



KLAIPÉDOS VISUOMENĖS SVEIKATOS CENTRAS

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UAB „Ekosistema“ direktoriui Mariui Šileikai Taikos pr. 119, Klaipėda	2010-06-18	Nr. (7.12)-V4-1935
I	2010-05-27	Nr. 08-478

DĖL POVEIKIO VISUOMENĖS SVEIKATAI VERTINIMO ATASKAITOS

1. Pateikti dokumentai:

UAB „Lemminkainen Lietuva“ planuojamos ūkinės veiklos (Kantvainių smėlio telkinio eksploatavimo) poveikio visuomenės sveikatai vertinimo ataskaita.

2. Ūkinės veiklos organizatorius (užsakovas), poveikio visuomenės sveikatai vertintojas:

Ūkinės veiklos organizatorius: UAB „Lemminkainen Lietuva“ Tilžės g. 53, Klaipėda, tel. (8 46) 31 43 54. Ataskaitos rengėjas UAB „Ekosistema“ Taikos pr. 119, Klaipėda, tel. (8 46) 43 04 63.

3. Planuojamos ūkinės veiklos pavadinimas:

Ūkinė veikla – Sekcija B, skyrius- 08, grupė -08.1, klasė -08.12 smėlio ir žvyro karjeru eksploatavimas; molio ir koalino kasyba.

4. Planuojamos ūkinės veiklos vieta:

Klaipėdos rajonas, Agluonėnų sen., Kantvainių kaimas, žemės sklypas kadastrinis Nr. 5503/0009:155, sklypo plotas 15000 ha.

5. Trumpas planuojamos ūkinės veiklos aprašymas:

Poveikio visuomenės sveikatai vertinimas atliekamas, kad išsiaiškinti, kiek planuojama ūkinė veikla turės (ar neturės) neigiamo poveikio visuomenės sveikatai ir pagal gautus rezultatus patikslinti sanitarinės apsaugos zonos ribas. Šiuo metu pradėtas rengti teritorijos detalusis planas, kuriuo bus suformuota bei įteisinta sanitarinė apsaugos zona.

Bendrovė planuoja žvyro ir smėlio gavybą Klaipėdos rajono Kantvainių kaime, žvyro ir smėlio telkinyje. Prieš žaliavų gavybos darbus, dirvožemis buldozeriu iš 50 m pločio pakraštinių telkinio juostos sustumiamas į formuojamą 3 m aukščio pylimą.

Nurodoma, kad atidengus naudingąjį kladą, ekskavatoriumi bus kasamas smėlio kolas. Iškastas sausas smėlis iškart bus kraunamas į sunkvežimius ir išvežamas. Apvandenintos iškasenos bus pilamos į pylimą nusausėjimui ir išvežamos vėliau. Kasimo darbai bus vykdomi tik šiltuoju metu laiku, t.y. apie 9 mėnesius per metus.

Gretimybėse žemės ūkio paskirties sklypai. Šalia objekto yra kiaulidžių komplekso teritorija. Artimiausias gyvenamasis namas yra 690 m atstumu nuo išžvalgytos telkinio teritorijos.

Iškasenų transportavimui bus naudojamas esamas žvyrkelis, kuris toliau jungiasi su rajoniniu keliu Klaipėda-Veiviržėnai-Endriejavas. Gyvenamujų pastatų šalia privažiuojamojo karjero kelio nėra, artimiausias pastatas yra 240 m atstumu. Bendras iškasenų gabėjimo iki Klaipėdos atstumas sieks apie 15 km.

Nurodoma, kad kasimo darbams bus naudojamas ekskavatorius Komatsu, buldozeris CAT bei 3 24 t keliamosios galios Mercedes Benz savivartėjai automobiliai. Kiekvienas iš jų per pamainą turės atlitti 8 reisus.



KOPIJA

UAB "GJ Magma" vadovas
G.m.dr. Gintautis Juozapavičius

Teigama, kad planuoojamos ūkinės veiklos metu naudoti kenksmingų ir pavojingų medžiagų nenumatoma. Planuojama metinė kasybos apimtis sudarys 50 tūkst. m³ neišpurento žvyro ir smėlio. Pagal tokias gavybos apimtis telkinį numatoma eksplotuoti apie 10 metų.

Orientacinis darbuotoju, kurie aptarnaus karjerą skaičius, bus 5 (gamybos vadovas, apskaitininkas, ekskavatorių mašinistai-šaltkalviai, buldozerininkai).

Nurodoma, kad pagrindiniai veiksniai galintys daryti neigiamą įtaką visuomenės sveikatai yra triukšmas bei aplinkos oro tarša.

Kasybos darbai vyks viena pamaina, 5 dienas per savaitę, vidutiniškai po 7 valandas per dieną, 30 reisų per pamainą. Atmosferos ore vadovaujantis LR Aplinkos ministro ir LR Sveikatos apsaugos ministro 2001-12-11 įsakymu Nr. 591/640 „Dėl aplinkos oro užterštumo normų nustatymo“ valandos ribinė azoto oksidų vertė, nustatyta žmonių sveikatos apsaugai yra 0,2 mg/m³ ir per kalendorinius metus negali būti viršyta daugiau kaip 18 kartų. Suskaičiuota azoto oksidų pažemio koncentracija teritorijoje sudarys 0,0130 mg/m³ arba 0,065 DLK dalį, su fonu 0,0161 mg/m³ arba 0,0801 DLK dalį. Suskaičiuota maksimali anglies monoksido pažemio koncentracija teritorijoje sudarys 0,0020 mg/m³ arba 0,0002 DLK dalį. Suskaičiuota sieros dioksidu pažemio koncentracija aplinkos ore sudarys 0,0004 mg/m³ arba 0,0011 DLK dalį, su fonu 0,0015 mg/m³ arba 0,0043 DLK dalį. Angliavandenilių apskaičiuota koncentracija tiriamojoje teritorijoje sudarys 0,0057 mg/m³ arba 0,0057 DLK dalį. Metinė kietųjų dalelių koncentracija aplinkos ore iš dyzelinių vidaus degimo variklių ir smėlio krovos metu tiriamosios aplinkos ore sudarys 0,006 mg/m³ arba 0,15 DLK dalį, su fonu 0,021 mg/m³ arba 0,53 DLK dalį. Skaičiavimai buvo atlikti ir teršalų koncentracijos teritorijoje pavaizduotos naudojant kompiuterinę programinę įrangą “ADMS 4.2”.

Kaip viena iš galimų apsaugos priemonių aplinkos oro taršai sumažinti yra nurodoma, kad karjeras bus apsuptas iki 3 m aukščio dirvožemio pylimu, kuris bus sustumtas palei kasybos sklypo išorinį pakraštį. Dirvožemio pylimui stabilizuoti ant jo bus sėjamas žolės mišinys. Mechanizmai dirbs už tokios užtvaras, todėl dulkių sklidai susidarys dirbtinis barjeras. Planuojama ūkinė veikla – smėlio telkinio eksplotacija – kvapų išsiskyrimo nesalygos, todėl neigiamo poveikio visuomenės sveikatai ir psychologinio diskomforto dėl pasklidusių kvapų nebus.

Planuoojamos ūkinės veiklos metu, vykdant smėlio kasybos darbus, triukšmą sukels savaeigiai mechanizmai –ekskavatorius, buldozeris, savivartės mašinos. Nurodoma, kad buldozeris sukelia 103 dBA, ekskavatorius 93 dBA, sunkvežimis - 80 dBA triukšmą.

Sklaidos skaičiavimo žemėlapis pateikiamas sumodeliavus situaciją triukšmo sklaidos modeliu Map Noise. Nurodoma, kad Map Noise programinė įranga naudojama vertinant kelių transporto triukšmo poveikį aplinkai, analizuojant planuojamą variantą triukšmo poveikį bei planuojant triukšmo mažinimo užtvaras.

Ataskaitos rengėjai nurodo, kad triukšmo sklaidos žemėlapiuose sklaida pateikiama vienam periodui – dienos, kadangi telkinio eksplotacijos darbai bus vykdomi tik dienos metu 06-18 val., pateikiamos ekvivalentinio ir maksimalaus triukšmo reikšmės. Sklaidos skaičiavimai pateikiami, kai pagrindiniai kasybos darbai bus vykdomi arčiausiai (apie 690 m) gyvenamujų namų. Iš pateiktų sklaidos žemėlapių matyti, kad nei ekvivalentiniams, nei maksimaliam triukšmo lygiui ties arčiausiai esančia sodybviete ūkinė veikla įtakos neturės ir triukšmas neviršys nustatytą dydžių. Teigama, kad įvertinus ūkinės veiklos bei foninį triukšmo lygi prie artimiausio gyvenamojo namo bus apie 40 dBA.

Pradėjus vykdyti ūkinę veiklą (smėlio telkinio eksplotacija) bus atliekamas darbo vietų rizikos veiksnių nustatymas vadovaujantis profesinės rizikos nuostatais.

Nurodoma, kad karjero veikla įtakos darbo rinkai, išsilavinimo galimybėms, aplinkinių gyventojų elgsenos ir gyvensenos veiksniams neturės. Veiklos įtaka bendravimui ir kitiems socialiniams veiksniams nenumatoma. Neigiamo poveikio aplinkos estetiniams vaizdui nebus. Kadangi planuojamas sklypas yra nutolęs nuo gyvenamųjų teritorijų, tai galimo visuomenės nepasitenkinimo nelaukiama. Numatoma veikla įtakos sveikatos priežiūrai, socialinių paslaugų prieinamumui ir kokybei neturės. Pirminio ir antrinio lygio sveikatos priežiūros paslaugų prieinamumas gyventojams nepasikeis. Neigama įtaka paviršiniams vandeniu taip pat nenumatoma.

Pranešimas visuomenei dėl planuoojamos ūkinės veiklos poveikio visuomenės sveikatai vertinimo atrankos buvo išspausdintas 2010 m. balandžio 28 d. Klaipėdos rajono dienraštyje „Banga“. Pranešimas



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G.m dr. Gintas Juozapavičius

visuomenei apie parengtą planuojamos ūkinės veiklos poveikio aplinkai vertinimo ataskaitą buvo išspausdintas 2010 m. gegužės 12 d. Klaipėdos rajono dienraštyje „Banga“. Motyvuotų visuomenės pastabų ir pasiūlymų dėl poveikio visuomenės sveikatai vertinimo atrankos bei ataskaitos nebuvo gauta.

Ataskaitos rengėjai pateikė regiono gyventojų demografinius rodiklius: gyventojų skaičių, tankumą, pasiskirstymą pagal amžių, lyti, gimstamumą, mirtingumą, mirties priežasčių struktūrą, kūdikių mirtingumą, perinatalinį mirtingumą ir kitus reikalingus rodiklius.

Nurodoma, kad ataskaitos rengėjai kompleksiškai įvertinę žinomus aplinkos veiksnius, galinčius daryti poveikį visuomenės sveikatai planuoja me ir už maždaug 690 metrų esamoje gyvenamojoje teritorijoje (fizikinius, cheminius, socialinius, psychologinius ir kt.) yra daroma išvada, kad neigiamo poveikio gyventojų sveikatai nebus; planuojama ūkinė veikla Kantvainių kaimo smėlio karjere neturės žymios įtakos triukšmo padidėjimui už planuoja sklypo ribų, todėl teigama, kad neigiamo poveikio visuomenės sveikatai triukšmo aspektu nebus; įvertinus visus galimus veiksnius nustatyta, jog planuojama ūkinė veikla neturės neigiamo poveikio visuomenės sveikatai, ir sanitarinė apsaugos zona, nustatoma sutapdirbant su sklypo ribomis.

Ataskaitos rengėjai doro išvadą, kad karjero eksploatavimo pradžioje dėl karjero apvandenintojo sluoksnio iškėlimo artimiausių sodybviečių, kurių pati artimiausia yra 690 m atstumu, šachtiniuose šuliniuose gali nežymiai sumažėti vandens lygis. Iškeltos iškasenos bus pilamos į pylimą nusauseti, todėl didžioji dalis vandens persifiltravusi per gruntą grįš atgal. Todėl, neigiamas poveikis gruntuinio vandens lygiui bus nežymus ir juntamas karjero eksploatacijos pradžioje. Taip pat nurodoma, kad tiesioginio poveikio per paviršinius ir požeminius vandenis visuomenės sveikatai nebus.

Pabaigus eksploatuoti smėlio telkinį, jis bus rekultivuotas, bus įrengtas vandens baseinas, kurio kraštai bus apsodinti mišku.

6. Išvada:

UAB „Lemminkainen Lietuva“ planuojamos ūkinės veiklos (Kantvainių smėlio telkinio eksploatavimo) poveikio visuomenės sveikatai vertinimo ataskaitai ir planuojamai ūkinei veiklai pasirinktoje vietoje pritarta.

Direktorius

Rimantas Pilipavičius

R. Giedraitis, tel. (8 46) 48 50 94, faks. (8 46) 41 03 35, el. p. rimantas.giedraitis@klaipeda.vvspt.lt



KOPIJA

UAB "GJ Magma" vadovas
G.m.dr. Gintautas Juozapavičius

18.1 priedas

NET HORSEPOWER

153 kW **205 HP** @ 1950 rpm

OPERATING WEIGHT

D65EX-15: 20470 kg **45,129 lb**

D65PX-15: 21210 kg **46,763 lb**

D65WX-15: 21130 kg **46,589 lb**

D65WX-15 PAT: 21670 kg **47,773 lb**

D65EX-15 Long Track: 20850 kg **45,950 lb**

KOMATSU®

D65EX-15 D65PX-15 D65WX-15 D65WX-15 PAT

With PLUS Undercarriage

**D
65**

CRAWLER DOZER



Photos may include optional equipment.

D65-15**CRAWLER DOZER**

NET HORSEPOWER
153 kW 205 HP @ 1950 rpm

OPERATING WEIGHT

D65EX-15:	20470 kg 45,129 lb
D65PX-15:	21210 kg 46,763 lb
D65WX-15:	21130 kg 46,589 lb
D65WX-15 PAT:	21670 kg 47,773 lb
D65EX-15:	20850 kg 45,950 lb (Long Track)

BLADE CAPACITY

Semi-U Tilt Dozer:

D65EX-15: 5.61 m³ 7.34 yd³D65WX-15: 6.23 m³ 8.15 yd³

Straight Tilt Dozer:

D65EX-15: 3.89 m³ 5.09 yd³D65PX/WX-15: 3.69 m³ 4.83 yd³D65EX-15 PAT: 4.40 m³ 5.75 yd³

Electronic Monitoring System prevents minor problems from developing into major ones.

Hydrostatic Steering System (HSS)

provides smooth, quick, and powerful control in various ground conditions.

Wet, multiple-disc brakes

eliminates brake-disc adjustments for adjustment-free operation.

Modular power train for increased serviceability and durability.

Parallel Link Undercarriage System (PLUS)

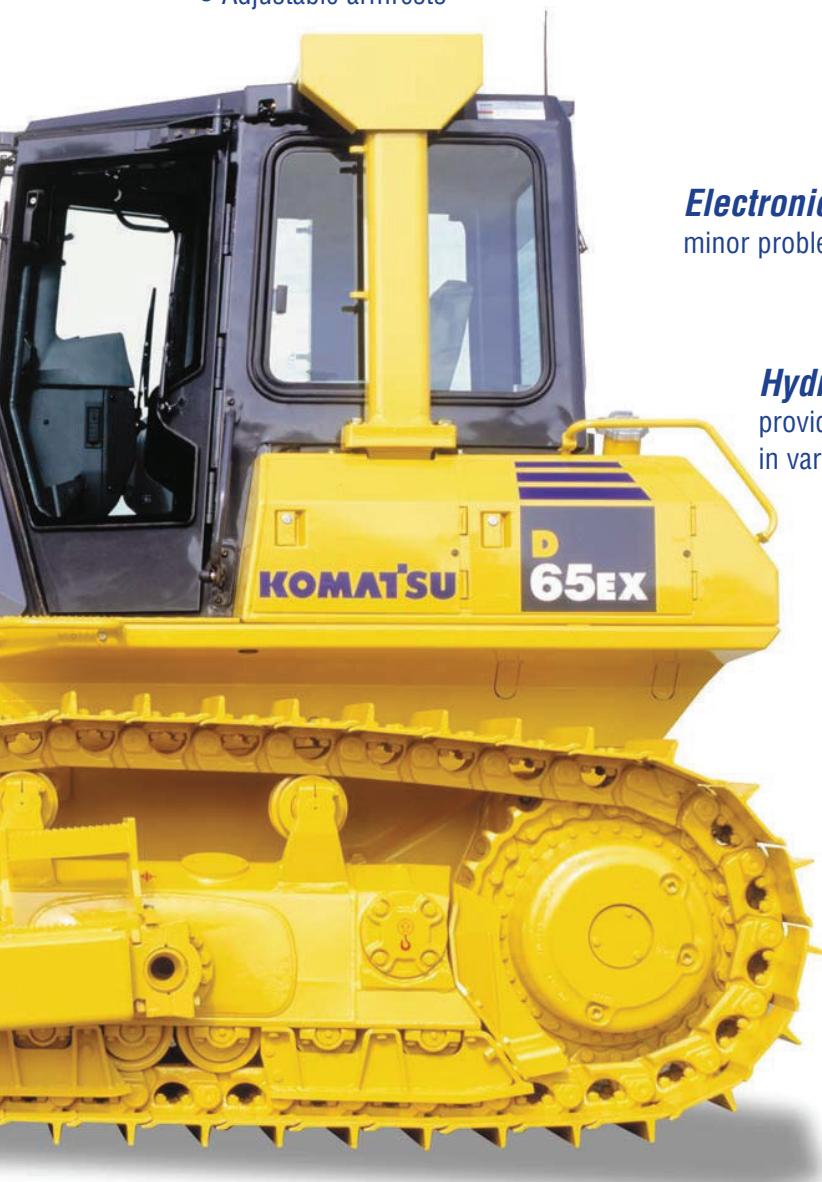
with rotating bushings and up to double the wear life.

Forward mounted **pivot shafts** isolate final drives from blade loads.

Photos may include optional equipment.

Bolt-on segmented sprocket teeth

for easy in-the-field replacement.



D65-15 CRAWLER DOZER**PRODUCTIVITY FEATURES****ecot3**
ecology & economy - technology 3

Komatsu's new "ecot3" engines are designed to deliver optimum performance under the toughest of conditions, while meeting the latest environmental regulations. This engine is EPA Tier 3 and EU Stage 3A emissions certified; "ecot3" - ecology and economy combine with Komatsu technology to create a high performance engine without sacrificing power or productivity.

Engine

The Komatsu SAA6D114E-3 engine delivers a net output of 153 kW **205 HP** at 1950 rpm. The fuel-efficient Komatsu engine, together with the heavy machine weight, make the D65EX/PX/WX superior crawler dozers in both ripping and dozing operations. The engine features direct fuel injection, turbocharger, and an air-to-air aftercooler to maximize fuel efficiency.

To minimize noise and vibration, the engine is mounted to the main frame with rubber cushions.

Hydraulic Drive Radiator Cooling Fan

Fan speed is automatically controlled depending on coolant and hydraulic oil temperature. This saves fuel and provides great productivity with a quiet operating environment.

Work Equipment**Large Blade**

Capacities of 3.89 m^3 **5.09 yd}^3** (Straight-Tilt Dozer for D65EX), 3.69 m^3 **4.83 yd}^3** (Straight-Tilt Dozer for D65PX/WX), 5.61 m^3 **7.34 yd}^3** (Semi-U Dozer for D65EX), 6.23 m^3 **8.15 yd}^3** (Semi-U Dozer for D65WX), and 4.40 m^3 **5.75 yd}^3** (PAT for D65WX). yield outstanding production. High-tensile-strength steel has been incorporated into the front and sides of the blade for increased durability.

Undercarriage**Low Drive Undercarriage**

Komatsu's design is extraordinarily tough and offers excellent grading ability and stability.

**Wide Track Version (WX Series)**

A wide track machine has the same length of track on ground as an EX model combined with the track gauge of the PX model. This provides the operator with the tractive effort and productivity of the EX as well as the stability and flotation of the PX.

Addition of 6 Way Blade Option (WX series)

The D65WX-15 PAT machine utilizes the same track gauge as the D65PX & WX outside blade mounted machines but it features extended track on ground (T.O.G.) of 9'9" and 8 bottom rollers for productivity, reliability and machine balance.

The Power Angle Tilt (PAT) blade makes the machine extremely versatile. It allows the machine to operate in a wide variety of applications such as finish grading, ditching, and backfilling.



WX Series Machine with PAT Blade Option.

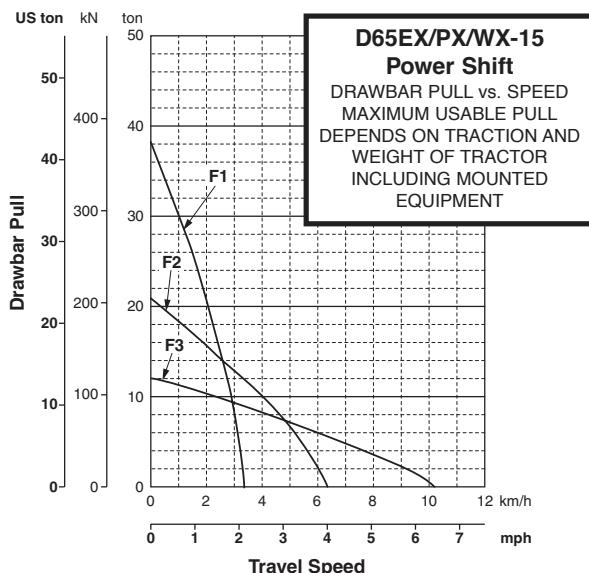
D65-15 CRAWLER DOZER**SPECIFICATIONS****ENGINE**

Model	Komatsu SAA6D114E-3
Type	4-cycle, water-cooled, direct injection
Aspiration.....	Turbocharged, air-to-air aftercooled
Number of cylinders	6
Bore x stroke	114 mm x 135 mm 4.49" x 5.31"
Piston displacement.....	8.27 ltr 505 in ³
Governor	All-speed, electronic
Horsepower	
SAE J1995.....	Gross 155 kW 207 HP
ISO 9249 / SAE J1349*.....	Net 153 kW 205 HP
Hydraulic fan at maximum speed	Net 142 kW 190 HP
Rated rpm	1950 rpm
Fan drive type	Hydraulic
Lubrication system	
Method	Gear pump, force lubrication
Filter	Full-flow
EPA Tier 3 and EU stage 3A emissions certified.	

**TORQFLOW TRANSMISSION**

Komatsu TORQFLOW transmission consists of a water-cooled, 3-element, 1-stage, 1-phase, torque converter and a planetary gear, multiple-disc clutch transmission which is electrically-controlled, hydraulically-actuated and force-lubricated for optimum heat dissipation.

Travel speed	Forward	Reverse
1st	3.3 km/h 2.1 mph	4.4 km/h 2.8 mph
2nd	6.3 km/h 3.9 mph	8.2 km/h 5.1 mph
3rd	10.1 km/h 6.3 mph	12.9 km/h 8.1 mph

**FINAL DRIVES**

Double-reduction final drive of spur and planetary gear sets to increase tractive effort and reduce gear tooth stresses for long final drive life. Segmented sprocket rims are bolt-on for easy replacement.

**STEERING SYSTEM**

Palm Command Control System (PCCS) lever controls for all directional movements. Pushing the PCCS lever forward results in forward machine travel, while pulling it rearward reverses the machine. Simply tilt the PCCS lever to left to make a left turn. Hydrostatic Steering System (HSS) is powered by steering planetary units and an independent hydraulic pump and motor. Counter-rotation turns are also available. Wet, multiple-disc, pedal-controlled service brakes are spring-actuated and hydraulically released. Gear shift lock lever also applies parking brake.

Minimum turning radius	D65EX-15	1.8 m 5'11"
	D65PX-15	2.2 m 7'3"
	D65WX-15	2.0 m 6'7"
	D65WX-15 PAT	2.0 m 6'7"
	D65EX-15 Long Track	2.2 m 7'3"

**UNDERCARRIAGE**

Suspension	Oscillating equalizer bar and pivot shaft
Track roller frame	Monocoque, large section, durable construction
Rollers and idlers	Lubricated track rollers

Track assemblies
Lubricated tracks. Unique seals help prevent entry of foreign abrasive material into pin to bushing clearances to provide extended service life. Parallel Link Undercarriage System (PLUS) with rotating bushings for extended wear life and lower maintenance costs..

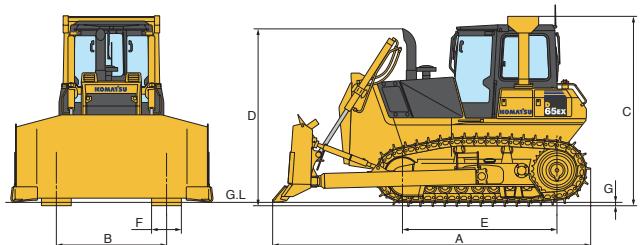
	D65EX-15	D65EX-15 Long Track	D65PX-15	D65WX-15	D65WX-15 w/PAT Blade
Number of track rollers (each side)	7	8	8	7	8
Type of shoes (standard)	Single grouser PLUS	Single grouser PLUS	Single grouser PLUS	Single grouser PLUS	Single grouser PLUS
Number of shoes (each side)	39	45	45	39	42
Grouser height mm in	65 2.6"	65 2.6"	65 2.6"	65 2.6"	65 2.6"
Shoe width (standard) mm in	510 20"	510 20"	915 36"	810 32"	660 26"
Ground contact area cm ²	27285	33507	60115	43335	39336
	4,230	5,194	9,318	6,717	6,097
Ground pressure kPa (tractor)	62.8	52.2	30.1	41.3	49.1
	0.64 kgf/cm ²	0.53	0.31	0.42	0.50
	9.10 psi	7.57	4.36	5.99	7.13
Track gauge mm ft.in	1880 6'2"	1880 6'2"	2050 6'9"	2050 6'9"	2050 6'9"
Length of track on ground mm ft.in	2675 8'9"	3285 10'9"	3285 10'9"	2675 8'9"	2980 9'9"

**COOLANT AND LUBRICANT CAPACITY (REFILL)**

Fuel tank	415 ltr	109.6 U.S. gal
Coolant	37 ltr	9.8 U.S. gal
Engine	28 ltr	7.4 U.S. gal
Torque converter, transmission, bevel gear, and steering system	48 ltr	12.7 U.S. gal
Final drive (each side)		
D65EX-15	24 ltr	6.3 U.S. gal
D65PX-15	27 ltr	7.1 U.S. gal
D65WX-15	27 ltr	7.1 U.S. gal
D65WX-15 PAT	27 ltr	7.1 U.S. gal

D65-15**CRAWLER DOZER****DIMENSIONS**

	D65EX-15 Semi-U Tilt Dozer	D65PX-15 Straight Tilt Dozer	D65WX-15 Semi-U Tilt Dozer	D65WX-15 PAT	D65EX-15 Long Track
A	5440 mm 17'10"	5520 mm 18'1"	5440 mm 17'10"	5590 mm 18'3"	5520 mm 18'1"
B	1880 mm 6'2"	2050 mm 6'9"	2050 mm 6'9"	2050 mm 6'9"	1880 mm 6'2"
C	3220 mm 10'7"	3220 mm 10'7"	3220 mm 10'7"	3220 mm 10'7"	3220 mm 10'7"
D	2990 mm 9'10"	2990 mm 9'10"	2990 mm 9'10"	2990 mm 9'10"	2990 mm 9'10"
E	2675 mm 8'9"	3285 mm 10'9"	2675 mm 8'9"	2980 mm 9'9"	3285 mm 10'9"
F	510 mm 20.1"	915 mm 36.0"	810 mm 31.9"	660 mm 26"	510 mm 20.1"
G	65 mm 2.6"	65 mm 2.6"	65 mm 2.6"	65 mm 2.6"	65 mm 2.6"

Ground clearance 405 mm **1'4"****OPERATING WEIGHT**

Tractor weight:

Including rated capacity of lubricant, hydraulic control unit, coolant, full fuel tank, operator, and standard equipment.

D65EX-15	17460 kg 38,489 lb
D65PX-15	18450 kg 40,673 lb
D65WX-15	18240 kg 40,209 lb
D65WX-15 PAT	19710 kg 43,453 lb
D65EX-15 Long Track	17840 kg 39,320 lb

Operating weight:

Including Semi-U tilt dozer (EX/WX) or straight tilt dozer (PX), steel cab, ROPS, operator, standard equipment, rated capacity of lubricant, hydraulic control unit, coolant, and full fuel tank.

D65EX-15	20470 kg 45,129 lb
D65PX-15	21210 kg 46,763 lb
D65WX-15	21130 kg 46,589 lb
D65WX-15 PAT	21670 kg 47,773 lb
D65EX-15 Long Track	20850 kg 45,950 lb

**HYDRAULIC SYSTEM**

Closed-center load sensing system (CLSS) designed for precise and responsive control, and for efficient simultaneous operation.

Hydraulic cylinders Double-acting, piston

	Number of cylinders	Bore
Blade lift	2	95 mm 3.7"
Blade tilt	1	140 mm 5.5"
Ripper lift	1	140 mm 5.5"

Hydraulic oil capacity (refill):

Straight tilt dozer	55 ltr 14.5 U.S. gal
Semi-U tilt dozer	55 ltr 14.5 U.S. gal

Ripper equipment (additional volume):

Multi-shank ripper	7 ltr 1.8 U.S. gal
--------------------------	---------------------------

Relief valve setting 20.6 MPa 210 kg/cm² **2,990 psi**

Control valves:

Spool control valves for tilt dozer

Positions: Blade lift	Raise, hold, lower, and float
Blade tilt	Right, hold, and left

Additional control valve required for multi-shank ripper (EX)

Positions: Ripper lift	Raise, hold, and lower
------------------------------	------------------------

**DOZER EQUIPMENT**

Blade capacities are based on the SAE recommended practice J1265.

Use of high tensile strength steel in moldboard for strengthened blade construction.

	Overall Length With Dozer mm ft.in	Blade Capacity m ³ yd ³	Blade Width x Height mm ft.in	Max. Lift Above Ground mm ft.in	Max. Drop Below Ground mm ft.in	Max. Tilt Adjustment mm ft.in	Weight		Ground Pressure (at operating weight) kPa kg/cm ² psi
							Dozer equipment kg lb	Hydraulic control unit kg lb	
D65EX-15 Semi-U Tilt Dozer	5440 mm 17'10"	5.61 7.34	3460 x 1425 11'4" x 4'8"	1105 3'8"	440 1'5"	855 2'10"	2280 5,030	720 1,590	73.6/0.75/ 10.67
D65EX-15 Straight Tilt Dozer	5210 mm 17'1"	3.89 5.09	3415 x 1225 11'2" x 4'0"	1105 3'8"	440 1'5"	870 2'10"	2000 4,410	720 1,590	72.6/0.74/ 10.52
D65EX-15 Angle Dozer	5470 mm 17'11"	3.55 4.64	3970 x 1100 13'0" x 3'7"	1185 3'11"	450 1'6"	400 1'4"	2280 5,030	650 1,430	73.3/0.75/ 10.63
D65PX-15 Straight Tilt Dozer	5520 mm 18'1"	3.69 4.83	3970 x 1100 13'0" x 3'7"	1105 3'8"	540 1'9"	450 1'6"	2030 4,480	710 1,570	34.6/0.35/ 5.02
D65WX-15 Semi-U Tilt Dozer	5440 mm 17'10"	6.23 8.15	3640 x 1410 11'11" x 4'8"	1105 3'8"	440 1'5"	820 2'8"	2360 5,200	720 1,590	47.8/0.49/ 6.94
D65WX-15 PAT	5590 mm 18'3"	4.40 5.75	3800 x 1210 12'6" x 4'0"	1170 3'10"	810 2'8"	460 1'6"	2750 6,050	N/A	54.0/0.55/ 7.84
D65EX-15 Long Track	5520 mm 18'1"	5.61 7.34	3460 x 1425 11'4" x 4'8"	1105 3'8"	440 1'5"	855 2'10"	2280 5,030	720 1,590	60.8/0.62/ 8.84


STANDARD EQUIPMENT FOR BASE MACHINE

- Air cleaner, double element with dust indicator
- Engine intake precleaner
- Alternator, 60 ampere
- Back-up alarm
- Cup holder
- Batteries, 200 Ah/2 x 12V
- Hydraulic-driven reversible cooling fan
- Decelerator pedal
- Electronic instrument monitor panel
- Engine hood
- Fenders
- Muffler with curved exhaust pipe
- Engine side covers, gull-wing
- Front pull hook
- High mount foot rests
- KOMTRAX Level 2
- Locks, filler caps and covers

- Lunch box holder
- Parallel Link Undercarriage System (PLUS)
- Pressure test ports for power train
- Radiator reserve tank
- Radiator guard door, hinged
- Rear cover
- Rear view mirror
- Starting motor, 11.0 kW/24V
- Steering system:
 HSS (Hydrostatic Steering System)
- Seat, adjustable, suspension
 high back, vinyl
- Seat belt, 76 mm 3", retractable
- Sealed electrical connectors
- Track roller guard, center and
 end section (PX)
- Track roller guard, end sections (EX, WX)

- Track shoe assembly
 —Heavy-Duty sealed and lubricated track
- 510 mm 20" single grouser shoe PLUS
(EX) (EX Long Track)
- 810 mm 32" single grouser shoe PLUS
(WX)
- 660 mm 26" single grouser shoe PLUS
(WX PAT)
- 915 mm 36" single grouser shoe PLUS
(PX)
- Underguards, oil pan and transmission,
 heavy-duty
- Water separator

* ROPS cab or ROPS canopy must be ordered for all machines. Cab and canopy FOPS Level 2. ROPS/FOPS meets all OSHA/MSHA standards and regulations criteria.

Dozer assembly and rear-mounted equipment are not included in base machine price.


OPTIONAL EQUIPMENT

- Air-conditioner intake precleaner
- Air conditioner
- Cab
- Cab accessories
 - Sun visor
 - 12V power supply

- AM-FM radio with cassette
- Forestry guarding for cab/canopy
- Hitch type drawbar
- Heater and defroster
- Hydraulics for ripper (EX, WX)
- Light working, cab additional
- Rear counterweight

- Rescue/recovery winch
- Suspension seat, reclining with
 fabric material (cab only)
- Track roller guard, full length
- Vandalism protection cover
 for instrument panel

ROPS CANOPY

Additional weight 390 kg **860 lb**

Roof dimensions:

- Length: 1830 mm **6'0"**
- Width: 1824 mm **6'0"**
- Height from operator compartment
 floor: 1660 mm **5'5"**

Additional ground pressure

D65EX	1.4 kPa/0.014 kg/cm ² / 0.20 psi
D65WX	0.9 kPa/0.009 kg/cm ² / 0.13 psi
D65PX	0.6 kPa/0.006 kg/cm ² / 0.09 psi
D65EX	1.1 kPa/0.011 kg/cm ² / 0.16 psi (Long Track)

ROPS/FOPS Level 2 for cab:

Additional weight 240 kg **530 lb**

Roof dimensions:

- Length: 480 mm **1'7"**
- Width: 1570 mm **5'2"**

Additional ground pressure

D65EX	0.9 kPa/0.009 kg/cm ² / 0.13 psi
D65WX	0.5 kPa/0.006 kg/cm ² / 0.08 psi
D65PX	0.4 kPa/0.004 kg/cm ² / 0.06 psi
D65EX	0.7 kPa/0.007 kg/cm ² / 0.11 psi (Long Track)

ROPS cab or ROPS canopy must
be ordered for all machines.

CAB

Additional weight 410 kg **910 lb**

All-weather, enclosed pressurized cab

Dimensions:

- Length: 1765 mm **5'9"**
- Width: 1323 mm **4'4"**
- Height: 1625 mm **5'4"**
- Height from floor to ceiling:
 1515 mm **5'0"**

Additional ground pressure

D65EX	1.5 kPa/0.015 kg/cm ² / 0.21 psi
D65WX	0.9 kPa/0.009 kg/cm ² / 0.13 psi
D65PX	0.7 kPa/0.007 kg/cm ² / 0.10 psi
D65EX	1.2 kPa/0.012 kg/cm ² / 0.17 psi (Long Track)

MULTI-SHANK RIPPER (for D65EX/WX)

Additional weight (including hydraulic control unit): 1680 kg **3,700 lb**

Beam length: 2170 mm **7'1"**

Maximum digging depth: 595 mm **1'11"**

Maximum lift above ground: 640 mm **2'1"**

Additional ground pressure

D65EX	6.0 kPa/0.062 kg/cm ² / 0.88 psi
D65WX	3.8 kPa/0.039 kg/cm ² / 0.55 psi
D65EX	4.9 kPa/0.05 kg/cm ² / 0.71 psi (Long Track)

SHOES

Models	Shoe
D65EX	560 mm 22" single-grouser shoe PLUS
	610 mm 24" single-grouser shoe PLUS
	660 mm 26" single-grouser shoe PLUS
	560 mm 22" extreme service shoe conventional undercarriage
	610 mm 24" extreme service shoe conventional undercarriage
	Center holes for PLUS shoes 20", 22", 24", 26"
D65EX Long Track	510 mm 20" single-grouser shoe PLUS
	560 mm 22" single-grouser shoe PLUS
	610 mm 24" circular-arc shoe PLUS



KOBELCO

Hydraulic Excavators

SK230SR_{Lc}

■ Bucket Capacity :
1.05 cu.yd. (0.80 m³) SAE heaped

■ Engine Power :
157 hp (117 kW) / 2,000 min⁻¹{rpm}
(SAE NET)

■ Operating Weight :
55,100 lb (25,000 kg)



Note: This catalog may contain attachments and optional equipment that are not available in your area. It may also contain photographs of machines with specifications that differ from those of machines sold in your area. Please consult your nearest KOBELCO distributor for those items you require.
Due to our policy of continuous product improvements all designs and specifications are subject to change without advance notice.

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Inquiries To:

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2013080000E Printed in USA

Complies with the latest exhaust emission regulations



US EPA
Interim Tier IV



EU (NRMM)
Stage III B



Japanese
Regulations

**DRIVEN BY
PASSION**

More Work with Less Fuel!

Fuel Consumption and Work Volume

The new hydraulic system and an additional ECO-mode have cut fuel consumption by up to 18%.

H-mode (vs previous SK225SRLC in H-mode)

Fuel consumption (L/h)

6% decrease

Work volume per liter of fuel (m³/L)

3% increase

S-mode (vs previous SK225SRLC in H-mode)

Fuel consumption (L/h)

5% decrease

Work volume per liter of fuel (m³/L)

3% increase

ECO-mode (vs previous SK225SRLC in S-mode)

Great leap forward in energy-saving performance

Fuel consumption (L/h)

19% decrease

Work volume per liter of fuel (m³/L)

8% increase

* Figures for fuel consumption: fuel consumed per hour (L/h) compared with previous model, in KOBELCO tests.

* Figures for work volume: digging volume per liter of fuel (m³/L) compared with previous model, in KOBELCO tests.

ECO-mode

Work modes for a closer match to the job in hand. An addition to the existing H-mode and S-mode, the new ECO-mode saves even more energy.



H-mode: For heavy duty operation, when a higher performance level is required.

S-mode: For normal operations with lower fuel consumption.

ECO-mode: Puts priority on low fuel consumption and economic performance.

Significant Extension of Continuous Working Hours

The combination of a large-capacity fuel tank and excellent fuel efficiency delivers an impressive increase in the length of continuous usage.

Fuel tank capacity:
**87.2U.S.gal
(330 L)**

NEXT-3E Technology New Hydraulic System

Rigorous inspections for pressure loss are performed on all components of the hydraulic piping, from the spool of control valve to the connectors. This regimen, combine with the use of a new, high-efficiency pump, cuts energy loss to a minimum.

NEXT-3E Technology Total Tuning Through Advanced ITCS Control

The next-generation engine control is governed by a new version of ITCS, which responds quickly to sudden changes in hydraulic load to ensure that the engine runs as efficiently as possible with a minimum of wasted output.

ITCS ITCS (Intelligent Total Control System) is an advanced, computerized system that provides comprehensive control of all machine functions.

NEXT-3E Technology Next-Generation Electronic Engine Control

The high-pressure, common-rail fuel-injection engine with the multiple injection system features adjust table control to maximize fuel efficiency and provide powerful low-speed torque. The result is a highly fuel-efficient engine .



Tier4 compliant engine

PM emissions cut: Limits creation of particulate matter (which results from incomplete combustion of fuel)

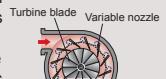
■ Common rail system

High-pressure injection atomizes the fuel, and injection timing is more precise, improving combustion efficiency.



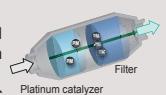
■ VG turbo

The opening of the exhaust side nozzles in the variable-geometry turbocharger adjusts air intake to maximize combustion efficiency. At low engine speeds the nozzles are closed, then the turbo speed is increased and air intake is boosted. This helps lower fuel consumption.



■ Diesel Particulate Filter (DPF)

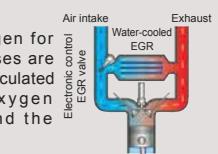
Carbon is built up as soot on the diesel particulate filter and is burned off at high temperature. No exhaust fluid required. The system allows manual or automatic filter regeneration.



NOx emissions cut: Reduces nitrogen oxides (created by reaction with oxygen at high temperature)

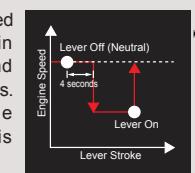
■ EGR cooler

While ensuring sufficient oxygen for combustion, cooled exhaust gases are mixed with the air intake and re-circulated into the engine. Then the oxygen concentration is lowered and the combustion temperature is lowered.



Automatic Acceleration / Deceleration Function Reduces Engine Speed

Engine speed is automatically reduced when the control lever is placed in neutral, effectively saving fuel and reducing noise and exhaust emissions. The engine quickly returns to the previous speed when the lever is moved out of neutral.



Photos in this catalog are the machine with the option installed.

Efficient Performance!

Top-Class Powerful Digging

For more efficient work performance.
(SAE J1179:1990)

Max. arm crowding force: **19,200lbs {85.5kN}**

With power boost: **21,200lbs {94.1kN}**

Max. bucket digging force: **24,300lbs {108kN}**

With power boost: **26,800lbs {119kN}**

Powerful Travel

Drawbar pulling force: **51,000lbs {226.9kN}**

Great Swing Power, Short Cycle Times

Powerful swing power and top-class swing speed.

Swing speed: **13.3 rpm**

Optional N&B (crusher and breaker)

The operator selects the desired mode from inside the cab, and the selector valve automatically configures the machine accordingly.

Attachment Mode Selector Switch

There's a choice of three different attachment modes to accommodate bucket, crusher, or breaker. The desired attachment mode can be selected with a switch, which automatically configures the selector valve. All attachment modes can be used in either S-mode or H-mode.



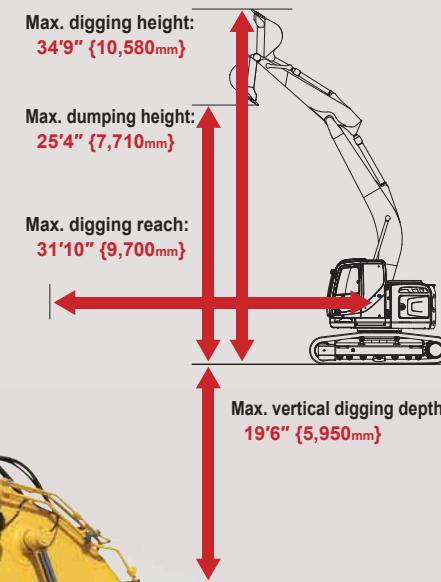
Seamless, Smooth Combined Operations

The machines have inherited the various systems that make inching and combined operations easy and accurate, with further refinements that make a good thing even better. Leveling and other combined operations can be carried out with graceful ease.

- Electronic active control system
- Arm regeneration system
- Boom lowering regeneration system
- Variable swing priority system
- Swing rebound prevention system

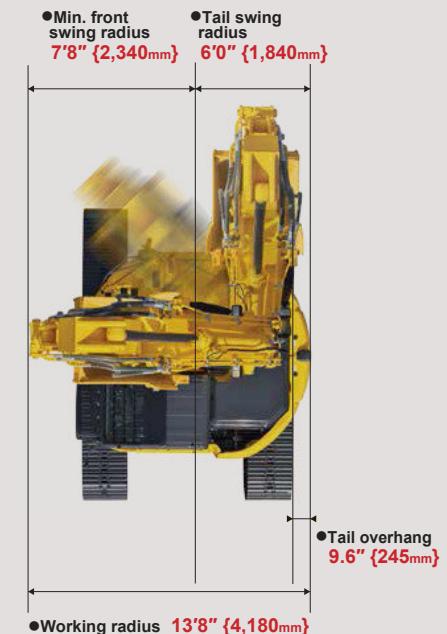
Excellent Working Ranges

Greater working ranges with class-topping vertical digging depth.



Requires 13 ft. 8 in. of Working Space

The compact design allows the machine to perform continuous dig, 180 ° swing and dump operations within a working space of 13 feet 8 inches.



Working radius equals the sum of the minimum front swing radius and tail swing radius.
The values of tail overhang and tail swing radius are for the machine that the add-on type counterweight is installed.

Mild Operating Sound

The iNDr cooling system also helps to keep the machine quiet, even at close quarters.

Meets EMC(Electromagnetic Compatibility) Standards in Europe

Electrical shielding ensured that the machines clear all European standards and neither cause or are affected by electromagnetic interference.

Specifications

SK230SR_{LC}
SK230SRLC-3



Engine

Model	HINO J05F
Type:	Direct injection, water-cooled, 4-cycle diesel engine With turbocharger, intercooler (Complies with EU (NRMM) Stage III B, US EPA Interim Tier IV, and act on regulation, etc. of emission from non-road special motor vehicles (Japan))
No. of cylinders:	4
Bore and stroke:	4.41" (112mm) x 5.12" (130 mm)
Displacement:	312.6 cu.in (5.123 L)
Rated power output:	157hp (117 kW) / 2,000 rpm (SAE NET)
Max. torque:	472 lb-ft (640 N·m) / 1,600 rpm (SAE NET)



Travel System

Travel motors:	2 x axial piston, two-speed motors
Parking brakes:	Oil disc brake per motor
Travel shoes:	49 each side
Travel speed:	3.7 / 2.2 mph (6.0 / 3.6 km / h)
Drawbar pulling force:	51,000 lbs (226.9 kN) (SAE J 1309)
Gradeability:	70 % (35°)



Cab & Control

Cab	All-weather, sound-suppressed steel cab mounted on the silicon-sealed viscous mounts and equipped with a heavy, insulated floor mat.
Control	
Two hand levers and two foot pedals for travel	
Two hand levers for excavating and swing	
Electric rotary-type engine throttle	



Boom, Arm & Bucket

Boom cylinder:	4.7" (120 mm) x 4.5" (1,355 mm)
Arm cylinder:	5.1" (130 mm) x 4.7" (1,406 mm)
Bucket cylinder:	4.3" (110 mm) x 3.6" (1,064 mm)



Refilling Capacities & Lubrications

Fuel tank:	87.2 U.S.gal (330 L)
Cooling system:	6.3 U.S.gal (24 L)
Engine oil:	5.4 U.S.gal (20.5 L)
Travel reduction gear:	2 x 1.3 U.S.gal (2 x 5.0 L)
Swing reduction gear:	0.7 U.S.gal (2.7 L)
Hydraulic oil tank:	30.1 U.S.gal (114 L) tank oil level 60.8 U.S.gal (230 L) hydraulic system



Attachments

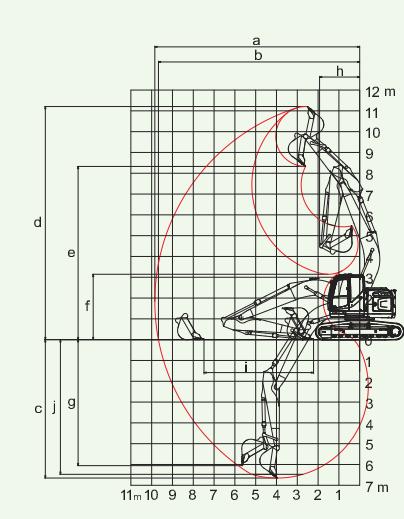
Backhoe bucket and arm combination

Use		Backhoe bucket Normal digging			
Bucket capacity	SAE heaped cu.yd.(m ³)	0.67 (0.51)	0.92 (0.70)	1.05 (0.80)	1.22 (0.93)
	SAE struck cu.yd.(m ³)	0.51 (0.39)	0.68 (0.52)	0.77 (0.59)	0.88 (0.67)
Opening width	With side cutter inches (mm)	34 (870)	43 (1,080)	46 (1,160)	52 (1,330)
	Without side cutter inches (mm)	30 (770)	39 (980)	42 (1,060)	48 (1,230)
No. of bucket teeth		3	5	5	5
Bucket weight	lbs (kg)	1,140 (520)	1,390 (630)	1,460 (660)	1,570 (710)
Combinations	9'5" (2.87 m)	○	○	○	△



Working Ranges

Boom	18'5" (5.62 m)	Unit: ft-in (m)
Range	9'5" (2.87 m)	
a - Max. digging reach	31'10" (9.7)	
b - Max. digging reach at ground level	31'3" (9.53)	
c - Max. digging depth	21'7" (6.58)	
d - Max. digging height	34'9" (10.58)	
e - Max. dumping clearance	25'4" (7.71)	
f - Min. dumping clearance	9'9" (2.98)	
g - Max. vertical wall digging depth	19'6" (5.95)	
h - Min. swing radius	7'8" (2.34)	
i - Horizontal digging stroke at ground level	16'6" (5.03)	
j - Digging depth for 8' flat bottom	20'11" (6.37)	
Bucket capacity SAE heaped cu.yd.(m ³)	1.05 (0.80)	



Digging Force

Arm length	9'5" (2.87 m)	Unit: lbs (kN)
Bucket digging force	SAE	24,300 (108)
	ISO	26,800 (119)*
Arm crowding force	SAE	27,000 (120)
	ISO	29,700 (132)*

* Power Boost engaged



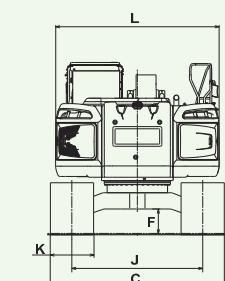
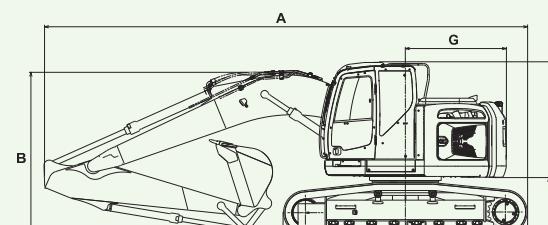
Dimensions

Arm length	9'5" (2.87 m)	Unit: ft-in (m)
A Overall length	29'0" (8,830)	
B Overall height (to top of boom)	9'10" (3,000)	
C Overall width of crawler	10'5" (3,190)	
D Overall height (to top of cab)	10'4" (3,160)	
E Ground clearance of rear end*	3'6" (1,030)	
F Ground clearance*	17.5" (455)	

G Tail swing radius	6'0" (1,840)**
H Tumbler distance	12'0" (3,660)
I Overall length of crawler	14'7" (4,450)
J Track gauge	7'1" (2,390)
K Shoe width	31.5" (800)
L Overall width of upperstructure	9'10" (2,990)

*Without including height of shoe lug

** With add-on type counterweight



Operating Weight & Ground Pressure

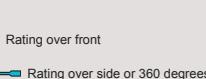
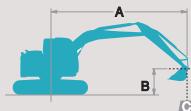
In standard trim, with standard boom, 9'5" (2.87 m) arm, and 1.05 cu.yd. (0.80m³) SAE heaped bucket

Shaped	Triple grouser shoes (even height)
Shoe width	31.5" (800)
Overall width of crawler	10'5" (3,190)
Ground pressure	5.66 (39)
Operating weight	55,100 (25,000)*

*With add-on type counterweight

Lifting Capacities

SK230SR_{LC}
SK230SRLC-3



A – Reach from swing centerline for bucket hook
B – Bucket hook height above/below ground
C – Lifting capacities in pounds

SK230SRLC	Arm: 9'5" (2.87 m)	Bucket: 1.05 cu.yd. (0.80 m ³) SAE heaped 1,460 lbs (660kg) Counterweight : 16,600 lbs (7,530 kg) Shoe: 31.5" (800 mm)										HEAVY LIFT	
		5'(1.5m)	10'(3.0m)	15'(4.6m)	20'(6.1m)	25'(7.6m)	At Max. Reach		Radius				
B	lb(kg)	lb(kg)	lb(kg)	lb(kg)	lb(kg)	lb(kg)	lb(kg)	lb(kg)	lb(kg)	lb(kg)	lb(kg)	lb(kg)	
25' (7.6m)	*13,410 (6,080)	*13,410 (6,080)	*11,500 (5,210)	11,190 (5,070)	*6,640 (3,010)	*6,640 (3,010)	*4,610 (2,090)	*4,610 (2,090)	260' (7.93m)	199' (6,04m)	199' (6,04m)	199' (6,04m)	
20' (6.1m)	*18,000 (8,160)	*18,000 (8,160)	*21,470 (9,730)	15,510 (7,030)	*15,750 (7,140)	10,060 (4,560)	11,660 (5,280)	7,110 (3,220)	*5,490 (2,490)	*5,490 (2,490)	276' (8.39m)	273' (8.31m)	
15' (4.6m)	*27,950 (12,670)	*27,950 (12,670)	*18,150 (8,230)	16,740 (7,590)	*14,160 (6,420)	10,640 (4,820)	9,670 (4,380)	7,390 (3,350)	*4,910 (2,220)	*4,910 (2,220)	252' (7.69m)	252' (7.69m)	
10' (3.0m)	*18,400 (8,340)	*18,400 (8,340)	*23,020 (10,440)	14,750 (6,690)	16,130 (7,310)	9,630 (4,360)	11,410 (5,170)	6,880 (3,120)	*6,520 (2,950)	6,170 (2,790)	261' (8.19m)	261' (8.19m)	
-5' (-1.5m)	*15,480 (7,020)	*15,480 (7,020)	*24,610 (11,160)	24,610 (11,160)	*22,490 (10,200)	14,460 (6,550)	15,890 (7,200)	9,420 (4,270)	*9,610 (4,350)	6,790 (3,070)	8,420 (3,810)	6,720 (3,040)	
-10' (-3.0m)	*22,620 (10,260)	*22,620 (10,260)	*27,880 (12,640)	*27,880 (12,640)	*19,900 (9,020)	14,540 (6,590)	*14,510 (6,580)	9,460 (4,290)			*12,330 (5,590)	8,090 (3,660)	224' (6.80m)
-15' (-4.6m)			*19,700 (8,930)	*19,700 (8,930)	*14,400 (6,530)	*14,400 (6,530)					*11,750 (5,320)	*11,750 (5,320)	177' (5.36m)

Notes:

- Do not attempt to lift or hold any load that is greater than these lift capacities at their specified lift point radius and heights. Weight of all accessories must be deducted from the above lift capacities.
- Lift capacities are based on machine standing on level, firm, and uniform ground. User must make allowance for job conditions such as soft or uneven ground, out of level conditions, side loads, sudden stopping of loads, hazardous conditions, experience of personnel, etc.
- Bucket lift hook is defined as lift point.

- The above lifting capacities are in compliance with SAE J/ISO 10567. They do not exceed 87 % of hydraulic lifting capacity or 75 % of tipping load. Lifting capacities marked with an asterisk (*) are limited by hydraulic capacity rather than tipping load.
- Operator should be fully acquainted with the Operator's and Maintenance Instructions before operating this machine. Rules for safe operation of equipment should be adhered to at all times.
- Lift capacities apply to only machines as originally manufactured and normally equipped by KOBELCO CONSTRUCTION MACHINERY CO., LTD.

STANDARD EQUIPMENT

ENGINE

- Engine, HINO J05E, Diesel engine with turbocharger and intercooler, Tier 4 interim certified
- Automatic engine deceleration
- Batteries (2 x 12V - 92Ah)
- Starting motor (24V - 5kW), 60 amp alternator
- Automatic engine shut-down for low engine oil pressure
- Engine oil pan drain cock
- Double element air cleaner

CONTROL

- Working mode selector (H-mode, S-mode and ECO-mode)
- Heavy Lift and Power Boost "without time limit"

SWING SYSTEM & TRAVEL SYSTEM

- Swing rebound prevention system
- Straight propel system
- Two-speed travel with automatic down shift
- Sealed & lubricated track links
- 31.5" (800mm) track shoes
- Grease-type track adjusters
- Automatic swing brake

MIRRORS & LIGHTS

- Three rear view mirrors and rearview camera
- Two front working lights
- Swing flashers

CAB & CONTROL

- ROPS cab
- Two control levers, pilot-operated
- Horn, electric
- Integrated left-right slide-type control box
- Ashtray
- Cab light (interior)
- Coat hook
- Luggage tray
- Large cup holder
- Detachable two-piece floor mat
- 7-way adjustable suspension seat
- Retractable seatbelt
- Headrest
- Handrails
- Heater and defroster
- Intermittent windshield wiper with double-spray washer
- Skylight
- Top guard
- Tinted safety glass
- Pull-type front window and removable lower front window
- Easy-to-read multi-display monitor
- Automatic air conditioner
- Emergency escape hammer
- Radio, AM/FM Stereo with speakers
- Travel alarm
- Drain pressure switch
- DPF regeneration switch
- 12V converter
- Add-on type counterweight (+1,400 kg)

OPTIONAL EQUIPMENT

- Boom & arm load (lock) holding valve
- Front-guard protective structures (May interfere with bucket action)
- Additional hydraulic circuit
- Cab additional light
- Rain visor (may interfere with bucket action)
- Control pattern changer (2 way)

Note: Standard and optional equipment may vary. Consult your KOBELCO dealer for specifics.

SPECIFICATIONS

HL960

Tier 4 Final Engine



*Photo may include optional equipment.

Net Power

222 HP (166 kW) / 2,200 rpm

Operating Weight

19,425 kg / 42,825 lb

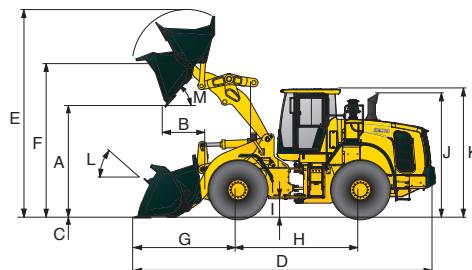
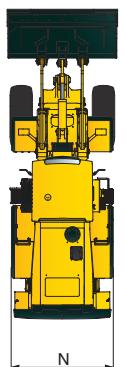
Standard Bucket3.3 m³ / 4.3 yd³

SPECIFICATIONS HL960

ENGINE		HYDRAULIC SYSTEM	
Make/model	CUMMINS / QSB6.7	Type	Load-sensing hydraulic system
Type	Watercooled, 4-cycle, turbocharged air-cooled, direct injection, electronically controlled diesel engine	Pump	Variable-displacement piston pump, 246 l/min (65 gpm)
Gross power	225 HP (168 kW) / 2,200 rpm	Control valve	2-spool (bucket, boom) 3-spool (bucket, boom, aux)
Net power	222 HP (166 kW) / 2,200 rpm	System pressure	280 kgf/cm ² (3,983 psi)
Maximum torque	106 kg·m (770 lb·ft) / 1,500 rpm	Lift circuit	Valve has four functions: raise, hold, lower and float Can adjust automatic kick-out from horizontal to full lift
No. of cylinders	6	Tilt circuit	Valve has three functions: tilt back, hold and dump Can adjust automatic bucket positioner to desired load angle
Bore x stroke	107 mm (4.21") x 124 mm (4.88")	Cylinder	Type: Double acting No. of cylinders-bore x stroke: HL960: 2-140 mm (5.5") x 765 mm (30.1") HL960XT: 1-160 mm (6.3") x 530 mm (20.9")
Displacement	6.7 l (408 in ³)	Cycle times	Raise: 5.9 sec Dump: 1.3 sec Lower: 3.1 sec Total: 10.3 sec
Compression ratio	17.3 : 1		
Air cleaner	Dry, 2-stage dual elements		
Alternator	24 V - 95 Amp		
Battery	2 x 12 V - 160 Ah, 900 CCA		
Starting motor	24 V - 7.8 kW		
TRANSMISSION		BRAKES	
Torque converter type	3-element, single-stage, single-phase	Service brakes	Hydraulically actuated, wet-disc brakes actuate all 4 wheels Independent axle-by-axle system Self-adjusting and wheel speed brake
* Fully automatic power shift, countershaft type with soft-shift in range and direction.			
Travel speed, km/h (mph)	4 speed T/M	5 speed T/M with lockup clutch	Parking brake
			Spring-applied, hydraulically released brake
Forward	1st	6.4 (4.0)	Emergency brake
	2nd	12.1 (7.5)	When brake oil pressure drops, indicator light alerts operator, and parking brake automatically applies
	3rd	24.3 (15.1)	
	4th	39.5 (24.5)	
	5th	40.0 (24.9)	
Reverse	1st	6.7 (4.2)	
	2nd	12.7 (7.9)	
	3rd	25.6 (15.9)	
AXLES		STEERING SYSTEM	
Drive system	Four-wheel drive system	Type	Load-sensing hydrostatic articulated steering
Mount	Rigid front axle and oscillating rear axle	Pump	Variable-displacement piston pump, 120 l/min (32 gpm)
Rear axle oscillation	±11° center pin-loaded	Relief valve setting	250 kgf/cm ² (3,556 psi)
Hub reduction	Planetary reduction at wheel end	Cylinder	Double acting 2-75 mm (2.9") x 424 mm (16.7")
Differential	Hyd Lock (front) / Conventional (rear)	Steering angle	40° both right and left angle, respectively
Reduction ratio	24.666	Additional features	Center-point frame articulation Tilt and telescopic steering column
OVERVIEW		SERVICE REFILL CAPACITIES	
Description	UNIT	HL960	HL960XT
Operating weight	kg (lb)	19,425 (42,825)	19,600 (43,211)
Bucket capacity	Heaped Struck	m ³ (yd ³) m ³ (yd ³)	3.3 (4.3) 2.9 (3.8)
Breakout force–bucket		kg (lb)	16,670 (35,160)
Tipping load	Straight	kg (lb)	12,700 (27,999)
	Full turn	kg (lb)	10,900 (24,030)
TIRES		Fuel tank	300 l (79.3 gal)
Type	Tubeless, loader design tires	DEF tank	27 l (7.1 gal)
Standard	23.5 R25, L3	Cooling system	42 l (11.1 gal)
Options include	23.5-25, 20 PR, L3	Crankcase	18 l (4.8 gal)
	23.5-25, 20 PR, L5	Transmission	33 l (8.7 gal)
	23.5, R25 XHA2, L3 20.5-25, 16PR, L3	Front axle	35 l (9.2 gal)
		Rear axle	35 l (9.2 gal)
		Hydraulic tank	110 l (29.1 gal)
		Hydraulic system (including tank)	200 l (52.8 gal)

DIMENSIONS

All dimensions are approximate.



Description	UNIT	HL960	HL960XT
Bucket type	General purpose bolt-on cutting edge		
A. Dumping clearance at max. height and 45° dump angle	mm (ft-in)	2,935 (9' 7.5")	3,365 (11' 0.5")
B. Reach	Full lift 2,134 mm height (7 feet)	mm (ft-in)	1,295 (4' 3.0")
C. Digging depth	mm (in)	90 (3.5")	145 (5.7")
D. Overall length	on ground at carry	mm (ft-in)	8,140 (26' 8.5")
		mm (ft-in)	8,030 (26' 4.1")
		mm (ft-in)	8,695 (28' 6.3")
		mm (ft-in)	8,530 (27' 11.8")

Description	UNIT	HL960	HL960XT
E. Overall height (fully raised)	mm (ft-in)	5,640 (18' 6.0")	6,070 (19' 11.0")
F. Bucket pivot height (max)	mm (ft-in)	4,105 (13' 5.6")	4,535 (14' 10.5")
G. Front overhang	mm (ft-in)	2,810 (9' 2.6")	3,275 (10' 8.9")
H. Wheelbase	mm (ft-in)	3,300 (10' 9.9")	3,300 (10' 9.9")
I. Ground clearance	mm (ft-in)	410 (1' 4.1")	410 (1' 4.1")
J. Height over exhaust	mm (ft-in)	3,360 (11' 0.3")	3,360 (11' 0.3")
K. Height over cab	mm (ft-in)	3,450 (11' 3.8")	3,450 (11' 3.8")
L. Rollback angle	deg	42	42
M. Dump angle	deg	47	48
Clearance circle, over bucket (carry position)	mm (ft)	13,150 (43.14)	13,600 (44.62)
Clearance circle, outside of tires	mm (ft)	11,836 (38.83)	11,836 (38.83)
Clearance circle, inside of tires	mm (ft)	6,368 (20.89)	6,368 (20.89)
N. Overall width	mm (ft-in)	2,900 (9' 6.2")	2,900 (9' 6.2")
	without bucket	mm (ft-in)	2,770 (9' 1.1")
	with bucket	mm (ft-in)	2,770 (9' 1.1")

HL960 / DENSITY OF OPERATING MATERIALS

		Material Density
Loose material		
Earth/clay		1.5~1.7 tons / m ³ (2,528~2,865 lb / yd ³)
Sand and gravel		1.5~1.7 tons / m ³ (2,528~2,865 lb / yd ³)
Aggregate	25~76 mm (1" to 3")	1.6~1.7 tons / m ³ (2,697~2,865 lb / yd ³)
	19 mm (3") and larger	1.8 tons / m ³ (3,034 lb / yd ³)

HL960 / DENSITY OF OPERATING MATERIALS

Lift arm	Bucket	Type	m ³ (yd ³)	Material Density [t/m ³] (lb/yd ³)												
				1.0 (1,686)	1.1 (1,854)	1.2 (2,023)	1.3 (2,191)	1.4 (2,360)	1.5 (2,528)	1.6 (2,697)	1.7 (2,865)	1.8 (3,034)	1.9 (3,203)	2.0 (3,371)	2.1 (3,540)	2.2 (3,708)
Standard lift-arm	General Purpose	Cutting edge	3.3 (4.3)						3.8 m ³ (5.0 yd ³)					3.1 m ³ (4.0 yd ³)		
		Cutting edge	3.5 (4.5)						4.0 m ³ (5.2 yd ³)					3.3 m ³ (4.3 yd ³)		
		1-piece bolt-on tooth	3.2 (4.2)						3.7 m ³ (4.8 yd ³)					3.0 m ³ (3.9 yd ³)		
		1-piece bolt-on tooth	3.4 (4.4)						3.9 m ³ (5.1 yd ³)					3.2 m ³ (4.2 yd ³)		
		2-piece bolt-on tooth	3.2 (4.2)						3.7 m ³ (4.8 yd ³)					3.0 m ³ (3.9 yd ³)		
		2-piece bolt-on tooth	3.4 (4.4)						3.9 m ³ (5.1 yd ³)					3.2 m ³ (4.2 yd ³)		
		2-piece bolt-on tooth and segment edge	3.3 (4.3)						3.8 m ³ (5.0 yd ³)					3.1 m ³ (4.0 yd ³)		
High-lift arm (XT)	General Purpose	Cutting edge	3.3 (4.3)						3.8 m ³ (5.0 yd ³)					3.1 m ³ (4.0 yd ³)		
		Cutting edge	3.5 (4.5)						4.0 m ³ (5.2 yd ³)					3.3 m ³ (4.3 yd ³)		
		1-piece bolt-on tooth	3.2 (4.2)						3.7 m ³ (4.8 yd ³)					3.0 m ³ (3.9 yd ³)		
		1-piece bolt-on tooth	3.4 (4.4)						3.9 m ³ (5.1 yd ³)					3.2 m ³ (4.2 yd ³)		
		2-piece bolt-on tooth	3.2 (4.2)						3.7 m ³ (4.8 yd ³)					3.0 m ³ (3.9 yd ³)		
		2-piece bolt-on tooth	3.4 (4.4)						3.9 m ³ (5.1 yd ³)					3.2 m ³ (4.2 yd ³)		
		2-piece bolt-on tooth and segment edge	3.3 (4.3)						3.8 m ³ (5.0 yd ³)					3.1 m ³ (4.0 yd ³)		

115% 100% 95%

18.3 priedas

CAB & INTERIOR	STD	OPT	CAB & INTERIOR	STD	OPT	POWER TRAIN	STD	OPT
Alternator, 95 Amp	•		Cab (sound suppressed and pressurized) with			Tires		
Alarms, audible and visual			Cigar lighter and ashtray	•		23.5 R25, L3	•	
Air filter clogging	•		Coat hook	•		23.5 - 25, 20PR, L3		•
Transmission error	•		Automatic climate control			23.5 - 25, 20PR, L5		•
Battery voltage	•		Air conditioner and heater	•		23.5 R25, XHA2, L3		•
Brake oil pressure	•		Defroster	•		20.5-25, 16PR, L3		
Engine oil pressure	•		Intermittent wiper and washer, front and rear	•		Travel speed limiter (20-40 km/h)	•	
Parking brake	•		Seat					
Fuel level	•		3" retractable seat belt and adjustable air suspension (heated)	•		HYDRAULIC SYSTEM	STD	OPT
Hydraulic oil temperature	•		Personal storage space			Boom kick-out, automatic	•	
Coolant temperature	•		Console box	•		Bucket positioner, automatic	•	
Transmission oil temperature	•		Holder, can and cup	•		Diagnostic pressure taps	•	
Service brake oil pressure	•		Rearview mirrors (1 inside)	•		Hydraulic oil cooler	•	
Coolant level	•		Rearview mirrors (2 outside)	•		Hydraulic control, 3 spool	•	
Water in fuel	•		Rearview mirrors (2 outside, heated)	•		Joystick control (EH control)	•	
Alarm, backup	•		Steering column, tilt and telescopic	•		Lever control-single axis (EH control)	•	
Batteries, PT			Steering wheel with knob	•		Joystick steering	•	
900 CCA, 12V, (2)	•		Roller type sunshade (front window)	•		Ride control system	•	
Gauges			Tinted safety glass	•		Secondary steering system	•	
Engine coolant temperature	•		One door cab	•		Extra piping for auxiliary function	•	
Fuel level	•		Magazine pocket	•		Quick coupler piping	•	
Speedometer	•		Pedals			Auto grease system	•	
Transmission oil temperature	•		One accelerator pedal	•				
Horn, electric	•		One brake pedal	•		OTHER	STD	OPT
Indicator lights			Dual-brake pedal	•		Articulation locking bar	•	
T/C lockup	•		Radio / USB player	•		Counterweight	•	
High beam	•		Bluetooth	•		Additional counterweight		•
Turn signal	•		Miracast	•		Door and cab locks, one key	•	
FNR joystick steering	•		Rubber floor mat	•		Doors, service access (locking)	•	
Pilot cutoff	•		Armrest	•		Drawbar with pin	•	
LCD display			24-volt to 12-volt DC converter (20A)	•		Ergonomically located and slip resistant, left & right	•	
Clock and fault code	•					Handrails	•	
Operating hour counter	•					Ladders	•	
Engine rpm	•					Platforms	•	
Transmission gear range	•					Steps	•	
Indicator	•		ENGINE	STD	OPT	Hydraulic oil level sight gauge	•	
Job time and distance	•		Engine, Cummins QSB6.7			Lift and tie-down hooks	•	
Temperature (coolant, hydraulic oil, t/m oil)	•		Tier 4 Final / Stage 4	•		Loader linkage, sealed	•	
Lighting system			Engine enclosure, lockable	•		Z-bar design	•	
LED dome light	•		Engine fuel priming pump	•		Vandalism protection caplocks	•	
2 stop and taillights	•		Fan guard	•		Toolkit		•
4 turn signals	•		Reversible cooling fan	•		Tooth, 1 piece, bolt-on type	•	
Brake lights (counterweight)	•		Fuel/water separator	•		Tooth, 2 pieces, bolt-on type	•	
2 headlights on front tower	•		Antifreeze	•		Cutting edge, bolt-on type	•	
2 working lights on front roof	•		Clean emission module			Pallet forks	•	
4 working lights on front roof, 2 working lights on rear roof	•		DOC and SCR	•		Guards		
4 working lights (2 xenon) on front roof, 2 working lights on rear roof	•		Radiator	•		Crankcase		•
4 working lights (LED) on front roof, 2 working lights (LED) on rear roof	•		Starting aid (air intake heater)	•		Transmission		•
2 working lights on grille	•		Fuel heater	•		Half fenders front and rear	•	
Switches			Coolant-level sight gauge	•		Full rear fenders		•
Hazard	•		Engine oil-level dipstick gauge	•		Wheel chock		•
Ignition	•		Fuel heater (dual)	•		License plate & lamp		•
Parking	•		Air cleaner with auto dust eject	•		Hi-Mate remote management system		
Battery master switch	•		3-stage air precleaner	•		Mobile	•	
FNR	•					Satellite	•	
Diff lock	•		POWER TRAIN	STD	OPT			
SCR cleaning / inhibit	•		Brakes: service, enclosed wet-disc	•		SAFETY	STD	OPT
Secondary steering test	•		Parking brake	•		Beacon light, rotating		•
Pilot cutoff	•		Torque converter	•		Fire extinguisher		•
Integrated monitor switches			Transmission F4 / R3, computer-controlled, electronic soft-shift, auto-shift and kick-down features	•		Operator suit		•
Main light switch	•		Transmission F5 / R3 with lockup clutch	•		Rearview camera	•	
Work light switch	•		Transmission oil sight level	•				
Auto grease switch	•		Limited-slip differential (front, rear)	•		* Standard and optional equipment may vary. Contact your Hyundai dealer for more information. The machine may vary according to International standards.		
Quick coupler switch	•		Transmission oil cooler	•		* The photos may include attachments and optional equipment that are not available in your area.		
Ride control switch	•		Transmission oil cooler with thermostat	•		* Materials and specifications are subject to change without advance notice.		
Work load switch	•		Hydraulic lock differential (front) / Conventional differential (rear)	•		* All imperial measurements rounded off to the nearest pound or inch.		
Beacon lamp switch	•		Front axle cooling system	•				
Rear wiper switch	•		Hydraulic lock differential (front) / Limited-slip differential (rear)	•				
Mirror heat switch	•							
Auto position switch	•							
Fine modulation switch	•							

PLEASE CONTACT



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Printed in U.S.A.

1001-WL-SP 2/2018v4

EC Declaration of Conformity

1. We hereby declare that the following machine complies with the machine directive 2006/42/EC, EMC-directive 2004/108/EC, Non Road Mobile Machinery emission directive 97/68/EC (amended by 2002/88/EC, 2004/26/EC, 2006/105/EC) and noise emission 2000/14/EC (amended by 2005/88/EC).

Wheelloader

Model :	HL960
Serial Nr. :	HHKHW600KG0000137
Production year :	2016

2. Manufacturer : **Hyundai Heavy Industries Co.Ltd.**
1 Chonha-Dong, Dong-Ku, Ulsan, The Republic of Korea

Authorized representative : **Hyundai Heavy Industries Europe N.V.**
 Owner of the technical file for
 machine production (TCF : Technical
 Construction File) **Vossendaal 11**
2240 Geel
Belgium

3. Harmonized European directives : **EN474-1:2006, EN474-3:2006, EN ISO 2867:2008, ISO 7096 : 2000,**
EN ISO 6682:2008, ISO 6683:2008, EN ISO 2860:2008, EN ISO 3450:2008,
EN ISO 3457:2003, ISO 5006:2006

4. Noise level :
 Certificat Nr. : **e13*2000/14*2005/88*0059*06Rev.01**
 Date : **31/10/2006**
 Conformity assessment procedure : **Attachment VIII following the periodical inspection on technical documentation extended with "Information on the scope of delivery" by TÜV Rheinland.**
 Authorized entity: **Société Nationale de Certification et d'Homologation s.à r.l CE0499**
11, route de Luxembourg
5230 Sandweiler
Luxemburg
 Engine Power : **166 kW**
 Measured sound power level : **106 dB (A)**
 Guaranteed sound power level : **105 dB (A)**

5. Remarks :

J. C. Jung

Managing director

Place and date of issue :


Geel Belgium 21/06/2016

|| HEAVY MACHINES LITHUANIA



UAB „Lemminkainen Lietuva“

2017-03-31

INFORMACIJA DĖL RATINIO FRONTALINIO KRAUTUVO HYUNDAI HL960 VARIKLIO

Jūsų įmonės eksploatuojamame ratiniame frontaliniame krautuve HYUNDAI HL960, serijos Nr. HHKHW600KG0000137, gamykos gamintojos sumontuotas CUMMINS QSB 6.7 (FR94949), serijos Nr. 22176664, variklis.

Šiuo raštu informuojame Jus, kad krautuvo variklis atitinka EU Stage IV variklio išmetamujų dujų emisijos standartus.

Variklio išmetamujų dujų emisijos atitikties sertifikatai pateikiami papildomuose dokumentuose.

Serviso vadovas

Gintautas Šiaulyt

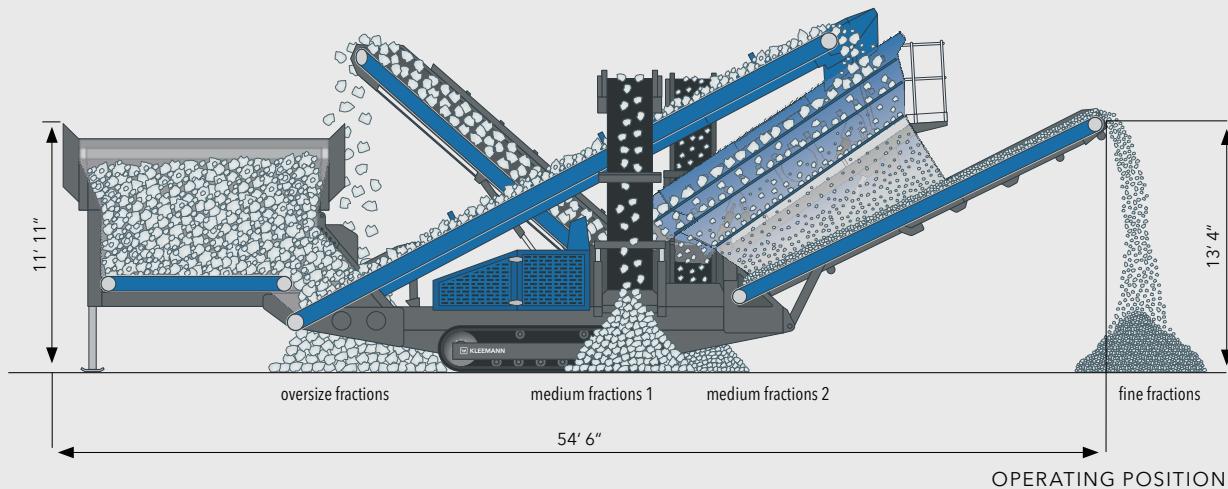


KLEEMANN

TECHNICAL SPECIFICATIONS | TRACK-MOUNTED SCREENING PLANT

MOBISCREEN MS 16 D





TECHNICAL HIGHLIGHTS

- Triple-deck screening unit
- Diesel-hydraulic drive
- Classifying screen for four final products
- Max. feed size: 6"

TECHNICAL SPECIFICATIONS MS 16 D - US SPEC

Feeding unit

Feed capacity up to approx. (US t/h)	386
Feed size max. (inch)	6"
Feed height (inch)	11' 11"
Hopper capacity (yd ³)	10.5

Belt conveyor feeder

Width x length (inch)	4' x 11' 6"
Type (optional)	variable speed

Feeding belt conveyor screen

Width x length (inch)	3' 5" x 31' 6"
-----------------------	----------------

Screening unit

Type	triple-deck vibration screen
Top deck width x length (inch)	5' x 14'
Middle deck width x length (inch)	5' x 14'
Bottom deck width x length (inch)	5' x 12'

Bottom deck underflow discharge conveyor (fine fractions)

Width x length (inch)	4' x 20' 8"
Discharge height approx. (inch)	13' 4"

Bottom deck overflow discharge conveyor (medium fractions 1)

Width x length (inch)	2' 2" x 29' 10"
Discharge height approx. (inch)	15' 1"

Middle deck overflow discharge conveyor (medium fractions 2)

Width x length (inch)	2' 2" x 29' 10"
Discharge height approx. (inch)	15' 1"

Belt conveyor oversize fractions

Width x length (inch)	2' 2" x 6'
-----------------------	------------

Top deck overflow discharge conveyor (oversize fractions)

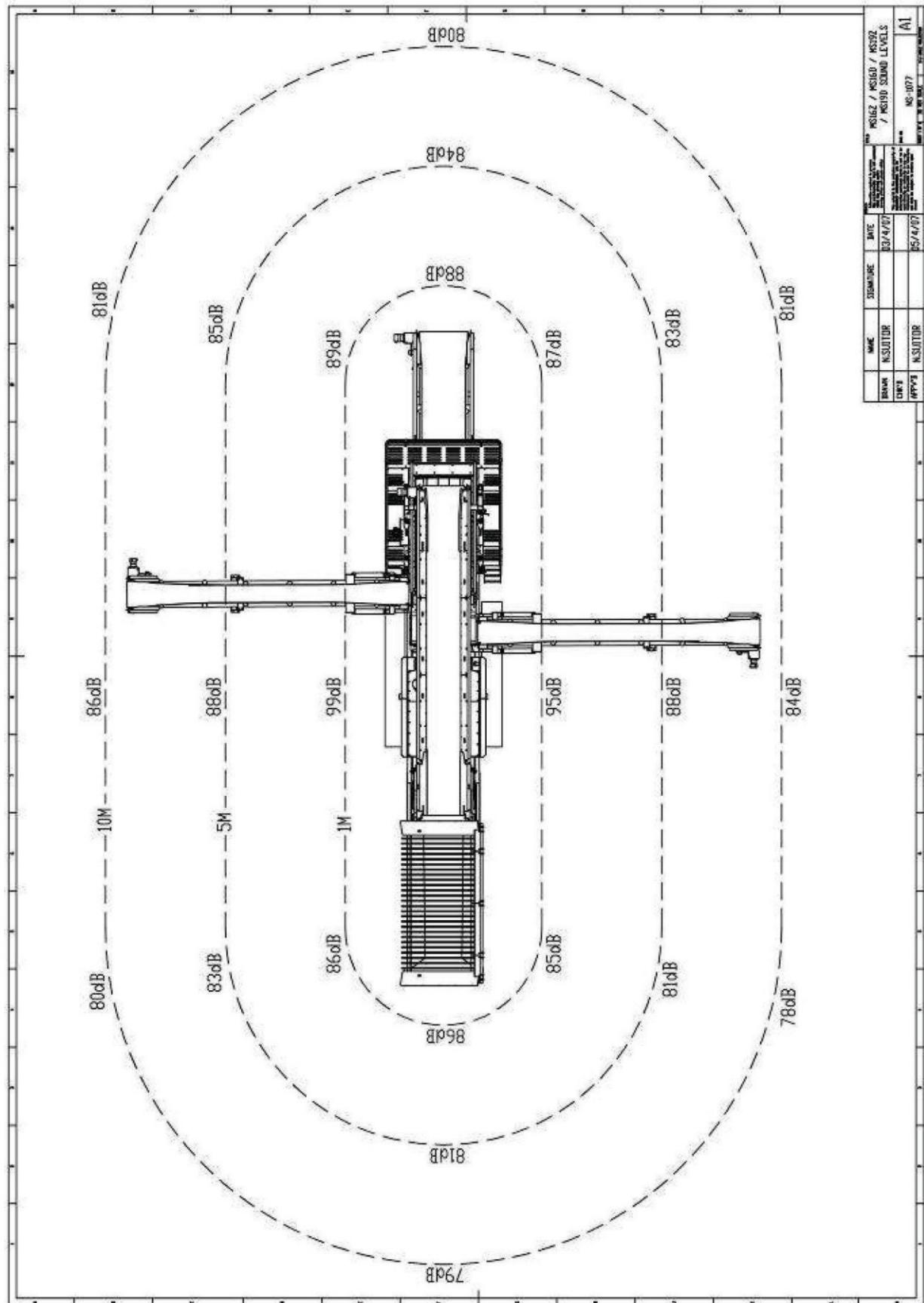
Width x length (inch)	1' 8" x 28'
Discharge height approx. (inch)	16'

Drive

Drive concept	diesel-hydraulic
Powerpack CAT (Tier 4f/Stage IV) (hp)	100

Transport

Transport height approx. (inch)	11' 4"
Transport length approx. (inch)	51' 3"
Transport width approx. (inch)	10' 2"
Transport weight approx. (lbs)	62,800



Sijotuvo Kleemann Mobicreen MS 16D skleidžiamo triukšmo schema

TGS 6x6 chassis

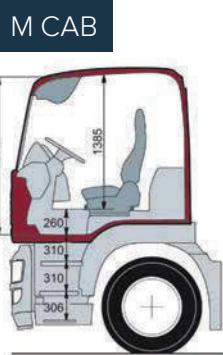
► M Cab



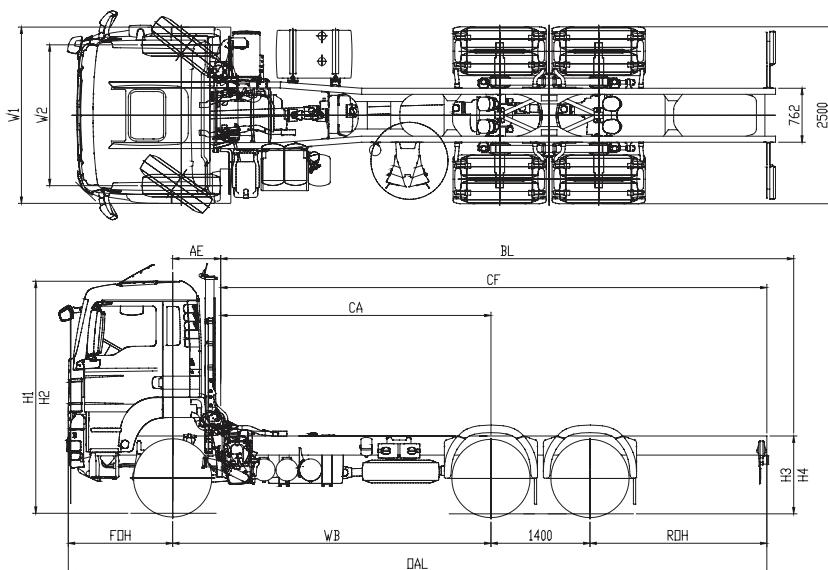
ENGINEERED TO SAVE YOU MONEY ►

MAN

SPECIFICATION DATA



GVM 33,000kg GCM: 90,000



	M CAB WEIGHTS				TURNING CIRCLE			
Wheelbase	Front (kg)	Rear (kg)	Total (kg)		Kerb to Kerb (m)	Wall to Wall (m)		
3600mm	5360		4830		10190		18.5	
4500mm	5415		4985		10400		21.3	

	DIMENSIONS						MAX	EMPTY	LOADED	EMPTY	LOADED		
Wheelbase	FOH	ROH	OAL	AE	CA	CF	BL	H1	H2	H3	H4	W1	W2
3600mm	1492	1500	7992	650	2950	5850	5930	3344	3279	1170	1100	2490	2240
4500mm	1492	2500	9892	650	3850	7750	7670	3344	3279	1170	1100	2490	2240

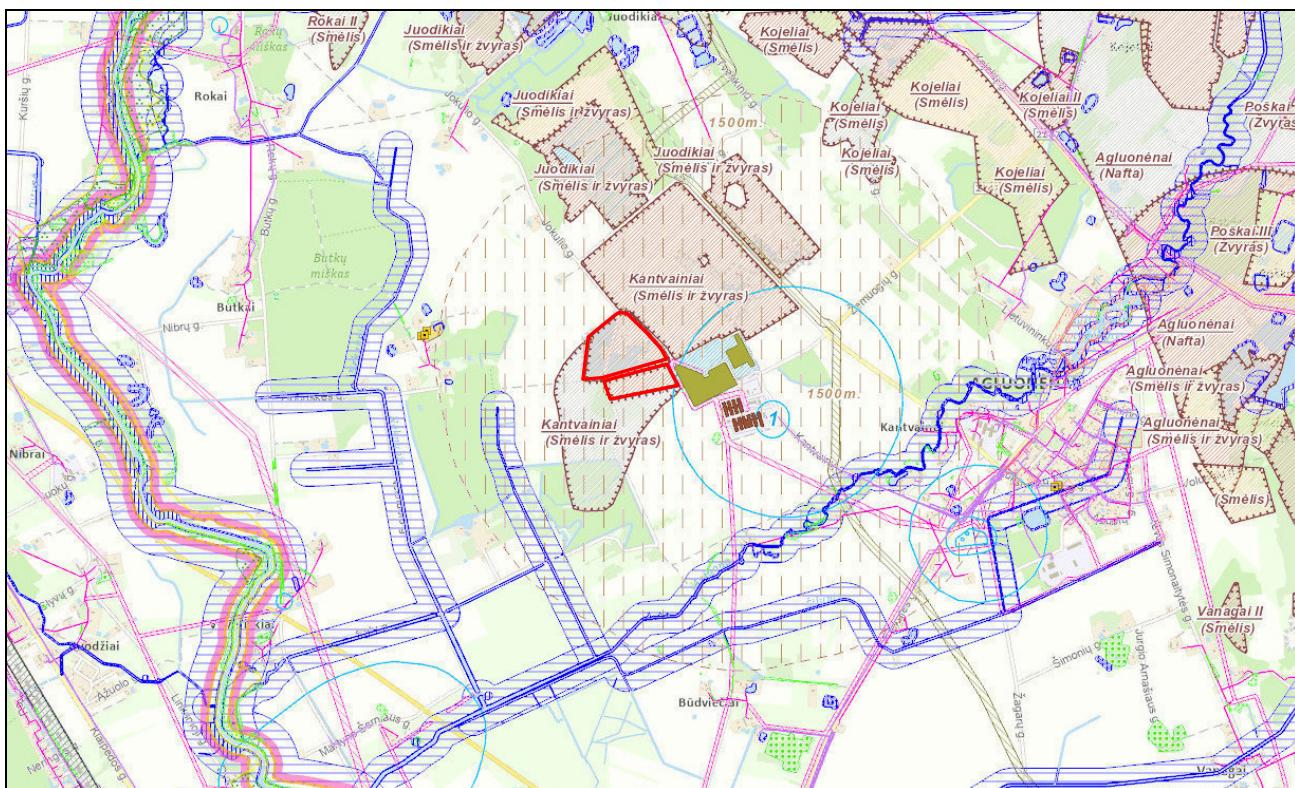
	ENGINE SPECIFICATIONS					TRANSMISSION SPECIFICATIONS			
Engine HP	Model	Power Rating		Torque		Model	Transmission Ratios	Standard Differential Ratio	
440HP	MAN D20 10.5 Ltrs	324kW @ 1600 - 1900rpm		2100Nm @ 1000 - 1400 rpm		ZF 12 AS 2330 OD	12.33 - 0.78	4.00	

- All above weights and dimensions are subject to confirmation and may vary depending on final specification. Manufacturing weight tolerance +/- 3%.
- State and Federal regulations over ride information supplied on this brochure.
- Vehicle images in this specification sheet are for illustration purposes only.
- Maximum body length is calculated using a rear overhang of 60% of the wheelbase to a maximum of 3.7m.
- Tare weight includes 100 litres of fuel, spare wheel and steel wheels.
- Specifications are subject to change without notice. Copyright © 2014, MAN Automotive Imports Pty Ltd.

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Sutartiniai ženklai

A116P	Kultūros paveldo objektas, registro kodas		Miško naudojimo apribojimai
	Kultūros paveldo objektas		Požeminių ryšių kabelio apsaugos zona
	Natura 2000 teritorijos riba (buveinių apsaugai svarbi teritorija)		Saugotinas želdinys (medžiai ir krūmai) augantis ne miškų ūkio paskirties žemėje
	Draustinio riba		Išžvalgyti naudingujų iškasenų telkiniai, kurių ištakliai patvirtinti
	Vandens telkiniių pakrančių apsaugos juosta 2 - pakrantės apsaugos juostos plotis, m		Perspektyvūs naudingujų iškasenų plotai
	Vandens telkinio apsaugos zona		Požeminių vandens telkiniių (vandenkiečių) sanitarinės apsaugos zonas
	Vandens telkiniių pakrančių apsaugos juosta		
	Pastatas, kuriame laikomi ūkiniai gyvūnai		
	Mėšlo ir srutų kaupimo įrenginys		
	Pastatų, kuriuose laikomi ūkiniai gyvūnai, su esančiais prie jų mėšlo ir srutų kaupimo įrenginiais arba bejų, sanitarinės apsaugos zona		
	Kelio apsaugos zona, 10 - zonos plotis, m		
	Elektros oro linijos apsaugos zona		
	Magistralinio dujotiekio apsaugos zona		
	Planuojami naudoti Kantvainių smėlio ir žvyro telkinio nauji plotai		

19 priedas. Išbraiža iš Lietuvos Respublikos teritorijos specialiųjų žemės naudojimo sąlygų erdvinio duomenų rinkinio SŽNS_DR10LT M 1:10000