710A VHP
Series V

CHAMPION
MOTOR GRADERS
A Volvo Construction Equipment Group Company

MODEL	710A VHP	716 VHP	710 VHP
Configuration	Articulated	Articulated - All Wheel Drive	Rigid Frame
Operating Weight	31,510 lbs (14 293 kg)	32,990 lbs (14 964 kg)	31,440 lbs (14 261 kg)
Net Power - Gears 1-2	135 hp (101 kW)	135 hp (101 kW)	135 hp (101 kW)
- Gears 3-8	160 hp (119 kW)	160 hp (119 kW)	160 hp (119 kW)

SPECIFICATIONS

710A VHP❑ 716A VHP❑ 710 VHP❑

BASE OPERATING WEIGHT (Standard Equipment)

Weights shown include full cab with ROPS, all operating fluids and operator.

710A VHP		
Total	30,780 lbs	(13 962 kg)
On front wheels	9,460 lbs	(4 291 kg)
On rear wheels	21,320 lbs	(9 671 kg)
716A VHP		
Total	31,190 lbs	(14 148 kg)
On front wheels	9,700 lbs	(4 400 kg)
On rear wheels	21,490 lbs	(9 748 kg)
710 VHP		
Total	29,640 lbs	(13 445 kg)
On front wheels	9,290 lbs	(4 214 kg)
On rear wheels	20,350 lbs	(9 231 kg)

Weight adjustments for various options are listed.

Typically equipped operating weight: includes 14.00 x 24, 12 pr., G2 tires on 10" (254 mm) rims and 14' x 25" x 7/8" (4 267 mm x 635 mm x 22 mm) moldboard and MBCS.

710A VHP	31,510 lbs	(14 293 kg)
716A VHP	32,990 lbs	(14 964 kg)
710 VHP	31,440 lbs	(13 261 kg)

PRODUCTIVITY (Standard Equipment)

710A VHP

Maximum blade pull (no wheel slip, 0.9 traction co-efficient)	19,188 lbs	(8 704 kg)
Blade down pressure - cutting capability (ISO 7134)	16,572 lbs	(7 517 kg)

Blade down pressure is the maximum downward force which may be applied at the cutting edge.

ENGINE DATA

Make/Model	Cummins 6BTA5.9
Type	4-Cycle, Turbocharged, Aftercooled
No. of cylinders	In Line 6
Bore & stroke	4.02 x 4.72 in. (102 x 120 mm)
Displacement	359 cu. in. (5,88 L)
Rated gross brake horsepower @ 2200 RPM	
- Gears forward 1, 2 and Reverse 1	149 hp (111 kW)
- Gears forward 3-8 and Reverse 2-4	174 hp (130 kW)
Rated net brake horsepower @ 2200 RPM	
- Gears forward 1, 2 and Reverse 1	135 hp (101 kW)
- Gears forward 3-8 and Reverse 2-4	160 hp (119 kW)
716A VHP - rated net brake horsepower, all wheel drive on, in all gears	160 hp (119 kW)
Torque - Gears Forward, 1, 2 and Reverse 1 @ 1200 RPM	422 lb.ft (572 N.m)
- Gears Forward 3-8 and Reverse 2-4 @ 1600 RPM	590 lb.ft (800 N.m)
Torque rise (Net)	34.5% - 49.6%

Engine equipped with a two stage, dual element, dry-type air cleaner with evacuator and dash-mounted service indicator. 24 volt starting and electrical system with 50 amp (1200 watt) alternator with internal voltage regulator. Two heavy duty 12 volt maintenance-free batteries with 625 cold cranking amps (CCA) and 180 minutes reserve capacity per battery. 900 CCA batteries available optionally. System includes battery disconnect.

Performance: Rated net brake horsepower SAE standard J1349/ ISO 3046-2 conditions with water pump, lubricating oil pump, fuel system, air cleaner, alternator, and cooling fan.

TRANSMISSION

Make/Model Champion 8400

Fully sequential, direct drive, powershift transmission. Engine cannot be started if transmission is in gear. Single lever transmission controller contains an electronic self-diagnostic feature. The flywheel mounted, multi-disc master clutch is oil-cooled for long life.

Ground speeds at 2200 RPM with standard tires:

Forward Gears	mph	km/h	Reverse Gears	mph	km/h
1	2.4	3,8	1	2.4	3,8
2	3.3	5,4			
3	4.7	7,5	2	4.7	7,5
4	6.5	10,5			
5	9.1	14,7	3	9.1	14,7
6	12.7	20,4			
7	17.7	28,6	4	17.7	28,6
8	24.5	39,4			

Transmission guard is standard equipment and is hinged for easy access.

DIFFERENTIAL / FINAL DRIVE

Make/Model Champion SR30

Single reduction final drive with an operator controlled lock/unlock differential. Rear axles are case hardened, full floating design, supported on double row spherical roller bearings.

TANDEMS

Oil-tight, oscillating tandem case has internal gusseting for maximum torsional strength. Field-proven split ring/ flanged sleeve tandem mounting and 1" (25 mm) thick inner wall resists flexing from side loading during severe applications. Drive chain sized for long life.

Depth		24.5"	(622 mm)
Width		8.25"	(210 mm)
Thickness	- inner wall	1.0"	(25 mm)
	- outer wall	0.75"	(19 mm)
Center distance		61.5"	(1 562 mm)
Drive chain pitch		7.75"	(44 mm)
Oscillation			±15°

BRAKES

Service Brakes: Foot Operated

Fade resistant, hydraulically actuated, oil disc service brakes located at the four (4) tandem wheels are self-adjusting, fully sealed and maintenance-free. System features cross-over dual braking circuits for even braking on both sides of the grader. Includes reserve power assist and operator warning system (visual and audible).

Parking Brake: Hand Operated

Independent, disc-type hand brake on transmission output shaft and effective on all four (4) tandem drive wheels. Includes visual and audible operator warning system for parking brake on, transmission in gear condition.

Braking systems to:
SAE Recommended Practice J1473 OCT. 90, and J1152 APR. 80; ISO 3450-1993-01-28. Champion uses asbestos-free brake components.

WHEELS & TIRES (Standard Equipment)

Tire size	13.00 x 24, G-2
Ply rating (pr.)	12
Rim size	9.0" (229 mm)

Bolt-on rims are interchangeable front and rear on 710 VHP and 710A VHP models.

FRONT AXLE

Type	Fully welded steel truss, gusseted for torsional strength, oscillates on a single 3.5" (89 mm) diameter center pivot pin	
Wheel lean	-710 VHP/710A VHP	18° R & L
	-716A VHP	15° R & L
Oscillation		16° up and down
Ground clearance		23.5" (597 mm)

A single 4" (102 mm) diameter wheel lean cylinder with lock valve is standard equipment on 710 and 710A. Two 3" (76 mm) diameter wheel lean cylinders and lock valve are available optionally, and are standard on the 716A.

STEERING

Hydraulic power front wheel steering incorporating two steering cylinders. Meets SAE J1511 OCT. 90 with optional supplemental steering.

Minimum turning radius using front axle steering, wheel lean and unlocked differential:

710A VHP articulated frame	25'5" (7 747 mm)
716A VHP articulated frame	24'3" (7 391 mm)
710 VHP conventional or straight frame	34'11 (10 643 mm)
Steering arc	72°
Frame articulation angle 710A VHP/716A VHP	22°

Articulation lock standard.

FRAME

Full front and rear frame sections.

Front: Fully welded box section. Double-lapped in high load areas. Lowered nose plate on front frame provides the best visibility in the industry to the front of the grader.

Minimum dimensions of box section	9.75" x 12.0" (248 mm x 305 mm)
Plate thickness	0.5" (13 mm)
Vertical section modulus at arch	164.4 cu.in. (2 694 cm^3)
Linear weight - min-max	71.6 - 207.7 lbs/ft (106.6 - 309.3kg/m)

Rear: Full rear frame permits modular powertrain mounting for ease of service and simplifies attachment mounting.

Minimum dimensions of rear frame	4.0" x 10.0" (102 mm x 254 mm)
Plate thickness	0.375" (9.5 mm)

Twin 4.5" (114 mm) hydraulic cylinders articulate frame 22° right and left. Anti-drift lock valve ensures stable operation.

CIRCLE

Hardened teeth, cut on the outside of the circle for maximum leverage and minimum wear. Circle is machined after welding to ensure flatness.

The circle is held positively in place at six points by three adjustable clamp plates and three adjustable guide shoes, providing optimum circle support and load distribution. The primary set of clamps and guide shoes is located at the front of the circle where greatest loading occurs. DURAMIDE™-faced clamp and guide shoes prevent metal to metal contact.

DURAMIDE is a synthetic material that extends service life and reduces maintenance requirements.

Diameter	66.25"	(1 683 mm)
Thickness	1.25"	(32 mm)
Adjustable guide shoes		3
Adjustable Clamp plates		3

CIRCLE DRIVE

Champion's patented dual cylinder circle drive system uses direct-acting hydraulic power for exceptional turning and holding capability under full load. Circle drive system is fully protected against impact damage by an overload cushion valve as standard equipment.

Hydraulic drive cylinders	2
Points of leverage	2
Rotation	360° continuous

DRAWBAR

Fully welded box section. Narrow 'T' design permits optimum visibility to the work area. Drawbar connection provides an adjustment to compensate for different tire sizes. Blade lift cylinder anchors are straddle-mounted on drawbar to provide maximum strength and support.

Dimensions of box section	6.5" x 6.5"	(165 mm x 165 mm)
Plate thickness	1.0" & 0.75"	(25 mm & 19 mm)

MOLDBOARD

Standard moldboard with replaceable end bits	12' x 25" x 7/8" (3 658 mm x 635 mm x 22 mm)
Blade material	SAE 1050 high carbon steel
Edge: through hardened	6" x 5/8" boron steel (152 mm x 16 mm) boron steel
Drilling - Bolt diameter	6" (152 mm)
- drilling	5/8" (16 mm) bolts

Slide rails supported with DURAMIDE bearings.

BLADE RANGE: MOVEABLE BLADE CONTROL SYSTEM (Standard)
(Dimensions shown with standard moldboard)

	LEFT	RIGHT
Reach outside tires- articulated frame	117.0" (2 973 mm)	113.0" (2 870 mm)
Reach outside tires - straight frame	76.0" (1 930 mm)	73.5" (1 867 mm)
Blade slide	26.5" (673 mm)	26.5" (673 mm)
Circle side shift	26.0" (660 mm)	24.0" (610 mm)
Maximum bank sloping angle	90°	90°
Blade ground clearance	16.5" (419 mm)	
Blade cutting depth	30.5" (775 mm)	
Blade tilt range	47° forward	5° back

BLADE RANGE: FIXED POINT LIFT SYSTEM (Optional)
(Dimensions shown with standard moldboard)

Reach outside tires -articulated frame	105.8" (2 687 mm)
Reach outside tires - straight frame	67.7" (1 720 mm)
Blade slide	53.5" (1 359 mm)
Circle side shift	16.0" (406 mm)
Blade ground clearance	16.8" (427 mm)
Blade cutting depth	25.0" (635 mm)
Blade tilt range	47° forward; 5° back
Number of moldboard tilt cylinders	1

CAB & CONTROLS

Operator noise exposure is limited to 75dB(A)/ 77dB(AWD) per SAE J919 JUNE 86 (enclosed cab). Located in the pedestal head is the engine oil pressure, coolant temperature and fuel level gauges, transmission gear indicator and a three-level electronic monitoring system. Pedestal located switches include: differential lock/unlock, independent moldboard floats (optional) and combination turn signal, hazard lights, and high beam headlight switch. Heater and wiper/washer controls, lighting and accessory switches are grouped in the operator's right hand console. This console also contains the ignition key and access to the circuit breaker panel. An accelerator/decelerator foot pedal and slider type hand throttle are standard equipment. Cab door opening and closing is easy from either a seated position or while entering and exiting. Fixed front window enhances visibility by reducing window frame width.

Full Height Cab with ROPS
INSIDE DIMENSIONS:

Height	74.0"	(1 880mm)
Width @ controls	56.0"	(1 422 mm)
Depth @ controls	55.5"	(1 410 mm)

An optional Low Profile Cab is available with an inside height of 62" (1 575 mm). All Champion cabs and canopies are designed to meet or exceed SAE J1040 APR. 88, ISO 3471/1-1986(E), and 86/295/EEC ROPS requirements. The seat belt is 3" (76 mm) wide and meets SAE J386 JUNE 93; ISO 6683-1981(E). A cushioned vinyl covered bucket seat with fore & aft and height adjustment is standard.

LOAD SENSING HYDRAULICS

Closed center hydraulic system senses load requirements and maintains system pressure 250 psi (17,25 Bar) above the load pressure.

When hydraulic pressure is not required, system pressure is only 90 psi (6,2 Bar). Low standby pressure improves fuel-efficiency and reduces heat generation.

System incorporates lock valves to prevent cylinder drift under load in the following circuits: blade lift, moldboard tilt, circle shift, wheel lean, articulation and scarifier. All hoses and fittings are equipped with 'O' ring seals to eliminate leaks.

Pump design features include cast iron end covers and center housing, and one-piece gear and shaft assembly to ensure reliability and a long service life.

Maximum pressure	2,500 psi	(172 Bar)
Output at 2200 RPM	0-50.5 gpm	(0-191 lpm)
Filtration	7 micron spin-on type	

CAPACITIES

	U.S. Gal.	Imp. Gal.	Liters
Fuel tank	100.0	83.3	378,5
Transmission	10.2	8.5	38,8
Final drive	6.0	5.0	23,0
Tandems (ea.)	26.4	22.0	100,0
Hydraulic oil tank	23.8	19.8	90,0
AWD hydraulic oil (716A)	10.0	8.3	37,9
Coolant antifreeze protection to -58° F (-50° C)	11.6	9.7	44,0
Engine oil	4.3	3.6	22,3

ALL WHEEL DRIVE - 716A VHP

Completely independent from the main hydraulic system, Champion's All Wheel Drive system incorporates a variable displacement, load sensing piston pump, and a separate reservoir, oil cooler and filter. This allows the system to operate continuously without overheating, and eliminates potential fluid cross-contamination. Champion's AWD design automatically adjusts hydraulic flow and pressure to the drive system to match ground speed and tractive conditions. A positive on/off control allows the operator to concentrate on the task at hand, rather than trying to find the 'correct' AWD setting. No electronics or wheel speed sensors are used. The powered front axle has two variable displacement piston motors with double reduction planetary torque hubs.

Maximum system pressure	3,000 psi	(206 Bar)
Stand-by pressure	175 psi	(12 Bar)
Filtration		7 micron
Top speed	17.7 mph	(28,6 km/h)

STANDARD FEATURES

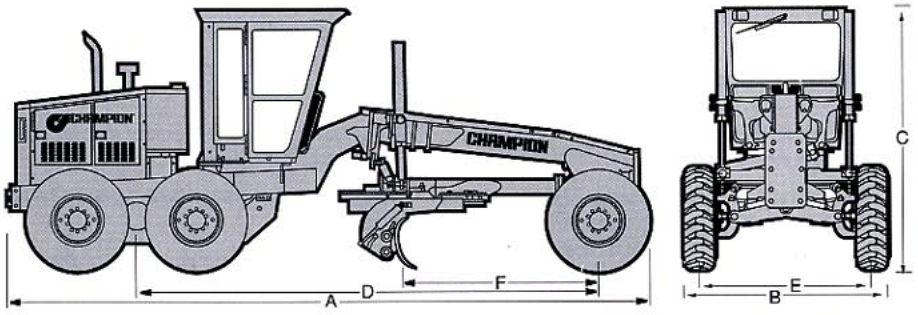
- Operator controlled, lock/unlock differential final drive
- 4-wheel, cross-over, dual braking system with reserve power assist
- Ratchet-type park brake with operator warning alarm and indicator
- Fully-sequential, powershift 8400 transmission, with guard
- 13.5" (343 mm) diameter, 4-plate, full oil clutch for operator control
- Choice of rigid or articulation frames
- Full front and rear sections designed to absorb shock loading of attachment use
- Cab halogen headlights with dimmer includes directional and hazard lights
- Cushion valve circle drive protection to minimize impact damage
- Hardened circle teeth cut on outside of circle for maximum wear resistance
- Isolation-mounted cab, transmission and engine for reduced noise and vibration
- Adjustable steering pedestal with tilt head for maximum operator comfort
- Gauges include: coolant temperature, engine oil pressure, fuel, hourmeter, dash-mounted air cleaner service indicator, articulation angle indicator, three-level electronic monitoring system - M4 - with visual and audible warnings
- Load-sensing, closed-center hydraulic system with short-throw, low effort control levers, positioned in the industry-accepted arrangement. Hydraulically operated blade lift, circle turn, moldboard slide and tilt, circle shift and wheel lean functions
- Outside left and right mirrors
- 100 gallon fuel capacity
- Horn
- Hinged radiator guard for easy trash clean out. Engine compartment fan guard included.
- Back-up alarm with automatic volume level
- Painted Champion Yellow, cab painted grey
- Lockable tool box with storage space for scarifier shanks

OPTIONAL EQUIPMENT (May vary)

	lbs.	Kg
Accumulators - blade lift (2)	130	59
- circle side shift	65	29
Air conditioner - 21,500 BTU -HFC-134a (non-CFC refrigerant) with cab pressurizer/filter	130	59
Brush guards	40	18
Cab		
- canopy shell with ROPS - deduct	(200)	(91)
- FOPS protection for ROPS cabs	220	100
- low profile cab with ROPS - deduct	(200)	(91)
Cab heater - 49,000 BTU	30	14
Cab pressurizer/filter	14	6
Defroster fan	3	1
Engine block heater	3	1
Engine precleaner - Turbo II	6	3
Engine side panels	50	23
Ether cold start	10	4
Exhaust rain cap	-	-
Fan - blower type (suction type is standard)	0	0
First user lifetime frame warranty	0	0
Fixed point lift system - deduct	(560)	(254)
Float control - Right and Left independent, electric	15	7
Hub odometer	0	0
Hydraulic tank heater	3	1
Jack - 20 ton (18.5 tonne)	35	16
Lights		
- back-up lights - 2	0	0
- beacon (amber or blue)	4	2

	lbs.	Kg
clearance lights front & rear	2	1
- front-mounted plow lights - 2		
- high	120	54
- low	100	45
- Headlights with dimmer switch	0	0
- Moldboards lights - 2	2	1
- Rear flood lights - 2	2	1
- Snow wing lights - 2	2	1
Machine Monitor Plus package - M44 Audible and visual warnings for transmission and hydraulic filter restriction, low engine oil pressure, high coolant temperature, high transmission temperature, and low transmission clutch pressure	0	0
Moldboards		
- 14' x 25" x 7/8" (4 267 mm x 635 mm x 22 mm)	280	127
- 12' x 29" x 1" (3 658 mm x 737 mm x 25 mm)	340	154
- 13' x 29" x 1" (3 962 mm x 737 mm x 25 mm)	490	222
Moldboard extensions		
R & L - 2' (610 mm)	200	91
Moldboard edges -Carbide 3/4" x 5"	-	-
Operator convenience package		
- lunch box, steel vacuum bottle and holder, ash tray	10	5
Paint - custom colors	-	-
Radiator shutters - hinged	10	4
Reflectors - rear	-	-

	lbs.	Kg
Remote valve for attachments		
- 3 or 5 bank - remote mount	25	11
Second leaning wheel cylinder -right side (standard on 716A)	25	11
Supplemental steering (power assisted)meets SAE J53 OCT.84	61	28
Suspension seat	55	25
Tie-down brackets	100	45
Tires		
-14.00 x 24, 12 pr., G2, 8" (203 mm) rims	90	41
-14.00 x 24, 12 pr., G2, 10" (254 mm) rims	450	204
-15.5 x 25,12pr., G2, 13" (330 mm) rims (N/A on 716A)	840	381
-17.5 x 25,12pr., G2, 14" (356 mm) rims (N/A on 716A)	1032	468
Tire chains - pair	300	136
Tool kit	-	-
Transmission sump heater	-	-
Tropical protection - Vandalism protection	8	4
Wheel weights front or rear - each	250	113
Window -opening - lower front	-	-
Window -opening sliders - left/right	-	-
Wiper and washer - front	-	-
Wiper and washer - rear	-	-
Wiper and washer - lower front windows	-	-



DIMENSIONS

A	Overall length	27'9" (8 458 mm)
B	Overall width	8'2" (2 489 mm)
C	Overall height with cab	11'1" (3 378 mm)
	- with Low Profile Cab	10'1" (3 073 mm)
D	Wheelbase	20'0" (6 096 mm)
E	Tread width	6'10" (2 083 mm)
F	Blade base - ISO 7134	8'7" (2 616 mm)

CHAMPION MATCHED ATTACHMENTS

A-Frame	850 lbs.	(386 kg)
Dozer blade- 8' (2 438 mm)	1,600 lbs.	(726 kg)
- 9' (2 743 mm)	1,650 lbs.	(749 kg)
One-way plow	2,350 lbs.	(1 067 kg)
Push block	1,050 lbs.	(476 kg)
Ripper-scarifier, rear	2,680 lbs.	(1 215 kg)
Scarifier, front, with 11 teeth	1,450 lbs.	(657 kg)
Snow wing - front-mounted	2,900 lbs.	(1 317 kg)
- rear-mounted	3,100 lbs.	(1 407 kg)
V-plow - 9' (2 743 mm)	2,560 lbs.	(1 161 kg)
-10' (3 048 mm)	2,720 lbs.	(1 234 kg)

Specifications subject to change without notice. Some items included in this brochure are optional.
™ DURAMIDE is a registered trademark of Champion Road Machinery Limited.
Your safety and the safety of those around you depends on using care and judgement when operating and servicing your grader. Do not operate the grader until you read and understand the warnings and instructions in the operator's manual.

CHAMPION MOTOR GRADERS

A Volvo Construction Equipment Group Company

Goderich, Ontario, Canada