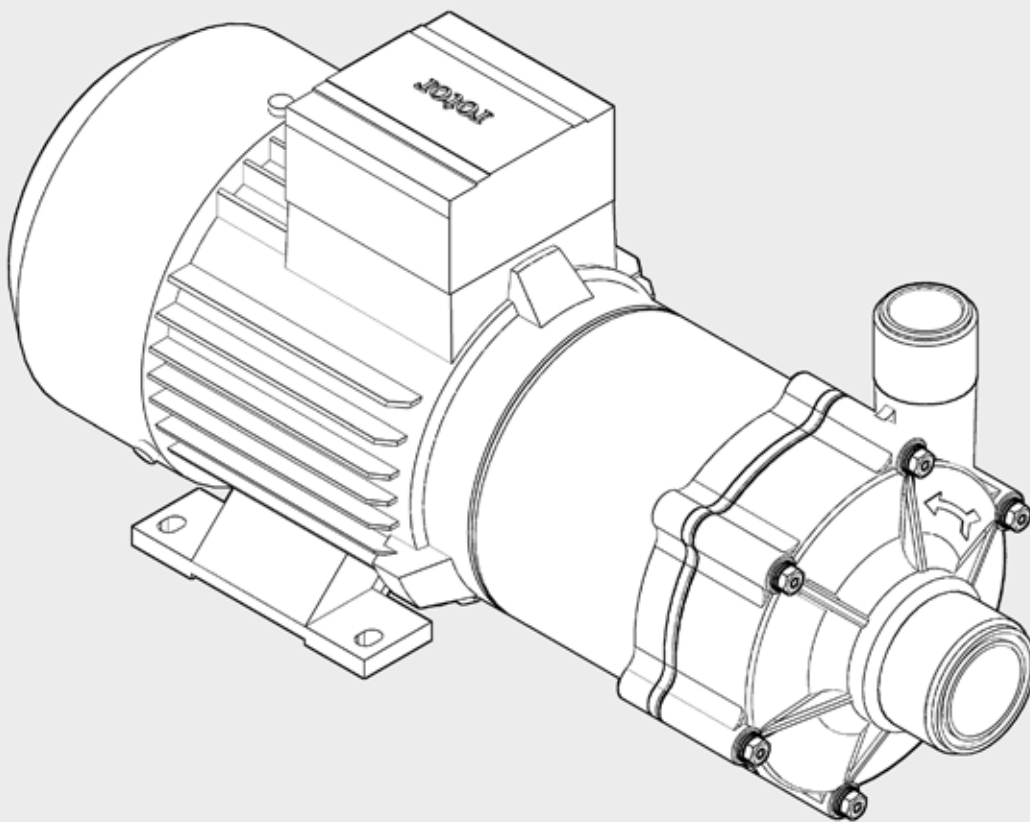


Manual



MMP 15/PP *(01607100)*

DIRECTIONS FOR USE MEFIAG MMP 15

Publication date : 18-02-'98

MEFIAG Magnetic drive pumps type : MP-1, MP-5, MP-6, MP-7, MP-9, MP-11, MP-12, MP-15 and MP-20

General.

One of the distinctive features of the pumps is their magnetic drive which excludes the drawbacks common to all those pumps which are provided with other drives. The pump impeller is not physically fixed to the drive shaft, seals are therefore eliminated and this consequently avoids those leakages of the liquids drawn by the pump which should be ascribed to its wear. The advantages are obvious. First of all, no friction takes place between the drive shaft and the seals and this stands for a considerable energy saving. Highly corrosive liquids can be safely handled too. Being wear and friction removed from the drive shaft seals, the time required for maintenance works is virtually reduced to nothing; furthermore, thanks to the simple pump construction, any replacement of damaged parts can be carried out in a short while without the assistance of skilled workers. The outer permanent magnet transmits the motion to the inner permanent magnet which is fixed to the impeller so as to avoid any possible slipping. The pump casing permits the passing through of magnetic power but insulates the liquids drawn by the pump. MEFIAG magnetic coupled pumps are really universal equipment, they find successful applications in many different fields, such as galvanic-, chemical-, petrochemical- and photographic industries.

Installation/Pipe work

- Install the pump as close as possible to the tank from which the liquid has to be pumped.
- Regarding the suction pipe: keep as short as possible, and at least one size larger than the dimension of the inlet. To prevent cavitation, the horizontal suction pipe has to be straight in front of the inlet, over a distance of at least 10 x the diameter.
- Regarding the pressure pipe: at least the same diameter as the dimension of the outlet.
- Knees are not allowed. Only use curves, since the internal resistance of curves is considerably lower.

- In the suction pipe, the use of ball valves is preferred instead of membrane valves, since a membrane valve has a very high (internal) resistance.
- Make sure that all couplings/valves and other types of connections in the suction pipe are (air) tight.
- When the pump is mounted in combination with a filter housing, the liquid shall be sucked in from the bottom of the tank with a sufficiently dimensioned strainer basket.
- When the liquid level of the tank is higher than the pump, a (small) air relief valve has to be mounted just after the valve on the outlet. (To vent the air during suction.)

Recommendations

- Make sure that there is always sufficient liquid in the tank and that the level is high enough for the capacity of the magnetic pump. When the level is too low, surface air will mix with the tank liquid. This may disturb the flow and suction of the pump.
- Never let the pump operate for more than 5 to 10 minutes when the outlet valve is closed. This may cause overheating of the liquid in the pump and damage the polypropylene / PVDF components in the pump.
- When the pump operates during a considerable time with the outlet valve closed, you have to install a by-pass line dimensioned as small as possible, starting before the outlet valve and going back to the tank. The circulation will prevent overheating and by taking a line that is as small as possible, there is a minimal loss of pressure.
- Some liquids may crystallise when they are cooling down and may therefore damage the magnetic pump. To prevent this crystallisation, clean the pump with water when it is not used during the night or for a longer period.
- Magnetic pumps are **not suitable** for liquids with **solid and/or metal** particles.

General suggestions / Safety

DIRECTIONS FOR USE MEFIAG MMP 15

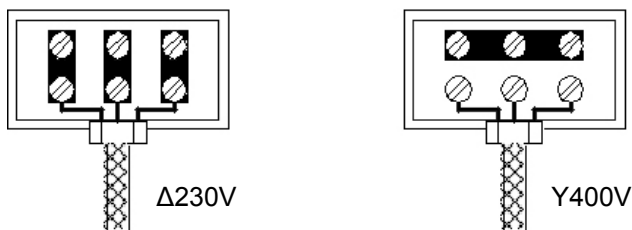
General suggestions / Safety

- During repairs or overhaul to the pump/motor or motor protection switch, the power has to be switched off; namely, remove the plug and/or fuse.
- During repairs or overhaul to the pump, wear protective clothing, safety glasses and gloves.
- **Never let the pump run dry!**

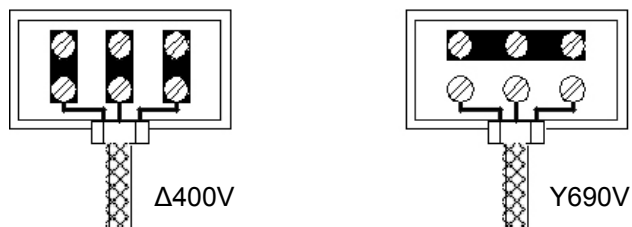
Connecting the motor (MP-6 to MP-15)

Use a four-core cable, the green-yellow wire is the earthing wire. Connect the motor in accordance with the information mentioned on the type-plate of the motor. Check the direction of rotation of the motor (marked with a red arrow on the motor), and if necessary, exchange two of the three electric wires to change the direction of rotation.

Example motor 230/400V



Example motor 400/690V



NOTE: MEFIAG magnetic pumps are equipped with high-quality electromotors. To protect these against overload, a thermal motor protection switch or a magnet switch has to be mounted.

Commissioning

- Check all connections of hoses, tubes, valves etc. for leakages.
- Check if the suction pipe is equipped with a strainer basket (!)
- Check if the suction pipe and pressure pipe are of the correct diameters.
- The suction pipe and pressure pipe have to be fixed in the tank as far from each other as possible.
- Check the direction of rotation of the motor.

(See "Connecting the motor")

- Check if the thermal safeguard of the motor is set correctly.
- Fill the pump and suction pipe with water or tank liquid.
- Start the pump and vent via the air relief valve. (See "Installation/Pipework")

Disassembly Mefiag Magnetic drive pumps

- 1) Switch off the power.
- 2) Close the valves from and to the pump.
- 3) Demount the inlet and outlet pipework.
- 4) Remove the bolts from the pump housing.
- 5) Carefully pull the pump housing forward, the ceramic shaft and ring could come out as well.
- 6) Remove the distance ring. (With the MP-11, MP-12 and MP-15, these are fixed in the pump housing)
- 7) Pull out the impeller.
- 8) The ceramic shaft can be pulled out by hand.
- 9) Clean all components and replace all worn or damaged components.

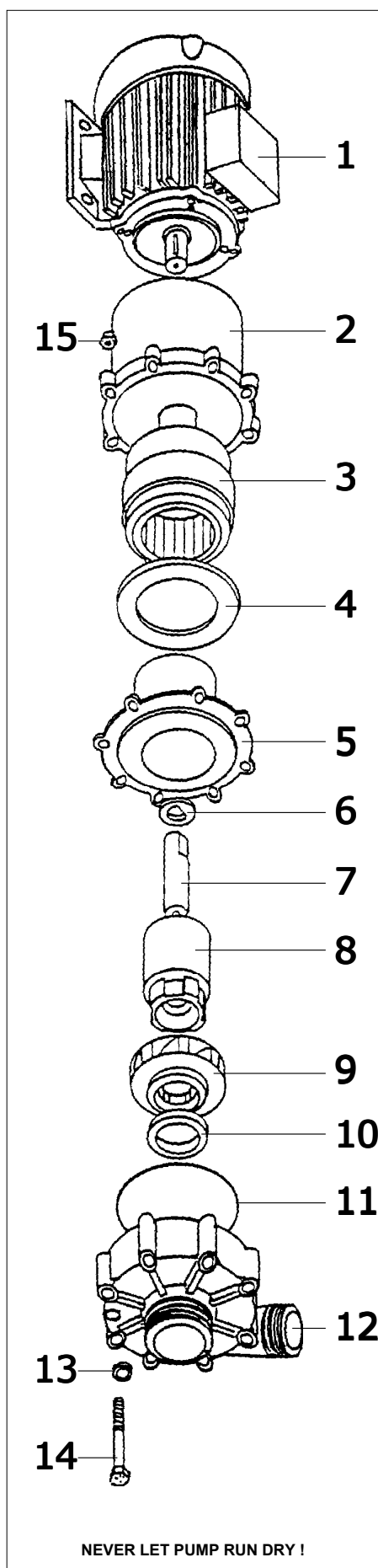
ATTENTION! With the assembly, the polished side of the spacers should be turned towards the impeller. The unpolished side can be recognised by the cast-in circle. Make sure that the O-ring in the pump housing is properly making contact. Prevent that the impeller slips into the impeller housing too fast as a result of the magnetic force; this may damage the distance ring in the impeller housing.

Replacing the drive magnet:

- 10) Carry out step 1 up to and including step 8.
- 11) Remove the impeller housing.
- 12) In the bottom-side of the magnet body is an opening: Turn the drive magnet in such a manner that the two socket screws that lock the drive magnet become visible.
- 13) Loosen the socket screws and remove the drive magnet. (The magnet body itself is screwed on the motor with 4 socket screws: these are visible when the drive magnet has been removed) The drive magnet can be replaced now and the installation can be assembled again in reverse order.

MEFIAG MAGNETIC PUMP MP-15

Publication date : 01-01-1999

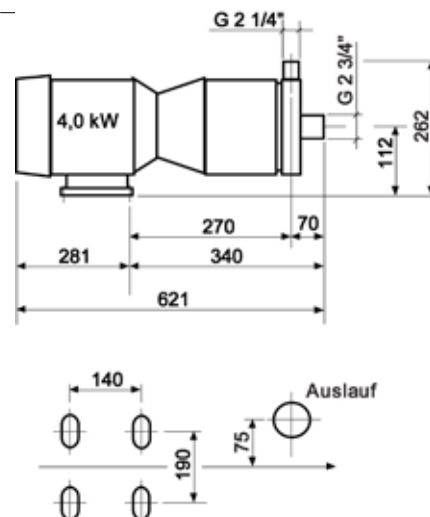


• Parts list and part numbers

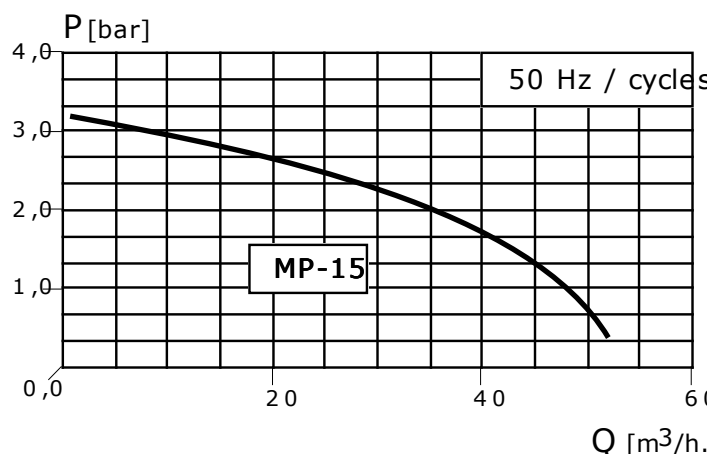
	Part no.	Description
1	41324000	Motor 4,0 Kw
2	44192050	Magnet casing PP
	44192055	Magnet casing PVDF
3	44192060	Drive magnet
4	44192070	Ring, stainless steel
5	44192081	Impeller housing PP
	44192091	Impeller housing PVDF
6	44192101	Distance ring
7	44192110	Spindle
8	44192020	Impeller magnet PP
	44192025	Impeller magnet PVDF
9	44192030	Impeller, PP
	44192040	Impeller, PVDF
8 + 9	44192000	Impeller complete, PP
	44192010	Impeller complete, PVDF
10	44192120	Distance ring, PP
	44192125	Distance ring, PVDF
11	44192130	O-ring, EPDM
	44192135	O-ring, Viton
12	44192140	Pump house PP
	44192150	Pump house PVDF
13 + 14 + 15	M8 x 85	Bolt/Washer/Nut, stainless steel
Pos. 2-15	44123000	Assembly Kit MP-15, PP
Pos. 2-15	44124000	Assembly Kit MP-15, PVDF
Pos. 5-12	44123100	Pump set MP-15, PP

• Technical data

Max. pressure :	3,1 bar
Max. capacity :	48.000 L/H.
Weight :	34,5 Kg.
P :	4,0 kW.
U :	230/400 V.
f :	50 Hz.
Ph. :	3
I :	14,5/8,3 A.
n :	2870 RPM.
IP :	54



• Pump diagram



NEDERLANDS

A. Slangaansluitingen :

Voordelen :

- Zeer snel te installeren.
- De binnendiameter van de slang is altijd een maat groter dan de slangaansluiting c.q. het leidingwerk van het filterapparaat. De slang heeft geen scherpe bochten die extra weerstand leveren. Hierdoor funktioneert de pomp beter (verkleint de kans op kavities).

Nadelen :

- Kwetsbaar; een slang kan gemakkelijk beschadigd raken.
- Vaak lekkage in de buurt van de slangklemmen.
- Montage over de badrand onmogelijk, daar de slang op de lange duur knikt.
- De meeste slangen zijn temperatuurgevoelig.
- Slangaansluitingen zijn betrekkelijk ouderwets en bij hogere drukken is deze vorm van aansluiting onbetrouwbaar.

WAARSCHUWING

CONTROLEER VOORAF BIJ UW LEVERANCIER OF DE TE GEBRUIKEN SLANG :

- DE VEREISTE BESTENDIGHEID HEEFT VOOR HET BETREFFENDE MEDIUM.
- GESCHIKT IS VOOR DE HEERSENDE DRUK.
- GESCHIKT IS VOOR DE TEMPERAATUUR VAN HET BETREFFENDE MEDIUM

B. Vast leidingwerk (polypropyleen) :

Voordelen :

- Zeer bedrijfszeker, daar PP een sterk, stijf en corrosiebestendig materiaal is.
- Geschikt voor bijna alle types galvanische baden zowel zuur als alkalisch bij werktemperaturen tot max. 100 °C.
- Bij juiste montage treden geen lekkages op.

Nadelen :

- Relatief duur vooral wanneer de filterapparaten niet naast het bad en/of op een ver afgelegen plaats staan opgesteld.
- Meestal moet de montage uitgevoerd worden door een hierin gespecialiseerde firma aangezien het benodigde gereedschap hiervoor ter plaatse vaak niet beschikbaar is.

Aanwijzingen voor vast leidingwerk :

Voldoende badcirculatie d.m.v. filterpompen wordt tegenwoordig als zeer belangrijk beschouwd. Een goed gedimensioneerd en geïnstalleerd leidingwerk is echter noodzakelijk om de max. capaciteit van de filterpompen te benutten.

Gezien het feit dat onze middelgrote en grote filterapparaten (4500 en 5500-serie) over het filter bijna geen drukverlies hebben leveren de pompen bijna de maximale prestaties. Het is dus zeer belangrijk dat het leidingwerk voldoende doorlaat heeft. Voor de aanzuigleiding geldt : minstens één maat groter dan het leidingwerk van het filter en als de leiding zeer lang is twee maten. Voor de persleiding geldt : minstens de zelfde doorsnede als het leidingwerk van het filter.

Belangrijk :

- Waar mogelijk moet de aanzuigleiding altijd korter dan de persleiding zijn.
- Houdt de aanzuigleiding altijd zo kort mogelijk (kaviteitsgevaar).
- Knien zijn verboden. Gebruik uitsluitend bochten aangezien de invendige weerstand hiervan aanzienlijk minder is.
- Wanneer er T-stukken gebruikt worden moet u er altijd op letten dat de rechte doorgang naar het bad voert en de "T" (90° - hoek) naar de by-pass (reservetank, slibtank, enz.).
- In de aanzuigleiding moeten bij voorkeur kogelkranen toegepast worden i.p.v. membraankranen. Wanneer om welke reden dan ook een membraankraan nodig is moet deze groot gedimensioneerd worden (minstens één maat groter dan het leidingwerk) omdat een membraankraan een hogere weerstand heeft.

Hoe filtreert u het beste ?

- De aanzuigleiding moet zo kort mogelijk gehouden worden. De aanzuig vindt plaats vanaf de bodem van het bad met een voldoende groot gedi-mensioneerde zuigkorf.
- De persleiding loopt diagonaal naar de andere zijde van het bad en eindigt 10 cm. onder de badspiegel. Hiermee bereikt u een stroming van de badvloeistof van boven naar beneden en van de ene naar de andere zijde van het bad.

In de praktijk worden kleine filterapparaten (tot 8 m³/uur) met slang geïnstalleerd. Deze filter staan vaak naast het bad en de maximale druk is zeer gering (ca. 1 bar). Toch raden wij aan, om knikken van de slang te voorkomen, om in het bad een vast leidingwerk aan te leggen tot over de badrand en dan pas met slang verder te gaan. Grote filterapparaten (vanaf ca. 10 m³/uur) worden bijna uitsluitend van vast leidingwerk voorzien.

ENGLISH

A. Hose connections :

Advantages :

- Quick installation.
- The inside diameter of the hose is always one size larger than the hose connection or piping of the filter unit. The hose has no sharp bends, thereby minimizing line loss due to resistance. The benefit of the increased diameter is a smoothly functioning pump (decreased cavitation).

Disadvantages :

- Vulnerable; a hose can easily be damaged.
- Frequent leakage near the hose clamps.
- Mounting over the edge of the tank is not advisable because the hose will eventually kink.
- Most hoses are sensitive to temperature.
- Hose connections are relatively old-fashioned and when in use with a higher pressure, this type of connection is less reliable.

WARNING

FIRST CHECK WITH YOUR SUPPLIER IF THE HOSE YOU WANT TO USE :

- HAS THE DURABILITY REQUIRED FOR THE MEDIUM INVOLVED.
- IS SUITABLE FOR THE PREVAILING PRESSURE.
- IS SUITABLE FOR THE TEMPERATURE OF THE MEDIUM INVOLVED.

B. Permanent piping system (polypropylene) :

Advantages :

- Very safe to operate because PP is a very strong, rigid and corrosion-resistant material.
- Suitable for nearly any type of plating process, acid as well as alkaline, up to working temperatures of 100 °C.
- When properly mounted, no leakage will occur.

Disadvantages :

- Relatively expensive, especially when the filter units are not located near the working tank and/or are at a remote location.
- Usually the installation has to be carried out by a specialized company because the required tools are often not available on the premises.

Directions for permanent piping :

Sufficient circulation by means of filter pumps is considered to be very important these days. A well-dimensioned and properly installed piping system is nevertheless essential to exploit the max. capacity of the filter pumps.

Due to the fact that our medium- and large-ranged filter units (4500 & 5500-series) show very little pressure-loss over the filter, the pumps deliver maximum performance. Therefore, it is very important that the piping has a sufficiently large cross-section.

For the suction-side : at least one size larger than the piping of the filter unit, and two sizes when the piping run is more than 8 meters.

For the outlet-side : at least the same size cross-section as the piping of the filter unit.

Important :

- Whenever possible the inlet-piping should be shorter than the outlet-piping.
- Keep the inlet-piping as short as possible (cavitation risk).
- Knees are forbidden. Use bends only, they have considerably less internal resistance.
- When T-pieces are in use, be sure that the straight way through leads to the tank and the "T" (90° angle) to the by-pass (spare tank, slurry tank etc.).
- Preferably use ball valves in the suction-side instead of diaphragm valves. When a diaphragm valve has to be used for one reason or another, dimension it at least one size larger than the piping, for these type of valves have a very large pressure drop.

What is the best way for you to filter ?

- Keep the suction-side piping as short as possible. Suction should take place from the bottom of the tank with a sufficiently sized strainer at the inlet.
- The discharge piping should be positioned diagonally across the suction inlet side of the tank, and end 10 cms. below the tank surface. This way you achieve a cross current in the electrolyte running from the top to the bottom and from one side to the other of the tank.

Most small filter installations (up to 8 m³/h) are installed with hoses. These filter units are often placed next to the working tank and their max. pressure is very low (± 1 bar). Yet, to avoid kinking of the hose, we advise you to mount a permanent piping system at the tank lip and use a hose for the rest of the connection. Large filter units (from ± 10 m³/h) are fitted almost exclusively with permanent piping.

DEUTSCH

A. Schlauchanschluß :

Vorteile :

- Sehr schnell zu installieren
- Der Innendiameter des Schlauches ist immer ein Mass größer als der Schlauchanschluß bzw. die Verrohrung am Gerät. Der Schlauch hat keine scharfen Winkel die zusätzlich Widerstand leisten. Dadurch funktioniert die Pumpe besonders gut (geringere Kavitationsgefahr).

Nachteile :

- Störanfällig, da ein Schlauch leicht beschädigt werden kann.
- Öfters undicht im Bereich der Schlauchschellen.
- Montage über Badrand unmöglich, da der Schlauch auf den Dauer "knickt".
- Die meisten Schläuche sind temperaturempfindlich.
- Montage mittels Schläuche ist ziemlich altmodisch und speziell bei höherem Druck ist diese Art von Installation unsicher.

KONTROLLIERE

KONTROLLIERE IMMER IM VORAUSS BEI IHREM LIEFERANTEN OB DER ZU GEBRAUCHENDE SCHLAUCH :

- DIE VORAUSSETZUNGEN ERFÜLLT FÜR DAS BETREFFENDE MEDIUM.
- DEM HERSCHENDEN DRUCK ANGEMESSEN IST.
- DER TEMPERATUR DES BETREFFENDEN MEDIUMS ANGEMESSEN IST.

B. Feste Verrohrung (polypropylen) :

Vorteile :

- Sehr betriebssicher, da PP ein hartes und korrosionsfestes Material ist.
- Geeignet für fast alle galvanischen Bäder, sowohl sauer als auch alkalisch bei Temperaturen bis max. 100 °C.
- Wenn richtig montiert, treten keine Undichtigkeiten auf.

Nachteile :

- Ziemlich teuer, besonders, wenn die Filtergeräte nicht im Bereich des Bades und/oder erweitert aufgestellt sind.
- Meistens muß die Montage von einer Fachfirma durchgeführt werden, da Spezialwerkzeug in den meisten Galvanikbetrieben nicht vorhanden ist.

Hinweise bei fester Verrohrung :

Ausreichende Umwälzung mittels Filterpumpen wird heute als sehr wichtig betrachtet. Eine richtig dimensionierte und installierte Verrohrung ist jedoch notwendig, um die max. Kapazität der Filterpumpe auszunützen. Da unsere mittelgroßen und großen Geräte (4500 und 5500-Serie) im Filter fast keinen Druckverlust haben, fördern die Pumpen fast die maximalen Leistungen. Es ist also sehr wichtig, daß die Verrohrung einen ausreichenden Querschnitt hat. Für die Ansaugleitung gilt : mindestens ein Maß größer als die Verrohrung am Filter und, falls diese Leitung sehr lang ist, dann sogar 2 Maße größer. Für die Druckleitung gilt : mindestens der gleiche Querschnitt wie am Filter.

Wichtig :

- Die Saugseite soll, wenn möglich, immer kürzer sein als die Druckseite.
- Die Ansaugleitung soll immer so kurz wie möglich sein (Kavitationsgefahr).
- Winkel sind verboten. Benutzen Sie ausschließlich Bögen, da der Widerstand wesentlich geringer ist.
- Falls T-Stücke verwendet werden, sehen Sie bitte immer zu, daß der gerade Durchgang zum Bad führt und der "T" (90°-Winkel) als Bypass (Reservewanne, Ansatzbehälter usw.) verrohrt wird.
- In der Saugseite sollen keine Membranventile, sondern Kugelhähne verwendet werden. Falls aus irgendwelchen Grund trotzdem ein Membranventil notwendig ist, soll dieses sehr groß dimensioniert sein (mindestens ein Maß größer als die Verrohrung), da diese Ventile einen sehr hohen Widerstand darstellen.

Wie filtrieren Sie am besten ?

- Die Saugleitung soll den kürzesten Weg vom Bad zum Filter folgen. Angesaugt wird vom Boden mit einem ausreichend groß dimensionierten Saugkorb.
- Die Druckleitung führt diagonal zur anderen Seite der Wanne und hört 10 cm. unter dem Badspiegel auf. Somit erreichen Sie eine Bewegung vom Elektrolyt von oben nach unten und von der einen Seite vom Bad zur anderen.

In der Praxis werden kleine Filtergeräte (bis 8 m³/St.) mit Schlauch installiert. Diese Filter stehen meistens in der unmittelbaren Nähe vom Bad und der max. Druck ist sehr gering (ca. 1 Bar). Wir empfehlen jedoch, um ein "Knicken" zu vermeiden, im Bad eine feste Verrohrung durchzuführen bis über den Badrand und dann erst weiterzugehen mit dem Schlauch. Große Filtergeräte (ab ca. 10 m³/St.) werden fast ausschließlich fest verrohrt.