Fischer Panda Vehicle Generators

Fischer Panda®
Power wherever you are™

compact light quiet

Image courtesy: MOST Mobile Specials GmbH

Fischer Panda vehicle generators

- **Compact**
- **Light**
- **Extremely quiet**

- **Water-cooled**
- **High performance**
- **Worldwide service network**

The water-cooled diesel generators from Fischer Panda are renowned worldwide for being innovative, reliable and extremely quiet. The product range includes more than two hundred generators from 2.5 kW to 200 kW.

Fischer Panda generators feature an effective water-cooling system and a lightweight compact construction. This has made Fischer Panda a leader in Europe for mobile super-silent diesel generators. These highly proven generators supply power to electrical systems, drives and complete mobile energy systems.

Fischer Panda manufactures compact and quiet diesel generators for marine and vehicle applications. These are sold in more than eighty countries worldwide.

The company, based in Paderborn/Germany, was founded in 1977 under the name Icemaster GmbH and renamed as Fischer Panda GmbH in 2007.

Fischer Panda for mobile and stationary applications

Designed for use in special and diverse areas of the vehicle industry, Fischer Panda generators are installed in the smallest and tightest places available and can be found in numerous mobile applications worldwide.

Touring
- Luxury motor coaches
- Limousine coaches
- Holiday homes

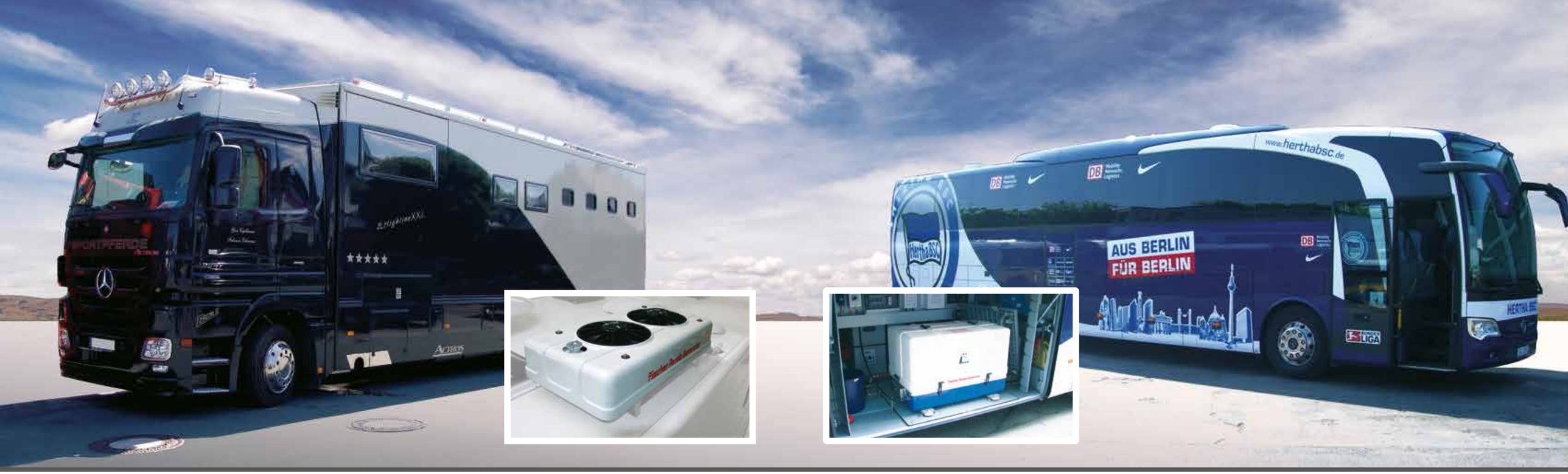
Emergency services
- Command centres
- Border control & customs
- Mobile blood donor units

Promotion
- Mobile stages
- Trade show vehicles
- Formula 1 team vehicles

Specialist services
- Environmental monitoring
- Railway & track maintenance
- Tactical shelters

Communications
- Mobile broadcasting
- Relay and transmitter sites
- Commercial vehicles

Recreational
- Motorized RVs
- Expedition vehicles
- Off-grid and remote sites



Compact, quiet vehicle generators from Fischer Panda

Super-silent sound insulation system
The most significant advantage of all Fischer Panda generators is the low sound level. Many parts are required to work together to achieve this result. A flow of cooling air is not required inside the capsule, this also helps maintain constant ambient temperatures. An efficient water-cooling system requires the radiator to be installed separately from the generator.

Fischer Panda generators up to 25 kW are housed in a fibreglass (**GFK**) sound insulation capsule with "3D" sound insulation material as standard.

From 30 kW, the generator is housed in a stainless steel capsule (**MPL**). Depending on the size of the generator, the MPL sound-insulation capsule consists of 6 to 11 parts. MPL capsules are also available (at an additional cost) for generators from 6 kW to 25 kW.

Various versions of sound insulation material are available:

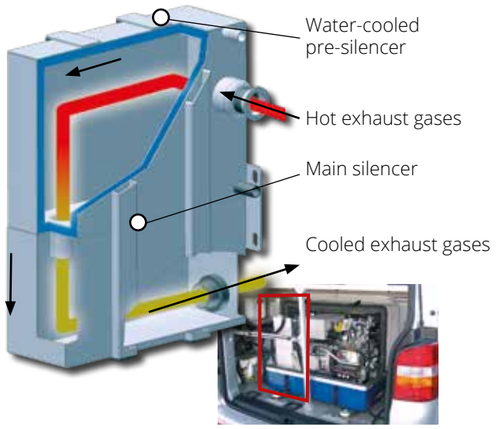
3D: 3 layers, up to 25 mm thick
4DS: up to 5 layers, up to 40 mm thick
6DS: up to 6 layers, up to 60 mm thick

Water-cooled exhaust silencer
PVMV-N, PVK-U and PVK-UK generators (up to 25 kW) are fitted with an internal water-cooled exhaust silencer.

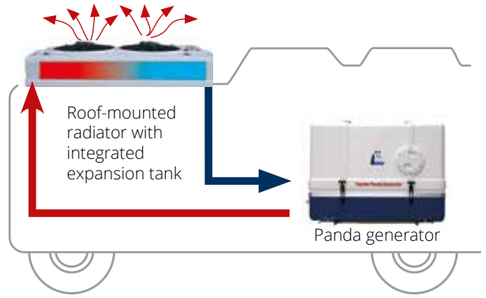
- Less space required for installation
- Water-cooled AC winding
- Can be installed in tight spaces

- Hermetically sealed capsule
- All connections pre-fitted on capsule
- Modular design ensures installation flexibility

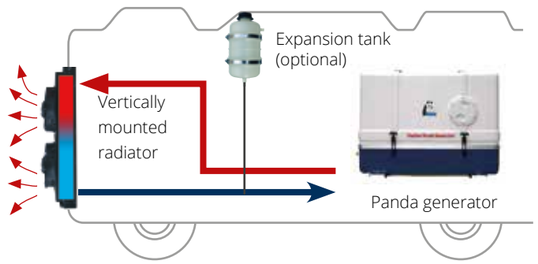
- No appreciable warming of the installation area
- Super-silent sound insulation system
- Water-cooled silencer (up to 25 kW)
- No cooling air circulating within capsule



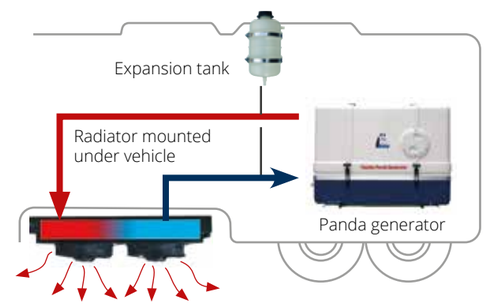
Vehicle installation: roof-mounted radiator
The radiator must be installed where good access for fresh air circulation is guaranteed. The best location is horizontally on the roof of the vehicle. The radiator has an integrated expansion tank.

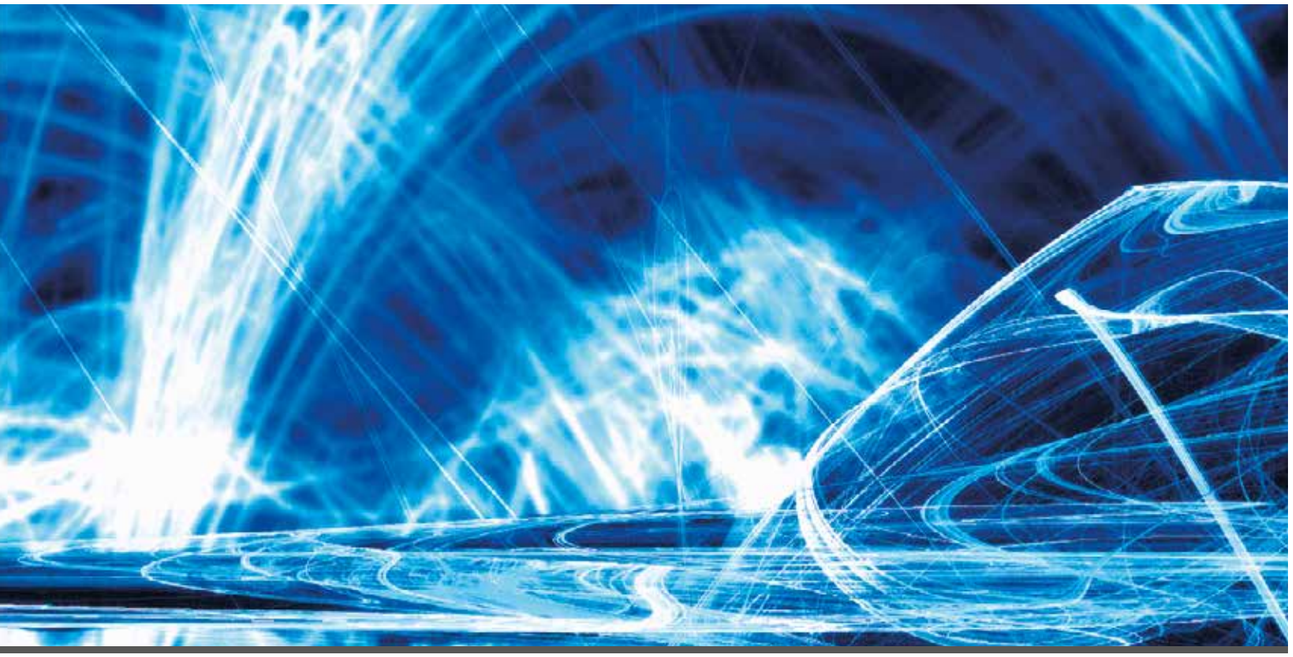


Vehicle installation: vertically mounted radiator
A radiator can be fitted vertically on the vehicle when there is no space on the roof.



Vehicle installation: chassis-mounted
When sufficient clearance is available, the radiator may be mounted under the chassis. The air must be able to circulate correctly so warm air does not flow back over the radiator.





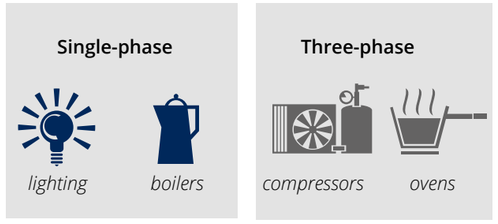
High performance AC windings from Fischer Panda

Single-phase windings
The 230 V 50 Hz, (120/240 V 60 Hz) single phase windings are standard for generators up to 25 kW. A three-phase version should be considered above 12 kW, as the Panda generator permits asymmetrical loads up to 50 % per phase. A Hybrid Power System should also be taken into consideration for small to middle range on-board power systems.

Three-phase windings
The 400 V AC 50 Hz, (208 V 60 Hz) three-phase winding has the highest level of efficiency and the best qualities. This winding can also supply single-phase AC with the appropriate phase distribution. A three-phase generator should always be chosen above 25 kW (from Panda 30).

Reliable and durable
The asynchronous generator delivers high standards regarding both operational security and life. The asynchronous generator is often the preferred choice when a high degree of safety and reliability is demanded.

Fischer Panda warrants the rotor, often the most sensitive part of other generator systems, with a lifetime guarantee. Furthermore, the asynchronous generator continues to be the best suited for water-cooling as the copper winding is the only component producing heat via the stator. The electrical generator is warranted with a 5-year guarantee against corrosion.



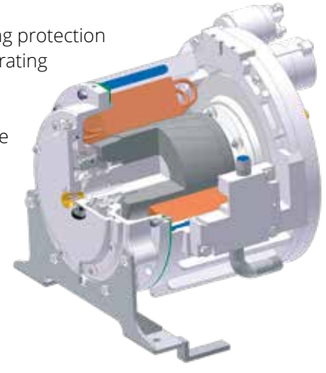
All the benefits of the asynchronous generator:

- Overload protection
- Water-cooled
- Short-circuit stability

- Highest operating protection
- High protection rating
- Brushless

- Perfect sine wave
- No rotating coils
- No diodes

- Precise control
- No signal noise
- Highly efficient



“Perfect Power” iSeries generators with variable speed

The Panda iSeries generators have been especially designed to be compact, quiet and powerful with up to 30 % weight and space savings! They are ideal for superyacht owners looking for a night generator with low operating sound levels and vibrations. The generators are characterised by their modern, innovative and environmentally friendly inverter technology. iSeries generators using parallel inverters can be connected in parallel without any additional cables and synchronised.

The speed of the diesel engine is adjusted according to the user’s changing power requirements while the output voltage always remains constant from the inverter. Variable speed control considerably reduces exhaust emissions and fuel consumption in comparison with a traditional generator with a fixed speed. The maximum speed of the engine is 2800 RPM. The electric load is provided with a constant output voltage of 230 V / 50 Hz or 400 V / 50 Hz via an inverter.

- **Highly efficient - maximum energy**
- **Variable speed - load-dependent**
- **Meets latest emission standards**

- **Modular design ensures installation flexibility**
- **Extremely stable voltage and frequency**
- **Optional CAN SAE J1939 Interface**

“Compact Power” generators

Premium Line: Fischer Panda generators with xControl

The “xControl” management system offers a easy to operate system, a modern and simple system architecture and a modern communication interface. It replaces the current VCS control on Fischer Panda asynchronous generators. Modern data communications and energy systems require that the generator is able to integrate with an existing control and regulation system. With the “xControl”, Fischer Panda offers an extremely powerful and user-friendly generator control system. Through intelligent communication of three main system components (digital panel, connection box and control unit), a reliable operation of the generator is ensured.

“Hybrid Power” generators (AC indirect)

AGT-DC Line: Fischer Panda battery charging generators

Fischer Panda battery charging generators produce direct current and generally function as part of a Hybrid Power System. Battery levels are monitored and automatically charged by the generator. An inverter supplies energy to the 230 V consumers on-board. These systems are ideal for typically varying power demands which do not require a generator to constantly run throughout the day.

Fischer Panda Panels for ease of use and operation

Fischer Panda panels allow the generator to be operated from another location within the vehicle. Options are available for connecting panels in parallel or with a slave panel. The generator can then be operated from two locations for even more flexibility. A panel can be installed in the cabin and another panel can be fitted in the installation area. Important operating information is also displayed.

"AGT Panel" for
"Hybrid Power" DC generators

"Panda iControl" panel for "Perfect Power" iSeries generators

"Panda xControl" panel for "Compact Power" xSeries generators

The standard version remote control panel (for models Panda over 30 kW and above) monitors the following functions:

- Engine coolant temperature
- Engine exhaust temperature
- Engine oil pressure
- Battery charging
- 230 Volt AC
- Cooling-water leakage (optional)

The generator switches itself off when any of these functions are not in the normal state. The standard remote control panel can be upgraded with an additional automatic module to enable the generator to be started (and stopped) by external devices such as timers.

"Generator Control" - standard panel for
„Compact Power" generators > 30 kW

Fischer Panda generators with innovative control

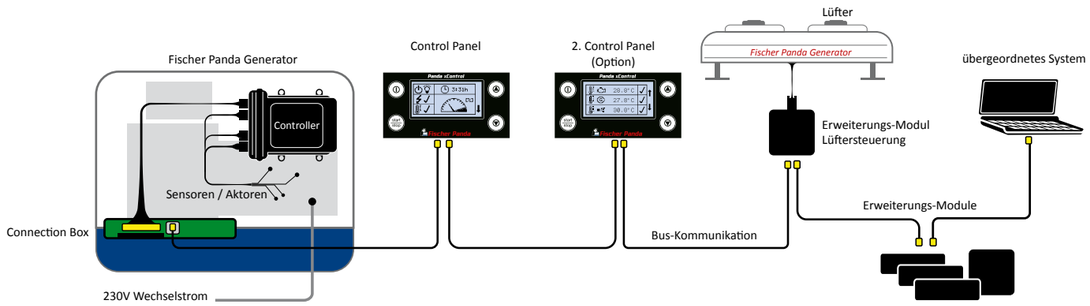
Innovative, flexible and reliable – these are the attributes of the new generator control from Fischer Panda for **„Perfect Power" iSeries generators** and **„Compact Power" xSeries generators up to 30 kW.**

In the age of modern data communications and energy systems, it is more and more important that the generator is able to integrate into an existing control and regulation systems. Fischer Panda offers an extremely powerful and user-friendly generator control system:

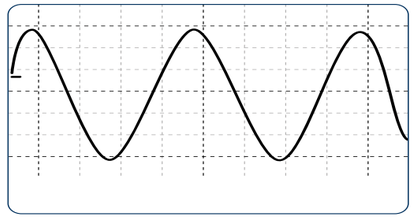
- "Plug & Play" - reduced installation effort
- Modular system - easy to expand
- Logging and display of operational data - complete control at all times

- Comprehensive event logging - long-term service
- Digital panel - easy to use and multilingual
- Communications interface - integration in other control systems

- Self-test of all functions - safe and reliable system
- Automatic start - remote control of generator
- Optional CAN SAE J1939



Perfect sine wave
The Panda combines all the advantages of the asynchronous generator with the voltage control of a synchronous generator.
Asynchronous Panda generators supply a particularly clean sine wave and have achieved the best results during numerous tests in this category. This is essential for the smooth running of sensitive electronic devices such as air conditioners, charging devices, laser printers etc.



The outstanding sine wave of the Fischer Panda generator

Voltage stability with patented Voltage Control System (VCS) tolerance ± 3V
Fischer Panda generators have used their own patented electronic Voltage Control System (VCS) for controlling generator and engine. The engine speed is progressively controlled. This ensures that the output voltage of the asynchronous generator has a tolerance of ± 3V.

SAEJ1939 CANBus Module for xControl / iControl
The Fischer Panda FP Bus provides 100 % SAEJ1939 functionality. This allows the generator to be integrated into a higher level control system. The generator can be remotely started and stopped. All electrical data can be accessed via the bus: voltage, current, frequency and power. Monitoring information such as cooling, exhaust and oil temperatures etc. can also be accessed.

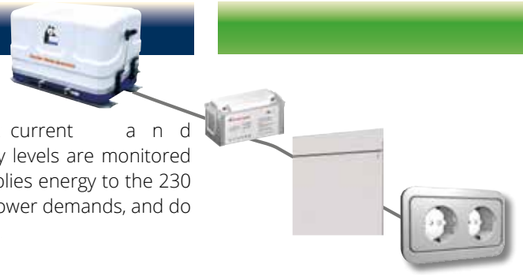
SAEJ1939 CANBus Module for xControl / iControl

Professional solutions from Fischer Panda

Generators for all types of commercial and recreational vehicle applications

Different types of generators are available to provide you with an ideal power solution for your vehicle:

Hybrid AC energy



Fischer Panda battery charging generators produce direct current and generally function as part of a Hybrid Power System. Battery levels are monitored and automatically charged by the generator. An inverter supplies energy to the 230 V consumers on-board. These systems are ideal for varying power demands, and do not require a generator to constantly run throughout the day.

AC energy direct

Fischer Panda AC generators are designed for continuous operation. They produce alternating current directly while running. Not only for operating domestic electrical appliances and electric cooking, they are the right choice for operating demanding consumers such as air-conditioning and compressors. They also produce a very clean sine wave, ideal for sensitive electronic equipment.

Hybrid Power: Powerful battery-charging generators. Ideal for battery systems which may be required to power larger consumers for short periods during the day

Hybrid Power

DC generators

Panda AGT-DC Hybrid
vehicle battery charging generators

12 V / 24 V / 48 V)
(other voltages on request)

- Longer lifespan for generator
- Reduced maintenance costs
- Reduced environmental impact

- Reduced exhaust emissions
- Reduced fuel consumption
- Less noise on board & outside

- Longer battery life
- Smaller battery bank possible
- Up to 30 % smaller and lighter
- Automatic start as standard (optional manual start)

Battery
12 V / 24 V / 48 V DC

Inverter

Battery-powered systems

12 V / 24 V / 48 V DC

Advanced Generator Technology (AGT) only from Fischer Panda

Suited for typical power applications requiring continuous power and higher starting capabilities

Compact Power

Suited for applications requiring continuous power and high starting capabilities with a very stable voltage supply

Compact Power

Generators with variable speed for lower fuel consumption, quieter operation and reduced exhaust emissions

Perfect Power

Asynchronous generators

Panda Premium Line
asynchronous vehicle generators
with voltage control

Voltage tolerance ±3 V

3000 rpm - 50 Hz - 230 V
3000 rpm - 50 Hz - 400 V
3600 rpm - 60 Hz - 120 / 240 V
3600 rpm - 60 Hz - 208 V AC

Panda xSeries Premium Line
asynchronous vehicle generators
with voltage control

Voltage tolerance ±3 V

3000 rpm - 50 Hz - 230 V
3000 rpm - 50 Hz - 400 V

Inverter generators

Panda iSeries
vehicle generators
with variable speed technology

Voltage tolerance ±3 V
50 Hz - 230 V
50 Hz - 400 V
60 Hz - 120 / 240 V (up to 15000i)
60 Hz - 230 V
variable speed - load dependent

Power for domestic electrical consumers

230 V / (120 / 240 V) AC

Complete programme

Fischer Panda generators are available in different versions to suit your individual requirements.

Fischer Panda generators are of compact construction and highly suited for applications with limited space available. They are available for installation inside the vehicle and for mounting externally on the chassis. The modular versions PVMV-N, PVM-NE and PVK-U have been designed to be installed with an external radiator. The most effective cooling is usually achieved using a cooling system with a roof-mounted radiator.

Panda PVMV-N

Vehicle generator with sound insulation capsule, integrated water-cooled vertically mounted pre-silencer and main silencer.

- **Best choice when space is available inside vehicle**
- Easy to install
- Requires external radiator
- Suitable for internal installation

- Complete water-cooled silencer inside capsule
- Also suited for keel cooling in ships

- Glass-reinforced plastic (GRP) capsule standard for models up to 12 kW
- Stainless steel capsule (MPL) for models from 15 kW and above

Panda PVM-NE

The PVM-NE is the standard version for generators above 30 kW. The PVM-NE is similar to the PVMV-N, however the silencer is not water-cooled and is externally mounted on the capsule.

The generator must be installed in a well-ventilated area because heat is absorbed by the silencer. An additional silencer is not necessary. The generator is housed within a sound insulation capsule.

- **Suitable for internal installation**
- Requires external radiator
- Easy to install

Panda PVK-U

Vehicle generators with internal water-cooled silencer for mounting externally on the vehicle chassis. This generator type is ideal for installing on trucks with limited space between axles. The heavy-duty housing is also suitable for expedition vehicles.

- **Designed for external mounting**
- Assembly bolts pre-fitted to housing
- Metal capsule with a heavy-duty cover

- Wide access hatch for easier access
- Water-cooled exhaust silencer inside capsule
- No additional exhaust silencer required
- Requires external radiator

Panda PVK-UK

Vehicle generator “Compact Construction” with integrated cooling system for mounting externally on the vehicle chassis.

- **Designed for external mounting**
- Assembly bolts pre-fitted to housing
- Metal capsule with a heavy-duty cover

- Wide access hatch for easier access
- Sound insulation capsule
- Water-cooled exhaust silencer inside capsule

- No additional exhaust silencer required
- Integrated radiator and cooling system

Panda PSC

Self-Contained generators are complete “turnkey” units fitted with an integrated cooling system, fuel- tank and electrical cabinet.

- **Integrated fuel tank**
- Vertically or horizontally mounted radiator
- Suitable for external mounting

- Sound insulation capsule
- Water-cooled exhaust silencer inside capsule
- No additional exhaust silencer required
- Integrated radiator and cooling system

Technical data for Fischer Panda vehicle generators

"Perfect Power" iSeries generators




Panda generator Model / type	Generator nominal performance HP1 230 V 1 Phase 50 Hz (kW)	HP1 (kVA*)	HP3 400 V 3 Phase 50 Hz (kW)	HP3 (kVA)	Voltage tolerance	Engine manufacturer	Engine type	Displacement cm³	No. of cylinders	Sound level [dBA] (7m / 3m / 1m)	for internal installation PVMV-N (bis 30 kW) / PVM-NE (ab 30 kW) Approx. capsule dimensions L x W x H) mm	Weight incl. capsule (kg)	Standard capsule type	Standard sound Insulation	for installation under the chassis PVK-U Approx. capsule dimensions L x W x H) mm	Weight incl. capsule (kg)	Standard capsule type	Standard sound Insulation	PVK-UK Approx. capsule dimensions L x W x H) mm	Weight incl. capsule (kg)	Standard capsule type	Standard sound Insulation
Perfect Power : iSeries Panda marine generators																						
Panda 5000i.Neo	0-4,0	5			±3 V	Fischer Panda	FP320	309	1	54 / 64 / 68	610 x 460 x 570	request	GFK	4DS	not available in this version				not available in this version			
Panda 5000i	0-4,0	5			±3 V	Kubota	EA300	309	1	54 / 64 / 68	780 x 460 x 430	120	GFK	4DS	761 x 447 x 440	140	MPL	4DS	1204 x 445 x 460	176	MPL	
Panda 5000i GreenTec	0-3,6	4			±3 V	Kubota	Z482	479	2	54 / 64 / 68	660 x 515 x 610	138	GFK	4DS	not available in this version				not available in this version			
Panda 8000i	0-6,4	8,0			±3 V	Kubota	Z482	479	2	52 / 62 / 67	760 x 515 x 609	192	GFK	4DS	780 x 530 x 620	220220	MPL	4DS	1295 x 531 x 621	265	MPL	4DS
Panda 10000i	0-8,0	10,0			±3 V	Kubota	Z602	599	2	52 / 62 / 67	760 x 515 x 609	195	GFK	4DS	809 x 530 x 620	242225	MPL	4DS	1426 x 530 x 620	275300	MPL	4DS
Panda 15000i-230V	0-12,0	15,0			±3 V	Kubota	D902	898	3	54 / 64 / 68	910 x 515 x 619	230	GFK	4DS	910 x 530 x 600	275268	MPL	4DS	1516 x 530 x 625	355	MPL	4DS
Panda 15000i-400V			0-12,0	15,0	±3 V	Kubota	D902	898	3	54 / 64 / 68	910 x 515 x 619	230	GFK	4DS	910 x 530 x 600	268275	MPL	4DS	1516 x 530 x 625	355	MPL	4DS
Panda 25i-230 V	0-20,0	25,0			±3 V	Kubota	V1505	1498	4	54 / 64 / 68	1070 x 650 x 690	335	MPL	4DS	1085 x 545 x 680	request	MPL	4DS	1715 x 534 x 691	460	MPL	4DS
Panda 25i-400 V			0-20,0	25,0	±3 V	Kubota	V1505	1498	4	54 / 64 / 68	1070 x 650 x 690	335	MPL	4DS	1085 x 545 x 680	request	MPL	4DS	1715 x 534 x 691	460460	MPL	4DS
Panda 45i			0-36,0	45,0	±3 V	Kubota	V2403T	2434	4	55 / 65 / 69	1412 x 660 x 880	662	MPL	4DS	1449 x 696 x 820		MPL	4DS	not available in this version			
Panda 60i			0-48,6	60,0	±3 V	Hatz	4H50TIC	1952	4	66 / 69 / 72	1592 x 800 x 870	707	MPL	4DS	not available in this version				not available in this version			
Compact Power : Panda / xSeries generators - 3000 rpm - 50 Hz																						
Panda 8000x	6,8	8,0	6,8	8,0	±3 V	Kubota	Z482	479	2	52 / 62 / 67	870 x 515 x 634	230	GFK	4DS	870 x 523 x 580	279	MPL	4DS	1330 x 522 x 620	332	MPL	4DS
Panda 10000x	8,0	9,4	8,0	9,4	±3 V	Kubota	Z602	599	2	52 / 62 / 67	910 x 515 x 630	240	GFK	4DS	910 x 522 x 620910 x 522 x 620	290290	MPL	4DS	1516 x 522 x 620	340	MPL	4DS
Panda 12000x	10,2	12,0	10,2	12,0	±3 V	Kubota	D722	719	3	53 / 63 / 67	950 x 515 x 629	253	GFK	4DS	960 x 530 x 625	317	MPL	4DS	1566 x 530 x 625	370	MPL	4DS
Panda 15000x	12,7	15,0	12,7	15,0	±3 V	Kubota	D902	898	3	54 / 64 / 68	1010 x 515 x 634	316	GFK	4DS	1000 x 530 x 630	365	MPL	4DS	1606 x 522 x 630	430	MPL	4DS
Panda 18x	15,3	18,0	15,3	18,0	±3 V	Kubota	D1105	1123	3	55 / 65 / 69	1100 x 540 x 680	415	MPL	4DS	1100 x 560 x 680	440	MPL	4DS	1736 x 560 x 680	544	MPL	4DS
Panda 24x	20,4	24,0	20,4	24,0	±3 V	Kubota	V1505	1498	4	55 / 65 / 69	1220 x 540 x 680	465	MPL	4DS	1225 x 542 x 684	492	MPL	4DS	1854 x 542 x 684	492	MPL	4DS
Panda 30x	25,5	30,0	25,5	30,0	±3 V	Kubota	V1505T	1498	4	55 / 65 / 69	1270 x 570 x 700	512	MPL	4DS	1270 x 570 x 690	530	MPL	4DS	1970 x 564 x 690	687	MPL	4DS
Panda 40x			34,0	40,0	±3 V	Lombardini	LDW 2204T	2199	4	55 / 65 / 69	1398 x 650 x 808	695	MPL	4DS	1220 x 680 x 800	request	MPL	4DS	2000 x 950 x 800	851	MPL	4DS

Fischer Panda „Hybrid Power": Panda AGT-DC battery charging generators

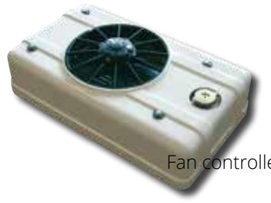
Model / Type AGT generator	Continuous performance (kW)	Nominal voltage (DC)	Constant current rate (A)	Voltage tolerance	Engine manufacturer	Engine type	Displacement cm³	No. of cylinders	Sound level [dBA] (7m / 3m / 1m)	Approx. capsule dimensions (excl. fittings) L x W x H (mm)	Weight incl. capsule (kg)	Standard capsule type	Standard sound Insulation	Approx. capsule dimensions (excl. fittings) L x W x H (mm)	Weight incl. capsule (kg)	Standard capsule type	Standard sound Insulation	Approx. capsule dimensions (excl. fittings) L x W x H (mm)	Weight incl. capsule (kg)	Standard capsule type	Standard sound Insulation
AGT-DC 4000-12	3,2	12	220	±3 V	Kubota	EA300	309	1	55 / 65 / 69	770 x 450 x 430	120	GFK	4DS	761x 440 x 440	140	MPL	4DS	1210 x 450 x 440	158	MPL	4DS
AGT-DC 4000-24	3,2	24	110	±3 V	Kubota	EA300	309	1	55 / 65 / 69	770 x 450 x 430	120	GFK	4DS	761x 440 x 440	140	MPL	4DS	1210 x 450 x 440	158	MPL	4DS
AGT-DC 5000-12	4,0	12	250	±3 V	Kubota	Z482	479	2	52 / 62 / 67	750 x 505 x 615	189	GFK	4DS	request	request	MPL	4DS	request	request	MPL	4DS
AGT-DC 6000-24	4,8	24	170	±3 V	Kubota	Z482	479	2	52 / 62 / 67	760 x 515 x 609	189	GFK	4DS	request	request	MPL	4DS	request	request	MPL	4DS
AGT-DC 8000-24	6,4	24	220	±3 V	Kubota	D722	719	3	53 / 63 / 67	860 x 515 x 614	216	GFK	4DS	request	request	MPL	4DS	request	request	MPL	4DS
AGT-DC 12000	12,0	request		±3 V	Kubota	D902	898	3	54 / 64 / 68	870 x 515 x 614	request	GFK	4DS	request	request	MPL	4DS	request	request	MPL	4DS
AGT-DC 14000	14,0	request		±3 V	Kubota	D1105	1123	3	55 / 65 / 69	request	request	GFK	4DS								
AGT-DC 16000	16,0	request		±3 V	Kubota	V1505	1498	4	55 / 65 / 69	1100 x 550 x 690	366	MPL	4DS								

*) For inverter generators: output performance is calculated with a Cos Phi factor 0.8 up to 40 °C ambient temperature, otherwise calculate with factor 1.0 up to 50 °C.

*) For asynchronous generators (up to and including Panda 15000), the KVA is calculated with Cos Phi 0.85 for a short starting performance of inductive consumers. Otherwise it should be calculated with factor 1.0. Generators above and including Panda 16 are calculated with an optional start performance with compensation or starting current booster, otherwise it should be calculated with a factor of 1.

Dimensions apply for the sound insulation capsule only and do not include latches, fittings etc. Additional room will need to be calculated for the installation to include hoses, cables and capsule mountings. Please confirm current dimensions and weights when ordering.

Roof-mounted radiators from Fis



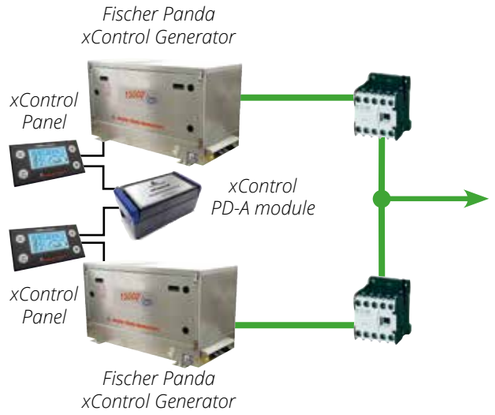
Radiator		Weight (dry)	Approximate dimensions (L x W x H) mm	Article no.	Suited for generator model: Panda 5000i	Panda 8000i	Panda 10000i	Panda 15000i	Panda 25i	Panda 45i	Panda 60i	Panda 8000x	Panda 10000x	Panda 12000x	Pande 15000x	Panda 18x	Panda 24x	Panda 30x	Panda 40x	AGT 4.000-12	AGT 4.000-24	AGT 5.000-12	AGT 6.000-24	AGT 8.000-24	AGT 12.000-48	AGT 14.000-48	AGT 16.000-48	AGT 25.000-48
RD-D: **Roof radiators DC**																												
RD 1.2	24 V	18	705 x 390 x 310	0000472	x															x	x							
RD 2.2	24 V	29	930 x 515 x 321	0022841		x	x					x	x									x	x					
RD 3.2	24 V	32	1055 x 515 x 312	0000426			x	x						x	x									x	x			
RD 3.2 Trop	24 V	40	1055 x 515 x 361	0000425			x	x						x	x									x	x			
RD-A: **Roof radiators AC**																												
RD 3.3	230 V / 50 Hz	36	1055 x 515 x 369	0005837	x	x	x	x				x	x	x	x													
RD 3.3 Trop	230 V / 50 Hz	42	1055 x 515 x 364	0022812		x	x	x				x	x	x	x													
RD 4.2	230 V / 50 Hz	32	735 x 705 x 395	0022807		x	x	x				x	x	x	x							x	x	x	x			
RD 16.2	230 V / 50 Hz	56	1040 x 630 x 392	0022808												x	x									x	x	
RD 6 / 2.2	230 V / 50 Hz	67	1405 x 630 x 414	0022813														x										
RD 6 / 2.2 Dual	230 V / 50 Hz	104	1405 x 640 x 493	0005742																								
RD 7.2	400 V / 50 Hz		858 x 940 x 502	0000418															x									
RD 7.2 Dual	400 V / 50 Hz		1011 x 920 x 597	0005730																								
RD 60i	400 V / 50 Hz		1870 x 878 x 551	0024832							x																	
RV-D: **Side-/underneath radiators DC**																												
RV 1.2	24 V	13	620 x 330 x 214	0000448	x															x	x							
RV 2.2	24 V	21	750 x 450 x 224	0000451		x	x					x	x									x	x					
RV 3.2	24 V	24	880 x 450 x 224	0000449			x	x						x	x									x	x			
RV 3.2 Trop	24 V	30	920 x 450 x 254	0000452			x	x						x	x									x	x			
RV-A: **Side-/underneath radiators AC**																												
RV 3.3	230 V / 50 Hz	30	880 x 450 x 210	0005839	x	x	x	x				x	x	x	x													
RV 3.3 Trop	230 V / 50 Hz	33	920 x 450 x 259	0005817		x	x	x				x	x	x	x													
RV 5.2	230 V / 50 Hz	32	580 x 610 x 356	0005793		x	x	x				x	x	x	x							x	x	x	x			
RV 13.160	230 V / 50 Hz	52	601 x 690 x 441	0005799												x	x									x	x	
RV 6/2.2	230 V / 50 Hz	63	1280 x 550 x 322	0005808														x									x	x
RV 6/2.2 Dual	230 V / 50 Hz	81	1280 x 556 x 378	0005801					x																			
RV 14.120	400 V / 50 Hz	48	690 x 780 x 355	0022804														x	x									x
RV 14.160	400 V / 50 Hz	55	690 x 780 x 407	0005814															x									
RV 7.2	400 V / 50 Hz	63	800 x 1000 x 416	0000428																								
RV 7.2 Dual	400 V / 50 Hz	78	940 x 800 x 438	0005798						x																		
RV 8.2	400 V / 50 Hz		1012 x 1100 x 396	0005786																								

[1] No value = on request. Fischer Panda GmbH reserves the right to change technical information without prior notice.

Parallel power from Fischer Panda generators

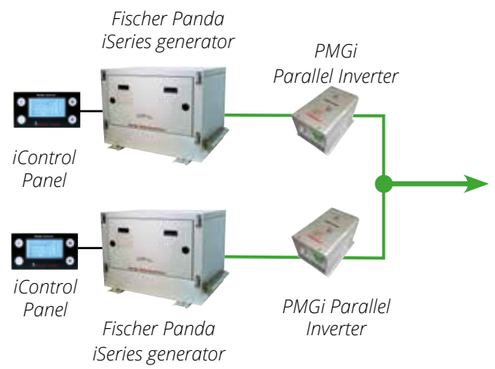
Load transfer for Fischer Panda generators with xControl
The xControl PD-A (Parallel Device) module allows two Fischer Panda xControl AC generators to be connected in parallel. Electrical loads can be switched from one generator to another (uninterrupted) or their outputs can be combined (load sharing).

The PD-A is connected to each generator's data bus. The generators are set to "parallel-mode" via the xControl display menu. The PD-A monitors boths generators and synchronises their output. The load is switched from one generator to the other when their outputs are synchronised. Both single and three phase generators can be connected in parallel using the PD-A module.



Parallel "Perfect Power - iSeries" generators
Optional available parallel inverters can be used to easily connect several iSeries generators of different types in parallel. Extra cables or additional cabinets are not required. Each generator is fully independent and can be individually operated.

- Several generators (even if they have different outputs) can be easily connected
- Load-Sharing: generators are equally loaded when operating in parallel (generators operate with output of smallest generator)
- Ideal for applications which may benefit from installing smaller generators to improve weight distribution



Fischer Panda power for rail and locomotive applications

- Auxiliary power and charging
- Maintenance wagon equipment
- Accommodation carriage systems

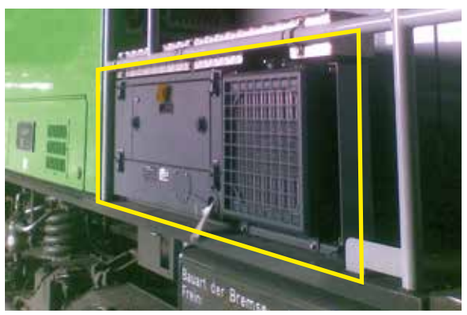
Fischer Panda generators are installed on a variety of railway applications providing battery charging for the locomotives, powering equipment used by maintenance wagons or supplying power to accommodation carriages.

Generators provide power to each of four accommodation carriages on board the luxury Danube Express, supplying electrical systems for air-conditioning, en suite showers and cabin lighting. The quiet supply of power is also of importance during overnight stops in cities. The operation of locomotive engines at night are often restricted due to noise levels.

The generators are also used as auxiliary power sources supplying power for tasks which are usually powered by idling the locomotive's engine such as cabin heating or preventing cooling systems from freezing in winter weather. AC generators are also used on maintenance wagons to power tools, compressors, pumps and floodlighting during track repair and replacement.

The generator's low profile is ideal for mounting externally underneath the wagon. The heavy-duty sound shield provides additional protection if the generator is installed externally.

Radiator mounted separately on wagon roof



External Fischer Panda DC generator with side-mounted radiator.

Even when the unit is completely submerged under drifting snow, the raised exhaust and air intakes allow the generator to continue operating.

Fischer Panda power for isolated and unmanned applications

- Ideal for remote communication and monitoring
- Extremely long service interval (up to 1500 hours)
- Fully automatic operation and monitoring
- Hybrid Systems: combine with battery, solar and wind power

Fischer Panda generators are ideal for remote communication and monitoring sites. Their compact and robust design makes them suitable for operating in remote areas and exposed locations. These sites are often unmanned and operate for prolonged periods, requiring only routine maintenance schedules and refueling.

Fischer Panda Hybrid-DC generators provide powerful battery charging capabilities and can be integrated with wind and solar-based systems. The generator starts and stops automatically when the battery banks require recharging.

Fischer Panda AC generators are especially suited for applications which require even more continuous power such as providing extra coverage at large events. The iSeries generators with iControl are designed to allow longer periods between maintenance schedules when operating with lower loads.

Options and services are available to meet individual specifications and requirements. The generators are designed to be connected to an external fuel source within a container-based system. Generators with integrated fuel tank and electrical distribution are available on request.

This 12 kW Panda, inside a mobile GSM station from Czech company Meico Systems, carried out 24-hour operational periods for over one and a half years. The unit operated for more than 19,960 hours; stopping only for routine servicing and minor repairs.

Fischer Panda power for off-grid buildings

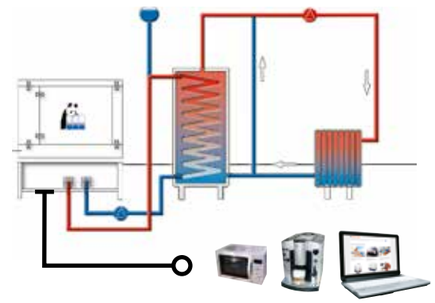
- Power for off-grid and remote buildings
- Co-generation (electric power and heating)
- Hybrid systems: combine with battery, solar and wind power

Fischer Panda vehicle generators can also be used for supplying power to off-grid or remotely located buildings such as mountain hostels, weekend homes or even alpine huts. The generator's low space requirements and compact construction is suited for buildings where space is limited. Effective sound shielding reduces operating noise and low vibrations. The generator is easy to operate using a panel which also features an automatic start.

Power is available for larger consumers including electric cooking, boilers and even air-conditioning. Guests can also enjoy the comfort of being able to use domestic consumer appliances such as hair dryers and coffee makers.

The generator can also be used to form an effective Combined Heat and Power system (CHP) system. This uses heat from the exhaust and radiator to supply the water-heating system while the generator is running. The system's overall efficiency is increased. Fuel supply may be an important factor in remote locations. Options for using alternative fuels are available on request. A higher degree of efficiency can be achieved if used in a hybrid system with battery, solar and wind power.

This three-phase Panda is installed in a basement. Main fuses, panel and radiator control are fitted in an electrical cabinet.



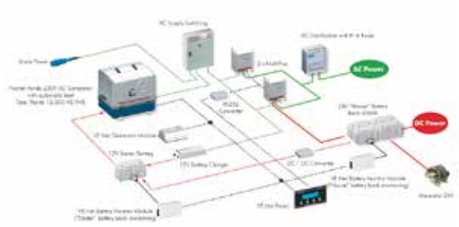
Overall efficiency can be increased when excess heat from engine (exhaust and cooling) is also used to heat water when electrical energy is generated.

Installation services and support from Fischer Panda

Installation kits
Fischer Panda supplies installation kits with all the necessary cables, hoses, connection pieces and accessories to ensure the system can be correctly installed inside the vehicle or externally on the chassis. Specific hose and cable lengths are available on request.

Custom services for special requirements
Fischer Panda offers extensive services for adapting generators for use with special equipment and commercial applications. This includes electro-magnetic hydraulic couplings for driving mechanical-hydraulic pumps and also mounting slides to provide access to the generator.

Powerful energy systems
Fischer Panda Generators form the backbone of our intelligent and innovative solutions whether you are upgrading an existing installation, connecting to another system or ensuring you have sufficient energy when a land power connection is not available.



Fischer Panda SOS-24/7 hotline
For urgent enquiries or generator failure outside our normal business hours, you can ring the Fischer Panda international switchboard on +49 5254 9202-767 (SOS on a key-operated telephone). Please leave your name, number and the purpose of your call on the answerphone / voice mail. This service is operated 24/7 by employees at Fischer Panda.

Global Service Directory
With a coordinated network of distributors, dealers and service stations, Fischer Panda has trained specialists and a worldwide dealer network ready to help, give advice and recommend the best service station depending on the location of your vehicle or yacht..
The Global Service Directory can be downloaded from the company website at: http://www.fischerpanda.de/globalservice

Service kits
Fischer Panda Service Kits contain original parts which meet the required specifications and are suited for normal workshop servicing. Fischer Panda Service “Plus” Kits contain all the relevant spare parts for the first 600 hour service interval.Service Plus kits are supplied in a handy waterproof plastic box so all the items are protected during storage. The Fischer Panda Installation Guide can be downloaded from the company website at: http://www.fischerpanda.de/installation

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