

Technical Specification

SCHOPF F 110 Aircraft Towing Tractor

DESCRIPTION

The SCHOPF F 110 is an aircraft towing tractor with 4-wheel drive and 4-wheel steering. It is available in the weight classes 10,000 / 12,000 / 14,000 / 16,000 kg.

STRUCTURE

This tractor consists of a sturdy and rigid frame of welded construction. The front axle is mounted to the frame by parabolic laminated leaf springs. The rear axle is rigidly mounted.

Engine, full-power-shift transmission and hydraulic system as well as all other components are placed within the frame, easily accessible for repair and maintenance work. Engine and transmission can be removed as one unit.

The sight tunnel to the tractor rear end provides for easy towing operation.

In standard a single-stage pin-type tow hitch, pin with 3" (75 mm) Ø, for connecting a tow bar is mounted to each of the massive bumpers front and rear.

ENGINE / TRANSMISSION

ENGINE:

Make:	Deutz
Type:	BF4M 2012, turbo-charged, diesel, 4 cylinders, in-line, 4-stroke, integrated engine management system EMR
Exhaust emission:	acc. to COM II (EC guidelines 97/68/EG STEP 2) / EPA II
Cooling:	by water, 2-speed cooling fan (noise reduction)
Output:	74.9 kW (102 HP) at 2,300 rpm acc. to ISO 3046
Max. torque:	390 Nm at 1,500 rpm
Bore / stroke:	101 / 126 mm
Displacement:	4.04 dm ³

TRANSMISSION:

Make:	ZF
Type:	4 WG 115, ERGOPOWER series, automatic full-power-shift transmission with integrated torque converter, manual and automatic gear-shifting mode,
Gear shift:	electro-hydraulic, 4 gears forward / 3 gears reverse

The transmission characteristics are especially adapted to the requirements of aircraft towing tractors; jerk-free gear shifting due to modulation. Under full load the transmission can be shifted either automatically or manually (both jerk-free). At the starting point (1st gear engaged with maximum engine speed) the maximum draw-bar pull is achieved.

Converter and transmission are fed from one common oil system. The combined cooling unit cools the oil.

AXLES AND WHEELS

Front and rear axles, make Kessler, LT 51 (disc-type brake) are driven by the full-power-shift transmission through joint shafts and reduction gears. Both axles are designed as driven steering axles with planetary drives in the wheel hubs.

The F 110 is equipped with 9.00 R 20 radial tyres.

HYDRAULIC SYSTEM

Brakes and steering system are operated hydraulically. The hydraulic system is fed by gear pumps being flange-mounted to the transmission PTO (power-take off).

STEERING SYSTEM

Steering is done hydraulically (Orbitrol). Four steering modes can be selected electrically through a push button:

- front-wheel steering
- rear-wheel steering
- 4-wheel steering
- crab steering (option)

An electrically driven "emergency steering pump" is connected to the steering circuit so that the vehicle can be steered temporarily for salvage purposes.

BRAKING SYSTEM

The tractor is equipped with a fully hydraulic 3-circuit safety disk brake system, consisting of 2-circuit service brake and 1-circuit failsafe parking brake. Emergency parking-brake release is done by means of the emergency steering pump; optionally a hydraulic hand pump is available.

OPERATOR'S CABIN

The ergonomically laid out operator's cabin is of all-steel construction. The lockable doors are equipped with sliding windows. In standard there are 2 fully adjustable suspension seats for driver and one co-driver.

For additional safety and comfort the cabin is equipped as follows:

- 2 intermittent windscreen wipers for the largest wiped area possible
- windscreen washer
- 2 rear screen wipers incl. washer
- cabin / front screen ventilation
- adjustable steering column
- 2 outside rear-view mirrors
- cabin lights

Furthermore a lot of special equipment is available optionally.

OPEN DRIVER'S STATION

The F 110 can be optionally equipped with an open driver's station in front instead of a closed driver's cabin.

LIGHTING SYSTEM

Standard equipment:

- 2 headlights, low and high-beam
- 2 reversing lights
- 2 brake lights
- 2 directional indicator lights (front + rear)

Optional equipment:

- tow hitch lights
- spot lights
- beacon or anti-collision lights

others upon request

TECHNICAL DATA AND DIMENSIONS:

Operating weights	10,000 / 12,000 / 14,000 / 16,000 kg
Length - without tow hitches	5,180 mm
- with standard tow hitches	5,690 mm
Height over body	1,530 mm
Height - cabin roof	1,900 mm
- cabin-roof ventilator	2,020 mm
Width	2,220 mm
Ground clearance	200 mm
Axle base	2,500 mm
Wheel track, front + rear	1,938 mm
Turning radius - inside (4-wheel steering), approx.	1,350 mm
- outside (4-wheel steering), approx.	4,750 mm
Tyres, front + rear	9.00 R 20
Draw-bar pull installed	110 kN / 24,729 lbs
The max. transferable draw-bar pull depends on tractor weight and friction coefficient.	
Travelling speeds - forward:	
1 st gear	0 - 5 km/h
2 nd gear	0 - 9 km/h
3 rd gear	0 - 18 km/h
4 th gear	0 - 32 km/h
- reverse:	
1 st gear	0 - 5 km/h
2 nd gear	0 - 9 km/h
3 rd gear	0 - 18 km/h
Electrical system	24 V

Tolerance of mentioned data $\pm 3\%$
 Technical modifications reserved.

SCHOPF Maschinenbau GmbH
 Parkstr. 21
 D-73760 Ostfildern / Germany
 ☎ +49 / 711 / 34000-0
 📠 +49 / 711 / 3411087
 www.schopf-gse.de
 eMail: schopfsale@schopf-gse.com

10/03 PP, 11/03 IS