Zetor

SALES MANUAL

MAJOR

PERFORMACE
ENDURANCE
TOTAL COST OF OWNERSHIP

Tractor is Zetor. Since 1946.

The current range of tractors continues the long-standing tradition of quality and affordability of our products and services.

SINCE THE BEGINNING THE ZETOR BRAND IS SYNONYMOUS WITH THE FOLLOWING ATTRIBUTES:

PERFORMANCE
ENDURANCE
TOTAL COST OF OWNERSHIP

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Zetor

Zetor MAJOR

A reliable tractor of a medium-capacity class with an excellent price-to-power ratio.

PERFORMANCE

Zetor tractors are designed to achieve the best possible combination of engine power to weight ratio.

ENDURANCE

The ethos of Zetor Tractors is to provide; simple, smart & practical tractors. The result of this philosophy is a tractor which is extremely reliable & easy to service.

TOTAL COST OF OWNERSHIP

Zetor tractors rank among the best in fuel consumption. Every Zetor engine is tested by our engineers prior to its release to production line.

In the long run, the reasonably priced spare parts will also be appreciated. Therefore, Zetor can hardly be beaten with regard to operating costs.

A general purpose tractor, ideal for both Agricultural & Industrial purposes. Designed to follow the basic pillars of the Zetor brand.

Zetor Major – a smaller compact tractor in the power category up to 80 HP. It recalls on the model of the same name which was one of the most successful tractors in Zetor's history. The reliable, powerful and easy to maintain model gained the reputation of a lifelong tractor. It is designed mainly for the owners of small or family farms, with an excellent price-to-power ratio.

MAIN ADVANTAGES

- Excellent price/power ratio
- Major concept well-tried over time
- Zetor engine – Czech know-how providing high quality engines
- High reliability
- Simple to service
- Robust unit fitted with re-inforcing frame
- Easy maintenance
- Stage 3A engine
- Lifting force up to 2,600 kg over the entire course of lift

ZETOR MAJOR TRACTORS ARE MADE IN ONE TYPE

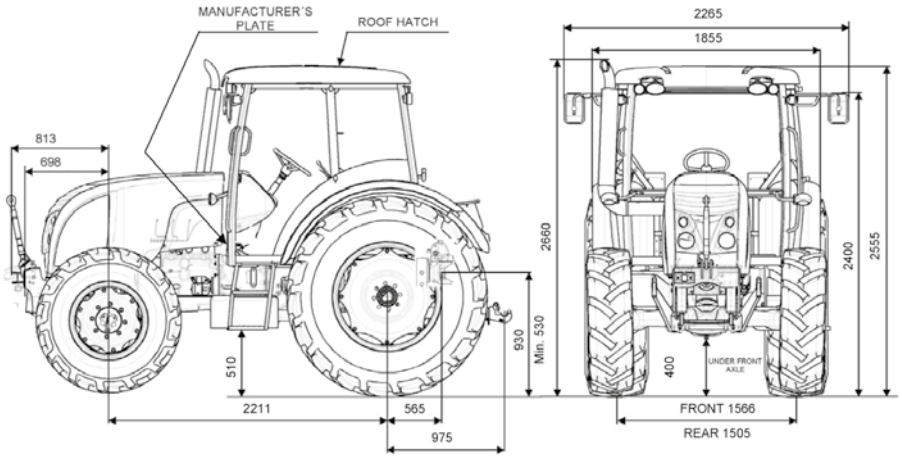
WG 2000/25/EC

80	57 kW

BASIC PARAMETERS

MODEL	80
ENGINE	
Engine	Z1105
Power (kW/HP)	57/77
Engine design	Diesel, four-stroke with direct fuel injection, turbocharged
Engine version	in-line, upright, water cooled
Rated speed (rpm)	2,200
Number of cylinders	4
Engine charging	turbocharger
Intermediate cooling	air-air
Bore/stroke (mm)	105 / 120
Volume (cm^3)	4,156
GEARING	
Traverse clutch	dry
Max. speed (km/h)	30
Number of gears	12+12
Crawling speeds	no
Reversing	synchronized, mechanically shifted
Transmission synchronization	full
TAIL POWER TAKE-OFF SHAFT – PTO	
Design	independent / dependent
Clutch	dry
Speed (rpm)	540 / 1,000
Ends	6 grooves
HYDRAULIC SYSTEM	
Type	with mechanical distributor
Three-point linkage	category II
Control	mechanical
Working pressure (MPa)	18
Hydro-generator supply (l)	50
Quick couplings	2+1 or optional 4+1 quick couplings
HITCHES	
Rear TBZ – lifting force (kN)	26
FRONT DRIVEN AXLE	
Type	Carraro 20.14 with limited slip
Brakes	no
SAFETY CAB	
Heating	hot water with ventilation and recirculation
Air conditioning	optional

MODEL	80
OTHER PARAMETERS	
Drive system	4WD
Steering	hydrostatic
Rear wheel brakes	disc wet
TRACTOR DIMENSIONS [mm]	
Wheelbase	2,211
Contour length – without weight in front of body mask	4,000
Contour length – with weight in front of body mask	4,212
Width over rear mudguard	1,860
Height to exhaust nozzle	2,565
Tractor height to the top of cab	2,555
Clearance under front axle support	400
Height of the attachment tail piece of multistage suspension linkage in the highest position (tail piece centre)	530
WEIGHT	
Kerb weight (kg)	3,090



ENGINE

All Zetor engines are designed & manufactured by Zetor Tractors. Fitted as standard is a mechanically operated duel clutch assembly. An air compressor is fitted to the engine as standard enabling the easy fitting of trailer air brakes, if required.

ADVANTAGES OF THE SPECIFIED ENGINES

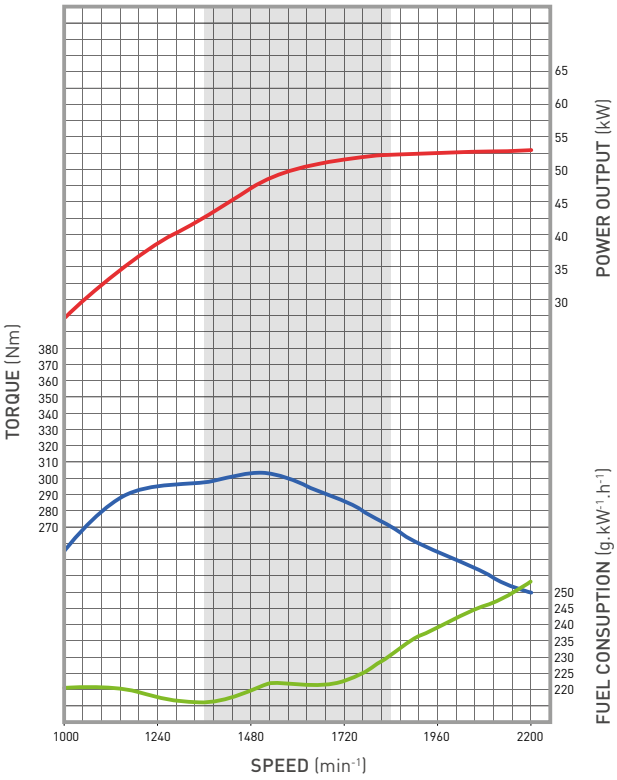
- own engine manufacture
- low fuel consumption
- excellent torque reserve
- failure-free in-line pump
- smooth engine running – balancing shafts
- piston head cooling by pressure oil – improved temperature balance of engines + lower consumption
- easy to start even in low temperatures
- engine oil 15W/40 with change interval of 500 operating hours
- electronically controlled exhaust-gas recirculation (EGR)
- dry double-plate, mechanically operated clutch. One plate serves for travel, the other for driving the rear power take-off shaft

Upon request the engine the tractor can be equipped with a an air compressor.

Compressor is fitted as a standard with the option of air trailer brakes.

CHARACTERISTIC FEATURES OF ENGINES

ENGINE **1105**



TECHNICAL DATA OF ENGINES

MODEL	Units	80
ENGINE		
engine type		Z1105
engine design		diesel, four-stroke with direct fuel injection, turbocharged
engine version		in-line, upright, water cooled
number of cylinders		4
number of valves		8
bore x stroke	cm^3	4,156
rated speed	mm	105×120
injection sequence	min^{-1}	2,200
compression ratio		1-3-4-2
max. overrun speed		17
idle speed	min^{-1}	2,460
idle	min^{-1}	800±25
net power at rated speed 2,200 rpm (EC 24)	(kW)	53
specific fuel consumption at 2,200 rpm	$g{\cdot}kW^{-1}{\cdot}h^{-1}$	260
max. torque (mt) at 1,480 rpm	Nm	310
torque elevation	%	35
net power at 1,480 rpm	(kW)	48
specific fuel consumption at max. torque at 1,480 rpm	$g{\cdot}kW^{-1}{\cdot}h^{-1}$	222
engine lubrication		forced with gear pump
maximum oil consumption after 100 operating hours of engine run-in	$g{\cdot}kW^{-1}{\cdot}h^{-1}$	0,7
oil pressure at engine rated speed and oil temperature 80 °C	MPa	0,2 –0,5
minimum oil pressure at engine speed 750 rpm and oil temperature 80 °C	MPa	0,05
max. temperature of coolant	°C	106
valve mechanism design		OHV
oil filter		full-flow, disposable
fuel filter		one-stage with replaceable element
opening pressure of injectors	MPa	25–0,8
injection advance angle	(°)	12
cold valve clearance (inlet)	mm	0,25±0,05
cold valve clearance (exhaust)	mm	0,25±0,05

GEARING

TRANSMISSION

Zetor Major tractors are equipped with reversing four-speed all-synchromesh transmissions and three-stage reduction transmissions. Reversing is fully synchronized.

THE NUMBER OF SPEED GEARS IS
12 FORWARD GEARS AND 12 REVERSE GEARS.

ADVANTAGES

- solution proved by market success
- proven long-term functionality and reliability
- simple to service
- smooth graph of speed gears

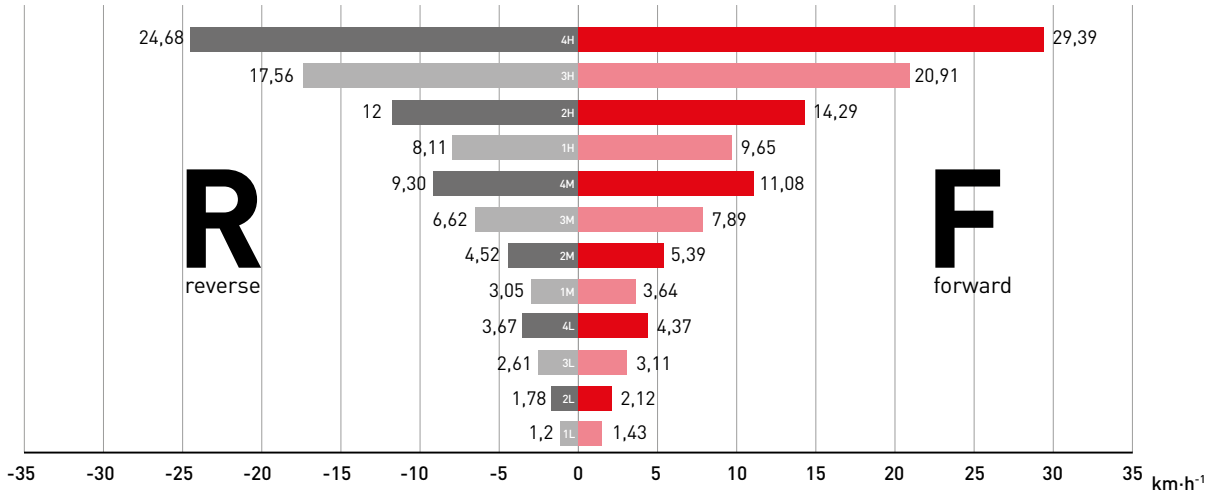
TABLE OF TRACTOR TRAVEL

SPEEDS AT 2,200 RPM

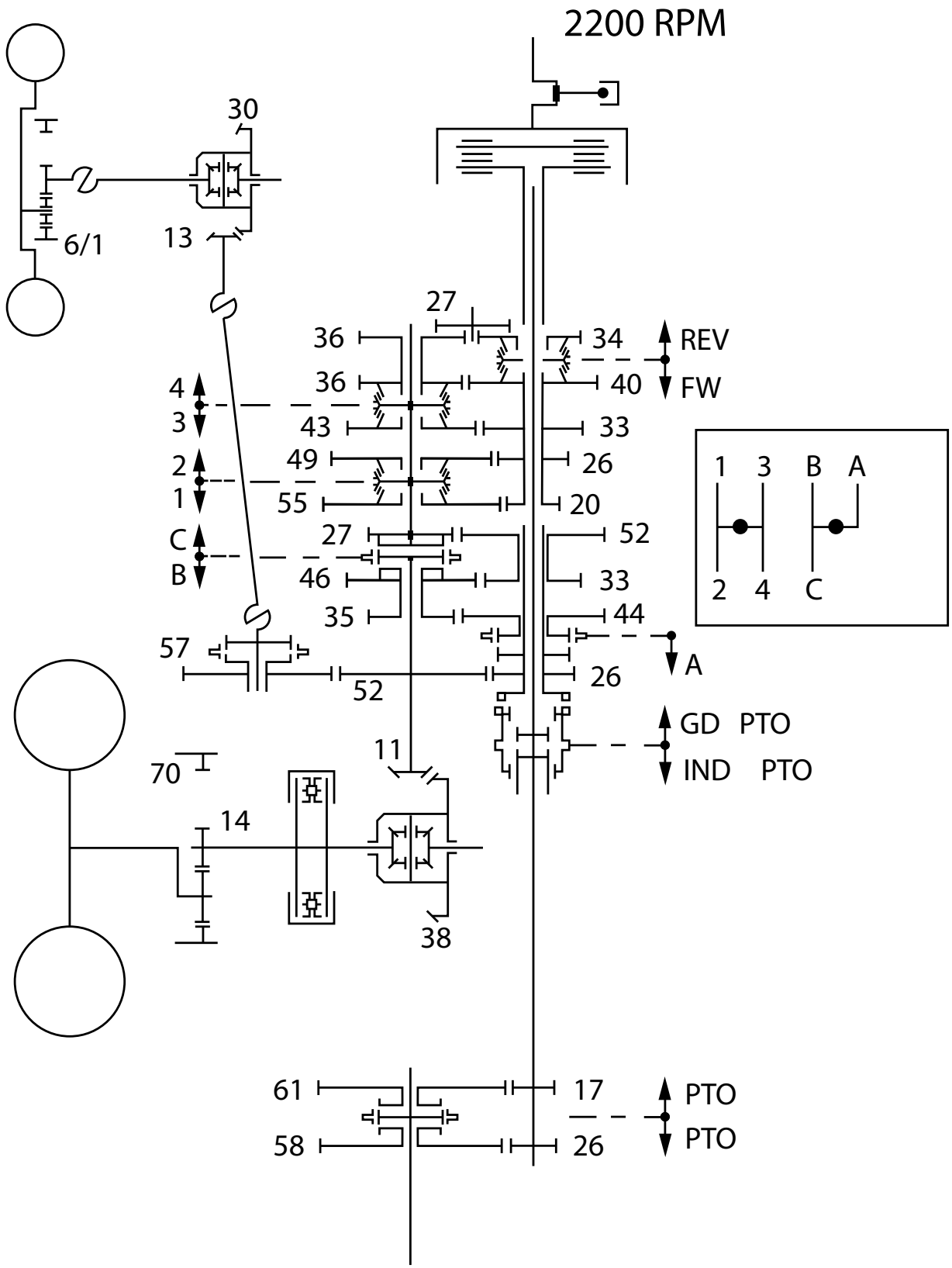
reduction gear	speed gear	FORWARD SPEED	REVERSE SPEED
L	1 L	1,43	1,20
	2 L	2,12	1,78
	3 L	3,11	2,61
	4 L	4,37	3,67
M	1 M	3,64	3,05
	2 M	5,39	4,52
	3 M	7,89	6,62
	4 M	11,08	9,30
H	1 H	9,65	8,11
	2 H	14,29	12,00
	3 H	20,91	17,56
	4 H	29,39	24,68

GRAPH OF TRACTOR TRAVEL

SPEED AT 2,200 RPM



GEAR DIAGRAM

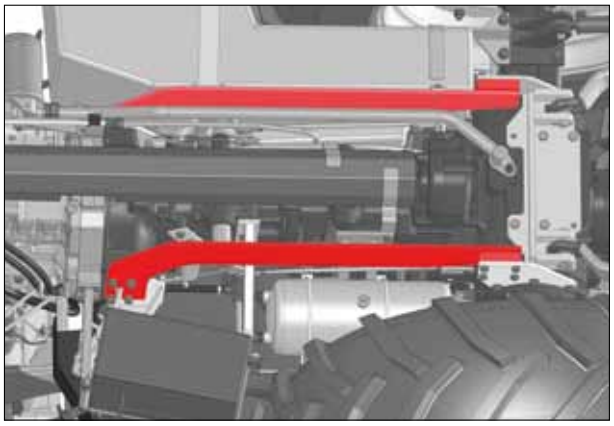


CHASSIS

FRAME REINFORCEMENT

A new frame reinforcement was designed to increase the rigidity of the whole tractor with aim to increase strength of this model range. This means that Major can handle any job in demanding and difficult environments.

The frame connects the clutch box with the engine.



REAR AXLE

The rear axle is fitted with planetary reducers in the semi-axles and with differential lock operated mechanically by pedal

FRONT DRIVEN AXLE

The front drive axle Cararro 20.14 is unbraked, pivoted around a spigot shaft. It is equipped with a 'limited slip' automatic lock.

The front drive axle is mechanically activated with a lever.

SIMPLE, PROOVEN DESIGN USED ACROSS THE WORLD

REAR POWER TAKE-OFF SHAFT – PTO

The tractor is equipped with a dry single-plate PTO clutch operated mechanically with the lever located on the left of the driver's seat.

The tractor is equipped with a fixed 6 spline – power take-off shaft.

The tractor is equipped with combinations of power take-off shaft speeds 540/1000. The PTO speeds are shifted mechanically with a lever.

The rear power take-off shaft is in dependent and independent speed versions. The dependent and independent speeds of PTO are shifted mechanically with a lever.

- Independent speed of PTO – revolutions depend on engine speed.
- Dependent speed of PTO – revolutions depend on shifted speed gear and reverse lever position.

INDEPENDENT PTO SPEED

At PTO independent speed, revolutions depend on engine speed.

PTO DEPENDENT SPEEDS

At PTO dependent speed engaged, the rear power take-off shaft is activated at tractor start.

At PTO dependent speed shifted, the number and sense of rotation depend on the position of the PTO speed selection lever, the speed gear shifted, the reduction gear shifted, and the reverse lever position.

POWER AT POWER TAKE-OFF SHAFT (KW±2%)
– AT ENGINE RATED SPEED AND SHIFTED 1000 RPM OF PTO

at rated speed	47 kW
maximum	51 kW

THE REAR PTO TRANSMITS THE FULL POWER OF THE ENGINE.

ADVANTAGES

- Easy change from 540/1000 to 540/540E by simply adding a gear, even after the tractor has been made.
- Two PTO speeds in connection with PTO dependent speed give above-standard utilization of aggregations for that class of tractors.

HYDRAULIC EQUIPMENT

Composed of inner and outer circuits.
Inner hydraulic circuit operates rear three-point linkage.

Outer hydraulic circuit supplies pressure oil to hydraulic consumers connected to the outer hydraulic circuit tapping terminated with quick couplings.

HYDRAULIC PUMP PARAMETERS

The pressure oil source is the gear pump. Oil is taken from the joint transmission and final drive housing filling.

The hydraulic pump cannot be switched off. When the engine is running, the pump is functioning. In the hydraulic pump's discharge line is an oil filter with replaceable filter element. The hydraulic pump with filter is a unified component from Proxima tractors.

supplied amount of oil	50 $l \cdot min^{-1}$
maximum oil pressure	18 MPa

INNER HYDRAULIC CIRCUIT

The inner hydraulic circuit comprises of a mechanical hydraulic distributor which operates the lifting of the rear three-point linkage using the inner hydraulic cylinder.

Control pulses are sensed from the third point of the rear three-point linkage.

ADVANTAGES OF THE MITA HYDRAULIC SYSTEM

- mechanical regulation – high reliability
- high lifting force
- smooth starting control
- quick aggregation mounting and securing
- easy and safe handling of attachments
- hydraulic lock function when transporting implements

CONTROL TYPES OF THE REAR THREE-POINT LINKAGE

The hydraulic system has three methods of controlling the lift of the rear three-point linkage.

Position control at which the implement attached in the three-point linkage is kept automatically at a stable height (position) in relation to the tractor.

Mixed control which is a combination of position and power controls. It is suitable particularly for ploughing land with unequal soil resistance.

Power control at which the implement attached in the three-point linkage is height adjusted automatically – depending on changes in soil resistance.

ALL CONTROL METHODS ALSO ALLOW WORKING WITH IMPLEMENTS WITH SWIVEL WHEELS IN THE 'FREE (FLOATING) POSITION.

CONTROL OF THE INNER HYDRAULIC CIRCUIT

The inner hydraulic circuit is controlled by two levers located in the cab on the right mudguard, and by two rotary controls located in front of the driver's seat.

The levers control the lifting of the rear three-point linkage and setting the control method of the inner hydraulic circuit.

The rotary controls set:

- The hydraulic system sensitivity control sets the hydraulic system sensitivity at the power of mixed control.
- The speed control of lowering the theee-point linkage sets the speed of lowering the rear three-point linkage arms or blocking the lowering (the rear three-point linkage arms cannot be lowered).

OUTER HYDRAULIC CIRCUIT

It supplies pressure oil to hydraulic consumers connected to the outer hydraulic circuit tapping terminated with quick couplings.

The following can be installed on the tractor:

Single-section distributor with one section (2+1) – one pair of pressure quick couplings and one quick coupling connected directly with the discharge.

Double-section distributor with two sections (4+1) – two pairs of pressure quick couplings and one quick coupling connected directly with the discharge.

REAR THREE-POINT LINKAGE

Serves for the coupling of mounted or semi-mounted farm machines and implements with linkage points of category II acc. to ISO.

linkage axis length	870 mm
diameter of connecting sphere holes of lower tie rods acc. to ISO	28 mm
diameter of upper tie rod hole	25 mm
lifting force at the end of lower tie rods of the rear three-point linkages in the entire lift range	26 kN

The vertical tie rods of the rear three-point linkages connect the hydraulic arms and the lower tie rods of the rear three-point linkage.

They are adjustable in length, and fixed and free positions can be set on them.

The free position allows the free coupling of the tractor and farm implements. In this case, both tie rod ends can move freely in height against one another.

THE LOWER TIE RODS OF THE REAR THREE-POINT LINKAGE HAVE THREE VERSIONS

- **Lower tie rods with fixed end pieces**
- **Lower tie rods with pull-out end pieces**
- **Lower tie rods with hooks and CBM spheres**

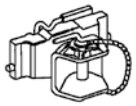
LINKAGES FOR TRAILERS AND SEMI-TRAILERS

MULTI-STAGE LINKAGE

Serves for coupling two-axle or lighter single-axle trailers. The linkage tail piece is height adjustable without using any tools. When working with various farm machines, the linkage must be heigh adjusted or removed as necessary.

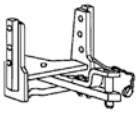
TAIL PIECE FOR TRAILER COUPLING

If the tractor is equipped with the bracket for multi-stage linkages, it can be provided with a tail piece for coupling linkages.

	LINKAGE TYPE	STATIC LOAD	∅ LINKAGE PIN
	50.458.902	2 000 kg	31 mm

SWIVEL TIE ROD BRACKET MODULE

If the tractor is equipped with the bracket for multi-stage linkages, it can be provided with a swivel tie rod bracket module.

	NAME	STATIC LOAD	∅ LINKAGE PIN
	Swivel tie rod bracket module + swivel tie rod	736 kg	31 mm

TRACTOR'S SERVICE BRAKES

The tractor is equipped with brakes that decelerate the rear axle wheels. They are two-pedal, mechanically operated brakes. Structural design – wet disc brakes

ADVANTAGE

The brakes are of mechanical character, so there is no need to supply additional fluid

BRAKES FOR TRAILERS

The tractor can be equipped with air single-line brakes for trailers. The quick coupling is on the rear panel along with hydraulic quick couplings with 7-pole socket.

WHEELS AND TYRES

WHEEL COMBINATION

DIMENSION	11,2–24	11,2 R24
16,9-30	•	
16,9R30		•

FRONT MUDGUARDS

The tractor can be equipped with front plastic mudguards upon request.

CAB

The cab is comfortable and designed for practical use. The sufficient space and ergonomically designed controls make the tractor operator's work easier. Upon customer request, the cab can be equipped with air conditioning. The cab also has a roof hatch.

- The suspended cab is attached to the tractor body on silent blocks. The cab has a safety frame.
- The cab roof is provided with a sight glass in the front.
- The cab is equipped with hot-water heating.

NEW IMPROVED ROOF

The roof has a new shape with roof hatch allowing good visibility when working with front loader. Option of radio in the provided opening.

The cab has a simply replaceable windscreen. Replacement can even be done in the field under non-service conditions.

DRIVER'S SEAT

RUN	
Seat suspension by driver's weight	50–120 daN
Horizontal seat adjustment	160 mm
Backrest inclination adjustment	Yes

ADVANTAGES

- Spacious and practical
- Ergonomically designed controls – making the operator's work easier
- High visibility through roof hatch – an excellent feature for front loader work

DASHBOARD

- fuel level indicator
- RPM display
- engine operating hours
- temperature gauge

STRONGER AND STIFFER BONNET

The new Zetor Major has a new facelifted bonnet featuring user friendly sandwich construction.

WEIGHTS

Additional weights are required to increase the pressure on axles, to secure the steering control of the tractor, or to ensure stability.

The weights are in front of the mask.
The weight combination is 4+1.

THE WEIGHT COMBINATION	WEIGHT (kg)	
4 + 1	4 × 50 + 66	266

FUEL TANK

The fuel tank is made of plastic, located under the cab on the left.

The fuel tank capacity is 82 litres.

TRACTOR MAINTENANCE

Tractor maintenance is provided through a system of service inspections. The first inspection of a new tractor is after the first 100 operating hours, subsequent service inspections are after 500 operating hours.

NOTES

Zetor Zetor

SUBJECT TO CHANGES WITHOUT NOTICE – 12/2012

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