

Vertical multi-stage close coupled pumps

MXSU

OPERATING INSTRUCTIONS

1. Operating conditions

Standard construction

- For clean water with a maximum temperature of 35 °C and maximum sand content of 60 g/m³.
 - For clean liquids: non-explosive and non-flammable, non-hazardous for health or the environment, non-aggressive for pump materials, not containing abrasives, solid or fibrous particles.
 - Maximum permissible pressure in the pump casing: 10 bar.
 - Maximum starts/hour: 30 at regular intervals.
- Sound pressure: 60 dB (A).

The motor is cooled by the pumped water passing between the motor jacket and the external jacket.

The pump is suited for installation in confined space with minimum ventilation, in areas exposed to the sun and weather, those subject to risk of temporary flooding or exposure to water jetting.

2. Installation



Never use the electric power cable to suspend the pump.

The pump must be installed in the vertical position with the delivery connection facing upwards. See installation examples, fig. 1.

Place the pump as close as possible to the suction source.



Make sure prolonged accidental leakage of liquid does not cause damage to persons or property.

Leakage may develop as a result of overpressure, water hammer, erroneous operations (such as failing to close a plug or valve) or other functional disorders. Allow for the possibility of channeling away any leaked fluid or for an automatic drainage system against flooding. Put in a safe place any property which may be damaged by the water.

Provide for the possibility of draining the pump without having to drain the entire system.

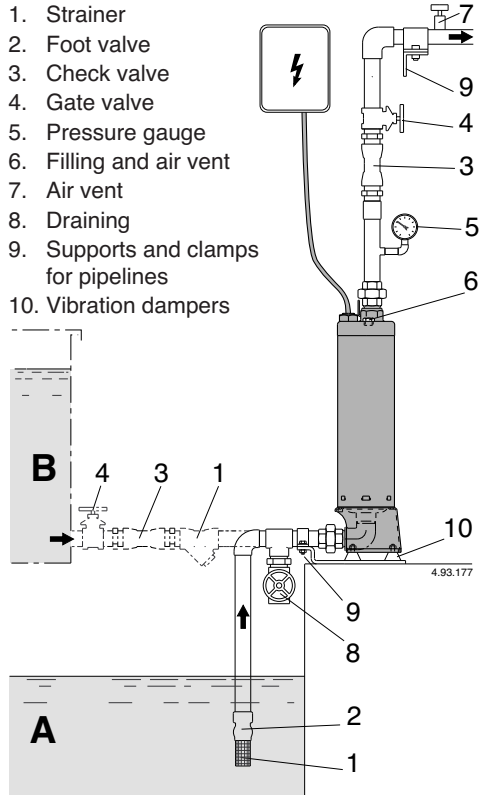


Fig. 1 Systems diagram
A = Suction lift operation
B = Positive suction head operation

3. Pipes

Ensure the inside of pipes are clean and unobstructed before connection.

ATTENTION: The pipes connected to the pump should be secured to rest clamps so that they do not transmit stress, strain or vibrations to the pump.

Into stable and rigid pipelines the pump can be supported directly through the pipes (fig. 2).

Tighten the pipes or union coupling to the extent sufficient to ensure a tight seal.

Excessive torque may cause damage to the pump. When the pipe or union coupling is mounted, keep the pump connection blocked with a second wrench, making sure the connection is not deformed by excessive tightening.

The pipe diameters must not be smaller than the pump connections.

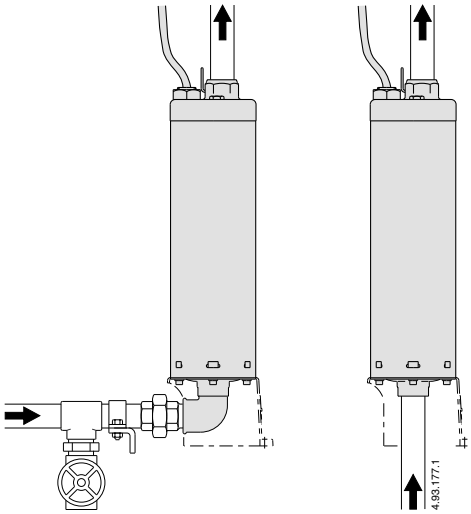


Fig. 2 Pump supported by the pipes

3.1. Suction pipe

If the suction pipe is longer than 10 m, use an internal pipe diameter larger than the pump suction connection.

The suction pipe must be perfectly airtight and be led upwards in order to avoid air pockets.

With a **pump located above the water level** (suction lift operation, fig. 1A) fit a foot valve with strainer which must always remain immersed.

With the **liquid level on the suction side above the pump** (inflow under positive suction head, fig. 1B) fit an inlet gate valve.

For suction from a storage tank fit an anti-backflow valve.

Follow local specifications if increasing network pressure.

Install a strainer on the suction side of the pump to prevent foreign particles from entering the pump.

3.2. Delivery pipe

Fit a gate valve in the delivery pipe to adjust delivery, head and absorbed power.

Install a pressure gauge between the pump and the gate valve.

ATTENTION: install a check valve between the pump and the gate valve in order to avoid reverse flow after switching off the pump unit and to protect the pump from water hammers.

With servooperated shut-off devices, provide an air vessel or another protection device against surge of pressure in the case of sudden changes of flow rate.

4. Electrical connection



Electrical connection must be carried out only by a qualified electrician in accordance with local regulations.

Follow all safety standards.

The unit must be properly earthed (grounded).

Make sure the frequency and mains voltage correspond with the name plate data.



The motors with supply current directly switched by thermally sensitive switches can start automatically.



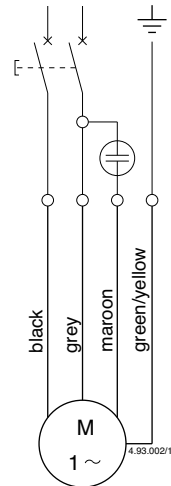
Install a **device for disconnection from the mains** (switch) with a contact separation of at least 3 mm on all poles.

4.1. Single-phase pumps MXSUM

Supplied with incorporated thermal protector.

The motor will stop if overheating is detected. When the windings cool down (after 2 to 4 minutes), the thermal protector enables re-starting.

Control box with capacitor supplied on request.



Electrical diagram

4.2. Three-phase pumps MXSU

Install in the control box an overload-protective device in accordance with the name-plate current.

5. Starting

ATTENTION: never run the pump dry - not even for a short trial run.

Start the pump after filling it completely with liquid.

When the pump is located above the water level (suction lift operation, fig. 1A) or with a positive suction head which is too low (less than 1 m) to open the non-return valve, fill the suction pipe and the pump through the priming hole (ref. 6, fig. 1).

When the liquid level on the suction side is above the pump (inflow under positive suction head, fig. 1B), fill the pump by opening the suction gate valve slowly and completely, keeping the delivery gate valve and the air vent (ref. 6, fig. 1) open to release the air. Close the plug when the water reaches the air vent hole.


With a three-phase power supply make sure the direction of rotation is correct.

For this purpose, with the gate valve at any aperture position, check the pressure (with the pressure gauge), or flow rate (sight check) after starting. Switch off power, invert the connections of two phases on the control panel, re-start and check the pressure or flow rate capacity again.

The correct direction of rotation will provide a considerably greater and easily distinguishable pressure and delivery capacity.

Check that the pump works within its field of performance and that the absorbed current shown on the name-plate is not exceeded. Otherwise adjust the delivery gate valve or the setting of any pressure switches.

If a priming loss occurs (interruption of delivery flow) or if a pressure oscillation is indicated by the pressure gauge, make sure all the suction pipe couplings are perfectly sealed.

 **Never run the pump for more than five minutes with a closed gate valve.** Prolonged operation without a change of water in the pump causes dangerous increases of temperature and pressure.


6. Maintenance

Under normal operating conditions the pump will not require maintenance.

ATTENTION: if the pump is temporarily used with dirty liquids or water containing chloride, flush the pump briefly with clean water immediately after use to remove any deposit.

If the pump has not been used for a long time and does not start or gives no water (but electrical connections are in order), the pump must be removed and checked to see if it is choked by any foreign matter or blocked by sediment, deposits or any other cause.

When the pump remains inactive it must be emptied completely if there is a risk of freezing.

 **Disconnect electrical power before any servicing operation and make sure the pump cannot be accidentally switched on.**

7. Dismantling

7.1. Checking rotation of the shaft

Close the suction and delivery gate valves and drain the pump casing before dismantling the pump.

For dismantling and re-assembly see construction in the cross section drawing.

While the pump is positioned horizontally, remove the screws (14.24), the square nuts (14.28) the base (61.00), the suction casing (16.00) with the elbow (16.30). Hold the first stage casing (25.01) tightly with one hand so that it does not rotate and, with a wrench on the nut (28.04), turn the shaft in the anti-clockwise direction.

If the shaft is blocked and cannot be freed, dismantling should continue until the cause has been found and removed.

7.2. Inspection of the hydraulic parts

The O-ring (14.20) and then the complete motor assembly with all internal pump parts are removed from the external jacket (14.02).

The first impeller can be inspected by removing the first stage casing (25.01).


Once the nuts (28.04) and washer (28.08) are removed the spacer sleeves (64.15), impellers (28.00) and the other stage casings (25.02 and 25.05) can be dismantled one after the other.

Others parts should not be dismantled.

The motor and pump functions can be impaired by erroneous procedure or tampering with internal parts.

7.3. Oil chamber

If the oil chamber has to be inspected, follow these instructions:

 **CAUTION: there may be slight pressure in the oil chamber.** Care must be taken to avoid a sudden spurting of oil. Wait until the oil chamber cover (34.03) has cooled down.

Before removing the lower mechanical seal (36.00), loosen the screws (70.18) and raise the cover (34.03), applying force simultaneously on two opposite points of the cover rim, to let off pressure from the oil chamber. Carry out this operation while holding the motor in the upturned vertical position.

When refilling the chamber use only white oil suitable for food machinery and pharmaceutical use (quantity = 35 g).

First, mount the fixed parts of the seal (36.00) on the oil chamber cover (34.00) and then the oil chamber cover (34.03) on the motor cover (70.00) with the O-ring (70.09).

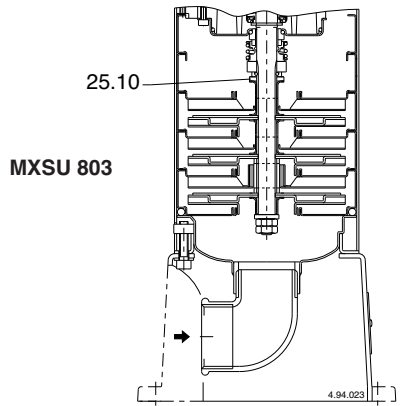
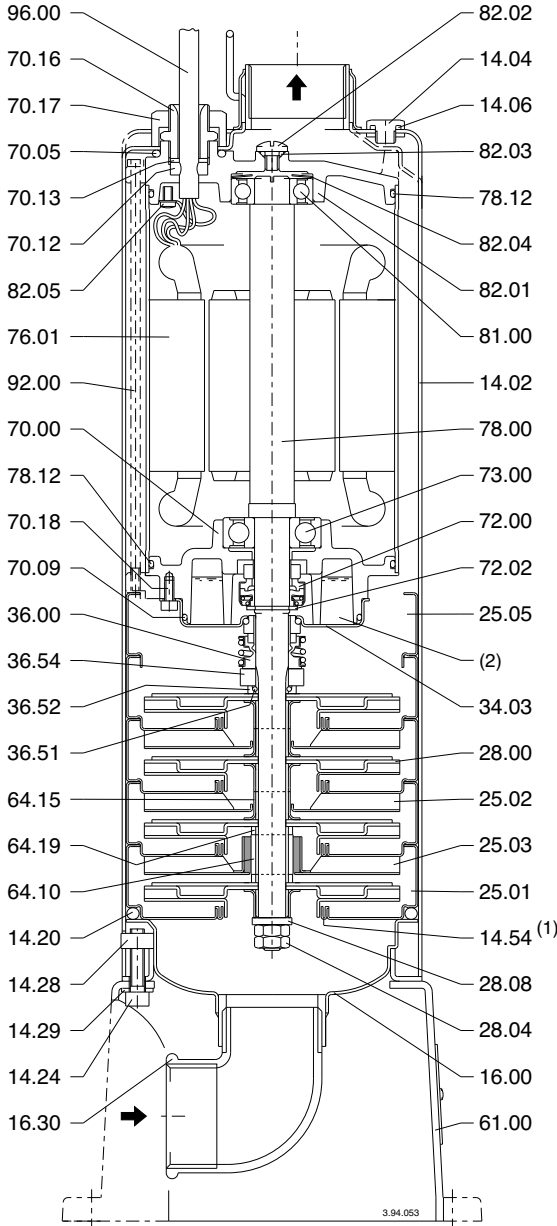
8. Spare parts

When ordering spare parts, please quote their designation, position number in the cross section drawing and rated data from the pump name plate (typ, date and serial number).

Changes reserved.

Disegni in sezione
Cross section drawings
Schnittzeichnungen
Dessins en coupe
Diseños en sección
Чертеж в разрезе

MXSU



Nr.	Denominazione	Nr.	Designation	Nr.	Teile-Benennung
14.02	Camicia esterna	14.02	External jacket	14.02	Pumpenmantel
14.04	Tappo	14.04	Plug	14.04	Verschlußschraube
14.06	O-ring	14.06	O-ring	14.06	Runddichtring
14.20	O-ring	14.20	O-ring	14.20	Runddichtring
14.24	Vite	14.24	Screw	14.24	Schraube
14.28	Dado quadro	14.28	Square nut	14.28	Vierkantmutter
14.29	Rosetta	14.29	Washer	14.29	Scheibe
14.54	Anello di tenuta (1)	14.54	Wear ring (1)	14.54	Spaltring (1)
16.00	Corpo aspirante	16.00	Suction casing	16.00	Sauggehäuse
16.30	Gomito	16.30	Elbow	16.30	Krümmmer
25.01	Corpo primo stadio	25.01	First stage casing	25.01	Stufengehäuse erste Stufe
25.02	Corpo stadio	25.02	Stage casing	25.02	Stufengehäuse
25.03	Corpo stadio con cuscinetto	25.03	Stage casing with bearing	25.03	Stufengehäuse mit Lager
25.05	Corpo ultimo stadio	25.05	Last stage casing	25.05	Stufengehäuse letzte Stufe
25.10	Spessore girante mancante	25.10	Washer for missing impeller	25.10	Scheibe für fehlendes Laufrad
28.00	Girante	28.00	Impeller	28.00	Laufrad
28.04	Dado bloccaggio girante	28.04	Impeller nut	28.04	Laufradmutter
28.08	Rosetta	28.08	Washer	28.08	Scheibe
34.03	Coperchio camera olio	34.03	Oil chamber cover	34.03	Ölkammer-Deckel
36.00	Tenuta meccanica inferiore	36.00	Lower mechanical seal	36.00	Untere Gleitringdichtung
36.51	Anello di arresto, in 2 pezzi	36.51	Retaining ring, split	36.51	Haltering, geteilt
36.52	Anello di spallamento	36.52	Shoulder ring	36.52	Schulterring
36.54	Distanziatore	36.54	Spacer	36.54	Abstandshülse
40.00	Anello di tenuta radiale	40.00	Radial shaft seal	40.00	Radialdichtring
61.00	Base	61.00	Base	61.00	Fuß
64.10	Bussola cuscinetto	64.10	Bearing sleeve	64.10	Lagerhülse
64.15	Bussola distanziatrice	64.15	Spacer sleeve	64.15	Abstandshülse
64.19	Bussola distanziatrice cuscinetto	64.19	Spacer sleeve, bearing stage	64.19	Abstandshülse Lagerstufe
70.00	Coperchio motore lato pompa	70.00	Motor cover, pump side	70.00	Motorlagergehäuse, pumpenseitig
70.05	O-ring	70.05	O-ring	70.05	Runddichtring
70.09	O-ring	70.09	O-ring	70.09	Runddichtring
70.10	O-ring	70.10	O-ring	70.10	Runddichtring
70.12	Anello del pressacavo	70.12	Cable gland rubber ring	70.12	Kabelgummiring
70.13	Rondella	70.13	Washer	70.13	Dichtring
70.16	Pressacavo	70.16	Cable gland	70.16	Kabelführung
70.17	Ghiera di pressione	70.17	Lockring	70.17	Druckmutter
70.18	Vite	70.18	Screw	70.18	Schraube
72.00	Tenuta meccanica superiore	72.00	Upper mechanical seal	72.00	Obere Gleitringdichtung
72.02	Anello di sicurezza	72.02	Circlip	72.02	Sicherungsring
73.00	Cuscinetto lato pompa	73.00	Pump side bearing	73.00	Wälzlager, pumpenseitig
76.01	Camicia motore con avvolgimento	76.01	Motor jacket with winding	76.01	Motormantel mit Wicklung
78.00	Albero con pacco rotore	78.00	Shaft with rotor packet	78.00	Welle mit Rotorpaket
78.12	O-ring	78.12	O-ring	78.12	Runddichtring
81.00	Cuscinetto	81.00	Bearing	81.00	Wälzlager
82.01	Coperchio motore lato opposto	82.01	Motor end-shield, non-drive end	82.01	Motorlagergehäuse, B-seitig
82.02	Vite	82.02	Screw	82.02	Schraube
82.03	O-ring	82.03	O-ring	82.03	Runddichtring
82.04	Molla di compensazione	82.04	Compensating spring	82.04	Federscheibe
82.05	Vite	82.05	Screw	82.05	Schraube
92.00	Tirante	92.00	Tie-bolt	92.00	Verbindungsschraube
96.00	Cavo	96.00	Cable	96.00	Kabel

(1) Inserito nel corpo stadio
(non fornibile singolarmente)
(2) Olio

(1) Inserted in the stage casing
(cannot be supplied separately)
(2) Oil

(1) Im Stufengehäuse eingepreßt
(einzeln nicht lieferbar)
(2) Öl

Nr.	Description	Nr.	Denominación	N°	Наименование
14.02	Chemise extérieure	14.02	Camisa bomba	14.02	Наружный кожух
14.04	Bouchon	14.04	Tapón con arandela	14.04	Заглушка (наполнение)
14.06	Joint torique	14.06	Junta tórica tapón	14.06	Уплотнительное кольцо
14.20	Joint torique	14.20	Junta cuerpo bomba	14.20	Уплотнительное кольцо
14.24	Vis	14.24	Tornillo	14.24	Винт
14.28	Ecrou carré	14.28	Turca	14.28	Квадратная гайка
14.29	Rondelle	14.29	Arandela fijación	14.29	Шайба
14.54	Bague d'usage (1)	14.54	Anillo de cierre lado aspiración (1)	14.54	Уплотнительное кольцо (1)
16.00	Corps d'aspiration	16.00	Cuerpo aspiración	16.00	Корпус всасывающей части
16.30	CoUDE	16.30	Tube acodado	16.30	Колено
25.01	Corps premier étage	25.01	Cuerpo primera etapa	25.01	Корпус первой ступени
25.02	Corps d'étage	25.02	Cuerpo elemento	25.02	Корпус ступени
25.03	Corps d'étage avec coussinet	25.03	Cuerpo elemento con cojinete	25.03	Корпус ступени с подшипником
25.05	Corps dernier étage	25.05	Cuerpo último elemento	25.05	Корпус последней ступени
25.10	Rondelle pour roue manquante	25.10	Espesor para rodete ausente	25.10	Вставка на месте нехватящего рабочего колеса
28.00	Roue	28.00	Rodete	28.00	Рабочее колесо
28.04	Ecrou de blocage de roue	28.04	Tuerca fijación rodete	28.04	Блокировочная гайка рабочего колеса
28.08	Rondelle	28.08	arandela fijación	28.08	Шайба
34.03	Couvercle chambre d'huile	34.03	Tapa cámara de aceite	34.03	Крышка масляной камеры
36.00	Garniture mécanique inferieure	36.00	Sello mecánico inferior	36.00	Мех. уплотнение нижнее
36.51	Bague d'arrêt, en deux pièces	36.51	Anillo de paro en 2 piezas	36.51	Стопорное кольцо из 2 частей
36.52	Bague d'appui	36.52	Anillo de apoyo	36.52	Стопорное кольцо
36.54	Entretoise	36.54	Manguito distanciador	36.54	Распорка
40.00	Joint à lèvres	40.00	Anillo de cierre radial	40.00	Радиальное уплотнительное кольцо
61.00	Socle	61.00	Base	61.00	Основание
64.10	Coussinet	64.10	Casquillo guía del cojinete	64.10	Втулка подшипника
64.15	Entretoise	64.15	Manguito distanciador intermedio	64.15	Распорная втулка
64.19	Entretoise coussinet	64.19	Manguito distanciador	64.19	Распорная втулка подшипника
70.00	Fond de moteur, côté pompe	70.00	Tapón motor lado bomba	70.00	Крышка двигателя со стороны насоса
70.05	Joint torique	70.05	Junta tórica	70.05	Уплотнительное кольцо
70.09	Joint torique	70.09	Junta tórica	70.09	Уплотнительное кольцо
70.10	Joint torique	70.10	Junta tórica	70.10	Уплотнительное кольцо
70.12	Bague de serrage de câble	70.12	Anillo del pasacable	70.12	Кольцо прижимного устройства
70.13	Rondelle	70.13	Arandela fijación	70.13	Шайба
70.16	Bague de serrage de câble	70.16	Manguito prensacable	70.16	Прижимное устройство для проводов
70.17	Collier de serrage	70.17	Anillo de presión	70.17	Lockring
70.18	Vis	70.18	Tornillo	70.18	Винт
72.00	Garniture mécanique superieure	72.00	Cierre mecánico superior	72.00	Мех. уплотнение верхнее
72.02	Circlips	72.02	Anillo de seguridad	72.02	Предохранительное кольцо
73.00	Roulement à billes, côté pompe	73.00	Cojinete lado bomba	73.00	Подшипник со стороны насоса
76.01	Chemise moteur avec bobinage	76.01	Camisa motor bobinado	76.01	Кожух двигателя с обмоткой
78.00	Arbre-rotor	78.00	Eje con rotor	78.00	Вал с роторным комплектом
78.12	Joint torique	78.12	Junta tórica	78.12	Уплотнительное кольцо
81.00	Roulement à billes	81.00	Cojinete	81.00	Подшипник
82.01	Fond de moteur, côté opposé	82.01	Tapá motor lado opuesto	82.01	Крышка двигателя с проти. стороны
82.02	Vis	82.02	Tornillo	82.02	Винт
82.03	Joint torique	82.03	Junta tórica	82.03	Уплотнительное кольцо
82.04	Rondelle de compensation	82.04	Muelle de compensación	82.04	Компенсационная пружина
82.05	Vis	82.05	Tornillo	82.05	Винт
92.00	Tirant d'assemblage	92.00	Espárrago tirante.	92.00	Распорка
96.00	Câble	96.00	Cable eléctrico	96.00	Провод

(1) Monté dans le corps étage
(ne peut être livré séparément)
(2) Huile

(1) Insertar en el cuerpo elemento
(no suministrado separadamente)
(2) Aceite

(1) Встроен в корпус ступени
(не поставляется отдельно)
(2) Масло

I DICHIARAZIONE DI CONFORMITÀ

Noi CALPEDA S.p.A. dichiariamo sotto la nostra esclusiva responsabilità che le Pompe MXSU, MXSUM, tipo e numero di serie riportati in targa, sono conformi a quanto prescritto dalle Direttive 2004/108/CE, 2006/42/CE, 2006/95/CE e dalle relative norme armonizzate.

GB DECLARATION OF CONFORMITY

We CALPEDA S.p.A. declare that our Pumps MXSU, MXSUM, with pump type and serial number as shown on the name plate, are constructed in accordance with Directives 2004/108/EC, 2006/42/EC, 2006/95/EC and assume full responsibility for conformity with the standards laid down therein.

D KONFORMITÄTSESKLÄRUNG

Wir, das Unternehmen CALPEDA S.p.A., erklären hiermit verbindlich, daß die Pumpen MXSU, MXSUM, Typbezeichnung und Fabrik-Nr. nach Leistungsschild den EG-Vorschriften 2004/108/EG, 2006/42/EG, 2006/95/EG entsprechen.

F DECLARATION DE CONFORMITE

Nous, CALPEDA S.p.A., déclarons que les Pompes MXSU, MXSUM, modèle et numero de série marqués sur la plaque signalétique sont conformes aux Directives 2004/108/CE, 2006/42/CE, 2006/95/CE.

E DECLARACION DE CONFORMIDAD

En CALPEDA S.p.A. declaramos bajo nuestra exclusiva responsabilidad que las Bombas MXSU, MXSUM, modelo y numero de serie marcados en la placa de características son conformes a las disposiciones de las Directivas 2004/108/CE, 2006/42/CE, 2006/95/CE.

DK OVERENSSTEMMELSESERKLÆRING

Vi CALPEDA S.p.A. erklærer hermed at vore pumper MXSU, MXSUM, pumpe type og serie nummer vist på typeskiltet er fremstillet i overensstemmelse med bestemmelserne i Direktiv 2004/108/EC, 2006/42/EC, 2006/95/EC og er i overensstemmelse med de heri indeholdte standarder.

P DECLARAÇÃO DE CONFORMIDADE

Nós, CALPEDA S.p.A., declaramos que as nossas Bombas MXSU, MXSUM, modelo e número de série indicado na placa identificadora são construídas de acordo com as Directivas 2004/108/CE, 2006/42/CE, 2006/95/CE e somos inteiramente responsáveis pela conformidade das respectivas normas.

NL CONFORMITEITSVERKLARING

Wij CALPEDA S.p.A. verklaren hiermede dat onze pompen MXSU, MXSUM, pomptype en serienummer zoals vermeld op de typeplaat aan de EG-voorschriften 2004/108/EU, 2006/42/EU, 2006/95/EU voldoen.

SF VAKUUTUS

Me CALPEDA S.p.A. vakuutamme että pumpppumme MXSU, MXSUM, malli ja valmistusnumero tyypikilvstä, ovat valmistettu 2004/108/EU, 2006/42/EU, 2006/95/EU direktiivien mukaisesti ja CALPEDA ottaa täyden vastuun siitä, että tuotteet vastaavat näitä standardeja.

S EU NORM CERTIFIKAT

CALPEDA S.p.A. intygat att pumpar MXSU, MXSUM, pumptyp och serienummer, visade på namnplåten är konstruerade enligt direktiv 2004/108/EC, 2006/42/EC, 2006/95/EC. Calpeda åtar sig fullt ansvar för överensstämmelse med standard som fastställts i dessa avtal.

GR ΔΗΛΩΣΗ ΣΥΜΦΩΝΙΑΣ

Εμείς ως CALPEDA S.p.A. δηλώνουμε ότι οι αντλίες μας αυτές MXSU, MXSUM, με τύπο και αριθμό σειράς κατασκευής όπου αναγράφετε στην πινακίδα της αντλίας, κατασκευάζονται σύμφωνα με τις οδηγίες 2004/108/ΕΟΚ, 2006/42/ΕΟΚ, 2006/95/ΕΟΚ, και αναλαμβάνουμε πλήρη υπευθυνότητα για συμφωνία (συμμόρφωση), με τα στάνταρς των προδιαγραφών αυτών.

TR UYGUNLUK BEYANI

Bizler CALPEDA S.p.A. firması olarak MXSU, MXSUM, Pompalarımızın, 2004/108/EC, 2006/42/EC, 2006/95/EC, direktiflerine uygun olarak imal edildiklerini beyan eder ve bu standartlara uygunluğuna dair tüm sorumluluğu üstleniriz.

RU Декларация соответствия

Компания "Calpeda S.p.A." заявляет с полной ответственностью, что насосы серий MXSU, MXSUM, тип и серийный номер которых указывается на заводской табличке соответствуют требованиям нормативов 2004/108/CE, 2006/42/CE, 2006/95/CE.

Il Presidente

Licia Mettifofo