





HIT[®] - Hybrid Integrated Tank! Quick-Connect: Reinvented Hose Connections Error Prevention at the Source: PRM9 CFP 03: Tiny Unit With Great Opportunities

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Dear Reader,

When the next Hannover Messe Industry (HMI) opens its doors for one week of innovations in the world of Industry 4.0 on April 23, 2018 - Fluid Power is a part of it! Deutsche Messe and our industry decided to integrate two major exhibitions during Hannover Messe: Industrial Automation (IA) and Motion Drive and Automation (MDA), where hydraulics is one important player. The reason is the digitalization of our industry. IA offers the connectivity technology to link our products to sub-systems and those sub-systems to integrated systems as enablers for our customers' industry.

Therefore, it makes sense to showcase the complete package of intelligent hydraulic systems in one new exhibition. The new name is IAMD and stands for Integrated Automation, Motion and Drive. IAMD will be part of HMI every year. From now on, CeMAT - the leading intralogistics exhibition - will take place every two years during HMI. It gives us the opportunity to show our products for the logistic industry in 2018 as well. Logistics is the largest customer industry by turnover for the hydraulic industry. ARGO-HYTOS is proud to have been supplying this industry successfully for many years.

2017 was an excellent year for our customers and therefore also for ARGO-HYTOS. Despite the trend to attack the achievements in our global and connected industry by short sighted politics, strong growth in all our companies worldwide gave us the confidence to be on the right track.

ARGO-HYTOS is prepared for the world of the "Internet of Things"!

ARGO-HYTOS is strictly committed to our strategy by following our customers worldwide and engage ourselves in creating value in the countries of our global customers' basis.

It is a challenge to form an international company in the light of tendencies by going against the globalization of industrial ties and the rising nationalism in some countries. However, I believe though, that our friendly international relationships will help us to resist this trend and that we are capable of being a flexible and reliable partner for our customers!

In order to provide this performance, we need to expand our international presence. Last year, we celebrated the 70 years anniversary of the foundation of "ARGO GmbH für Feinmechanik". ARGO-HYTOS in Germany is the root of our success.

This year, we are happy to remind us that 25 years ago, ARGO-HYTOS started the production of hydraulic valves and control systems in the Czech Republic by taking over HYTOS in Vrchlabí.

In this FLASH No. 22 you will find many new ideas in applications and products presented by our experts in this field. Being a classical mid-size company, we are focusing on an excellent relationship with our customers and on listening to their wishes and needs pro-actively! Therefore, we ask you to test and challenge us. Please come up with new requirements and ideas we are looking forward to realize them!

This year, in Hanover we want to showcase our ideas in connecting our systems to the logistic equipment and end-user. Condition Monitoring as part of the Telematic Environment is the topic you will find in our booth or on the VDMA Forum. We want to prove that ARGO-HYTOS is prepared for the world of the "Internet of Things"!

Please enjoy reading our Flash or eflash, which you can subscribe to on our website. Or better visit us at HMI IAMD 2018 in Hanover. We are looking forward to welcoming you at our booth B17 in Hall 23.

Have a safe trip!

Christian H Kienzle CEO ARGO-HYTOS Group

Double Anniversary at ARGO-HYTOS s.r.o., Vrchlabí



Rainer Christmann, Chairman of the Management

"It is a great pleasure for me to see how the location has evolved in recent years, thanks to the commitment of my employees." ARGO-HYTOS s.r.o., Vrchlabí celebrates two anniversaries in 2018, namely the 25th anniversary as a member of the ARGO-HYTOS group and the 15 year anniversary of the name change from Hytos a.s. to ARGO-HYTOS a.s.

In 1993, today's ARGO-HYTOS group, together with the former partner Ulbrich GmbH, took over the majority of the shares in Hytos a.s. In 2003, Hytos a.s. was renamed ARGO-HYTOS a.s. in the course of the restructure of the ARGO-HYTOS group. Furthermore, in 2007 the company was transformed into a GmbH, s.r.o.

In 2006-2008 significant investments were made by the ARGO-HYTOS group in Vrchlabí. For example, around 8 million EUR were invested in expanding the production area by twice the old space, renovating the old production area and in building a new high-bay warehouse. Another 10 EUR million were invested in new machinery and new assembly lines with new test benches.













These high investments combined with the great commitment of the employees have paid off.

ARGO-HYTOS s.r.o. today has one of the most modern production facilities for hydraulic products in Europe. Within the ARGO-HYTOS Group, ARGO-HYTOS s.r.o. is the competence center and the main production site for the hydraulic Fluid & Motion Control (FMC) product range.

With around 650 employees and the functional areas of development, sales, finance, purchasing / logistics, production, IT and quality assurance, ARGO-HYTOS s.r.o. is not only the largest production site within the ARGO-HYTOS Group, but also a development center for the product groups valves, control blocks and power units. The rapid growth of these product groups in recent years shows that the price-performance ratio and the quality of the products are in demand worldwide.

ARGO-HYTOS s.r.o. will continue to work intensively over the next few years to further adapt the product range to the needs of the markets by expanding and modernizing the product range by means of stronger electrification of the products, the expansion of system technology and the implementation of digitization solutions. In addition to product development, the introduction of further automation solutions and the use of the latest production technologies will be a key objective in the following years.







(from right to left): Ajax Fiori India Executive Director, Mr. Gopal is handing over the award certificate and momento to Mr. H.S. Rajgopal, ARGO-HYTOS General Manager Sales and Mr. Nisar Hassan, General Manager ARGO-HYTOS India

Best Supplier Award from AJAX FIORI INDIA

In 2017, ARGO-HYTOS India received the "Best Supplier Award" from Ajax Fiori India. Ajax Fiori India is a very important player making unique machines for the Indian construction sector.

ARGO-HYTOS delivers return-suction filters, spare filter elements, manifold solutions, tank mounted filters and accessories to Ajax Fiori. ARGO-HYTOS would like to thank Ajax Fiori India for the great cooperation at all times.

About Ajax Fiori India

Ajax Fiori (India) Pvt. Limited is one of India's leading concreting machinery manufacturers.

Today, Ajax Fiori has over 7,500 machines working in every state of India, while supporting customers and sites through their pan-nation network of offices, parts warehouses & dealerships. Ajax Fiori manufactures, delivers and supports a whole range of Ajax Fiori concreting machinery including self-loading concrete mixers, concrete batching plants, dumpers and concrete pumps, which are a familiar sight at various infrastructure development projects, including irrigation, transport networks, housing & urban development, power & industrial projects across India.



Jörg Stech (Managing Director Operations & Administration) and Ralph Bauer (Production Manager) accepted the award



16 Baden-Württemberg flagship projects were awarded by Allianz Industrie 4.0 on May 22, 2017 for the production of the future

ARGO-HYTOS Awarded by Allianz Industry 4.0 as Flagship Project for the Production of the Future

State Secretary of Economics Katrin Schütz honored the current winners of the competition "100 Locations for Industry 4.0 in Baden-Württemberg" on May 22, 2017. All in all, sixteen companies and institutions were honored, that have successfully implemented Industry 4.0 in their day-to-day operations.

With the competition, the "Allianz Industrie 4.0 Baden-Württemberg" is looking for innovative concepts from the economy, which are successful with the intelligent networking of production and value-added processes. In addition to the degree of innovation, the expert jury also assesses the concrete practical relevance for Industry 4.0. The award-winning projects covered a wide range of industries and technologies, demonstrating that "Industry 4.0 is not just about specific industries such as engineering or automotive, but overall industrial value creation," said State Secretary Schütz.

Which Industry 4.0 solution was implemented?

For the welding of plastic parts, the "Laser Cube 4.0", was commissioned at the Kraichtal works, which is used for the production of highly integrated plastic system and plastic tank solutions in small quantities.

By networking of systems / plant components, parameterizable programming and in-process control, a highly flexible laser welding system was developed on "high-volume level", which realizes high quality at low costs for actually low demand.

Through the use of networked components, "production systems 4.0" are being developed in the company's own plant construction, with which ARGO-HYTOS has been pursuing the "ZERO SET-UP TIME" concept for several years.



Modularity for Mobile Hydraulics

Symbiosis of standard and application-specific solutions



Wolfgang Rocca, Head of Application Engineering International

"By performing a detailed function analysis together with the customer, we are capable of determining the optimum number and configuration of valves needed for the given function." The demands placed on a modern hydraulic system in mobile working machines are varied:

- > Reliability
- > Energy efficiency
- > Ease of maintenance
- › Compact design

Control blocks from ARGO-HYTOS provide the flexibility necessary for efficient solutions. Different designs, sizes and control strategies can be combined to reach an application-specific optimum.



The control block is divided into three sections:

- 1. Standard catalog products for flow rates up to 25 l/min.
- 2. Application-specific control block with screw-in and flangeable valves (UNF ³/₄, 7/8 and ISO-4401)
- 3. Sandwich sections from modular systems, nominal size 6 (LS-connection, directional control valves (DCVs), proportional control valves (PCVs), with and without pressure compensators)

In general, there are two types of consumers in mobile machines: consumers that are actuated and operated frequently or permanently during operation, and consumers that are used rarely or sporadically, e.g. actuating movements.

Only in rare cases are the permanently operated consumers supplied with maximum pressure at all times, so a LS circuit in conjunction with a control pump for these functions is often the chosen solution. By using control pumps, the energy consumption can be brought much closer to the "real" demand of the function. The precondition for this is created by section 3 of the control block, which taps the LS signal, limits it upwards and also relieves it, if necessary. A main pressure protection can also be realized and integrated in the inlet section.





Pilot-operated check valves and overcenter valves

In section 1, a simple throttle control is realized by means of DCVs. The actuating and auxiliary functions supplied here are used sporadically, here, an LS circuit is not mandatory. Savings in terms of cost, weight and space are paramount. 4/4 and 4/2 directional control valve functions have been configured in addition to the usual locking and pressure functions from our catalog. Quick and subsequent adjustments are also possible during the course of testing, by changing the tie rods and sandwich valves, both number of consumers and functionality can be easily adapted.

Switching from the LS system to the constant pressure system takes place in the central inlet section by means of a $\frac{3}{4}$ UNF screw-in valve. By operating the $\frac{3}{2}$ -way valve, the control pump is supplied with control pressure and opens; it supplies the control block with the preset maximum pressure. The pressures of the LS sections and the constant pressure sections can be adjusted independently of each other. An electrically proportional adjustment is easily feasible by replacing the valves. Parallel operation of the two sides is just as feasible as a priority circuit for one of the two functional units, which is implemented in the central inlet section.





We rely on tried and tested principles and schematics regarding design and functionality. For years, these design concepts have been used successfully in a wide variety of agricultural and construction machinery. The further development and adaptation of the switching logic behind the LS switching and "conditioning" of the LS signal is operated in all directions: manually operated, electrically, electro sensorially or hydraulically automatic.

The functional principles and design options presented here are suitable for a wide variety of agricultural and construction machines – sprayers, balers, combine harvesters, forage harvesters, reach stackers, potato and beet harvesters, planting and seed drills, to name only a few.







HIT® **Hybrid Integrated Tank!**

The "Wellness Center" for every hydraulic and lubricating fluid Ready to install compact module



The "hybrid tank" intelligently combines the two manufacturing technologies rotational molding and injection molding. The unique combination of innovative production processes with a modular kit makes the "hybrid tank" economically interesting even for small quantities.

Function

The hybrid tank is a ready-to-install complete module. All required tank functions are already integrated. Since the filter housing is part of the tank, there are no sealing points and therefore no risk of leakage. The tank geometry can be adapted as required to the installation situation. Numerous components such as filter cover, "Quick-Connect fittings", etc. come from an existing modular system and do not cause any tool costs to the customer. 100% replacement filter element business is ensured by a special copy protection. The high thermal strength of the Polyamide material used allows the tank to be used even at higher operating temperatures. Quick-Connect fittings allow fault-free and tool-free hose mounting on the tank and can also be dismantled at any time.

Application examples











Richard Jenkner, Dipl.-Ing. (FH) Head of Product Management Tank Solutions

"Another impressive example of high engineering. ARGO-HYTOS is the guarantor for pure innovation."

Technical data

Tank volume	$V_{\rm max}$	up to 150 l
Temperature	T _{max}	-30°C +100 °C short-term up to +120 °C
Fluids		mineral oil and environmentally friendly hydraulic fluids (HEES and HETG, see info sheet 00.20-EN)

Integrated filter functions

- > Return filter 10 ... 30 µm
- > Return-suction filter 10 ... 16 µm
- > Suction strainer 140 ... 280 µm
- › Ventilating filter 2 µm
- > Filling filter 140 ... 450 µm



Function integration

- 1 Filter housing is integrated in the tank
- 2 Ventilating filter
- 3 Filling filter
- 4 Integrated oil level indicator
- 5 Quick-Connect fittings (see figure below)
- 6 Suction strainer
- 7 Baffle wall (in the shape of a channel)
- 8 Internal suction or return pipes
- 9 Sensor connections can be integrated
- 10 Oil drain plug



"Quick-Connect" system technology









Watch our HIT[®] Hybrid Integrated Tank!
CLIP

Advantages of the ARGO-HYTOS hybrid tank

- > Installation of a complete module in the machine
- > Complex geometries can be realized
- > Weight reduction
- > High mechanical strength and thermal stability by using Polyamide
- There is no risk of leakage between the filter head and the tank
- > Excellent corrosion resistance
- > Multiple ports save hose collection manifold
- > Tool-free assembly of Quick-Connect fittings
- Cost savings compared to traditional tank solutions
- Copy-protected filter elements
- > Tank development "Made in Germany"





Reinvented Hose Connections

Quick-Connect System





Conventional fittings

Quick-Connect ports



Steffen Kemmling, Dipl.-Ing. (FH) Head of Product Portfolio & Project Management -System Filtration

"Overtime, a single innovative solution has turned into a broad product range that is now made accessible to all customers and quickly offers cost benefits to every user."

Innovative low-pressure hose connections The Quick-Connect system has already proven its worth

in harsh field use, in a wide variety of mobile applications for 100,000 times. The quick and easy toolfree installation already convinces during installation. Quick-Connect ports are placed on the nozzle and fixed with a locking clip and are ready for immediate use.

Narrow space conditions are safely controlled by a minimum hose distance and by the rotatability of the hose line. A large number of connection variants is available.

Cost savings

- Toolfree assembly and disassembly
- Space savings through minimal hose distance
- Increased productivity through reduced assembly time (quick assembly)
- > Weight reduction with plug connection
- Installation safety thanks to simple visual inspection

Technical data

Temperature range	-30 °C +100 °C short-term up to +120 °C
Operating pressure	up to 10 bar
Suitable for	suction and return lines

Safety

It is immediately apparent from the snapped-on locking clip that the connection has been correctly installed on the nozzle. It is not necessary to specify and control a tightening torque.

The locking clip prevents the hose from being pulled off the nozzle. In radial direction, however, the line remains rotatable. In many applications this represents a further advantage, since the hose line can thus move into a position as free of stress as possible.

Application examples



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Hydraulic tank with various Quick-Connect ports

Product range

The ARGO-HYTOS modular "Quick-Connect" system was introduced several years ago in large series of agricultural and construction machines. In the meantime, more than 20 different connections are available in different sizes and shapes.

The Quick-Connect kit is often provided to the hose supplier. This way, customers receive assembled lines ready for installation.

Plastics and sealing geometry are selected in such a way that the connections can also be reliably installed to metal nozzles.

Quick-Connect is innovative assembly with expertise

Advantages

- > Cost savings
- > Quick and error-free assembly, without tools
- > Nozzles in plastic or metal possible
- > Radial O-ring sealing
- > Large flow areas, thereby low pressure drops
- > Hose line rotatable 360°
- > Reliable, tried and tested system

A Filter, Breaking All Records

The smallest non-woven element ever produced at ARGO-HYTOS in Kraichtal has a diameter of 25 mm and a height of 35 mm and is used in the control block of a wheel loader.





A filter element for new dimensions. The smallest filter from ARGO-HYTOS is just the size of a thumb, but does not compromise on functionality. A multi-layer filter fleece encloses the perforated support tube. The close cooperation between development department and prototype shop guarantees the process-reliable manufacturing of the necessary materials.

Complex process steps must be mastered in a new dimension:

- > Cut to width
- > Four-layer pleating of the materials
- > Optimization of the pleat geometry
- > Cutting the pleat pack to length
- > Bonding of the longitudinal seam
- > Dosing of smallest quantities of glue
- > Secure fixation of all parts during curing
- > Assembly of support tube and end cap

The miniature filter elements thus produced are then subjected to quality testing, which they have passed without complaint.

In sample production, process reliability is also assessed and documented, which is important for future series production.



Rafael Kaliciak, Product Portfolio & Project Management System Filtration

"But not only small dimensions can be a challenge. The other extreme, about this small element, is a 153 mm diameter, 922 mm height sample element used in a 3 MW wind turbine gearbox lubrication system."

Error Prevention at the Source -Proportional Valve with On-Board Electronics



OBE (On-Board Electronics) is the direct and best way to correct a nonlinear behavior of your valve. The sensor and electronics on the valve body implement a control loop at the front line of the system. Mechanical tolerances, friction, hysteresis and wear no longer cause failures in the movement of the drive. For a modern machine monitoring, the sensor information can also be sent to the main controller.

Advantages of implementing the proportional technology

Efficiency, speed, accuracy, low hysteresis, repeatability and the chance to adapt the control are the main benefits of introducing proportional technology in hydraulic applications. ARGO-HYTOS valves, combined with advanced electronics, are capable of meeting the demands posed by a large variety of stationary and mobile applications. ARGO-HYTOS develops and manufactures proportional valves to provide its customers the chance to take full advantage of the benefits of proportional technology. The new directional valves PRM9-06 and PRM9-10 with advanced electronics, design of the mechatronic parts along with a robust design make this possible.



Martin Cadan, Head of Product Management FMC

"The specialty of our products is that they really and fully meet your expectations and your demands."





Design

- Available in two sizes 06 (D03) and 10 (D05), ISO 4401
- > Spool and process feedback
- OBE digital electronics for integrated control loops with high dynamic response
- > Spool position feedback reduces hysteresis
- > Used for position and speed control of hydraulic actuators, among others
- Complies with shock & vibration, EMC, IP, climate / temperature environment demands
- Robust design / reduced wiring / high corrosion protection

Performance

- > High hydraulic power limits and smooth running characteristic
- Steady performance in different working conditions
- Optional: Fieldbus access / communication, CANopen connectivity

Advantages & Benefits

- > One solution for several command signals parameterization within one valve version
- > User-friendly interfaces (LED, µUSB)
- > Easy to handle software
- > Optical feedback of valve status through three LEDs
- > Enhanced surface protection for mobile sector available (ISO 9227, 520 h salt spray)
- > Excellent shock and vibration behavior

Higher Flexibility for Mobile Transmissions -Screw-in and Slip-in Cartridge Proportional Valves



The ever-increasing demand for fuel efficiency and emission reduction continues to drive the need for more efficient, reliable powertrain solutions in mobile construction or agriculture machinery. In these applications we require precise, customizable controls, especially regarding the powertrains.

ARGO-HYTOS offers innovative powertrain valve solutions that help to increase your standards for reliability, efficiency, performance, emissions compliance and system modularity.

Technical Features & Advantages

- > Direct-operated directional and proportional valves for 80 bar and 30 l/min
 - Directional valves PD2E,
 - Proportional valves PP2P
- > Pilot-operated proportional valves for 30 bar and 40 l/min, Type SP4P1-B4







For transmission control



NEW

Valve Technology for Agriculture Machines

Proportional Pressure Reducing -Relieving Valve, Manually Operated



20 l/min / 30 bar

PVRR

These valve families stand for excellent stability throughout the entire flow range and rapid response to proportional current input with additional advantages, such as

- One4All cavity system, allowing the interchangeability between directional and proportional valves. This results in a cost-optimized design of the valve block and the flexibility to provide more functional options with just one design of plate.
- > Low hysteresis \leq 5%, accurate pressure control and low pressure drop
- > Precise pressure control vs current and excellent repeatability
- > Integrated relief function for protection against pressure peaks
- > High flow capacity and low coil power consumption
- > Optional mesh screen
- Reliability of the design with a lifetime of 10 Mio cycles at rated pressure, also valid for the seals
- > Extended surface protection 520 h according to DIN 9227 standards
- Extreme resistance to high or low temperatures in range -30 ... +100 °C (-22 ... +212 °F)
- > Optimized design for the best ratio between pressure drop, transmitted hydraulic power and leakage
- Solenoid electrical terminal option AMP Junior Timer or Deutsch DT-04

For cost-optimized applications of transmission controls, ARGO-HYTOS offers special valves with the mechanical operation **PVRR**. These valves allow to proportionally build up the pressure in the clutch, thus ensuring a smooth start of the operation. The valves are designed for 30 bar and a flow of 20 l/min.



Jaroslav Jebavý, Deputy of Product Management FMC

"PTO clutch to be controlled by lever/wire."

Screw-In Cartridge (SIC) Valves

for Mobile & Industrial Use



The ARGO-HYTOS screw-in cartridge program offers a wide function range for mobile and industrial hydraulics. Typical functions are flow direction control and pressure control in the hydraulic circuit. The most common applications are, for example, agricultural machines, construction equipment, municipal services vehicles, machine tools and wind power plants, among others. The ARGO-HYTOS range of valves represents in its design the best performance achieved thanks to a design optimized with the help of modern simulation methods and high-quality manufacturing processes.



SD2E-A*/L	SD2E-B*/S(L)	SD2E-A*/H	SD2E-B*/H
250 bar	250 bar	350 bar	350 bar
30 l/min	60 l/min	30 l/min	60 l/min
Ligl	ntline	High Pei	rformance

Directional Valves Screw-In Cartridge (SIC) - spool version

Design Features

ARGO-HYTOS offers in its design increased technical specification for all standard valves

- Reliability of design with lifetime of 10 Mio cycles at rated pressure also valid for the seals
- High operating pressure and flow power limits in each size coupled with low pressure drops
- Extended surface protection 520 h according to DIN 9227 Standards
- > Extreme resistance to high or low oil and ambient temperatures
- Optimized design for best ratio between pressure drop, transmitted hydraulic power and leakage

Screw-in cartridge spool and poppet version

These valves are designed to control the flow direction. There are two sizes available, based on ISO/TR 17209 standard for threaded cavities 3/4-16 UNF and 7/8-14 UNF. The operating pressure is up to 350 bar. Two performance product families are available in order to choose the best-fit solution.

To compensate misalignments of the cavity production, all cartridge spool valves are equipped with the unique feature of a tumbling nose which prevents blocking of the spool in the cavity, thus ensuring a long life and robustness of the assembly.

Poppet versions are available up to 150 l/min and 420 or 350 bar pressure, applicable for all ports. Precision machined parts secure leak-free closing (less than 3 drops/minute). For spool and poppet cartridges, two performance product families are available in order to choose the best-fit solution.

- High performance for 350 bar or 420 bar circuits
- Lightline for 250 bar circuits

NEW SD1E & SD3E





NEW poppet valve size 12, 150 l/min, 350 bar

In the year 2018, ARGO-HYTOS will introduce a new family of poppet valves, normally open and normally closed for high flows up to 150 l/min. These valves are intended for use in mobile and stationary applications to achieve low pressure drops and high transmitted power. The new valve SD3E-C2 offers:

- > Leak-free closing less than 3 drops/minute
- Reliability of design with a lifetime of 10 Mio cycles at rated pressure - also valid for the seals
- High operating pressure up to 350 bar coupled with low pressure drops
- Extended surface protection 520 h according to DIN 9227 standards
- Extreme resistance to high or low oil and ambient temperatures



Jaroslav Jebavý, Deputy of Product Management FMC

"Developed and tested to outperform all comparable products on the market."





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Hydraulic Valves Intended for use in potentially explosive atmospheres

In segments of the chemical and petrochemical industries or mines, there appear dangerous explosive mixtures in the form of gas, vapor, mist or dust. It is necessary to ensure a high level of protection against explosion on each part of the mechanical or electrical equipment used in these potentially explosive areas. For application in such areas, ARGO-HYTOS offers a wide range of directional valves of modular and screw-in cartridges.

When using solenoid operated hydraulic valves, a common method is to prevent the accumulation of energy, which would be sufficient for the ignition of an explosive mixture. The hottest part of the valve typically is the solenoid.





Zdenek Fronek, Product Management -Power Units

"Excellent parameters were reached on our Ex-proof valves. We are just starting to work on another interesting task - Ex-proof proportional valves."

Solenoid system:

ARGO-HYTOS' new **One4All** explosion proof solenoids are designed for use in all explosion-risk areas and temperature classes in combination with modern design methods, resulting in a unique hydraulic power performance.

ARGO-HYTOS uses two types of protection on the electrical parts of our valves: Type "Ex e" - increased safety for the connection terminal on DC coils and type "Ex mb" - encapsulation on our AC coils with a rectifier bridge.

The **hydraulic power** transmitted by valves designed for explosive environments is typically lower than the power of conventional valves. ARGO-HYTOS, being in valves and solenoid development for more than 60 years, has achieved extraordinary high flow and pressure parameters thanks to modern development methods in the new directional modular and screw-in explosion proof valve family. One of the key elements is the explosion proof solenoid.





Size 10 (7/8-14 UNF)			UNF)	Size 8 (¾-16 UNF)		
SD2E	X-B2 SD2	EX-B3 S	D2EX-B4	SD3EX-B2	SD1EX-A3	
350	bar 350	bar	350 bar	420 bar	350 bar	
45 /	'min 60 l	/min 5	50 l/min	75 l/min	40 l/min	

Design

- Modular valves available in four sizes: 06 (D03), 10 (D05), 16 (D07), 25 (D08) ISO 4401
- Screw-In cartridges poppet and spool in sizes 08 and 10
- Special bayonet manual override for all easy emergency switch-overs
- Unique detent function in modular directional valves
- > Complies with shock & vibration demands



Advantages & Benefits

- One4All solenoid system for all classes T4/5/6 and all areas, such as mining / gas / oil + dust
- Solenoids are interchangeable between the modular and screw-in cartridge range
- > Extraordinary high transmitted hydraulic power
- > Steady performance in different working conditions
- CETOP + SIC valve range robust design for 10 Mio cycles lifetime
- Screw-in cartridge poppet valves with 0 drop leak and pressure rating 420 bar
- Cartridge spool valves equipped with a tumbling nose feature to compensate misalignments of the cavity
- > High oil / ambient temperatures in standard
- > Terminal box suitable for simple and safe cable installation
- Enhanced surface protection 520h acc. to DIN 9227 Standard

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Tiny Unit With Great Opportunities

Compact Filter Pack CFP 03



Compact filter pack (CFP 03)

The CFP 03 is a completely new, portable filter device for off-line filtration.

Main characteristics:

- > Light weight (9 kg)
- > Compact size (LxWxH 275x270x265mm)
- > Part of the FMA family
- > Ergonomic design
- > Easy to handle
- > Direct connected pump and motor unit
- > Durable filter with optical clogging indicator





NEW

Most failures in oil systems (up to 80%) are related to oil contamination. This problem applies to big industrial applications (tanks volumes between several hundred and several thousand liters), mobile machines as well as systems powered by small hydraulic power packs. Effective off-line filtration - constantly or temporarily during filling and cyclic service inspections - significantly improves oil purity, minimizes operating costs and extends machine lifetime. The ARGO-HYTOS portfolio of Fluid Management (FMA) products is well-suited for servicing systems with relatively large oil tanks of 60 to 5000 I capacity. But what if we fill a small-sized reservoir or its installation position makes it difficult to access larger service units?



Tomasz Wzorek, Product Management

"CFP 03 is probably the smallest and lightest filtration unit on the market."





Figure 3: Filling of the small power pack with the use of CFP – one of the possible ways of use of the aggregate

Exclusive solution for maintenance of small units

The problem of oil cleanliness is not only related to large devices. The question is how to optimize the service of smaller devices such as compact power packs, for example the SMA 05 family. Unfortunately, these types of systems are very often filled in the wrong way, without the use of professional equipment. As a result, oil poured into the tank does not meet the basic purity requirements. Even a new oil's cleanliness class is worse than recommended by manufacturers of hydraulic components. Filling of a system with such media results in faster component wear and frequent failures. In case of small tanks (volume up to several dozen liters), filling and off-line filtration with standard service units often are not possible. Even a relatively small nominal flow of 8 or 16 l/min is too big and leads to undesired oil spillage because of too fast filling. Moreover, most compact power packs have limited possibilities for connecting external hydraulic hoses. Usually there is only one available port in the oil tank (after removing the ventilating filter) which is too small for parallel installation of a suction and return hose. Without the possibility of oil sucking and then pumping it via a separate hose, off-line filtration cannot be performed. The compact filter pack CFP 03 solves these problems! Its nominal flow of 3 l/min provides trouble-free filling of small machines. With such a small flow, the risk of spilling or overflowing is minimal. Even in the case of a tank with a capacity of several litres, oil can be filled in a controlled manner. The example of such use is shown in Figure 3.



Figure 6: Installation of the suction-return set in a plastic tank

It is worth to emphasize that the CFP is not only a device for filling machines with oil. It is primarily a service unit for off-line filtration. This type of filtration seems obvious in systems with an easy access to the tank, where installation of two independent hoses (suction and pressure) is not a problem. The real challenges are small systems where oil is poured through one small available port. What about off-line filtration in such systems? The CFP 03 works perfectly in such applications thanks to the innovative suction-return set (Figure 4), which complements the unit.



Figure 4: Suction-return set

Fresh oil in the barrel is contaminated

This set consists of an aluminium body, suction and pressure tube and a quick couplings kit. Additionally it is equipped with a small ventilating filter which provides air exchange between environment and tank inside. Thanks to the magnet attached to the body, the installation of the set in the steel tank is extremely easy and fast. In the first step, the original ventilating filter has to be removed from the tank. Then the suction-return set can be placed in the released port and rotated to any desired angle. The strength of the magnet provides a tight and reliable connection. After the connection of the suction and pressure hose, the entire installation is ready for off-line filtration. The example of such use is shown in Figure 5.



Figure 5: Off-line filtration in small hydraulic power pack with CFP, connected to the tank via suction-return set

The same set can also be used in power packs with plastic tanks. This is possible thanks to an additional adapter made of steel. The adapter screwed into the air filter port is the base for inserting the suction-return set. The installation is shown in Figure 6.

CFP 03 is just the beginning!

Ideal service equipment

The compact size makes the CFP 03 suitable for use in installations where other units do not work. This refers to systems with difficult access to the oil tank, where the connection of a bigger service unit is not possible. Thanks to its small weight, the CFP 03 is ideal for work at heights. It is also a very useful device for maintenance services. When several machines need to be cleaned, the transport of this super light aggregate is not a problem. Thanks to handy plugs, the hoses of the unit can be secured during transport. This helps to avoid unwanted oil leakages. The free ends of the hoses can be plugged immediately after being removed from the tank – Figure 7. This avoids dripping oil and getting the machine dirty.



Figure 7: Securing of the end of the hydraulic hose with a plug



CFP 03 is just the beginning!

The current version of the CFP 03 does not cover all ARGO-HYTOS ideas for additional configurations of this product. The CFP's function of oil dosing seems to be an interesting development option. This is a very useful feature especially in car repair shops. The CFP with particle counter, in turn, could be a complement to the larger family of UMPC 045 and FAPC 016 units. This would be an interesting proposition especially to service companies. Also a version with a 12 or 24 VDC motor appears to be attractive. Such a configuration can be used for example in mobile machines.

As usual with the products manufactured at ARGO-HYTOS, it is possible to customize the basic version: change the length of the suction and pressure hose, the length of the power cable, the standard of the electric plug, the colour of the frame etc. These and other ideas will be implemented successively in response to the needs of our customers.

Predictive Maintenance for Hydraulic Systems



The concept of Industrie 4.0 or Industrial Internet of Things is still new and spreading in major industries with significant investment programs to improve performance, ensure competitiveness and increase value. It is a process that also is revolutionizing traditional maintenance towards smart Predictive Maintenance, allowing to perform services just in time. Real-time machine status information, through remote monitoring and data expertise, significantly increases the availability of equipment, reduces downtime and extends the life of the machine, fluids and components. Predictive Maintenance is thereby a tool to also change business models and offer new after-sales services. It additionally enables manufacturers to offer their machines as a service instead of regular sales.

Figure 1: Critical condition changes



Roman C. Krähling, Head of Condition Monitoring, Fluid Management & Electronics

"ARGO-HYTOS has developed ground breaking solutions for the online monitoring of fluids."



Figure 2: Structure of a remote oil condition monitoring system

ARGO-HYTOS has developed ground breaking solutions for the online monitoring of fluids. These intelligent measurement systems use smart algorithms to monitor the aging of lubricants and the wear of hydraulic components. ARGO-HYTOS measurement systems detect problems at an early stage, before these cause further damage or downtime.

The smart predictive models developed by ARGO-HYTOS are based on machine-specific learning, allowing to evaluate the time remaining before failure and to plan maintenance accordingly.

> Smart Predictive Maintenance: allowing to perform services just in time.

ARGO-HYTOS measurement solutions have proven their benefit in a wide range of applications, from remote monitoring of mobile equipment (e.g. agricultural, construction, material handling), to power generation and distribution (e.g. wind turbines, gas turbines, water power, gearboxes, fuel storage & transport, transformers), machines (e.g. injection molding, presses, welding, grinding) and many more.

Who is... Carlos?



Carlos Filipe Campelo Plens is Product Engineer for Hydraulic Units and Manifolds, located at ARGO-HYTOS Brazil.

We would like to use this opportunity to introduce Carlos a bit more and ask him a few questions:

Carlos, since when have you been working at ARGO-HYTOS and what exactly are your tasks?

I joined ARGO-HYTOS in 2013 and since then I have been working in customized projects in all kinds of areas. My actual challenge is to provide internal sales support to the customers and administrate CKD assembly at ARGO-HYTOS Brazil.

What was the most incredible moment in your life?

My wedding, after that I started a new different perspective in life.

Which dream has not yet been fulfilled?

Have a child and make an international travel.

What do you like to do outside of the business?

I always like to play my saxophone, read a good book or watch series, but I never dispense with doing some exercise like cycling or playing tennis. Of course solving puzzles is a great hobby, too.

What is your motto in life?

Persist forever, never give up.

Thank you very much Carlos, have a great time, fun and enjoy life the most – in your private life as well as at work.



EXHIBITIONS

Our Participation in Exhibitions 2018 at a Glance



















maintenance 21.02.-22.02.2018 Dortmund, Germany

World of Asphalt 06.03.-08.03.2018 Austin, Texas USA

Expodireto 05.03.-09.03.2018 Não-Me-Toque,

Aachen, Germany

Grenoble, France

Waste Expo 23.04.-26.04.2018 Las Vegas, Nevada, USA

Hannover Messe 23.04.-27.04.2018 Hannover, Germany

Agrishow 30.04.-04.05.2018 Ribeirão Preto, Brazil

Agro Show 22.09.-25.09.2018 Bednary, Poland

WindEnergy 25.09.-28.09.2018 Hamburg, Germany











MSV Brno 01.10.-05.10.2018 Brno, Czech Republic

CIAME October 2018 China

EIMA 07.11.-11.11.2018 Bologna, Italy

bauma China 27.11.-30.11.2018 Shanghai, China

bC India December 2018 Bangalore, India

Come to visit us at our exhibition booths. We are looking forward to seeing you.

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Fluid power technology for success

Innovations and intelligent system solutions combined with flexibility and productivity – ARGO-HYTOS sets new standards in all areas of fluid power technology.

We make your products better. Worldwide.

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