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TEREX Equipment Limited Maintenance Manual

MAINTENANCE MANUAL TA35 - TA40 G7



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TEREX Equipment Limited Maintenance Manual Re-order

MAINTENANCE MANUAL

TA35 - TA40 G7

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TEREX Equipment Limited Maintenance Manual - Introduction

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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MAINTENANCE MANUAL

TA35 - TA40 G7

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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 decals 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.

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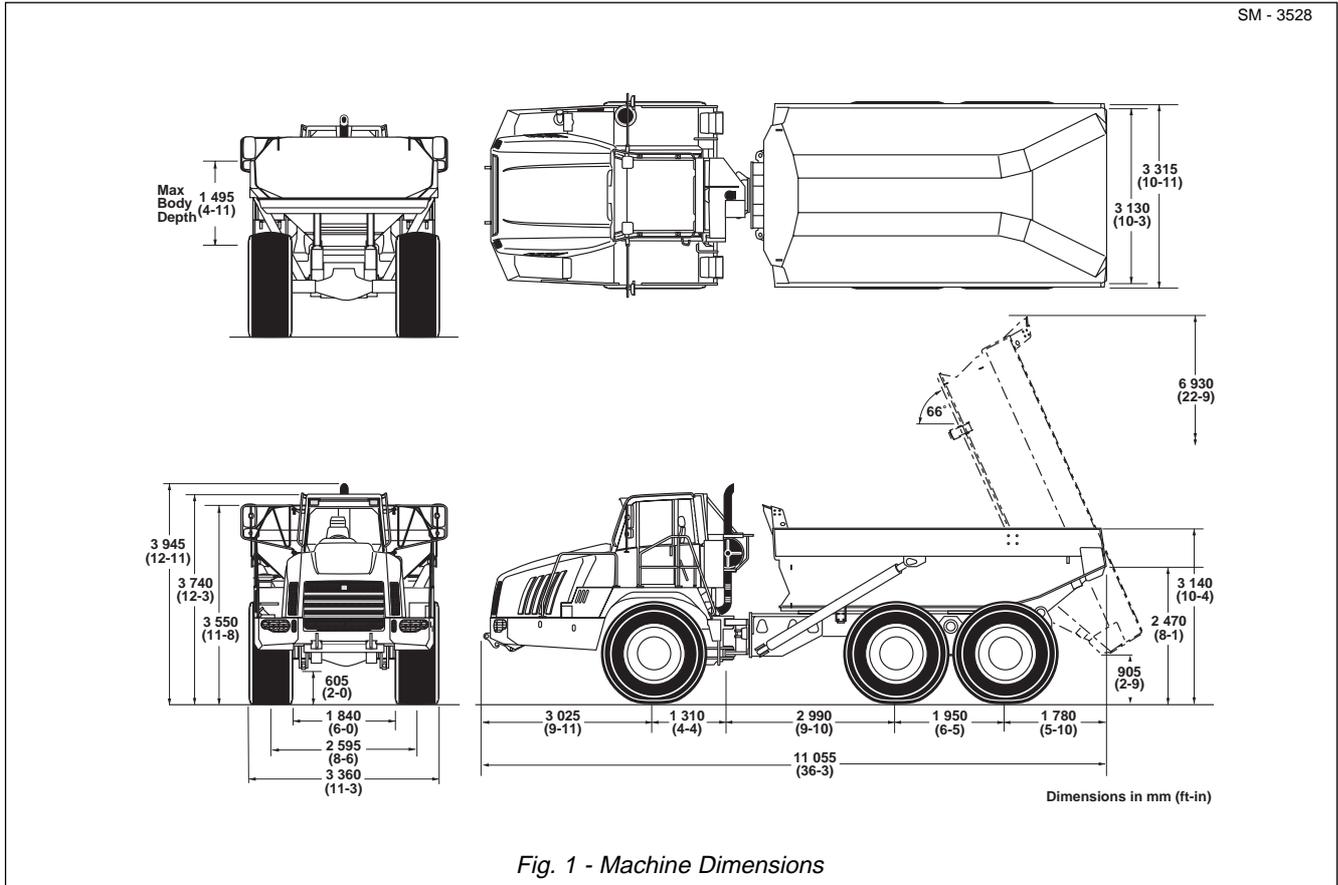


Fig. 1 - Machine Dimensions

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 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					

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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/in ²)	4.97 bar (72 lbf/in ²)

Inflation Pressures (Michelin):

	Front	Centre/Rear
26.5 R25**	3.24 bar (47 lbf/in ²)	4.28 bar (62 lbf/in ²)

Inflation Pressures (GoodYear):

	Front	Centre/Rear
26.5 R25**	4.75 bar (69 lbf/in ²)	4.75 bar (69 lbf/in ²)

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	48 ± 2.4 bar (700 ± 35 lbf/in ²)
Pump Type	Triple stage gear
Capacity at 1 685 rev/min	8.9 l/s (2.35 US gal/min)

Braking surface (tractor)	590240 mm ² (914.9 in ²)/brake
Braking surface (trailer)	590240 mm ² (914.9 in ²)/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/in ²)
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/in ²)
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

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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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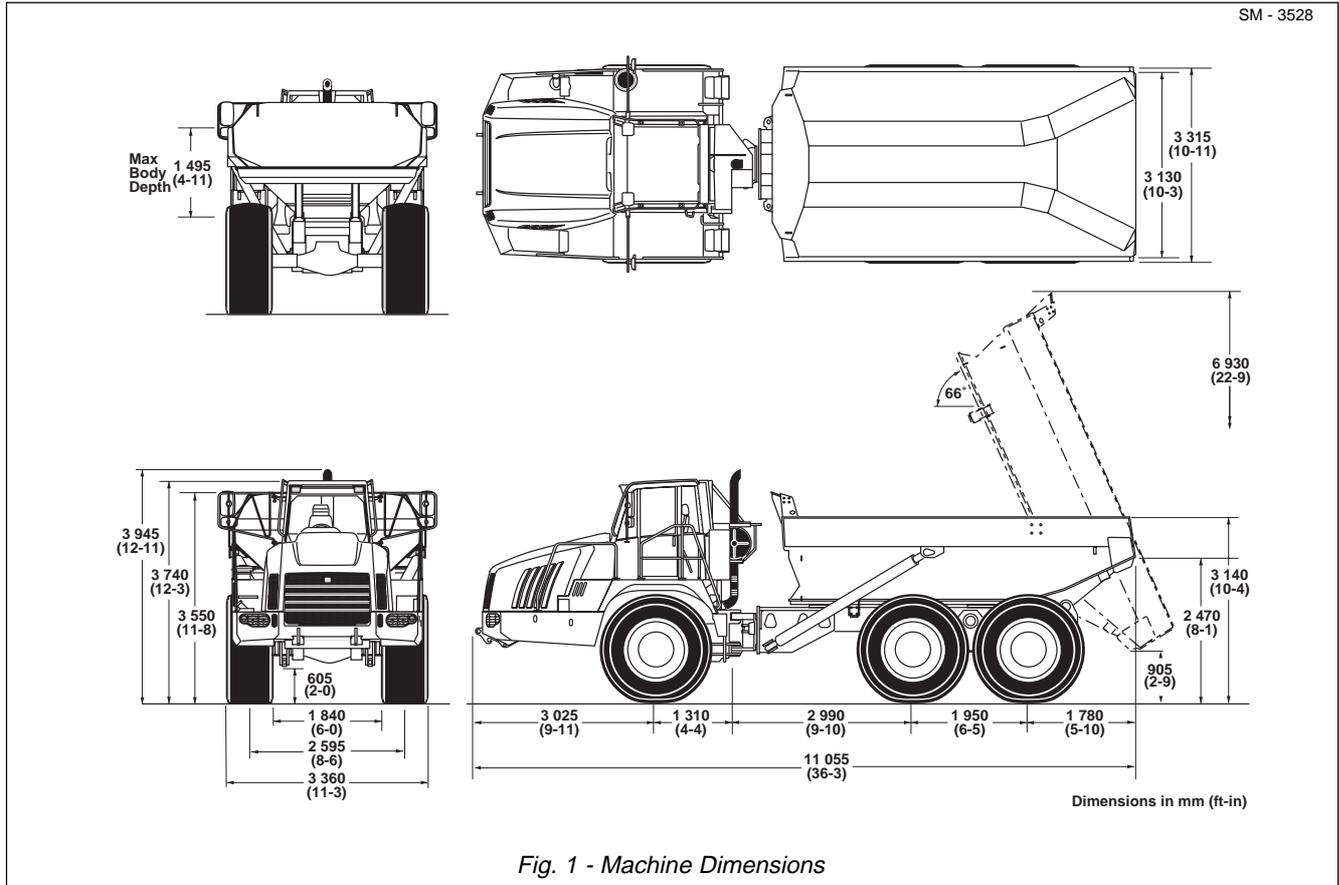


Fig. 1 - Machine Dimensions

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					

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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/in ²)	5.7 bar (82 lbf/in ²)

Inflation Pressures (Michelin):

	Front	Centre/Rear
26.5 R25**	3.2 bar (47 lbf/in ²)	4.5 bar (65 lbf/in ²)

Inflation Pressures (Double Coin):

	Front	Centre/Rear
26.5 R25**	4.5 bar (65 lbf/in ²)	5.5 bar (80 lbf/in ²)

Inflation Pressures (Triangle):

	Front	Centre/Rear
26.5 R25**	4 bar (58 lbf/in ²)	5.9 bar (86 lbf/in ²)

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 48 ± 2.4 bar (700 ± 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)

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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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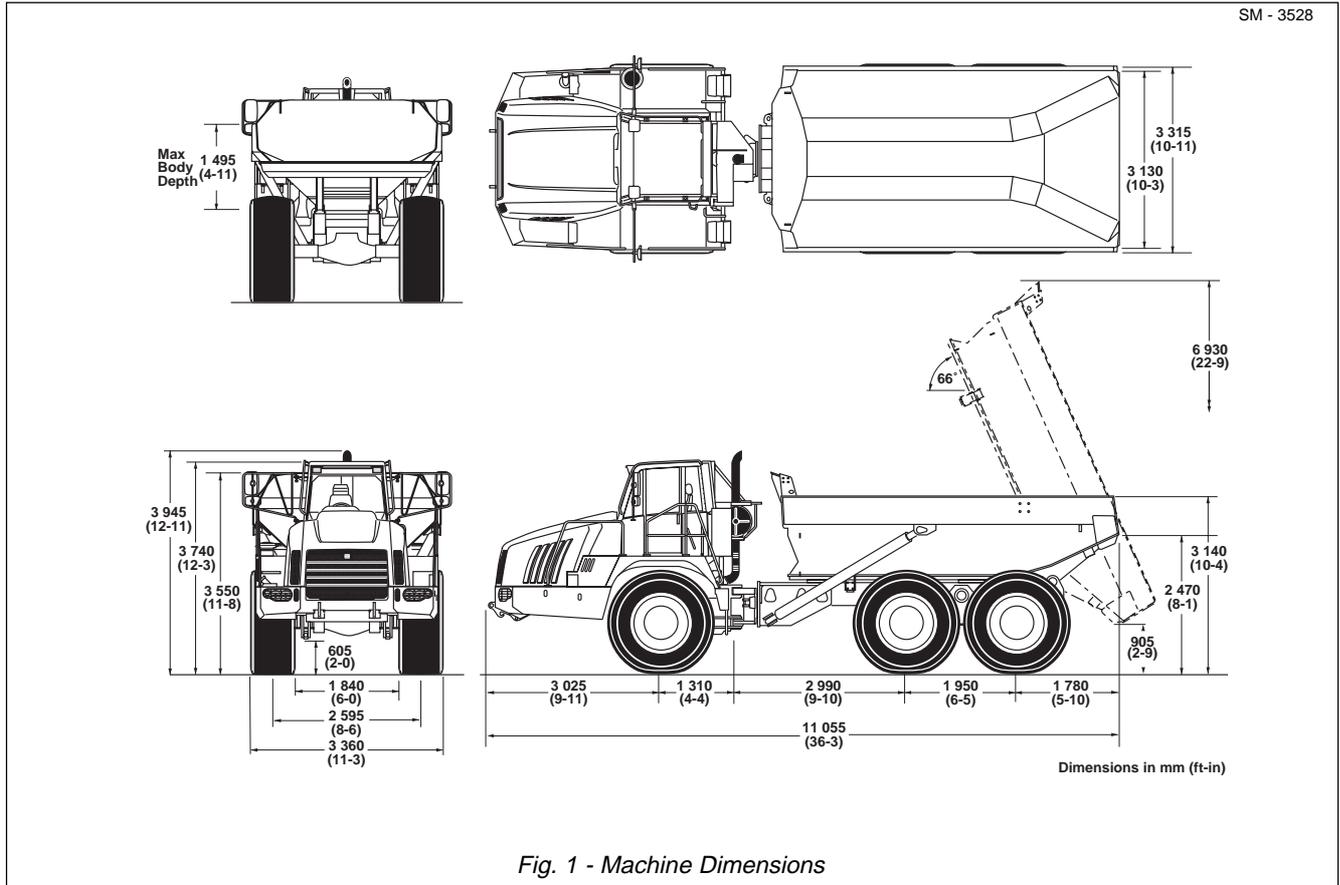


Fig. 1 - Machine Dimensions

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					

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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/in ²)	5.0 bar (73 lbf/in ²)

Inflation Pressures (Michelin):

	Front	Centre/Rear
29.5 R25**	2.76 bar (40 lbf/in ²)	3.80 bar (55 lbf/in ²)

Inflation Pressures (Good Year):

	Front	Centre/Rear
29.5 R25**	3.24 bar (47 lbf/in ²)	4.6 bar (66 lbf/in ²)

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	48 ± 2.4 bar (700 ± 35 lbf/in ²)
Pump Type	Triple stage gear
Capacity at 1 685 rev/min	8.9 litre/s (2.35 US gal/min)

Braking surface (tractor)	590240 mm ² (914.9 in ²)/brake
Braking surface (trailer)	590240 mm ² (914.9 in ²)/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/in ²)
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/in ²)
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

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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.

General Information - Welding Procedure

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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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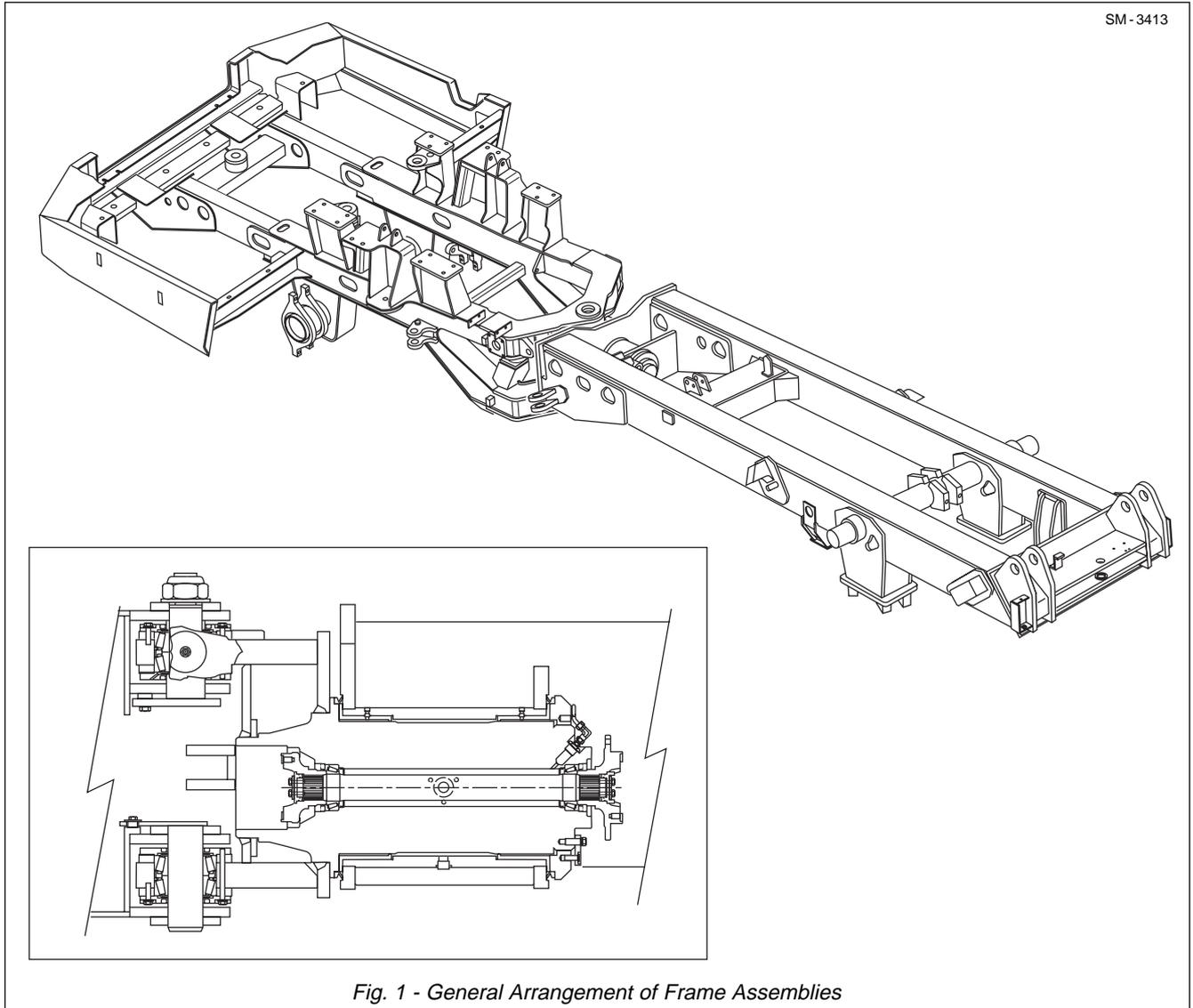


Fig. 1 - General Arrangement of Frame Assemblies

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.

Chassis - Frames

Section 100-0010

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.

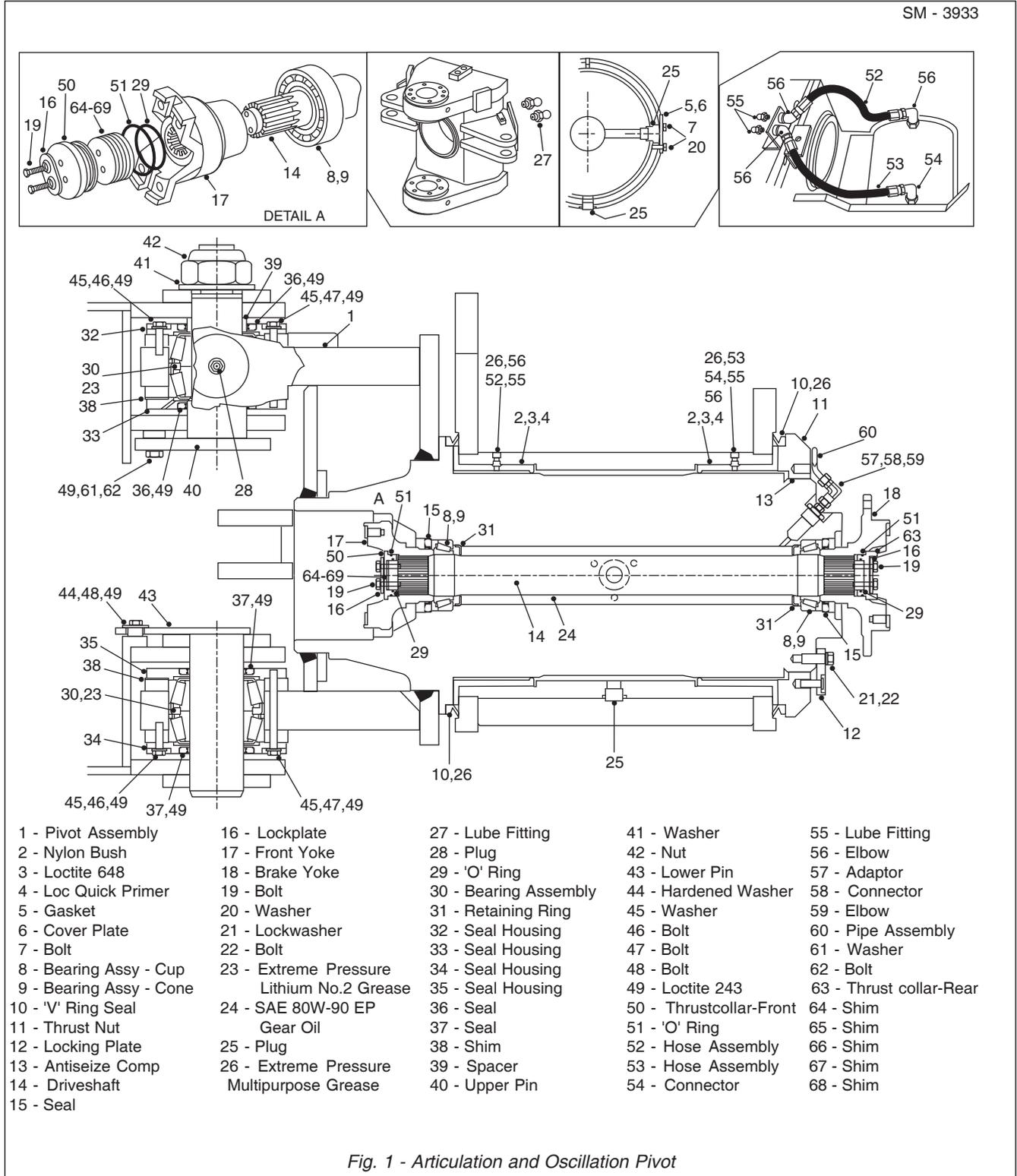
If painting of a frame is required, thoroughly clean the areas to be painted. Apply a primer coat of synthetic red oxide and then a finish coat of synthetic enamel.

* * * *

CHASSIS - Articulation and Oscillation Pivot

Section 100-0020

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

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.

Chassis - Articulation and Oscillation Pivot

Section 100-0020

THRU-DRIVE DRIVESHAFT

Numbers in parentheses refer to Fig. 1, unless otherwise specified.

Note: The following procedures assume that only thru-drive components require repair.

Note: Tighten all fasteners without special torques specified to torques listed in Section 300-0080, STANDARD BOLT AND NUT TORQUE SPECIFICATIONS.



WARNINGS

To prevent personal injury and property damage, be sure wheel blocks are properly secured and of adequate capacity to do the job safely.



When necessary to drive out or drive on components during disassembly/assembly, be sure to use a soft drift to prevent property damage and personal injury.

Removal and Disassembly

1. Position the vehicle on a level work area and apply parking brake.

2. Raise body and install body safety prop to secure body in partially raised position.

3. Shut down engine and block all wheels securely.

4. Identify the relationship of the driveline caps to the transmission yoke and front yoke (17). Remove capscrews and remove driveline from vehicle.

Note: Take extra care when handling drivelines as any deformity on a rotating mass creates vibration and excessive wear during any operation.

5. Remove wheel blocks, start engine and steer vehicle into a full left-hand lock. Shut down engine and block all wheels securely.

6. Remove Lockplate (16) , 2 Off Front bolts (19) & Front thrust collar (50).

7. Remove and discard 'O' rings (29 & 51) from Thrust collar (50).

8. Place a suitable container under the front of the pivot and pull front yoke (17) from driveshaft (14).

9. Disconnect mounting hardware securing protective guard (if fitted), from beneath the parking brake disc, to the rear frame.

10. Release the parking brake by turning the hex-head on the parking brake actuator fully anticlockwise.



WARNING

Tensioned spring on adjuster.

11. Remove mounting hardware securing parking brake assembly to mounting bracket on frame, then secure parking brake assembly clear of brake disc.

12. Identify the relationship of the driveline caps to brake yoke (18). Remove capscrews, disconnect driveline and secure clear of brake yoke.

13. Withdraw driveshaft assembly (14) from housing by pulling rearwards on parking brake disc/brake yoke assembly (18). If necessary, tap front end of driveshaft (14) to ease removal, take care to avoid damaging threads. Place driveshaft (14) assembly on work bench for further disassembly.

14. Prise out and discard seal (15) from front of the housing.

15. Lift out front bearing assembly cup (8) from front of the housing.

16. If bearing replacement is required, use a suitable puller to remove front and rear bearing assembly cups (8) from the housing.

Note: If either bearing assembly cup or cone (8 or 9) need replacing, they must be replaced as a set.

17. If retaining rings (31) need replacing, use a suitable drift or puller to remove them from the housing.

18. Temporarily install front yoke (17) fully onto front of driveshaft (14) and suitably restrain to resist rotation.

19. Remove mounting hardware securing parking brake disc to brake yoke (18) and remove brake disc.

20. Remove Lockplate (16) , 2 off Rear bolts (19) , Rear Thrust collar (63) & Brake yoke (18) from driveshaft (14). Identify front and rear ends of driveshaft (14).

21. Remove and discard 'O' rings (29 & 51) from Rear Thrust collar (63).