TEREX

Terex Equipment Limited Maintenance Manual

TA350 - TA400

MAINTENANCE MANUAL

15504580
SM975/972/982

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MAINTENANCE MANUAL

TA350 - TA400

15504580
SM975/972/982

For further information on the subject matter detailed within this Maintenance Manual, please refer to Terex Equipment Limited Operator Handbooks and Product Parts Books.

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The illustrations, technical information, data and descriptive text in this manual, to the best of our knowledge, were correct at the time of print. The right to change specifications, equipment and maintenance instructions at any time without notice, is reserved as part of the Terex Equipment Limited policy of continuous development and improvement of the product.

Please refer to TEREX Specification Sheets or consult Factory Representatives to ensure that information is current.

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TEREX

Terex Equipment Limited Maintenance Manual Re-order

MAINTENANCE MANUAL
TA350 - TA400
15504580
SM975/972/982

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IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all motor vehicles. The service procedures recommended and described in this publication, are effective methods for performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when, and as recommended.

It is important to note that this publication contains various WARNINGS and NOTES which should be carefully read in order to minimize the risk of personal injury to personnel, or the possibility that improper service methods will be followed which may damage the vehicle or render it unsafe. It is also important to understand these WARNINGS and NOTES are not exhaustive. It is not possible to know, evaluate and advise the service trade of ALL conceivable ways in which service might be carried out, or, of the possible hazardous consequences of each way. Consequently, no such broad evaluation has been undertaken. Accordingly, anyone who uses a service procedure, or tool, which is not recommended, must first satisfy themselves thoroughly that neither their safety, nor vehicle safety, will be jeopardized by the service method he/she selects.

Safety Alert Symbol
The safety alert symbol is used to alert you to a potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

Hazard Classification
A multi-tier hazard classification system is used to communicate potential personal injury hazards. The following signal words used with the safety alert symbol indicate a specific level of severity of the potential hazard. Signal words used without the safety alert symbol relate to property damage and protection only. All are used as attention getting devices throughout this manual as well as on deals and labels fixed to the machinery to assist in potential hazard recognition and prevention.

DANGER	**DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	**WARNING** indicates an potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	**CAUTION** indicates an potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
CAUTION	**CAUTION** used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

WARNING
Never use parts which are altered, modified, or weakened in operation. This can seriously jeopardise the integrity of the machine and could result in property damage or serious personal injury.

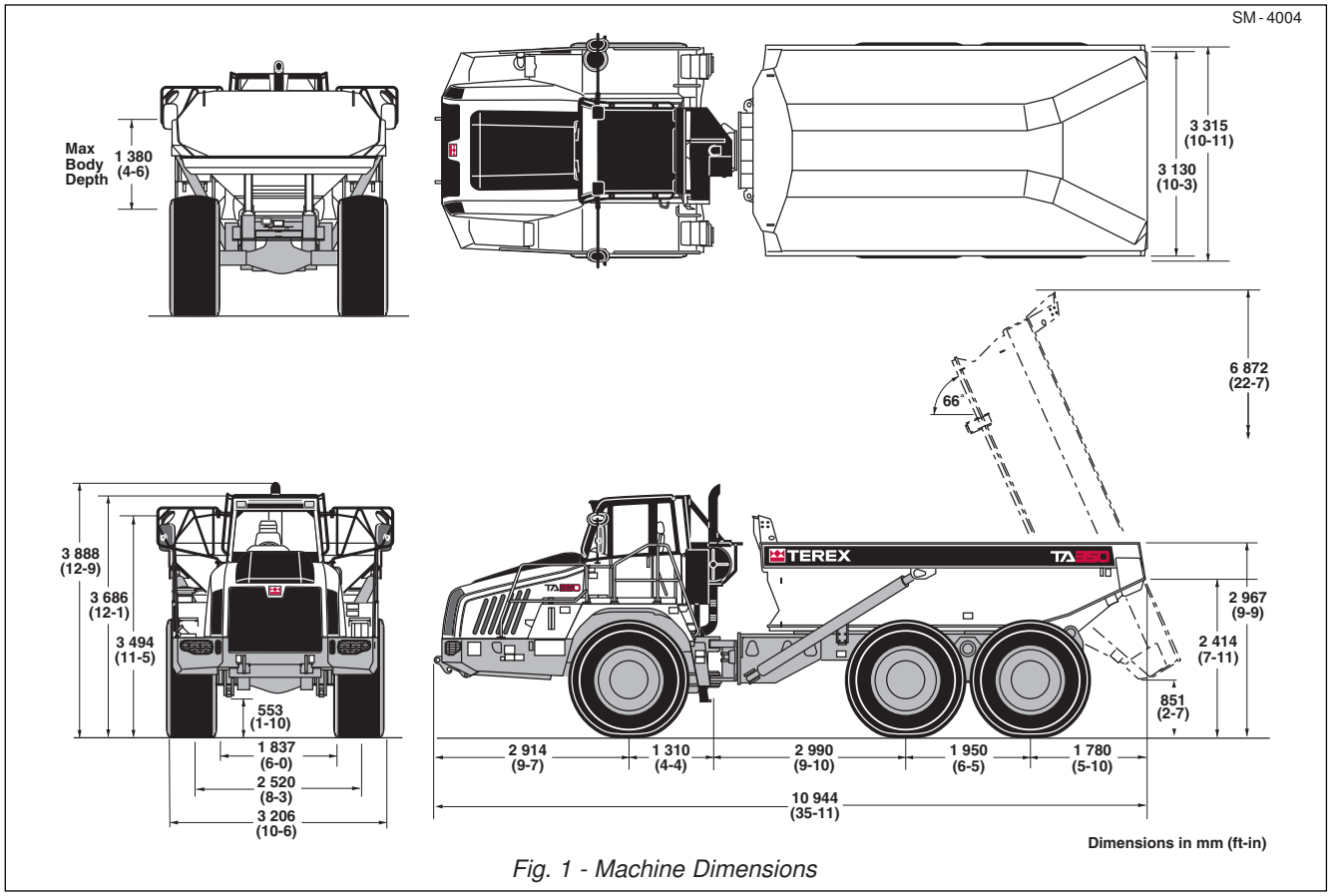

Fig. 1 - Machine Dimensions

ENGINE

Make/Model ..... Detroit Diesel Series 60
Type ... 6 Cylinder, in line , Four cycle diesel, water cooled, turbocharged with air to air cooling, electronic engine management.

Gross power at 2110 rev/min .....298 kW (400 hp, 405 PS)
Net power at 2110 rev/min .....289 kW (388 hp, 393 PS)

Note: Gross power rated to SAE J1995 Jun 90. Engine emission meets USA EPA Tier 3 /CARB MOH 40 CFR 89 Tier 3 and proposed EU NRMM (non-road mobile machinery) Tier 3 directive.

Maximum Torque..... 2000 Nm (1475 lbf ft) at 1200 rev/min
Number of cylinders/configuration .....6, in line
Bore x Stroke ..... 133 x 168 mm (5.24 x 6.61 in)
Piston Displacement .....14 l (855 in³)
Air cleaner .....Dry type, double element
Starting ..... Electric
Maximum Speed (No load) ..... 2300 rev/min
Maximum Speed (Full load) ..... 2200 rev/min
Idle Speed ..... 700 rev/min

TRANSMISSION

Make/Model ..... Allison 4500 ORS with integral retarder mounted directly to the engine, fully automatic transmission with planetary gearing, lock-up in all gear ranges. Electronic control with six forward and one reverse gear.

Main ..... 18.5 + 3.4 bar (269 + 50 lbf/in²)
Temperatures:
Normal ..... 60 °C - 135 °C (140 °F - 275 °F)
Maximum ..... 165 °C (329 °F)
Ratios:
Transmission ..... Refer to table below

Low Range

Forward						
Gear	1	2	3	4	5	6
km/h	5.2	11.0	15.9	24.3	31.0	35.2
mile/h	3.2	6.8	9.9	15.1	19.3	21.9
Reverse						
Gear	1					
km/h	4.6					
mile/h	2.9					

High Range

Forward						
Gear	1	2	3	4	5	6
km/h	7.9	16.8	24.3	37.1	47.7	53.9
mile/h	4.9	10.4	15.1	23.1	29.6	33.5
Reverse						
Gear	1					
km/h	7.0					
mile/h	4.3					

DROPBOX

Remote mounted transfer gearbox taking drive from the transmission and feeding it via a lockable differential to the front and rear wheels.

AXLES

Three axles in permanent all-wheel drive (6 X 6) with differential coupling between each axle to prevent driveline wind-up. Heavy duty axles with fully-floating axle shafts and outboard planetary reduction gearing.

Automatic limited slip differentials in each axle. Centre axle incorporates a through-drive differential to transmit drive to the rear axle. This differential and the dropbox output differential are locked simultaneously using one switch selected by the operator.

Ratios:

Differential	3.70:1
Planetary	6.35:1
Total Reduction	23.50:1

SUSPENSION

Front: Four trailing links and a Panhard rod locate the front axle giving a high roll centre. The optimised front axle position along with the wide spaced main and rebound mounts, mounted directly above the axle and long suspension travel, combine with two heavy duty dampers each side to give excellent handling and ride.

Rear: Each axle is coupled to the frame by three rubber- bushed links with lateral restraint by a transverse link. Pivoting inter-axle balance beams equalize load on each axle. Suspension movement is cushioned by rubber/metal laminated compression units between each axle and underside of balance beam ends. Pivot points on rear suspension linkages are rubber-bushed and maintenance-free.

WHEELS AND TYRES

Wheels: ..... 5-piece earthmover rims with 12 stud fixing

Size:

Standard	25 x 22.00 in for 26.5 R25** tyres

Tyres:

Standard	26.5 R25**

Inflation Pressures (Bridgestone):

	Front	Centre/Rear
26.5 R25**	3.73 bar (54 lbf/in²)	4.97 bar (72 lbf/in²)

Inflation Pressures (Michelin):

	Front	Centre/Rear
26.5 R25**	3.24 bar (47 lbf/in²)	4.28 bar (62 lbf/in²)

Inflation Pressures (GoodYear):

	Front	Centre/Rear
26.5 R25**	4.75 bar (69 lbf/in²)	4.75 bar (69 lbf/in²)

Note: Tyre pressures should be regarded as nominal only. It is recommended that for tyres both listed and unlisted, the user should consult the tyre manufacturer and evaluate all job conditions in order to make the proper selection.

HYDRAULIC SYSTEM

Braking, steering and body hoist systems are controlled by a main hydraulic valve mounted on frame. Systems are supplied with oil from a common tank by the main hydraulic pump, driven from power takeoff on transmission. System components are protected by full flow filtration on the return line.

Pump:

Type	Piston
Capacity at 2700 rev/min	5.4 l/s (85.6 US gal/min)

Brakes

Full hydraulic braking system with enclosed, forced oil-cooled multiple discs on each wheel. Independent circuits for front and rear brake systems. Warning lights and audible alarm indicate low brake system pressure. Brake system conforms to ISO 3450, SAE J1473.

Actuating Pressure	58 ± 2.4 bar (845 ± 35 lbf/in²)
Pump Type	Triple stage gear
Capacity at 1 685 rev/min	8.9 l/s (2.35 US gal/min)

Braking surface (tractor)	590240 mm² (914.9 in²)/brake
Braking surface (trailer)	590240 mm² (914.9 in²)/brake

Parking: Spring-applied, hydraulic-released disc on rear driveline.

Emergency: Automatic application of driveline brake should pressure fall in main brake hydraulic system. Service brakes may also be applied using the parking-emergency brake control.

Retardation: Hydraulic retarder integral with transmission.

Steering

Hydrostatic power steering by two single-stage, double-acting, cushioned steering cylinders. Emergency steering pressure is provided by a ground driven pump mounted on the rear of the transmission. An audible alarm and warning light indicates should the emergency system activate. Conforms to ISO 5010, SAE J53.

System Pressure	240 bar (3500 lbf/in²)
Steering Angle to either side	45°
Lock to Lock Turns, steering wheel	4

Body Hoist

Two single-stage, double-acting hoist rams, cushioned at both ends of stroke. Electro servo assisted hoist control.

System Pressure	240 bar (3500 lbf/in²)
Control Valve	Pilot Operated, Closed Centre
Body Raise Time (loaded)	12.5 sec
Body Lower Time (power down)	8 sec

ELECTRICAL SYSTEM

Type	24 V, Negative Ground
Battery	Two, 12 V, 175 Ah each
Accessories	24 V
Alternator	100 Amp

BODY

Of all welded construction, fabricated from high hardness (min. 360 BHN) 1000 MPa (145000 lbf/in²) yield strength steel. 25° tail chute angle provides good load retention without tailgate.

Plate Thicknesses:
- Floor and Tailchute ..... 15 mm (0.58 in)
- Sides ..... 12 mm (0.47 in)
- Front ..... 8 mm (0.39 in)

Volume:
- Struck (SAE) ..... 15.5 m³ (20.3 yd³)
- Heaped 2:1 (SAE) ..... 21.0 m³ (27.5 yd³)

SERVICE CAPACITIES

Fuel tank ..... 481 l (127 US gal)
Hydraulic System ..... 330 l (87.2 US gal)
Cooling System ..... 80 l (21.1 US gal)
Engine Crankcase (with filters) ..... 37 l (9.8 US gal)
Transmission (with filters) ..... 61 l (14.8 US gal)
Differentials - Front & Rear ..... 33 l (8.9 US gal)
Differential - Centre ..... 34 l (8.7 US gal)
Planetaries (each) ..... 9 l (2.4 US gal)
Driveshaft Bearings ..... 1.5 l (0.4 US gal)
Air Conditioning Compressor ..... 0.125 l (0.033 US gal)

TYPICAL NOISE LEVELS

Operator Ear (ISO 6394) ..... 76 dbA

*Exterior Sound Rating (ISO 6395) ..... 109 dbA
* - The above result is for the mode giving the highest exterior sound level when measured and operated as per the prescribed procedures of the standard. Results shown are for the vehicle in base configuration.

Note: Noise Level Exposure to the operator and bystander personnel may be higher depending upon proximity to buildings, rock piles, machinery, etc. The actual job site Noise Level Exposure must be measured and applicable regulations complied with in respect to Employee Hearing Protection.

Vehicle Weights	29.5 R25 Tyres	
Standard Vehicle	**kg**	**lb**
Net Distribution		
Front Axle	15086	32258
Centre Axle	7125	15707
Rear Axle	7068	15582
Vehicle, Net	**29279**	**64547**
Payload	**34000**	**74956**
Gross Distribution		
Front Axle	17279	38094
Centre Axle	23000	50705
Rear Axle	23000	50705
Vehicle, Gross	**63279**	**139506**
Bare Chassis	23669	52177
Body	4950	10915
Body Hoists (Pair)	660	1455

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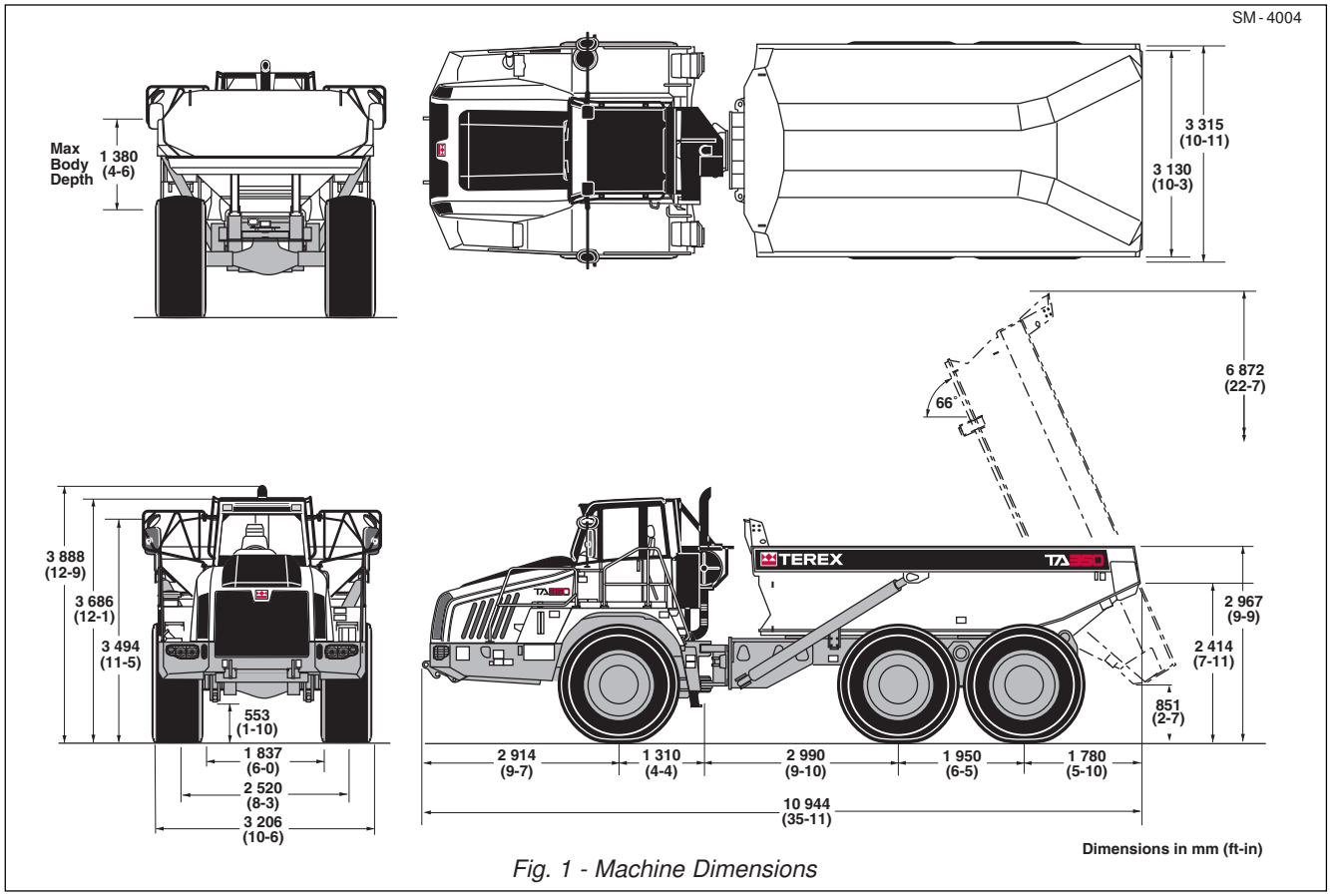

Fig. 1 - Machine Dimensions

ENGINE

Make/Model ..... Detroit Diesel Series 60
Type … 6 Cylinder, in line , Four cycle diesel, water cooled, turbocharged with air to air cooling, electronic engine management.

Gross power at 2110 rev/min .....338 kW (454 hp, 460 PS)
Net power at 2110 rev/min .....326 kW (437hp, 433 PS)

Note: Gross power rated to SAE J1995 Jun 90. Engine emission meets USA EPA Tier 3 /CARB MOH 40 CFR 89 Tier 3 and proposed EU NRMM (non-road mobile machinery) Tier 3 directive.

Maximum Torque..... 2100 Nm (1548 lbf ft) at 1 350 rev/min
Number of cylinders/configuration .....6, in line
Bore x Stroke ..... 133 x 168 mm (5.24 x 6.61 in)
Piston Displacement .....14 l (855 in³)
Air cleaner .....Dry type, double element
Starting ..... Electric
Maximum Speed (No load) ..... 2300 rev/min
Maximum Speed (Full load) ..... 2200 rev/min
Idle Speed ..... 700 rev/min

TRANSMISSION

Make/Model ..... Allison 4500 ORS with integral retarder mounted directly to the engine, fully automatic transmission with planetary gearing, lock-up in all gear ranges. Electronic control with six forward and one reverse gear.

Main Pressure ..... 18.5 + 3.4 bar (269 + 50 lbf/in²)
Temperatures:
Normal ..... 60 °C - 135 °C (140 °F - 275 °F)
Maximum ..... 165 °C (329 °F)
Ratios:
Transmission ..... Refer to table below

Low Range

Forward						
Gear	1	2	3	4	5	6
km/h	5.5	11.7	16.9	25.8	33.0	37.5
mile/h	3.4	7.3	10.5	16.0	20.5	23.3
Reverse						
Gear	1					
km/h	4.8					
mile/h	3.0					

High Range

Forward						
Gear	1	2	3	4	5	6
km/h	8.4	17.8	25.8	39.5	50.4	60.0
mile/h	5.2	11.0	16.0	24.5	31.3	37.3
Reverse						
Gear	1					
km/h	7.4					
mile/h	4.6					

DROPBOX

Remote mounted transfer gearbox taking drive from the transmission and feeding it via a lockable differential to the front and rear wheels.

Ratios:
- Low.....1.129:1
- High.....0.738:1

Pressure:
- High/Low Actuation.....15 ±0.2 bar
- Differential Lock Actuation.....42 ±8 bar
- Lubrication.....2 ± 1 bar

Temperature:
- Maximum.....100 °C (212 °F)

AXLES

Three axles in permanent all-wheel drive (6 X 6) with a differential coupling between each axle, to prevent driveline wind-up. Heavy duty axles with fully-floating axle shafts and outboard planetary reduction gearing.

Automatic limited slip differentials in each axle. Centre axle incorporates a through-drive differential to transmit drive to the rear axle. This differential and the dropbox output differential are locked simultaneously using one switch selected by the operator.

Ratios:
- Differential 3.70:1
- Planetary 6.35:1
- Total Reduction 23.50:1

SUSPENSION

Front: Four trailing links and a Panhard rod locate the front axle giving a high roll centre. The optimized front axle position, along with the wide spaced main and rebound mounts, mounted directly above the axle, and long suspension travel, combine with two heavy duty dampers each side to give excellent handling and ride.

Rear: Each axle is coupled to the frame by three rubber-bushed links with lateral restraint by a transverse link. Pivoting inter-axle balance beams equalize the load on each axle. Suspension movement is cushioned by rubber/metal laminated compression units between each axle and underside of balance beam ends. Pivot points on rear suspension linkages are rubber-bushed and maintenance-free.

WHEELS AND TYRES

Wheels: ..... 3-piece earthmover rims with 19 stud fixing
Size:
- Standard ..... 25 x 22.00 in for 26.5 R25** tyres

Tyres:
- Standard 26.5 R25**

Inflation Pressures (Bridgestone):

	Front	Centre/Rear
26.5 R25**	4.5 bar (65 lbf/in²)	5.7 bar (82 lbf/in²)

Inflation Pressures (Michelin):

	Front	Centre/Rear
26.5 R25**	3.2 bar (47 lbf/in²)	4.5 bar (65 lbf/in²)

Inflation Pressures (Double Coin):

	Front	Centre/Rear
26.5 R25**	4.5 bar (65 lbf/in²)	5.5 bar (80 lbf/in²)

Inflation Pressures (Triangle):

	Front	Centre/Rear
26.5 R25**	4 bar (58 lbf/in²)	5.9 bar (86 lbf/in²)

Note: Tyre pressures should be regarded as nominal only. It is recommended that for tyres both listed and unlisted, the user should consult the tyre manufacturer and evaluate all job conditions in order to make the proper selection.

HYDRAULIC SYSTEM

Braking, steering and body hoist systems are controlled by a main hydraulic valve mounted on the frame. Systems are supplied with oil from a common tank by the main hydraulic pump, driven from a power take-off on the transmission. System components are protected by full flow filtration on the return line.
Pump:
- Type ..... Piston
- Capacity at 2700 rev/min ..... 5.4 l/s (85.6 US gal/min)

Brakes

Full hydraulic braking system with enclosed, forced oil-cooled multiple discs on each wheel. Independent circuits for front and rear brake systems. Warning lights and audible alarm indicate low brake system pressure. Brake system conforms to ISO 3450, SAE J1473.

Actuating Pressure ..... 58 ± 2.4 bar (850 ± 35 lbf/in²)
Pump Type ..... Triple stage gear
- Capacity at 1685 rev/min ..... 8.9 l/s (2.35 US gal/min)

Braking surface (tractor) ..... 590240 mm² (914.9 in²)/brake
Braking surface (trailer) ..... 590240 mm² (914.9 in²)/brake

Parking: Spring-applied, hydraulically-released disc on rear driveline.

Emergency: Automatic application of driveline brake should pressure fall in main brake hydraulic system. Service brakes may also be applied using the parking-emergency brake control.

Retardation: Hydraulic retarder integral with transmission.

Steering

Hydrostatic power steering by two single-stage, double-acting, cushioned steering cylinders. Emergency steering pressure is provided by a ground driven pump mounted on the rear of the transmission. An audible alarm and warning light indicates should the emergency system activate. Conforms to ISO 5010, SAE J53.

System Pressure ..... 240 bar (3 500 lbf/in²)
Steering Angle to either side ..... 45°
Lock to Lock Turns, steering wheel 4

Body Hoist
Two single-stage, double-acting hoist rams, cushioned at both ends of stroke. Electro servo assisted hoist control.

System Pressure ..... 240 bar (3500 lbf/in²)
Control Valve ..... Pilot Operated, Closed Centre
Body Raise Time (loaded) ..... 12.5 sec
Body Lower Time (power down) ..... 8 sec

ELECTRICAL SYSTEM

Type ..... 24 V, Negative Ground
Battery ..... Two, 12 V, 175 Ah each
Accessories ..... 24 V
Alternator ..... 100 Amp

BODY

Of all welded construction, fabricated from high hardness (min. 360 BHN) 1 000 MPa (145 000 lbf/in²) yield strength steel. 25° tail chute angle provides good load retention without tailgate.

Plate Thicknesses:
- Floor and Tailchute ..... 15 mm (0.58 in)
- Sides ..... 12 mm (0.47 in)
- Front ..... 8 mm (0.39 in)

Volume:
- Struck (SAE) ..... 15.5 m³ (20.3 yd³)
- Heaped 2:1 (SAE) ..... 21.0 m³ (27.5 yd³)

SERVICE CAPACITIES

Fuel tank ..... 481 l (127 US gal)
Hydraulic System ..... 330 l (87.2 US gal)
Cooling System ..... 80 l (21.1 US gal)
Engine Crankcase (with filters) ..... 37 l (9.8 US gal)
Transmission (with filters) ..... 61 l (14.8 US gal)
Differentials - Front & Rear ..... 33 l (8.9 US gal)
Differentials - Centre ..... 34 l (8.7 US gal)
Planetaries (each) ..... 9 l (2.4 US gal)
Driveshaft Bearings ..... 1.5 l (0.4 US gal)
Air Conditioning Compressor ..... 0.125 l (0.033 US gal)

TYPICAL NOISE LEVELS

Operator Ear (ISO 6394) ..... 76 dbA

*Exterior Sound Rating (ISO 6395) ..... 109 dbA
* - The above result is for the mode giving the highest exterior sound level when measured and operated as per the prescribed procedures of the standard. Results shown are for the vehicle in base configuration.

Note: Noise Level Exposure to the operator and bystander personnel may be higher depending upon proximity to buildings, rock piles, machinery etc.. The actual job site Noise Level Exposure must be measured and applicable regulations complied with in respect to Employee Hearing Protection.

* * * *

Vehicle Weights	29.5 R25 Tyres	
Standard Vehicle	**kg**	**lb**
Net Distribution		
Front Axle	15086	32258
Centre Axle	7125	15707
Rear Axle	7068	15582
Vehicle, Net	**29279**	**64547**
Payload	**34000**	**74956**
Gross Distribution		
Front Axle	17279	38 094
Centre Axle	23000	50 705
Rear Axle	23000	50705
Vehicle, Gross	**63279**	**139506**
Bare Chassis	23669	52177
Body	4950	10915
Body Hoists (Pair)	660	1 455

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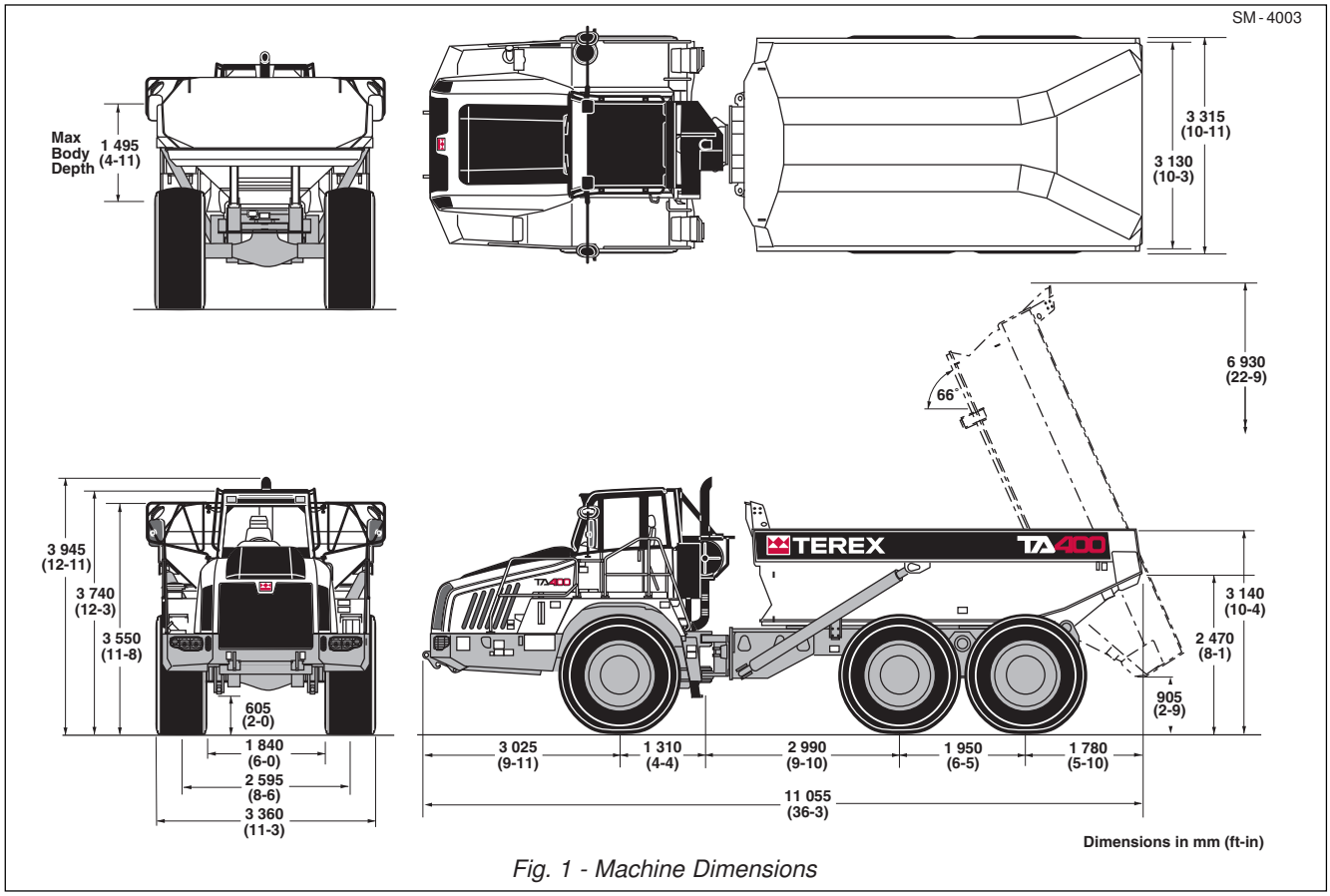

Fig. 1 - Machine Dimensions

ENGINE

Make/Model ..... Detroit Diesel Series 60 Type 6 .... Cylinder, in line , Four cycle diesel, water cooled, turbocharged with air to air cooling, electronic engine management.

Gross power at 2110 rev/min .....338 kW (454 hp, 460 PS)
Net power at 2110 rev/min .....326 kW (437 hp, 443 PS)

Note: Gross power rated to SAE J1995 Jun 90. Engine emission meets USA EPA Tier 3 /CARB MOH 40 CFR 89 Tier 3 and proposed EU NRMM (non-road mobile machinery) Tier 3 directive.

Maximum Torque..... 2100 Nm (1548 lbf ft) at 1350 rev/min
Number of cylinders/configuration .....6, in line
Bore x Stroke ..... 133 x 168 mm (5.24 x 6.61 in)
Piston Displacement .....14 litres (855 in³)
Air cleaner .....Dry type, double element
Starting ..... Electric
Maximum Speed (No load) ..... 2300 rev/min
Maximum Speed (Full load) ..... 2200 rev/min
Idle Speed ..... 700 rev/min

TRANSMISSION

Make/Model ..... Allison 4500 ORS with integral retarder mounted directly to the engine, fully automatic transmission with planetary gearing, lock-up in all gear ranges. Electronic control with six forward and one reverse gear.

Main ..... 18.5 + 3.4 bar (269 + 50 lbf/in²)
Temperatures:
Normal ..... 60 °C - 135 °C (140 °F - 275 °F)
Maximum ..... 165 °C (329 °F)
Ratios:
Transmission ..... Refer to table below

Low Range

Forward						
Gear	1	2	3	4	5	6
km/h	5.5	11.7	16.9	25.8	33.0	37.5
mile/h	3.4	7.3	10.5	16.0	20.5	23.3
Reverse						
Gear	1					
km/h	4.8					
mile/h	3.0					

High Range

Forward						
Gear	1	2	3	4	5	6
km/h	8.4	17.8	25.8	39.5	50.4	60.0
mile/h	5.2	11.0	16.0	24.5	31.3	37.3
Reverse						
Gear	1					
km/h	7.4					
mile/h	4.6					

DROPBOX

Remote mounted transfer gearbox taking drive from the transmission and feeding it via a lockable differential to the front and rear wheels.

AXLES

Three axles in permanent all-wheel drive (6 X 6) with differential coupling between each axle to prevent driveline wind-up. Heavy duty axles with fully-floating axle shafts and outboard planetary reduction gearing.

Automatic limited slip differentials in each axle. Centre axle incorporates a through-drive differential to transmit drive to the rear axle. This differential and the dropbox output differential are locked simultaneously using one switch selected by the operator.

Ratios:

Differential	3.70:1
Planetary	6.35:1
Total Reduction	23.50:1

SUSPENSION

Front: Four trailing links and a panhard rod locate the front axle giving a high roll centre. The optimised front axle position along with the wide spaced main and rebound mounts, mounted directly above the axle and long suspension travel, combine with two heavy duty dampers each side to give excellent handling and ride.

Rear: Each axle is coupled to the frame by three rubber-bushed links with lateral restraint by a transverse link. Pivoting inter-axle balance beams equalise load on each axle. Suspension movement is cushioned by rubber/metal laminated compression units between each axle and underside of balance beam ends. Pivot points on rear suspension linkages are rubber-bushed and maintenance-free.

WHEELS AND TYRES

Wheels: ..... 5-piece earthmover rims with 12 stud fixing

Size:

Standard	25 x 25.00 in for 29.5 R25** tyres

Tyres:

Standard	29.5 R25**

Inflation Pressures (Bridgestone):

	Front	Centre/Rear
29.5 R25**	4.0 bar (76 lbf/in²)	5.0 bar (73 lbf/in²)

Inflation Pressures (Michelin):

	Front	Centre/Rear
29.5 R25**	2.76 bar (40 lbf/in²)	3.80 bar (55 lbf/in²)

Inflation Pressures (Good Year):

	Front	Centre/Rear
29.5 R25**	3.24 bar (47 lbf/in²)	4.6 bar (66 lbf/in²)

Note: Tyre pressures should be regarded as nominal only. It is recommended that for tyres both listed and unlisted, the user should consult the tyre manufacturer and evaluate all job conditions in order to make the proper selection.

HYDRAULIC SYSTEM

Braking, steering and body hoist systems are controlled by a main hydraulic valve mounted on frame. Systems are supplied with oil from a common tank by the main hydraulic pump, driven from power takeoff on transmission. System components are protected by full flow filtration on the return line.

Pump:

Type	Piston
Capacity at 2700 rev/min	5.4 l/s (85.6 US gal/min)

Brakes

Full hydraulic braking system with enclosed, forced oil-cooled multiple discs on each wheel. Independent circuits for front and rear brake systems. Warning lights and audible alarm indicate low brake system pressure. Brake system conforms to ISO 3450, SAE J1473.

Actuating Pressure	58 ± 2.4 bar (845 ± 35 lbf/in²)
Pump Type	Triple stage gear
Capacity at 1 685 rev/min	8.9 litre/s (2.35 US gal/min)

Braking surface (tractor)	590240 mm² (914.9 in²)/brake
Braking surface (trailer)	590240 mm² (914.9 in²)/brake

Parking: Spring-applied, hydraulic-released disc on rear driveline.

Emergency: Automatic application of driveline brake should pressure fall in main brake hydraulic system. Service brakes may also be applied using the parking-emergency brake control.

Steering

Hydrostatic power steering by two single-stage, double-acting, cushioned steering cylinders. Emergency steering pressure is provided by a ground driven pump mounted on the rear of the transmission. An audible alarm and warning light indicates should the emergency system activate. Conforms to ISO 5010, SAE J53.

System Pressure	240 bar (3500 lbf/in²)
Steering Angle to either side	45°
Lock to Lock Turns, steering wheel	4

Body Hoist

Two single-stage, double-acting hoist rams, cushioned at both ends of stroke. Electro servo assisted hoist control.

System Pressure	240 bar (3500 lbf/in²)
Control Valve	Pilot Operated, Closed Centre
Body Raise Time (loaded)	13 sec
Body Lower Time (power down)	7.5 sec

ELECTRICAL SYSTEM

Type	24 V, Negative Ground
Battery	Two, 12 V, 175 Ah each
Accessories	24 V
Alternator	100 Amp

BODY

Of all welded construction, fabricated from high hardness (min. 360 BHN) 1000 MPa (145000 lbf/in²) yield strength steel. 25° tail chute angle provides good load retention without tailgate.

Plate Thicknesses:
- Floor and Tailchute ..... 15 mm (0.58 in)
- Sides ..... 12 mm (0.47 in)
- Front ..... 10 mm (0.39 in)

Volume:
- Struck (SAE) ..... 17.4 m³ (22.8 yd³)
- Heaped 2:1 (SAE) ..... 23.3 m³ (30.3 yd³)

SERVICE CAPACITIES

Fuel tank ..... 481 l (127 US gal)
Hydraulic System ..... 330 l (87.2 US gal)
Engine Crankcase and filters ..... 32 l (8.4 US gal)
Cooling System ..... 67 l (17.7 US gal)
Transmission (including cooler) ..... 61 l (2.6 US gal)
Dropbox ..... 13 l (8.7 US g
Differentials - Front & Rear (each) ..... 33 l (8.7 US gal)
Differential - Centre ..... 34 l (8.9 US gal)
Planetaries (each) ..... 9 l (2.37 US gal)
Hand Pump Tank ..... 1 l (0.26 US gal)
Air Conditioning Compressor ..... 0.125 l (0.033 US gal)

TYPICAL NOISE LEVELS

Operator Ear (ISO 6394) ..... 76 dbA

*Exterior Sound Rating (ISO 6395) ..... 109 dbA
* - The above result is for the mode giving the highest exterior sound level when measured and operated as per the prescribed procedures of the standard. Results shown are for the vehicle in base configuration.

Note: Noise Level Exposure to the operator and bystander personnel may be higher depending upon proximity to buildings, rock piles, machinery etc.. The actual job site Noise Level Exposure must be measured and applicable regulations complied with in respect to Employee Hearing Protection.

Vehicle Weights	29.5 R25 Tyres	
Standard Vehicle	**kg**	**lb**
Net Distribution		
Front Axle	15880	34936
Centre Axle	7500	16500
Rear Axle	7440	16368
Vehicle, Net	**30820**	**67804**
Payload	**38000**	**83775**
Gross Distribution		
Front Axle	18320	41500
Centre Axle	25000	55000
Rear Axle	25000	55000
Vehicle, Gross	**68320**	**151500**
Bare Chassis	24760	54444
Body	5400	11905
Body Hoists (Pair)	660	1455

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Welding

⚠ WARNINGS
Before any welding is done on a machine equipped with any electronic systems, disconnect the following (if applicable) in this order: Battery earth cable, battery supply cable, alternator earth cables, alternator supply cables and electrical connections at the engine ECM, transmission ECU, body control lever, hydraulics ECU and cab bulkhead to avoid damage to electrical components. Turn off battery master switch to isolate the batteries before disconnecting any components.
After welding connect all of the above in the reverse order.

⚠
Before any welding is done ensure all paint has been removed from the area to be welded. Failure to do so may result in hazardous fumes being given off from the paint.

Note: Always fasten the welding machines ground cable to the piece/frame being welded if possible.

Electric arc welding is recommended for all welded frame repairs. Since the nature and extent of damage to the frame cannot be predetermined, no definite repair procedure can be established. As a general rule however, if parts are twisted, bent or pulled apart, or a frame is bent or out of alignment, no welding should be done until the parts are straightened or realigned.

Successfully welded repairs will depend to a great extent upon the use of the proper equipment, materials and the ability of the welder. The Customer Support Department can be consulted regarding the feasibility of welding repairs.

⚠ WARNING
Welding and flame cutting cadmium plated metals produce odourless fumes which are toxic. Recommended industrial hygiene practice for protection of the welding operator from the cadmium fumes and metallic oxides requires enclosure ventilation specifically designed for the welding process. A respiratory protective device such as the M.S.A. 'Gasfoe' respirator with G.M.A. cartridge will provide protection against cadmium, fumes and metallic oxides. The 'Gasfoe' respirator has been approved by the U.S. Bureau of Mines: Approval number 23B-10, and is designed to protect against gases, vapours, and/or metal fumes.

Note: The current from the welding rod always follows the path of least resistance. If, for example, the ground clamp is attached to the rear frame when welding is performed on the front frame, the current must pass a frame connection to return to the welding machine. Since the pivot coupling offers the least resistance but not a sound electrical connection, small electric arcs may be set up across the moving parts which may cause welding blotches on their wearing surfaces and increase the wear rate of these components.

General Welding Procedure

The following general procedure should be used for the repair of defects outwith the vicinity of alloy steel castings.

1. Completely ARC-AIR gouge or grind out the crack until sound metal is reached. If ARC-AIR method is employed, pre-heat area to 100° C (212° F), measure 3 - 4" either side of repair prior to gouging. On completion of gouging grind to remove thin carbon layer.

2. Apply dye-penetrant check to ensure crack has been completely removed.

3. Pre-heat area to 100° C (212° F), measured 3 - 4" either side of repair. Avoid local overheating.

4. Weld completely using E-7016 electrodes. Care must be taken to ensure electrodes are protected from moisture pick-ups at all times.

5. Allow repair weld to cool slowly.

6. Grind and blend repair to original contour. Paint heat damaged areas.

The following general procedure should be used for the repair of defects in alloy steel castings and in the welds joining steel castings.

1. Completely ARC-AIR gouge or grind out the crack until sound metal is reached. If ARC-AIR method is employed, pre-heat area to 200° C (392° F), measure 3 - 4" either side of repair prior to gouging. On completion of gouging grind to remove thin carbon layer.

2. Apply dye-penetrant check to ensure crack has been completely removed.

3. Pre-heat area to 200° C (392° F), measured 3 - 4" either side of repair. Avoid local overheating.

4. Weld completely using E-7016 electrodes. Care must be taken to ensure electrodes are protected from moisture pick-ups at all times.

5. On completion of welding, post-heat repair area to 400° C (752° F), measure 3 - 4" either side of repair.

6. If welding has to be interrupted for any reason, e.g. overnight, post-heat immediately as in Step 5.

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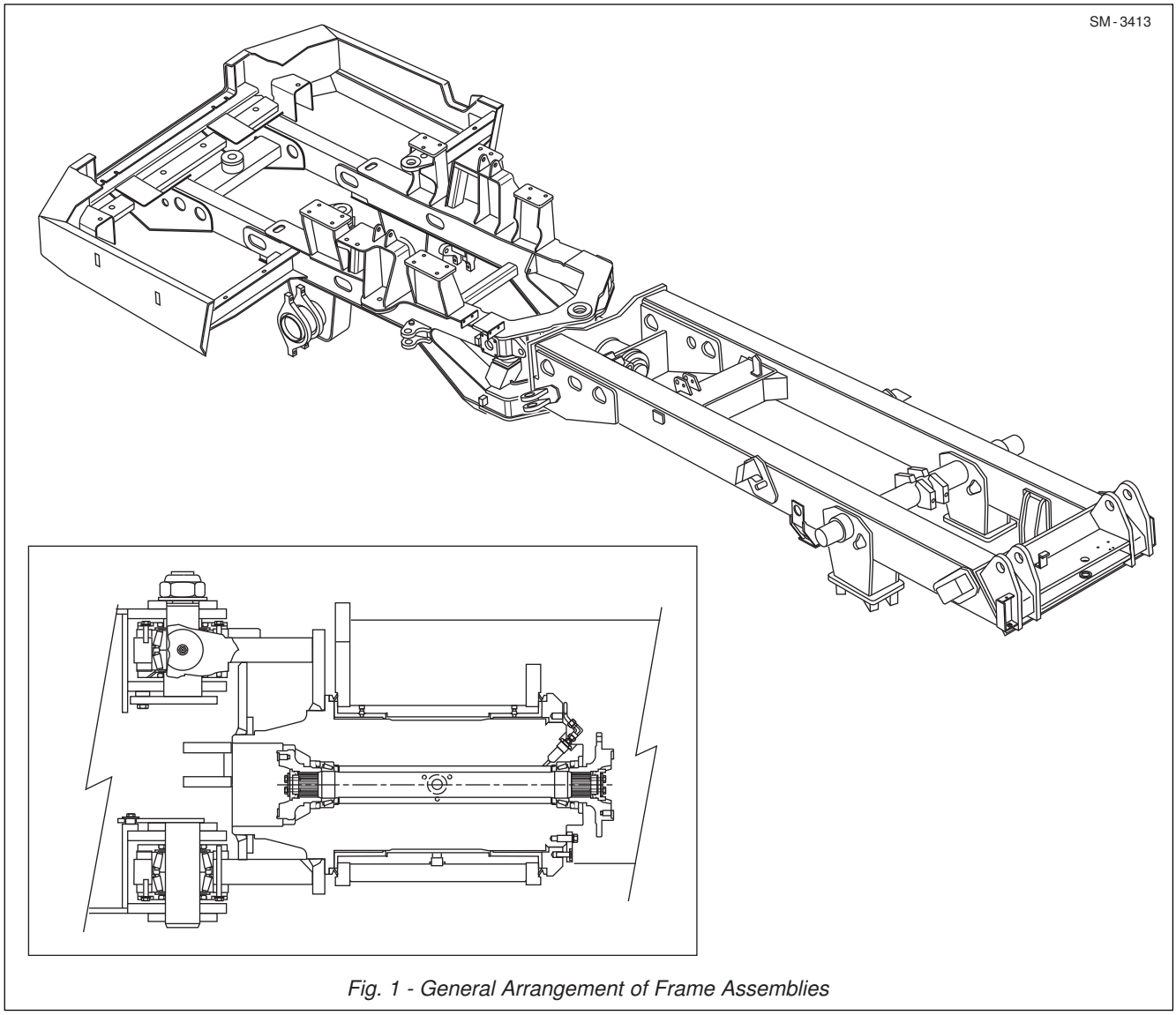

Fig. 1 - General Arrangement of Frame Assemblies

DESCRIPTION

The front and rear frames are all-welded high grade steel fabrications, with rectangular box section beams forming the main side and cross-members. These heavy duty structures are designed to withstand the severe loadings incurred when operating over rough terrain.

The front frame houses engine, transmission, hydraulic and fuel tanks and carries the cab, front suspension and front drive axle. The rear frame carries the body, body cylinders, rear suspension system and the rear drive axles.

Inter-frame oscillation is provided by a robust cylindrical coupling, carried on large nylon bushes. Steering is by frame articulation to 45 degrees either side by two widely spaced vertical pivot pins in taper roller bearings.

Note: For details on the articulation and oscillation pivot and procedures for separating the front and rear frames, refer to Section 100-0020, ARTICULATION AND OSCILLATION PIVOT.

MAINTENANCE

Note: This section covers maintenance of the front and rear frames only.

Inspection

Inspect the frames and attached parts at intervals not exceeding 250 hours for cracked or broken welds and bending of the frame. Any defects found should be repaired before they progress into major failures.

Straightening

If the frame is not too badly sprung or twisted, hydraulic straightening and aligning equipment can be used to straighten the frame without dismantling the machine. However, if the frame is severely damaged, it will be necessary to disassemble the machine in order to repair or replace the frame assembly.

All straightening operations should be performed without application of heat if possible. If heat must be applied, do not heat the metal beyond a dull cherry red colour, as it will result in serious weakening of the frame by decreasing the tensile strength of the steel. When it is necessary to apply heat, apply it uniformly over the area to be straightened until the metal reaches a uniform colour. Protect the heated surface from drafts to prevent sudden cooling of the metal. If the frame or frame parts cannot be straightened they must be replaced.

Welding

⚠ WARNINGS

Before any welding is done on a machine equipped with the DDEC system, disconnect wiring harnesses at the ECM, connections at body hydraulics joystick, all battery connections at both positive and negative terminals and ground cable to alternator to avoid damage to electrical components. Turn battery master switch to the 'Off' position before disconnecting any components. Remove battery ground cable first, and reconnect last, to avoid damaging electrical components.

⚠

Before any welding is done ensure all paint has been removed from the area to be welded. Failure to do so may result in hazardous fumes being given off from the paint.

Note: Prior to welding, switch off/disconnect the following in the order given. Failure to do so may seriously damage the machines electrical components.

a - Turn keyswitch off
b - Turn battery master switch off
c - Battery earth cables
d - Battery supply cables
e - Alternator earth cables
f - Alternator supply cables
g - ECM Vehicle (both 68 pin connectors)
h - Transmission TCM (80 pin connector)
i - Transmission (4th Gen) connector
j - Hydraulic ECU Electronic Controller
k - Body hydraulics joystick
l - VDU panel CPU (all connectors)

After welding, connect all of the above in the reverse order.

Note: Always fasten the welding machines ground cable to the piece/frame being welded if possible.

Electric arc welding is recommended for all welded frame repairs. Since the nature and extent of damage to the frame cannot be predetermined, no definite repair procedure can be established. As a general rule however, if parts are twisted, bent or pulled apart, or a frame is bent or out of alignment, no welding should be done until the parts are straightened or realigned.

Successfully welded repairs will depend to a great extent upon the use of the proper equipment, materials and the ability of the welder. The Service Department can be consulted regarding the feasibility of welding repairs.

Reinforcement

Frame reinforcement can be made with channel, angle or flat structural stock. Whenever possible, the reinforcement should extend well beyond the bent, broken or cracked area. The reinforcement stock thickness should not exceed that of the frame stock and the material should be of the same tensile strength.

Painting

To keep rust and corrosion to a minimum, periodic painting of abrasions and other exposed metal areas on the frames is highly recommended.

If painting of a frame is required, thoroughly clean the areas to be painted. Apply a primer coat of synthetic red oxide and then a finish coat of synthetic enamel.

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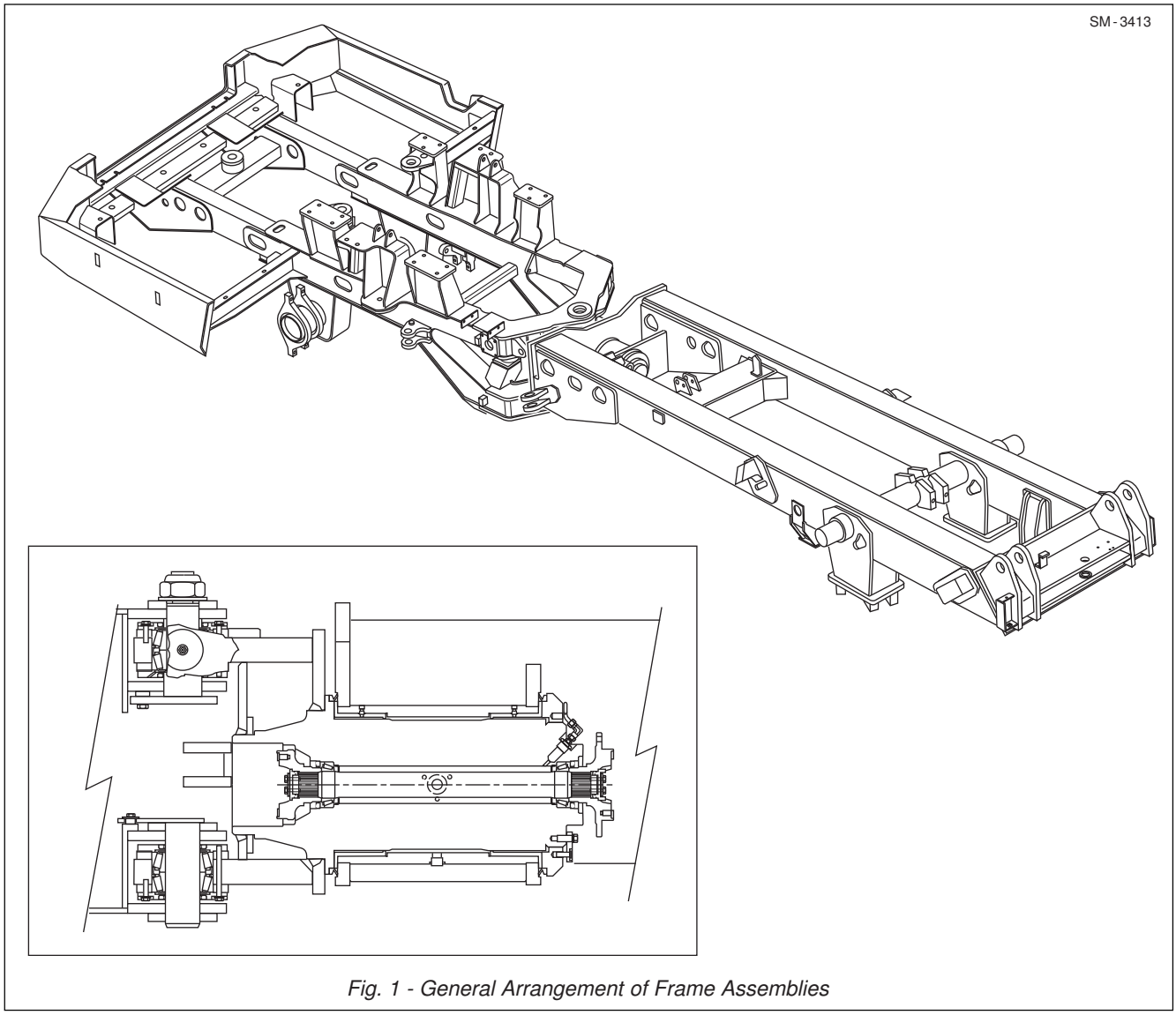

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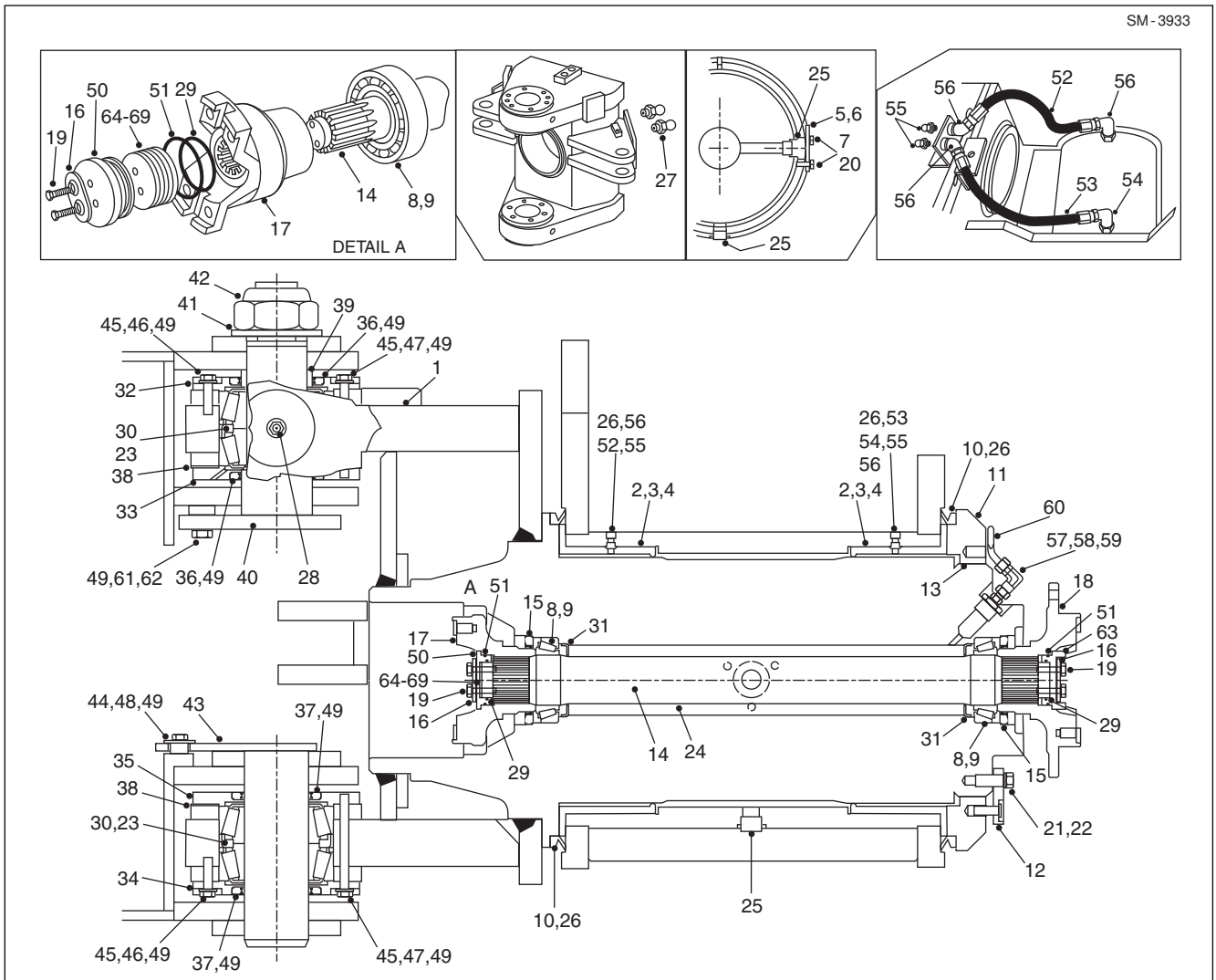

1 - Pivot Assembly	16 - Lockplate	28 - Plug	43 - Lower Pin	58 - Connector
2 - Nylon Bush	17 - Front Yoke	29 - 'O' Ring	44 - Hardened Washer	59 - Elbow
3 - Loctite 648	18 - Brake Yoke	30 - Bearing Assembly	45 - Washer	60 - Pipe Assembly
4 - Loc Quick Primer	19 - Bolt	31 - Retaining Ring	46 - Bolt	61 - Washer
5 - Gasket	20 - Washer	32 - Seal Housing	47 - Bolt	62 - Bolt
6 - Cover Plate	21 - Lockwasher	33 - Seal Housing	48 - Bolt	63 - Thrust Collar-Rear
7 - Bolt	22 - Bolt	34 - Seal Housing	49 - Loctite 243	64 - Shim
8 - Bearing Assy - Cup	23 - Extreme Pressure	35 - Seal Housing	50 - Thrustcollar-Front	65 - Shim
9 - Bearing Assy - Cone	Lithium No.2 Grease	36 - Seal	51 - 'O' Ring	66 - Shim
10 - 'V' Ring Seal	24 - SAE 80W-90 EP	37 - Seal	52 - Hose Assembly	67 - Shim
11 - Thrust Nut	Gear Oil	38 - Shim	53 - Hose Assembly	68 - Shim
12 - Locking Plate	25 - Plug	39 - Spacer	54 - Connector	69 - Shim
13 - Antiseize Comp	26 - Extreme Pressure	40 - Upper Pin	55 - Lube Fitting	
14 - Driveshaft	Multipurpose Grease	41 - Washer	56 - Elbow	
15 - Seal	27 - Lube Fitting	42 - Nut	57 - Adaptor	

Fig. 1 - Articulation and Oscillation Pivot

DESCRIPTION AND OPERATION

The articulation and oscillation pivot allows the front and rear frames to rotate horizontally (articulation) and tilt laterally (oscillation) with respect to each other. It is also the main load bearing coupling between the two frames. The pivot assembly houses the driveshaft connecting the drive between the front and rear frames.

Articulation bearings, oscillation bushes, pivot driveshaft bearing and associated parts can be removed, inspected and replaced or renewed by following the procedures outlined in this section.