 - On-off valve

6 - Pulsation dampener

7 - Pressure gauge

2.11 CRANK HOUSING OIL FILLING UP

Pumps are always supplied without oil. For oil type see table E.

• Unscrew the filling plug located on the crank housing and pour lubricating oil into it (pos. 1).

Table E

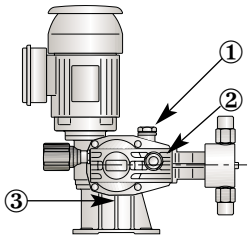
BRAND	TYPE
IP	MELLANA OIL 320
ESSO	SPARTAN EP 320
AGIP	BLASIA 320
MOBIL	MOBILGEAR 632
SHELL	OMALA OIL 320
BP	ENERGOL GR-XP 320

Table E/1

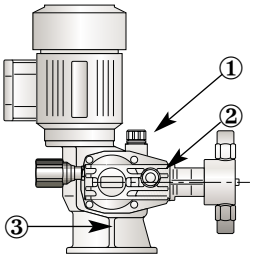
PUMP	OIL QUANTITY
RBA - RBB RCC - RIE	**0,4** L
RH	**1,1** L

Fig. 15

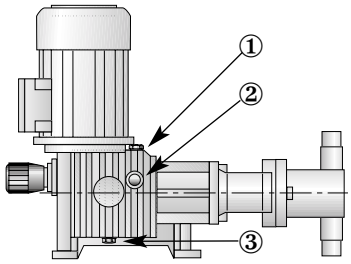
RBA RBB RIE



RCC



RH



① OIL FILLING UP - ② OIL LEVEL - ③ OIL DRAINING

3 STARTUP

3.1 BEFORE THE STARTUP

BEFORE THE STARTUP VERIFY THE FOLLOWING CONDITIONS:

• Make sure that the baseplate is made of steel, stable and even. Do not install the pump directly on a concrete foundation.

• Fix the pump to the baseplate using the specific anchor holes in the pump feet.

• Make sure that the pump valve axis is perfectly upright.

• Before connecting the piping to the pump, it is absolutely necessary to flush the pipelines with water, especially the suction line and relevant feed tank.

This preliminary flushing is often underestimated by the installator; if this operation is not properly carried out, the pump will become a collector of all foreing matters contained in the pipeline and tank, such as weld drops, gasket scraps, soil and other stuff.

• The pipelines must be independently supported, so as to prevent stresses on the pumphead.
Therefore, besides the baseplate, the pump needs a supporting framework for both suction and discharge pipelines.

• It is advisable to fit a cross after the discharge flange. This fitting will facilitate the removal of the pump from the baseplate and can be used for the installation of pressure gauges, safety valves and dampers.

• Make sure that the pump mechanism moves freely. To do this, act manually on the motor fan.

• Make sure that the pipeline fittings and flanges are perfectly tight and in particular that no air enters the suction line, as this would hinder the priming of the pump.

3.2 STARTUP

THE STARTUP HAS TO BE DONE AS FOLLOWS:

• Oil level (the pumps are always supplied without oil; for oil type see table **E**.
Pour slowly the oil though the filling orifice until required level).

• Check all electric connections and also the direction of rotation of the motor (shown by the arrow on motor body).

• **Make sure that all isolating valves on the suction and discharge lines are open.**

• Make sure that the liquid to be metered has not solidified or frozen inside the piping.

• Carry out the first startup with discharge pressure as low as possible and with adjustment knob set to 20%; keep these conditions about **3-5** minutes. Increase gradually the flow rate up to the maximum value, then set the pump to the required working conditions (flow rate and pressure).

• During the first stage check the pump discharge pressure by means of the pressure gauge: the pressure value (max. oscillation of the pointer) must not exceed the max. pressure indicated on the pump rating plate.

CAUTION ! ***THE PUMP CANNOT STAND PRESSURES HIGHER THAN THOSE INDICATED ON THE RATING PLATE.***

3.3 POSSIBLE TROUBLES DURING STARTUP

FLOW RATE IRREGULAR OR HIGHER THAN EXPECTED

CAUSES	SOLUTIONS
• The suction hydrostatic head exceeds the discharge pressure:	**Increase the discharge pressure by means of a back pressure valve. (OBL, series 300).**
• Back pressure valve stuck in open position because of foreing matters, or pressure setting too low respect to the suction head:	***Check.***
• Pump valves jammed in open position:	***Check.***

FLOW RATE LOWER THAN EXPECTED

CAUSES	SOLUTIONS
• Air entering the suction piping through the fittings:	***Check.***
• Air trapped inside the pump:	***Raise pump flow rate to maximum value, otherwise unscrew discharge valve housing (pos.14) till the liquid arrives.***
• Suction lift too high:	***Reduce it.***
• The vapour pressure of the fluid is too high:	***Increase the hydrostatic head on suction side.***
• The viscosity of the liquid is too high:	***Install a suction piping having a larger diameter. Increase the hydrostatic head on suction side.***
• Suction piping is clogged or its valves are shut:	***Verify.***
• Filter on suction side is clogged:	***Clean it.***
• Pump valves are stuck because of foreign matters coming from suction side:	***Dismantle the valves and clean them carefully .***
• Wrongly assembled valve units:	***See instructions on page 15/16 (Valves dismantling and reassembly).***

4 MAINTENANCE

4.1 ROUTINE MAINTENANCE

Metering pump maintenance is to be authorised by safety-at-work manager, provided that:

a) Motor power is off and no portion of the pump is live including auxiliaries (if any).

b) No danger of possible pump re-start.

c) Chemical inside pump head is not under pressure.

d) With pump at rest, suction and discharge isolation valves are closed.

This is an industrial pump and, **in case of more stringent safety requirements, site manager is to carry out and follow needed extra safety procedures.**

No maintenance can be made unless pump is at rest and disconnected from power grid (including auxiliaries). To maintain as-new working characteristics, a regular inspection/maintenance procedure is to be scheduled. Inspection/maintenance procedure is to be prepared by skilled engineers, based also on local environment conditions.

4.1.1 TECHNICAL DOCUMENTATION CONSULTATION

Safety at law requirements are mandatory when maintenance is carried out on pumps.

Before starting any maintenance procedure it is recommended to consult both sectional drawing and operating manual. **Make also sure that all needed tools are available.**

NB:
When pumps is dismantled, while waiting to be reassembled, is necessary to protect all loose components (most all gears and pump head sealing surfaces), to avoid damages due to oxidation and hits.

Non proper reassembly of seals and bearings can quicken deterioration of the same and cause pump mis-functioning and overheating.

4.1.2 RECURRING WORK/INSPECTION

After start up, inspect frequently the pump to define maintenance schedule (general inspection and routine maintenance).
In case of failure before schedule or anomaly it is service manager's responsibility to anticipate inspection/maintenance.
It is very likely that failure/anomaly is due to unclean seats/valves.

- Any part in contact with the chemical may get covered by crystals.
- In case of batch operation, when pump is at rest, chemical tend to coagulate, solidify. We recommend flushing of pump head, every time pump is stopped.

LUBRICATION CHECK

Check **periodically** oil level into mechanism. Make sure that there are no leaks on seals and/or plugs. Make sure oil is not contaminated nor sludge is formed into it (this may preclude proper lubrication). Change oil after **every 10000 working hour** and any case after **5 years**.

PLUNGER PACKING CHECK

Frequent checks on plunger packing status are to be scheduled.

- **Pump head with adjustable plunger packing:**
  Scrape off the scale from gland nut (pos. 22), unscrew it by 1 to 2 turns.
  Apply Vaseline on thread and tighten plunger packing (pos 2) (1 to 2 turns) (see picture **16**).
  After 1 to 2 turns wait a few minutes and check if pumps leaks.
  Only if it still leaks tighten again the plunger packing.

- **Pump heads with lip seals:**
  If pump leaks, it is necessary to service the pump by changing the lip seals (pos 4).
  While changing pos. 4, also check plunger status (scratches, corrosion or dented).
  If damaged change it too.

Fig. 16

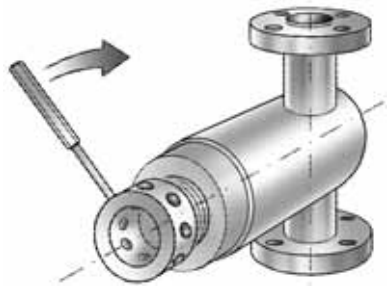
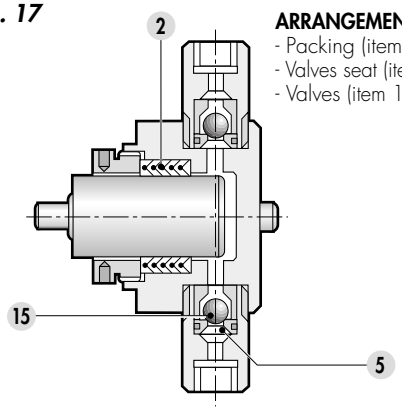


Fig. 17



ARRANGEMENT OF:
- Packing (item 2)
- Valves seat (item 5)
- Valves (item 15)

In case of lower or irregular flow rate, check the valve units as follows:

- Refer first to the pumphead section drawing.
- Pay attention to the arrangement of the valve components; each valve ball rests by gravity on its seat (Fig. **17**).
- Unscrew the suction and discharge valve units, one at a time. Check their components for soundness and cleanness.
- Clean carefully all valve components: seat, ball, guide, housing. Reassemble the valve unit.
- For more details see on cap. **4**.2: **Valves dismantling and reassembly.**

4.2 PREVENTIVE MAINTENANCE

- We suggest the purchase of a series of essential details for the preventive maintenance of the plunger pump head (tables **F - G - H**).

RBA **RIE**

VALVES DISMANTLING (AND REASSEMBLY)

Table F — **RECOMMENDED QUANTITIES**

DENOMINATION	EXECUTION (PUMP HEAD MATERIALS)							
	PAE - PAF		PCE - PCF - PCB - PCV		AAF - AAE		ACE - ACF - ACV	
	POSITION	PIECES No.	POSITION	PIECES No.	POSITION	PIECES No.	POSITION	PIECES No.
PLUNGER	1	1	1	-	1	1	1	-
PACKING	4	2	4	2	4	2	4	2
VALVE SEATS	5	2	5	2	5	2	5	2
VALVE	15	2	15	2	15	2	15	2
O-RING	8	2	8	2	8	2	8	2
O-RING	9	2	9	2	9	2	9	2

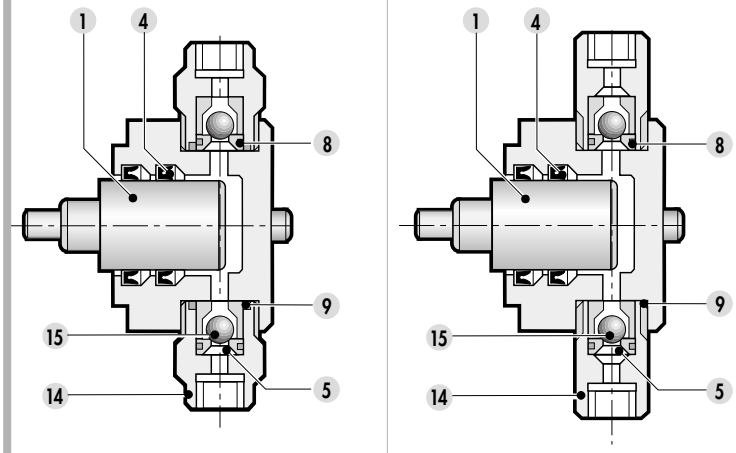
- **Valves** (fig. **18 -** pos.**15**).

Unscrew valve container (pos.**14**) and, using a spanner, push out the valve assembly.
Push from liquid connection side.

Clean valve assemblies as here indicated.
Clean the valve assemblies separately.

- Unscrew valve container (pos.**14**).
- Memorise valve assemblies arrangement.
- Push out the valve assemblies (pos.**15**).
- Clean carefully valves and valve and valve seats.
- Replace valve seats and valves if necessary.
- Re-assemble valve assemblies with same arrangements.
- Screw back container (pos.**14**).

Fig. 18



RBB **RCC**

VALVES DISMANTLING (AND REASSEMBLY)

Table G — RECOMMENDED QUANTITIES

DENOMINATION	EXECUTION (PUMP HEAD MATERIALS) A			P			AC		
	POSITION	PIECES No. SV	DV	POSITION	PIECES No. SV	DV	POSITION	PIECES No. SV	DV
PLUNGER	1	1	1	1	-	-	1	-	-
PACKING	2	1	1	2	1	1	2	1	1
VALVE SEATS	5	2	4	5	2	4	5	2	4
VALVE	15	2	4	15	2	4	15	2	4
O-RING	8	2	4	8	2	4	8	2	4
O-RING	9	2	2	9	2	2	9	2	2

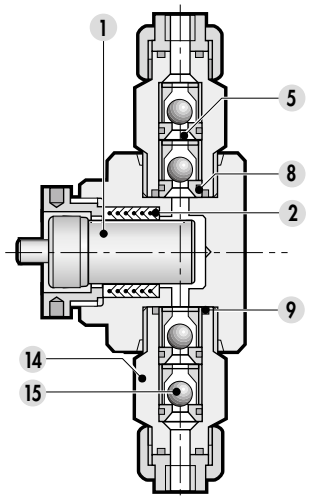
• **Valves** (fig. **19** / pos.**15**).

Unscrew valve container (pos.**14**) and, using a spanner, push out the valve assembly. Push from liquid connection side.

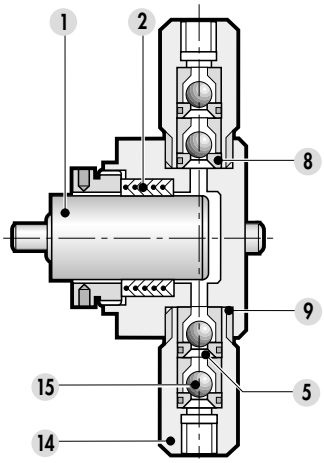
Clean valve assemblies as here indicated.
Clean the valve assemblies separately.

- Unscrew valve container (pos.**14**).
- Memorise valve assemblies arrangement.
- Push out the valve assemblies (pos.**15**).
- Clean carefully valves and valve and valve seats.
- Replace valve seats and valves if necessary.
- Re-assemble valve assemblies with same arrangements.
- Screw back container (pos.**14**).

Fig. 19



PVC



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VALVES DISMANTLING (AND REASSEMBLY)

Table H — RECOMMENDED QUANTITIES

DENOMINATION	EXECUTION (PUMP HEAD MATERIALS) A			P		
	POSITION	PIECES No. SV	DV	POSITION	PIECES No. SV	DV
PLUNGER	1	1	1	1	1	1
PACKING	2	1	1	2	1	1
VALVE SEATS	5 (13)	2	2+2	5	2	4
VALVE	15	2	4	15	2	4
O-RING	7	6	10	8	2	4
O-RING	-	-	-	9	2	2

• **Valves** (fig.**20** / pos.**15**).

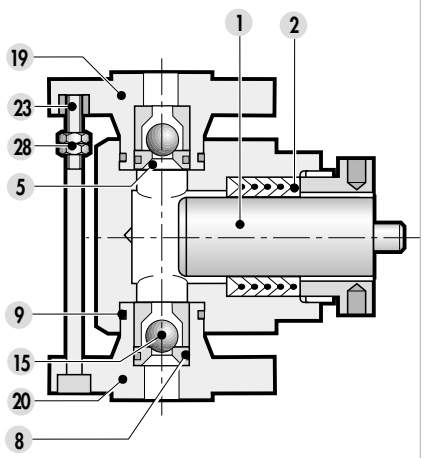
Strip down flanges (pos.**19** and **20**) by unscrewing the nuts (pos.**28**) on stay bolts (pos.**23**).

For PVC construction push out valve assembly using a spanner. Push from liquid connection side.

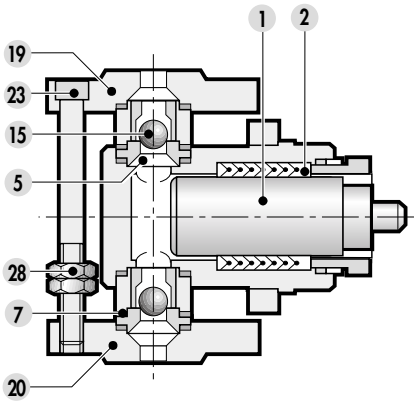
Clean valve assemblies as here indicated.
Clean the valve assemblies separately.

- Strip down flanges (pos.**19** and **20**).
- Memorise valve assemblies arrangement.
- Strip down valve assemblies.
- Clean carefully valves and valve and valve seats.
- Replace valve seats and valves if necessary.
- Re-assemble valve assemblies with same arrangements.
- Re-assemble the flanges (pos.**19** and **20**) and tighten them with stay bolts (pos.**23**).

Fig. 20



PVC



AISI 316L

4.3 OPERATING TROUBLES

FLOW RATE LOWER THAN EXPECTED

CAUSES	SOLUTIONS
• Air enters the suction piping through the fittings:	***Check.***
• Air trapped inside the pump:	***For a short while, keep flow rate to maximum.***
• Excessive suction head lift:	***Reduce it.***
• Vapour pressure of the liquid too high:	***Increase hydrostatic head on suction side.***
• Pumping temperatures too high:	***Increase hydrostatic head on suction side.***
• Viscosity of the liquid too high:	***Install a suction piping of larger diameter. Increase hydrostatic head on suction side.***
• Feed tank hermetically sealed and with no vent:	***Make a vent in the tank upper part.***
• Suction piping clogged or valves shut	***Check.***
• Filter on suction side clogged:	***Clean it.***
• Pump valves jammed because of dirt:	***Dismantle the valves and clean them carefully.***
• Safety valve setting pressure too low:	***Check.***

FLOW RATE IRREGULAR OR HIGHER THAN EXPECTED

CAUSES	SOLUTIONS
• The suction hydrostatic head exceeds the discharge pressure:	**Increase the discharge pressure by means of a back pressure valve. (OBL, series 300).**
• Back pressure valve stuck in open position because of foreing matters, or pressure setting too low respect to the suction head:	***Check.***
• Pump valves jammed in open position:	***Check.***

IRREGULAR MOVEMENT OF THE PLUNGER WHEN PUMP IN OPERATION

CAUSES	SOLUTIONS
• Excessive tightening of the gland-nut:	**Loosen it.**

OVERHEATING OF PUMP BODY AND MOTOR

CAUSES	SOLUTIONS
• Incorrect wiring:	**Check.**
• Overheating due to pump working pressure higher than allowed:	**Check max. discharge pressure by means of a pressure gauge fitted on the discharge pipeline.**
• Pressures higher than allowed:	**(see max. pressure indicated on pump rating plate) reduce the discharge pressure or install a dampener in case of excessive narrowing on the discharge pipeline.**
• Stresses on pump flanges:	**Loosen the pipes connected to the pumphead and check.**
• Discharge pipeline clogged or valve shut:	**Check.**
• Back pressure valve set to a pressure higher than allowed:	**Check.**
• Excessive tightening of the gland-nut:	**Loosen it.**
• Oil level in the gearbox is low:	**Add suitable oil.**

METERING PUMPS

MACHINE DIRECTIVE

EUROPEAN COMMUNITY DIRECTIVE **98/37/CE** AND SUBSEQUENT MODIFICATIONS

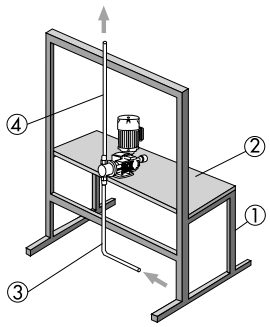
GENERAL SAFETY NORMS

Please read and save these instructions.

INSTRUCTIONS ABOUT THE RESIDUAL RISKS ELIMINATION AND THE SAFETY AT WORK

1 - INSTALLATION

- The pump has to be installed on a base plate ①.



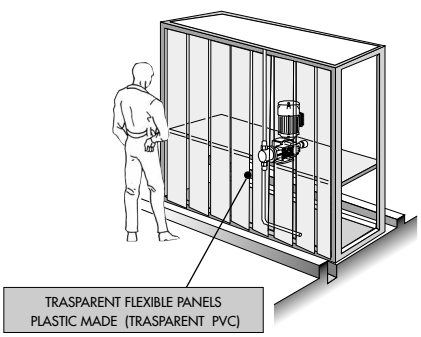
- The basement has to be made of electric welded steel and fit for the pump dimensions, with leveled face ②.

- The pump has to be strongly fastened to the basement by clamping screws.

- The basement has to have a frame to support the suction ③ and discharge ④ pipelines and possible accessories (pulsation dampers, pressure gauges, valves) and not vibrate while the pump is working.

2 - OPERATOR PROTECTION

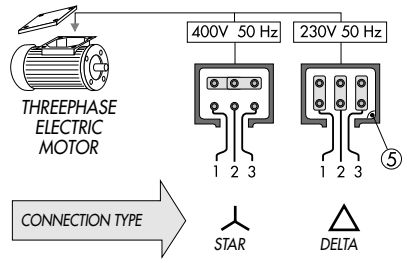
Protection against accidental leakages of aggressive pressurized fluids.



3 - ELECTRICAL CONNECTIONS

- For a proper connection of the electrical motor follow the illustrated instructions .

TERMINAL BOX DISPOSAL ACCORDING TO THE LINE VOLTAGE

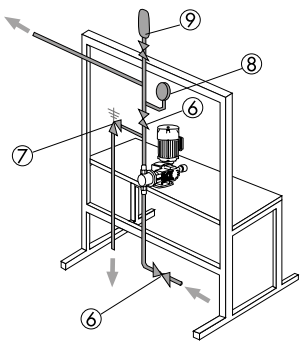


- Protect the motor by installing a magneto-thermic device, fit to the power input values of the motor, knowing that the motor, at start, absorbs at least four times the motor nominal power.
- Earth the terminal of the motor casing, using a cable with at least 6 mm² section ⑤.
- Check the direction of rotation of the motor (see the arrow on the motor body); if the direction of rotation is not in accordance with the arrow, interchange two wires: **1 on 2, 2 on 1.**

WARNING:
Start the motor only when the terminal box is closed

4 - SETTING INTO OPERATION

- Check the oil level.
- Open all the on-off valves both along the discharge and suction pipeline ⑥.
- Check the relief valve installation and its discharge into the feeding tank ⑦.



WARNING:
Do not start the pump without a safety valve.

- Check the pressure gauge installation ⑧ (essential to check the pump status).
- Check the pulsation damper ⑨ (indispensable for flowrates above 100 L/h).
- Start the pump with adjustment set to 20 % increase gradually the flowrate (acting on the adjustment knob) and find the relevant pressure on the pressure gauge.

WARNING:
The working pressure must not exceed the rating plate value it makes the pump break.

- Check during the first three working hours the pump body temperature (max 40°C) as well as the motor temperature (max 80°C).

5 - ROUTINE MAINTENANCE

- Check periodically the oil level through the oil-windows located on the pump body. First three months, once a month afterwards, once every four months.
- Check periodically (once every four months) the pump status:
- Pump body temperature (max 40°C).
- Motor body (max 70°C).
- Working pressure (must not exceed the rating plate value).
- Noise (within normal conditions must not exceed 85 dbA).

6 - PREVENTIVE MAINTENANCE

- Please see indication for plunger heads maintenance (tables **F-G-H** pag. **14/15**).

- For disassembly and re-assembling see instructions at page **14/15**.

METERING PUMPS

CE CONFORMITY DECLARATION

OBL s.r.l. 20090 Segrate - MILANO - Via Kennedy, 12 - Tel. +39 02 269191 - Fax +39 2 2133893 - E mail: info@obl.it

Modello/Model/Modele/Modell/Modelo/Modelo/Model/Model/Typ/Model/Malli/Μοντελο

PLUNGER METERING PUMPS — SERIE R

IT DICHIARAZIONE DI CONFORMITA' CE

Noi, **OBL**, s.r.l., **MILANO ITALIA**, dichiariamo sotto la nostra unica responsabilità che il prodotto cui questa dichiarazione si riferisce, è conforme alle seguenti Direttive e successive modifiche:
- **Direttiva Macchine 98/37/CE**
- **Direttiva Bassa Tensione 73/23/CE**
- **Direttiva Compatibilità Elettromagnetica 89/336/CE**

GB CE CONFORMITY DECLARATION

We, OBL, s.r.l., MILAN ITALY, declare under our sole responsibility that the product relevant to this declaration complies with the following directive and subsequents modifications:
- **Machinery Directive 98/37/EEC**
- **Low Voltage Directive 73/23/EEC**
- **Electromagnetic Compatibility Directive 89/336/EEC**

FR DECLARATION DE CONFORMITE CE

Nous, **OBL** s.r.l., **MILAN ITALIE**, déclarons sous notre seule responsabilité que le produit auquel cette déclaration se rapporte, est conforme au suivantes directives et successives modifications:
- **Directive Machines 98/37/CEE**
- **Directive Basse Tension 73/23/CEE**
- **Directive Compatibilité Electromagnétique 89/336/CEE**

DE EU-KONFORMITÄTSERKLÄRUNG

Wir **OBL** s.r.l. **MAILAND ITALIEN**, erklären unter unserer Verantwortung, dass unser Produkt, auf das sich diese Erklärung bezieht, den folgenden EU-Richtlinien und deren Anderungen entspricht:
- **Maschinenrichtlinie 98/37/EWG**
- **Richtlinie über die Niederspannung 73/23/EWG**
- **Normen über die Elektromagnetische Verträglichkeit 89/336/EWG.**

ES DECLARACIÓN DE CONFORMIDAD CE

La firma suscrita, **OBL** s.r.l., de **Milán**, **Italia**, declara bajo su propia responsabilidad que el producto al que se refiere esta declaración, cumple con las siguientes directivas y sucesivas modificaciones:
- **Directiva de máquinas 98/37/CEE**
- **Directiva de baja tensión 73/23 CEE**
- **Directiva de compatibilidad electromagnética 89/336 CEE**

PT DECLARAÇÃO DE CONFORMIDADE CE

Nós, **OBL** s.r.l., **MILÃO ITÁLIA**, declaramos sob nossa inteira responsabilidade que o produto ao qual se refere esta declaração se encontra de acordo com as seguintes directivas e sucessivas modificações:
- **Directivas máquinas 98/37/EEC**
- **Directivas Baixa Tensão 73/23/EEC**
- **Directivas Compatibilidade Electromagnética 89/336/EEC**

NL EG-VERKLARING VAN OVEREENKOMST

Wij, **OBL** s.r.l., **MILAAN ITALIË**, verklaren voor onze uitsluitende verantwoordelijkheid dat het product waarop deze verklaring betrekking heeft, in overeenstemming is met de volgende richtlijnen en navolgende wijzigingen:
- **Machinerichtlijn 98/37/EEG**
- **Laagspanningsrichtlijn 73/23/EEG**
- **Richtlijn Bestendigheid tegen Elektromagnetische Storingen 89/336/EEG**

DK CE OVERENSSTEMMELSES ERKLÆRING

Vi, **OBL** srl, **MILANO ITALIEN**, erklærer os ansvarlige for at produktet, som denne Erklæring henviser til, stemmer overens med følgende direktiver og påfølgende modificeringer:
- **Maskindirektiv 98/37/EEC**
- **Lavspændingsdirektiv 73/23/EEC**
- **Direktif for Elektromagnetisk Forenelighed 89/336/EEC**

SE EG ÖVERENSSTÄMMELSEFÖRKLARING

Vi, **OBL** s.r.l., **MILANO, ITALIEN**, förklarar under eget ansvar, att produkten, till vilken denna förklaring hänför sig, överensstämmer med förljande normer och deras respektive ändringar:
- **Norm för Maskiner 98/37/EEC**
- **Norm för Lågspänning 73/23/EEC**
- **Norm för Elektromagnetiks Förenlighet 89/336/EEC**

NO CE-OVERENSSTEMMELSE ERKLÆRING

Vi, **OBL** s.r.l., **MILANO, ITALIA**, erklærer under eget ansvar at produktet som omfattes av denne erklæringen er i overensstemmelse med følgende direktiver og senere endringer:
- **Maskindirektivet 98/37/EU**
- **Lavspenningsdirektivet 73/23/EU**
- **Direktivet vedr. elektromagnetisk kompatibilitet 89/336/EU.**

FI YHDENMUKAISUUSTODISTUS

OBL s.r.l., **MILANO ITALIA** , vakuuttaa omalla vastuullaan, että tässä todistuksessa mainittu tuote vastaa seuraavien direktiivien ja niihin tehtyjen muutosten vaatimuksia:
- **EU- laitedirektiivi 98/37**
- **EU- pienjännitedirektiivi 73/23**
- **EU- direktiivi 89/336 joka käsittelee sähkömagneettista yhteensopivuutta**

GR ΔΗΛΩΣΗ ΕΥΜΜΟΡΦΩΣΗΣ CE

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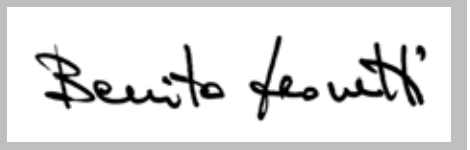
- Οδηγια περι Μηχανων **98/37/EOK**
- Οδηγια περι Χαμηληζ **73/23/EOK**
- Οδηγια περι Ηλεκτομαγνητικηζ Συμβατοτηταζ **89/336/EOK**

Nome e posizione del dichiarante / Name and charge of issuer / Nom et fonction de l'emetteur/ Name und position des erstellers / Nombre y cargo del expedidor / Nome e cargo do emissor / Naam en funktie van de uitgever / Udsteder, navn og stilling / Utsteders navn og stilling / Utfärdarens namn och befattning / Ilmoituksen antajan nimi ja asema / Ονομα και θεση εκδοτη

Benito LEONETTI
Responsible of the "TECHNICAL MANAGER"

Firma del dichiarante / Signature of issuer / Signature de l'emetteur / Unterschrift des erstellers / Firma del expedidor / Assinatura do emissor / Handtekening van de uitgever / Udsteder, underskrift / Usteders signatur / Utfärdarens namnteckning / Ilmoituksen antajan allekirjoitus / Υποραφη εκδοτη



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> OPERATING MANUAL