Euclid R35

MAXIMUM GMW
146,000 LBS. (66 200 Kg)

PAYLOAD RANGE
35.0 TO 41.5 TONS
(31.75 TO 37.6 TONNES)

DIRECT-INJECTED, TURBO-CHARGED CUMMINS ENGINE

AUTOMATIC TRANSMISSION ELECTRIC CONTROL (ATEC) SHIFT SYSTEM

ROBUST FRAME - SMOOTH TRANSITIONS AND LOAD-MATCHED MAIN RAILS

WET MULTI-PLATE DISC BRAKES (WITH RETARDER FUNCTION) ON REAR AXLE

FRONT AXLE DESIGN WITH INDEPENDENT TRAILING ARMS

EFFECTIVE SUSPENSION AND SHOCK ABSORPTION - NEOCON SUSPENSION UNITS ALL AROUND

SEPARATED HYDRAULICS

VME
VOLVO BM
MICHIGAN
EUCLID

ENGINE

Make	Cummins
Model	KT19-C
Type	4 Cycle
Aspiration	Turbocharged
Rated Output (SAE @ 2100 rpm)	450 bhp (336 kW)
Flywheel Output (SAE @ 2100 rpm)	430 bhp (321 kW)
No. Cylinders	6
Bore & Stroke	6 1/4" x 6 1/4" (159mm x 159mm)
Displacement	1150 in³ (18.8 litres)
Max. Torque @ 1300 rpm	1,406 lb-ft (1906 Nm)
Starting	Electric

TRANSMISSION

Allison CLT-5962, Planetary type, full automatic shift. Integral torque converter with automatic lock-up to lock-up shifting in all ranges. Remote mounted, 6 forward speeds, 1 reverse. Allison Transmission Electronic Control (ATEC) shift system.

Maximum Speeds @ 2100 RPM Governed Engine Speed

		Standard		Optional	
	Gear	3.13:1 Differential		2.81:1 Differential	
Range	Ratio	mph	(km/h)	mph	(km/h)
1	4.00	5.95	(9.57)	6.63	(10.66)
2	2.68	8.88	(14.29)	9.89	(15.92)
3	2.01	11.84	(19.05)	13.19	(21.22)
4	1.35	17.63	(28.37)	19.64	(31.60)
5	1.00	23.80	(38.30)	26.51	(42.66)
6	0.67	35.52	(57.16)	39.57	(63.67)
R	5.12	4.65	(7.48)	5.18	(8.33)

DRIVE AXLE

Full floating axle shafts, double reduction provided by Euclid Model 2052 differential and single reduction planetary with balanced life gears in each wheel.

Ratios	Standard	Optional
Differential	3.13:1	2.81:1
Planetary	6.00:1	6.00:1
Total Reduction	18.78:1	16.86:1
Maximum Speeds		
with 18.00-33 Tires	35.5 mph (57.2 km/h)	39.6 mph (63.7 km/h)

TIRES

Standard - Front and Rear	Rim Width
Goodyear 18.00-33(28)E-3	13" (330mm)

Plus optional Goodyear tire types, treads and ply ratings.

LOAD CAPACITY

	yd³	(m³)
Struck (SAE)	22.2	(17.0)
Heap 3:1	27.7	(21.2)
Heap 2:1 (SAE)	30.5	(23.3)

Payload	Ton	(Tonne)
From	35	(31.75)
Maximum	41.5	(37.6)

WEIGHTS

	lb	(kg)
Chassis with Hoists	46,800	(21 228)
Body	15,900	(7 212)
Net Machine Weight	62,700	(28 440)
Front Axle	31,560	(14 315)
Rear Axle	31,140	(14 125)
Maximum GMW with Selected Tires		
18.00-33(28)E-3		
Max. Gross Machine Weight	139,380	(63 220)
Net Machine Weight	62,700	(28 440)
18.00-33(32)E-3		
Max. Gross Machine Weight	146,000	(66 200)
Net Machine Weight	63,000	(28 580)
18.00-R33 RL3		
Max. Gross Machine Weight	146,000	(66 200)
Net Machine Weight	64,482	(29 249)
Maximum Payload	83,000	(37 649)

Loaded Weight Distribution
Front - 33.6% Rear - 66.4%
Machine weight based on 50% fuel
Maximum gross machine weight not to exceed 146,000 lbs (66 200 kg) including options, fuel and payload.

Liner Options:		
Body Liners, Complete: 3/8" (10mm) floor, 1/4" (6mm) corners, 1/4" (6mm) sides, front, end protection, 1/4" (6mm) canopy, 3/8" (10mm) top rails	5,160	(2 340)
Body Liners, Complete: 1/2" (13mm) floor, 1/2" (13mm) corners, 5/16" (8mm) sides, front, end protection, 1/4" (6mm) canopy, 3/8" (10mm) top rails	6,790	(3 080)

STEERING

Open-center hydraulic system with separate reservoir. Hydrostatic power steering using two, double-acting cylinders and independent gear pump. Supplementary steering provided by electric motor/pump in accordance with SAE J53.

Steering Angle	42°
Turning Circle (SAE)	53'0" (16.15m)
Steering Pump Output (@ 2100 rpm)	33 gpm (125 l/m)
System Relief Pressure	2000 psi (13 790 kPa)

ELECTRICAL

Twenty-four volt lighting and accessories system. 75 amp alternator with integral transistorized voltage regulator. Two 12 volt heavy duty batteries connected in series.

HYDRAULICS

Two (2) Euclid two-stage, double-acting cylinders, inverted and outboard mounted. Separate reservoir and independent tandem gear pump. Control valve mounted on reservoir.

Body Raise Time ..... 11 sec.
Brake Cooling Pump Output (@ 2100 rpm) ..... 52 gpm (197 l/m)
Hoist Pump Output (@ 2100 rpm) ..... 79 gpm (299 l/m)
System Relief Pressure ..... 2500 psi (17 237 kPa)

AIR

Compressor
Cummins ..... 13.2 cfm (6.2 l/s)
Service Air
Pressure ..... 125 psi (862 kPa)
Reservoir Capacity ..... 5.3 ft³ (150 litres)
Warning: Wig-wag alarm in cab activated when pressure drops to 90 psi (620 kPa).

BRAKES

Service
Air/oil actuated front disc brakes with one caliper per front disc. Calipers are internally ported, each containing three pairs of opposing pistons. Rear brakes are oil-cooled wet discs. Provide stopping capability conforming to SAE J1473.

Front Axle - BFGoodrich Dry Disc
Disc Diameter Each ..... 25.0 in (63.5cm)
Lining Area Per Axle ..... 150 in² (968cm²)
Brake Pressure (Max.) ..... 2070 psi (14 273 kPa)

Rear Axle - VME Oil-Cooled Wet Discs
Brake Surface Area Per Axle ..... 5784 in² (37 318cm²)
Brake Pressure (Max.) ..... 1000 psi (6 895 kPa)

Secondary
Two independent circuits within the service brake system provide emergency stopping capability conforming to SAE J1473. System is manually or automatically applied to stop vehicle within prescribed braking distance.

Parking
Drum, two shoe internal expanding type mounted behind transmission. Automatically applied if air pressure is lost. Manually controlled from instrument panel.

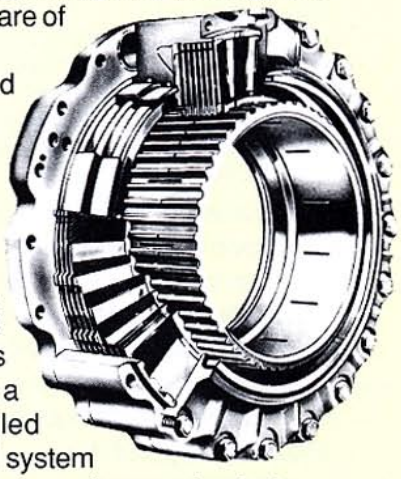
Size ..... 12" x 5" (305mm x 127mm)
Lining Area ..... 150 in² (968cm²)

Retarder
Foot operated valve controls air/oil actuation of oil-cooled wet disc brakes on rear axle. System provides constant speed control on downhill hauls.

Capacity (continuous) ..... 582 hp (434 kW)

WET DISC BRAKE

The Euclid designed wet disc brake is engineered for long service life even in the most extreme environments. The wet disc brakes are located on the rear axle and provide service braking, emergency braking, and retarding. The brakes are of a multi-plate design, constantly oil-cooled and do not require adjustment. The sealed design protects against environmental contamination for prolonged service life. Both application and release of the brake is accomplished through a hydraulically controlled piston. This simplified system does not require springs or other mechanical components resulting in reduced maintenance.



As a service brake, it incorporates Euclid's philosophy of system separation; the service brake actuation is totally separate from the retarder actuation. Both service braking and retarder functions are accomplished utilizing separate pedals. This allows the operator to activate the brakes or the retarder without removing his hands from the steering wheel as in other oil-cooled brake systems. The R35 utilizes dry disc front brakes in conjunction with the wet disc rear brakes for proportioned braking action.

FRAME

Box section main rails bridged by three crossmembers, front bumper and front suspension tube. Rail depth is constant taper rear to front. Two rear crossmembers are castings with integral body, suspension and drive axle mountings. Crossmember to frame junctions use large radii to minimize stress. Frame utilizes 45,000 psi (310 N/mm²) yield strength alloy steel.

STANDARD EQUIPMENT

General

- Air horns, dual
- Allison Transmission Electronic Control (ATEC)
- Body down indicator, mechanical
- Body prop cable
- Continuous heated body
- Electric start
- Fan guard
- Hoist interlock
- Mirrors, right and left
- Mud flaps
- Neocon suspension
- Operator arm guard
- Park brake interlock
- Radiator grill guard
- Reverse alarm
- Rock ejector bars
- Supplementary steering system, electric
- Tow hooks, front
- Transmission oilsight gauge

Cab

- Ash tray
- Cab interior light
- Cigar lighter
- Downshift inhibitor
- Heater and defroster
- Operator seat belt
- Operator seat, mechanical
- Park brake control
- Passenger seat and belt
- Rubber floor mat
- Sun visor
- Tinted windshield
- Windshield washers
- Windshield wipers

Gauges and Indicators

- Air cleaner restriction indicator light
- Ammeter
- ATEC malfunction indicator light
- Clutch pressure gauge
- Converter oil temp. gauge
- Converter lock-up indicator light
- Coolant temperature gauge
- Engine oil pressure gauge
- Gauge lights rheostat
- High beam indicator light
- Hoist tank sight gauge
- Hydraulic filter restriction indicator light
- Park/hand brake applied light
- Rear brake malfunction indicator light
- Retarder high oil temperature indicator light
- Service air pressure gauge
- Speedometer
- Steering filter restriction indicator light
- Steering tank sight gauge
- Steer system malfunction indicator light
- Tachometer and hourmeter
- Transmission malfunction indicator light
- Transmission filter restriction indicator light
- Wig-wag low air pressure alarm

Machine Lights

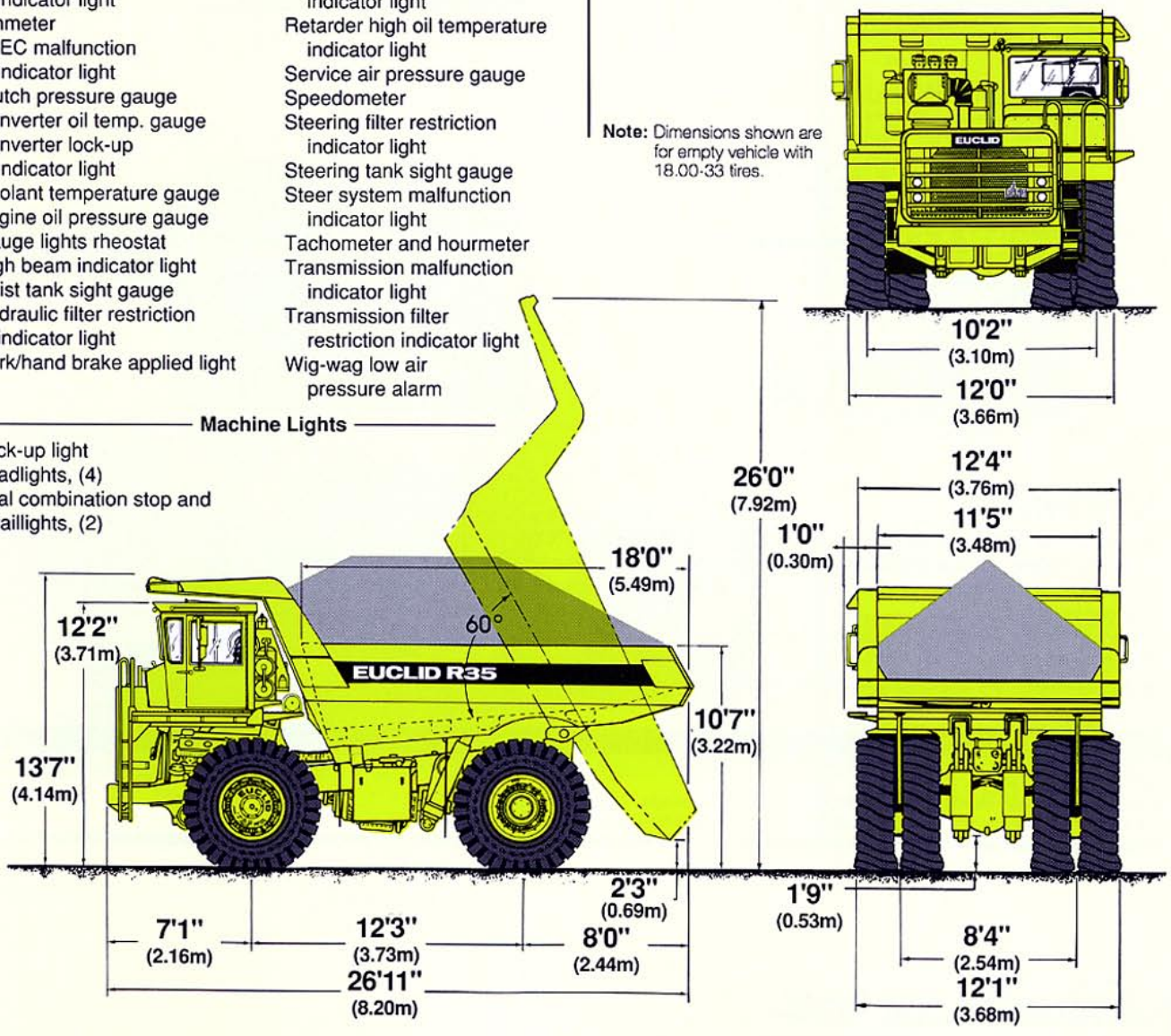
- Back-up light
- Headlights, (4)
- Dual combination stop and taillights, (2)

OPTIONAL EQUIPMENT

- Air conditioning
- Air dryer
- Alarm system, four function (low oil pressure, high coolant level, high conv. temperature)
- Body liner plates
- Canopy spill guard extension
- Cold starting aid
- Differential, no spin
- Differential, 2.81 ratio
- Guard rails
- Hubodometer
- Kim Hotstart preheaters
- Lube system, automatic
- Lube system, centralized
- Radiator shutters and mounting
- Sideboard extensions
- Tachograph, 24 hour recording
- Transmission guard
- Turn signals and hazard flashers

Standard and optional equipment may vary from country to country. Special options provided on request. Consult VME Market Support.

Note: Dimensions shown are for empty vehicle with 18.00-33 tires.

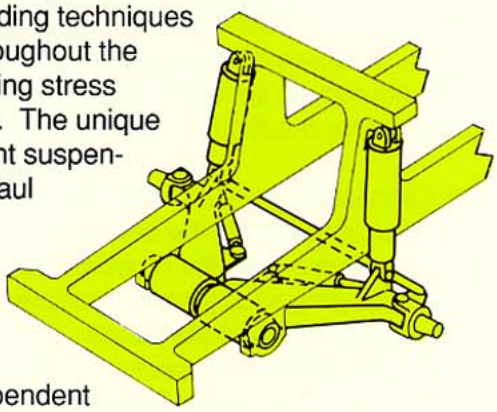


SUSPENSION

Front Suspension
Independent trailing arm for each front wheel. Neocon struts containing energy absorbing gas and compressible Neocon-x fluid mounted between trailing arm and frame.

Rear Suspension
"A" frame structure, integral with axle housing, links drive axle to frame at forward center point with pin and spherical bushings. Track rod provides rear link between frame and drive axle. Rear mounted Neocon struts suspend drive axle from frame. Neocon struts provide variable damping and rebound feature.

The Euclid frame and suspension are designed to work in unison to provide maximum structural integrity and operator comfort. The tapered box beam frame rail construction provides superior resistance to bending and torsional loads while eliminating unnecessary weight. Large radii and advanced blending techniques are utilized throughout the frame, minimizing stress concentrations. The unique trailing arm front suspension absorbs haul road input, minimizing suspension-induced frame twisting while providing independent tire action. Ride struts are mounted with spherical bushings, eliminating extreme sidewall forces by insuring a purely axial input to the ride strut. The wide track stance of the trailing arm design assures a more stable, comfortable ride.



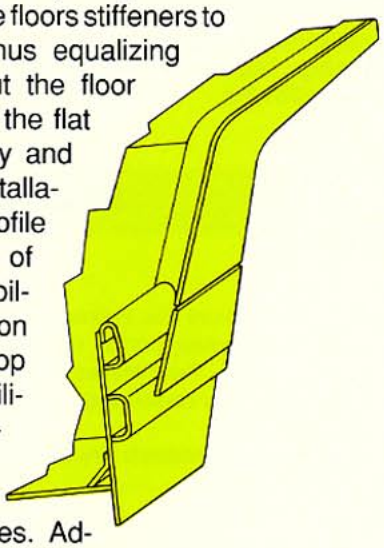
BODY

Flat floor, sloped tailchute, continuously exhaust heated. High tensile strength 190,000 psi (1310 N/mm²) alloy steel, 400 BHN minimum used in thickness of:

Floor	5/8" (16mm)
Sides	5/16" (8mm)
Canopy	3/16" (5mm)
Front	5/16" (8mm)

High yield strength 80,000 psi (551 N/mm²) alloy steel used for canopy side members, front, floor and side stiffeners. Body is rubber cushioned on frame.

The horizontal stiffener design of the Euclid body is specifically designed to minimize stress concentrations in any one area. Horizontal side rails dissipate load shocks over the entire body length. The flat floor configuration enables the floors stiffeners to be uniformly spaced thus equalizing stress levels throughout the floor plate area. In addition, the flat floor increases durability and augments body liner installation. The sloped floor profile provides a low center of gravity for maximum stability. Body lifting cut-outs on the underside of the top rails are provided to facilitate installation or removal of the body. The cut-outs are standardized to industry hook sizes. Additional features include a durable weld-on arm guard for operator safety and a weld-on exhaust collector box to eliminate a periodic service area.

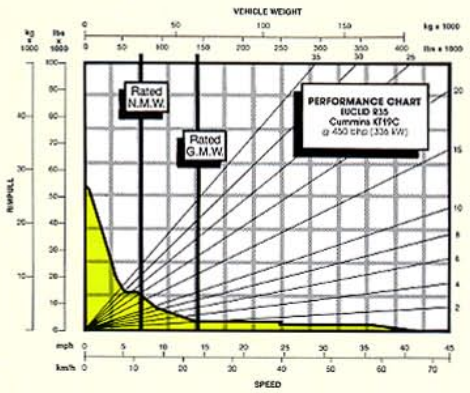


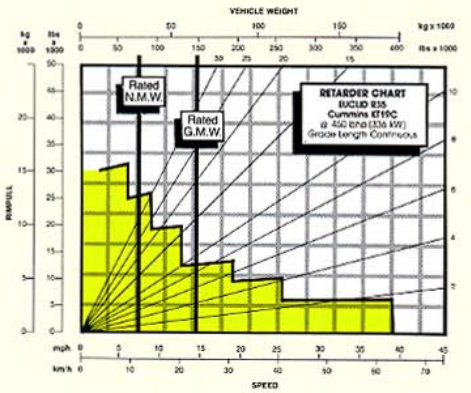
CAB

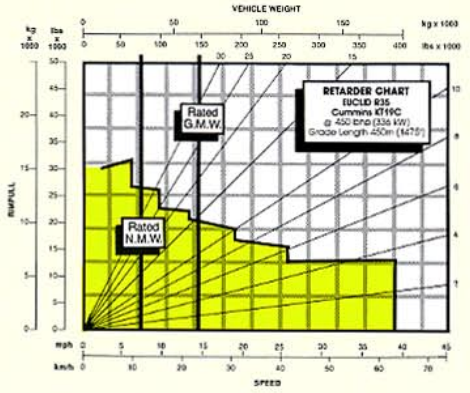
Euclid designed 56" (142cm) wide all steel cab offset to the left and three point rubber mounted to isolate the operator from vibration. Safety glass throughout, tinted windshield with 5° slant. Fully insulated for noise and temperature control. Fresh air pressurized, ventilators seal out dust. Ladder and catwalk entry.

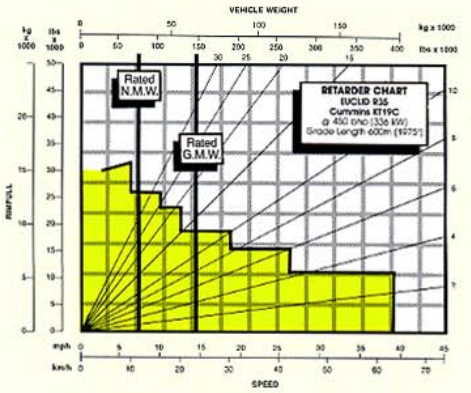
SERVICE CAPACITIES

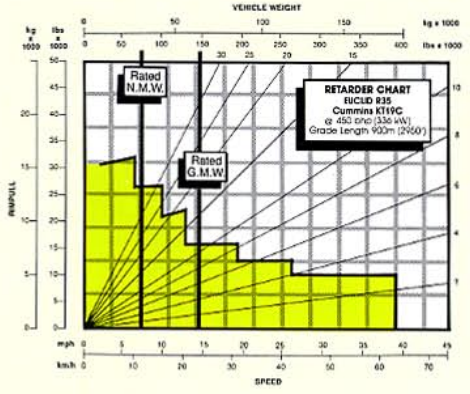
	gallons	(litres)
Crankcase (incl. filters)		
Cummins	15.5	(58.7)
Transmission (incl. filters)	18.5	(70.0)
Cooling System	37.0	(140.0)
Fuel Tank	120.0	(454.2)
Hydraulics		
Hoist Tank	46.0	(174.1)
Steering Tank	26.0	(98.4)
Drive Axle	14.0	(53.0)

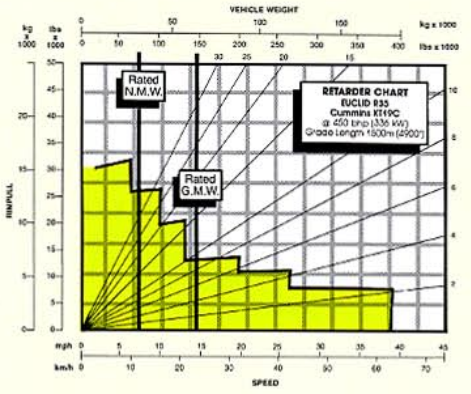












INSTRUCTIONS:

Diagonal lines represent total resistance (Grade % plus rolling resistance %).
Charts based on 0% rolling resistance, standard tires and gearing unless otherwise stated.

1. Find the total resistance on diagonal lines on right-hand border of performance or retarder chart.
2. Follow the diagonal line downward and intersect the NMW or GMW weight line.
3. From intersection, read horizontally right or left to intersect the performance or retarder curve.
4. Read down for machine speed.

NOTE: Photos and illustrations throughout may show optional equipment.

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VOLVO BM MICHIGAN EUCLID

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