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AS-ASP-ATR Selection Guide

Peristaltic Pumps

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1 – Fluid analysis

- Chemical composition of the fluid
- Viscosity
- Temperature
- Suspended solids – particle size and concentration
- Specific gravity and requested suction lift

2 – Construction materials selection

- Check chemical compatibility of hoses and connections on a chemical compatibility chart: https://www.coleparmer.com/chemical-resistance

- Refer to the following tables to aid in selection:

MATERIAL	COLOR	APPLICATIONS	OPER. T °C	MAX T °C	SERIES AS	SERIES ASP	SERIES ATR
Silicone	Red tube	Non-aggressive chemical products	120	150	✓	☒	☒
Norprene	Cream tube	Alcoholic products, diluted acids, alkalis, oils, and abrasives	100	130	✓	☒	☒
Norprene Food	Cream tube	Food, pharmaceutical and chemical products, alkalis, oils, diluted acids	100	130	✓	☒	☒
NR	Green band	Abrasive, saline, alkaline, alcoholic products	60	80	✓ (size 20/25)	✓	✓
NR Food	Black tube white inner layer	Non-fatty food products	50	70	✓ (size 25)	✓	✓
NBR	Red band	Oily and greasy products, hydrocarbons and hydrocarbon solvents	40	60	✓ (size 25)	✓	✓
NBR Food	Black tube red band white inner layer	Fatty food products such as vegetable and animal oils	40	60	✓ (size 25)	✓	✓
EPDM	White band	Non-aggressive chemical products, acidi diluiti, alcali, soluzioni saline	60	80	✓ (size 25)	✓	✓
Hypalon	Yellow band	Chemicals, acids, alkalis, solvents, oxidizing agents, alcohols, salts, and hydrocarbons	60	90	✓ (size 25)	✓	✓
Special	–	For very demanding applications in terms of chemical compatibility, we offer a selection of special tubes in Viton, Tygon, and ChemDurance	-	-	✓ (size 10/15)	☒	☒

CONNECTIONS MATERIAL	HOSE-BARB	THREADED	FLANGED	TRI-CLAMP	DIN 11851	T. LIMIT
316 SS	✓	✓	✓	✓	✓	150°C
PVC	✓	☒	✓	✓	☒	65°C
PVDF	☒	☒	✓	✓	☒	140°C

- **The maximum temperature indicated for the hoses is permitted only for short periods (a few minutes)**

2 – Construction materials selection

- All pump heads are made of painted aluminum alloy, with a protection level comparable to C3 (for medium corrosive environments).
  The following special finishes can be requested:

  C5-M coating – for marine and highly corrosive industrial environments.

  Ceramalloy – ceramic resin coating of the internal pump chamber to prevent corrosion in case of hose breakage.

  Nickel plating – for food environments; improves corrosion resistance and aesthetic appearance, suitable for high-pressure washing.

- The rollers are made of:

  Nylatron for the AS series and ASP10/15 models.

  Aluminum for all other models.

  316 SS on request for every model.

  Nylatron is a special type of high-performance nylon reinforced with solid lubricants
  Here are some key features:
  High mechanical strength: can withstand higher loads without deforming.
  Low wear and friction: ideal for moving components such as bearings, gears, and rollers.
  Good chemical resistance: resists oils, greases, and many solvents.
  Dimensional stability: less deformation compared to standard nylon, even in humid conditions

- Our standard motors have a protection class of **IP55** and a standard coating that protects in moderately corrosive environments. Upon request, motors with higher protection classes such as **IP65,** special coatings like **C5-M**, and **Explosion Proof** versions are available.

3 – Series selection

- Use the following guidelines to identify the series capable of meeting the required performance:

AS SERIES

Low pressure peristaltic dosing units Flow rates from 1.5 to 1785 |/h Pressures from 1.5 to 4 bar

ASP SERIES

High pressure peristaltics for dosing and transfers Flow rates from 9 to 25,000 l/h Pressures up to 12 bar

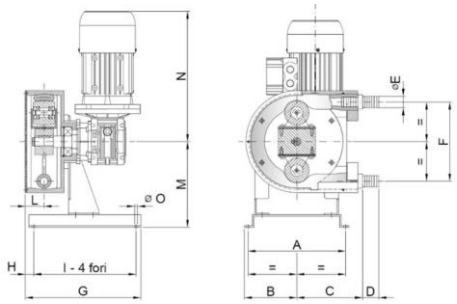
ATR SERIES

Peristaltic pumps for medium-pressure applications and large-volume transfers. Flow rates from 2,500 to 66,000 l/h – Pressures up to 8 bar.

- For each series, the following versions are available:
  - **FX** – pumps with fixed speed and flow.
  - **VX** – pumps with variable speed and flow via mechanical drive.
  - **IX** – pumps with variable speed and flow via separate electronic frequency drive.
  - **IMX** – pumps with variable speed and flow via integrated electronic frequency drive.
- Once the appropriate series and version have been identified, proceed to select the model.

4 – Model selection

- Refer to the technical tables, performance curves, and dimensional charts provided in our catalogues to select the correct model:

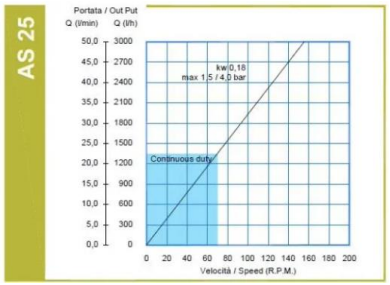


Overall Dimensions

TYPE	A	B	C	D	E	F	G	H	I	L	M	N	O	Kg.
AS 10 FX	172	92	92	20	15	104	185	12	166	28	137	245	7	9
AS 15 FX	172	92	110	20	20	127	183	12	166	30	137	245	7	10
AS 20 FX	210	112	142	35	25	175	248	18	220	40	184	260	7	18
AS 25 FX	250	146	210	45	32	254	386	81	290	52	228	370	11	40

Technical Features

TYPE	Q(L/H)	A	P	RPM	I	kW	di	Qu	Nm
AS 10 FX	23	4	15	23	60	0.18	9	0.017	6
	35	4	15	35	40	0.18			
	47	4	15	47	30	0.18			
	70	4	15	70	20	0.18			
	93	4	15	93	15	0.18			
AS 15 FX	56	4	15	23	60	0.18	13	0.041	12
	86	4	15	35	40	0.18			
	115	4	15	47	30	0.18			
	172	4	15	70	20	0.18			
	228	4	15	93	15	0.18			
AS 20 FX	149	5	*15-40	23	60	0.18	17	0.108	20
	227	5	*15-40	35	40	0.18			
	305	5	*15-30	47	30	0.18			
	453	5	*15-30	70	20	0.18			
	602	5	*10-20	93	15	0.18			
AS 25 FX	538	6	*20-40	28	60	0.37	25	0.320	30
	672	6	*20-40	35	40	0.37			
	902	6	*20-30	47	30	0.37			
	1344	6	*20-30	70	20	0.75			
	1785	6	*15-20	93	15	0.75			



5 – Required certifications

- Verify if special certifications are required (e.g. FDA, ATEX Zone 1)

- Food grade version:

  consider Norprene Food hose on AS series, NR Food or NBR Food on ASP and ATR series

  Provide for the use of special connections such as TRI-CLAMP or DIN 11851

- ATEX zone 1 versions:

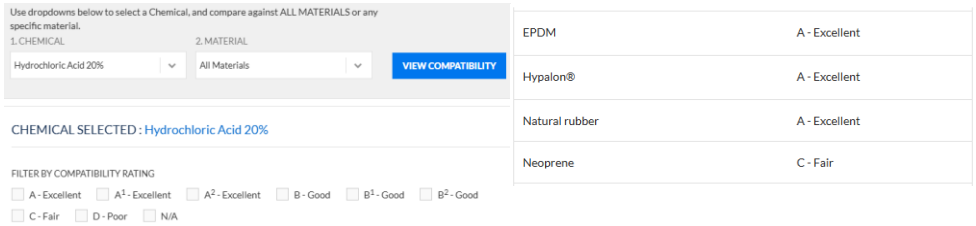
  AS/FX and AS/VX models: available in ATEX Zone 1.
  AS/IX and AS/IMX models: not ATEX classified.
  ASP/FX and ASP/VX models (except size 65): available in ATEX Zone 1.
  ASP/IX models: not ATEX classified.
  ATR models: not ATEX classified.

- Both certifications can be combined (where possible)

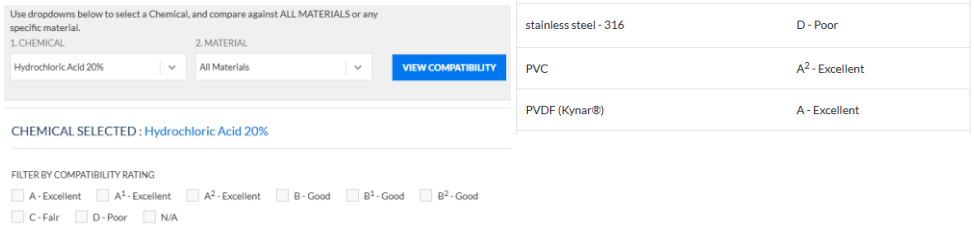
- ATEX RATING: **II 2/2 G Ex h IIB T4 Gb**

6 – Selection example

- Customer request:
  media: Mud containing hydrochloric acid 20%, viscosity 10.000 cP, size solids 20mm, 60°C
  required fixed flow rate: 6 m3/h @ operating pressure: 5 bar
  process connections: hose-barb
- Check the hose chemical compatibility → NR is the best cost-effective choice



- Verify the hose temperature limits
  NR = +60°C
- Check the connections chemical compatibility → PVC is the best cost-effective choice



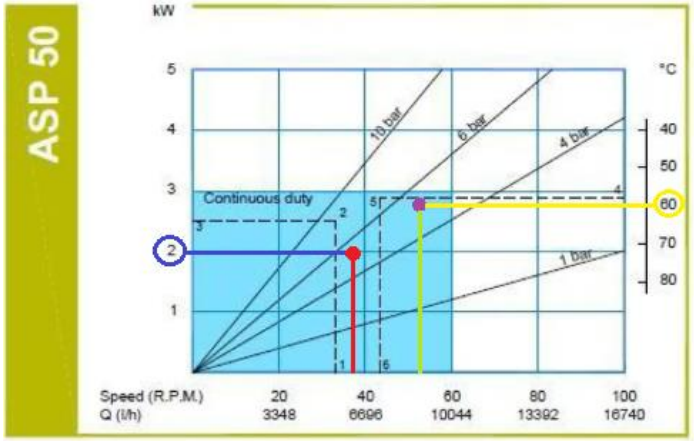
- Verify the connections temperature limits
  PVC = +65°C
- Proceed with model selection using the tables and curves: a fixed flow rate of 6 m^3/h at 5 bar can be achieved with the ASP50FX model. The internal hose Ø of 50mm allows the passage of solids up to 20 mm

Technical Features

TYPE	Q(l/h)	A	P	RPM	I	kW	di	Qu	Nm
ASP 50 FX	4185	8	100	25	56	2.20	50	2.79	200
	6026	8	60	36	39	2.20			
	7533	8	60	45	31.5	3			
	11718	8	40	70	20	3			

6 – Selection example

- On the performance curves, it is possible to verify whether the operating point falls within the blue box (suitable for continuous operation) and also the the absorbed power on the ordinate axis. On the other side of the graph, we can match the fluid temperature with the operating pressure to find the maximum suggested speed.



- Check that no special certifications or accessories are required, such as forced motor ventilation or a hose breakage sensor

- Proceed by generating the complete pump code

ASP	50	FX	36	NR	PVC	-	-
SERIES AS ASP ATR	SIZE 10 15 20 25 32 40 50 65	VERSION FX VX IX IMX FXs (with forced motor ventilation)	RPM 25 36 45 70	HOSE NR NR FOOD NBR NBR FOOD EPDM HYPALON	CONN. MATERIAL 316 SS PVC PVDF	CONN TYPE - : HOSE BARB TH : THREADED FL : FLANGED TC : TRI-CLAMP DIN : DIN 11851	ACCESSORIES/CERTIFICATIONS LKD : LEAK DETECTOR X : ATEX APPROVAL FDA : FDA APPROVAL C5 : C5-M PANINTING CER : CERAMALLOY TREATMENT IP65 : IP65 MOTOR CLASS

7 – FAQ

- **Is it possible to have different reduction ratios to achieve various flow ranges?**
  Yes, upon request. It is also possible to install additional pre-torque to further increase the reduction ratio.
  Moreover, VX versions can be equipped with hydraulic variators instead of mechanical ones, allowing operation from flow rates below 1 l/h.
- **What should be done if the solid particle size exceeds the pump capability?**
  We can only move up to the next pump size.
- **Which is the maximum solids concentration?**
  The maximum concentration of solids that a peristaltic pump can handle depends on several factors (type of solids, particle size, viscosity of the carrier fluid, pump speed, and the type and material of the hose).
  As a general guideline, however, we can state that our largest pump models are capable of handling up to 80% of soft solid content in water solution.
- **How do suction lift height and fluid viscosity affect the performance?**
  The suction lift is the factor that most affects the pump's performance loss; therefore, it is recommended to install the pump as close as possible to the fluid intake point. To compensate for flow rate loss, the operating speed can be increased, but only within certain limits that must be evaluated on a case-by- case basis.
  Viscosity also has a significant impact on a pump's performance, although it is impossible to determine exactly how. We provide a manageable operating range with our pumps up to 150.000 cP.
  To determine which model to use, we always ask customers to send us a product sample so we can simulate the required operating conditions.
- **Is it possible to change the orientation of the process connections?**
  On all models in the AS and ASP ranges, the pump head can be rotated in 90° increments to position the connections facing up, down, left, or right.
  Naturally, depending on the chosen orientation of the head, the motor must be wired with the correct electrical phase to ensure proper rotation direction.
- **Are all the pumps reversible?**
  Yes, the entire range is fully reversible.
- **Do the pumps run dry, or do they require an oil bath?**
  All pumps in the range are designed to run dry, and they do not require an oil bath for operation. When installing a new hose, it must be properly lubricated with MOLYKOTE 7CPD grease or a similar lubricant.
- **How does the leak detector work?**
  The system consists of a PP container with a capacitive sensor inside. It is mounted on the pump body, with a hole at the lowest point.
  In the event of a hose breaks, the fluid is directed into the container, triggering the sensor. The sensor then provides a clean output contact, which can be connected to the pump's power supply, a visual or audible alarm, or other monitoring systems.