

Redesign provides variable gear connection

POWER LINE air motors are distinctive for their high power density

Motors should be small and light - yet they must also achieve high torque values! DEPRAG is currently launching their enhanced POWER LINE air motors on the market and the name says it all. With their unbeaten low power-weight ratio these powerful air motors score top marks. They reach the high torque value required the instant they start. The engineers put the pneumatic motor on the test bench and gave it a complete design overhaul. From this rigorous process emerged an air motor that is a shining light of economy; an attractive price and fast delivery lead times speak for themselves.

The 54, 55 and 65 motors have been completely redesigned. The designers have standardized the structure with the aim of enabling a more effective, and thus more economical, manufacturing process for these drives. DEPRAG's product manager, Dagmar Dübbelde said "With this redesign we have achieved our aim and we are passing on the benefits directly to our customers. We are now able to offer our POWER LINE air motors at a very attractive price".

The high speeds produced by air motors often require different gears in order to adjust speed to torque. So, in their redesign of the POWER LINE vane motors the engineers at DEPRAG also addressed this aspect. The drives have been equipped with a standardized IEC flange connection, as used in electromotors and commercial gear connections. The IEC flange now allows easier connection to different gear types. These may be planetary gears, spur gears, worm gears, bevel gears or other gear types. Dagmar Dübbelde added: "From now on our standard range includes these air motors without a gear. We can then be flexible in the way we implement the speed or torque adjustment, using standard gears from a wide variety of manufacturers. It means we are also able to improve delivery lead times for our customers."



Example of redesigned air-motors

The performance data for the new motor types can be summarized as follows: Type 68-0054/IEC112A delivers 5.1 kW of motor power. The nominal torque is 16.2 Nm at a nominal speed of 3000 rpm. Type 68-0055/IEC112A delivers 9 kW of power and achieves a nominal torque of 28.6 Nm at a nominal speed of 3000 rpm. Type 68-0065/IEC112A has a motor power of 18 kW and supplies a rated torque of 57 Nm, also at a speed of 3000 rpm.

The motor spindle on the new POWER LINE series air motor drives is designed to resist high forces. The maximum radial force at the spindle is 7500 N and the maximum axial force is 1100 N.

The current POWER LINE range from air motor specialists DEPRAG is distinctive for its particularly wide variety of motors. The high-performance base-mounted and flange motors with their robust grey cast housings are available in power classes ranging from 1.6 kW to 18 kW. In addition to the new gearless air motor drives with IEC flange, the POWER LINE catalog still includes many standard models that can be fitted with different gears such as planetary, spur or worm gears. All the drives in the range are reversible, so they can operate in both directions of rotation. The air motors are controlled by means of an external directional valve. Alternatively, the range includes air motors that can be controlled manually via a hand lever.



*Power Line Motor 68-0054 with
6.8 HP*

There are many characteristics to look out for when selecting the right drive for a particular application. Pneumatics expert Dagmar Dübbelde points out the advantages of pneumatic motors over electromotors: "The main plus point in favor of an air motor is its high starting torque at an unbeatably low power-weight ratio!" Due to its design a motor driven by compressed air is very much lighter and is around a third of the size of an electromotor, yet achieves the same power. Dagmar Dübbelde added; "The power-weight ratio is a real issue for manually-controlled machines. But high power density is also crucial in the choice of drive system for robotic systems and NC machines."

A further plus point in favor of air motors is that output stays greatly constant over a wide range of speeds. This means they can operate optimally within a wide range of changing loads. The motor output can be easily varied by changing the operating pressure and the required speed is steplessly controlled by throttling the exhaust or feed air. The air motor's load resistance is legendary - it accepts load at speeds down to standstill without causing damage. Once the load is reduced, it starts up again - time after time after time.

The way they deal with temperature and operating safety is a further point in favor of air motors. The operating principle; expanding compressed air sets the rotor in movement, aided by the vanes which means that it is almost impossible for overheating to occur due to overload. This is because the expanding air cools the air motor as the load increases. The only time it might get warm is when it is running idle. In principle, compressed air is a fully unproblematic source of power. DEPRAG expert Dagmar Dübbelde pointed out this major advantage; "There are no hazards caused by electricity or undesirably high temperatures. It means that air motors are absolutely ideal for use in explosive atmospheres."

Air drives are very robust and reliable. The internal excess pressure that occurs while the vane motor is running prevents penetration by dust and other contamination. As wearing parts, only the vanes that form the working chambers for the expanding compressed air need to be replaced at regular intervals. Dagmar Dübbelde also commented that "the replacement vanes are not expensive and can be fitted quickly and easily by the customer's own service staff. There is no need to bring in a qualified engineer for the job."

She also commented on the air motor's often criticized energy balance: "you save energy as soon as you choose the correct drive. The optimum working range for the air motor is close to the nominal speed, i.e. at 50% off the no-load speed. If I calculate exactly the performance data for the air motor I want, and then design the drive accordingly, I can achieve the best possible economy

for my air motor. We are always very happy to offer our customers help and advice."



Power Line Motor 68-0065 with 24 HP

For over 80 years DEPRAG SCHULZ GMBH u. Co. has been involved with compressed air as a supply of drive power. DEPRAG's standard range offers many variants from which, using the module principle, it is possible to develop and manufacture customized drive solutions for the application in question at an attractive price-performance ratio. The redesigned POWER LINE vane motors also serve this purpose. Now, with the IEC flange, it is possible to connect a very wide variety of gears without problem. Dagmar Dübbelde summarized; "It means that we can easily and flexibly meet the individual requirements imposed by our customers' applications. About 85 percent of our air motor projects are special products, which we implement quickly and straight forward for our customers from our standard modules." DEPRAG, headquartered in

Amberg Germany, are also experts in screwdriver technology, automation and pneumatic tools. The family-owned and run company has almost 600 employees and is represented in more than 50 countries.

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