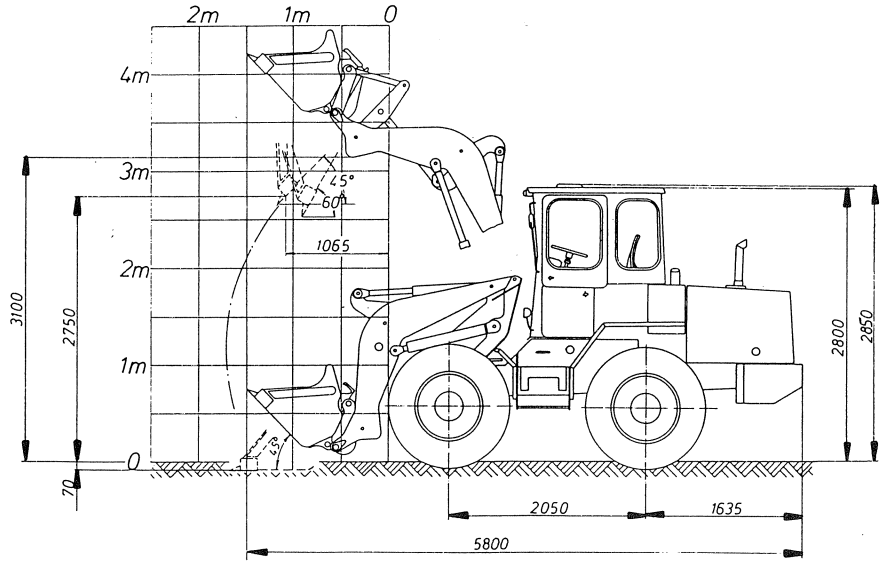

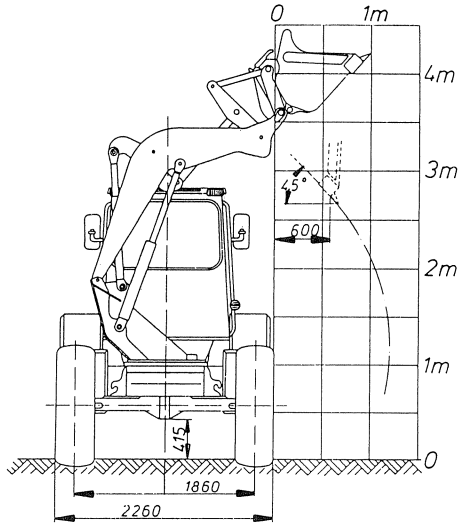

Diagram of reach with shovel 1.0 m³

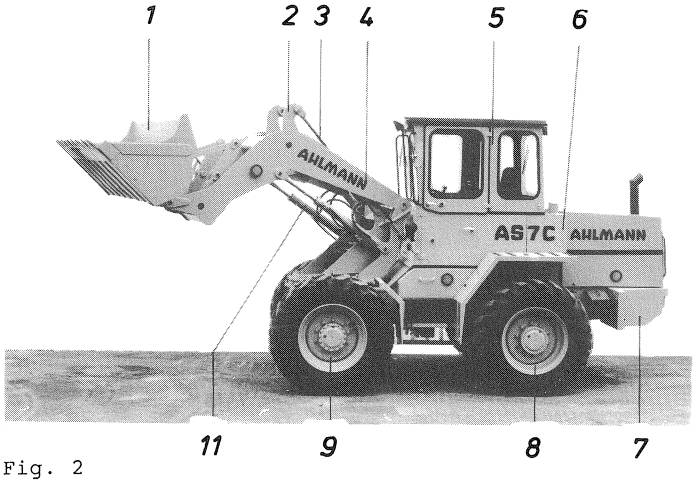

Fig. 2

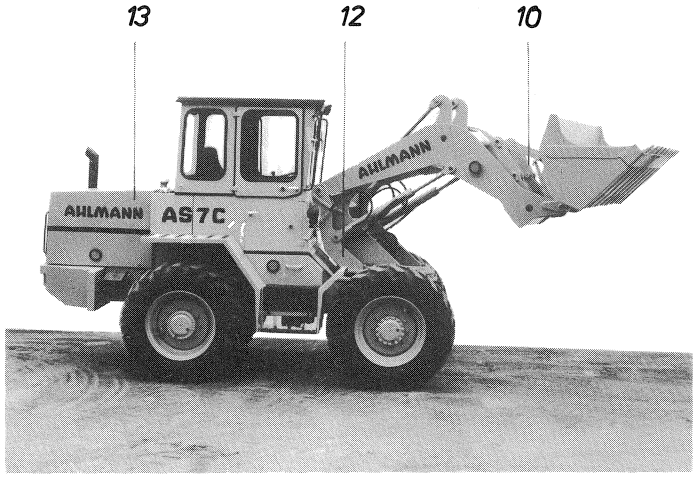

Fig. 3

1 Shovel
2 Reversing lever
3 Tilt cylinder
4 Shovel arm
5 Driver's cab
6 Fuel/hydr. oil tank
7 Counterweight
8 Rear axle
9 Front axle
10 Quick-changing frame
11 Lift cylinder
12 Swivel chair
13 Engine hood

Fig. 4 Swing shovel loader with grab

Fig. 5 Backhoe loader

Fig. 6 Swing shovel loader with crane hook

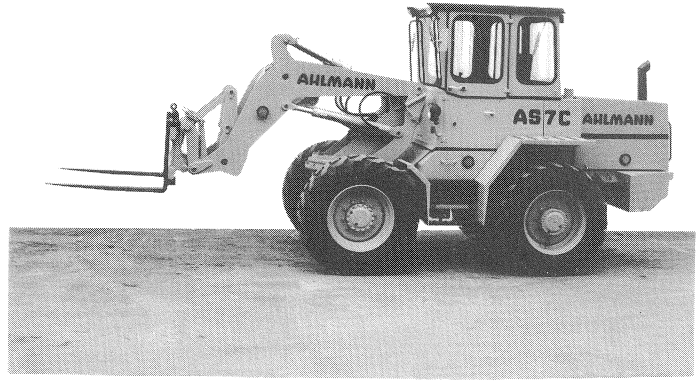

Fig. 7 Swing shovel loader with fork-lift attachment

1.1.1 General instructions

- The term "right-hand" or "left-hand" means viewed from the driver's seat.
- Design modifications reserved.
- Chassis No. ..... (D) for air-cooled engines
- Chassis No. ..... (P) for water-cooled engines

1.2 Technical data

Engines

1) Air-cooled diesel engine Klöckner-Humboldt-Deutz AG, type F 4 L 913, 4 cylinders, 4-stroke cycle, direct injection, volumetric displacement 4086 cm^3, output 59 kW at 2500 r.p.m. according to DIN 70020, max. torque 255 Nm at 1550 r.p.m.. Fuel consumption: 230 g/kW/h at max. torque.

2) Water-cooled diesel engine Perkins, type 4.248 Pr, 4 cylinders, 4-stroke cycle, direct injection, volumetric displacement 4070 cm^3, output, 60.5 kW at 2500 r.p.m. according to DIN 70020, max. torque 260 Nm at 1400 r.p.m.. Fuel consumption: 242 g/kW/h at max. torque.

Starter

4.0 kW, 24 V for both engines.

Filter systems

Dry air filter systems for both engines.

Transmission
- Combustion engine
- Axial piston pump is flanged to combustion engine.
- Axial piston engine is flanged to transfer gear-box.
- Transfer gear-box with switched steps, working and driving speed, neutral position.
- Maximum operating pressure of the driving hydraulics is 410 + 20 bar.
- Further transmission of torque by means of one cardan shaft to the front axle and one to the rear axle.
- The front axle is equipped with planetary gears and a limited slip differential.
- The rear axle is equipped with planetary gears. If desired, the rear axle can also be equipped with a limited slip differential.

NOTE

The limit effect of the limited slip differential is changed by wear.

TYRES

- Tyres 15.5 - 25 / 8 PR
- Tubeless
- Inflation pressure 2 bar
- All tyres may be filled with a water/magnesium chloride mixture (no standard). Tyres filled with water/magnesium chloride are frost-proof up to -25 °C.
- Mixed tyre equipment is to be avoided
- Tyre nuts are tightened at a tightening torque 500 - 600 Nm.

Driving speeds, axle loads, weights

Swing shovel loader - type "C"

Working speed	0 - 13 km/h	optional 0 - 10.5 km/h
Transport/road speed	0 - 25 km/h	optional 0 - 20 km/h

Noise abatement: corresponds to the presently valid regulations.

Swing shovel loader - type "CS"

Working speed	0 - 13 km/h
Transport/road speed	0 - 35 km/h

Noise abatement: corresponds to the presently valid regulations.

Date corresponding to all types of swing shovel loaders

Thrust on dry concrete ground	55 kN
Climbing ability with load	2000 kp = 65 %
Minimum turn: external	R = 5.85 m
internal	R = 3.25 m
Pendulum travel of the steering axle	11 ° up and down = 400 mm
Ford depth	0.8 m (on request)

Axle loads:

Front) empty weight with		28 kN
Rear) shovel		44 kN
Allowable axle load, front)	at max.	36 kN
Allowable axle load, rear)	driving speed acc. to StVZO	49 kN

Dumping load:

In the front	41 kN
Horizontal swing 90 °	40 kN

Weight:

Basic unit with quick-changing frame and with shovel	7 200 kg
Basic unit without quick-changing frame and without shovel	6 700 kg

Steering mechanism

The hydrostatic steering mechanism is fed by the gear pump 38 cm^3/rev. by means of a priority valve. With low expenditure of force at the steering wheel the oil is led into the steering cylinders by a servo valve.

Max. steering pressure 120 bars.

Emergency steering mechanism

The hydrostatic steering system may also be used at failure of the combustion engine. In this case the expenditure of force at the steering wheel is considerably higher. In case the swing shovel loader is to be towed, the speed is to be adopted to the emergency steering mechanism.

CAUTION

The unit is equipped with a rear axle steering mechanism. The steering characteristics are not equal to that of a passenger car.

Brake systems

1. **Service brake:** Foot operated hydraulic single-circuit brake system acting on 3 brake disks. The brake disks are mounted to the cardan shaft flange of the power divider and front axle.

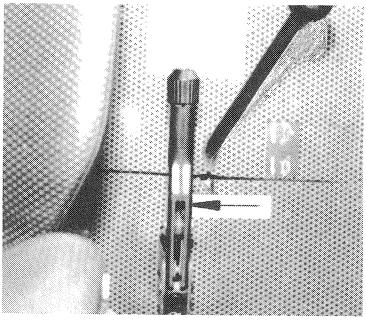

Fig. 8

2. **Parking brake:**
   The swing shovel loader is equipped with a parking brake operated by hand force. The parking brake is actuated by a hand lever (Fig. 8/arrow) arranged on the right-hand side of the driver's seat, operating the brake tongs at the disk brake by means of a Bowden cable.

3. **Permanent brake:** (Hydrostatic braking ratio)
During normal operation of the swing shovel loader it is sufficient to take the foot from the accelerator. Owing to the hydrostatic drive the travelling speed is reduced to standstill.

ATTENTION

This hydrostatic brake does not replace the parking brake.

CAUTION

Prior to leaving the driver's cab, the direction switch has to be in neutral position and the parking brake has to be applied.

Electric systems

Voltage 24 V
2 accumulators 88 Ah/12 V
Three-phase generator 28 V/27 A
2 headlights, front
2 working headlights, front
1 working headlight, rear
Warning flasher
Direction indicators
Stop and taillight
The lighting system meets the StVZO.
Flashing alarm lamp
(no standard equipment)

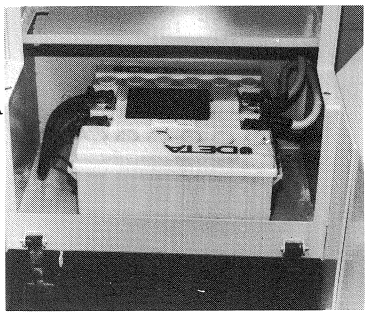

Fig. 9

Accumulator

2 maintenance-free accumulators (Fig. 9) in accordance with DIN with increased cold start performance are installed in the swing shovel loader. No water is refilled throughout the whole service life.

The accumulator is to be kept in clean and dry condition.

Slightly grease the terminals with acid-free and acid-resisting grease. The grease must not be in contact with the casting compound.

ATTENTION!

Welding work carried out on the swing shovel loader with electric welding devices may only be performed when the accumulator terminals have been disconnected before.

Fuel supply systems

1 Fuel tank 135 l
2 Filling pipe
3 Shut-off valve for engine fuel
4 Diesel engine
5 Injection nozzle
6 Injection pump
7 Fuel feed pump
8 Fuel filter for engine supply
9 Fuel filter for heater supply
10 Fuel dosing pump
11 Heating unit

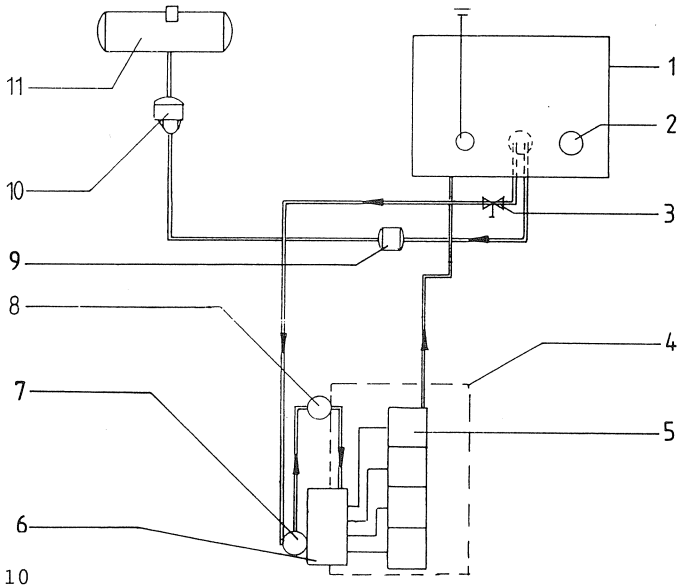

Fig. 10

The fuel tank with a capacity of approx. 135 l is located behind the driver's cab. The fuel tank is used for supplying fuel to the diesel engine and heating unit.

The tank content is controlled by a fuel gauge in the driver's cab.

The shut-off valve for the diesel engine is arranged below the fuel tank.

Lifting and dumping device

A tandem gear pump with a volume flow of 28 + 16 cm^3/rev. is flanged to the axial piston pump. It feeds through a quadruple control valve.

2 lift cylinders and
2 tilt cylinders
) 80/55, double acting

The volume flow of the gear pump 16 cm^3/rev. is led into the main circuit by means of a high-pressure overhead line arranged at the single swivel valve, increasing the lifting and dumping speeds.

All motions are controlled from the driver's seat by means of pilot valves. The pilot valves permit continuous control from very slow to full speed.

Shovel from 1.0 to 1.5 m^3 (according to SAE), special shovels on request.

Excavating depth with horizontal shovel position 70 mm
Excavating depth with shovel tilted by 5 ° 160 mm

Shovel position

- Tilting angle 45 °
- Dumping angle 60 ° (at highest position)

Lifting and clearing forces:

Lifting force	42.0 kN
Tilting force at shovel edge	54.5 kN

Working speed:
Lifting 5.0 s
Lowering 3.0 s
Dumping 1.5 s
Tilting 1.2 s

Operating pressure 200 ± 5 bars

Slewing gear and axle support

The gear pump with a discharge capacity of 16 cm^3/rev. feeds the 2 single-acting slewing cylinders (ϕ 100/55) through a single control valve. The slewing motion can be performed simultaneously with the lifting motion of the shovel arm. The single-layer ball slewing ring is mounted on one side to a machined twist-free plate of the frame and on the other side is connected with the swivel chair.

The swivel chair with the shovel arm is slewed by 90° to each side by means of 2 single-charged slewing cylinders and a chain gear. An automatically acting support device is actuated during slewing of the shovel arm. The support cylinder at the load side acting on the pendulum axle is thereby admitted with pressure by the load pressure by means of the supporting valve and acts against the slewed load.

Operating pressure in the slewing cylinders 180 ± 5 bars.

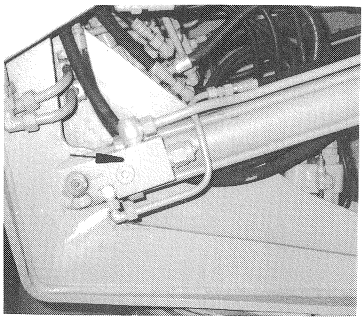

Fig. 11

Pipe-break safety device
(no standard equipment)

A pipe-break safety device is installed at the bottom of each of the two lift cylinders (Fig. 11/arrow). In case of pipe or hose breakage in the lifting device, movements are blocked until the damage is repaired.

In connection with the pipe-break safety valves a choker valve can be additionally installed in the piping to the lift cylinder bottom, if required. This choker valve is used to adjust the lowering speed of the shovel arm.

The lowering speed is to be adjusted in a manner to obtain the stipulated lowering speed and not to generate noises (fluttering of valves) of the pipe-break safety valves.

Limit of lift
(no standard equipment)

A device limiting the lifting range of the shovel arm between 1200 mm and maximum adjustment, is mounted at the joint shovel arm/swivel chair (measured at the pivot of the shovel in the shovel arm).

The desired lifting height is adjusted by means of trip cam (Fig. 12/1).

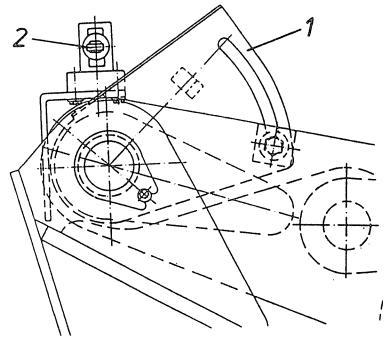

Fig. 12

Adjustment:

- Lift the shovel arm to the desired height,
- Unscrew hexagon bolt of the trip cam (Fig. 12/1) and shift the trip cam until the slide of the valve (Fig. 12/2) is impressed,
- Tighten hexagon bolt of the trip cam.

CAUTION!

Carry out functional check before work with limit of lift is performed and watch it from the driver's seat during operation.

Equipment

Comfortable driver's seat:

Suspension with weight counterbalance and hydraulic shock absorber, adjustable to front and back, adjustable back-rest, height adjustment, adjustment of tilt.

Clearly arranged dashboard:

Combi-instrument with electric working hour meter, fuel gauge, engine temperature indicator.

Set of tools with shovel arm support and wheel chock

Heating and ventilation system

Driver's cab:

Roll-proof all-steel design, split side doors, easy access from both sides, front and rear windscreen wipers, sunshade, lighting and defroster nozzle for front windscreen, good allround sight, dismountable upper part of driver's cab.

Special equipment:

Flashing alarm lamp
Radio
Rockfall protection grating
Special tyres resistant to rocks

NOTE

The supplied accessories are adopted to the general scope of supply. The user has to complete the equipment according to the local and customary extent.

On delivery of the device, the fuel volume is limited to a minimum according to the forwarding regulations.