

Sauer-Danfoss product overview

CONSTRUCTION



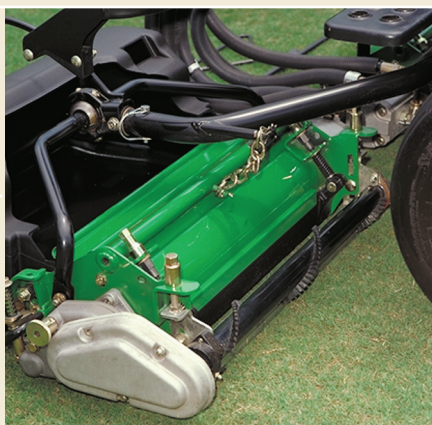
ROAD BUILDING



AGRICULTURE



MATERIAL HANDLING



TURF CARE



SPECIALTY

**SAUER
DANFOSS**

What really matters is inside®

Sauer-Danfoss Product Range

A quick overview

The Sauer-Danfoss product range covers the entire spectrum. With our hydrostatic transmissions, open circuit products, orbital motors, valves, steering systems, and mobile electronic controls, we provide off-highway vehicle OEMs around the world with the solutions they need. We offer individual, off-the-shelf components and design complete steering, propel, work, and control function systems.



Hydrostatics

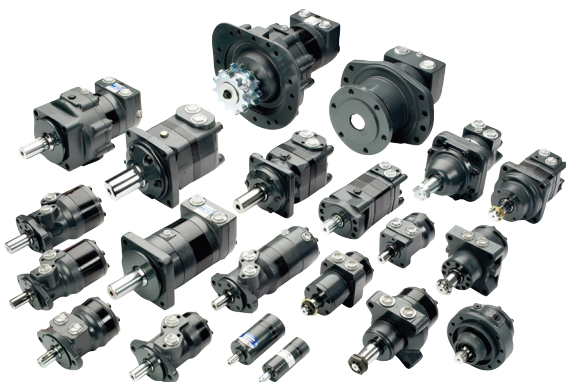
We cover low-, medium-, and high-powered applications with our axial piston variable displacement single and tandem pumps, axial piston fixed displacement motors, axial piston two-position motors, bent axis variable displacement motors, integrated pump systems, and transit mixer products.

Our solutions are designed for reliability, efficiency, easy installation, and expanded functionality.



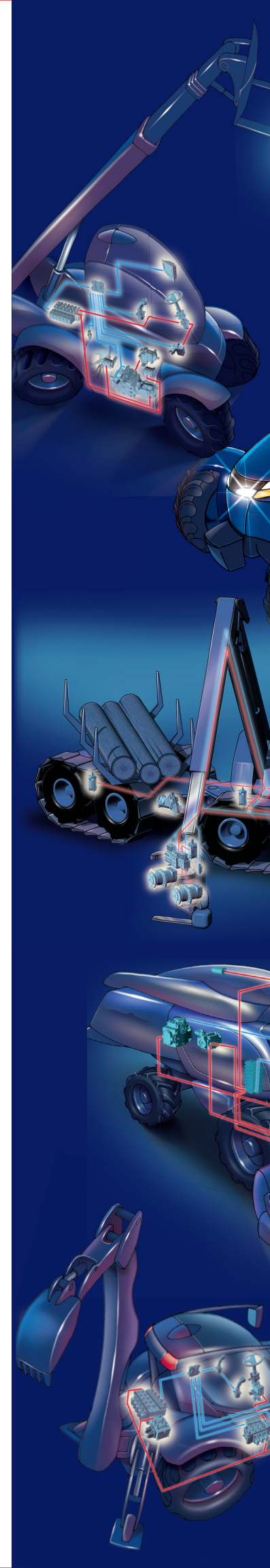
Open circuit axial piston pumps and gear units

Our portfolio includes fixed displacement gear pumps and motors as well as variable displacement axial piston pumps for work function applications in practically any off-highway sector. We also offer a range of leading-edge integrated work-function packages that include pumps, fan drive motors, and valves.



Orbital motors

Sauer-Danfoss offers low-speed, high-torque motors for work and propel functions in off-highway sectors ranging from construction, agriculture, turf care, and road building to marine, mining, and forestry. Benefits include high radial and axial bearing capacity, high starting torque, constant operating torque, high-pressure shaft seal, and long life under extreme operating conditions. We provide off-the-shelf components as well as customized solutions.

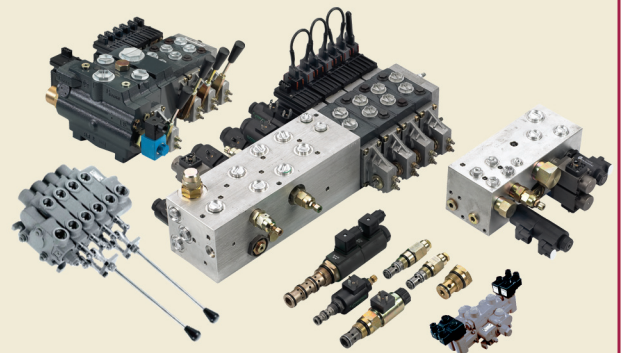




We offer individual, off-the-shelf components and design complete steering, propel, work, and control function systems.

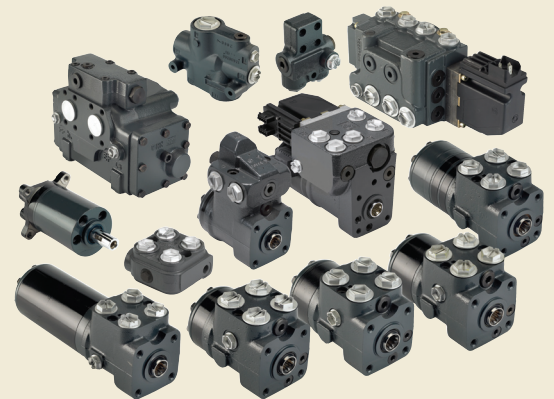
Valves

Sophisticated, reliable, and modular in concept, Sauer-Danfoss valve solutions can be designed to meet practically any application need. We offer load sensing, electrically controlled, load independent proportional valves, directional control valves, cartridge valves, Hydraulic Integrated Circuits (HICs), and hybrid solutions combining valve technologies.



Steering components and systems

Our range of steering products includes standard and electrohydraulic steering units, mini steering units, priority valves, dedicated steering sensor, and flow amplifiers. We cover all application needs – ordinary 2-wheel and 4-wheel steering, articulated steering, and automatic steering via sensors or satellite-signals.



Mobile electronic components and systems

Sauer-Danfoss offers a comprehensive range of state-of-the-art electronics for the off-highway vehicle sector. We provide an array of standard and custom products – from software, joysticks, PLUS+1™ microcontrollers, sensors, graphical terminals, PLUS+1 inverters and GPS technology, to complete machine control systems.



Hydrostatic transmission solutions

Sauer-Danfoss offers transmission solutions for off-highway vehicles, both at component and system levels. Our product range covers low, medium, and high powered applications with single and dual path propulsion drives as well as closed loop auxiliary transmissions. For low and medium powered vehicles such as aerial lifts, skid steer loaders, road rollers, mowers, and for high powered vehicles like combines, crawlers, forestry machinery, telescopic handlers, and road rollers, Sauer-Danfoss offers the right hydrostatic transmission solutions.

Features:

- Pumps and motors for closed circuits
- Controls for every application
- Compact and light weight
- Integral loop flushing
- Flexible filtration options
- System packages
- Proven reliability and performance
- Worldwide sales and service

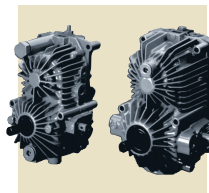
Series 15 and 70

Transmissions for low power vehicles

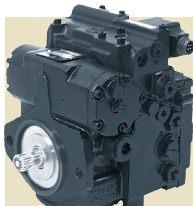
- 3 displacements
- U-style and inline packages, or separate variable pumps and fixed motors
- Maximum pressures to 145 bar [2100 psi] (Series 70) and 310 bar [4496 psi] (Series 15)



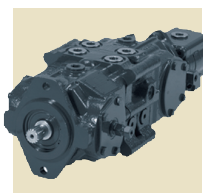
**L AND K FRAME
VARIABLE MOTORS**



**U-STYLE
TRANSMISSION
SERIES BD**



SERIES 42



**SERIES 40
DDC**

Series 40 and 42

Axial piston variable displacement single and tandem pumps

- 7 different displacements
- Complete family of control systems
- Through drives for auxiliary pumps
- Pressures up to 345 bar [5000 psi] (Series 40) and 415 bar [6019 psi] (Series 42)

Axial piston fixed and variable displacement motors

- 4 different displacements
- Compact design
- Short installed length
- Pressures up to 345 bar [5000 psi]

L and K Frame

Axial piston two-position motors

- 5 displacements in one compact package
- SAE-B and cartridge mounts
- Short installed length
- Variable motor with 3.4:1 working displacement ratio
- Overcenter (-2°) capability

H1 - the new generation of hydrostatics

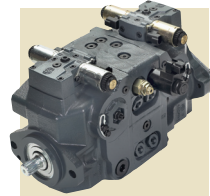
- Optimized for electro-hydraulic control
- Designed for improved operating efficiencies
- Designed for short length and compact installation

Axial piston variable displacement single and tandem pumps

- 7 displacements
- 2 integral tandem displacements
- Maximum operating pressures up to 480 bar [6962 psi]

Bent axis variable displacement motors

- Zero degree motor angle capability
- Electric 2-position or electric proportional control
- Higher corner HP/package size ratio



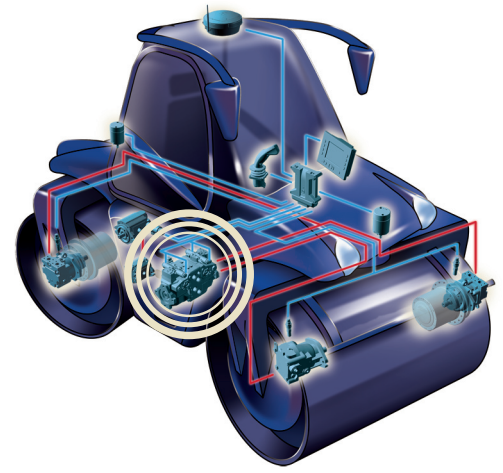
**H1
INTEGRATED
TANDEM
COMPLIANT**



**H1
SINGLE
COMPLIANT**



**H1 BENT AXIS MOTOR
COMPLIANT**



Series 90

Axial piston variable displacement pumps

- Highest through-drive capability
- 7 different displacements
- Complete family of control systems
 - Manual Displacement Controls (MDC)
 - Electrical Displacement Controls (EDC)
 - Hydraulic Displacement Controls (HDC)
 - Electrical automotive controls (NFPE)
- Compact and light weight
- Pressures up to 480 bar [6962 psi]

Axial piston fixed and variable displacement motors

- Cartridge motors designed for direct installation in compact planetary drives
- 5 sizes of fixed displacement motors in SAE flange configuration
- Variable displacement two-position motor in SAE or cartridge configuration
- Short installed length
- Pressures up to 480 bar [6962 psi]



Series 51 and 51-1

Bent axis variable displacement motors

- 5 sizes in SAE flange configurations, 60 cm³/rev [3.7 in³/rev] to 250 cm³/rev [15.25 in³/rev]
- SAE, DIN and cartridge flanges available
- Cartridge motors designed for direct installation in compact planetary drives
- Large displacement ratio (5:1)
- Pressure compensated, two-position, and proportional controls
- Compact and light weight
- Speeds to 7000 min⁻¹(rpm)
- Pressures up to 480 bar [6962 psi]

LPV

Axial piston variable displacement pumps

- 3 displacements
- For closed circuit applications
- Direct displacement control
- Optimized valve plates for quiet operation
- Integral neutral return assist
- Optional loop flushing
- Speeds up to 3600 min⁻¹(rpm)
- Pressures up to 210 bar [3045 psi] continuous and 345 bar [5000 psi] peak

TMG, TMP and TMM

Transit mixer gearbox

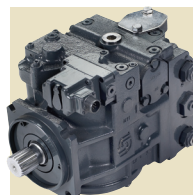
- High output torque
- High power density
- Drum swivel angle +/- 7°
- Splash lubrication
- Separate oil systems
- Low weight

Transit mixer pump and motor

- Proven rotating group
- Electric pump displacement control
- Significant noise reduction
- Significant reduction of envelope size
- Pressures up to 420 bar [6090 psi]



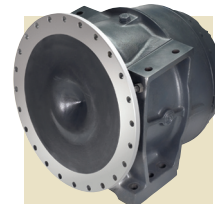
LPV



SERIES 90



COMPLIANT



TMG



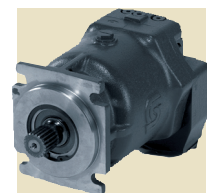
SERIES 51 AND 51-1



COMPLIANT



TMP



TMM

Open circuit gear units and axial piston pumps

Sauer-Danfoss offers a wide variety of open circuit products. Our fixed and variable pumps provide power for work functions and fan drives of on- and off-highway vehicles and equipment in the fields of agriculture, construction, material handling, and many other areas.

Open circuit solutions

Fixed displacement gear pumps and motors, and variable displacement piston pumps are a perfect choice when equipping applications like forklift trucks, tractors, road rollers, and skid-steer loaders. By combining products we can offer system solutions, like fan drive systems for buses, wheel loaders, and other heavy equipment.

Features and benefits:

- Motor inlet pressures up to 250 bar [3626 psi]
- Full series operation capability
- European and SAE flange and shaft options
- O-ring boss ports, SAE and European 4 bolt split-flange ports
- Radial and axial case drain option
- Single and multiple configurations
- Integral valves (requires special rear cover)
- Fan drive versions with integral proportional pressure control relief valves

SKP, SNP, and D series

Gear pumps and motors

For light vehicles such as aerial lifts and electric powered forklift trucks, Sauer-Danfoss offers SKP1 and SKP2 pumps. The pumps feature integral valves, pressure balanced design for high efficiency, and extruded aluminum bodies for high strength.

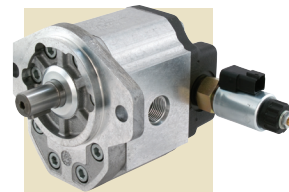
For medium-sized vehicles such as smaller tractors, internal combustion forklifts, and skid steer loaders, the cast iron D Series features SAE A and B mounts, integral valves, and high-performance DU bushings.

For larger off-highway vehicles like tractors, backhoe loaders, dumpers, and telescopic material handlers, we offer the SNP3 as well as the heavy-duty D range of pumps.

SGM2YN and SGM3YN

Hydraulic fan drive gear motors

- Based on proven SNM2 and SNM3 gear motors
- Full-flow proportional relief valve integrated into rear cover
- SGM2YN from 8 to 25 ccm
- SGM3YN from 22 to 44 ccm
- Integrated anti-cavitation check valve
- SAE, European, and German mounting and ports
- Maximum speed up to 3500 min⁻¹(rpm)
- Rated pressure up to 250 bar [3625 psi]



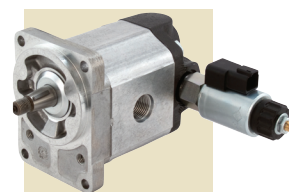
SGM3YN



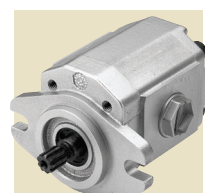
D SERIES TANDEM



D SERIES MOTOR



SGM2YN



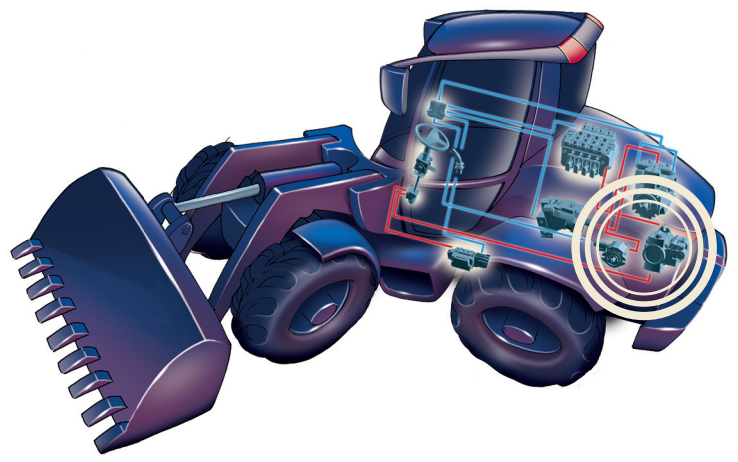
SKP 1



SNP 2



SKP2 GROUP 2
TANDEM



Series 45

Axial Piston Pumps

Series 45 open circuit axial piston pumps can be applied with other products in a system to transfer and control hydraulic power. They provide an infinitely variable flow rate between zero and maximum. The pumps are compact, high power-dense units, using the axial piston concept with a servo-positioned swashplate to vary the pump displacement.

Features and benefits:

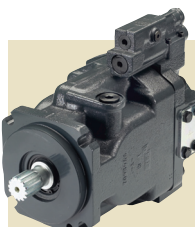
- Robust design using the proven methods of quality function deployment (QFD) and design for manufacturability (DFM)
- Wide range of cost-effective installation options
- Control system flexibility: pressure compensated, load sensing, and remote pressure compensated controls
- High power auxiliary drives for multiple pump configurations
- Low noise levels
- Unique design increases reliability (no gasketed joints)
- Compact size



**SERIES 45
FRAME E**



**SERIES 45
FRAME J**



**SERIES 45
FRAME F**



**SERIES 45
FRAMES L & K**

Valves

Sauer-Danfoss valves are designed to be flexible, which allows them to meet virtually any need. The modularity of our directional control valves, the variety of our cartridge valves and the flexibility of our electro-hydraulic products allow Sauer-Danfoss valves to be used in applications ranging from road building and construction machinery to agriculture and forestry equipment.

PVG

Load Independent Spool Valves

Our family of load independent spool valves includes three series. The PVG 32, PVG 100, and PVG 120 are available individually or as hybrid assemblies.

PVG 32 is a pressure-compensated, hydraulic load-sensing valve designed to give maximum flexibility. It is available in many versions, from a basic load sensing directional valve to an advanced electronically-controlled, load-independent proportional valve. The modularity of the PVG 32 makes it possible to build a valve group to precisely meet your requirements. Regardless of the configuration specified, the compact external dimensions of the valve remain unchanged.



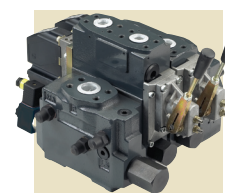
PVG 32
E1 COMPLIANT



PVG 100
E1 COMPLIANT



**COMBINED PVG 32
AND HIC**
E1 COMPLIANT



PVG 120
E1 COMPLIANT

Features and benefits of PVG 32:

- Max flow per section of 130 l/min [34 US gal/min]
- Working pressures up to 350 bar [5075 psi]
- Load-independent pre-compensated flow control to maximize operator productivity
- Up to 10 sections per valve group
- Open-center and closed-center versions for systems with fixed or variable displacement pumps
- A variety of available spool types (cylinder, motor, linear, float position, etc.) allows design flexibility.
- Interchangeable spools, for easy flow characteristic modifications, speed development.
- A variety of actuator options incorporating an enclosed spool design to extend seal life and minimize contaminate ingress improves reliability and system cleanliness.
- Integrated electronics, sensors, and actuators
- Spool feedback transducer provides optimal control regardless of valve dynamics and allows precise control with increased productivity.
- CAN-bus network options including intelligent control functions (ramp, adjustable flow limiting, dead band compensation, etc.)
- Electrical controls with integral connectors for durability in mobile applications
- Compact design with high power density



PVG 100 is a pressure compensated load sensing valve designed with flow sharing technology. Its hybrid capability makes it possible to build a valve solution that exceeds all your machine control needs.

Features and benefits of PVG 100:

- Post-compensation provides flow sharing and maximum control under all conditions.
- Max flow per section of 180 l/min [48 US gal/min]
- Max pressure to 350 bar [5075 psi]
- Zero leakage pilot operated check valves that work with float functionality means no tuning is required.
- Common accessory valves and actuators with the PVG 32 to minimize service part count
- Integrated priority valves reduce installed cost.
- Hybrid compatibility with PVG, CDS, and HIC for optimized valve solutions
- Up to 10 valve sections per group



Like the PVG 32, the **PVG 120** is a spool valve operating according to the load-sensing principle using a pre-compensated configuration. Its modular capability makes it possible to build a valve group that controls all your machine functions.

Features and benefits of PVG 120:

- Hybrid compatibility with PVG and HIC
- Many of the same features as PVG 32
- Max flow per section of 239 l/min [63 US gal/min]
- Max pressure to 400 bar [5800 psi]
- Up to 8 valve sections per group

DCV

Directional Control Valves

Sauer-Danfoss manufactures mobile control valves for applications up to 100 l/min [26 US gal/min]. Typical uses include controlling hydraulic systems on construction, agricultural, turf care, on-highway car transport, and refuse applications—to name a few.

The line of directional control valves are available as monoblock or stacks and in series, parallel, or tandem circuits. Monoblock valves are offered in one, two, or three spool designs. Stack valves can have as many as twelve sections. Through optimized coring using CFD analysis, higher efficiencies are achieved to address increasing vehicle power constraints.

Features and benefits of DCV:

- Series, parallel, or tandem circuit valves equipped with handles
- Joystick, electrical, hydraulic, and pneumatic control options
- Various check options (load holding, pilot operated, and low-leakage)
- Wide range of port sizes & types
- Valves may be delivered painted or unpainted
- Hydraulic kick-out actuation
- Relief valves with or without anti-cavitation
- Float spools
- Mechanical joysticks
- Cable controls
- Mid-inlet combiner/divider sections

HICs and cartridge valves

Hydraulic Integrated Circuits

HICs integrate standard cartridge valves into a common manifold. In addition to the standard range, blocks can be specially designed to meet your circuit requirements. The use of HICs substantially reduces the number of external hydraulic connections. Due to their minimal installation time and compact size and weight, HICs improve system performance and simplify maintenance.

Cartridge valves

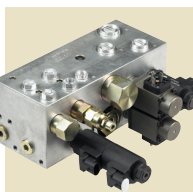
Sauer-Danfoss manufactures a wide variety of on-off and proportional directional control, flow and pressure regulating, and load holding cartridge valves.

The range of pressure-regulating valves features direct-acting, pilot-operated, sequence, pressure reducing, and overcenter valves. They allow flow up to 380 l/min [100 US gal/min] and pressures up to 420 bar [6092 psi].

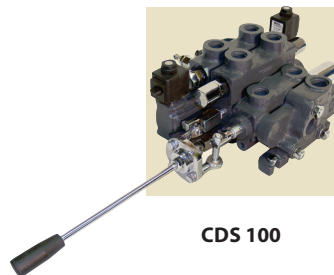
The range of flow-regulating valves includes pressure-compensated flow-regulating valves, flow dividers and combiners, and needle valves.

The range of directional control valves incorporates solenoid operated two-way, three-way, and four-way two and three-position valves. They allow flow up to 225 l/min [59 US gal/min] and pressure up to 350 bar [5076 psi].

The range of proportional valves features pressure reducing, relief, flow, and directional control valves. They allow flow up to 75 l/min [20 US gal/min] and pressure up to 350 bar [5076 psi].



HIC EXAMPLE



CDS 100



**1480 BUCKET
LEVELER**



CDS 60



CARTRIDGE VALVES



Steering components and systems

Sauer-Danfoss offers system level as well as component level steering solutions. Our product range makes it possible to cover applications of all types, ranging from ordinary 2-wheel steering to articulated steering, 4-wheel steering, automatic steering by GPS, and joystick controlled steering.

The primary Sauer-Danfoss steering components are:

- Standard OSP steering units
- OSPM mini steering units
- OSPE & EHPS electrohydraulic power steering units
- Various accessories
 - OLS priority valves
 - OSQ flow amplifiers

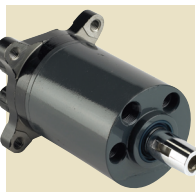
For **light vehicles** such as garden tractors, utility vehicles, lawn mowers, or small forklift trucks, Sauer-Danfoss offers OSPM mini hydrostatic steering units.

Small and medium sized vehicles can be equipped with an OSPB, OSPC, OSPF, OSPR, or OSPE steering unit. Typical applications include tractors, harvesters, forklift trucks, and small construction machines.

Larger vehicles such as combines, loaders, and dump trucks will typically use OSPB, OSPC, or OSPF steering units. The OSPL steering unit is particularly suitable when steering flow requirements reach 100 l/min [26.4 US gal/min]. However, for vehicles of this size, Sauer-Danfoss has specifically designed the OSPQ and OSPD. These steering units are designed with variable displacements to make emergency steering possible even on heavy machines. The unit changes automatically to lowest displacement when pump oil supply is unavailable.

For vehicles with a total weight exceeding 100 tons and a needed steering flow of up to 400 l/min [105.7 US gal/min], the OSQ flow amplifier is available.

On loaders, large forklift trucks, dump trucks, large tractors, and other heavy vehicles, there is often a need for electrically actuated steering. For such purposes Sauer-Danfoss has created the OSPE & EHPS systems to control the vehicle with GPS autosteering or joystick actuated steering.



OSPM



OSPB



OSPC LS/OSPF LS



OSPD



OSPE
COMPLIANT



OSPL



OSPQ



Features and benefits of OSP steering units:

- Low steering torque: 0.5 N•m to 1.8 N•m [4.4 lbf•in to 15.9 lbf•in] in normal steering situations
- Low noise level
- Many types available: open center non-reactive, open center reactive, load sensing, and load sensing reactive
- Built-in valve functions: relief valves, check valves, check valves in the pressure line or in the load sense line
- DIN, ISO, JIS, and SAE port connections

Special OSPM benefits:

- Compact design and small dimensions
- Optional integrated steering column
- Fittings integrated into end ports

OSPE :

- Selectable reactive/nonreactive steering modes
 - Improved automotive-like steering feel
 - Safe design, steering wheel always has priority.
 - Eliminates an external blocking valve.
- A true *safe-state*
 - Isolates electronics or EH valve when activated.
 - Eases approval of steer-by-wire features.
- Open-center steering systems
 - No external valves needed
- Load-sensing steering system
 - Reduces energy consumption.
 - Integrated PVFC-valve, for optimized LS circuit
- Integrated priority valve
 - Simplifies hydraulic architecture.
- Robust one piece casting
 - Compact design: fits tight areas.
 - Eliminates potential leak path.
 - Single design, development, and test source
- Optimized for automatic steering
 - Applicable to any GPS steering systems
- Variable steering ratio
 - Adjust steering aggressiveness to the current vehicle work situation (with Sauer-Danfoss SASA steering wheel sensor and PVED CL actuator – non reactive mode only)
- Numerous other configurations available.

Advantages of EHPS system:

- High steering pressure requiring smaller cylinders and oil flow
- Low pilot pressure: maximum of 30 bar [435 psi] – quiet in the cab
- Smoother operation on vehicles with articulated steering
- Optional combination with Sauer-Danfoss PVG 32 proportional valves
- Emergency steering possible even for heavy vehicles

OLS priority valves:

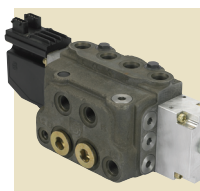
- Static or dynamic types
- Flow from 40 to 320 l/min [11 to 85 US gal/min]
- Maximum system pressure 350 bar [5075 psi]

OSQ flow amplifiers:

- For vehicles exceeding 100 tons needing steering flow of up to 400 l/min [160 US gal/min]



**OSQ FLOW
AMPLIFIER**



**EHPS
COMPLIANT**



**DIRECT WHEEL
MOUNT WITH
OSPM**

Orbital motors



Sauer-Danfoss offers a wide range of low-speed high torque orbital hydraulic motors designed for moderate to heavy load requirements. With the many variants available, it is always possible to find the optimum orbital motor solution for your specific application needs.

Orbital motors

Sauer-Danfoss low-speed, high-torque motors are used in a wide variety of construction, agriculture, turf care, material handling, and forestry applications. They are ideal solutions for both machine propel and work functions.

Features and benefits:

- High efficiency
- Smooth running over entire speed range
- Constant operating torque
- High starting torque
- High pressure shaft seal
- Long life under extreme operating conditions
- Robust and compact design
- High radial and axial bearing capacity
- For applications in both open and closed loop hydraulic systems

Mini motors (OML and OMM)

Sauer-Danfoss mini motors are ideal for work functions in the mobile sector, for example, mobile conveyors in harvesting machines.

- Spool valve integrated with output shaft
- Gearwheel set with fixed rim
- Suitable for long periods of operation at moderate pressure

Medium sized motors (OMP, DH, OMR, DS, OMH, OMEW)

Sauer-Danfoss medium sized motors are light and compact and therefore easy to install in equipment such as forklifts, lawn and turf care machinery, aerial lifts, skid steer loaders, trenchers, and many more.

- Spool valve is integrated with output shaft, except for OMEW which has a disc valve
- OMP and DH have a fixed gear rim and are ideal for long periods of operation at moderate pressure
- OMR/DS/OMH/OMEW have a gear rim with road rollers and are suitable for long periods of operation at high pressure
- OMP, OMR, and OMEW are available as wheel motors with a recessed mounting flange

Large motors (OMS, OMT, OMV, TMK, TMT, TMV)

For demanding operating conditions, Sauer-Danfoss offers a range of large orbital motors.

- Output shaft with tapered roller bearings gives high radial loading capacity
- Gear rim with road rollers, separate valve drive, and disc valve
- High volumetric and mechanical efficiency
- Long operating life at high pressures
- Short and ultra-short (without bearings and output shaft) versions possible
- Integral hydraulic brakes option on TMK, TMT
- OMS, OMT, OMV, TMT, and TMV are available as wheel motors with a recessed mounting flange.



OMM



OMP



DH/DS



OMR



OMEW



OMS



OMT



TMT



OMV

Mobile electronic components and systems

Sauer-Danfoss is a comprehensive manufacturer and systems integrator of state-of-the-art electronics for off-road and on-highway OEMs. We offer a wide array of standard and custom products ranging from sensors and GPS systems, to machine embedded microcontrollers and displays.

Our experience in designing hardened electronics for the mobile machine industry ensures operational longevity and low warranty costs. The advanced features of our electronic control solutions integrated with the power of Sauer-Danfoss hydraulics increases machine productivity and reliability.

Standard microcontrollers and vehicle networks

Our family of standard microcontrollers offers a wide selection of machine control solutions. Our latest line of PLUS+1™ microcontrollers offers the flexibility to handle anything from small-scope applications to complete machine management systems. The powerful DSP based processing core ensures they will meet even your toughest control requirements.

Custom Electronics

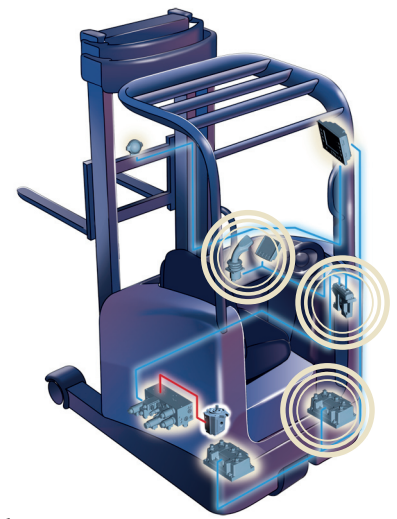
In addition to standard electronic products, we have the design, engineering, manufacturing, and quality systems required to build cost-effective, custom electronic products tailored to your specific machine or application. We offer build-to-print, design, design and build, and application software development services.

Operator interface devices

We offer a wide array of operator interface products, joysticks, displays, and graphical terminals that enable precise control of machine operation and relay complex information to the operator. In addition to standard interface and display products, we work with our customers to develop custom controls and instrument clusters.

Sensors

Sauer-Danfoss speed, temperature, and pressure sensors measure and transmit machine-operating parameters. We also offer grade and slope control products that enable our customers to meet specific standards for smoothness or simply optimize material control. We can interface with the latest in laser and GPS sensing technologies to provide state-of-the-art control solutions.

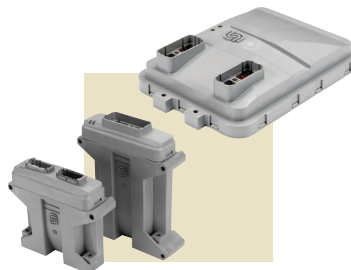


Inverters

Sauer-Danfoss offers a range of PLUS+1 Inverters tailor-made for traction drives and hydraulic pump drives. The best vehicle drive performance and highest efficiency in the drive system is ensured by using an advanced flux vector motor control algorithm. With a high number of input/outputs, the inverter has the flexibility to manage a wide range of different vehicle control needs. All vehicle functions are user programmable with PLUS+1 GUIDE. And the flux vector control algorithm enables easy motor characterization for any AC motor using the PLUS+1 Service tool.



**GRAPHICAL
TERMINALS**
 COMPLIANT



MICROCONTROLLERS
PLUS+1™
by SAUER-DANFOSS



PLUS+1 INVERTER
 COMPLIANT



SENSORS
 COMPLIANT

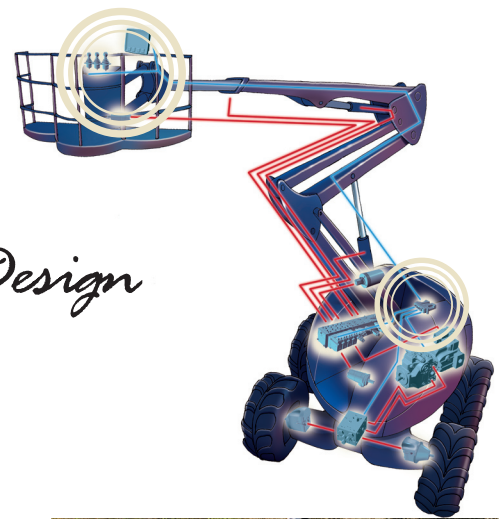


JS JOYSTICK
 COMPLIANT



PROF 1 JOYSTICK

PLUS+1™ – *Intelligent System Design*



Tomorrow's vehicles will require a higher level of vehicle management and electronics, improved productivity and ease of operation. Here's where Sauer-Danfoss can help your team excel. We provide solutions related to propel, work, control and vehicle management functions, all while integrating best-in-class products.

PLUS+1™ Compliance

PLUS+1™ Compliance ties our advanced mobile control technology together. It ensures that all our electrohydraulic products integrate seamlessly in the customized control systems developed using PLUS+1 GUIDE (Graphical User Integrated Development Environment).

PLUS+1 Compliance maximizes machine productivity and operator comfort via a smooth, highly responsive control system. Using our PLUS+1 GUIDE programming environment and PLUS+1 Compliant products, you can develop customized controls faster than ever before. PLUS+1 is the recommended way to raise performance, longer service life and lower costs.

You can be certain a product with the PLUS+1 Compliant Icon, has been tested with other PLUS+1 Compliant products and PLUS+1 GUIDE Compliance Block software modules, assuring optimum performance.

Application Software & Service Tools

Effective application software is vital to machine performance. Our application capabilities range from packaged standard options, to customized total machine solutions.

PLUS+1 GUIDE and PLUS+1 Compliance give you the tools to easily build and customize your own application software. Draw from our expansive library of versatile PLUS+1 control objects to get a head start in building your application.

Programming with PLUS+1 technology could not be simpler. Using PLUS+1 GUIDE, machine programmers just drag the components' software icons from the library, drop them on the computer screen workspace and connect them together. Hundreds of hours of programming and testing are at the programmer's disposal in seconds. And common interfaces between software blocks allow for easy program alterations without having to start again from scratch.

PLUS+1 Support & Training

Designed to make e-learning available to anyone, anywhere, at any time, GUIDE Training Online is a self-guided, self-paced experience with easy, intuitive navigational features.

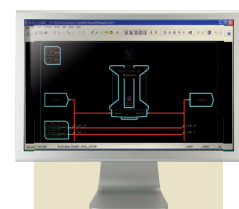
GUIDE is designed for use with Sauer-Danfoss PLUS+1 microcontrollers, I/O modules and an ever broadening range of PLUS+1 Compliant components including pumps, motors, valves, joysticks and graphical terminals.



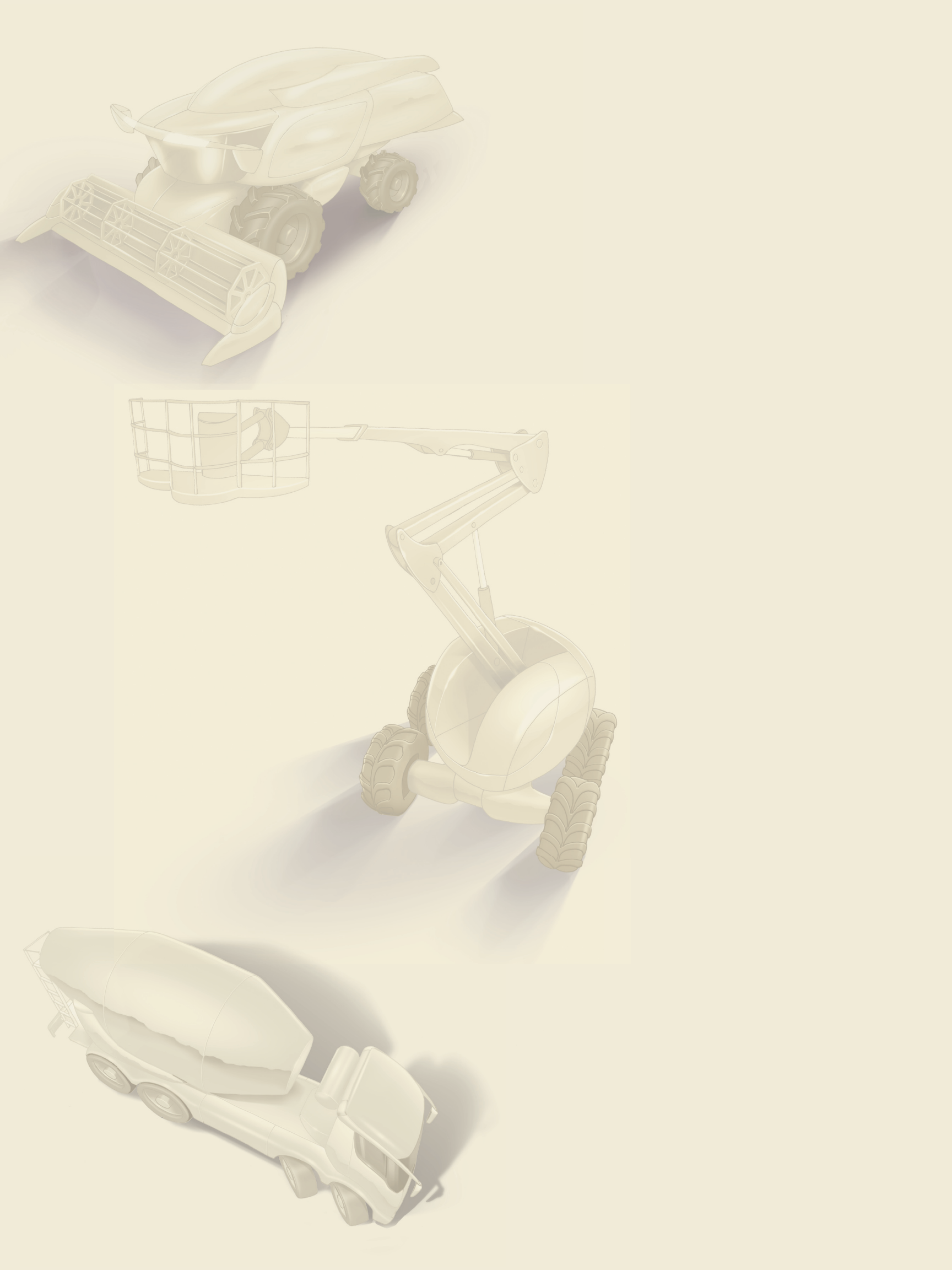
**PLUS+1 GUIDE
TRAINING TOOLS**



**PLUS+1 GUIDE
SOFTWARE
DEVELOPMENT
TOOLS**



PLUS+1 COMPLIANT
PLUS+1™
by SAUER-DANFOSS



Sauer-Danfoss is a leading global manufacturer of engineered hydraulic systems, components, and electronics to off-highway OEMs in agriculture, construction, road building, materials handling, forestry, and turf care. We have become a preferred supplier by offering the best of what really matters: The hardware inside your vehicle application. Our products and services enable you to develop more cost-effective, higher performing vehicles. It is that simple.

We are able to redesign the complete electrical and hydraulic system architecture on existing machinery to find smarter solutions for tomorrow's advanced vehicle systems. It is all about openness and innovation, really. Open to new ideas and new ways of doing things, we will assist you through all the stages of a given machine development project.

Backed by an extensive manufacturing, distribution, and service network, we are able to provide you with the solution you need, where and when you need it. If you want individual, off-the-shelf components, rely on Sauer-Danfoss. If you want a complete vehicle system built from the ground up, rely on Sauer-Danfoss. If you want it fast, rely on Sauer-Danfoss. Our more than 25 sales companies worldwide, local engineering expertise on all continents, 200-plus distributors, and authorized service-centers around the globe make it happen.

Please contact the Sauer-Danfoss representative nearest you.

Sauer-Danfoss (US) Company
2800 East 13th Street
Ames, IA 50010, USA
Phone: +1 515 239-6000
Fax: +1 515 239 6618

Sauer-Danfoss GmbH & Co. OHG
Postfach 2460, D-24531 Neumünster
Krokamp 35, D-24539 Neumünster, Germany
Phone: +49 4321 871-0
Fax: +49 4321 871 122

Sauer-Danfoss ApS
DK-6430 Nordborg, Denmark
Phone: +45 7488 4444
Fax: +45 7488 4400

Sauer-Danfoss-Daikin LTD.
Shin-Osaka TERASAKI 3rd Bldg. 6F
1-5-28 Nishimiyahara, Yodogawa-ku
Osaka 532-0004, Japan
Phone: +81 6 6395 6066
Fax: +81 6 6395 8585

© 2009, Sauer-Danfoss. All rights reserved. Printed in Europe.

Sauer-Danfoss accepts no responsibility for possible errors in catalogs, brochures and other printed material. Sauer-Danfoss reserves the right to alter its products without prior notice. This also applies to products already ordered provided that such alterations can be made without affecting agreed specifications. All trademarks in this material are properties of their respective owners. Sauer-Danfoss, the Sauer-Danfoss logotype, the Sauer-Danfoss S-icon, PLUS+1™, what really matters is inside® and Know-How in Motion™ are trademarks of the Sauer-Danfoss Group.

