

Application of CLS for Construction Machinery



Navigation

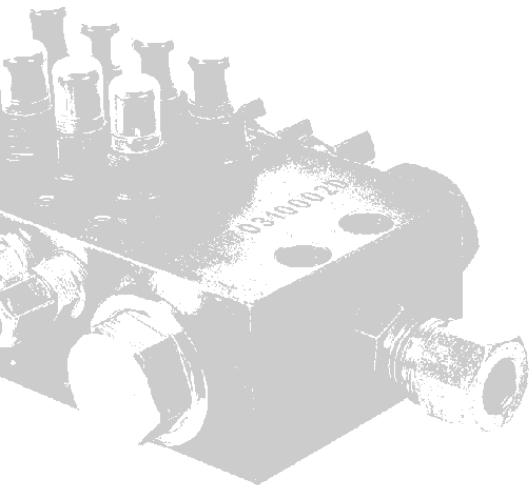
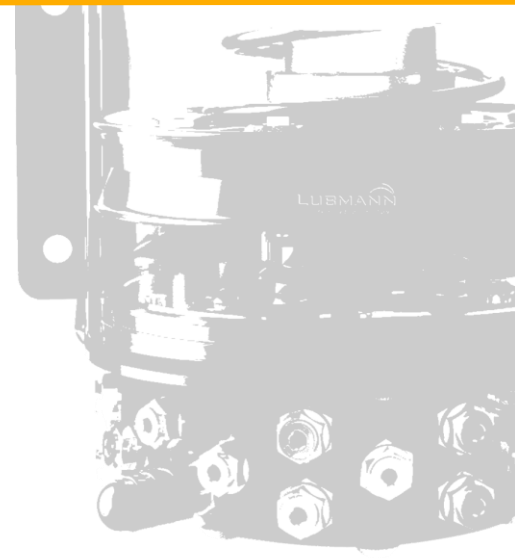
Introduction

System Overview

Application

Show Cases

Grease Gun/Grease Refilling Device



Introduction - Brands

Lubmann

Lubmann belongs to AUTOL Group, which locates in Duisburg, Germany since 2015 and provides you the world's leading lubrication equipment made in Germany – from manual greasing devices and tools to Automatic Lubrication Systems.



AUTOL

AUTOL is an Automatic Lubrication System Solution supplier which established in 2005 in Zhengzhou, China and provides a lot of world class's equipment/machinery manufacturers the high-performance lubrication solutions.



AUTOL Group

Both AUTOL and Lubmann systems are available through our global network of lubrication experts, offering you world-class installation and ongoing support on a local level – today and into the future. With the power of this network, and more than 200 years of combined friction management experience, we can help you improve machine reliability, reduce maintenance, increase productivity, enhance safety and optimize manpower resources.



In this document, we present the contents only for Lubmann products, including specifications, order information and so on. Any information from AUTOL products please ask your local AUTOL/Lubmann dealer.

Introduction - General Knowledge of Automatic Lubrication System

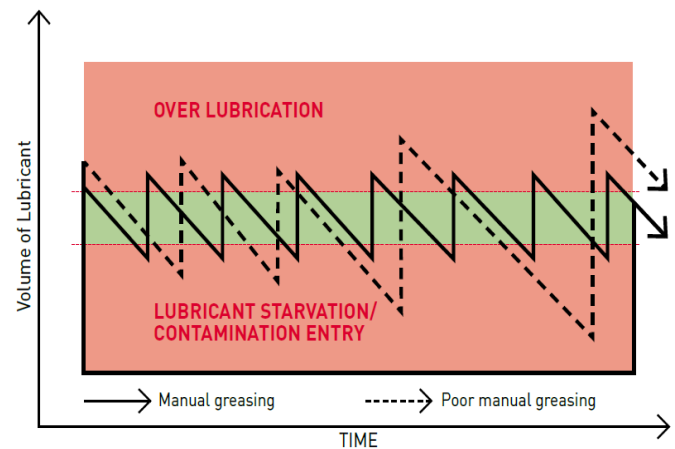
Manual Lubrication

- **Interval:** long and irregular.
- **Grease used:** too much per time and easy to degrade.
- **Friction pairs:** either grease excess or grease starvation.
- **Manual labor:** intensive and uncontrollable.
- **External dirt:** easy to enter lube points.
- **Operation time:** machines stop.
- **Point location:** some are not easy to access.

Results

- **Components' life:** greatly shortened.
- **Downtime:** unavoidable.
- **Environment:** polluted for excess grease.
- **Lubrication effect:** no guarantee.

Manual Greasing



Automatic Lubrication

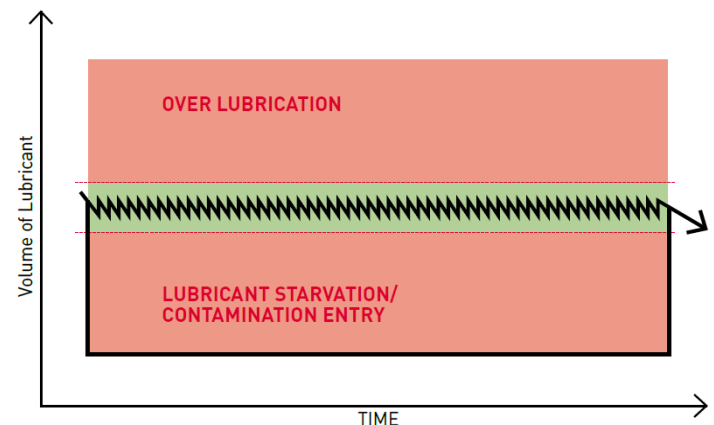
- **Interval:** short and regular.
- **Grease used:** as required every time, fresh and clean.
- **Friction pairs :** under adequate grease condition.
- **Manual labor:** save 95%, and actual effect is guaranteed.
- **External dirt:** a closed system, no dirt entrance.
- **Operation time:** the machine is running.
- **Point location:** regardless of location or ease of access

Results

- **Components' life:** greatly extended.
- **Downtime:** greatly reduced
- **Environment:** protected.
- **Lubrication effect:** guarantee.
- **Investment:** returned quickly

Save time, save grease, save labor, reduce maintenance cost.

Automatic Greasing



System Overview - Progressive (Grease)

The progressive centralized lubrication system connects all levels of distributor (main block, secondary blocks) in turn by lubricating pump, conveys the grease to each lubricating point parallelly, and lubricates the friction pair.

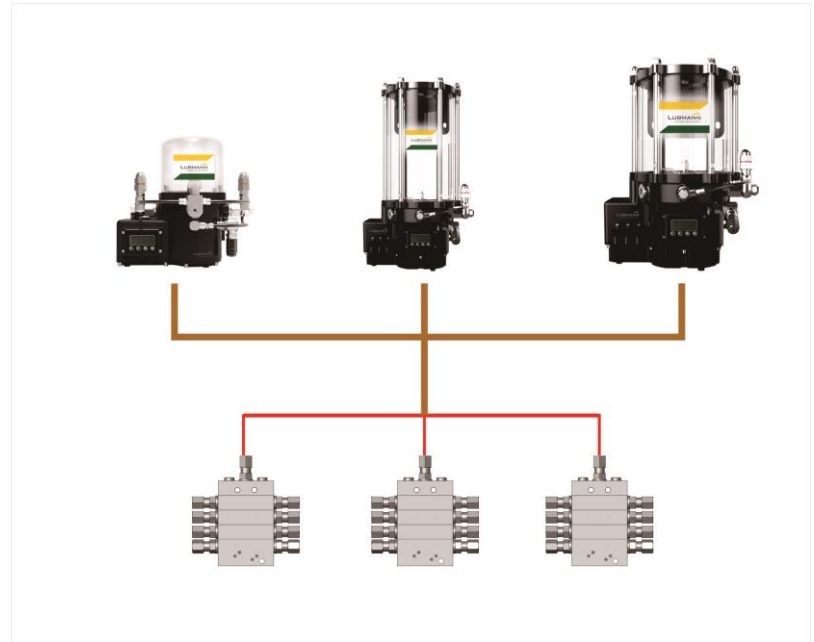
Components

Standard:

- Piston pump: 1 piece (Progressive, Plunger)
- Primary distributor: 1 piece (Block Type/Progressive)
- Secondary distributor: Optional (Block Type/Progressive)
- Monitor: Integrated in Pump/External

Optional:

- Indicator Rod
- Grease Level Sensor
- Pressure Sensor
- Flowrate Sensor



Accessories: Hoses and Fittings for connecting the whole system

Product	Function Principle	Grease Thickness till	Metering Quantity per Pump Element	Reservoir	Operating Max. Pressure	Operating Max. Pressure	Power Supply	Max. Pump Elements
			ml/Min		in bar	in psi		
LEP	Piston Pump/Paddle Mode	Up to 2	1.5-4.5	1-2	350 bar	5075	12/24 V DC 220V AC	3
LRMP	Piston Pump/Paddle Mode	Up to 2	1.5-4.5	2-8	350 bar	5075	12/24 V DC 220V AC	3
LRBP	Piston Pump/Paddle Mode	Up to 2	1.5-4.5	4-20	350 bar	5075	12/24 V DC 220V AC	4
LIGP	Piston Pump	Up to 2	400	60/100	400 bar	5800	220/380 AC	1
LIMP	Piston Pump/Spring Mode	Up to 2	1.5-4.5	2-8	350 bar	5075	12/24 V DC 220V AC	3
LIBP	Piston Pump/Spring Mode	Up to 2	1.5-4.5	4-20	350 bar	5075	12/24 V DC 220V AC	4

System Overview - Single Line (Grease)

The Single Line centralized lubrication system connects all levels of distributor (main block, secondary blocks) in turn by lubricating pump, conveys the grease to each lubricating point in series, and lubricates the friction pair.

Components

Standard:

Piston pump: 1 piece (Single Line, Plunger)

Single Line Distributor: X pieces in Series

Monitor: Integrated in Pump/External

Optional:

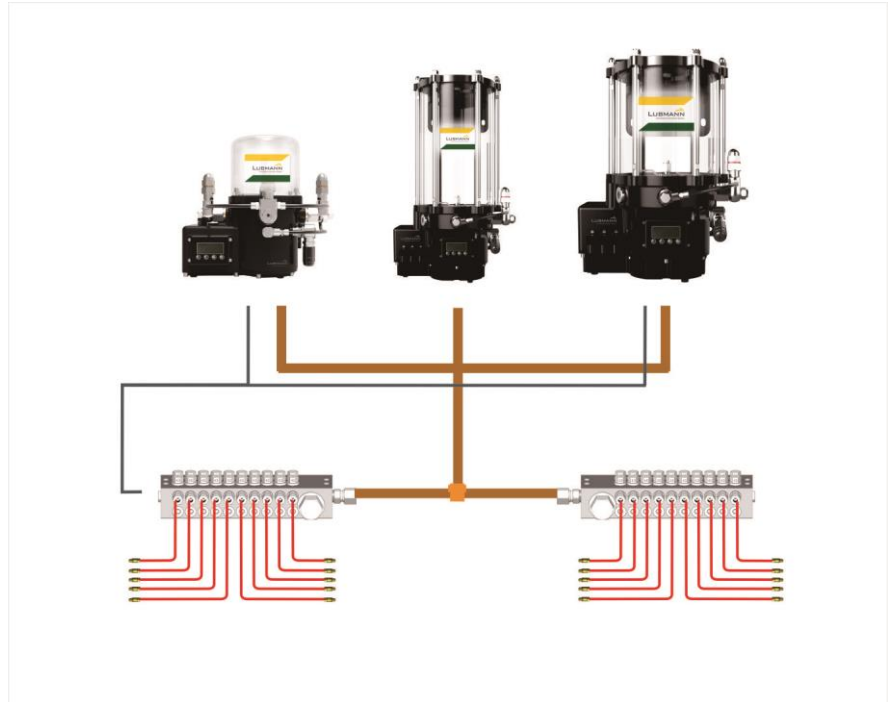
Grease Level Sensor

Pressure Sensor

Flowrate Sensor

Accessories:

Hoses and Fittings for connecting the whole system



Product	Function Principle	Grease Thickness till	Metering Quantity per Pump Element	Reservoir	Operating Max. Pressure in bar	Operating Max. Pressure in psi	Power Supply	Max. Pump Elements
			ml/Min	Liter				
LIMS	Piston Pump/Spring Mode	Up to 2	1.5-4.5	2-8	350 bar	5075	12/24 V DC 220V AC	3
LIBS	Piston Pump/Spring Mode	Up to 2	1.5-4.5	4-20	350 bar	5075	12/24 V DC 220V AC	4

System Overview - Dual Line (Grease)

The Dual Line centralized lubrication system has a variety of connections. System can be decided according to the actual demand. The distributors can be connected in series, parallel and mixed connection.

Components

Standard:

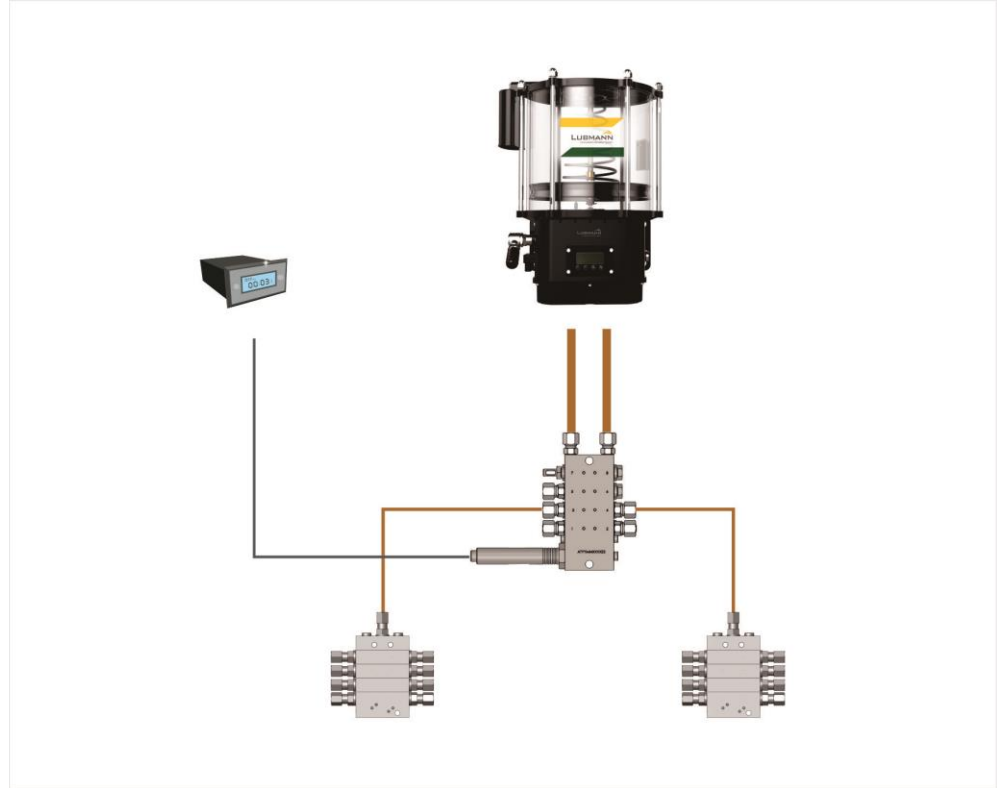
- Piston pump: 1 piece (Dual Line, Plunger)
- Dual Line Distributor: X pieces in Series
- Progressive Distributor: optional X pieces
- Monitor: Integrated in Pump/External

Optional:

- Grease Level Sensor
- Pressure Sensor
- Flowrate Sensor

Accessories:

- Hoses and Fittings for connecting the whole system



Product	Function Principle	Grease Thickness till	Metering Quantity per Pump Element ml/Min	Reservoir Liter	Operating Max. Pressure in bar	Operating Max. Pressure in psi	Power Supply	Pump Elements
LID	Piston Pump/Spring Mode	Up to 2	12	4/8/10	300 bar	4350	12/24 V DC 220V AC	2

System Overview – Pressurized Single Line (Oil/Fluid Grease)

Grease pump delivers grease alternatively into each lube points through progressive distributors.

Components

Standard:

Piston pump: 1 piece (Single Line, Gear)

Pressurized Single Line Distributor:

X pieces in Series

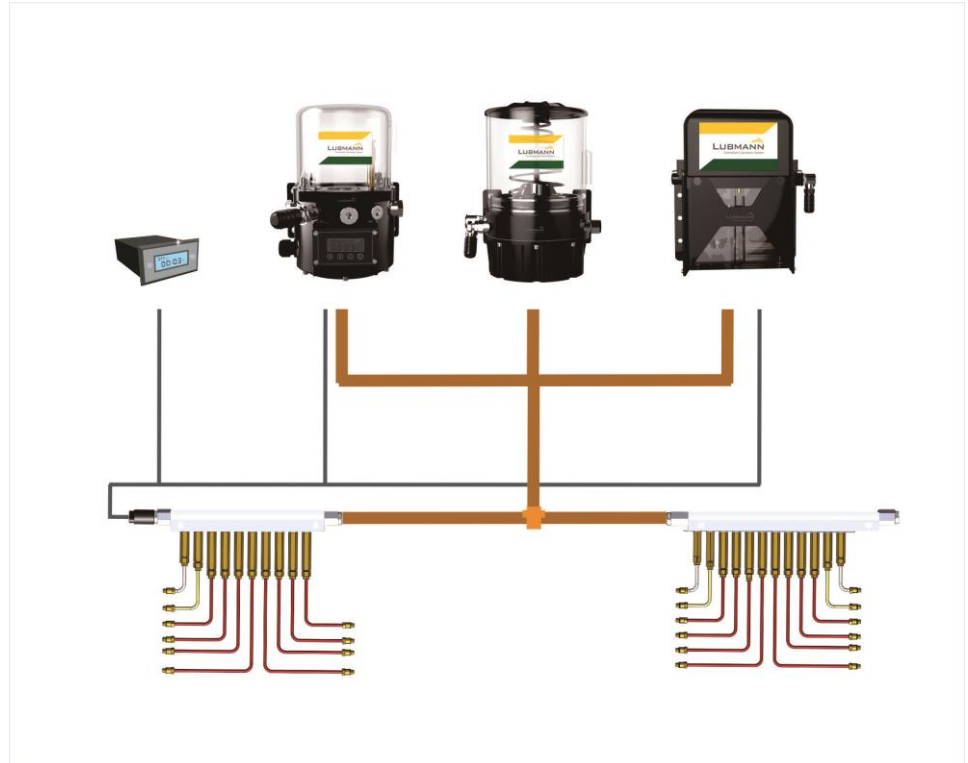
Optional:

Grease Level Sensor

Pressure Sensor

Flowrate Sensor

Monitor: Optional/External



Accessories:

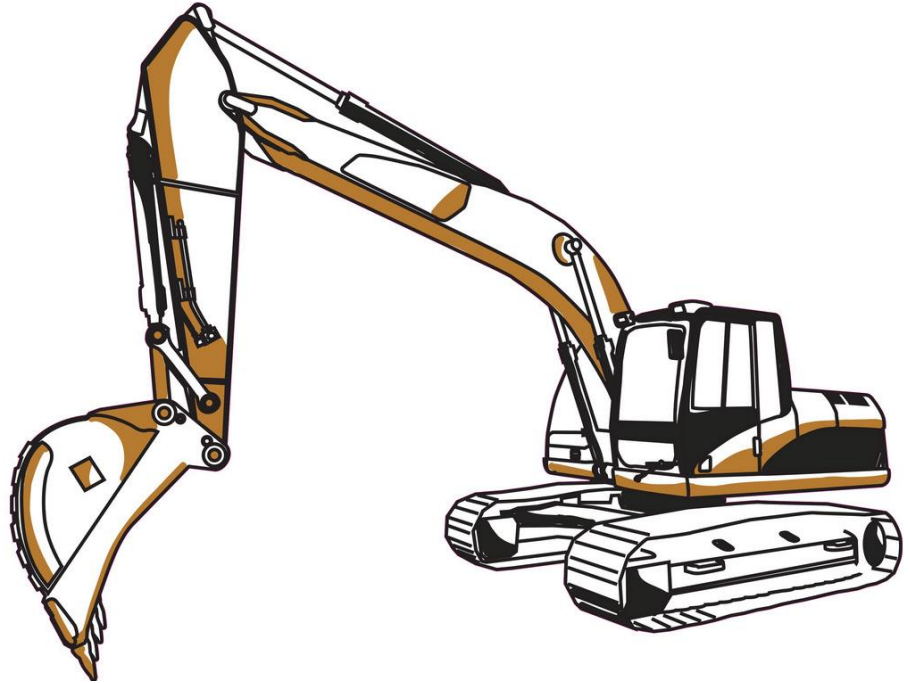
Hoses and Fittings for connecting the whole system

Product	Function Principle	Grease Thickness till	Metering Quantity per Pump Element	Reservoir	Operating Max. Pressure	Operating Max. Pressure	Power Supply	Max. Pump Elements
			ml/Min		in bar	in psi		
LFS-1	Gear Pump/Paddle Mode	Up to 0	90	1	40 bar	751	12/24 V DC 220V AC	1
LFS-2	Gear Pump/Paddle Mode	Up to 0	55	2	63 bar	923	12/24 V DC 220V AC	1
LFS-3	Gear Pump/Spring Mode	Up to 0	120	2.8	40 bar	751	12/24 V DC 220V AC	1

Application - Excavator

Recommended Discharge Rate for Greasing Points for Excavator

Name of Greasing Point	Number of Greasing Points	Required Discharge (ml/Min)
Root of Boom Cylinder	2-3	0.18
Top of Boom Cylinder	2	0.10
Root of Boom	2	0.18
Rotating Bearing	1-3	0.05
Root of Arm Cylinder	1	0.12
Top of Arm Cylinder	1	0.12
Root of Arm	1	0.18
Root of Bucket Cylinder	1	0.08
Top of Bucket Cylinder	1	0.23
Connector of Bucket-Arm	2	1.80
Connector of Bucket-Arm Cylinder (Top)	2	0.28
Connector of Bucket-Arm Cylinder (Bottom)	2	0.28



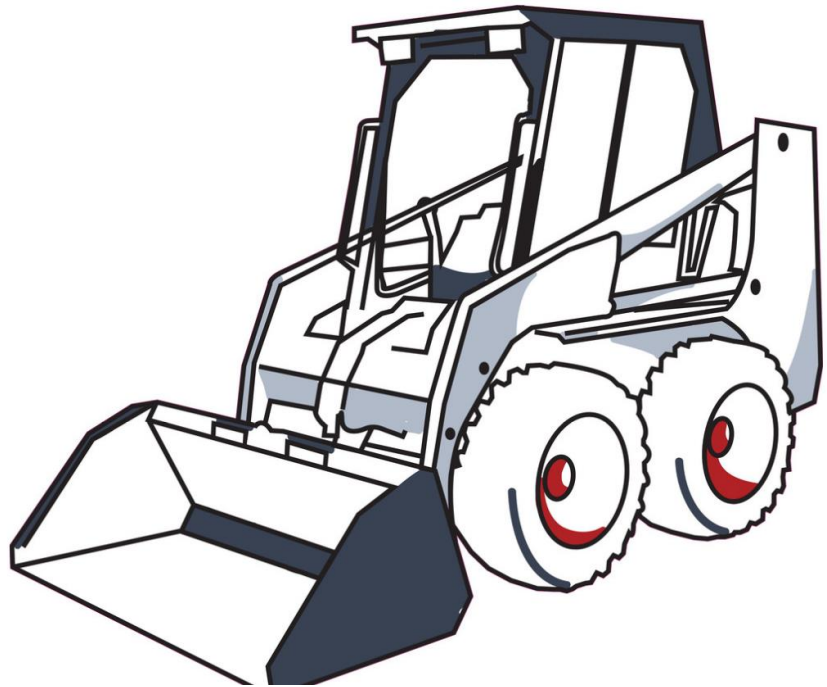
Recommended System Configuration for Excavator

Type of Machine	Ton in KG	No. of Greasing Points	Solutions	Extra Components Recommended
Compact Excavator	From 3,500-6,000	13-17	Compact Solu.: Automatic Electrical Greasing Gun + 2 LR-VPKA Blocks, High Perf.: LEP Serie Pump + 3 LR-VPKA Blocks.	Grease Level Sensor / Indicator Rod
Middle Size Excavator	From 7,000-26,000	17-22	Compact Solu.: LEP Serie Pump + 4 LR-VPKA Blocks. High Perf.: LRMP Serie Pump + 4 LR-VPKA Blocks.	Grease Level Sensor / Pressure Sensor / Indicator Rod / Manual or Electrical Grease Refilling Device
Large Size Excavator	From 26,000-45,000	19-25	Compact Solu.: LRMP Serie Pump + 4 LR-VPKA Blocks. High Perf.: LID Serie Pump + 4 Mixed Blocks.	Grease Level Sensor / Pressure Sensor / Indicator Rod / Manual Greasing Inlet on Blocks / Manual or Electrical Grease Refilling Device
Huge Size Excavator	Over 45,000	22-28	Compact Solu.: LIMP Serie Pump + 4 LR-VPKA Blocks. High Perf.: LID Serie Pump + 4 Mixed Blocks.	Grease Level Sensor / Pressure Sensor / Indicator Rod / Manual Greasing Inlet on Blocks / Manual or Electrical Grease Refilling Device

Application – Wheel Loader

Recommended Discharge Rate for Greasing Points for Wheel Loader

Name of Greasing Point	Number of Greasing Points	Required Discharge (ml/Min)
Back Axel	2	0.28
Middle Steering Top	1	0.38
Middle Steering Cylinder Front	2	0.13
Middle Steering Cylinder Back	2	0.18
Middle Steering Mid	2	0.18
Middle Steering Bottom	2	0.38
Root of Boom	2	0.25
Root of Boom Lift Cylinder	2	0.40
Top of Boom Lift Cylinder	2	0.20
Root of Bucket Cylinder	1	0.14
Top of Bucket Cylinder	1	0.18
Connector of Bucket-Bucket Links	1	0.55
Connector of Bucket Links-Bucket Bellcranks	1	1.40
Middle of Bucket Bellcranks	2	0.40
Connector of Bucket-Boom	2	0.28



Recommended System Configuration for Wheel Loader

Type of Machine	Ton in KG	No. of Greasing Points	Solutions	Extra Components Recommended
Compact Wheel Loader	From 1,500-3,500	19-22	Compact Solu.: Automatic Electrical Greasing Gun + 2 LR-VPKA Blocks, High Perf.: LEP Serie Pump + 3 LR-VPKA Blocks.	Grease Level Sensor / Indicator Rod
Middle Size Wheel Loader	From 3,500-6,000	19-23	Compact Solu.: LEP Serie Pump + 4 LR-VPKA Blocks. High Perf.: LRMP Serie Pump + 4 LR-VPKA Blocks.	Grease Level Sensor / Pressure Sensor / Indicator Rod / Manual or Electrical Grease Refilling Device
Large Size Wheel Loader	From 6,000-12,000	19-23	Compact Solu.: LRMP Serie Pump + 4 LR-VPKA Blocks. High Perf.: LID Serie Pump + 4 Mixed Blocks.	Grease Level Sensor / Pressure Sensor / Indicator Rod / Manual Greasing Inlet on Blocks / Manual or Electrical Grease Refilling Device
Huge Size Wheel Loader	Over 12,000	19-25	Compact Solu.: LIBP Serie Pump + 4 LR-VPKA Blocks. High Perf.: LID Serie Pump + 4 Mixed Blocks.	Grease Level Sensor / Pressure Sensor / Indicator Rod / Manual Greasing Inlet on Blocks / Manual or Electrical Grease Refilling Device

Application - Backhoe

Recommended Discharge Rate for Greasing Points for Backhoe

	Name of Greasing Point	Number of Greasing Points	Required Discharge (ml/Min)
Loader Side	Root of Loader Lifter Cylinder	2	Please ask our staffs for more details
	Top of Loader Lifter Cylinder	1	
	Root of Loader Lifter Links	2	
	Top of Loader Lifter Links	2	
	Mid of Loader Lifter Links	2	
	Root of Loader Arm	2	
	Root of Loader Bucket Cylinder	1-2	
	Top of Loader Bucket Cylinder	1-2	
	Middle of Bucket Links	2	
	Connector of Bucket Links-Bucket	2	
	Connector of Bucket Links-Loader Arm	2	
	Connector of Loader Arm-Bucket	2	
Backhoe Side	Swing Cylinder Back	2	
	Swing Cylinder Front	2	
	Stabilizer Arm & Cylinder	2	
	Steering Bottom	1	
	Steering Top	1	
	Root of Backhoe Boom	1	
	Root of Backhoe Boom Cylinder	1	
	Top of Backhoe Boom Cylinder	1	
	Root of Backhoe Arm	1	
	Root of Backhoe Arm Cylinder	1	
	Top of Backhoe Arm Cylinder	1	
	Root of Backhoe Bucket Cylinder	1	



Recommended System Configuration for Backhoe

Type of Machine	Ton in KG	No. of Greasing Points	Solutions	Extra Components Recommended
Compact Wheel Loader	Under 5,000	33-35	Compact Solu.: Automatic Electrical Greasing Gun + 7 LR-VPKA Blocks, High Perf.: LEP Serie Pump + 7 LR-VPKA Blocks.	Grease Level Sensor / Indicator Rod / Switch for Backhoe-Loader Side
Middle Size Wheel Loader	Over 5,000	33-38	Compact Solu.: LEP Serie Pump + 7 LR-VPKA Blocks. High Perf.: LRMP Serie Pump + 7 LR-VPKA Blocks.	Grease Level Sensor / Pressure Sensor / Indicator Rod / Manual or Electrical Grease Refilling Device / Switch for Backhoe-Loader Side

Application – Others of Construction Machinery



Bulldozer



Mining Truck



Screener



Forklift



Reach Stacker



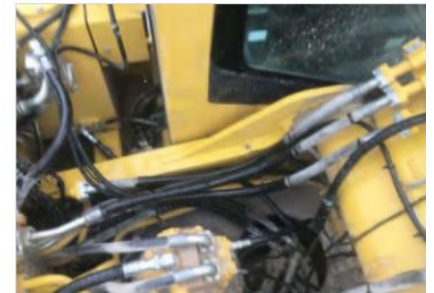
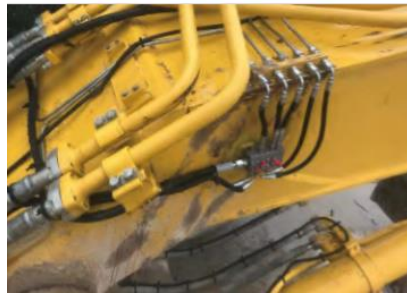
Crane

Type of Machine	Solutions	Extra Components Recommended
Bulldozer	Compact Solu.: LRMP Serie Pump+ LR-VPKA Blocks, High Perf.: LID Serie Pump + Mixed Blocks.	Grease Level Sensor / Pressure Sensor / Indicator Rod
Mining Truck	Compact Solu.: LFS Serie Pump+ LRK-SLA Blocks, High Perf.: LID Serie Pump + Mixed Blocks.	Grease Level Sensor / Pressure Sensor / Indicator Rod / Manual or Electrical Grease Refilling Device
Screener	Compact Solu.: LRMP Serie Pump + LR-VPKA Blocks. High Perf.: LID Serie Pump + Mixed Blocks.	Grease Level Sensor / Pressure Sensor / Indicator Rod / Manual or Electrical Grease Refilling Device
Reach Stacker	Compact Solu.: LRMP Serie Pump + LR-VPKA Blocks. High Perf.: LID Serie Pump + Mixed Blocks.	Grease Level Sensor / Pressure Sensor / Indicator Rod
Forklift	Compact Solu.: Automatic Electrical Greasing Gun + LR-VPKA Blocks. High Perf.: LEP Serie Pump + LR-VPKA Blocks.	Grease Level Sensor / Pressure Sensor / Indicator Rod
Truck Crane	Compact Solu.: LRMP Serie Pump + LR-VPKA Blocks. High Perf.: LID Serie Pump + Mixed Blocks.	Grease Level Sensor / Pressure Sensor / Indicator Rod / Manual or Electrical Grease Refilling Device

Show Cases - Construction Machinery Application

CLS for large size Excavator

Manufacturer: Komatsu
Equipment: 360 Excavator
Installation Date: 2017.10
Lubrication System: Progressive
Pump: LRMP 6 Liter
Block: SSVA



CLS for middle size Wheel Loader

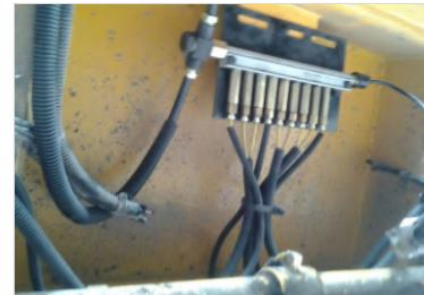
Manufacturer: Doosan
Equipment: DL503-9C Wheel Loader
Installation Date: 2017.06
Lubrication System: Progressive
Pump: LRMP 2 Liter
Block: SSVA



Show Cases - Construction Machinery Application

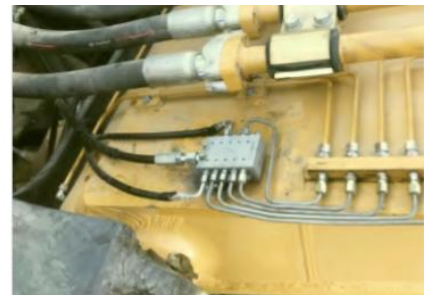
CLS for Mining Truck

Manufacturer: Ginaf
Equipment: HD5395 TS
Installation Date: 2014.04
Lubrication System: Pressurized Single Line
Pump: LFS3 (External Monitor)
Block: LRK-SLA



CLS for huge size Excavator

Manufacturer: Sany
Equipment: SY750 Excavator
Installation Date: 2018.03
Lubrication System: Progressive
Pump: LIMP 6 Liter
Block: SSVA



Grease Gun/Grease Refilling Device

Grease Gun (Portable Grease Device)

Product Model (Ordering Codes)	Working Principle	Grease	Operating Pressure Max.	Discharge Max.		Reservoir	Attached Accessories
		NLGI	Mpa	ml/Min	ml/Stroke	cc	
AMG1000	Manual	Up to 2	10		2	500	Nipple, Hose
AMG2000	Manual		10		2	500	Nipple, Hose
AMG3000	Manual		10		500 (only for CLS pump)	500	Nipple, Hose
APG1000	Pneumatic		6-8	70		600	Nipple, Hose
APG2000	Pneumatic		6-8	70		400	Nipple, Hose, one rechargeable cartridge
AEG1012	Electrical		45	60		500	Nipple, Hose, Battery
AEG1018	Electrical		57.5	70		500	Nipple, Hose, Battery
AEG1024	Electrical		70	80		500	Nipple, Hose, Battery

Grease Refilling Device (Pump)

Product Model (Ordering Codes)	Working Principle	Grease	Operating Pressure Max.	Discharge Max.		Reservoir	Attached Accessories
		NLGI	Mpa	ml/Min	ml/Stroke	L	
AMP1000	Manual	Up to 2	20-25		5	16	Nipple, Hose
AMP2000	Manual		20-25		5	12	Nipple, Hose
APP1000	Pneumatic		30-40	850		12	Nipple, Hose
APP2000	Pneumatic		30-40	850		30	Nipple, Hose
AEP1012T	Electrical 12V		40	350		18	Nipple, Hose
AEP1024T	Electrical 24V		40	350		18	Nipple, Hose
AEP1220T	Electrical 220V		40	350		18	Nipple, Hose
AEP1012B	Electrical 12V		40	350		18	Nipple, Hose
AEP1024B	Electrical 24V		40	350		18	Nipple, Hose





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