Shop Manual

VEBM120100

WA115-3

WHEEL LOADER

SERIAL NUMBER
WA115H30051 AND UP

- This shop manual may contain attachments and optional equipment that are not available in your area. Please consult your local KOMATSU distributor for those items you may require. Materials and specifications are subject to change without notice.

- WA115-3H is equipped with the engine S4D106-1HC
  For details of these engine see Engine Shop Manual, P/N: YMHINSHI-H8013.

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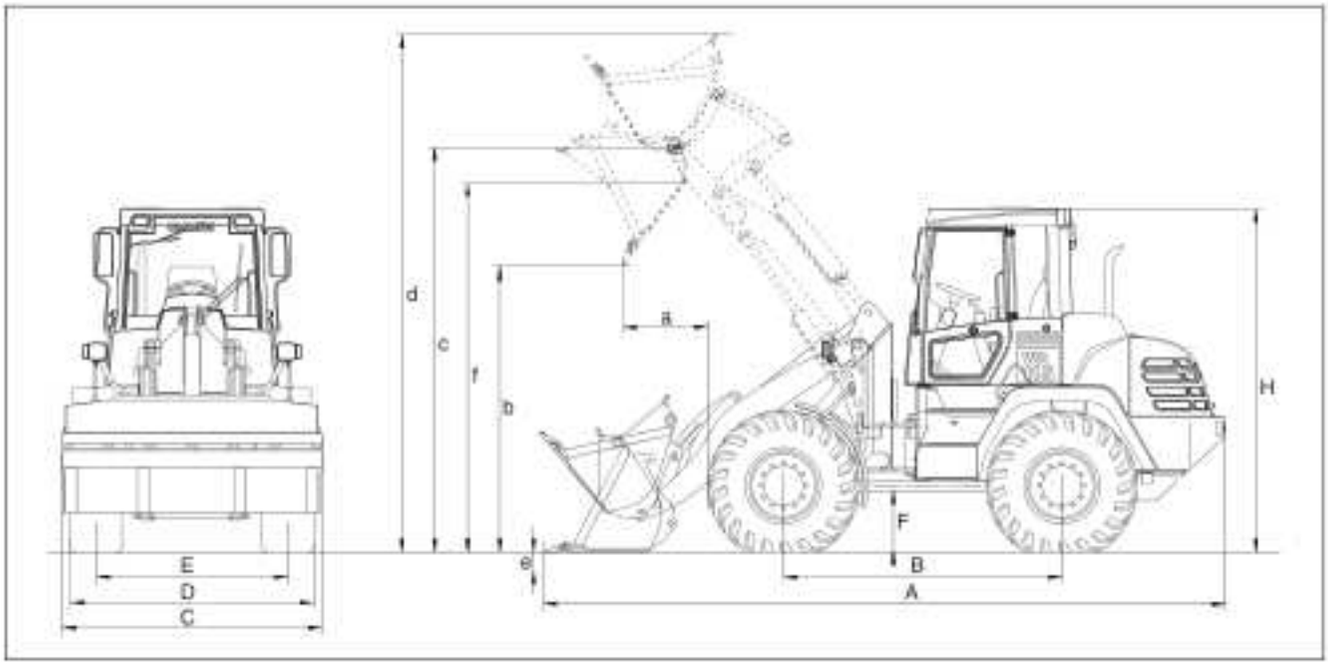
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Specifications

Machine model			WA115-3
Serial No.			WA115H30051 and up
Engine	Model		S4D106-1HC
	Type		4-cycle Diesel naturally aspirated
	No. of cylinders - bore/stroke [mm]		4 - 106 / 125
	Piston displacement [cm³]		4,412
	Flywheel horsepower [kw (PS/HP)]		65 (88.4/87.2)
	Maximum torque [Nm at rpm]		366 /1500
	Starting motor		12V - 23.0 kw
	Alternator		12V - 80 A
	Battery		12V - 92 Ah
Power train	Reduction gear		2-stage
	Differential		Limited slip differential, locking value 45%
	Drive type		Front-, rear-wheel drive
Axle, wheel	Tire		455/70 R24
	Turning radius 40°		Over tires 4.635 mm Over bucket 5.100 mm Over rear frame 4.635 mm
Brakes	Service brake		Wet-type disc brake in the rear axle (acting on all 4 wheels)
	Parking brake		Wet-type disc brake in the rear axle (acting on all 4 wheels)
Steering system	Type		articulated steering
	Structure		hydrostatic
Hydraulic system	Main pump		Gear pump
	Delivery [cm³/1 revolution]		52.4
	Control valve	Operating pressure [bar]	3-spool type 210
		Steering pressure [bar]	Orbit-roll valve type 175
	Cylinder	Boom cylinder No. - bore × stroke [mm]	2 - 95 × 702
		Tilt cylinder No. - bore × stroke [mm]	1 - 70 × 660
		Steering cylinder No. - bore × stroke [mm]	1 - 57 × 395
Work equipment	Work equipment lever type		Multi function lever
Speed	Travel speed [km/h]		
	1st travel range (20 km/h)		0 - 7.0
	1st travel range (35 km/h)		0 - 15.0
	2nd travel range (20 km/h)		0 - 20.0
	2nd travel range (35 km/h)		0 - 35.0
Weight	Operating weight [kg]		7.460

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Dimensions, weights and operating data



Dimensions, operating data									
	Bucket type	**m³**	**Universal**	**Multi purpose**	**Mulch grab**	**Side dump**	**Stock pile**	**High dump**	**Light material**
	Bucket capacity as per ISO 7546		**1.3**	**1.2**	**1.3**		**1.5**	**1.7**	**2.2**
	Dumping weight	t/m³	1.8	1.8	1.8		1.8	1.0	1.0
	Bucket weight without teeth	kg	554.5	808	804	885	601	1.224	876
	Stat. tipping load, straight	kg	6.064	6.547	5.601	5.230	6.116	4.604	5.393
	Stat. tipping load, 40° articulated	kg	5.307	5.752	4.876	4.385	5.353	3.981	4.672
	Break-out force hydraulic	kN	73,3	71.5	72.0	57.4	67.5	44.0	53.0
	Lifting capability hydr. at ground level	kN	76,7	76.9	76.0	58,4	77.0	60.0	74.0
	Operating weight	kg	7.456	7.736	7.720	7.800	7.560	8.120	7.800
	Turning radius at corner of tyres	mm	4.520	4.520	4.520	4.520	4.520	4.520	4.520
	Turning radius at bucket edge	mm	4.915	4.950	4.920	4.985	4.930	5.200	5.100
a	Reach at 45°	mm	815	810	885	995	860	1.420	1.055
b	Dumping height at 45°	mm	2.774	2.770	2.697	2.585	2.722	4.020	2.460
c	Centre hinge pin height	mm	3.595	3.595	3.595	3.595	3.595	3.595	3.595
d	Height bucket top edge	mm	4.590	4.550	4.690	4.755	4.692	4.875	4.750
e	Dig depth	mm	85	96	88	103	83	138	125
f	Max. loading height at 45°	mm	3.245	3.245	3.270	3.200	3.315	4.360	3.243
A	Overall length, bucket grounded	mm	5.975	5.980	6.100	6.250	6.025	6.602	6.350
B	Wheelbase	mm	2.444	2.444	2.444	2.444	2.444	2.444	2.444
C	Bucket width	mm	2.300	2.300	2.300	2.300	2.310	2.503	2.500
D	Width over tyres	mm	2.200	2.200	2.200	2.200	2.200	2.200	2.200
E	Track width	mm	1.700	1.700	1.700	1.700	1.700	1.700	1.700
F	Ground clearance	mm	378	378	378	378	378	378	378
H	Overall height	mm	3.010	3.010	3.010	3.010	3.010	3.010	3.010

All measurements with tyres 455/70 R24 SPT 9. If fitted with tyres sized 15.5 R25: dump heights -14 mm, dump reaches +14 mm.
Details given are for buckets without teeth; if equipped with teeth: dump height -134 mm, dump reach +134 mm, overall length +134 mm.

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Weight table

This weight table is a guide for use when transporting or handling components.

Components	Weight [kg]
Engine	306
Radiator	45
Drive shaft	29
Front axle	273
Rear axle with reduction gear	404
Steering valve	4.5
PPC valve	5.2
Steering cylinder	39
Variable-displacement motor • Motor A6VM 80 • Motor A6VM 107	 34 47
Variable-displacement pump	50
Hydraulic pump	17.3
Main control valve	

Components	Weight [kg]
Boom cylinder	
Bucket cylinder	
Engine hood	
Engine hood carrier	
Front frame	655
Rear frame	777
Quick-coupler	140
Bellcrank	52
Boom (including bushing)	326
Bucket	see page 01-3
Counterweight	1011
Battery	27.1
Floor, Cab assembly	
Operator's seat	32

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Lubricants and operating mediums

WA115-3	LUBRICANTS, FUELS AND FILLING CAPACITIES					
	Lubricants, fuel etc.	BI code **)	Quality grades	Tempera-ture ranges	Viscosity ranges	Approx. filling capacity in litres
Engine	Engine Oil EO	EO 1540 A EO 1030 A NRS	CCMC D4 or, if not available: API CE or API CF -4 [2])	-25° to 45°C -20° to 30°C -15° to 20°C	SAE 15W-40 *) SAE 10W-30 SAE 05W-30	14
Transfer Gear Box Standard Type High Speed Version	Gear Oi GO	GO 90 LS	API-GL5 +LS or MIL-L-2105D +LS	– –	SAE 90 LS	1.6 1.0
Front Axle	Gear Oi GO	GO 90 LS	API-GL5 +LS or MIL-L-2105D +LS	–	SAE 90 LS *) SAE 85W-90 LS SAE 80W-90 LS	Planet Gear: 2 × 1.5 Differential: 4.5
Rear Axle	Gear Oi GO	GO 90 LS	API-GL5 +LS or MIL-L-2105D +LS	–	SAE 90 LS *) SAE 85W-90 LS SAE 80W-90 LS	Planet Gear: 2 × 1.5 Differential: 4.5
Hydraulic system, steering, brakes	Hydraulic Oil HYD	HYD 0530 HYD 1030 HYD 1540	HVLP, HVLP D	-15° to 20°C -20° to 30°C -15° to 45°C	ISO VG 46 *) ISO VG 68 ISO VG 100	85
	or Engine Oil EO	EO 1540 A EO 1030 A NRS	CCMC D4 or, if not available: API CE or API CF -4 [2])	-15° to 20°C -20° to 30°C -15° to 45°C	SAE 15W-40 *) SAE 10W-30 SAE 05W-30	
	or Hydraulic Oil BIO-E-HYD	BIO-E-HYD 0530	HEES (acc. to VDMA fluid technology)	-15° to 20°C	ISO VG 46	
Service Brake	Automatic Transmission Gear Oil	AFT	AFT, Type A Suffix A	–	–	0.7
Cooling syste	Long-Time Coolant	SP-C	Antifreeze and Cor-rosion Protection	Proportion of Mixture: 50% Coolant : 50% Water Min. Freeze Proofing: -34° C		15.0
Fuel tank	Diesel fuel [3])	CFPP class B CFPP class D CFPP class E CFPP class F	DIN-EN 590	up to 0°C up to -10°C up to -15°C up to-20°C		120
Grease nipples, central lubrication	Multi-purpose grease MPG on a lithium base	MPG-A	KP2N-20	–	NLGI 2	
Air conditioning	Coolant Refrigerating machine oil	NRS NRS	R134a (CFC-free) PAG (polyalkyleneglycol)			1.200 g 180 cm³

⚠ The specified filling capacities are approximate guidelines; test specifications are binding. The selection of the viscosity class depends on the predominantly existing outside temperature. The temperature limits are to be regarded as guidelines which can be exceeded up or down for a brief period.

*) Works filling
[2]) If no engine oil of the API CE or API CF-4 specification is available, API CC or API CD-classified engine oil can be used alternatively. The oil change intervals must be split in half in this case, however.
[3]) If the fuel sulphur content is between 0.5 and 1.0 %, the oil change interval must be 1/2 normal. With a sulphur content of more than 1.0 %, the oil change interval must be 1/4 normal.

**) BI codes are the "standard lubricants" for construction machinery and vehicles of the Hauptverband der Deutschen Bauindustrie e.V. (BI). The brochure "Regelschmierstoffe für Baumaschinen- und Fahrzeuge" (Standard Lubricants for Construction Machinery and Vehicles" can be obtained from bookstores or Bauverlag GmbH, Wiesbaden and Berlin, under the ISBN no. 3-7625-3102-1."

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Wiring diagram – Fig. 4

NOTE
See wiring diagram 4 in chapter 90 "APPENDIX", page 10-138

Sect.	Description			Sect.	Description	
85	S437	Sprinter switch		99	Y412	OCV2 solenoid valve
86	Y436	Sprinter solenoid valve		100	S54	Heater/air conditioner blower switch
87	H438	Sprinter pilot lamp		101	M78	Heater/air conditioner blower motor
87	P426	Instrument paneel		101	K296	Relay for air conditioner
89	E71	Licence plate illumination left		102	V118.2	Diode 15 A
90	E72	Licence plate illumination right		103	B293	Air conditioner thermostate
90	S261	Drive range switch		104	Y293	Compressor solenoid coupling
92	S316	ALS switch		104	S296	Air conditioner switch
92	H316	ALS switch pilot lamp		104	H296	Air conditioner pilot lamp
94	B228	Speed sender		105	B296	Heat exchanger pressure switch
94	K314	ALS rotation switch		108	M296	Heat exchanger blower motor
96	H318	ALS solenoid valve pilot lamp		109	S439	Travel direction switch
96	Y315	ALS solenoid valve		110	Y174	3rd control circuit solenoid valve
98	Y411	OCV1 solenoid valve		111	S173	3rd control circuit switch
Connectors						
X J		Instrument paneel connector		X M		Engine connector
X L		Platform connector		X F		Front frame connector
X C		Cabin connector				
Fuses						
F...		Fuse				

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Troubleshooting

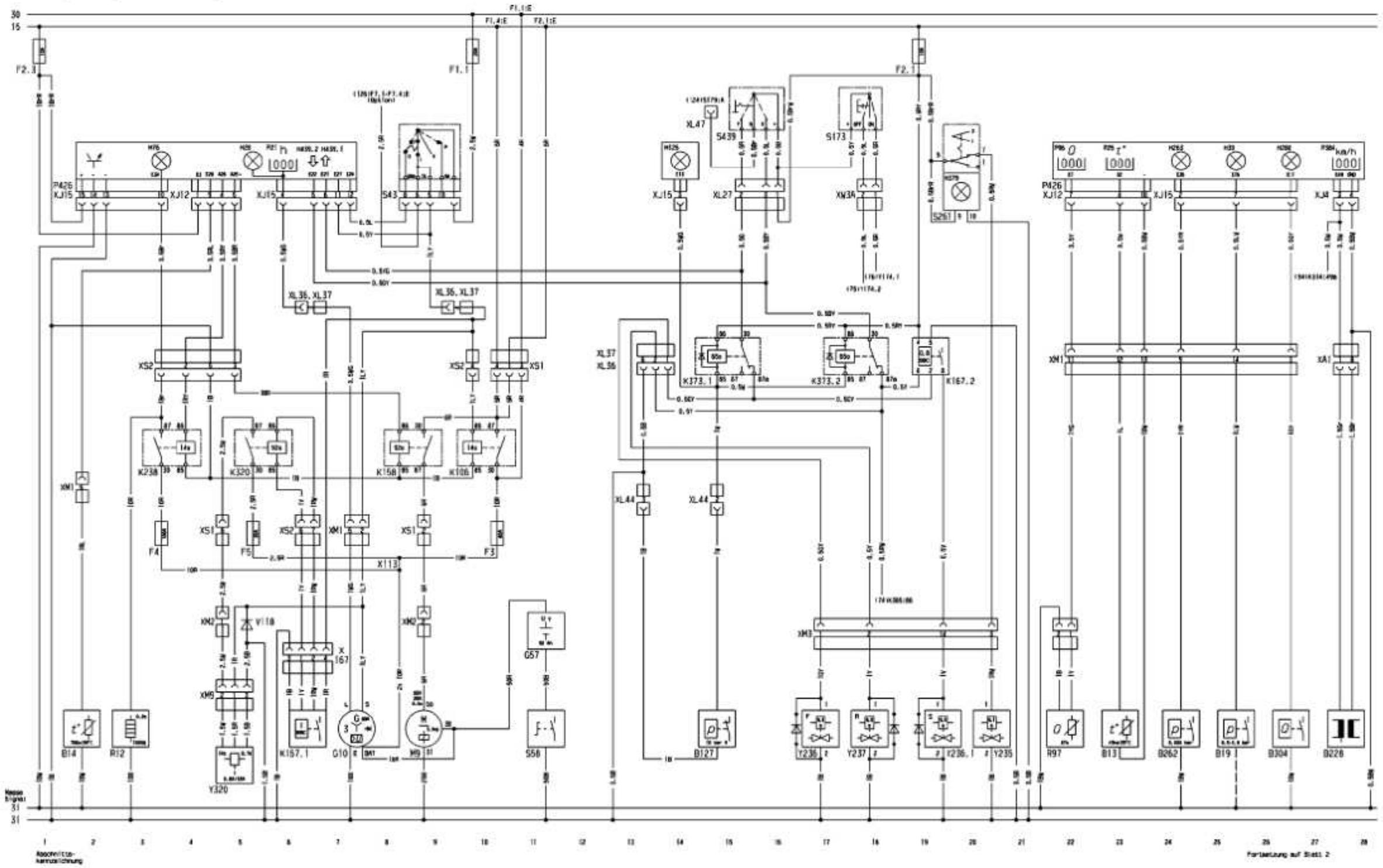
Checks prior to trouble shooting:

- Check belt tension
- Check condenser
- Check condenser blower, rotation direction right
- Compressor switches on and off
- Compressor clutch OK
- Function of air vents OK
- Coolant level OK (inspection glass)
- Condensation drain away
- Air temperature OK

Fault	Cause	Remedy
Low pressure too high High pressure too high	• System too full • Condenser is dirty or blocked • Blower faulty or wrong rotational direction	• Check filling level • Clean condenser or replace • Repair blower or replace
Low pressure too low High pressure too high	• Dryer blockes • Faulty expansion valve • Compressor faulty	• Replace dryer • Replace expansion valve • Replace compressor
Low and high pressure the same	• Compressor faulty	• Check drive belt - belt pulley - magnetic clutch, if all correct, proceed as for "Compressor does not switch on"
Low pressure too low High pressure normal	• Faulty expansion valve • Dirty or blockes vaporizer	• Replace expansion valve • Clean or replace vaporizer
Low pressure too low High pressure too low	• Expansion valve faulty • Not enough coolant • Insufficient cooling effect only for short time; water in system, expansion valve iced up as a result • Dryer or expansion valve partially blocked • Vaporizer iced up • Thermoswitch not working	• Replace expansion valve • Refill air conditioning system • Evacuate system, replace dryer • Replace dryer or expansion valve • Check the ON and OFF times of the compressor • Adjust or replace the thermoswitch
Compressor switches on and off at speed	• Loose contact in the electric system • Coolant pressure too high	• Check electrical system (air conditioner switch, thermostat) • Check air conditioning system pressure and refill if necessary
Compressor constantly running as well	• Thermostat not working	• Check whether sensor lead has been pushed into the vaporizer correctly • Check wether the sensor lead is okay • Adjust or replace thermostat
Compressor does not switch on	• Not enough coolant in system • Air conditioning system power supply interrupted	• Check air conditioning system pressure and refill if necessary • Check electrical system
Condenser fan not working	• Fault in the electrical system • Fan faulty	• Check electrical system • Repair fan or replace

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Wiring diagram – Fig. 1



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