



T1DR / T1DR-L INSTRUCTION MANUAL

We would like to express our thanks for purchasing our steam engine.

Read the instructions here and for the Boiler & Burner carefully before you use this equipment.

Any failure or trouble caused by unnecessary disassembly, modification, or other uses than those provided in the instruction manuals is not subject to the warranty.

Moreover, all responsibilities for the use of the engine, and other obligations and responsibilities based on laws, regulations, etc. are borne by the purchaser and the user, and SAITO SEISAKUSHO CO., LTD. is exempt from any responsibilities.



Content (T1DR / T1DR-L)

• Engine	x	1
• Oiler	x	1
• Steam oil	x	1
• Joint pipe between Boiler & Engine	x	1
• Screws for engine mount	x	4
• Spare O-ring P7 for oiler cap	x	1
• Hexagonal wrench 1.5mm & 2.0mm	x	1 each

Operation

① Feeding oils

Before each operation, fill the machine oil to the pillow block next to the flywheel and link parts of the steam engine using oil filler or so. And fill the attached steam oil fully to the oiler which has "OIL" mark on its cap. Make sure to do this every time before you operate the engine.

② Starting

When the boiler is ready for feeding steam, open the valve of the boiler slowly to feed steam into the steam engine. If the engine doesn't start naturally, you can start up by turning the flywheel lightly by your hand.

③ Break-in

In the first and second operations (Approx 40min.) from the brand new engine, keep the engine speed not to achieve the maximum speed by throttling the valve of the boiler.

Notes

- During break-in, do not force the reverse lever switched.
- However T1DR / T1DR-L have the reverse system, because of the mechanism of single cylinder, engine might stop when the piston is at TDC or BDC at the moment you switch the reverse lever. It can happen in high speed, but the slower the revolution speed becomes, the more often it can happen.
- Do not run the engine at maximum speed with no load.
- Make sure to fix the engine bed flatly. If it's not flat, engine bed might be distorted and the shaft can be tightened and seize-up.
- When you run the engine on shore not on water, keep the revolution range as it doesn't start vibrating.

Check and Maintenance

The steam engine doesn't have any part which needs to be adjusted regularly. But for each operation, make sure to fill the oils as the section ① describes. For the other, please follow the check and maintenance below.

- Tighten the set screws for crank, flywheel, universal joint, and screw once in a while.
- When you have any trouble, do not disassemble by yourself. Instead please consult to the store you purchased.
- When you need the consumable supplies such as steam oil and O-rings, please consult to the store you purchased.

All specifications and models are subject to change without notice.



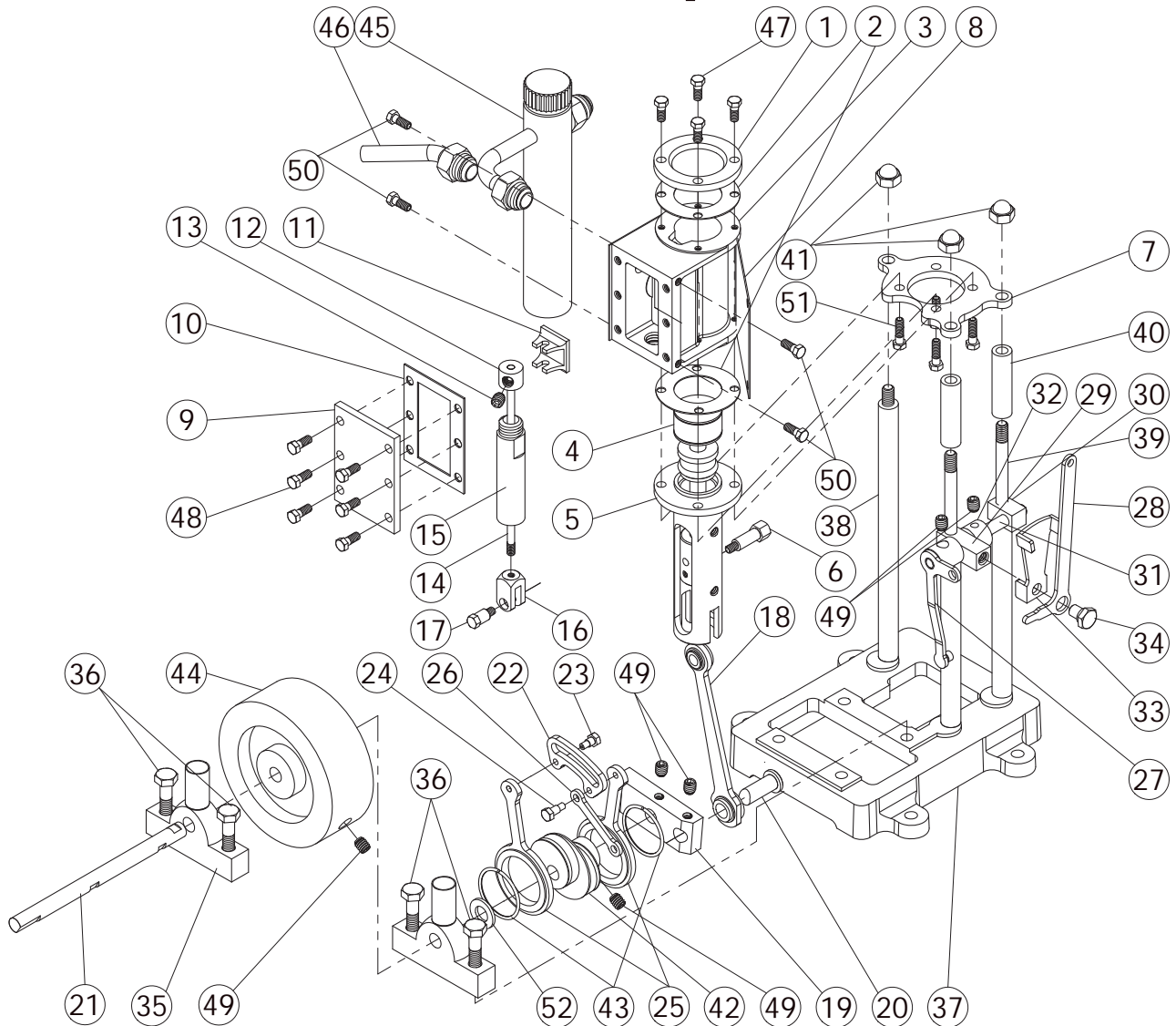
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T1DR / T1DR-L Exploded View



Parts No.	Name	T1DR		T1DR-L		Parts No.	Name	T1DR		T1DR-L	
		Qty	Common	Qty	Common			Qty	Common	Qty	Common
1	Cylinder head	1	T2D	1	T2D	24	Expansion link pin B	1	T2D	1	T2D
2	Cylinder Packing	2	T2D	2	T2D	25	Valve rod assembly	2	T2D	2	T2D
3	Cylinder	1	T2D右	1	Y2D右	26	Rod	1	T2D	1	T2D
4	Piston	1	T2D	1	Y2D	27	Bell crank for reverse gear	1	T1DR-L	1	T1DR-L
	Piston rod	1		1		T2D	1	T2D			
	Piston rod guide	1		1		T2D	1	T2D			
	O-ring P4 (Viton) for guide	1		1		T2D	1	T2D			
	O-ring P5 (NBR)	1		1		T2D	1	T2D			
5	Cross head	1		1		31	Reverse shaft	1	T1DR-L	1	T1DR-L
6	Cross head guide	1	T2D	1	Y2D	32	Reverse shaft stopper	1	T3D	1	T3D
7	Gudgeon Pin	1	T2D	1	T2D	33	Reverse lever stopper	1	T2D	1	T2D
8	Cylinder base	1	T1DR-L	1	T1DR-L	34	Reverse lever nut pin	1	T2D	1	T2D
9	Cylinder cover	1	T2D	1	Y2D	35	Crank bearing ASSY	2	T2D	2	T2D
10	Valve cover	1	T2D	1	T2DR-L	36	Bolt M3x12 for crank bearing	4	T2D	4	T2D
11	Valve cover packing	1	T2D	1	Y2D	37	Engine bed	1	T1DR-L	1	T1DR-L
12	Valve	1	T2D	1	T2D	38	Stay bolt A (Black)	3	T2DR	1	T2DR-L
13	Valve rod collar	1	T2D	1	T2D	39	Stay bolt B (Black)			2	T2DR-L
14	Set screw M3x3SUS	1	T2D	1	T2D	40	Stay bolt pipe (Black)			2	T2DR-L
15	Valve rod	1	T2D	1	Y2D	41	Stay bolt nut (Black)	3	T2D	3	T2D
16	Valve rod guide ASSY	1	T2D	1	Y2D	42	Eccentric sheave	1	T2D	1	T2D
	O-ring P2 (Viton) for guide	1		1		T2D	1	T2D			
17	Valve rod end	1	T2D	1	T2D	43	Eccentric stopper ring	2	T2D	2	T2D
18	Valve nut pin	1	T2D	1	T2D	44	Flywheel	1	T1DR-L	1	T1DR-L
19	Conrod ASSY	1	T2D	1	T1DR-L	45	Oiler cup	1	T1DR-L	1	T1DR-L
20	Crank arm	1	T2D	1	T1DR-L	46	Exhaust ASSY	1	T2D	1	T2D
21	Crank pin	1	T1DR-L	1	T1DR-L	47	Bolt 2x5 for cylinder head	4	T2D	4	T2D
22	Crank shaft	1	Y2D	1	Y2D	48	Bolt 2x5 for valve cover	4	T2D	6	T2D
23	Expansion link	1	T2D	1	T2D	49	Set screw M3x3	6	T2D	6	T2D
24	Expansion link pin A	1	T2D	1	T2D	50	Bolt 2x4 for cylinder cover	4	T2D	4	T2D
						51	Bolt 2x7 for cross head	4	T2D	4	T2D
						52	Steel washer	1	T2D	1	T2D