CHAMPION MOTOR GRADERS

Series V



MODEL	710A	716A	710	
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	140 hp (104 kW)	140 hp (104 kW)	140 hp (104 kW)	

716A 🗆 710A 🗆 710 SPECIFICATIONS:



BASE OPERATING WEIGHT (Standard Equipment)

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

	30,780 lbs. (13 962 kg) 9,460 lbs. (4 291 kg)
	21,320 lbs. (9 671 kg)
On front wheels	31,190 lbs. (14 148 kg) 9,700 lbs. (4 400 kg) 21,490 lbs. (9 748 kg)
On front wheels	
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.

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



PRODUCTIVITY (Standard Equipment)

710A 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 6BT5.9
Type 4 Cycle, Turbocharged
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 148 hp (110 kW)
Rated net brake horsepower
@ 2200 RPM 140 hp (104 kW)
Torque
@ 1600 RPM 440 lb-ft. (596 N-m)
Torque rise (Net)30.4%

Engine equipped with a two stage, dual element, dry-type air cleaner with evacuator and dashmounted 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 can not 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 oilcooled for long life.

Ground speeds at 2200 RPM with standard tires:

Forward	d		Reverse	
Gears	mph	km/h	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	417.7	28,6
88	24.5	39.4		

Transmission quard 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		(25 mm)
- outer wall	0.75"	(19 mm)
Center distance	61.5" (1	562 mm)
Drive chain pitch	1.75"	(44 mm)
Oscillation		±15°



BRAKES

Service Brakes: Foot Operated

Fade resistant, hydraulically actuated, oil disc service brakes located at the four (4) tandem drive 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



WHEELS & TIRES (Standard Equipment)

Tire size		 	1	3.00	x 24, G-2
Ply rating	(pr.)	 			12
Rim size		 	9	.0"	(229 mm)
_					

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



FRONT AXLE

Type Fully welded stee	el truss, gusseted for oscillates on a single
	neter centre pivot pin
Wheel lean - 710/710A	
- 716A	15°R & L
Oscillation	16° up and down
Ground clearance	23.5" (597 mm)
A single 4" (102 mm) diamete	r wheel lean cylinder
with lock valve is standard eq	uipment on 710 and
710A. Two 3" (76 mm) dia cylinders and lock valve are	
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 articulated frame	25'5" (7 747 mm)
716A articulated frame	24'3" (7 391 mm)
710 conventional or straight	
	(10 643 mm)
Steering arc	
Frame articulation angle 710	A/716A22°
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	0.75110.01
section	
	(248 mm x 305 mm)
Plate thickness	0.5" (13 mm)
Vertical section modulus	
at arch16	4.4 cu.in. (2 694 cm³)
Linear weight - min-max	71.6-207.7 lbs/ft (106.6-309.3 kg/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) Choice of conventional (rigid) or articulated frames:

710A/716A Articulates behind cab. Conventional 710 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 outside of 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)
	1.25" (32 mm)
Adjustable guide shoes	
	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 cylinder	s 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 I	box section 6.5" x 6.5" (165 mm x 165 mm)
Plate thickness	



MOLDBOARD

Standard moldboard with replaceable end bits 12° x 25" x (3 658 mm x 635 mm x 22 m	
Blade material SAE 1050 high carbon s	teel
Edge: through hardened 6* x 5 (152 mm x 16 mm) boron s	
Drilling - Bolt diameter6" (152 mm) drilling - (16 mm) holts	5/8"

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

Slide rails supported with DURAMIDE bearings.

(Dimensions shown with standard moldboard)

LEFT RIGHT

Reach outside	
tires - articulated	
frame117.0"(2 973 mm)113.0"(2 870 mm)
Reach outside	
tires - straight	
frame76.0 (1 930 mm) 73.5*(1 867 mm)
Blade slide26.5" (673 mm	1) 26.5' (673 mm)
Circle side	
shift26.0" (660 mm	n) 24.0" (610 mm)
Maximum bank	
sloping angle90°	90°
Blade ground clearance	16.5" (419 mm)
Blade cutting depth	30.5" (775 mm)
Blade tilt range47°	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		
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° forwa	rd; 5° back
Number of moldboard tilt cylin		



CAB & CONTROLS

Operator noise exposure is limited to 75 dB(A)/77 dB(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	880 mm)
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 a 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.	Litres
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 . AWD hydraulic	23.8	19.8	90,0
oil (716A) Coolant Antifreeze protection to		8.3	37,9
-58° F (-50° C)	11.6	9.7	44,0
Engine oil	4.3	3.6	16,3



ALL WHEEL DRIVE - 716A

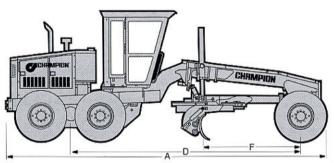
Completely independent from the main hydraulic system, Champion's All Wheel Drive system incorporates a variable displacement, load sensing piston pump, and a separate reservoir, oil cooler and filter. This allows the system to operate continuously without overheating, and eliminates potential fluid 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.

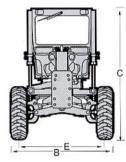
Maximum system pressure	3,000 psi (206 Bar)
Stand-by pressure	175 psi (12 Bar)
Filtration	7 micron
Top speed	. 17.7 mph (28,6 km/h)

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 articulating frames
- Full front and rear frame 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.
- ·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
- Outside left & right mirrors

OPTIONAL EQUIPMENT (May vary)	100	100			.,			14
	lbs.	Kg		lbs.	Kg		lbs.	Kg
Accumulators - blade lift (2)	130	59	clearance lights front & rear	2	1	Remote valve for attachments		
 circle side shift 	65	29	 front-mounted plow lights - 2 	7,075	200	- 3 or 5 bank - remote mount	25	11
Air conditioner - 21,500 BTU			- high	120	54	Second leaning wheel cylinder		
-HFC-134a (non-CFC refrigerant)			- low	100	45	-right side (standard on 716A)	25	11
with cab pressurizer/filter	130	59	 Headlights with dimmer switch 	0	0	Supplemental steering (power	25500	2000
Brush guards	40	18	 Moldboards lights - 2 	2	1	assisted)meets SAE J53 OCT.84	61	28
Cab			- Rear flood lights - 2	2	1	Suspension seat	55	25
 canopy shell with ROPS - deduct 	(200)	(91)	- Snow wing lights - 2	2	1	Tie-down brackets	100	45
 FOPS protection for ROPS cabs 	220	100	Machine Monitor Plus package - M44			Tires		
- low profile cab with ROPS - deduct	(200)	(91)	Audible and visual warnings for tran	nsmission	and	-14.00 x 24, 12 pr., G2,		
Cab heater - 49,000 BTU	30	14	hydraulic filter restriction, low engin	e oil pres	sure,	8" (203 mm) rims	90	41
Cab pressurizer/filter	14	6	high coolant temperature, high tran	smission		-14.00 x 24, 12 pr., G2,		
Defroster fan	3	1	temperature, and low			10" (254 mm) rims	450	204
Engine block heater	3	1	transmission clutch pressure	0	0	-15.5 x 25,12pr., G2,		
Engine precleaner - Turbo II	6	3	Moldboards			13" (330 mm) rims (N/A on 716A)	840	381
Engine side panels	50	23	- 14' x 25" x 7/8"			-17.5 x 25,12pr., G2,		
Ether cold start	10	4	(4 267 mm x 635 mm x 22 mm)	280	127	14" (356 mm) rims (N/A on 716A)	1032	468
Exhaust rain cap			- 12' x 29" x 1"			Tire chains - pair	300	136
Fan - blower type			(3 658 mm x 737 mm x 25 mm)	340	159	Tool kit	-	100
(suction type is standard)	0	0	- 13' x 29" x 1"			Transmission sump heater	12	52
First user lifetime frame warranty	0	0	(3 962 mm x 737 mm x 25 mm)	490	222	Tropical protection -	-	
Fixed point lift system - deduct	(560)	(254)	Moldboard extensions			Vandalism protection	8	4
Float control - Right and Left	100 00000000		R & L - 2' (610 mm)	200	91	Wheel weights front or rear - each	250	113
independent, electric	15	7	Moldboard edges -Carbide 3/4" x 5"	-		Window -opening - lower front	12	
Hub odometer	0	0	Operator convenience package			Window -opening sliders - left/right	(<u>a</u>	14
Hydraulic tank heater	3	1	- lunch box, steel vacuum bottle			Wiper and washer - front	-	
Jack - 20 ton (18.5 tonne)	35	16	and holder, ash tray	10	5	Wiper and washer - rear		
Lights			Paint - custom colors	_	-	Wiper and washer - lower front window	s -	
- back-up lights - 2	0	0	Radiator shutters - hinged	10	4	Latura ■ estaggir at report reministration and 40 — de notificated 3 - efficiency (filiperior 2 or in 100 d		
- beacon (amber or blue)	4	2	Reflectors - rear					





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Α	Overall length27"9"	(8 458 mm)
В	Overall width8'2"	(2 489 mm)
C	Overall height with cab11'1"	(3 378 mm)
	- with Low Profile Cab10'1"	(3 073 mm)
D	Wheelbase20'0"	(6 096 mm)
E	Tread width6'10"	(2 083 mm)
F	Blade base	
	- ISO 71348'7"	(2 616 mm)

CHAMPION MATCHED ATTACHMENTS			
A-Frame	850 lbs.	(386 kg)	Rippe
Dozer blade - 8' (2 438 mm) - 9' (2 743 mm)	1,600 lbs.	(726 kg) (749 kg)	Scarif Snow - fron
One-way plow	2,350 lbs.	(1 067 kg)	- rear-

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 rear-mounted	2,900 lbs. 3,100 lbs.	(1 317 kg) (1 407 kg)

V plow				
- 9' (2 743 mm)	2.560 lbs.	(1	161	ka
- 10' (3 048 mm)	2.720 lbs.	(1	234	ka

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.



A Volvo Construction Equipment Group Company

Goderich, Ontario, Canada

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