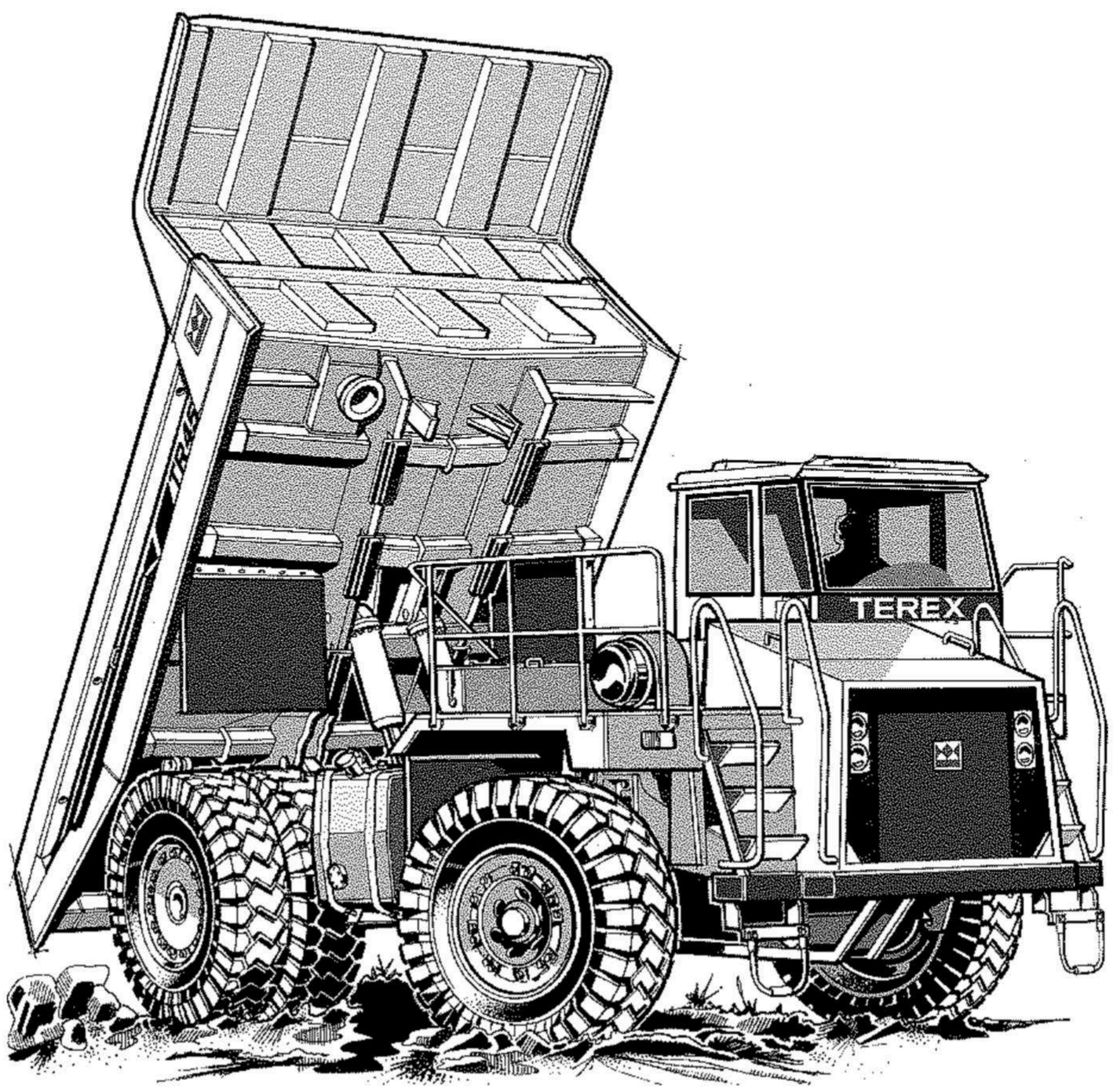
TEREX

TR45
Off-Highway Trucks
Service Manual



TECHNICAL PUBLICATIONS DEPARTMENT
TEREX EQUIPMENT LIMITED,
MOTHERWELL, SCOTLAND, ML1 5RY
REF. NO. SM754/781

SM 1606 Rev 2 02-02

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TABLE OF CONTENTS

Section No.	Description	SM No.
000	**GENERAL INFORMATION**	
0000	TR45 Off-Highway Truck	1608
100	**CHASSIS**	
0010	Chassis, Hood and Fenders	1570
110	**ENGINE**	
0030	Engine and Mounting	1571
0050	Air Cleaner	1572
0130	Power Takeoff	1296
120	**TRANSMISSION**	
0010	Transmission and Mounting	1612
0070	Commercial Electronic Control (CEC) Shift System	1575
0070	Commercial Electronic Control 2 (CEC2)	2128
0090	Power Takeoff	1178
0100	Transmission Oil Filter	1576
130	**DRIVELINE**	
0010	Front Driveline - Pre June 1998 Production	1180
0010	Front Driveline - From June 1998 Production	1577
0020	Rear Driveline - Pre June 1998 Production	1311
0020	Rear Driveline - From June 1998 Production	1578
140	**FRONT AXLE**	
0040	Wheel, Rim and Tyre	1303
160	**REAR AXLE**	
0020	Differential	1298
0030	Axle Group	1299
0050	Wheel, Rim and Tyre	1300 Rev 1
165	**BRAKE PARTS**	
0020	Brake Parts - Front Axle	1186
0030	Brake Parts - Rear Axle	1301
180	**SUSPENSION SYSTEM**	
0030	Ride Cylinder - Front	1584
0050	Ride Cylinder - Rear	1302
190	**CIRCUIT DIAGRAMS**	
0000	Circuit Diagrams	1585
0270	Switches and Sensors	1586
200	**FUEL SYSTEM**	
0010	Fuel Tank and Mounting	1587
0040	Fuel Lines	1195
0051	Electronic Foot Pedal	1196
210	**COOLING SYSTEM**	
0000	Cooling System	1305
0040	Radiator, Header Tank and Mounting	1613
0050	Disc Brake Oil Cooler	1589
0060	Transmission Oil Cooler	1590

MidWestTech | Terex TR45 Off-Highway Truck Service Manual | Publication SM_1606 Order the manual at mid-west-tech.com >

TABLE OF CONTENTS

Section No.	Description	SM No.
220	**STEERING SYSTEM**	
0000	Steering System Schematic	1591
0040	Steering and Brake Control Tank	1592
0050	Steering Pump	1204
0080	Accumulator	1205
0090	Steering Valve	1206
0110	Double Relief Valve	1208
0120	Steering Cylinder and Linkage	1304
0130	Accumulator Valve	1209
0150	Steering Filter	1593
230	**BODY SYSTEM**	
0000	Body System Schematic	1594 Rev 1
0040	Body and Disc Brake Cooling Tank	1595
0050	Tandem Pump	1213
0060	Body Control Valve	1596 Rev 1
0081	Body Control Joystick	1597
0090	Kick-over Valve	1218
0120	Relief Valve	1598
0121	Pilot Supply Valve	1599
0130	Body Cylinder	1221
250	**BRAKING SYSTEM**	
0000	Braking System Schematic	1222
0050	Brake Manifold Valve	1223
0060	Accumulator	1600
0070	Treadle Valve	1225
0090	Directional Control Valve	1226
0100	Monoblock Brake Valve	1227
0130	Retarder Control Valve	1609
0140	Shuttle Valve	1229
260	**OPERATORS COMPARTMENT**	
0010	Cab and Mounting	1602
0110	Passenger Seat and Mounting	1603
0130	Air Conditioning and Mounting	1620
270	**BODY**	
0010	Body and Mounting	1610
300	**MISCELLANEOUS**	
0020	Lubrication System	1611
0070	Service Tools	1621
0080	Standard Bolt and Nut Torque Specifications	1238
0090	Unit Storage	1239

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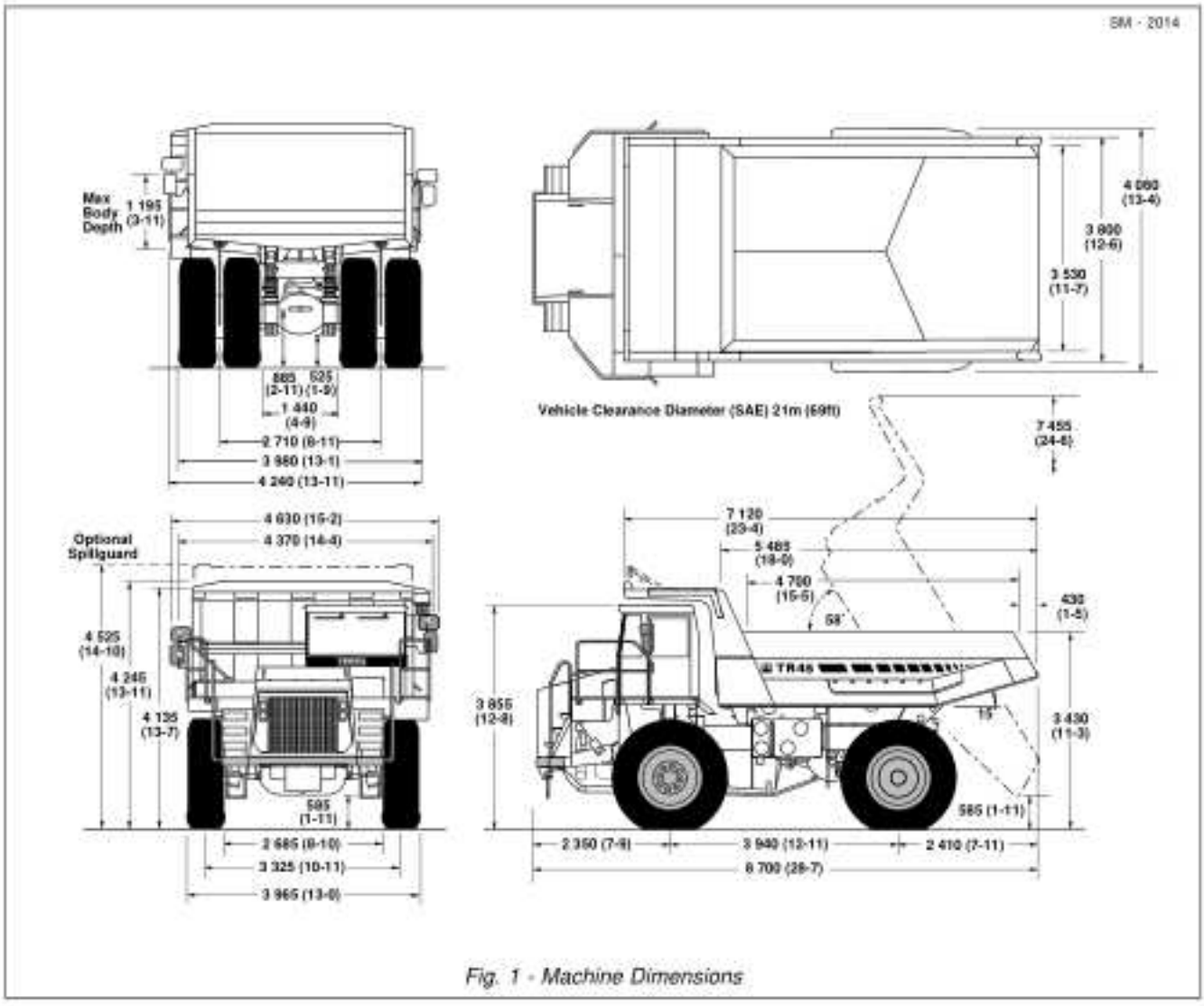


Fig. 1 - Machine Dimensions

ENGINE

Make/Model ..... Cummins QSK 19-C525
Type ..... 4 Cycle, Turbocharged/Low Temperature Aftercooled, Electronic Management.
Gross Power at 2 100 rev/min .....392 kW (525 hp, 532 PS)
Net Power at 2 100 rev/min .....370 kW (495 hp, 502 PS)

Note: Power ratings to SAE J1995 Jun 90. Engine emission meets USA EPA/CARB MOH 40 CFR 89 and proposed EU non-road mobile machinery directive.

Maximum Torque ..... 2 407 Nm (1 775 lbf ft) at 1 300 rev/min
Number of Cylinders/Configuration ..... 6, in line
Bore x Stroke ..... 159 x 159 mm (6.25 x 6.25 in)
Total Displacement ..... 18.9 litres (1 150 in³)
Starting ..... Electric
Maximum Speed, Full Load ..... 2 100 rev/min
Maximum Speed, No Load ..... 2 300 rev/min
Idle Speed ..... 700/750 rev/min
Safe Operating Angle ..... 30°/60% Grade

TRANSMISSION

Make/Model ..... Allison M5600A
Automatic electronic control with soft shift feature. Remote mounted in the frame. Integral torque converter and planetary gearing. Six speeds forward, two reverse. Automatic converter lockup action in all speed ranges. Downshift inhibitor.

Speeds With Standard Differential						
Forward						
Gear	1	2	3	4	5	6
Ratio	4.00	2.68	2.01	1.35	1.00	0.67
km/h	10.0	14.5	19.5	29.0	39.0	60.0
mile/h	6.0	9.0	12.0	18.0	24.5	36.0
Reverse						
Gear	1	2				
Ratio	5.12	3.46				
km/h	7.5	11.5				
mile/h	4.5	7.0				

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GENERAL TROUBLESHOOTING

Performance Complaints

Make the following general checks before beginning specific troubleshooting.

- Are there active diagnostic codes?
- Is the shift lever in N to allow engine start?
- Is the battery properly connected and charged?
- Are all fluid levels correct?
- Is the voltage to the ECU correct?
- Is engine properly tuned?
- Is fuel flow to the engine correct?
- Is air flow to the cooler and radiator unrestricted?
- Is the driveline properly connected?
- Are there signs of fluid leakage under the vehicle?
- What is the origination point of this leak?
- Are all hydraulic connections leak free?
- Are all electrical connections correct?

After making these checks, Some complaints involve diagnostic codes, so all troubleshooting checks should involve checking the system for diagnostic codes.

Solenoid Ratings

Each pressure solenoid that controls the functions on the transmission via the CEC2 commands have electrical resistance ratings. (Ref. Fig 9) These electrical resistance ratings can be checked through the CEC2 harnesses and connectors to the ECU.

All solenoids should be checked at normal operating temperature.

A through G solenoid	12 to 24 ohms
K solenoid	12 to 24 ohms
J solenoid	10 to 13 ohms

Speed Sensor Ratings

The 3 speed sensors have electrical resistances and can be checked at various transmission temperatures. These resistances can be checked via the CEC2 harnesses and connectors to the ECU (Fig. 9).

Temperature	Resistance
-40°C (-40°F)	200 ohms
20°C (68°F)	300 ohms
110°C (230°F)	400 ohms

Speedometer/Odometer

Driven by a signal from the CEC, the speedometer indicates travel speed in kilometers per hour and miles per hour. A digital odometer is incorporated in the speedometer to record the distance travelled by the vehicle at any given time.

Speedometer Calibration Table - All units with standard tyres

Unit	Transmission	Pulses
TR40	M5610A	188600
TR45	M5610A	188600
TR60	M6610A	208580
TR70	M6610A	208580

Speedometer Calibration

1. Determine the impulses/mile required. Reference speedometer calibration table.

2. Depress and hold calibration button on the speedometer and turn the ignition keyswitch to position '1'.

3. Release button when PULSE is displayed. The second digit will flash. Depress the button until the desired number is displayed the release the button for a few seconds until the next digit flashes.

4. Repeat step 3 to obtain the desired impulses/mile. After a few seconds only two digits will be displayed. The speedometer is now calibrated.

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DESCRIPTION AND OPERATION

⚠ WARNINGS
Use only hydraulic oils meeting specifications outlined in Section 300-0020, LUBRICATION SYSTEM. DO NOT use BRAKE FLUID (J1703). Use of improper fluids is destructive to rubber components of brakes resulting in loss of braking and possible catastrophic failure.

⚠ Exercise extreme caution while working on the braking system. The braking system operates at high pressure.

⚠ When servicing wheel brake parts, do not create dust by grinding or sanding brake pads or wheel brake parts with a dry brush or compressed air. A water dampened cloth should be used for cleaning wheel brake parts.

The service brakes are of the calliper disc-type. The calliper brake head is designed for use with hydraulic oils meeting the specifications outlined in Section 300-0020, LUBRICATION SYSTEM. **DO NOT use BRAKE FLUID (J1703).**

The head is bolted to a mounting plate on the spindle. The disc is bolted to the wheel. There is one brake head at each wheel.

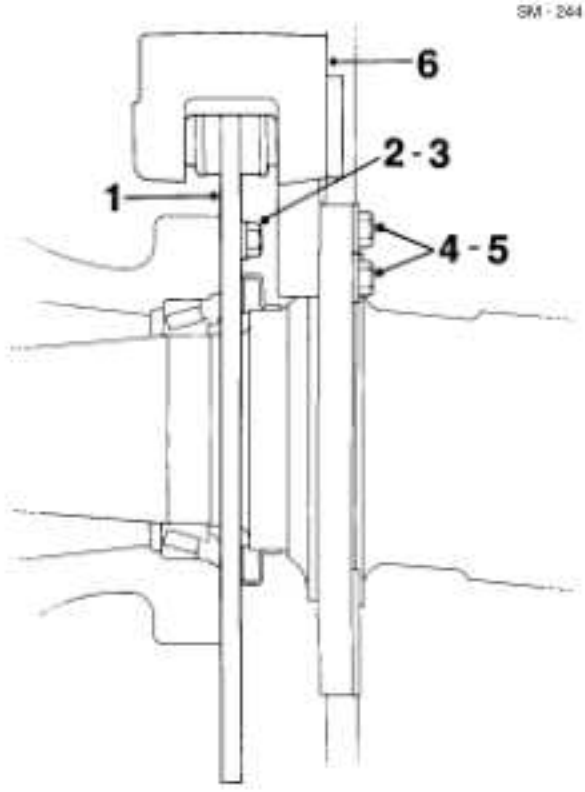
Each calliper brake head assembly consists of a torque plate, two brake pads; one on each side of the disc and six brake pistons; three on each side of the disc.

The brake is actuated by hydraulic oil entering the brake head through one of the bleeder ports. The piston bores on each side of the torque plate are interconnected by internal passages.

When the brake is actuated, the hydraulic pressure forces the pistons against the brake pads which are, in turn, forced against each side of the brake disc, slowing or stopping the disc and wheel rotation.

GENERAL INSPECTION

1. Inspect brake pads for wear. If the brake pad friction material is worn down to 3 mm (0.120 in) thickness, the pads must be replaced.



1 - Brake Disc
2 - Bolt
3 - Washer
4 - Bolt
5 - Washer
6 - Brake Head

Fig. 1 - Brake Head and Disc Mounting

⚠ WARNING
Failure to replace pads when worn to limits will result in loss of braking and possible catastrophic failure.

2. Inspect brake disc for wear. Measure thickness of brake disc at three points on the brake pad friction material contact circumference and determine the average disc thickness.

If the average disc thickness is 16 mm (0.63 in) or less, the disc must be replaced. Refer to Section 140-0040, WHEEL, RIM AND TYRE, for disc replacement instructions.

Disc Run Out

Maximum acceptable disc run out for disc speeds lower than 100 rev/min is 0.762 mm (0.030 in) total indicated reading (T.I.R.). Replace disc or repair hub If necessary to correct this condition. Refer to Section 140-0040, WHEEL, RIM AND TYRE.

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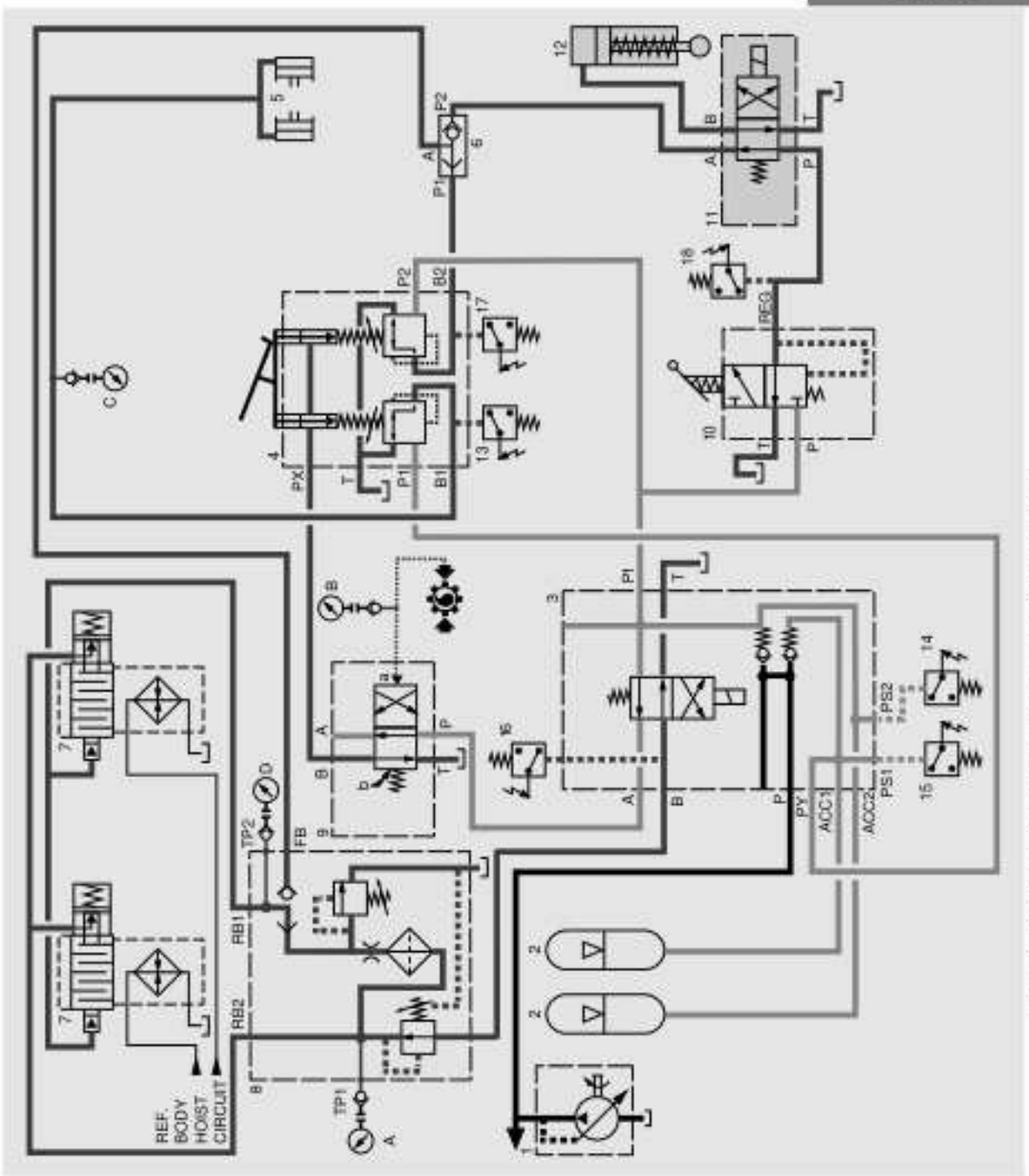


Fig. 2 - Braking System Schematic - Engine Shutdown

COMPONENTS

1 - Steering Pump
2 - Accumulators
3 - Brake Manifold Valve
4 - Treadle Valve
5 - Front Brake Callipers
6 - Shuttle Valve
7 - Oil Cooled Disc Brakes
8 - Monoblock Brake Valve
9 - Directional Control Valve
10 - Retarder Control Valve
*11 - Directional Control Valve
*12 - Transmission Retarder Cylinder
13 - Stop Light Pressure Switch
14 - Rear Brake Accumulator Pressure Switch
15 - Front Brake Accumulator Pressure Switch
16 - Parking Brake Pressure Switch
17 - Lockup Drop Out Pressure Switch
18 - Retarder Light Pressure Switch

* - Optional Components

PRESSURE TEST POINTS

A - Park Brake Pressure
B - Transmission Pressure
C - Front Service Brake Pressure
D - Rear Service Brake Pressure. Residual Brake Pressure and Retarder Pressure.

COLOUR CODES

Red - Pressurized Oil
Blue - Exhaust or Return Oil
Green - Intake Oil
Orange - Pilot Pressure
Yellow - Static Oil

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SM - 1591E

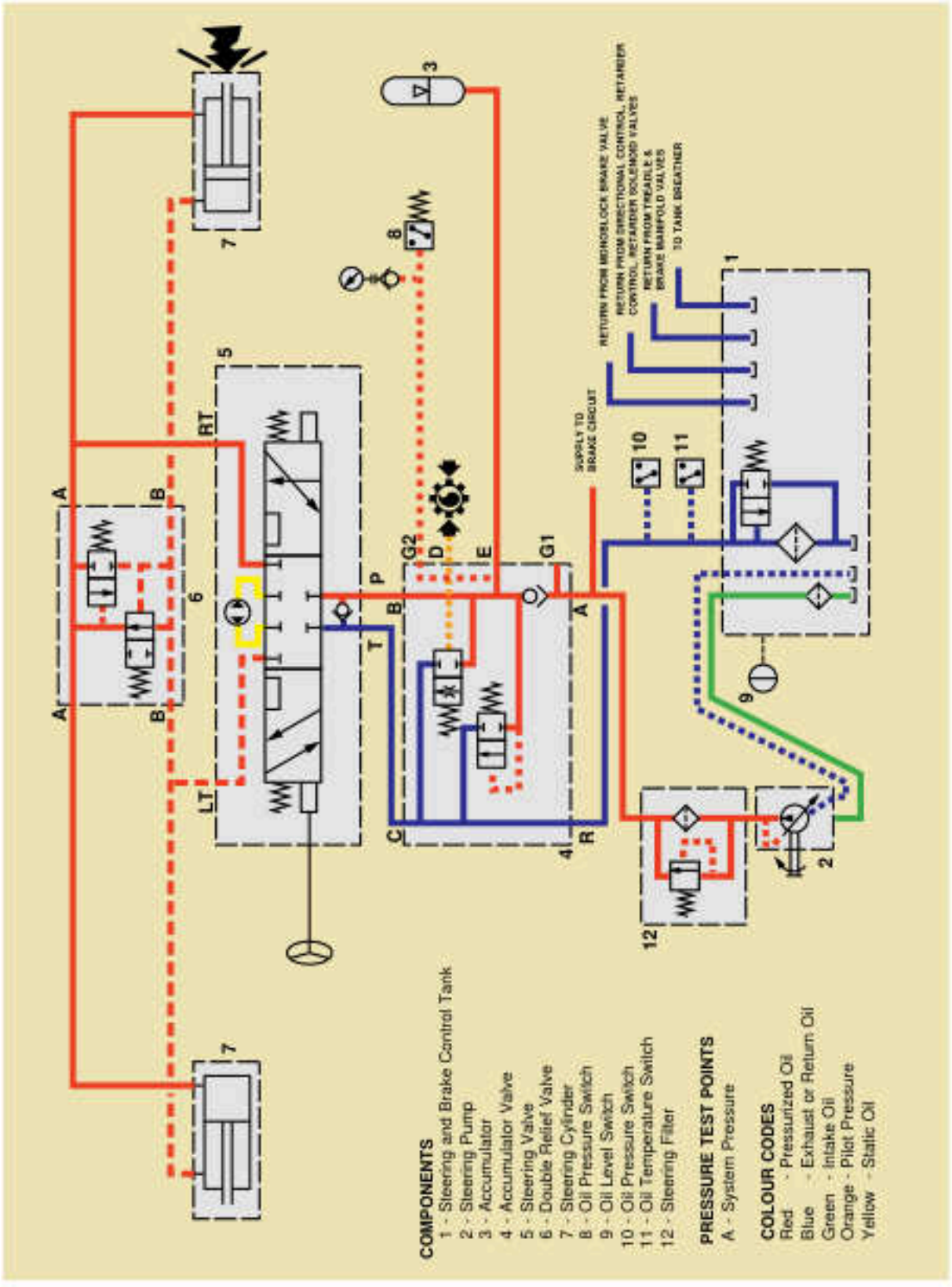


Fig. 6 - Steering System Schematic - Engine Running, Steering Cylinder Shock Load

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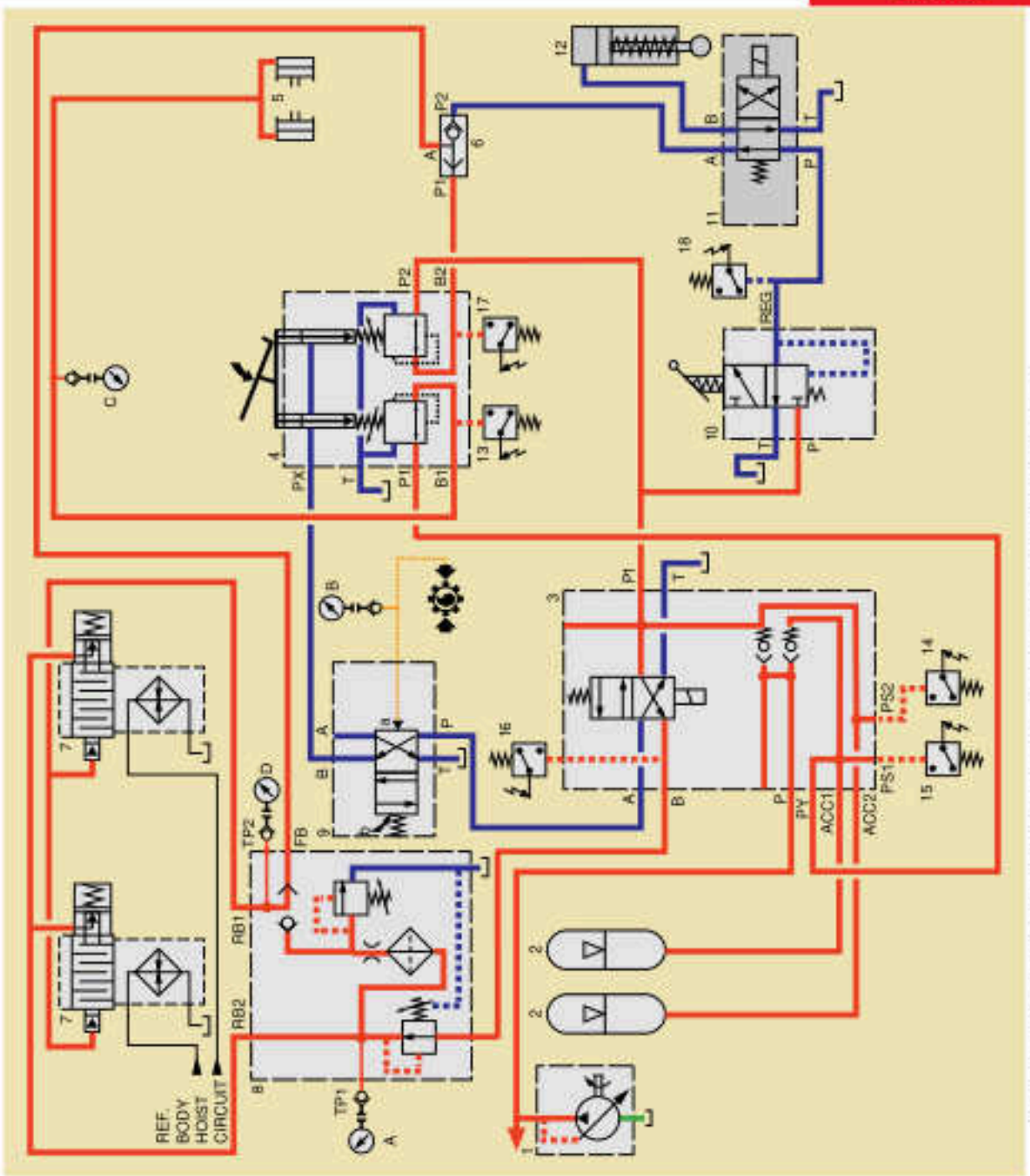


Fig. 4 - Braking System Schematic - Engine Running, Service Brake Applied

COMPONENTS

1 - Steering Pump
2 - Accumulators
3 - Brake Manifold Valve
4 - Treadle Valve
5 - Front Brake Callipers
6 - Shuttle Valve
7 - Oil Cooled Disc Brakes
8 - Monoblock Brake Valve
9 - Directional Control Valve
10 - Retarder Control Valve
*11 - Directional Control Valve
*12 - Transmission Retarder Cylinder
13 - Stop Light Pressure Switch
14 - Rear Brake Accumulator Pressure Switch
15 - Front Brake Accumulator Pressure Switch
16 - Parking Brake Pressure Switch
17 - Lockup Drop Out Pressure Switch
18 - Retarder Light Pressure Switch

* - Optional Components

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