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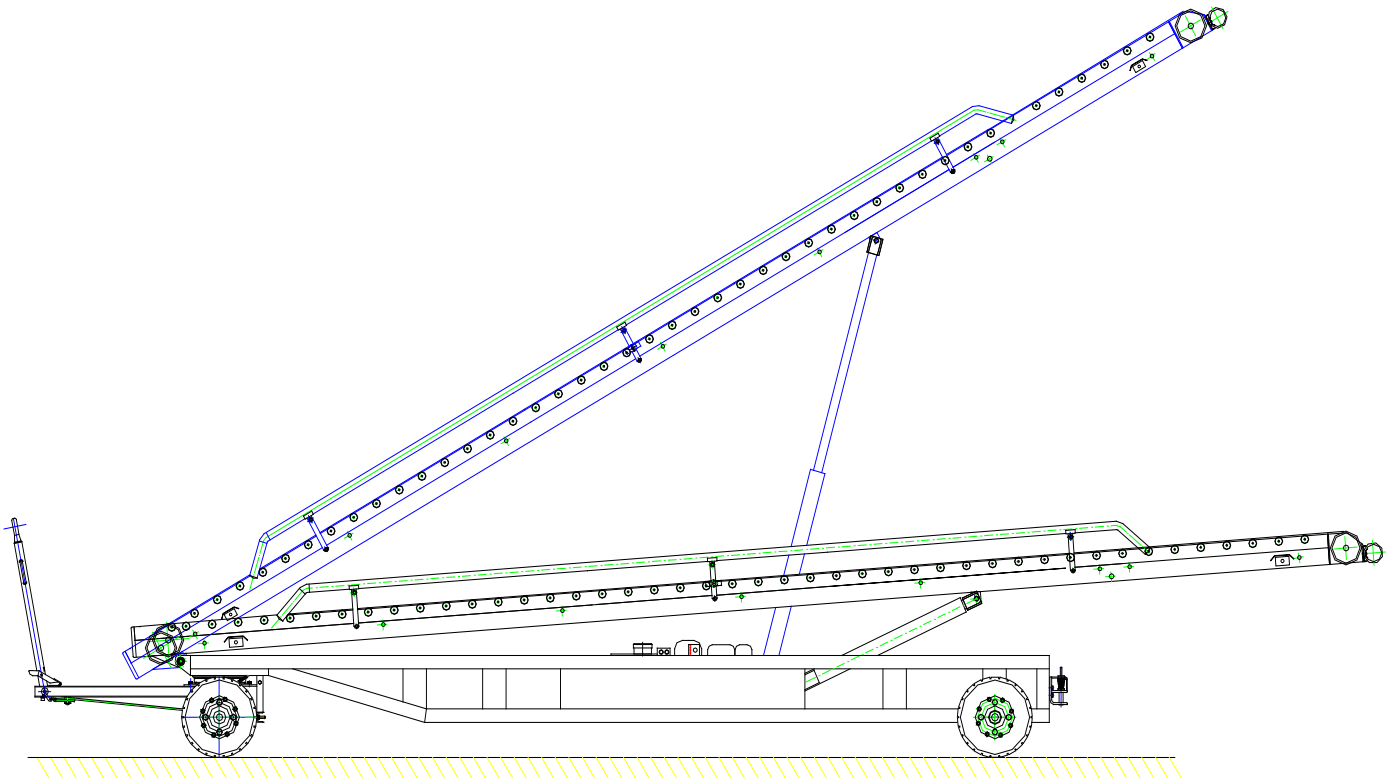

LABEL DATA

TYPE	DATE	SERIAL NUMBER
3750 SC	12.2007	345120701-09

CLIENT	AEROFLOT
S.NO	S-0345
DATE	12.2007

DENGE MAKİNA SAN.TİC.LTD.ŞTİ

ISTANBUL-TURKEY

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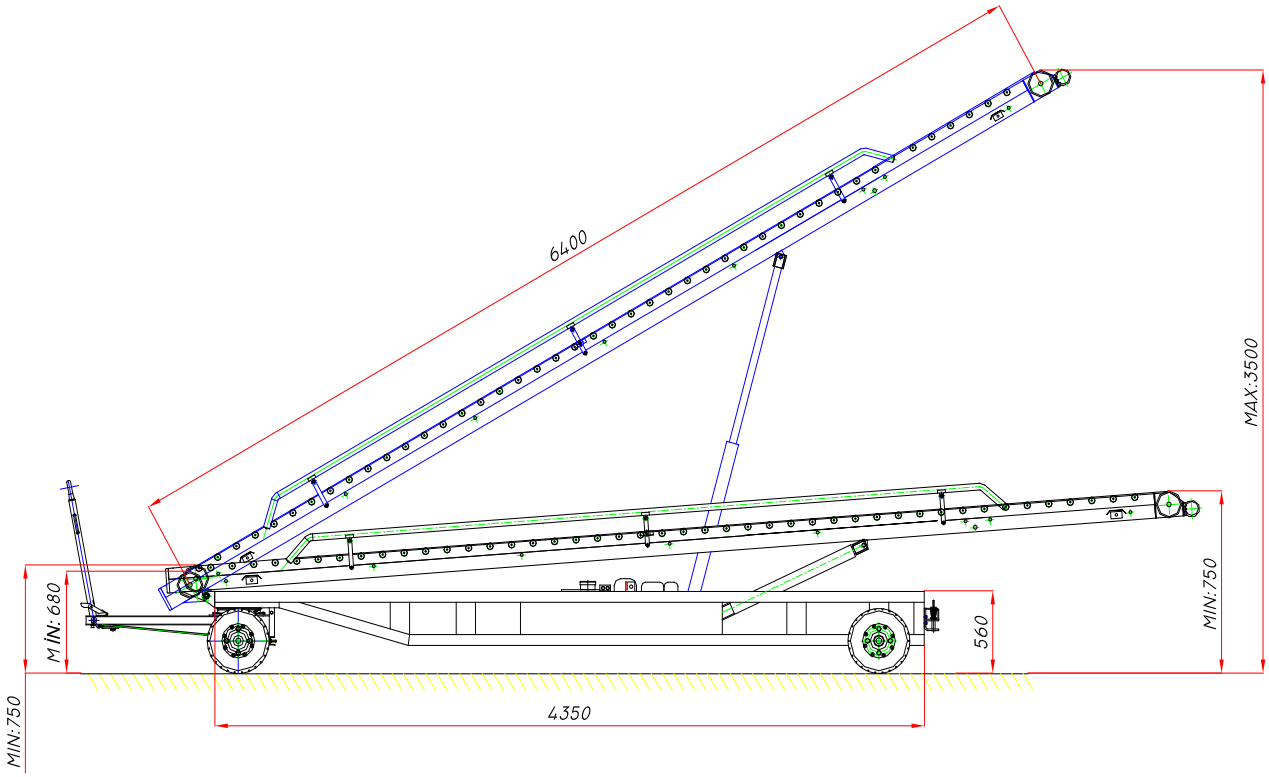
CONVEYOR BELT
ISSUE 2007



TECHNICAL DATA	
Lenght of Beam	6400 mm
Belt Lenght	13130 mm
Belt Width	590 mm
Belt Type	Ammeral Beltech SBR EF 16/2 O+C37 Black
Min. Height	Front : 750 mm Rear: 1200 mm
Max. Height	Front : 705 mm Rear: 3750 mm
Max. Payload	Single Load 400 kg Overal 1000 kg
Chassis	Hot-dip galvanized
Wheel	5.00x8 Pneumatic
Engine	GX390 HONDA
Height	1165 Kg

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TRAILER TYPE BELT CONVEYOR

(ONE CYLINDER)

TYPE: 3750 SC

ISSUE: 2007

TRAILER TYPE BELT CONVEYOR
(ONECYLINDER)
TYPE:3750 SC
ISSUE: 2007

BRIEF DESCRIPTION

This Belt Conveyor is equipped with 1 cylinder to provide the operators several operation heights on front edges of the conveyor (ramp side/aircraft side)

Complete chassis of the belt conveyor is hot-dip galvanized to protect from corrosion in long run and this belt conveyor is painted on top due to customer's choice.

Columns and banisters are made of stainless steel AISI 304 quality.
This belt conveyor offers a simple and comfortable operation to operators with its strong chassis and user friendly control panels.

Major aim of Denge designs is to provide a product which will be competitive in Quality, Ease to use, 0 level maintenance cost and high efficiency during operation.

OPERATING INSTRUCTION

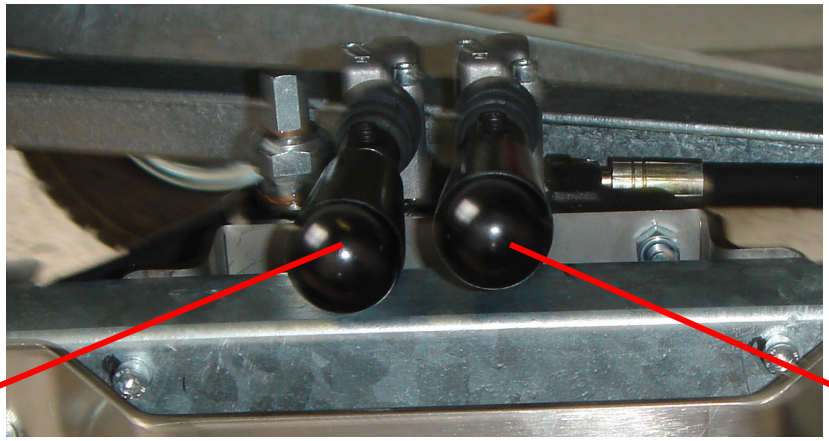
Engine Starting

- Check the oil and fuel level before starting the engine.
- Use minimum 90 octane gasoline.
- Ensure that suction ball valve at hydraulic line is open.

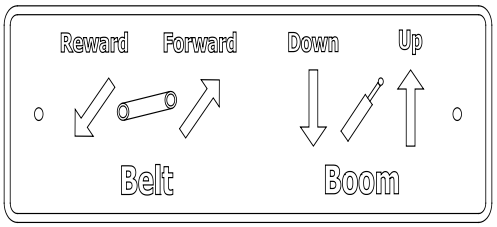
1. Turn the fuel valve to ON position.
2. Move the throttle lever slightly to left
3. Pull the choke lever (especially when engine is cold).
4. Turn the engine start switch to ON position.
5. Pull the starter grip lightly until resistance is felt, then pull briskly.
6. As soon as the engine starts, release the choke lever.
7. Set the throttle lever as desired.

1. Use control levers to adjust service height of the conveyor. (Sch.2)
-pressing lever 2 moves the conveyor up/down
-Conveyor lowering speed can be adjusted thru the drowsier under the cylinder.

2. To move the belt, use lever 1 (see Sch.2)
-Move this lever to the direction you want the belt to move.
Move the lever to middle to stop the belt.



Lever1 **Lever2**



3. After the operation, move the levers to neutral positions and turn the engine key to "O" position

NOTE : Emergency Stop is for stopping all functions in case of emergency. Emergency Stop buttons are located on the front and rear of the conveyor.

NOTE : Before starting any operation, ensure Emergency Stop buttons are not pressed. Otherwise engine will not start.

Belt Conveyor Speed

Adjust the speed of the belt by gas control on the engine.

Emergency Operation

To cancel all the functions please press "EMERGENCY STOP" button on panel.

Note: If emergency button is pressed it should be switched to its original position in order to start the operation.

If the engine stops during operation, to lowering boom to follow:

- Turn the engine starting key to right
- Hold boom down button and pull repeatly engine's rope manually.

When the boom is in resting position (minimum) if the engine do not run. Similarly do flow:

- Turn the engine starting key to right
- Hold boom down button and pull repeatly engine's rope manually.

Now, you can reach the engine.

BELT INSTALLATION

Belt Replacement

Decrease the belt tension using the 'belt tight bolts' of the belt so that the belt is loose.
Disconnect the belt from the attachment point by taking the wire out.
Take out the belt by rolling it so that the belt goes out from the rollers properly.
Reverse the operation described above to install the new belt.

Belt Tensioning

Tension of the belt must not cause the belt to skew under maximum height of the belt conveyor with max load on the belt.
Correct tensioning allows the belt to move laterally.
Adjust the tensioning of the belt by using the belt tight bolts on rear edge (ramp side) of the unit.
Tension of the belt must not exceed1% max. of belt total length.

Belt Adjustment

Check the belt and see which side it slides. Increase the tensioning according to the side where the belt slides.

Belt Control

Belt must operate properly under maximum load. Ensure operation to both sides is properly done.
Make visual control over the belt to check if there are any tears, damages,etc.

MAINTENANCE INSTRUCTIONS

Periodical Checks & Controls

Daily Controls

1. Check the battery level
2. Check the gasoline level in the engine
3. Check the oil level of the engine
4. Check the hydraulic oil level in the hydraulic tank
5. Check if there are any hydraulic leakage
6. Check the belt if any tears on it visually

Weekly Controls

1. Do the daily checks
2. Clean the piston mills
3. Check the belt tension and adjust if necessary
4. Check the belt running

Monthly Controls

1. Do the daily and weekly checks
2. Check all grease points

MAINTENANCE AND LUBRICATION SCHEDULE

O= First time operations ● =Regular operation

after.....hours operation						Description of inspection
10	*50*	*100*	*500*	*1000*	*2500*	
●						Check hydraulic fluid level
		O		●		*Replace hydraulic fluid*
				●		*Replace axle grease*
		●				Check battery acid level
				O	●	*Check the wheel bearing, adjust*
O			●			*Check the wheel nuts, tighten*
	O			●		*Check the nuts carrying the front axles*
	●					*Check the brakes, adjust*
		●				*Grease the grease-nipples*
		O		●		Replace the filter related elements
	O			●		*Check the rest of the connection elements*

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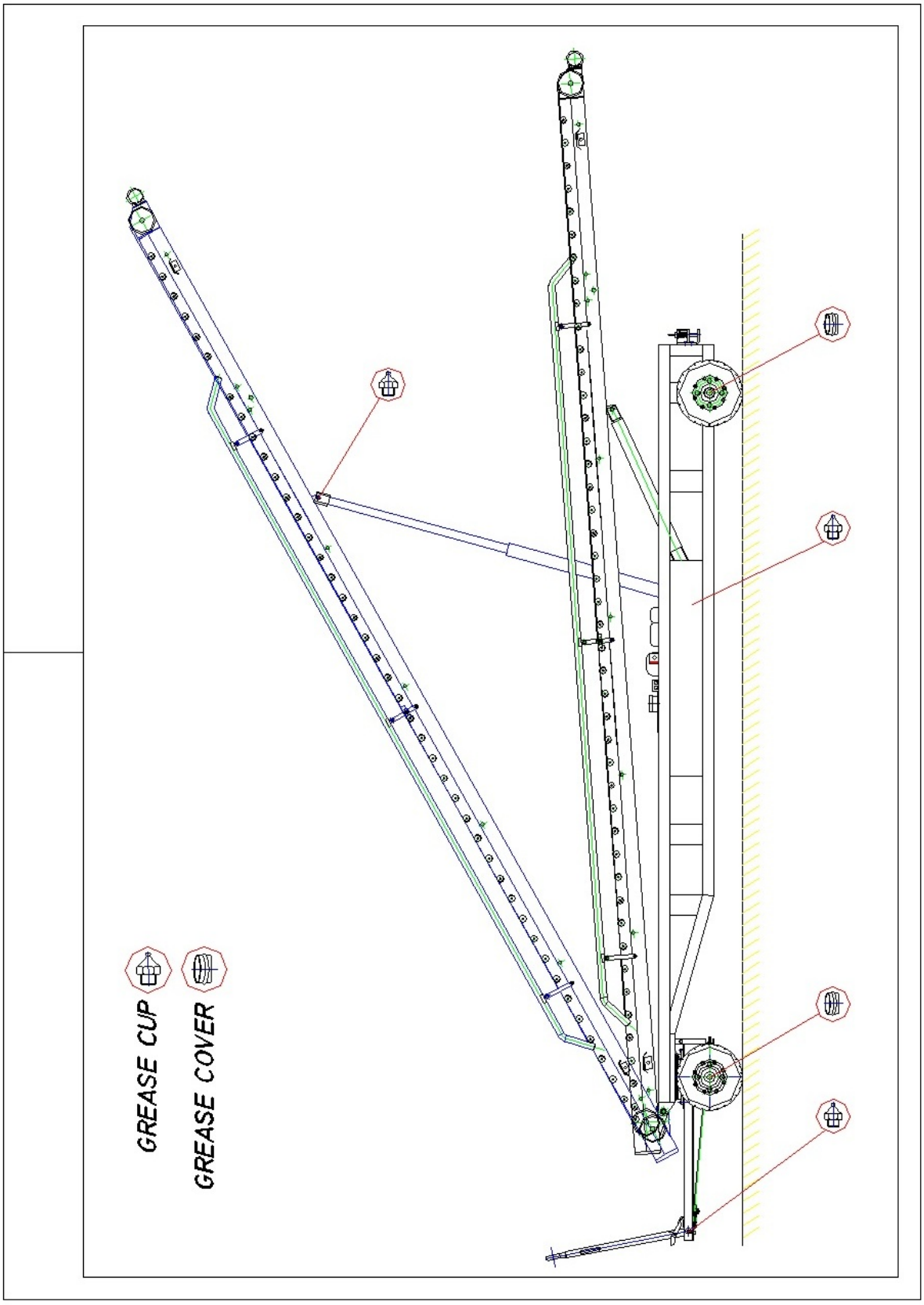
Metal-is 10/10 Ikitelli Osb 34306
K.Cekmece – Istanbul – TURKEY



CONTACT DENGE AT

: + 90 212 549 8866 : +90 212 549 7530 E-MAIL denge@dengemakina.com

HYDRAULIC FLUIDS

Symbol ISO 6074	SAE 10W	SAE 20,20W/30
BP	Energol HLP 37	Energol HLP 100
CASTROL	Hyspin AWS 37	Hyspin AWS 100
MOBIL	DTE Light,DTE24	DTE Heavy Medium DTE 26, DTE 13M
SHELL	Tellus 37	Tellus 33, Tractor Oil Unit

CONTACTS

Russian/English/Turkish

Technical Manager

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GENERAL WARRANTY CONDITIONS

This document presents the warranty conditions offered to any customer for all the pieces of equipment manufactured in the DENGE facilities.
The general warranty conditions hereunder described do govern the relationship between the final customer of a DENGE product hereunder called "BUYER" and DENGE factory called "MANUFACTURER" , following the sales of a new product manufactured by DENGE and sold through an authorized DENGE sales organization (DENEKS SINAI LTD) or any other authorized distributor.
The fact that the Buyer places an order of a DENGE product means that he has read the present policy and does accept its provision. Any other general or particular provision that differs from or contradicts one of the general or particular conditions described thereafter which may appear in any document from the buyer and especially in its general purchasing conditions, cannot be used against the manufacturer unless accepted by DENGE in a written agreement.

ARTICLE 1:
DENGE warrants each new equipment provided if :

1) The product is installed and operated in accordance with printed instructions of DENGE.
2) The product is used under normal operating conditions for which it is designed.
3) The product is not subject to misuse, negligence or accident
4) The product receives proper care, lubrication, protection and maintenance under the supervision of trained personal.
5) The product is normally protected from exterior egressions whatever their origin.

ARTICLE 2:
The warranty expires 12 months after shipment by DENGE.

ARTICLE 3:
Warranty is limited to the replacement of defective parts and if the repair justifies it, to the assistance of a technician.
Parts shipping expenses and travelling and housing expenses of personnel are to be paid by customer.

ARTICLE 4:
The DENGE warranty does not apply to fluids, oils, fuses, bulbs, accumulators, paint, seals, tires, bumpers, pads and other consumables or normally wearing type items unless found to be defective prior to use.

ARTICLE 5:
All warranty claims from the buyer must be sent by written to MANUFACTURER who will be in charge of dealing with the manufacturer to address the problem in a timely manner.

ARTICLE 6:
All the expenses related to a warranty claim will be invoiced to the buyer until DENGE employees have evaluated the claim. Whatever the circumstances, the buyer should not refuse or delay the payment. If the evaluation concludes to DENGE's full responsibility, a credit memo will be issued in favor of the buyer.

ARTICLE 7:
This warranty is extended by DENGE only to the buyer of new products from DENGE or of its authorised distributors. The products purchased under this warranty are intended for use exclusively by the buyer and his employess and by no other person. Therefore there shall be no third party beneficiary of this warranty.

ARTICLE 8 :
The consequences on the product linked to its use after first problem are not covered by this warranty .

ARTICLE 9:
Under no circumstances whatever shall DENGE and the MANUFACTURER be liable for any special or consequential damages, whether based on lost goodwill, lost resale profits, work stoppage, impairment of other goods or otherwise, and whether arising out of breach of any express or implied warranty, breech of contract, negligence or otherwise, except only in the case of personal injury only if required by applicable law.

ARTICLE 10:
Warranty is automatically void by DENGE in the following cases:
1) The product has received unauthorized modification or repair not advised by DENGE or not done following DENGE reqirements.
2) Original parts have been replaced by parts not provided/confirmed by DENGE.

ARTICLE 11:
This warranty and all undertaking of DENGE shall be governed by the laws of MANUFACTURER'S country and discussed in front of nearest court from the MANUFACTURER'S facility even in case of multiple of defenders.

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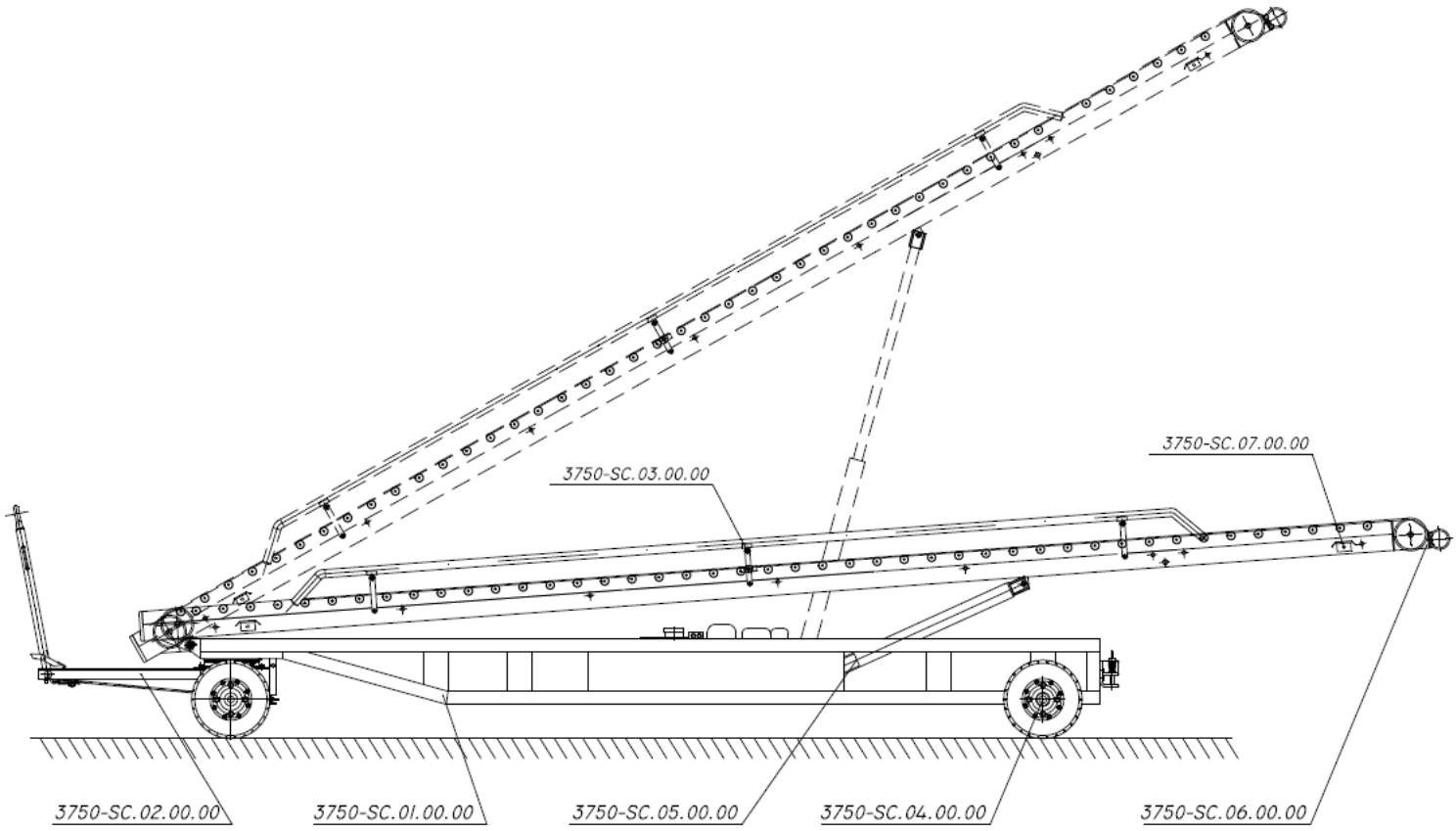
CONVEYOR BELT
ISSUE 2007

SPARE

PART

LIST



3750-SC.00.00.00	
CHASSIS GROUP	3750-SC.01.00.00
TOWBAR GROUP	3750-SC.02.00.00
BANISTER GROUP	3750-SC.03.00.00
HYDRAULIC GROUP	3750-SC.04.00.00
BAND SUPPORT GROUP	3750-SC.05.00.00
WHEEL GROUP	3750-SC.06.00.00
ELECTRICAL GROUP	3750-SC.07.00.00

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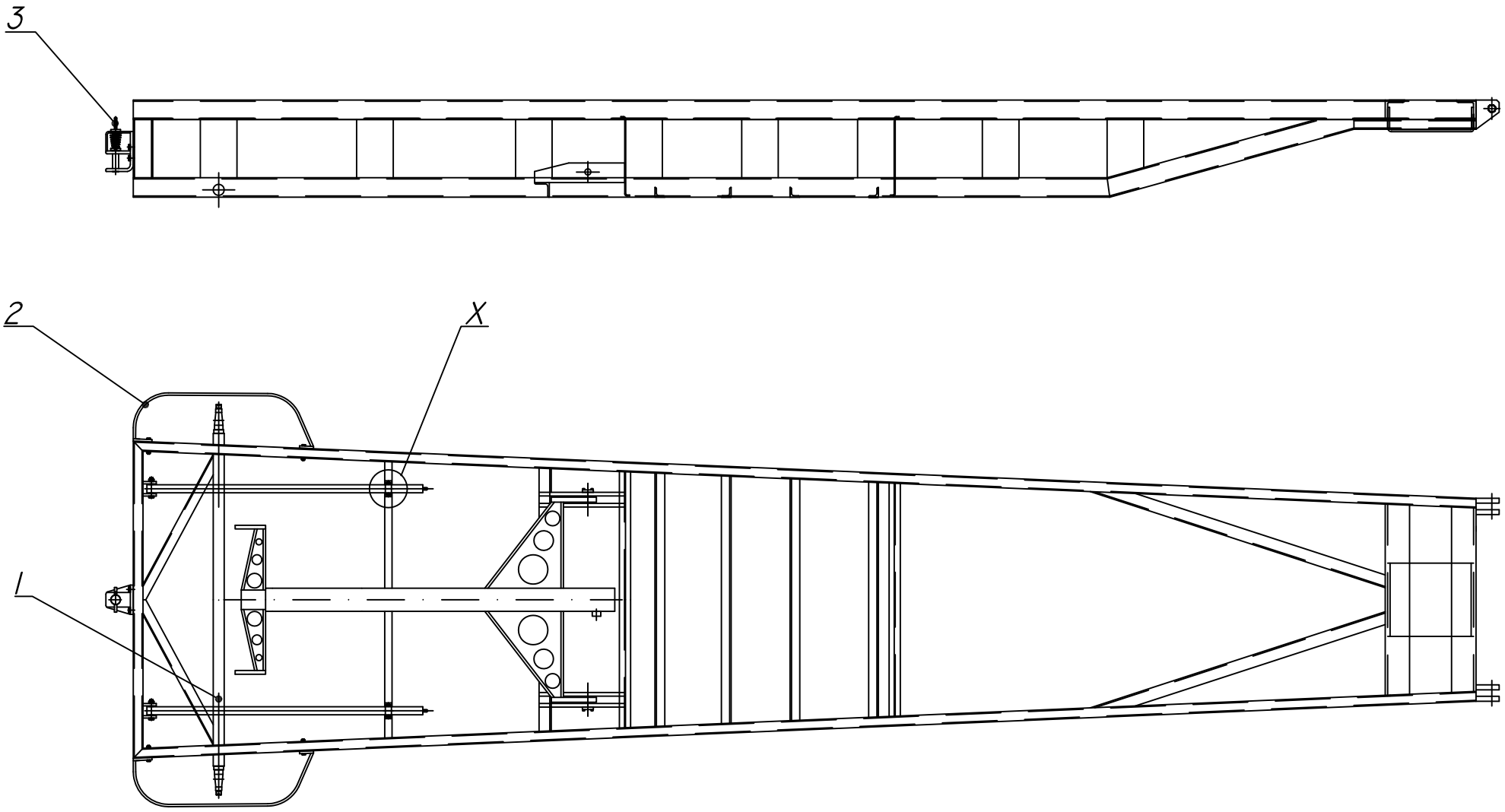

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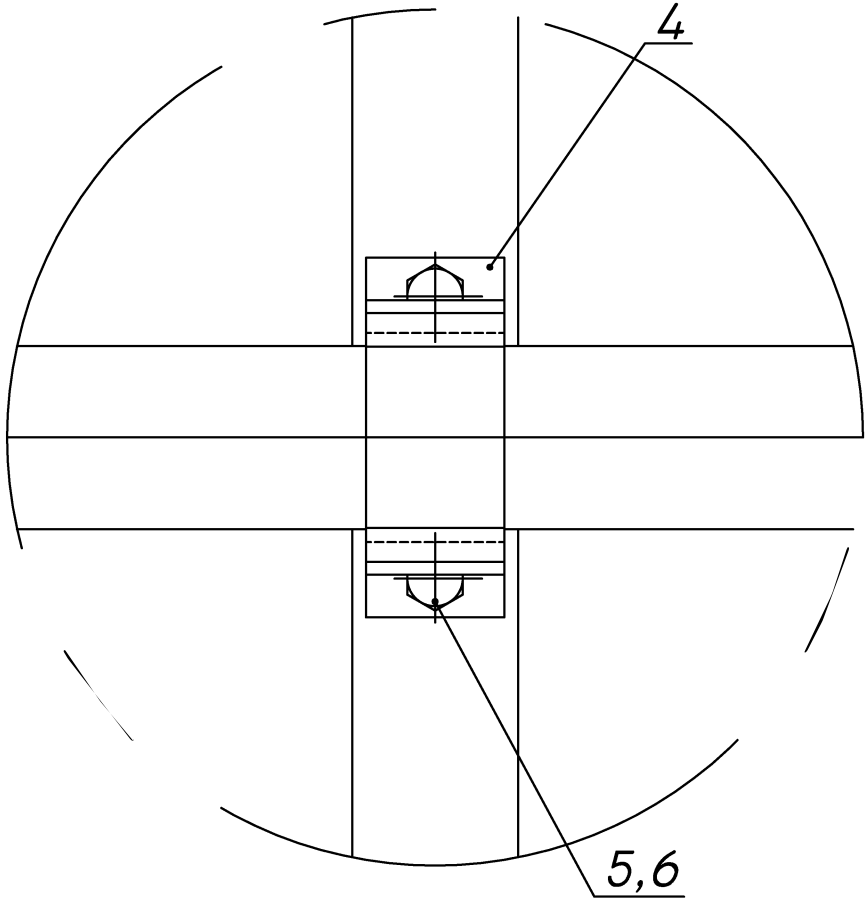

X DETAIL

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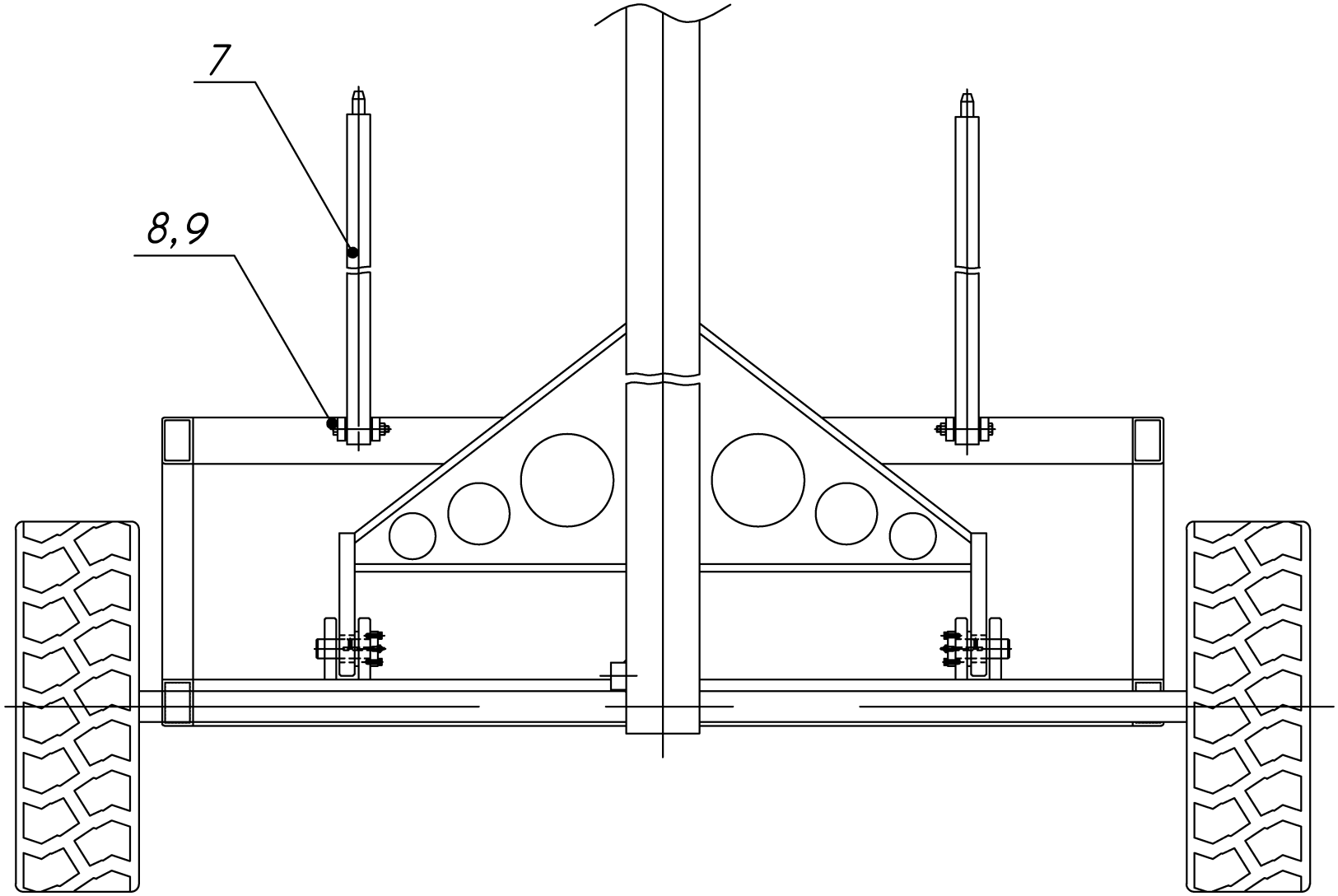

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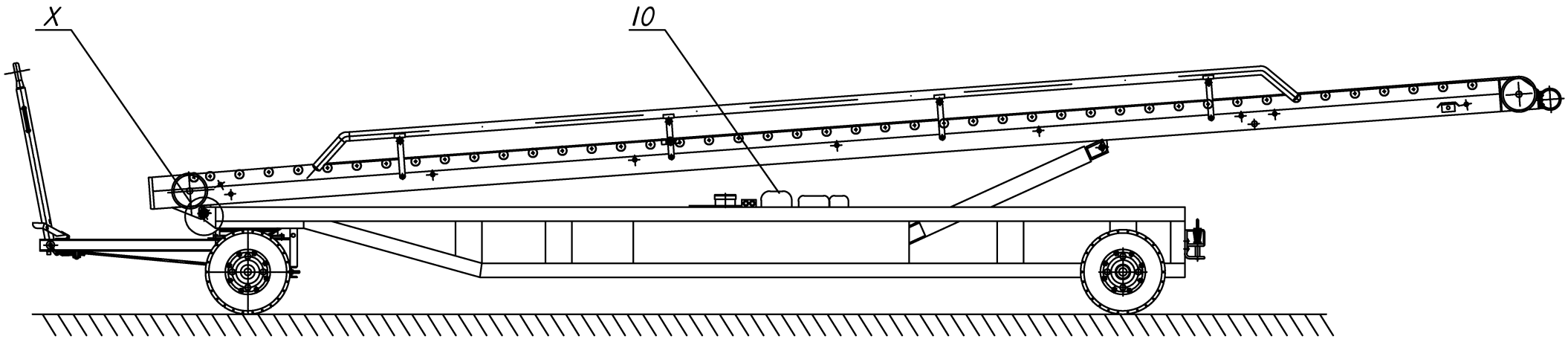

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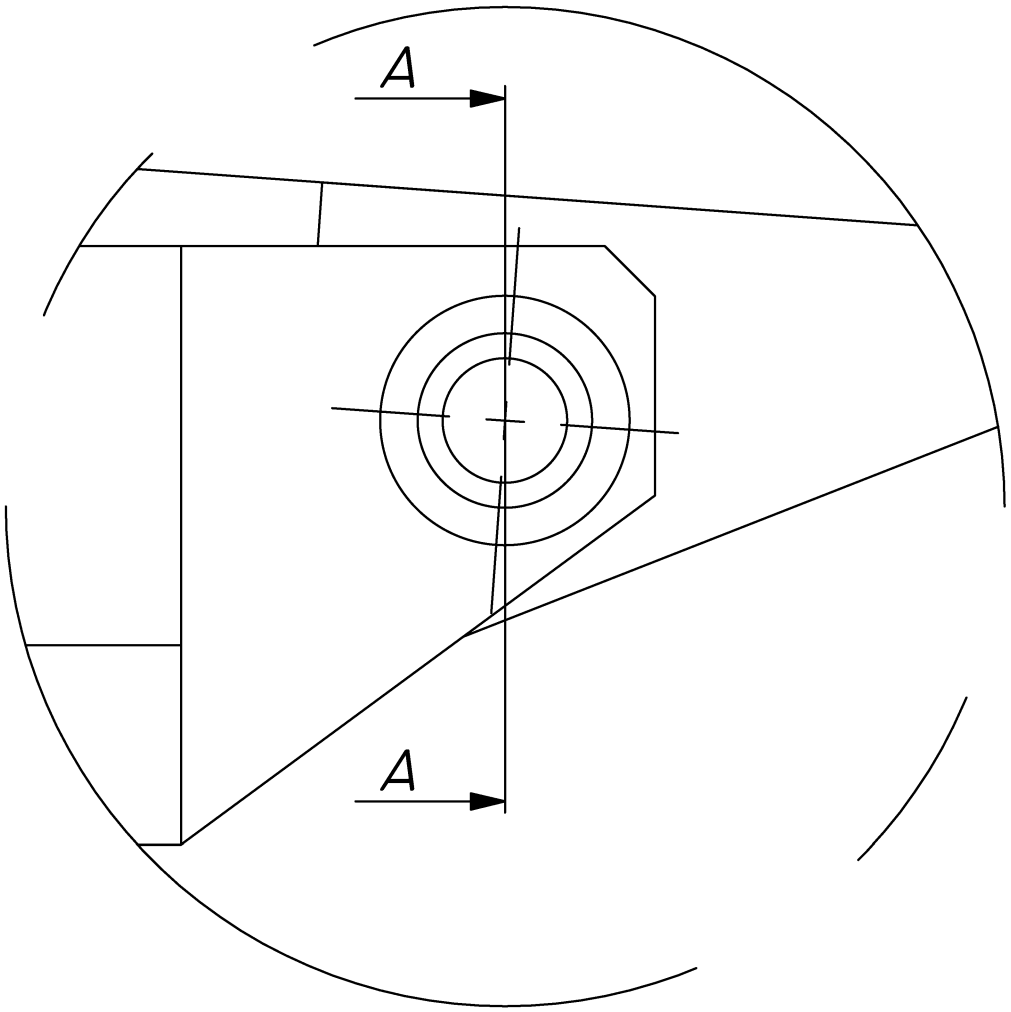
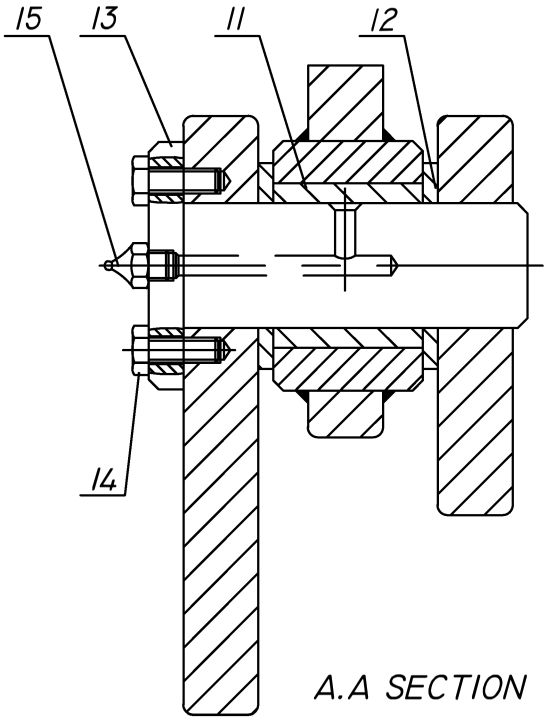


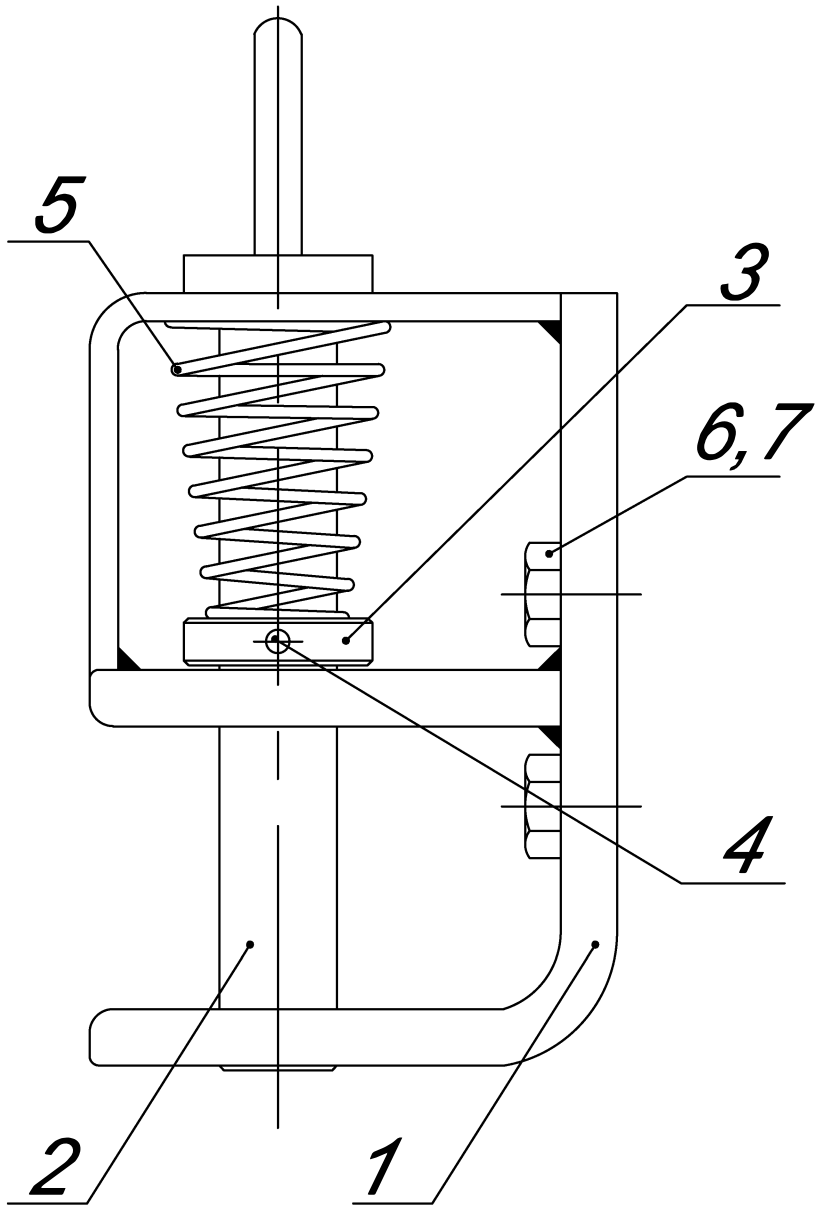


A.A SECTION

X DETAIL

3750-SC.01.00.00

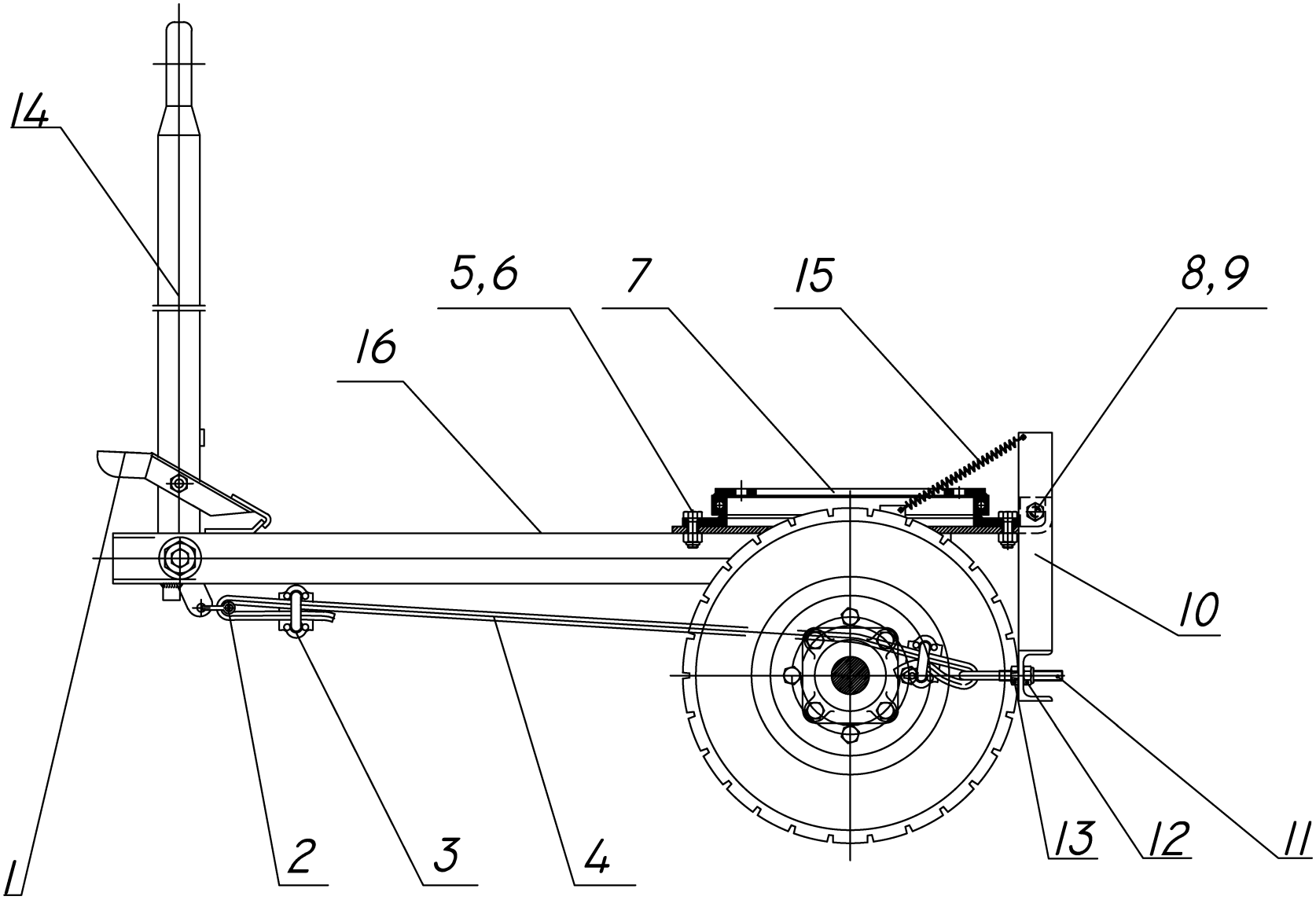
	SPARE PART LIST		Group No	
	CHASSIS GROUP		3750-SC.01.00.00	
P.No	**QTY**	**Description**	**Part No**	**Explanation**
1	**1**	Axle	3750-SC.01.01.00	
2	**2**	Wheel Banister	3750-SC.01.02.00	
3	**1**	Rear Tow Hitch	3750-SC.01.03.00	
4	2	Support Pipe Lock	3750-SC.01.04.00	
5	4	Screw M6x40	3750-SC.01.05.00	DIN 931
6	4	Fiber Nut M6	3750-SC.01.06.00	DIN 982
7	2	Support Pipe	3750-SC.01.07.00	
8	2	Screw M12x80	3750-SC.01.08.00	DIN 931
9	2	Fiber Nut M12	3750-SC.01.09.00	DIN 982
10	1	18 lt. Reserve Tank	3750-SC.01.10.00	
11	2	Pin	3750-SC.01.11.00	
12	4	Washer	3750-SC.01.12.00	
13	2	Bush	3750-SC.01.13.00	
14	4	Screw M6x30	3750-SC.01.14.00	DIN 931
15	2	Lubricator M6x1	3750-SC.01.15.00	



3750-SC.01.03.00

SPARE PART LIST		Group No:
	REAR TOW HITCH	3750-SC.01.03.00

P.No	Qty	Description	Drawing No	Explanation
1	1	Rear Tow body	3750-SC.01.03.01	
2	1	Rear Tow Pin	3750-SC.01.03.02	
3	1	Bush	3750-SC.01.03.03	
4	1	Pin Ø5	3750-SC.01.03.04	
5	1	Spring	3750-SC.01.03.05	
6	4	Screw M16x50	3750-SC.01.03.06	DIN 931
7	4	Fiber Nut M16	3750-SC.01.03.07	DIN 982



3750-SC.02.00.00

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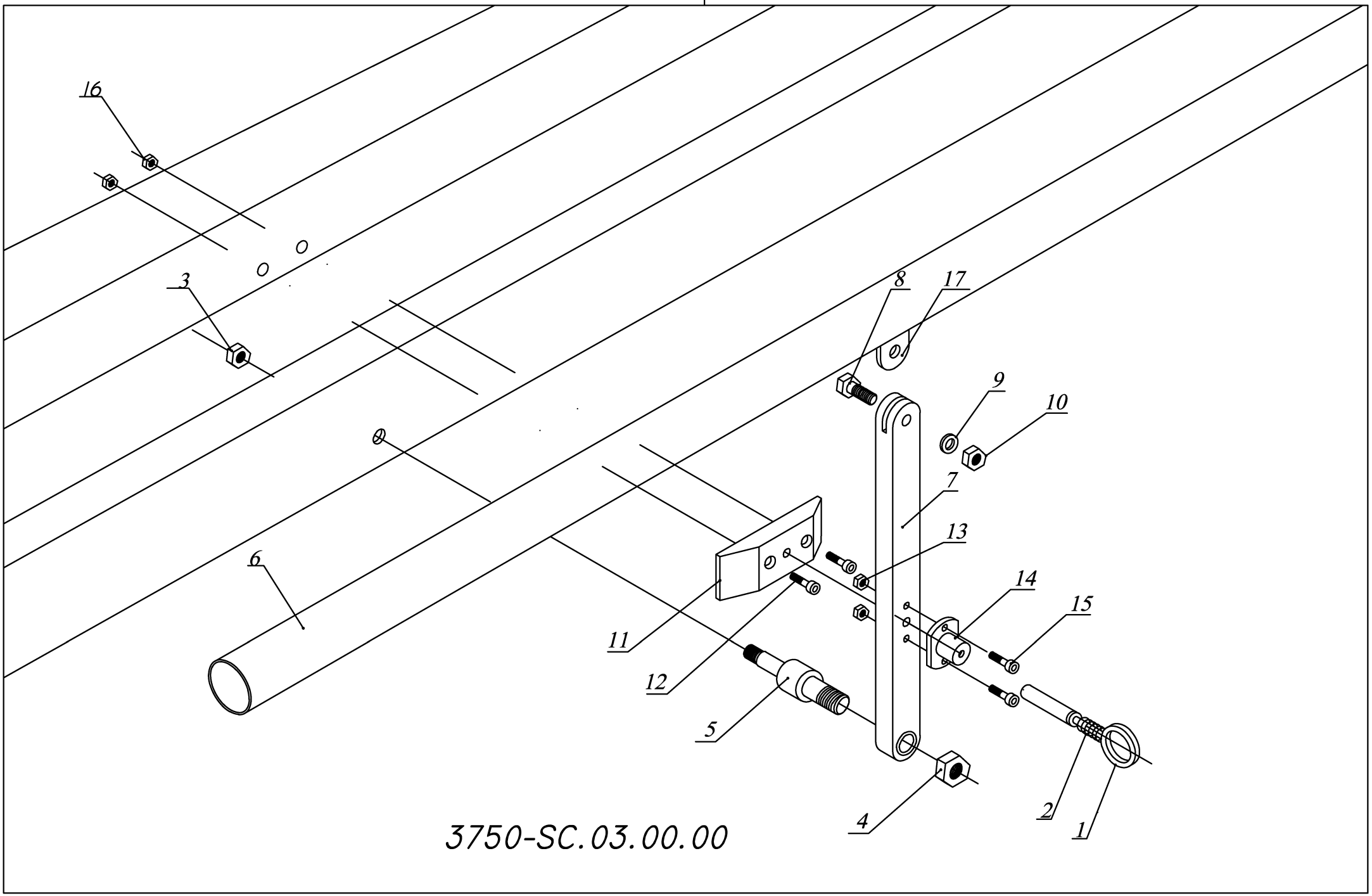
	SPARE PART LIST	Group No
	TOWBAR GROUP	3750-SC.02.00.00

P.No	QTY	Description	Part No.	Explanation
1	1	Towbar Lock	3750-SC.02.01.00	
2	1	Rope Lock	3750-SC.02.02.00	
3	2	Suffocating	3750-SC.02.03.00	
4	2	Steel Rope	3750-SC.02.04.00	
5	8	Screw M12x35	3750-SC.02.05.00	DIN 931
6	8	Fiber Nut M12	3750-SC.02.06.00	DIN 982
7	1	Ball Bearing Ø400	3750-SC.02.07.00	
8	2	Screw M12x35	3750-SC.02.08.00	DIN 931
9	2	Fiber Nut M12	3750-SC.02.09.00	DIN 982
10	2	Brake Profile	3750-SC.02.10.00	
11	1	Hook	3750-SC.02.11.00	
12	2	Fiber Nut M12	3750-SC.02.12.00	DIN 982
13	2	Nut M12	3750-SC.02.13.00	DIN 934
14	1	Towbar	3750-SC.02.14.00	
15	2	Spring	3750-SC.02.15.00	DIN 2097
16	1	Slewing Trolley	3750-SC.02.16.00	



3750-SC.03.00.00

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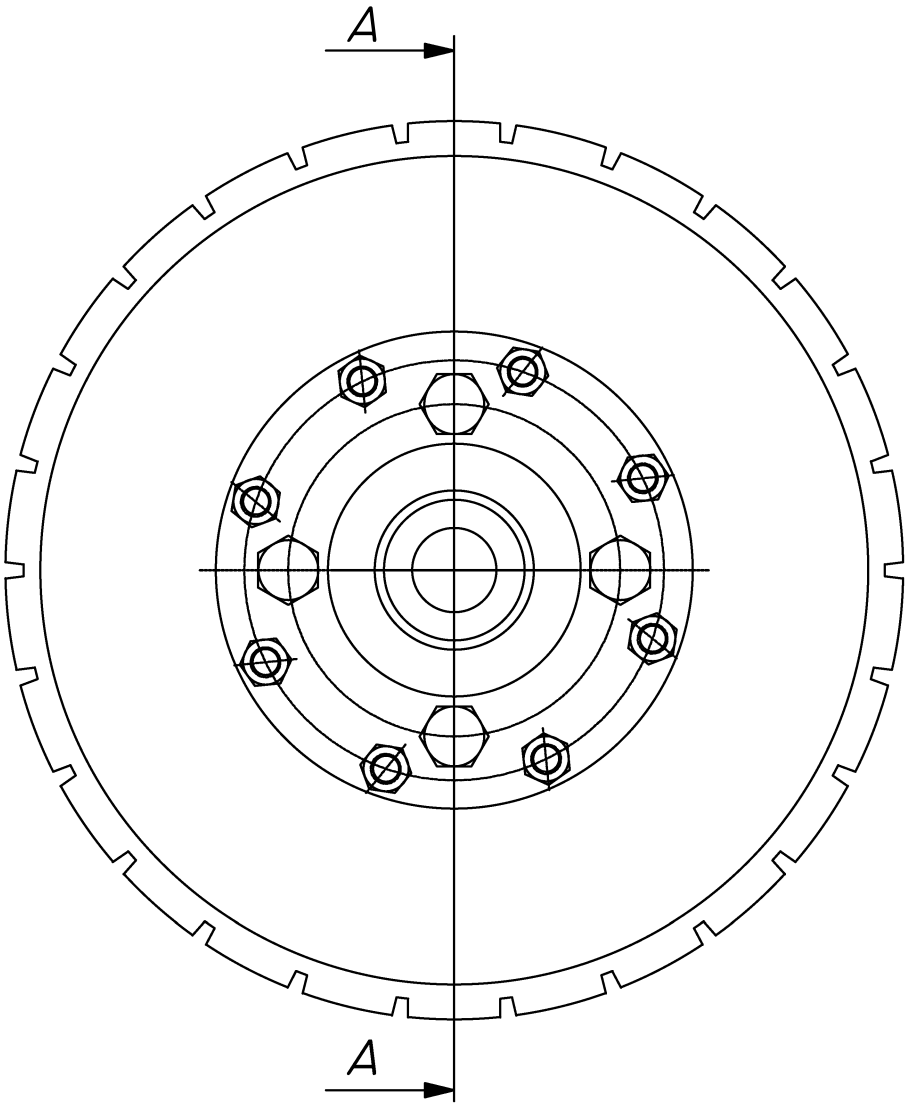
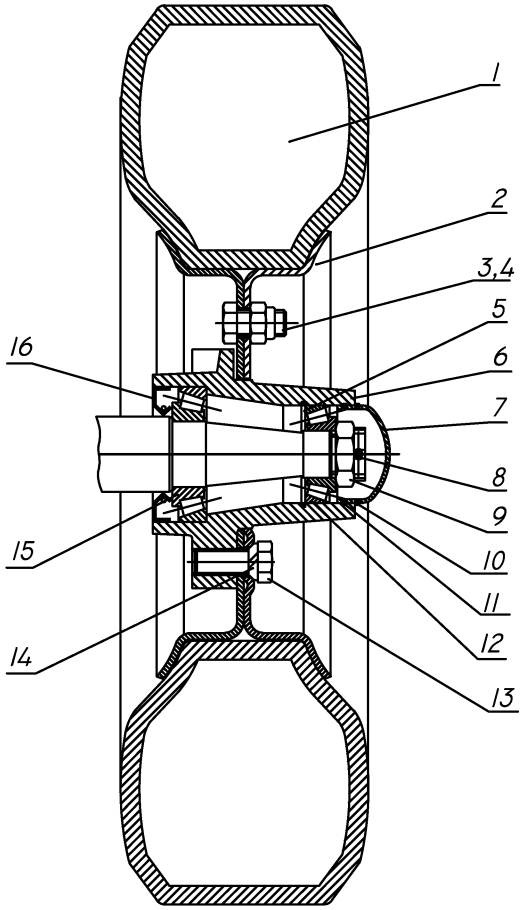
	SPARE PART LIST	Group No
	BANISTER GROUP	3750-SC.03.00.00

P.No	QTY	Description	Part No	Explanation
1	2	Lock Pin	3750-SC.03.01.00	
2	2	Spring	3750-SC.03.02.00	
3	6	Fiber Nut M12	3750-SC.03.03.00	DIN 982
4	6	Fiber Nut M16	3750-SC.03.04.00	DIN 982
5	6	Connecting Part	3750-SC.03.05.00	
6	2	Banister Pipe	3750-SC.03.06.00	
7	6	Handle	3750-SC.03.07.00	
8	6	Screw M10x35	3750-SC.03.08.00	DIN 933
9	6	Washer	3750-SC.03.09.00	
10	6	Fiber Nut M10	3750-SC.03.10.00	DIN 982
11	2	Middle Lock Part	3750-SC.03.11.00	
12	4	Screw M5x60	3750-SC.03.12.00	DIN 912
13	4	Fiber Nut M5	3750-SC.03.13.00	DIN 982
14	2	Seat	3750-SC.03.14.00	
15	4	Screw M5x25	3750-SC.03.15.00	DIN 912
16	4	Fiber Nut M6	3750-SC.03.16.00	DIN 982
17	6	Support Part	3750-SC.03.17.00	





A.A SECTION

3750-SC.04.00.00

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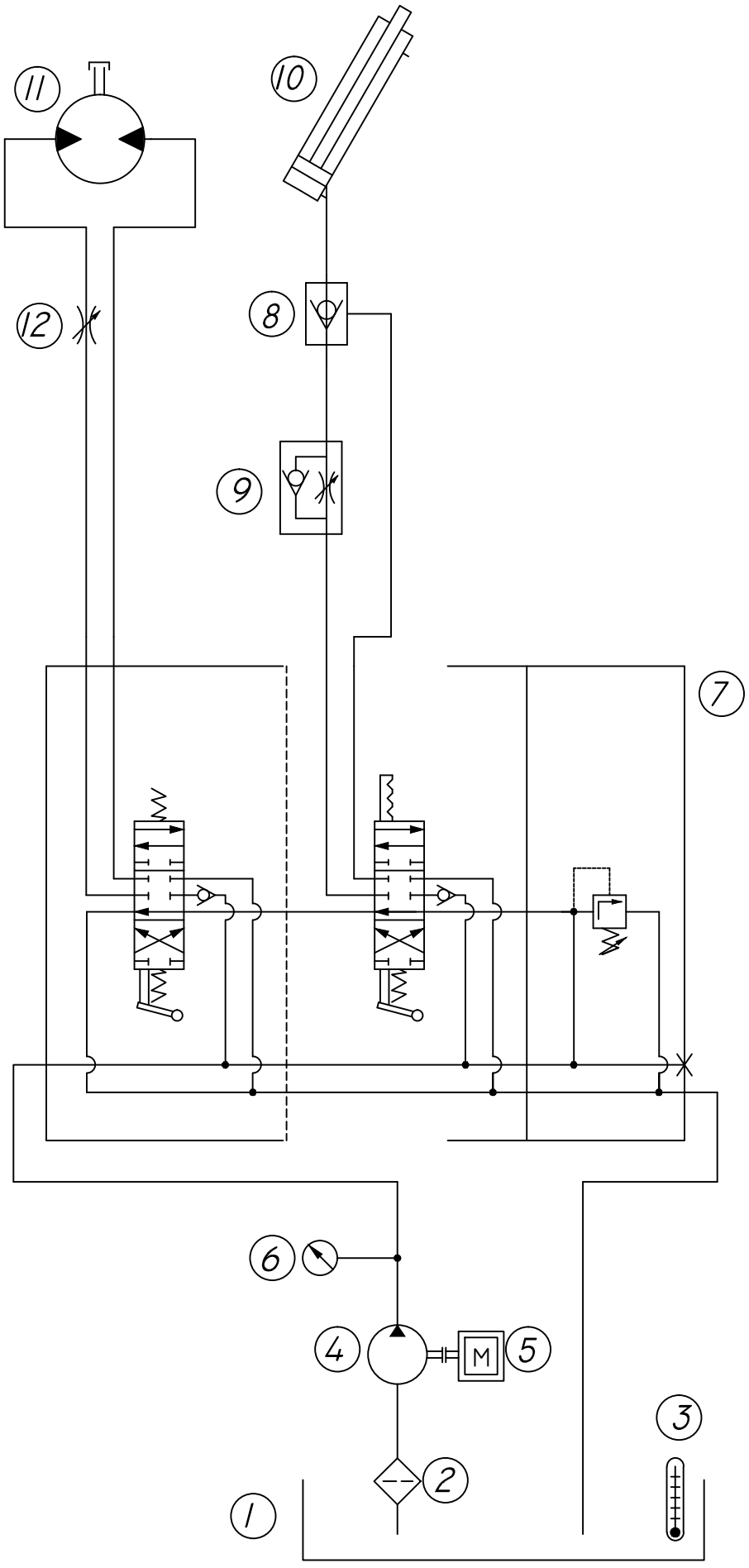
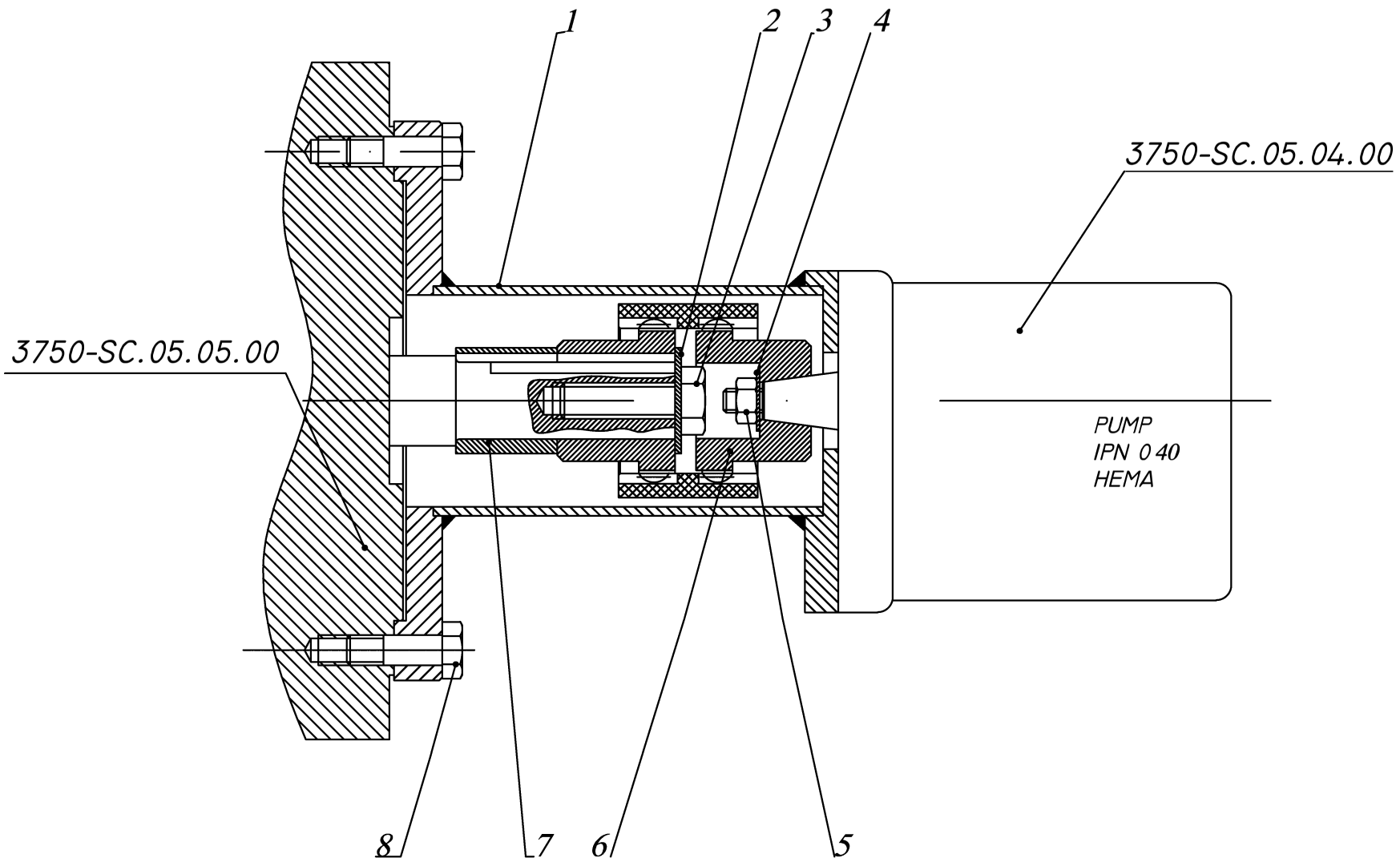
		SPARE PART LIST		Group No
		WHEEL		3750-SC.04.00.00
P.No	**Qty**	**Part Name**	**Part No.**	**Description**
1	4	Tire 5.00x8 Solid	3750-SC.04.01	
2	4	Rim	3750-SC.04.02	
3	16	Screw M12 x25	3750-SC.04.03	DIN 931
4	16	Fiber Nut M12	3750-SC.04.04	DIN 982
5	4	Rim	3750-SC.04.05	
6	4	Hub	3750-SC.04.06	
7	4	Hub Cover	3750-SC.04.07	
8	4	Pin	3750-SC.04.08	
9	4	Castle Nut R1/2	3750-SC.04.09	
10	4	Sheet Segment	3750-SC.04.10	
11	4	Strand Segment	3750-SC.04.11	
12	4	Bearing 30205	3750-SC.04.12	DIN 625
13	16	Screw M14x1.5	3750-SC.04.13	DIN 931
14	16	Washer	3750-SC.04.14	DIN 128
15	4	Bearing 30207	3750-SC.04.15	DIN 625
16	4	Seal 40x72x10	3750-SC.04.16	



3750-SC.05.00.00

	SPARE PART LIST		Group No	
	HYDRAULIC GROUP		3750-SC.05.00.00	
P.No	**QTY**	**Description**	**Part No**	**Explanation**
1	1	Oil Tank	3750-SC.05.01.00	
2	1	Filter	3750-SC.05.02.00	**1″**
3	1	Level Indicator	3750-SC.05.03.00	
4	1	Hydraulic Pump	3750-SC.05.04.00	**1PN040CBT1 HEMA**
5	1	Motor	3750-SC.05.05.00	**GX390 HONDA**
6	1	Manometer	3750-SC.05.06.00	**Ø63x315 Bar**
7	1	Hydraulic Block	3750-SC.05.07.00	**¼″ / 12V**
8	1	Hydraulic Lock	3750-SC.05.08.00	
9	1	Check Valve Drowsier	3750-SC.05.09.00	
10	1	Cylinder	3750-SC.05.10.00	
11	1	Hydraulic Motor	3750-SC.05.11.00	**EPMS 250**
12	1	Drowsier	3750-SC.05.12.00	



3750-SC.05.05. 00

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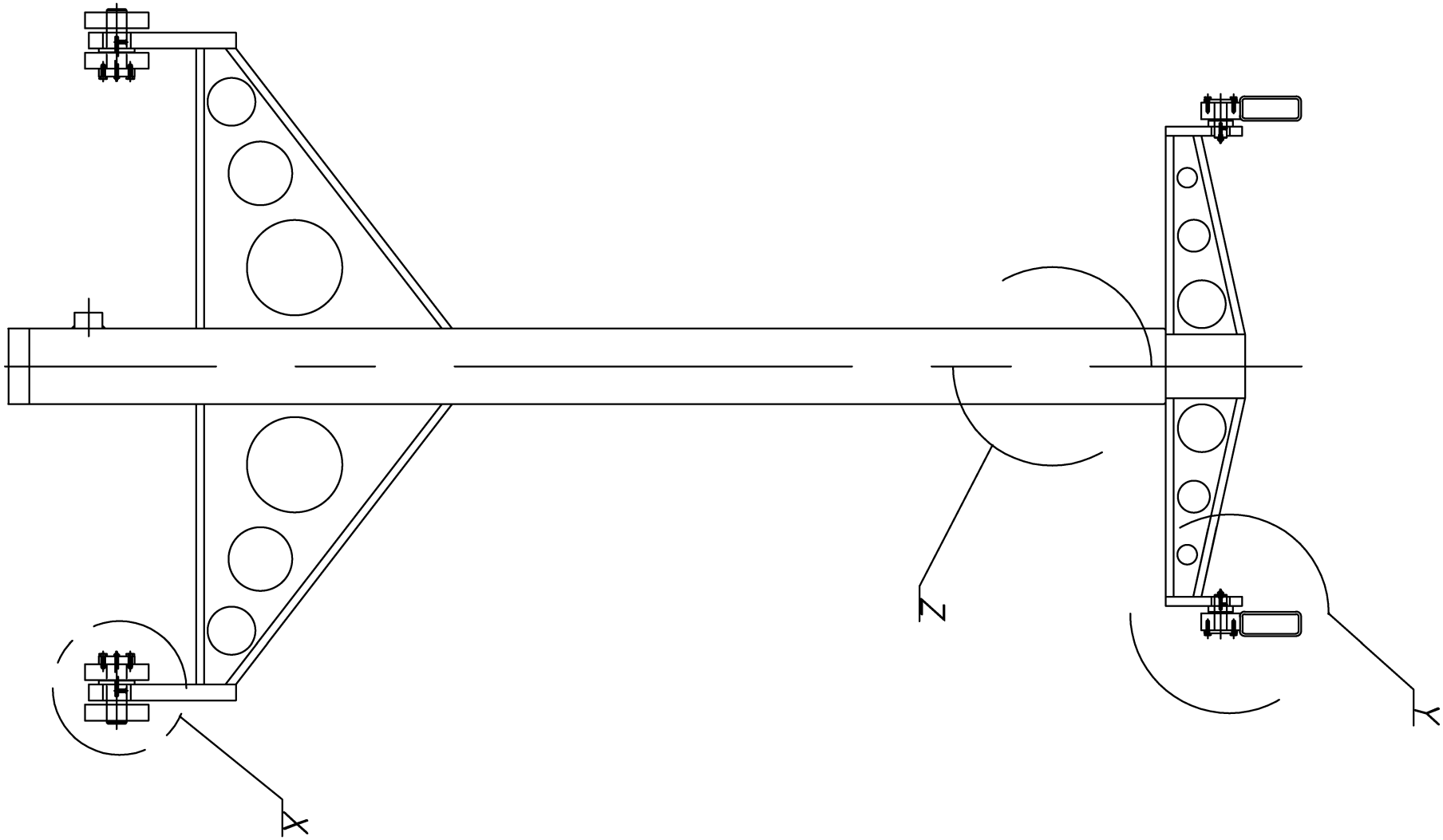
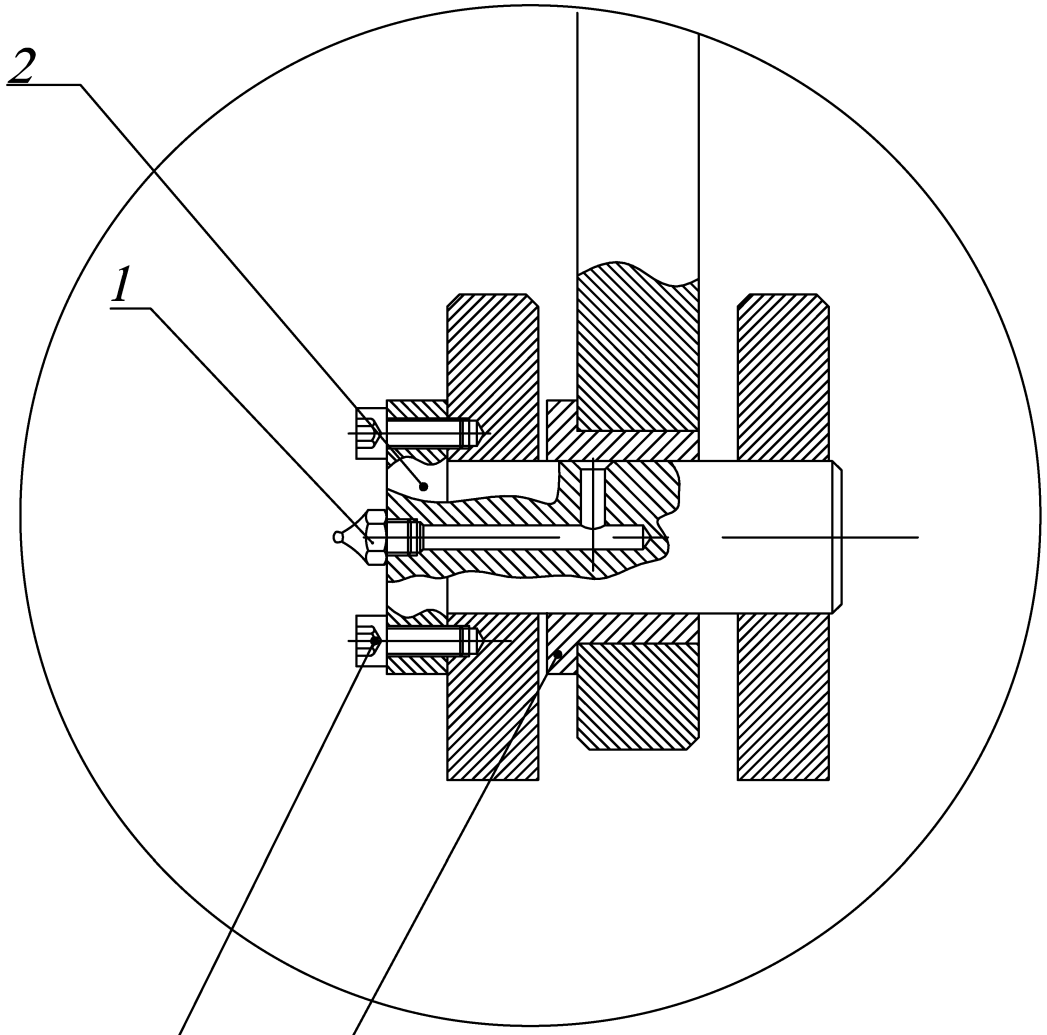
		SPARE PART LIST		Group No
		HYDRAULIC MOTOR / PUMP		3750-SC.05.05
P.No	**QTY**	**Description**	**Part No**	**Explanation**
1	1	Connecting Pipe	3750-SC.05.05.01	
2	1	Washer	3750-SC.05.05.02	
3	1	Screw M12x40	3750-SC.05.05.03	**DIN 931**
4	1	Washer	3750-SC.05.05.04	
5	1	Nut M8	3750-SC.05.05.05	**DIN 982**
6	1	Coupling	3750-SC.05.05.06	**DK 28**
7	1	Bush	3750-SC.05.05.07	
8	4	Screw	3750-SC.05.05.08	**DIN 931**

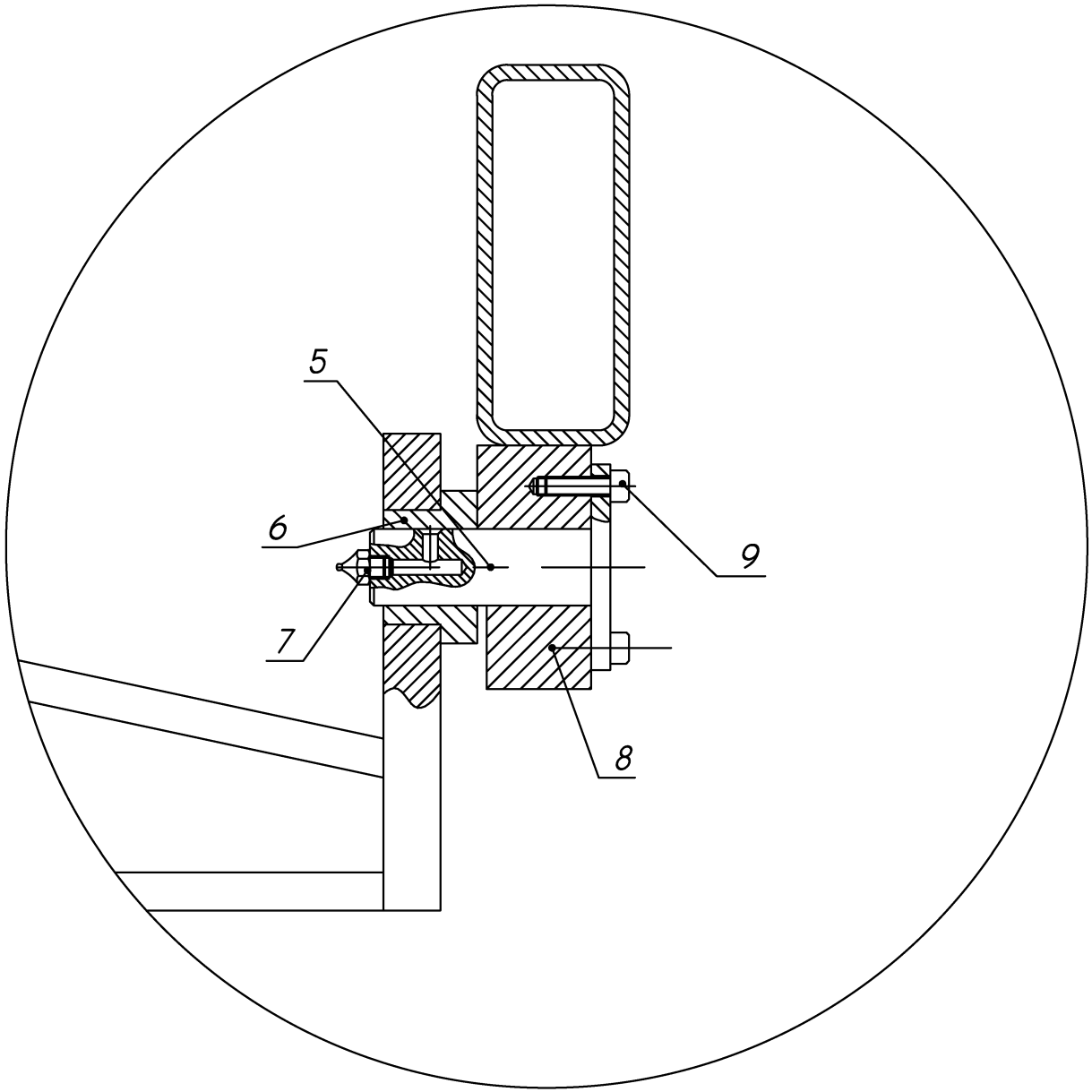


3750-SC.05.10.00



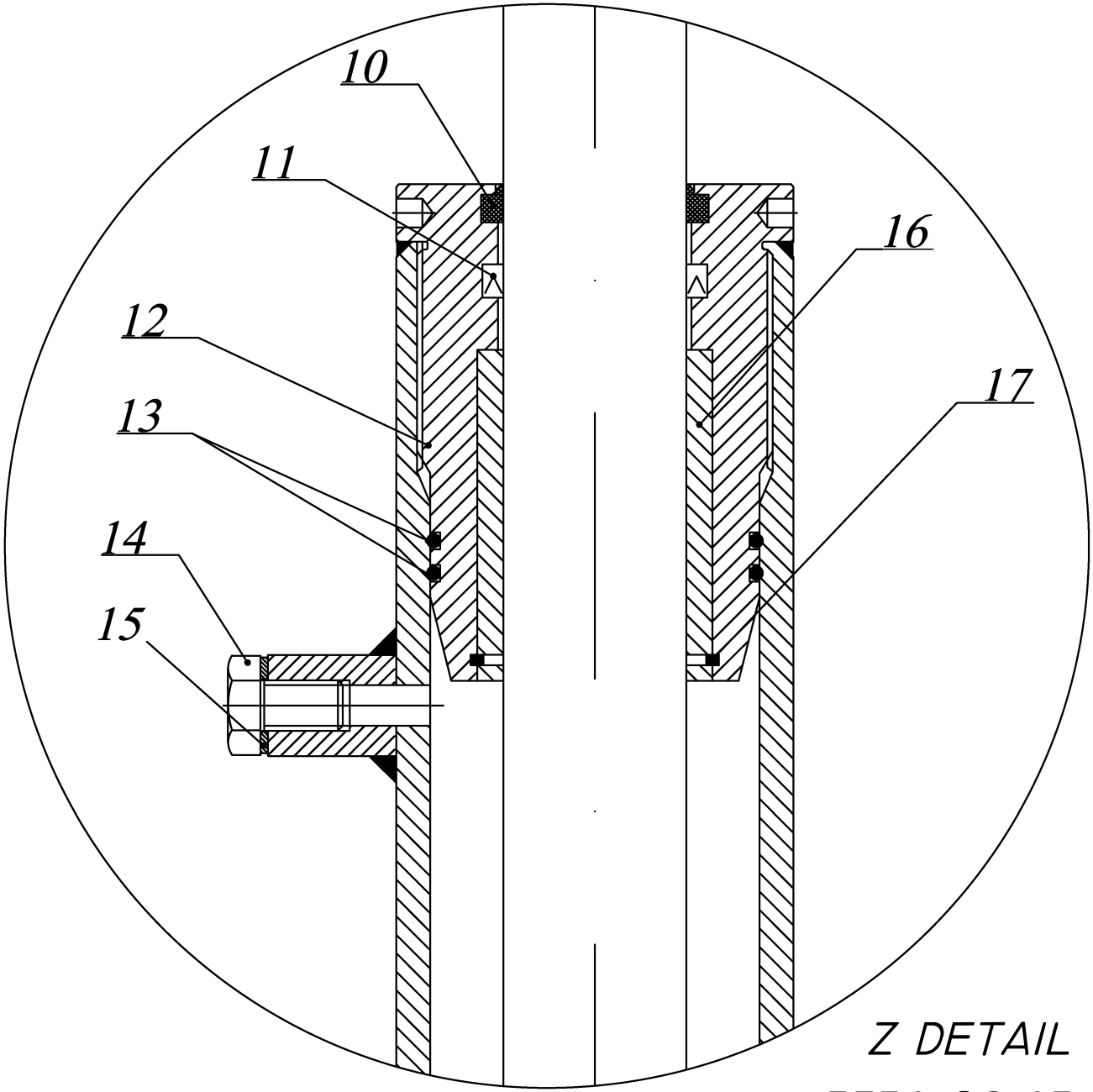
X DETAIL

3750-SC.05.10.00



Y DETAIL

3750-SC.05.10.00

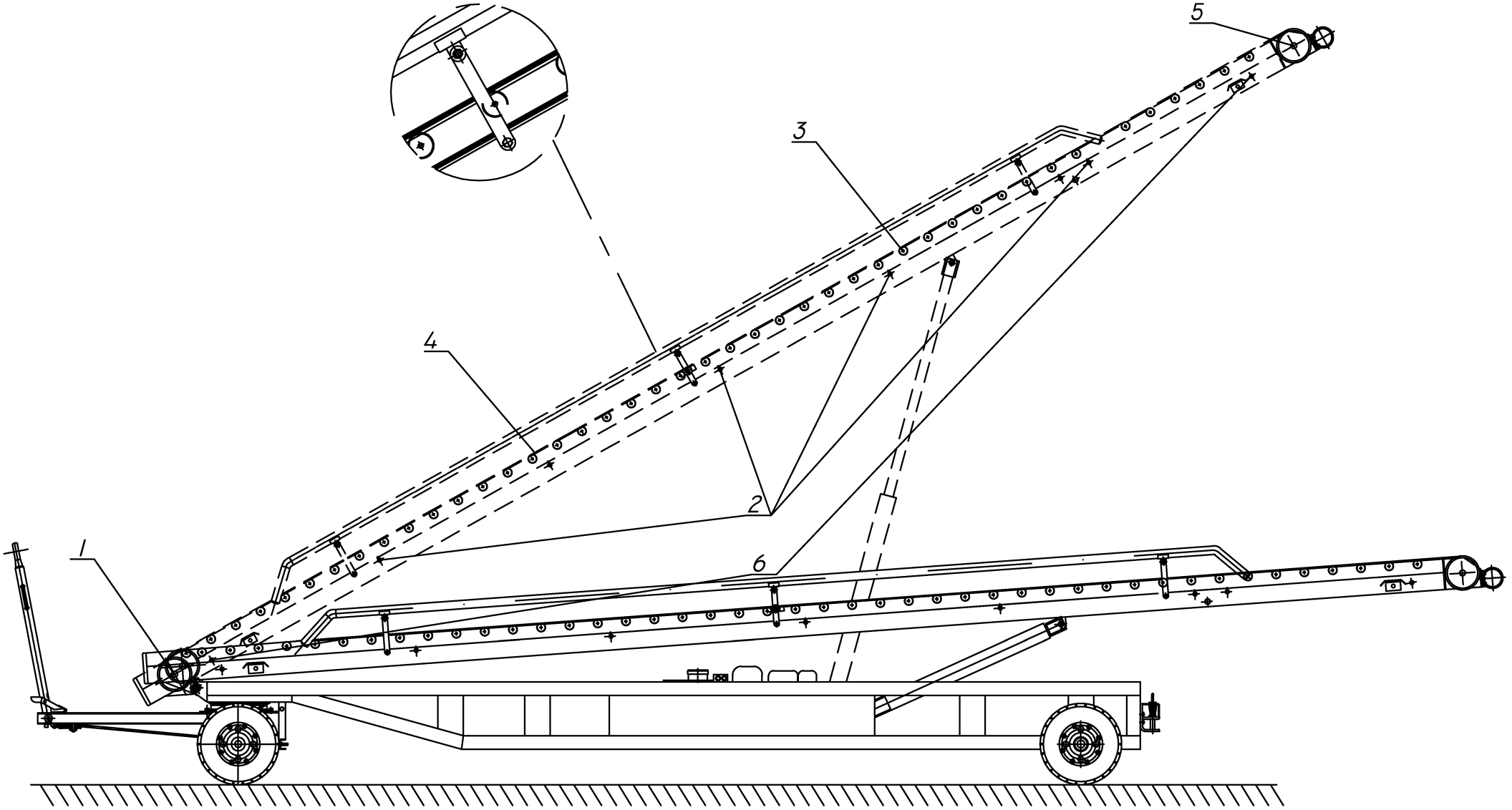


Z DETAIL

3750-SC.05.10.00

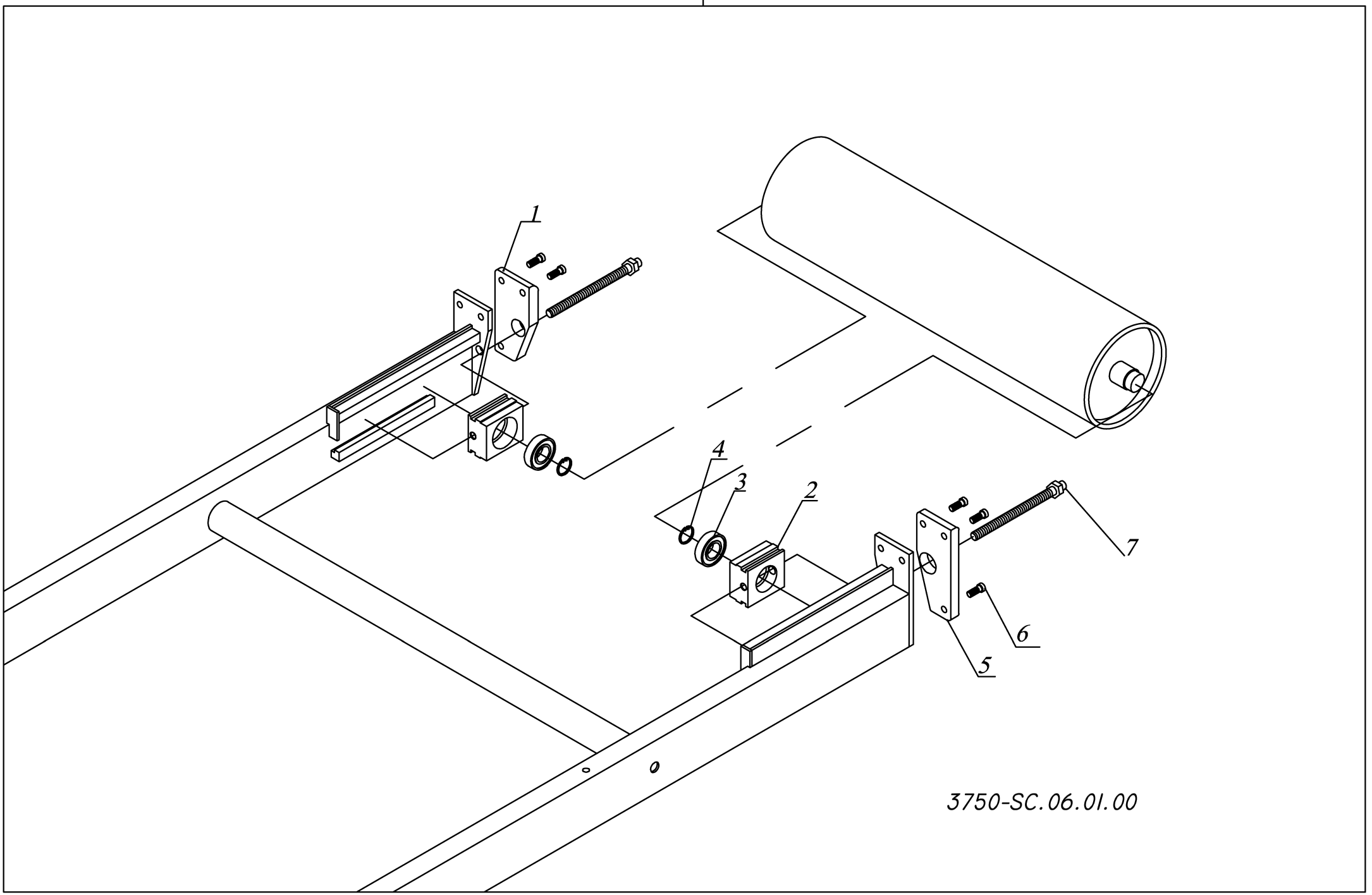
DENGE MAKINA LTD
Optimum on the ground

		SPARE PART LIST	Group No	
		HYDRAULIC CYLINDER	3750-SC.05.10.00	
P.No	**QTY**	**Description**	**Part No**	**Explanation**
1	2	Grease Cup M6x1	3750-SC.05.10.01	
2	2	Pin	3750-SC.05.10.02	
3	4	Screw M6x20	3750-SC.05.10.03	**DIN 931**
4	2	Bush	3750-SC.05.10.04	
5	2	Pin	3750-SC.05.10.05	
6	2	Bush	3750-SC.05.10.06	
7	2	Grease Cup M6x1	3750-SC.05.10.07	
8	2	Connection Part	3750-SC.05.10.08	
9	4	Screw M6x20	3750-SC.05.10.09	**DIN 931**
10	1	Seal 55x70x10	3750-SC.05.10.10	**(SUPTEX)**
11	1	Seal PT 55	3750-SC.05.10.11	
12	1	Cylinder Head	3750-SC.05.10.12	
13	2	‘’O” Ring Ø75x3.5	3750-SC.05.10.13	
14	1	Screw M10x25	3750-SC.05.10.14	**DIN 931**
15	1	Copper Washer	3750-SC.05.10.15	
16	1	Bush	3750-SC.05.10.16	
17	1	Segment Ø65x2.5	3750-SC.05.10.17	**DIN 472**



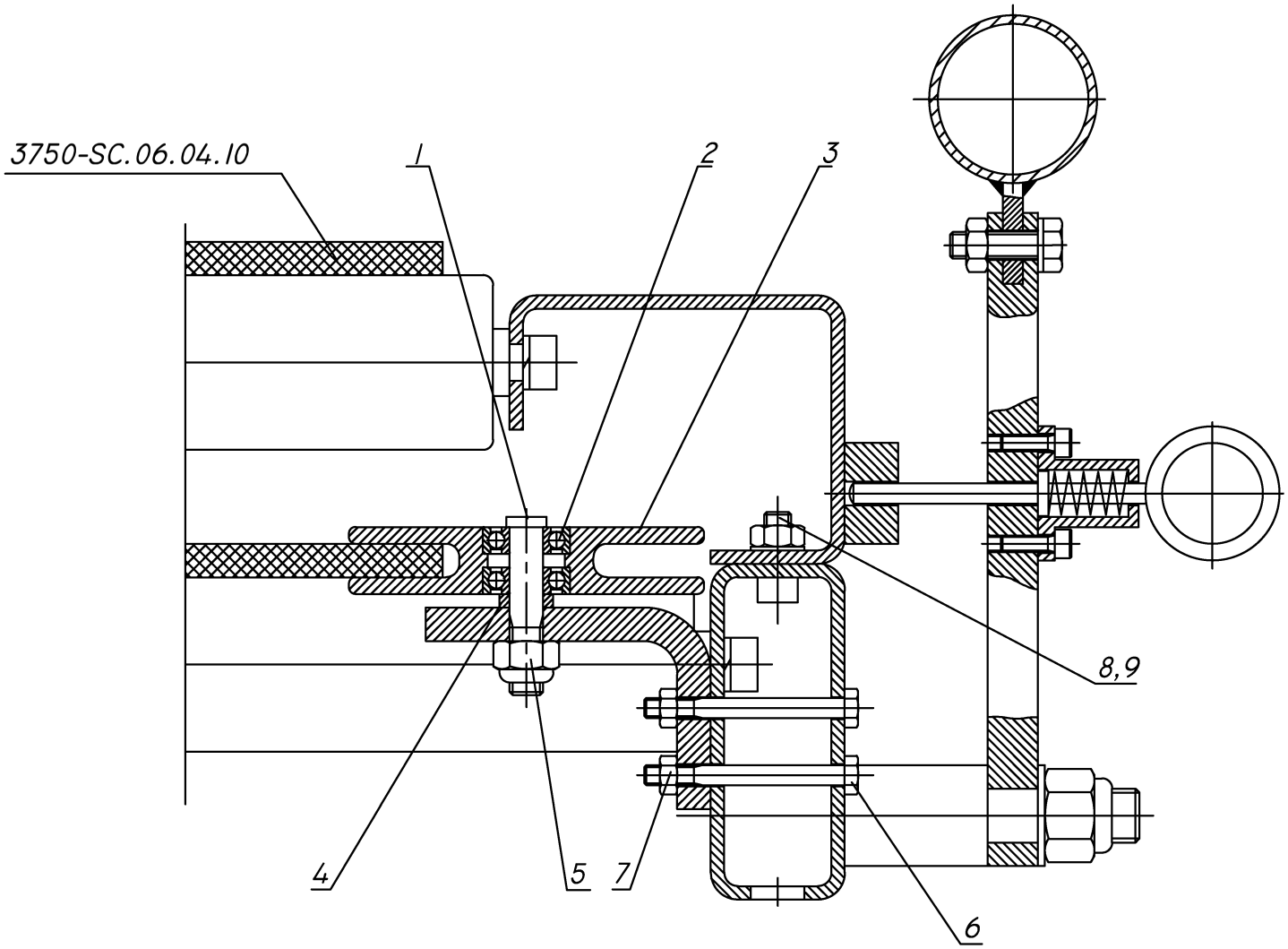
3750-SC.06.00.00

		SPARE PART LIST		Group No
		UPPER CHASSIS GROUP		3750-SC.06.00.00
P.No	**QTY**	**Description**	**Part No.**	**Explanation**
1	1	Front Tambour	3750-SC.06.01.00	
2	4	Rollers (Stainless)	3750-SC.06.02.00	
3	35	Rollers (Stainless)	3750-SC.06.03.00	
4	1	Band Groups	3750-SC.06.04.00	
5	1	Rear Tambour	3750-SC.06.05.00	
6	2	Rollers (Galvanized)	3750-SC.06.06.00	


1
4
3
2
7
6
5
3750-SC.06.01.00

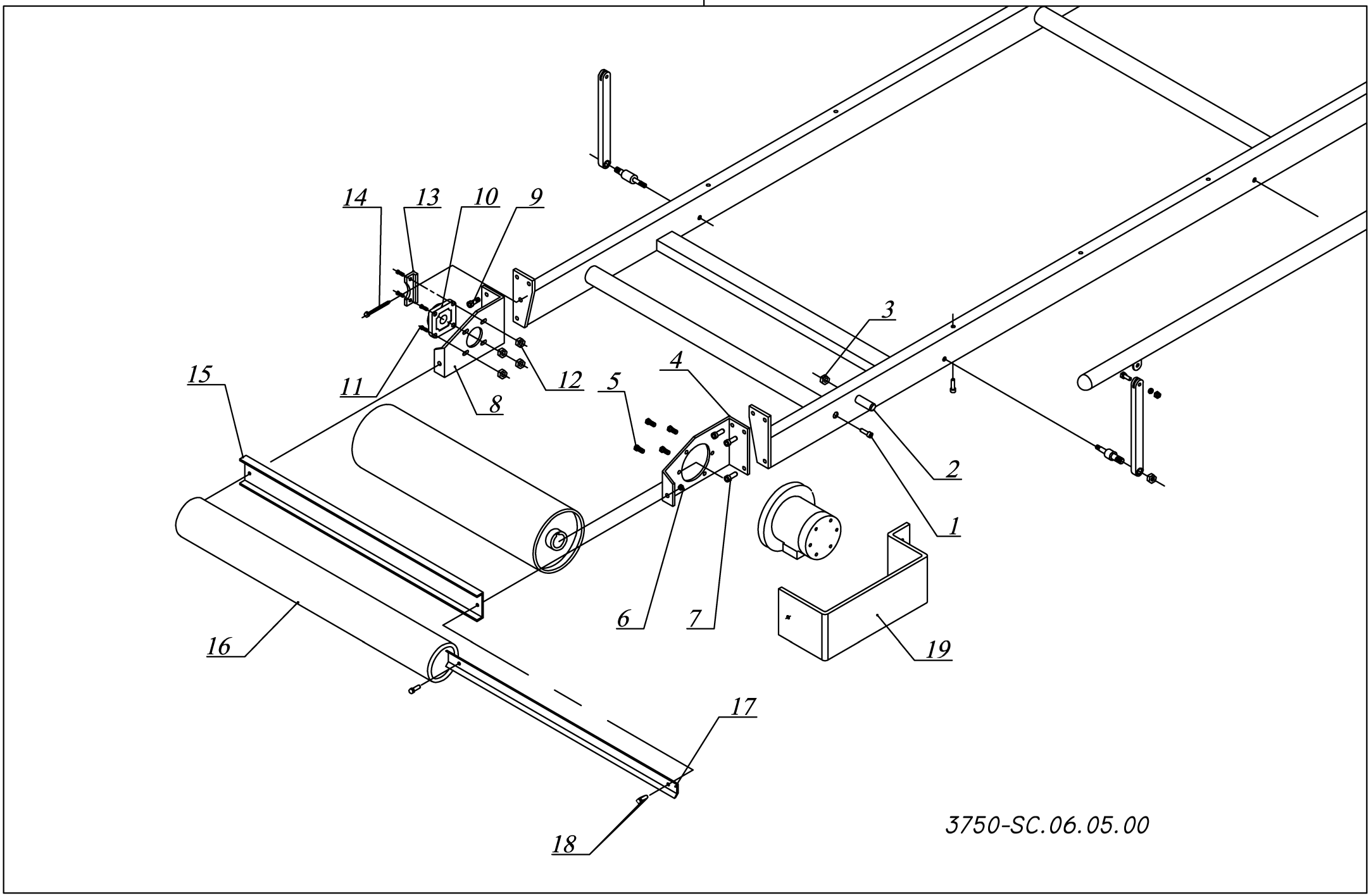
	SPARE PART LIST	Group No
	FRONT TAMBOUR GROUP	3750-SC.06.01.00

P.No	QTY	Description	Part No	Explanation
1	1	Aluminum Sheet	3750-SC.06.01.01	
2	2	Slide Plate	3750-SC.06.01.02	
3	2	Bearing 6206 2RS	3750-SC.06.01.03	**DIN 625**
4	2	Segment Ø62x2	3750-SC.06.01.04	**DIN 472**
5	1	Aluminum Plate	3750-SC.06.01.05	
6	6	Screw M10x30	3750-SC.06.01.06	**DIN 931**
7	2	Band Stretch Screw	3750-SC.06.01.07	**DIN 931**



3750-SC.06.04.00

		SPARE PART LIST	Group No	
		BAND GROUPS	3750-SC.06.04.00	
P.No	**QTY**	**Description**	**Part No**	**Explanation**
1	4	Pin	3750-SC.06.04.01	
2	8	Bearing 6000 2RS	3750-SC.06.04.02	DIN 625
3	4	Pulley	3750-SC.06.04.03	
4	4	Plate	3750-SC.06.04.04	
5	4	Fiber Nut M10	3750-SC.06.04.05	DIN 982
6	8	Screw M8x60	3750-SC.06.04.06	DIN 931
7	8	Fiber Nut M8	3750-SC.06.04.07	DIN 982
8	16	Screw M8x25	3750-SC.06.04.08	DIN 931
9	16	Fiber Nut M8	3750-SC.06.04.09	DIN 982
10	1	Band	3750-SC.06.04.10	


14
13
10
9
3
15
11
8
12
5
4
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1
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16
19
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18
3750-SC.06.05.00

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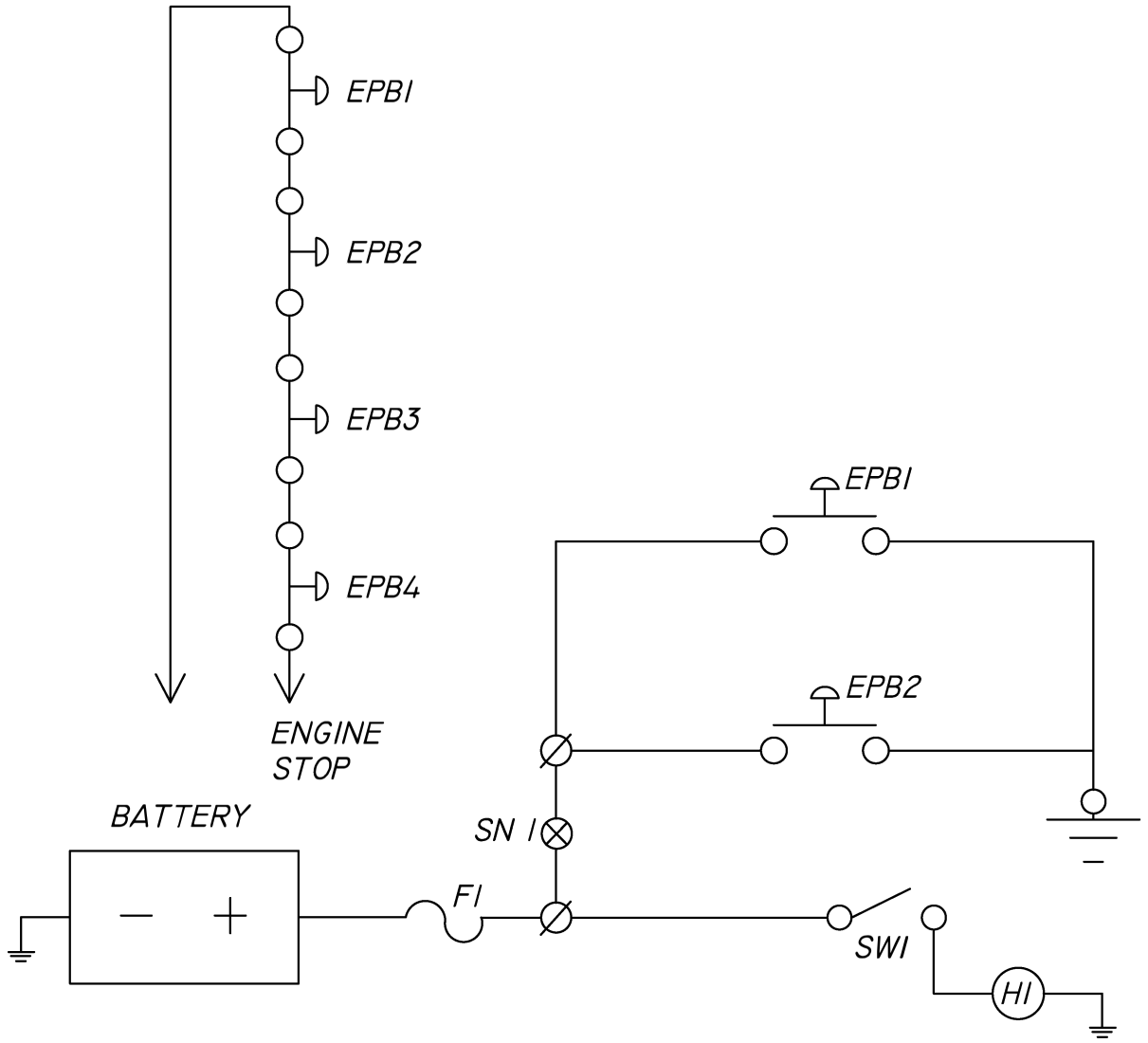
		SPARE PART LIST	Group No	
		REAR TAMBOUR GROUP	3750-SC.06.05.00	
P.No	**QTY**	**Description**	**Part No**	**Explanation**
1	16	Screw M10x20	3750-SC.06.05.01	DIN 931
2	4	Stopper	3750-SC.06.05.02	
3	4	Fiber Nut M12	3750-SC.06.05.03	DIN 982
4	1	Tambour Connecting Part(left)	3750-SC.06.05.04	
5	4	Screw M10	3750-SC.06.05.05	DIN 931
6	2	Fiber Nut M10	3750-SC.06.05.06	DIN 982
7	3	Screw M10	3750-SC.06.05.07	DIN 931
8	1	Tambour Connecting Part(right)	3750-SC.06.05.08	
9	3	Screw M10	3750-SC.06.05.09	DIN 931
10	1	Bearing UCF 206	3750-SC.06.05.10	
11	4	Screw M10	3750-SC.06.05.11	DIN 931
12	4	Fiber Nut M10	3750-SC.06.05.12	DIN 982
13	1	Band Stretch Part	3750-SC.06.05.13	
14	1	Band Stretch Screw	3750-SC.06.05.14	DIN 931
15	1	Rear Bumper Connecting Plate	3750-SC.06.05.15	
16	1	Rear Bumper	3750-SC.06.05.16	
17	1	Rear Bumper Connecting Plate	3750-SC.06.05.17	
18	2	Screw M8	3750-SC.06.05.18	DIN 931
19	1	Engine Protection Part	3750-SC.06.05.19	

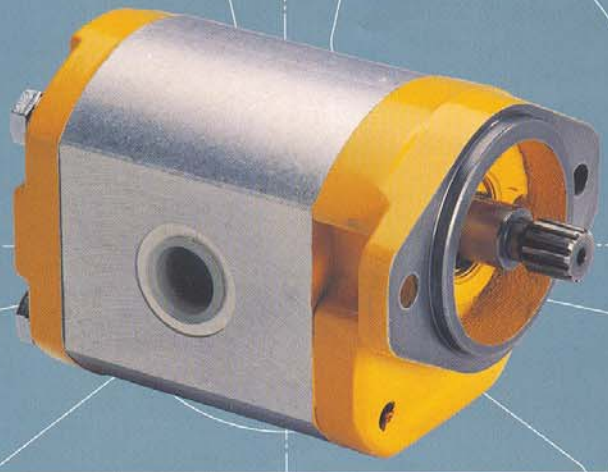


EMERGENCY STOP

3750-SC.07.00.00

APPENDIX

HEMA
ENDÜSTRİ A.Ş.



1PN DİŞLİ POMPALAR / *1PN GEAR PUMPS*

1P

SERİSİ/ *SERIES*

ÇALIŞMA ŞARTLARI

Bu pompalar, 0°C ile + 80°C arasında sürekli değişecek şekilde dizayn edilmiştir. Aralıklı çalışmalarda bu aralık -20°C ile + 100°C'ye genişletilebilir.

YÜKSEK VERİMLİLİK (1PN POMPALARI İÇİNDİR)

1PN serisi pompalarda yüksek verimlilik, diş üstü yağ kaçağının kontrolünde gösterilen özel bir dikkat ile sağlanır. Gövde ve dişli geometrisi öyle ayarlanmıştır ki pompalara uygulanan ilk alıştırma testinde dişliler gövdede görünür bir iz oluşturur. Diş üstü ile gövde arasında sıfır boşluk oluşur ve çalışma esnasında mükemmel bir diş ucu sızdırmazlığı sağlanır.

Pompalarda kullanılan serbest haldeki burçlar dişlilerde yüzey sızdırmazlığı sağlar. Bu etkin sızdırmazlık çalışma yağının burç arka yüzeydeki alanlara basınç yüklemesi ile gerçekleşir. Basınç, hız ve sıcaklık gibi çalışma parametrelerinin dengelenmesi için burcun sızdırmazlık sağlayan yüzeyi özel niteliklere sahiptir. Basınç dengeleme sistemi yüksek mekanik verimlilik için minimum yük sağlar. Burç yüzeyi boyunca oluşan basınç, burcu dengeleyerek yüksek performans sağlar.

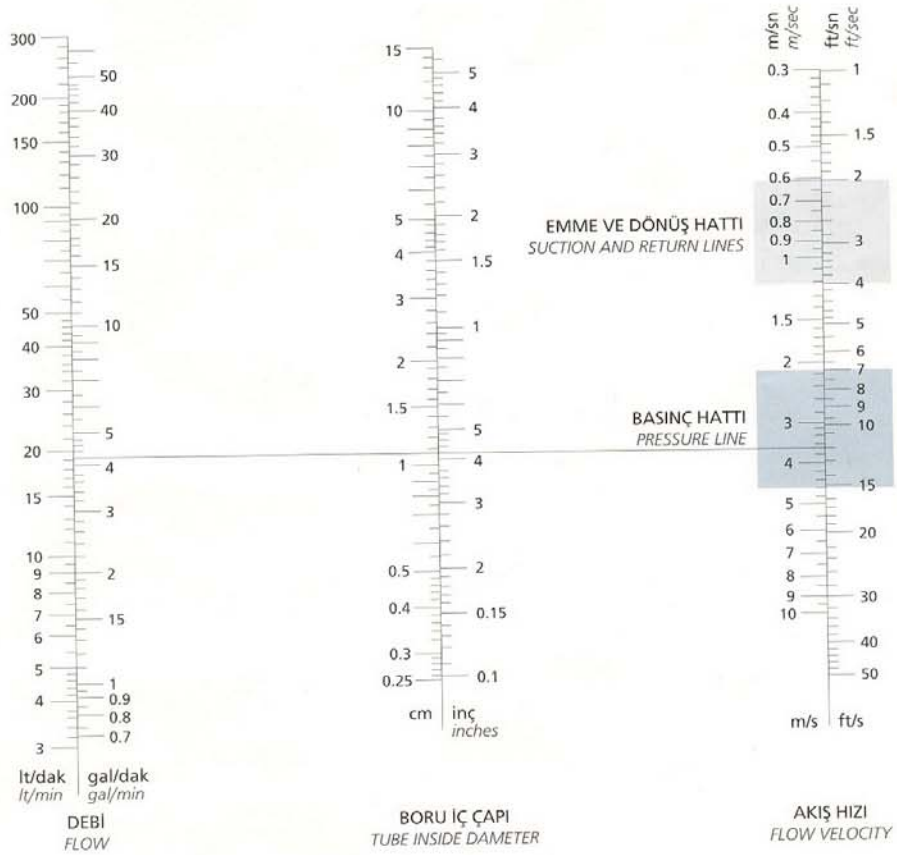
OPERATING PARAMETERS

These pumps are designed to operate continuously between 0°C and + 80°C. This range can be extended to -20°C and + 100°C for intermittent operation.

HIGH EFFICIENCY (FOR ONLY 1PN PUMPS)

High volumetric efficiencies produced by the pumps are achieved in part by careful attention to the control of gear tip leakage. The body to gear geometry is arranged such that during the running in test cycle, to which every unit is subjected, the gears cut perceptible tracks in the body. This results in virtually zero clearance between the gear tips and producing a near perfect tip seal under running conditions.

Floating composite bushes are used in the pumps which house the bearing liners and provide a face seal to the gears. This efficient seal is achieved by pressure loading precise areas of the bush rear face with fluid at working pressure. Special features are incorporated in the bush sealing face to compensate for operating variables such as pressure, speed and temperature. The pressure balancing system a minimum nett on-load for high mechanical efficiency yet at the same time balancing a varying pressure distribution across the bush face, thus contributing to the high volumetric performance of pumps.



ŞEKİL 5 : BORU BÜYÜKLÜĞÜNÜN SEÇİMİ
FIG : PIPE SIZING

1PN	-	160	-	C	B	S	Y	01	S	K
XXX		XXX		X	X	X	X	XX	X	X

ARA KEÇE *Internal seal*

KODU *Code*
K

VALFLİ ARKA KAPAK TİPİ *Rear cover type with valve*

KODU *Code*	VALF TİPİ *Valve type*
V	EMNİYET VALFİ / *Realive valve*
Z	AKIŞ KONTROL VALFİ / *Flow control valve*
Y	AKIŞ BÖLÜCÜ VALF / *Priority valve*
L	PİLOT VALF / *Load sensing valve*
P	ARKA KAPAK TİPİ / *Rear cover type*
R	ARKA KAPAK TİPİ / *Rear cover type*

DELİK TİPİ *Hole type*

DELİK TİPİ SAYFALARINA BAK.
See hole type pages

ÖN YATAK *Supported bearing*

KODU *Code*	ÖN YATAK *Supported beaning*
O	VAR / *Required*
Y	YOK / *Not required*

ŞAFT TİPİ *Shaft type*

KODU *Code*	TAHRİK MİLİ *Drive shaft*
P	PARALEL / *Parallel*
S	ÇOK KAMALI / *Spline*
T	KONİK / *Taper: 1/5*
-	KONİK / *Taper: 1/8*
R	KAPLİNLİ / *With coupling*

ÖN KAPAK TİPİ *Mounting flange type*

KAPAK TİPİ SAYFALARINA BAK.
See mounting flange type pages

DÖNÜŞ YÖNÜ *Rotation*

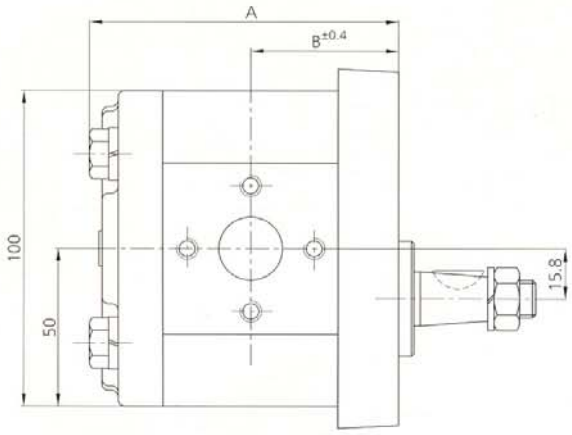
KODU *Code*	DÖNÜŞ YÖNÜ / *Rotation*
C	SAĞ / *Clockwise*
A	SOL / *Anti-clockwise*

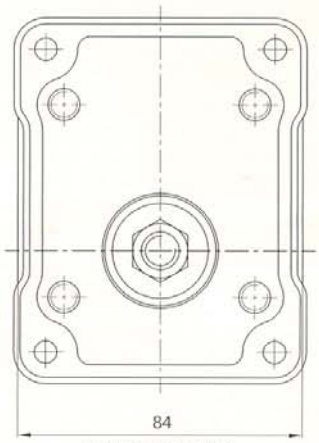
POMPA TİPİ *Pump type*

BAK. SAYFA 8
See page

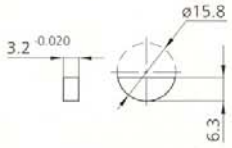
POMPA SERİSİ *Pump Series*

1PN





GÖVDE GENİŞLİĞİ
BODY WIDTH



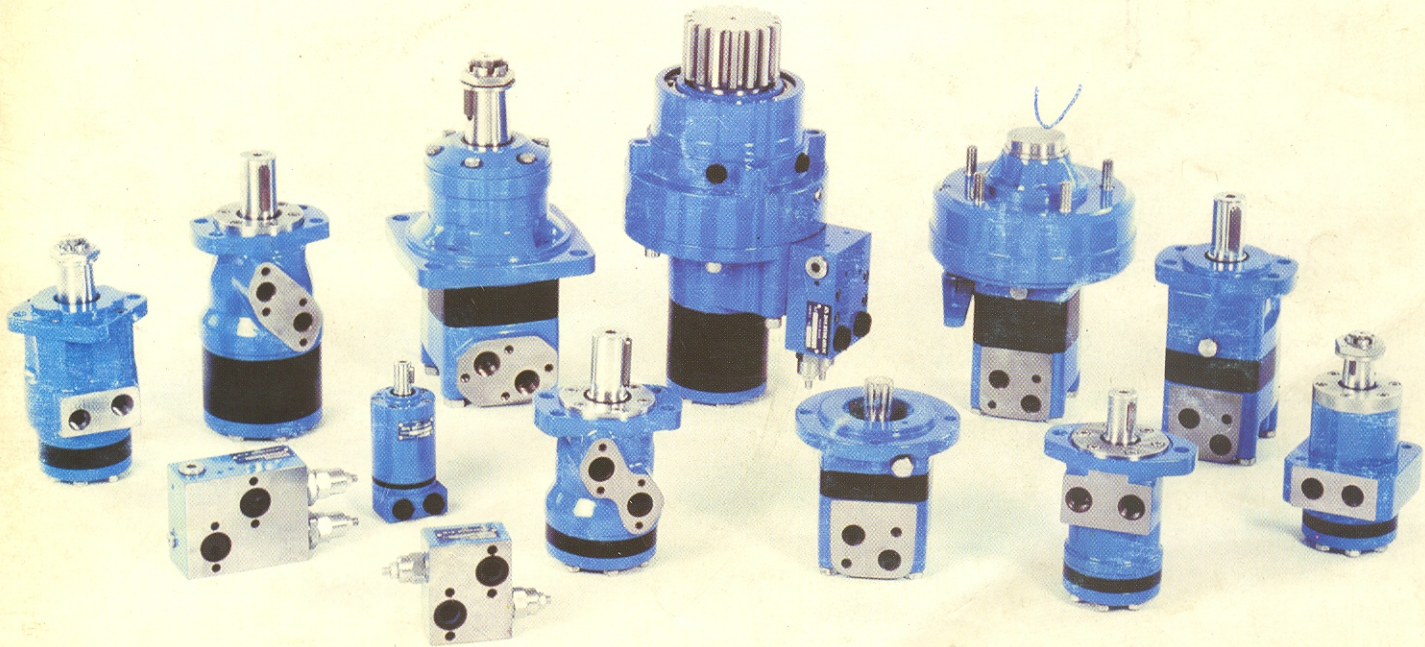
AY KAMA
WOODRUFF KEY

MODEL	İLETİM HACMİ *DISPLACEMENT* cm³/dev - *cm³/rev*	A	B
1PN-040	4.0	88.3	42.0
1PN-061	6.1	91.5	43.0
1PN-082	8.2	94.6	45.6
1PN-095	9.5	96.5	46.5
1PN-119	11.9	100.5	48.3
1PN-140	14.0	103.5	50.0
1PN-146	14.6	104.5	50.5
1PN-168	16.8	108.0	52.2
1PN-192	19.2	124.0	60.0
1PN-229	22.9	129.0	63.0
1PN-281	28.1	138.0	67.0

A+S HYDRAULIC

HYDRAULIC MOTORS

AND ACCESSORIES



ISO 9001
CERTIFIED BY TÜV-CERT

SPECIFICATION DATA

Type		EPMS 80	EPMS 100	EPMS 125	EPMS 160	EPMS 200
Displacement [cm^3/rev.]		80,5	100	125,7	159,7	200
Max. Speed,	cont.	810	750	600	470	375
[RPM]	Int.*	1000	900	720	560	450
Max. Torque	cont.	23,5	29,2	32	34	40
[daNm]	Int.*	25,8	32	38	48	50
	peak**	26	32	40	51	65
Max. Output	cont.	18,2	19,5	17,5	15,5	14
[kW]	int.*	22	22,5	21	21	17,5
Max. Pressure Drop	cont.	200	200	175	175	140
[bar]	Int.*	225	225	210	210	175
	peak**	250	250	225	225	225
Max. Oil Flow	cont.	65	75	75	75	75
[l/min]	Int.*	80	90	90	90	90
Max. Inlet Pressure	cont.	210	210	210	210	210
[bar]	Int.*	250	250	250	250	250
	peak**	300	300	300	300	300
Max. Return Pressure	cont. 0-100 RPM	100	100	100	100	100
without Drain Line or	cont. 100-300 RPM	50	50	50	50	50
Max. Pressure	cont. >300 RPM	20	20	20	20	20
in Drain Line , [bar]	Int.* 0-max. RPM	100	100	100	100	100
Max. Return Pressure	cont.	140	140	140	140	140
with Drain Line	Int.*	175	175	175	175	175
[bar]	peak**	210	210	210	210	210
Max. Starting Pressure with Unloaded Shaft, [bar]		12	10	10	8	8
Min. Starting Torque	at max. press. drop cont.	16,5	20,5	26	28	33
[daNm]	at max. press. drop Int.*	19,5	25	31	39	41
Min. Speed***, [RPM]		10	10	8	8	6
Weight, [kg]	EPMS(F) [E]	9,8[10,2]	10[10,4]	10,3[10,7]	10,7[11,1]	11,1[11,5]
	EPMSW [E]	10,3[10,7]	10,5[10,9]	10,8[11,2]	11,2[11,6]	11,6[12]
	EPMSS(Z) [E]	7,8[8,2]	8[8,4]	8,3[8,7]	8,7[9,1]	9,1[9,5]
	EPMSV [E]	5,7[6,1]	5,9[6,3]	6,2[6,6]	6,6[7]	7[7,4]
	EPMSQ [E]	10,2[10,6]	10,4[10,8]	10,7[11,1]	11,1[11,5]	11,5[11,9]
	EPMSB [E]	16,8[17,2]	17,0[17,4]	17,3[17,7]	17,7[18,1]	18,1[18,5]

* Intermittent operation: the permissible values may occur for max. 10% of every minute.

** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds of 5 RPM lower than given, consult factory or your regional manager.

1) Intermittent speed and intermittent pressure must not occur simultaneously.
2) Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3) Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4). If using synthetic fluids consult the factory for alternative seal materials.
4) Recommended minimum oil viscosity 13mm^2/s at operating temperatures.
5) Recommended maximum system operating temperature is 82^{0}C.
6) To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

SPECIFICATION DATA (continued)

Type		EPMS 250	EPMS 315	EPMS 400	EPMS 475	EPMS 525	EPMS 565
Displacement [cm^3/rev.]		250	314,9	397	474,6	522,7	564,9
Max. Speed,	cont.	300	240	190	160	145	130
[RPM]	Int.*	360	290	230	190	175	160
Max. Torque	cont.	45	54	58	58	58	58
[daNm]	Int.*	54	63	69	68	69	69
	peak**	69	84	85	84	85	85
Max. Output	cont.	12,5	11,5	10	8,4	7,6	6,9
[kW]	int.*	15	13,5	13	11,3	10.4	9,6
Max. Pressure Drop	cont.	125	120	100	85	80	75
[bar]	Int.*	155	140	120	100	90	85
	peak**	200	185	140	115	105	100
Max. Oil Flow	cont.	75	75	75	75	75	75
[l/min]	Int.*	90	90	90	90	90	90
Max. Inlet Pressure	cont.	210	210	210	210	210	210
[bar]	Int.*	250	250	250	250	250	250
	peak**	300	300	300	300	300	300
Max. Return Pressure	cont. 0-100 RPM	100	100	100	100	100	100
without Drain Line or	cont. 100-300 RPM	50	50	50	50	50	50
Max. Pressure	cont. >300 RPM	-	-	-	-	-	-
in Drain Line , [bar]	Int.* 0-max. RPM	100	100	100	100	100	100
Max. Return Pressure	cont.	140	140	140	140	140	140
with Drain Line	Int.*	175	175	175	175	175	175
[bar]	peak**	210	210	210	210	210	210
Max. Starting Pressure with Unloaded Shaft, [bar]		8	8	8	8	8	8
Min. Starting Torque	at max. press. drop cont.	36	44	47	47	47	47
[daNm]	at max. press. drop Int.*	44	52	55	55	55	55
Min. Speed***, [RPM]		6	5	5	5	5	5
Weight, [kg]	EPMS(F) [E]	11,6[12]	12,3[12,7]	13,2[13,6]	14[14,4]	14,9[15,3]	14,9[15,3]
	EPMSW [E]	12,1[12,5]	12,8[13,2]	13,7[14,1]	14,5[14,9]	15,4[15,8]	15,4[15,8]
	EPMSS(Z) [E]	9,6[10]	10,3[10,7]	11,2[11,6]	12[12,4]	12,9[13,3]	12,9[13,3]
	EPMSV [E]	7,5[7,9]	8,2[8,6]	9,1[9,5]	9,9[10,3]	10,8[11,2]	10,8[11,2]
	EPMSQ [E]	12[12,4]	12,7[13,1]	13,6[14]	14,4[14,8]	15,3[15,7]	15,3[15,7]
	EPMSB [E]	18,6[19]	19,3[19,7]	20,2[20,6]	21[21,4]	21,9[22,3]	21,9[22,3]

* Intermittent operation: the permissible values may occur for max. 10% of every minute.

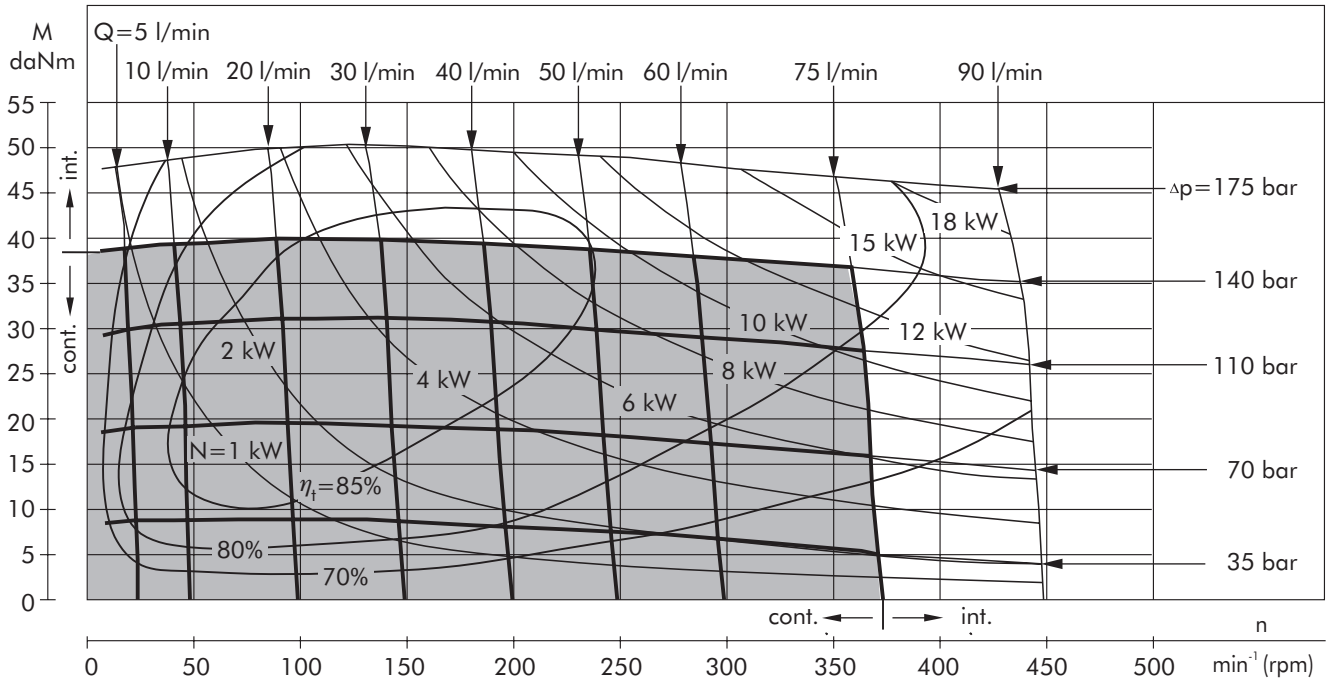
** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds of 5 RPM lower than given, consult factory or your regional manager.

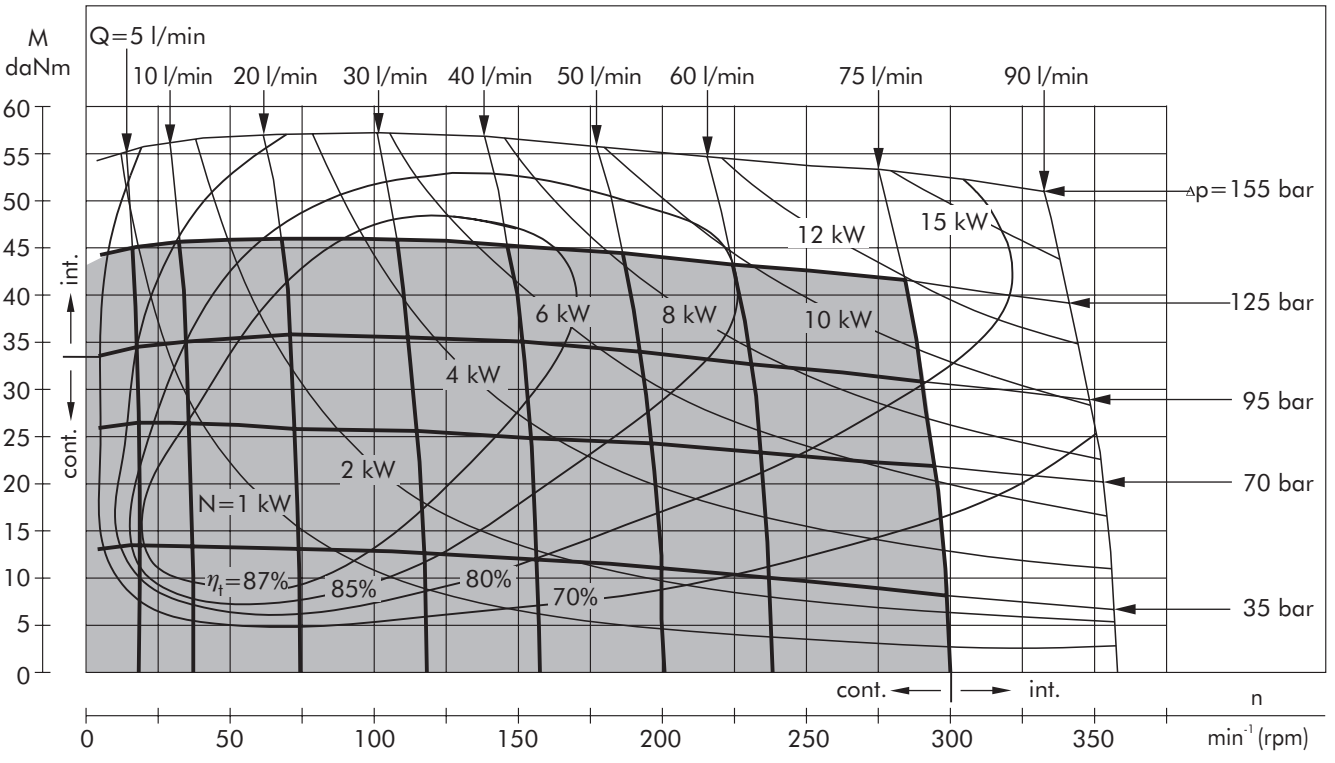
1) Intermittent speed and intermittent pressure must not occur simultaneously.
2) Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3) Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4). If using synthetic fluids consult the factory for alternative seal materials.
4) Recommended minimum oil viscosity 13mm^2/s at operating temperatures.
5) Recommended maximum system operating temperature is 82^{0}C.
6) To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

FUNCTION DIAGRAMS

EPMS 200



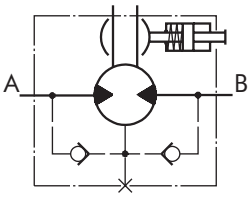
EPMS 250



The function diagrams data was collected at back pressure 5÷10 bar and oil with viscosity of 32 mm²/s at 50° C.

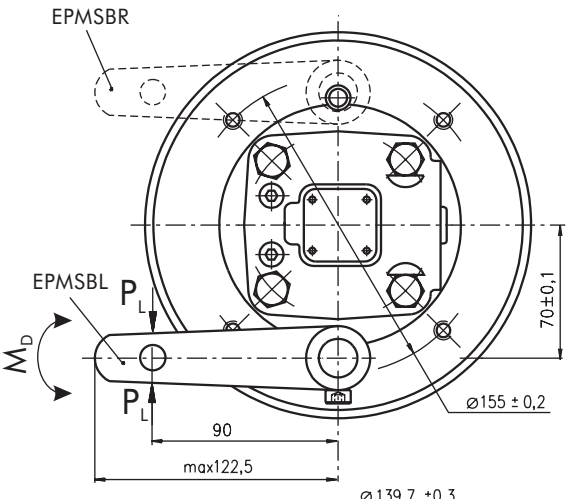
DIMENSIONS AND MOUNTING DATA -EPMSB

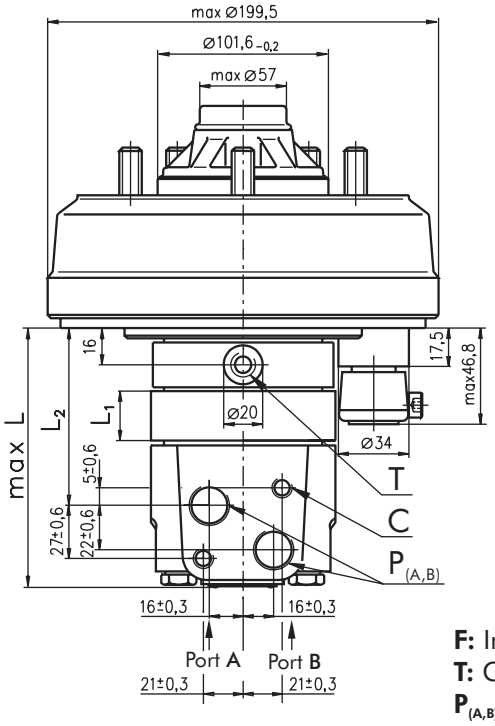
B Motor with Brum Brake

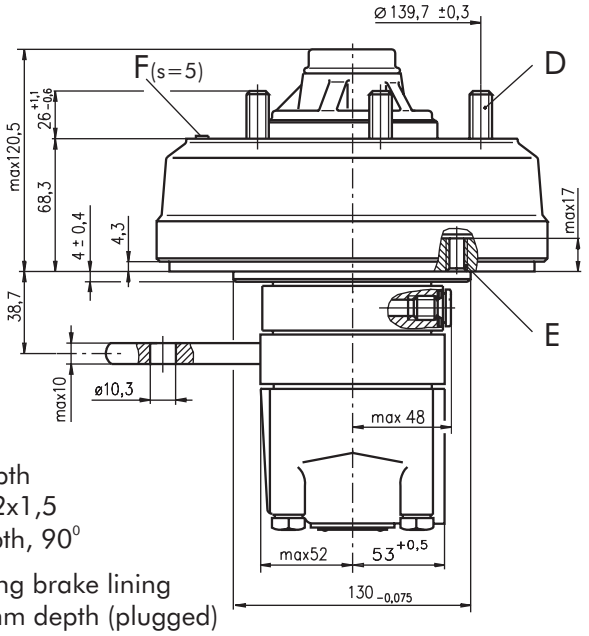


Actuating the brake level, the brake shaft is turned. The rectangular shape of the inner part of this shaft forces the brake pads to be pressed against the brake drum. This brakes the wheel or the winch drum.

Releasing the level, the springs pull it and the brake pads back to the initial position. The motor output shaft is released. Minimum angle adjustment is 10^0. It can be adjusted by dismounting the level. Depending on the application You can choose the actuating direction of the brake level. The rod connection actuating the brake should be capable of moving at last 25 mm from neutral to extreme position.



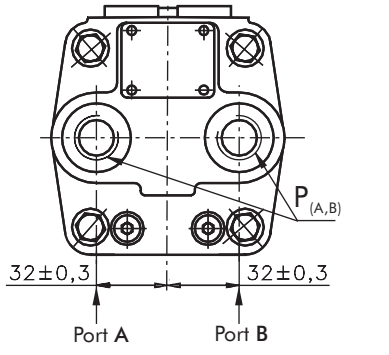


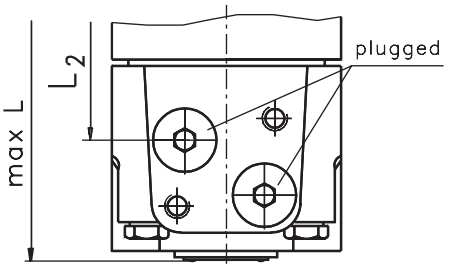


C: 2xM10-12 mm depth
D: Wheel bolts 5xM12x1,5
E: 4xM12; 17mm depth, 90^0

F: Inspection hole for checking brake lining
T: G 1/4 or M14x1,5 - 12 mm depth (plugged)
$P_{(A,B)}$: 2xG1/2 or 2xM22x1,5-15 mm depth

E Rear Port





Type	L, mm	*L_1, mm	L_2, mm	Type	L, mm
EPMSB 80	117	11,0	71	EPMSBE 80	127
EPMSB100	120	14,4	74	EPMSBE 100	130
EPMSB 125	124	18,8	79	EPMSBE 125	134
EPMSB 160	130	24,8	85	EPMSBE 160	140
EPMSB 200	137	31,8	92	EPMSBE 200	147
EPMSB 250	146	40,5	107	EPMSBE 250	156
EPMSB 315	157	51,8	112	EPMSBE 315	167
EPMSB 400	172	66,4	127	EPMSBE 400	182
EPMSB 475	186	79,6	140	EPMSBE 475	196
EPMSB 565	201	95,3	155	EPMSBE 565	211
EPMSB 715	227	121,2	181	EPMSBE 715	237

* The width of gerolor is 3 mm greater than L_1.

Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

SAVE Click SAVE to save this manual to your computer. Thank you for choosing Honda.

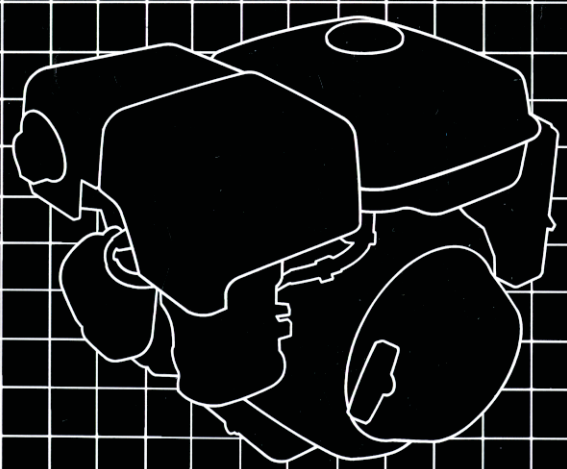
HONDA

Power

Equipment

Owner's Manual

GX240 · GX270 · GX340 · GX390



Thank you for purchasing a Honda engine.

This manual covers the operation and maintenance of GX240 • GX270 • GX340 and GX390 engines and is based on GX270 engine. The QAE type is equipped for both electric and manual starting; other types are equipped for manual starting only. All information in this publication is based on the latest product information available at the time of printing.

Honda Motor Co., Ltd. reserves the right to make changes at any time without notice and without incurring any obligation.

This manual should be considered a permanent part of the engine and should remain with the engine if it is resold.

It is illegal in some areas to operate an engine without a U.S.D.A. qualified spark arrester; check local laws and regulations. An optional spark arrester for this engine is available from any dealership displaying the Honda Power Equipment Engines sign.

READ THIS OWNER'S MANUAL CAREFULLY. Pay special attention to these symbols and any instructions that follow:

⚠DANGER —**Indicates serious injury or death WILL result if instructions are not followed.**

⚠WARNING —**Indicates a strong possibility that serious injury or death could result if instructions are not followed.**

⚠CAUTION —**Indicates a possibility that minor injury can result if instructions are not followed.**

NOTICE —**Indicates that equipment or property damage can result if instructions are not followed.**

NOTE: Gives helpful information.

If a problem should arise, or if you have any questions about your engine, consult your Honda engine dealer.

CONTENTS

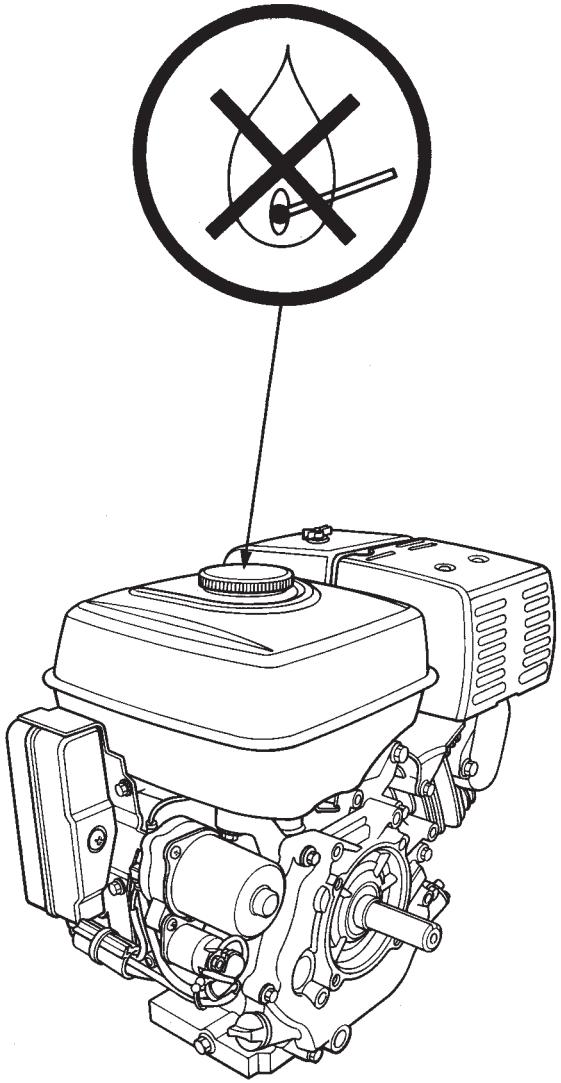
CONTENTS

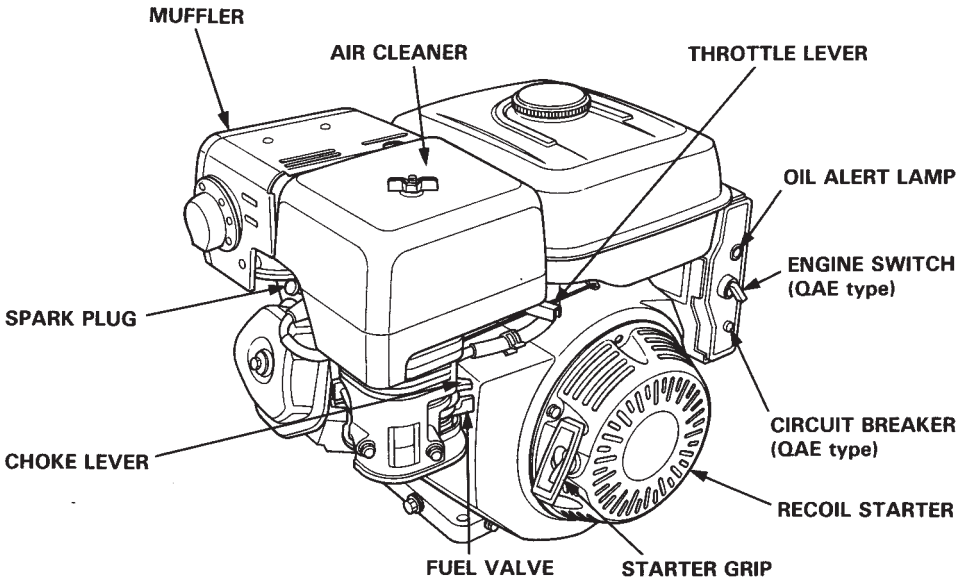
⚠WARNING

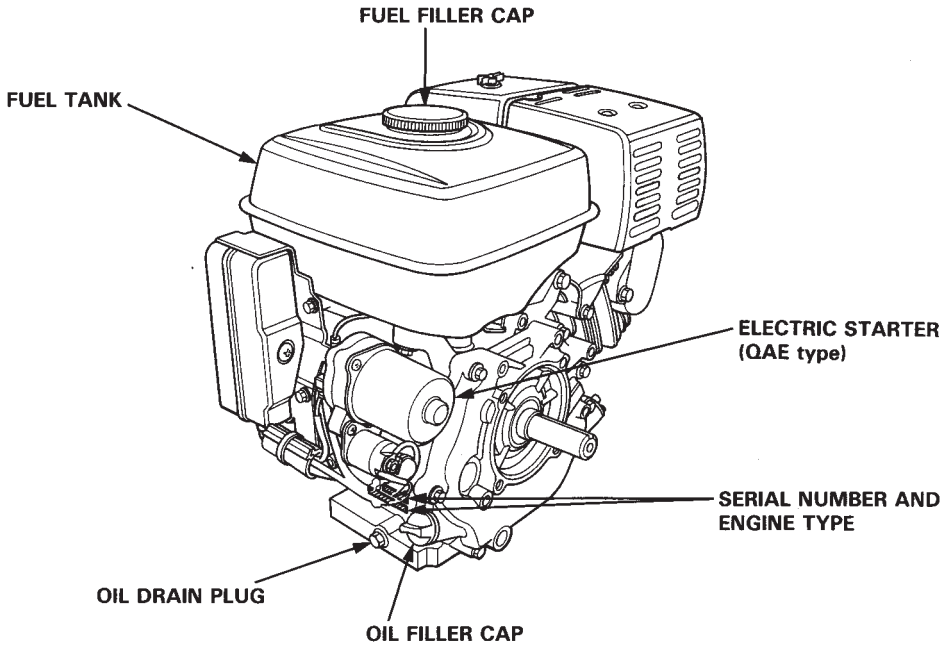
- **Honda engines are designed to give safe and dependable service if operated according to instructions. Read and understand this Owner's Manual before operating the engine. Failure to do so could result in personal injury or equipment damage.**
- **To prevent fire hazards and to provide adequate ventilation, keep the engine at least 1 meter (3 feet) away from buildings and other equipment during operation. Do not place flammable objects close to the engine.**
- **Children and pets must be kept away from the area of operation due to a possibility of burns from hot engine components or injury from any equipment the engine may be used to operate.**
- **Know how to stop the engine quickly, and understand the operation of all controls. Never permit anyone to operate the engine without proper instructions.**
- **Gasoline is extremely flammable and is explosive under certain conditions.**
- **Refuel in a well-ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the refueling area or where gasoline is stored.**
- **Do not overfill the fuel tank. After refueling, make sure the tank cap is closed properly and securely.**
- **Be careful not to spill fuel when refueling. Fuel vapor or spilled fuel may ignite. If any fuel is spilled, make sure the area is dry before starting the engine.**
- **Never run the engine in an enclosed or confined area. Exhaust contains poisonous carbon monoxide gas; exposure may cause loss of consciousness and may lead to death.**
- **The muffler becomes very hot during operation and remains hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot. To avoid severe burns or fire hazards, let the engine cool before transporting it or storing it indoors.**

Read these labels before you operate the engine.

GASOLINE WARNING LABEL




MUFFLER
AIR CLEANER
THROTTLE LEVER
OIL ALERT LAMP
ENGINE SWITCH
(QAE type)
SPARK PLUG
CHOKE LEVER
CIRCUIT BREAKER
(QAE type)
RECOIL STARTER
FUEL VALVE
STARTER GRIP


FUEL FILLER CAP
FUEL TANK
ELECTRIC STARTER
(QAE type)
SERIAL NUMBER AND
ENGINE TYPE
OIL DRAIN PLUG
OIL FILLER CAP

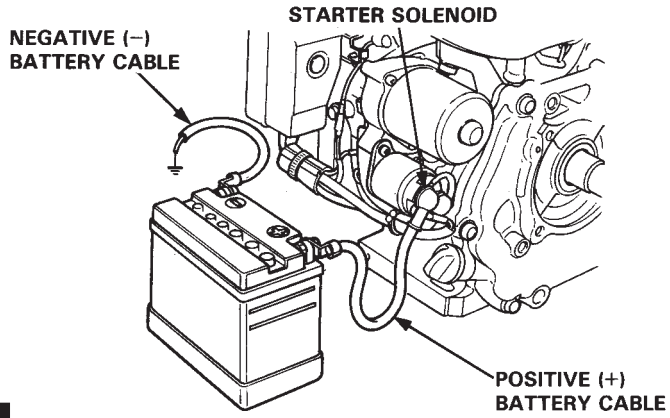
3. BATTERY CONNECTIONS (QAE type)

Use a 12 volt battery with an ampere-hour rating of at least 18 AH.

Connect the battery positive (+) cable to the starter solenoid terminal, as shown.

Connect the battery negative (−) cable to an engine mounting bolt, frame bolt, or other good engine ground connection.

Check the battery cable connections to be sure the cables are tightened and free of corrosion. Remove any corrosion and coat the terminals and cable ends with grease.



⚠WARNING

- **The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging or using batteries in an enclosed space.**
- **The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.**
  - **— If electrolyte gets on your skin, flush with water.**
  - **— If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician immediately.**
- **Electrolyte is poisonous.**
  - **— If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician.**
- **KEEP OUT OF REACH OF CHILDREN.**

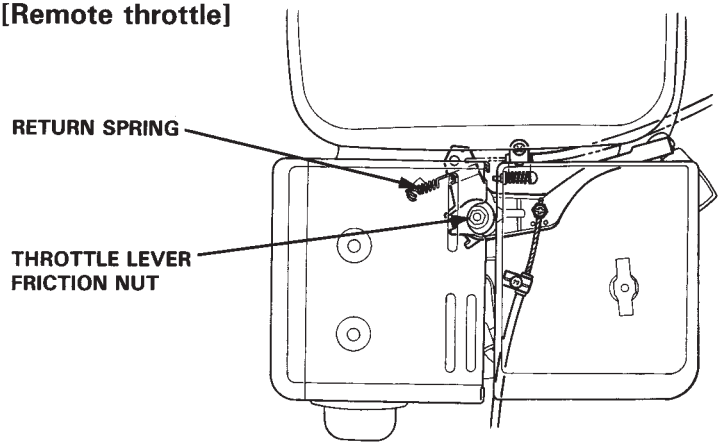
NOTICE

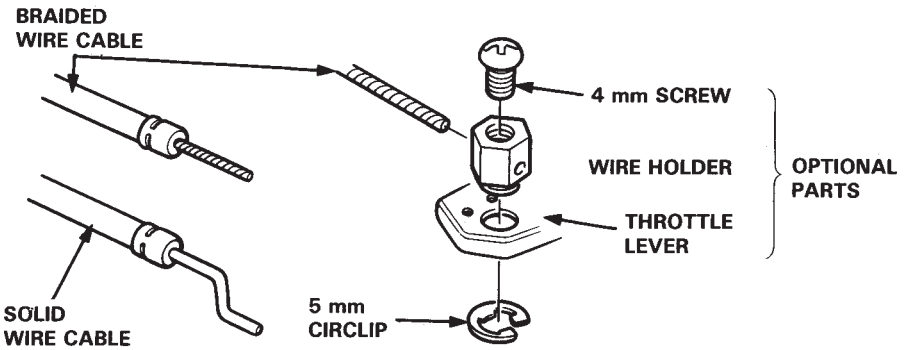
- **Use only distilled water in the battery. Tap water will shorten the service life of the battery.**
- **Filling the battery above the UPPER LEVEL line may cause the electrolyte to overflow, resulting in corrosion to engine or nearby parts. Immediately wash off any spilled electrolyte.**
- **Be careful not to connect the battery in reverse polarity, as this will short circuit the battery charging system and trip the circuit breaker or fuse.**

4. REMOTE CONTROL LINKAGE
(for throttle and choke cables)

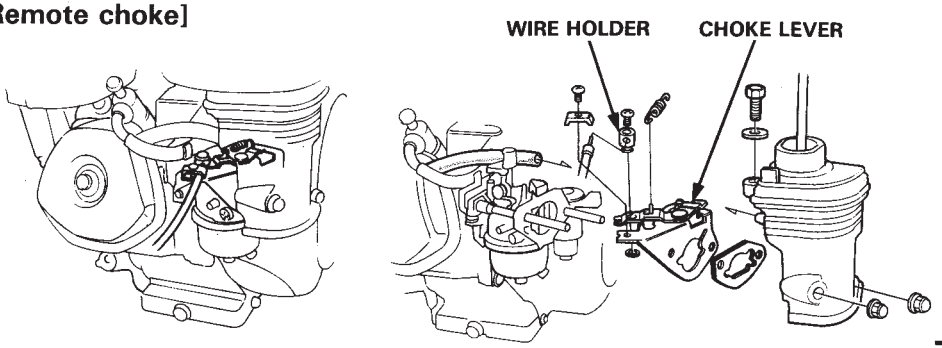
The throttle and choke control levers are provided with holes for optional cable attachment. The following illustrations show installation examples for a solid wire cable and for a braided wire cable. If using a braided wire cable, add a return spring as shown.
It is necessary to loosen the throttle lever friction nut when operating the throttle with a remote cable.

[Remote throttle]





[Remote choke]



5. PRE-OPERATION CHECK

1. ENGINE OIL

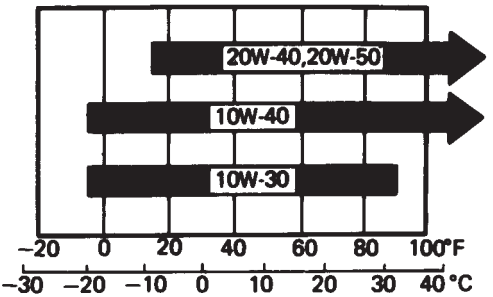
NOTICE

- **Engine oil is a major factor affecting engine performance and service life. Nondetergent oils and 2 stroke engine oils are not recommended because they have inadequate lubricating characteristics.**
- **Be sure to check the engine on a level surface with the engine stopped.**

Use Honda 4-stroke oil, or an equivalent high-detergent, premium-quality motor oil certified to meet or exceed U.S. automobile manufacturer's requirements for Service Classification SG·SF/CC·CD. (Motor oils classified SG·SF/CC·CD will show this designation on the container.)

SAE 10W-30 is recommended for general, all-temperature use.

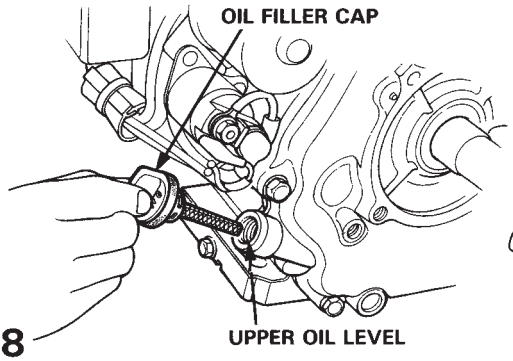
Other viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.

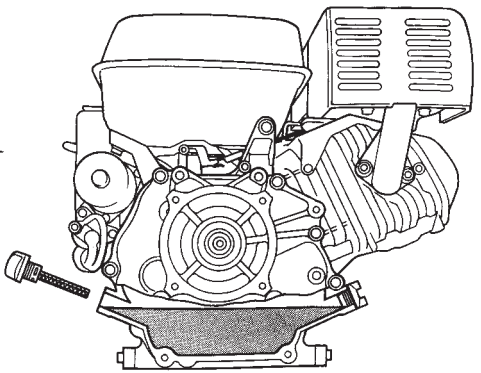


Ambient temperature

1. Remove the oil filler cap and wipe the dipstick clean.
2. Insert the dipstick into the oil filler neck, but do not screw it in.
3. If the level is low, fill to the top of the oil filler neck with the recommended oil.

NOTE: The oil Alert System will automatically stop the engine before the oil level falls below the safe limit. However, to avoid the inconvenience of an unexpected shutdown, it is advisable to visually inspect the oil level regularly.



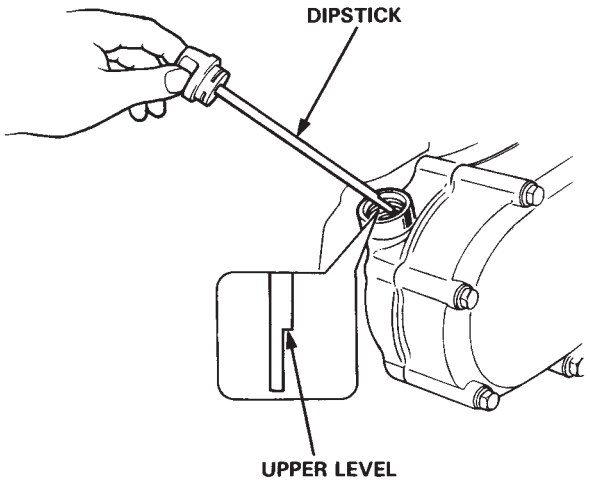


2. REDUCTION GEAR OIL (Only on equipped model)

<1/2 reduction with automatic centrifugal clutch>

1. Remove the oil filler cap and wipe the dipstick clean.
2. Insert the dipstick into the filler neck, but do not screw it in.
3. If the level is low, fill to the upper level mark with the same oil that is recommended for the engine (see engine oil recommendations on page 8).

Oil capacity: 300 cc (10 US oz, 8.4 Imp oz)

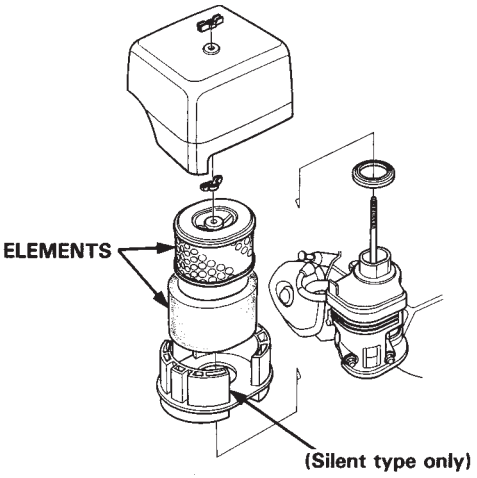


3. AIR CLEANER

NOTICE **Never run the engine without the air cleaner. Rapid engine wear will result from contaminants, such as dust and dirt, being drawn through the carburetor and into the engine.**

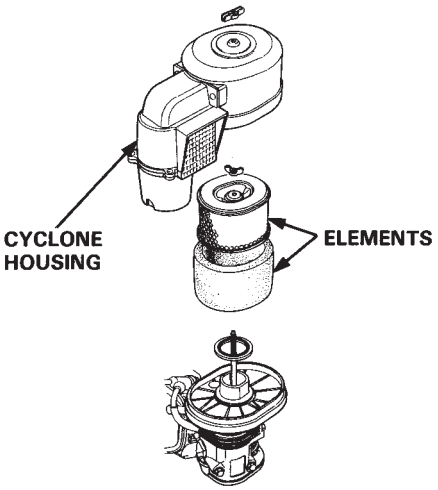
<Dual element type>

Check the air cleaner elements to be sure they are clean and in good condition. Clean or replace the elements if necessary (p.22).



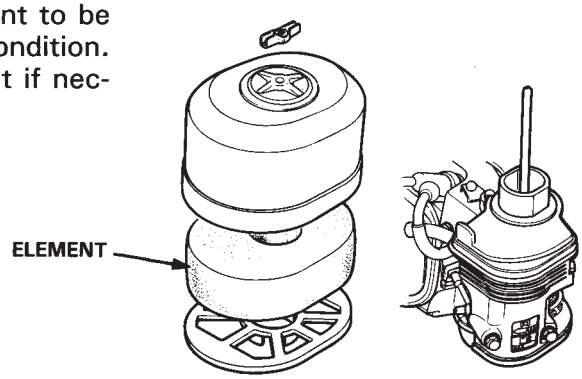
<Cyclone type>

1. Check the air cleaner element to be sure they are clean and in good condition.
   Clean or replace the elements if necessary (p.23).
2. Check the cyclone housing, and clean it if it is clogged or excessively dirty (p.23).



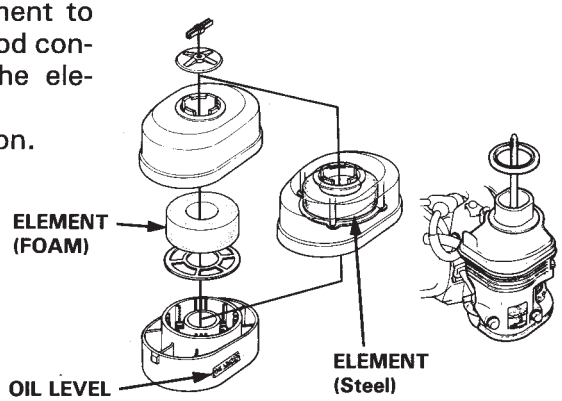
<Single element type>

Check the air cleaner element to be sure it is clean and in good condition. Clean or replace the element if necessary (p.24).



<Oil bath type>

1. Check the air cleaner element to be sure it is clean and in good condition. Clean or replace the element if necessary (p.24).
2. Check oil level and condition.



4. FUEL

Your engine is designed to use any gasoline that has a pump octane number $(\frac{R + M}{2})$ of 86 or higher, or that has a research octane number of 91 or higher. Gasoline pumps at service station normally display the pump octane number.
We recommend that you use unleaded fuel because it produces fewer engine and spark plug deposits and extends the life of exhaust system components.

Never use stale or contaminated gasoline or an oil/gasoline mixture. Avoid getting dirt, dust or water in the fuel tank. Use of a lower octane gasoline can cause persistent "pinging" or heavy "spark knock" (a metallic rapping noise) which, if severe, can lead to engine damage.

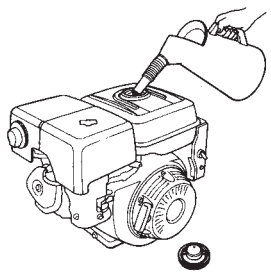
NOTICE **If "spark knock" or "pinging" occurs at a steady engine speed under normal load, change brands of gasoline. If spark knock or pinging persists, consult your authorized Honda dealer. Failure to do so is considered misuse, and damage caused by misuse is not covered by Honda's Limited Warranty.**

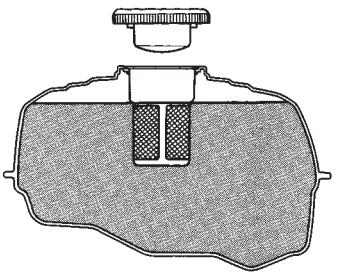
Occasionally you may experience light spark knock while operating under heavy loads. This is no cause for concern, it simply means your engine is operating efficiently.

⚠WARNING

- **Gasoline is extremely flammable and is explosive under certain conditions.**
- **Refuel in a well-ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the area where the engine is refueled or where gasoline is stored.**
- **Do not overfill the fuel tank (there should be no fuel in the filler neck). After refueling, make sure the tank cap is closed properly and securely.**
- **Be careful not to spill fuel when refueling. Spilled fuel or fuel vapor may ignite. If any fuel is spilled, make sure the area is dry before starting the engine.**
- **Avoid repeated or prolonged contact with skin or breathing of vapor. KEEP OUT OF REACH OF CHILDREN.**

Fuel tank capacity: GX240 · GX270 5.9 ℓ (1.6 US Gal, 10.4 Imp pt)
GX340 · GX390 6.5 ℓ (1.7 US Gal, 11.4 Imp pt)





GASOLINES CONTAINING ALCOHOL

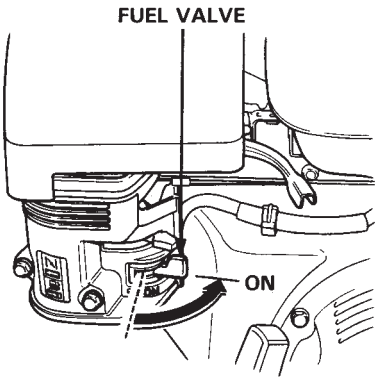
If you decide to use a gasoline containing alcohol (gasohol), be sure its octane rating is at least as high as that recommended by Honda. There are two types of "gasohol": one containing ethanol, and the other containing methanol. Do not use gasohol that contains more than 10% ethanol. Do not use gasoline containing methanol (methyl or wood alcohol) that does not also contain cosolvents and corrosion inhibitors for methanol. Never use gasoline containing more than 5% methanol, even if it has cosolvents and corrosion inhibitors.

NOTE:

- Fuel system damage or engine performance problems resulting from the use of fuels that contain alcohol is not covered under the warranty. Honda cannot endorse the use of fuels containing methanol since evidence of their suitability is as yet incomplete.
- Before buying fuel from an unfamiliar station, try to find out if the fuel contains alcohol, if it does, confirm the type and percentage of alcohol used. If you notice any undesirable operating symptoms while using a gasoline that contains alcohol, or one that you think contains alcohol, switch to a gasoline that you know does not contain alcohol.

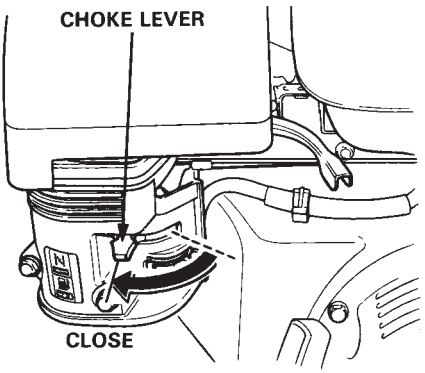
6. STARTING THE ENGINE

1. Turn the fuel valve to the ON position.

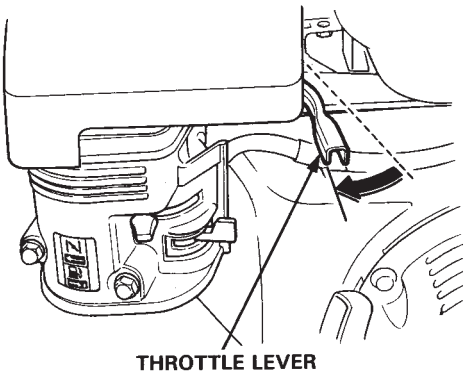


2. Move the choke lever to the CLOSE position.

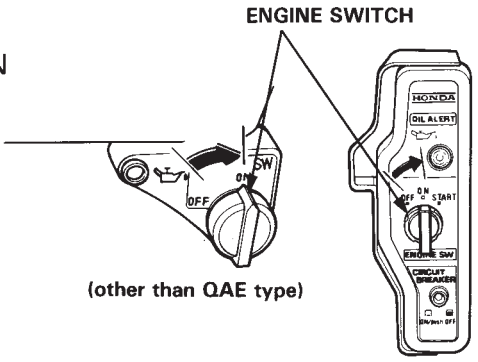
NOTE: The choke may not be needed if the engine is warm or the air temperature is high.



3. Move the throttle lever slightly to the left.



4. Start the engine.
- With recoil starter:
  Turn the engine switch to the ON position.

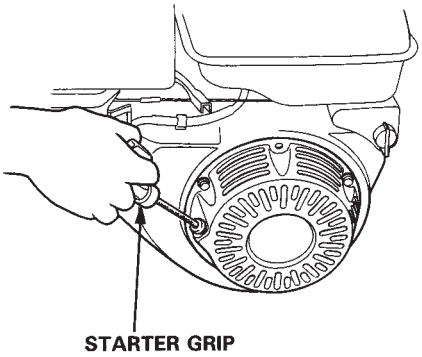


(other than QAE type)

(QAE type)

Pull the starter grip lightly until resistance is felt, then pull briskly.

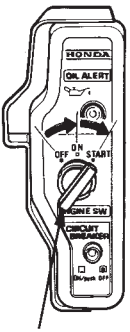
NOTICE **Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.**



- With electric starter (QAE type):
  Turn the engine switch to the START position and hold it there until the engine starts.

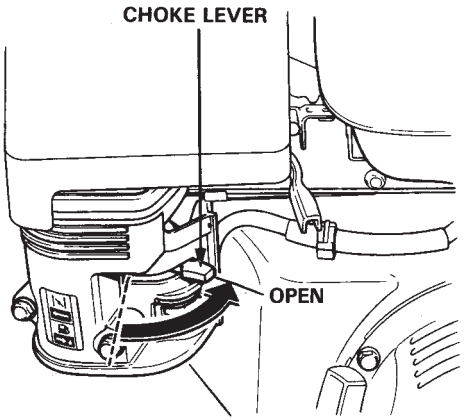
NOTICE **Do not use the electric starter for more than 5 seconds or starter motor damage may occur. If the engine falls to start, release the switch and walt 10 seconds before operating the starter again.**

When the engine starts, allow the engine switch to return to the ON position.

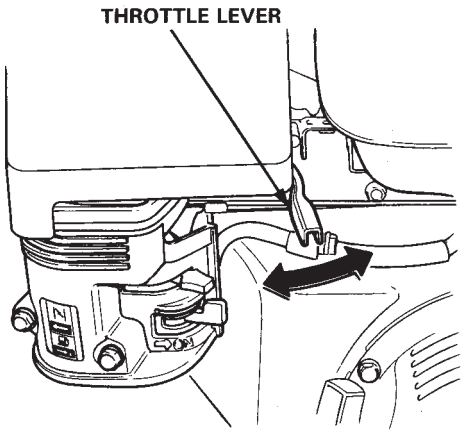


ENGINE SWITCH
(QAE type)

1. As the engine warms up, gradually move the choke lever to the OPEN position.



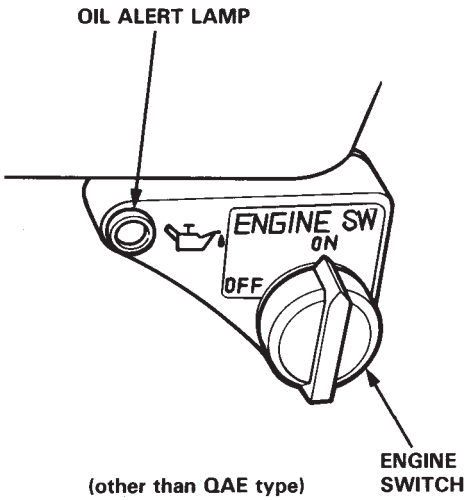
2. Position the throttle lever for the desired engine speed.



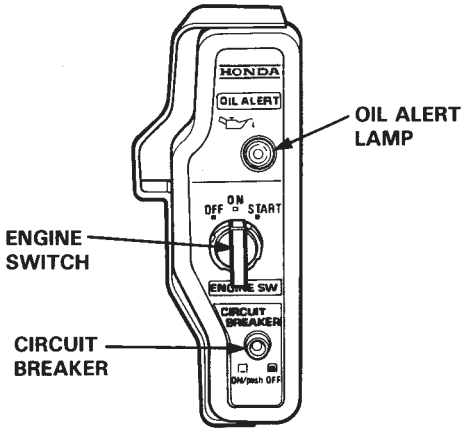
Oil Alert System

The Oil Alert system is designed to prevent engine damage caused by an insufficient amount of oil in the crankcase. Before the oil level in the crankcase can fall below a safe limit, the Oil Alert system will automatically shut down the engine (the engine switch will remain in the ON position).

If the Oil Alert system shuts down the engine, the Oil Alert lamp will flash when you operate the starter, and the engine will not run. If this occurs, add engine oil (p.8).



(other than QAE type)



(QAE type)

Circuit Breaker (QAE type)

The circuit breaker protects the battery charging circuit. A short circuit or a battery connected in reverse polarity will trip the circuit breaker.

The green indicator inside the circuit breaker will pop out to show that the circuit breaker has switched off. If this occurs, determine the cause of the problem, and correct it before resetting the circuit breaker.

Push the circuit breaker button to reset.

•High altitude operation

At high altitude, the standard carburetor air-fuel mixture will be excessively rich. Performance will decrease, and fuel consumption will increase.

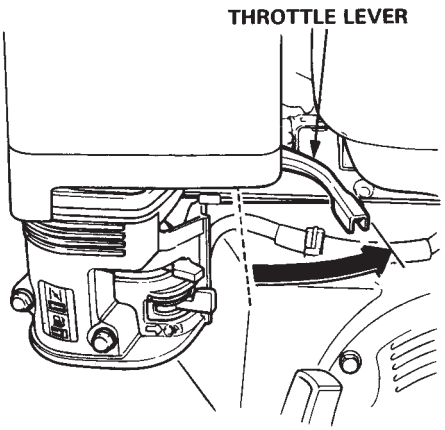
High altitude performance can be improved by installing a smaller diameter main fuel jet in the carburetor and readjusting the pilot screw. If you always operate the engine at altitudes higher than 6,000 feet above sea level, have these carburetor modifications performed by a dealership displaying the Honda Power Equipment Engines sign.

Even with suitable carburetor jetting, engine horsepower will decrease approximately 3.5% for each 1,000 foot increase in altitude. The effect of altitude on horsepower will be greater than this if no carburetor modification is made.

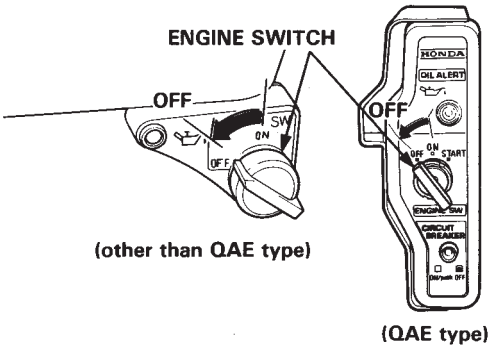
NOTICE **Operation of the engine at an altitude lower than the carburetor is jetted for may result in reduced performance, overheating, and serious engine damage caused by an excessively lean air/fuel mixture.**

To stop the engine in an emergency, turn the engine switch to the OFF position. Under normal conditions, use the following procedure:

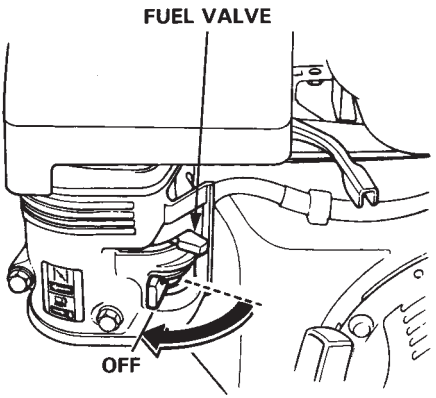
1. Move the throttle lever fully to the right.



2. Turn the engine switch to the OFF position.



3. Turn the fuel valve to the OFF position.



9. MAINTENANCE

Periodic maintenance and adjustment is necessary to keep the engine in good operating condition. Perform the service and inspection scheduled in the following table.

⚠WARNING Shut off the engine before performing any maintenance. If the engine must be run, make sure the area is well ventilated. The exhaust contains poisonous carbon monoxide gas; exposure can cause loss of consciousness and may lead to death.

NOTICE Use only genuine HONDA parts or their equivalent. The use of replacement parts which are not of equivalent quality may damage the engine.

Maintenance Schedule

ITEM / REGULAR SERVICE PERIOD (Performed at every indicated monthor operating hour interval, whichever comes first.)		Each use	First month or 20 Hrs.	Every 3 months or 50 Hrs.	Every 6 months or 100 Hrs.	Every year or 300 Hrs.
Engine oil	Check level	O				
	Change		O		O	
Reduction gear oil (applicable models only)	Check level	O				
	Change		O			O
Air cleaner	Check	O				
	Clean			O(1)		
Sediment cup	Clean				O	
Spark plug	Clean-Readjust				O	
Spark arrester (optional part)	Clean				O	
Valve clearance	Check-Readjust					O(2)
Fuel tank and strainer	Clean					O(2)
Fuel line	Check (Replace if necessary)	Every 2 years (2)				

NOTE: (1) Service more frequently when used in dusty areas.
(2) These items should be serviced by an authorized Honda dealer, unless the owner has the proper tools and is mechanically proficient. See the Honda Shop Manual.

1. Oil change

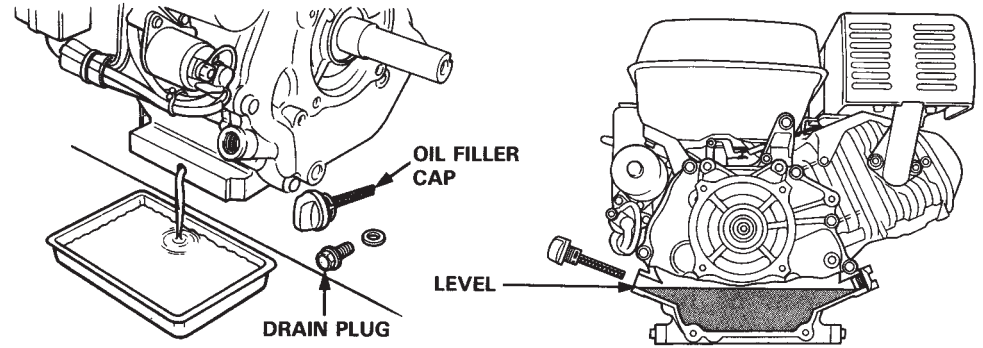
Drain the oil while the engine is still warm to assure rapid and complete draining.

1. Remove the oil filler cap and drain plug to drain the oil.
2. Install the drain plug, and tighten it securely.
3. Refill with the recommended oil (see pages 8 and 9), and check the oil level.
4. Install the oil filler cap.

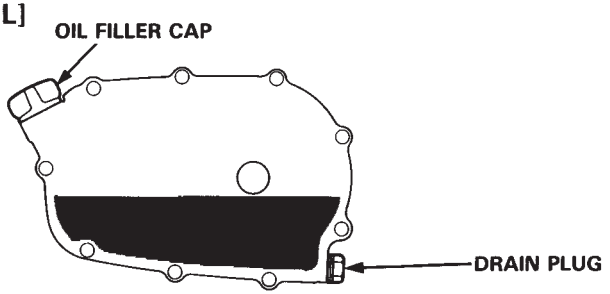
ENGINE OIL CAPACITY: 1.1 ℓ (1.2 US qt, 1.94 Imp qt)

REDUCTION GEAR OIL CAPACITY: 300 cc (10 US oz, 8.4 Imp oz)

[ENGINE OIL]



[REDUCTION GEAR OIL]



⚠CAUTION Used motor oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

NOTE: Please dispose of used motor oil in a manner that is compatible with the environment. Do not throw it in the trash or pour it on the ground.

2. Air cleaner service

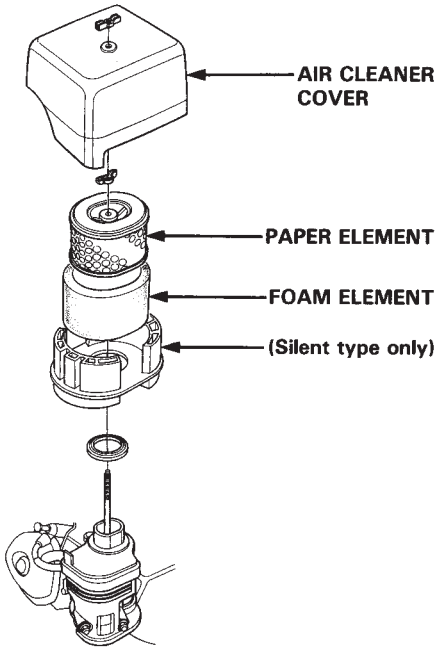
A dirty air cleaner will restrict air flow to the carburetor. To prevent carburetor malfunction, service the air cleaner regularly. Service more frequently when operating the engine in extremely dusty areas.

⚠WARNING Never use gasoline or low flash point solvents for cleaning the air cleaner element. A fire or explosion could result.

NOTICE Never run the engine without the air cleaner. Rapid engine wear will result from contaminants, such as dust and dirt, being drawn through the carburetor, into the engine.

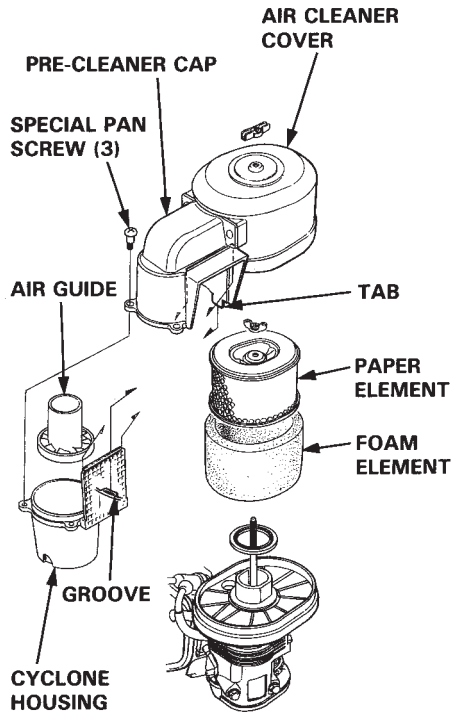
<Dual element type>

1. Remove the wing nut and the air cleaner cover. Remove the elements and separate them. Carefully check both elements for holes or tears and replace if damaged.
2. Foam element: Wash the element in a solution of household detergent and warm water, then rinse thoroughly, or wash in nonflammable or high flash point solvent. Allow the element to dry thoroughly.
   Soak the element in clean engine oil, and squeeze out the excess oil. The engine will smoke during initial start-up if too much oil is left in the foam.
3. Paper element: Tap the element lightly several times on a hard surface to remove excess dirt, or blow compressed air through the filter from the inside out. Never try to brush the dirt off; brushing will force dirt into the fibers. Replace the paper element if it is excessively dirty.



<Cyclone type>

1. Remove the wing nut and the air cleaner cover. Remove the elements and separate them. Carefully check both elements for holes or tears and replace if damaged.
2. Foam element: Wash the element in a solution of household detergent and warm water, then rinse thoroughly, or wash in nonflammable or high flash point solvent. Allow the element to dry thoroughly.
   Soak the element in clean engine oil and squeeze out the excess oil. The engine will smoke during initial start-up if too much oil is left in the foam.
3. Paper element: Tap the element lightly several times on a hard surface to remove excess dirt, or blow compressed air through the filter from the inside out. Never try to brush the dirt off; brushing will force dirt into the fibers. Replace the paper element if it is excessively dirty.
4. Cyclone Housing: Remove the three special pan head screws, remove the housing, and wash the components with water. Dry the components thoroughly, and carefully reassemble them.

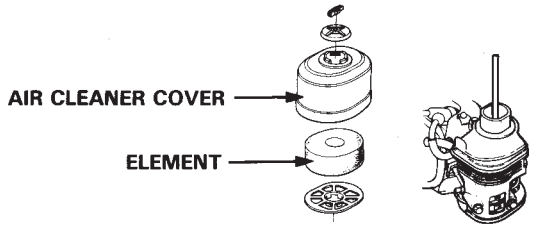


NOTICE

- **When reinstalling the cyclone housing, be sure that the groove on the cyclone housing fits properly into the tab in the pre-cleaner cap.**
- **Be careful to install the air guide as shown.**

<Single element type>

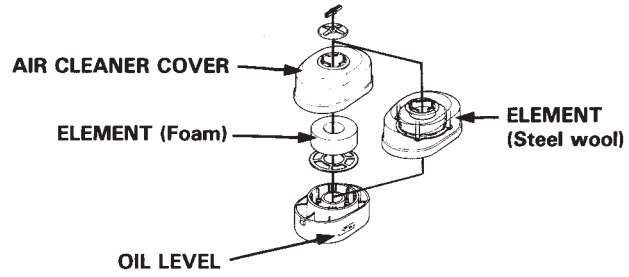
1. Unscrew the wing nut, remove the air cleaner cover and remove the element.
2. Wash the element in a solution of household detergent and warm water, then rinse thoroughly, or wash in nonflammable or high flash point solvent. Allow the element to dry thoroughly.
3. Soak the element in clean engine oil and squeeze out the excess oil. The engine will smoke during initial start-up if too much oil is left in the element.
4. Reinstall the air cleaner element and the cover.



<Oil bath type>

1. Unscrew the wing nut, remove the air cleaner cover and remove the element.
2. Wash the element in a solution of household detergent and warm water, then rinse thoroughly, or wash in nonflammable or high flash point solvent. Allow the element to dry thoroughly.
3. Soak the element in clean engine oil and squeeze out the excess oil. The engine will smoke during initial start-up if too much oil is left in the element.
4. Empty the oil from the air cleaner case and wash out any accumulated dirt with nonflammable or high flash point solvent. Dry the case.
5. Fill the air cleaner case to the level mark with the same oil that is recommended for the engine (see engine oil recommendations on page 8).
6. Reinstall the element and the cover.

OIL CAPACITY: GX240 · GX270 60 cc (2.0 US oz, 1.69 Imp oz)
GX340 · GX390 80 cc (2.7 US oz, 2.25 Imp oz)

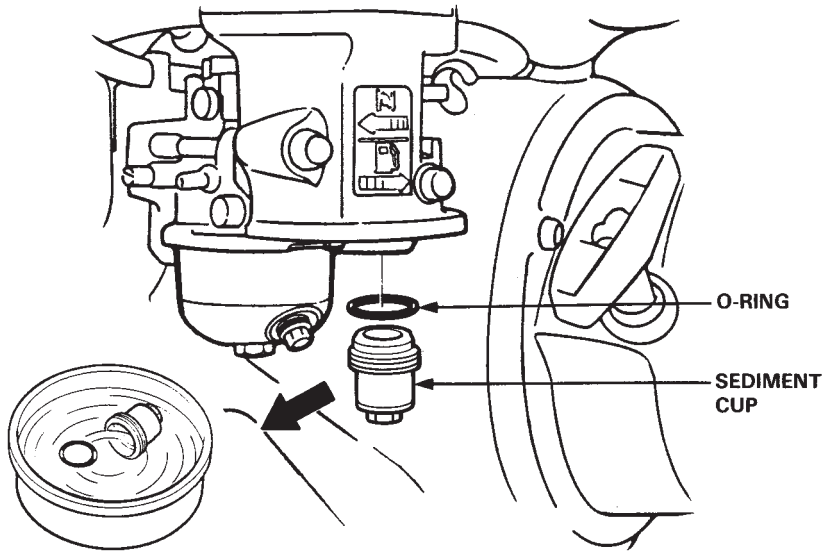


3. Sediment cup cleaning

⚠ WARNING

- **Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in the area.**
- **After installing the sediment cup, check for leaks, and make sure the area is dry before starting the engine.**

Turn the fuel valve to OFF. Remove the sediment cup and O-ring, and wash them in nonflammable or high flash point solvent. Dry them thoroughly, and reinstall securely. Turn the fuel valve ON, and check for leaks.



4. Spark plug service

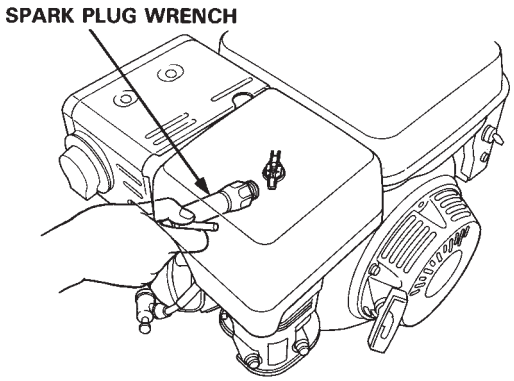
Recommended spark plug: BPR6ES (NGK)
W20EPR-U (ND)

NOTICE **Use only the recommended spark plugs or equivalent. Spark plugs which have an improper heat range may cause engine damage.**

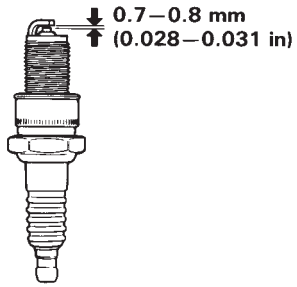
To ensure proper engine operation, the spark plug must be properly gapped and free of deposits.

1. Remove the spark plug cap, and use a spark plug wrench to remove the plug.

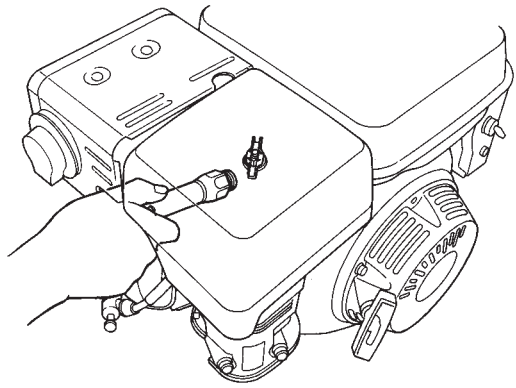
⚠WARNING **If the engine has been running, the muffler will be very hot. Be careful not to touch the muffler.**



2. Visually inspect the spark plug. Discard it if the insulator is cracked or chipped. Clean the spark plug with a wire brush if it is to be reused.
3. Measure the plug gap with a feeler gauge. The gap should be 0.7—0.8 mm (0.028—0.031 in).



4. Check that the spark plug washer is in good condition, and thread the spark plug in by hand to prevent cross-threading.



5. After the spark plug is seated, tighten with a spark plug wrench to compress the washer.

NOTE: If installing a new spark plug, tighten 1/2 turn after the spark plug seats to compress the washer. If reinstalling a used spark plug, tighten 1/8—1/4 turn after the spark plug seats to compress the washer.

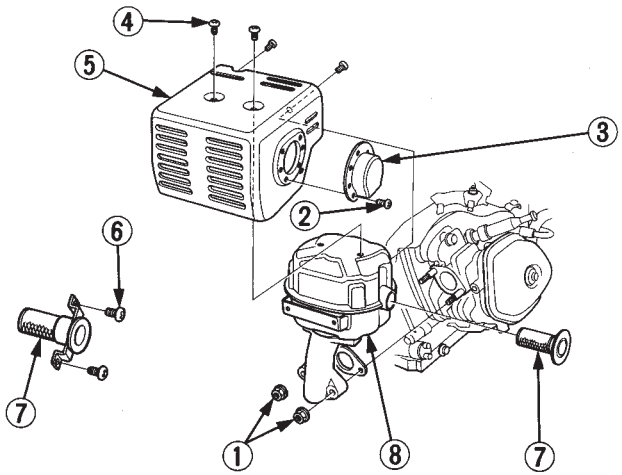
NOTICE **The spark plug must be securely tightened. An improperly tightened spark plug can become very hot and may damage the engine.**

5. Spark arrester maintenance (optional part)

⚠WARNING The muffler be comes very hot during operation and remains hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot. Allow it to cool before proceeding.

NOTICE The spark arrester must be serviced every 100 hours to maintain its efficiency.

1. Remove the two 8 mm nuts ① and remove the muffler from the cylinder.
2. Remove the three 4 mm screws ② from the exhaust deflector ③ , and remove the deflector.
3. Remove the four 5 mm screws ④ from the muffler protector ⑤ , and remove the muffler protector.
4. Remove the 4 mm screw ⑥ from the spark arrester ⑦ , and remove the spark arrester from the muffler ⑧.



5. Use a brush to remove carbon deposits from the spark arrester screen.

NOTICE Be careful not to damage the spark arrester screen.

NOTE: The spark arrester must be free of breaks and holes. Replace, if necessary.

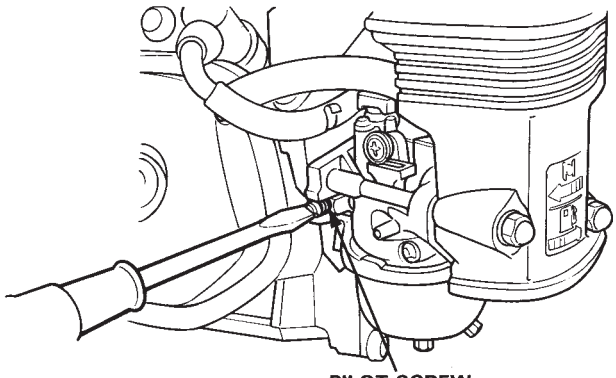
6. Install the spark arrester and the muffler in the reverse order of disassembly.

6. Carburetor adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the pilot screw in or out to the setting that produces the highest idle rpm. Usually the correct setting will be found to be:

	GX240	GX270	GX340	GX390
Dual element type Single element type Oil bath type	2.0	2 7/8	2 1/2	2 1/4
Cyclone type	2.0	2.0	2 1/4	2 1/4

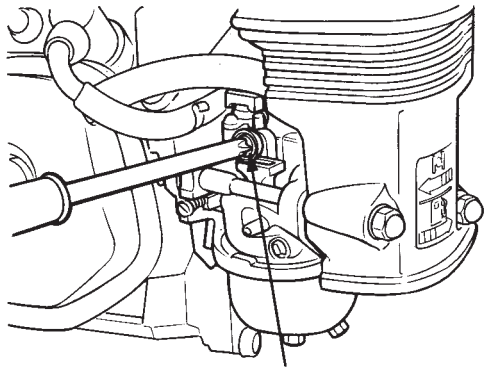
NOTICE **Do not tighten the pilot screw against its seat; this will damage the pilot screw or seat.**



PILOT SCREW

3. After the pilot screw is correctly adjusted, turn the throttle stop screw to obtain the standard idle speed.

Standard idle speed: 1400 ± 150 rpm.



THROTTLE STOP SCREW

10. TRANSPORTING/STORAGE

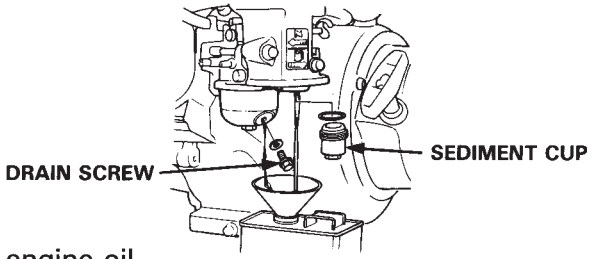
⚠WARNING

- **To avoid severe burns or fire hazards, let the engine cool before transporting it or storing it indoors.**
- **When transporting the engine, turn the fuel valve to the OFF position and keep the engine level to prevent fuel spillage. Fuel vapor or spilled fuel may ignite.**

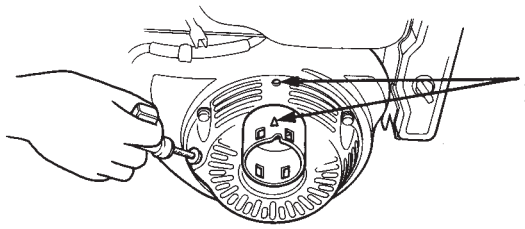
Before storing the unit for an extended period;

1. Be sure the storage area is free of excessive humidity and dust.
2. Drain the fuel...
   a. With the fuel valve OFF, remove and empty the sediment cup.
   b. Turn the fuel valve ON and drain the gasoline in the fuel tank into a suitable container.
   c. Replace the sediment cup and tighten securely.
   d. Drain the carburetor by loosening the drain screw. Drain the gasoline into a suitable container.

⚠WARNING **Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in the area.**



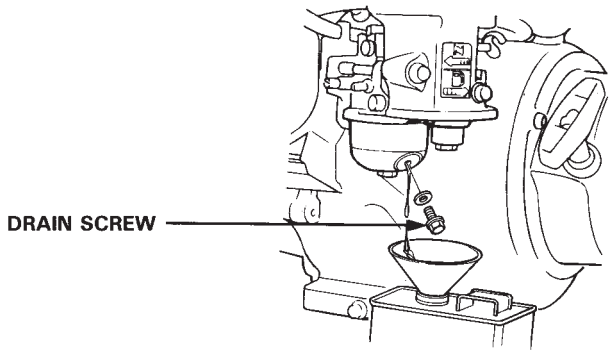
3. Change the engine oil.
4. Remove the spark plug and pour about a tablespoon of clean engine oil into the cylinder. Crank the engine several revolutions to distribute the oil, then reinstall the spark plug.
5. Pull the starter rope slowly until resistance is felt. Continue pulling until the notch on the starter pulley aligns with the hole on the recoil starter (see illustration below). At this point, the intake and exhaust valves are closed, and this will help to protect the engine from internal corrosion.



6. QAE type: Remove the battery and store it in a cool, dry place. Recharge it once a month.
7. Cover the engine to keep out dust.

Engine will not start, using recoil starter:
1. Is the engine switch ON?
2. Does the oil alert lamp flash when the starter is operated?
3. Is the fuel valve ON?
4. Is there fuel in the fuel tank?
5. Is gasoline reaching the carburetor?
   To check, loosen the drain screw with the fuel valve on.

⚠WARNING If any fuel is spilled, make sure the area is dry before testing the spark plug or starting the engine. Fuel vapor or spilled fuel may ignite.



6. Is there a spark at the spark plug?
   a. Remove the spark plug cap. Clean any dirt from around the spark plug base, then remove the spark plug.
   b. Install the spark plug in the plug cap.
   c. Turn the engine switch on.
   d. Grounding the side electrode to any engine ground, and pull the recoil starter to see if sparks jump across the gap.
   e. If there is no spark, replace the plug.
      If OK, try to start the engine according to the instructions.
7. If the engine still does not start, take the engine to the dealer.

Engine will not start, using electric starter:
1. Are the battery cables securely connected and free of corrosion?
2. Is the battery fully charged?

NOTE: If the engine does not charge the battery, check the circuit breaker.

3. If the starter motor operates but the engine will not start, follow the troubleshooting procedures described under recoil starter operation.

12. SPECIFICATIONS

GX240 · GX270

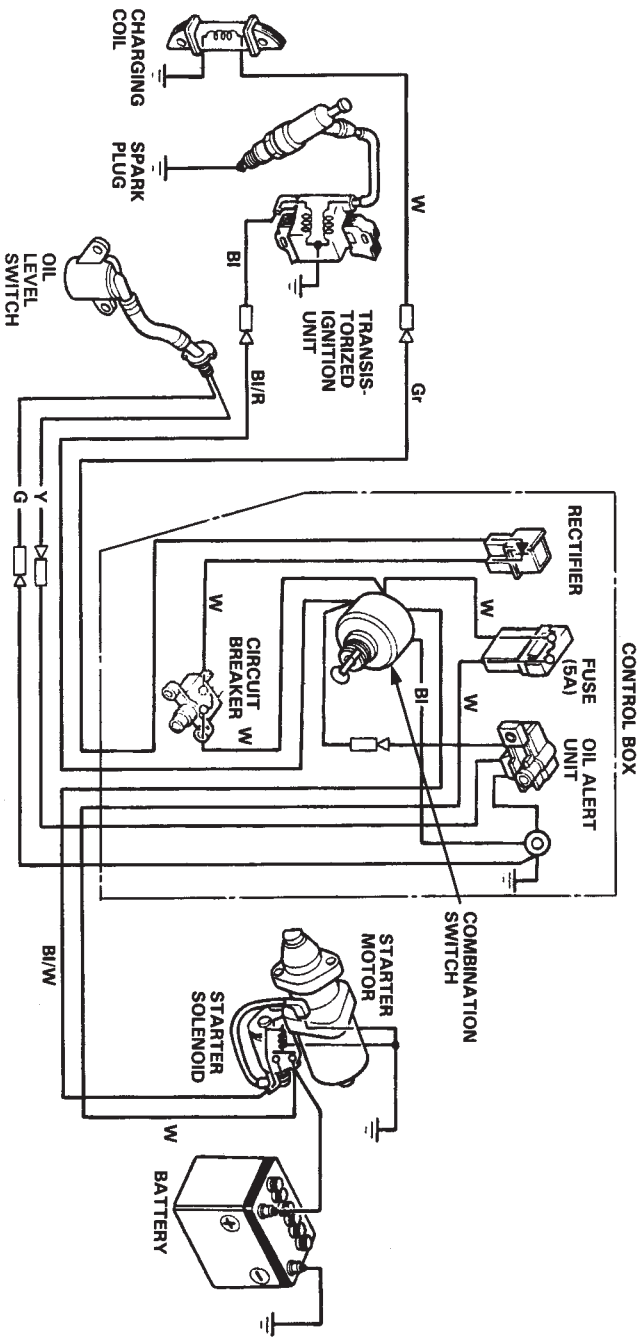
DIMENSIONS AND WEIGHT	GX240	GX270
Description code	GC04	GCAB
Length x Width x Height	360 x 420 x 410 mm (14.2 x 16.5 x 16.1 in)	
Dry weight	23.5 kg (51.8 lb)	
Engine type	4-stroke, overhead valve, single cylinder	
Displacement [Bore x Stroke]	242 cc (14.8 cu in) [73 x 58 mm (2.9 x 2.3 in)]	270 cc (16.5 cu in) [77 x 58 mm (3.0 in x 2.3 in)]
Max. output	8.0 HP/3.600 rpm	9.0 HP/3.600 rpm
Max. torque	1.7 kg-m (12.29 ft-lb)/2,500 rpm	1.95 kg (14.1 ft-lb)/2,500 rpm
Fuel consumption	230 g/HPh (0.7 lb/HPh)	
Cooling system	Forced air	
Ignition system	Transistorized magneto	
PTO shaft rotation	Counterclockwise	

GX340 · GX390

DIMENSIONS AND WEIGHT	GX340	GX390
Description code	GC05	GCAA
Length x Width x Height	390 x 450 x 435 mm (15.4 x 17.7 x 17.1 in)	
Dry weight	31 kg (68.4 lb)	
Engine type	4-stroke, overhead valve, single cylinder	
Displacement [Bore x Stroke]	337 cc (20.6 cu in) [82 x 64 mm (3.2 x 2.5 in)]	389 cc (23.7 cu in) [88 x 64 mm (3.5 in x 2.5 in)]
Max. output	11.0 HP/3.600 rpm	13 HP/3.600 rpm
Max. torque	2.4 kg-m (17.36 ft-lb)/2,500 rpm	2.7 kg-m (19.5 ft-lb)/2,500 rpm
Fuel consumption	230 g/HPh (0.7 lb/HPh)	
Cooling system	Forced air	
Ignition system	Transistorized magneto	
PTO shaft rotation	Counterclockwise	

NOTE: Specifications may vary according to the types, and are subject to change without notice.

QAE Type


Bl BLACK
Y YELLOW
W WHITE
Gr GRAY
R RED
G GREEN
COMBINATION SW
IG E ST BAT
OFF
ON
START
CHARGING COIL
SPARK PLUG
TRANSIS-TORIZED IGNITION UNIT
OIL LEVEL SWITCH
CONTROL BOX
RECTIFIER
FUSE (5A)
OIL ALERT UNIT
CIRCUIT BREAKER
COMBINATION SWITCH
STARTER MOTOR
STARTER SOLENOID
BATTERY
W
Bl
Bl/R
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Y
G
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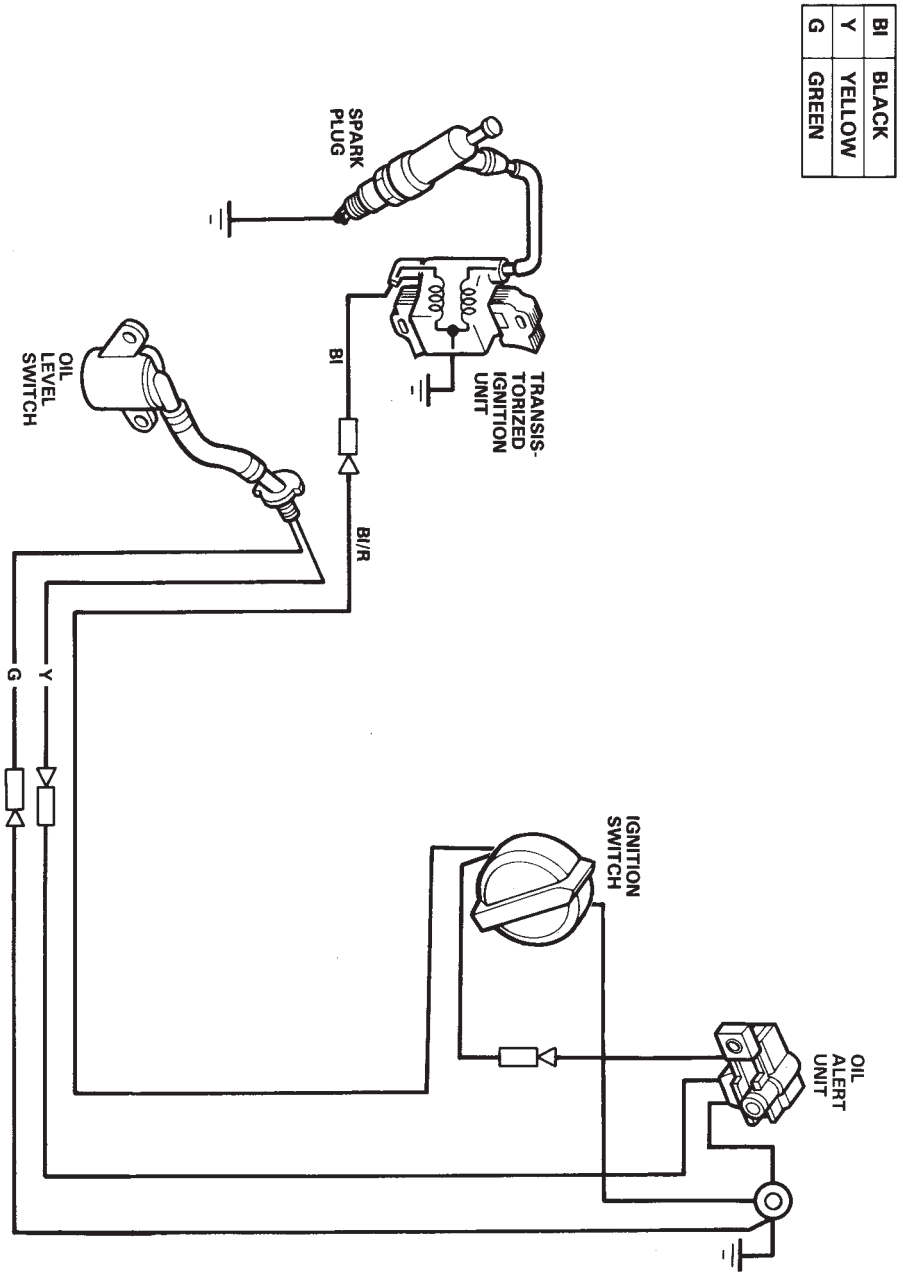
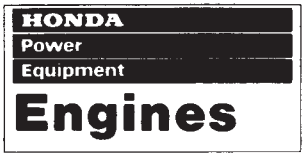
Except QAE type

NOTE: Wiring diagrams may vary according to the types.



Owner Satisfaction

Your satisfaction and goodwill are important to your dealer and to us. All Honda warranty details are explained in the Distributor's Limited Warranty.
Warranty service is available at any dealership displaying the Honda Power Equipment Engines sign. To locate dealers in your area, look in the yellow pages of your telephone directory under Gasoline Engines, Garden & Lawn Equipment & Supplies, Lawn Mowers, etc.



Normally, any problem concerning the engine will be handled by the dealer's service department. If you have a warranty problem that has not been handled to your satisfaction, we suggest you take the following action:

- Discuss your problem with a member of dealership management. Often complaints can be quickly resolved at that level. If the problem has already been reviewed with the Service Manager, contact the owner of the dealership or the General Manager.
- If your problem still has not been resolved to your satisfaction, contact:

American Honda Motor Co., Inc.
P.O. Box 100021
Duluth, Georgia 30136-9421
Telephone: (404) 497-6400

We still need the following information in order to assist you:
— Your name, address, and telephone number
— Engine model and serial number
— Date of purchase
— Dealer name and address
— Product or equipment in which the engine is installed.
— Nature of the problem

After reviewing all the facts involved, you will be advised of what action can be taken. Please bear in mind that your problem will likely be resolved at the dealership, using the dealer's facilities, equipment, and personnel, so it is very important that your initial contact be with the dealer.

Your purchase of a Honda engine is greatly appreciated by both your dealer and American Honda Motor Co., Inc. We want to assist you in every way possible to assure your complete satisfaction with your purchase.

HONDA

HONDA MOTOR CO., LTD. TOKYO, JAPAN

31ZH9600
00X31-ZH9-6000

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PRINTED IN JAPAN