

**PROJECT FOR RESEARCH AND DEVELOPMENT OF DEMINING
RELATED EQUIPMENT IN CAMBODIA**

No. 4

**REPAIR &
MAINTENANCE**

PUSH TYPE MACHINE

13. GENERAL MAINTENANCE WORK

13.1. TOOLS AND EQUIPMENTS

13.1.1. GENERAL EQUIPMENT FOR THE PROJECT

Table 56: General equipment for the project

No.	Name of the item, etc.	Period	Number	Remarks
1	Vehicle with driver	4 month	2	Pajero type
2	Vehicle for back up with driver	4 month	3	CMAC ambulance is acceptable. But without medical equipment
3	Trailer with driver	3 times	3	35 tons Drop bed type
4	Crane	4 weeks	2	Lifting capacity 25 ton
5	Fork lift	2 weeks	2	1 unit is OK. from workshop of CMAC
12	Hand tools set (1 set)	4 month	1	It is from w/shop Battambang
15	Diesel Fuel	Initially	22	22 drums (Total : 4400Litre)
16	Gasoline (for Generator) 1 Drum	Initially	1	
17	4ton (isuzu truck) 4WD with owing	4 to 6 month?	1	For JICS mobile office
18	Generator	4 to 6 month?	1	handy for JICS

13.1.2. GENERAL TOOLS FOR THE PROJECT FROM W/SHOP BATTAMBANG

Table 57: General tool from CMAC workshop in Battambang

No.	name of tool	Qty
1	Mechanic vise	1
2	Bolt cuter	1
3	Big size of box wrench	1
4	working lamp	1
5	Electrical welder kit	1
6	Big size hummer	1
7	Wire ropes	2
8	Caliper	1
9	Chisel kit	1
10	High speed cutter	1
11	Dolly (trolley) for pallet	1
12	Chain wrench for oil filter	1
13	Mechanic table	1
14	Generator 20KVA or more	1

13.1.3. ASSISTED TOOL FROM CMAC

Almost all of the tools/equipment required to repair/maintenance the machines were brought by manufacturer from Japan.

13.2. PERFORMANCE & ACCEPTANCE TESTS

Maintenance is implemented every morning by joint CMAC machine operators and manufacturers. The maintenance duration is taken approximately thirty to sixty minutes.

13.3. SURVIVABILITY TEST

There is well prepared and send for the test.

14. GENERAL REPAIR WORK

14.1. PERFORMANCE & ACCEPTANCE TESTS

For the repair of demining machine push type during acceptance test, please see section 5.4.3.

14.2. SURVIVABILITY TEST

14.2.1. GENERAL ASSESSMENT

- There is no damage done to the cabin
- There is no damage done to the engine
- There is no damage done to the body of the machine
- There is some damages done to the attachment

14.2.2. DAMAGE TO THE ATTACHMENT OF FV25

Table 58: Damage from anti-tank explosion

	Broken parts	Quantity
a)	Chain	1
b)	Bolt for chain	1
c)	Holder	9
d)	Anti-blast upper plate	1

14.2.3. DETAILS OF THE REPAIR

- Time and type of transportation from the field: 5minutes by it's own trip
- Time and labor for fixing the problem

Table 59: Repair duration

	Time/1pc	Quantity	Total Time	Labor
a) Chain / Replacement	2minutes	1	2minutes	1
b) Bolt / Replacement	5minutes	1	5minutes	1
c) Holder / Repair	15minutes	9	2h 15m	2
d) Anti-blast upper plate / Repair	1hour	1	1hour	2

- Equipment used to fix the problem

Table 60: Equipment used for repair

a) Chain / Replacement	Hexagon wrench
b) Bolt / Replacement	Hexagon wrench, small hammer, punch
c) Holder / Repair	Steel cable, Lever chain block, Burner
d) Anti-blast upper plate / Repair	Welding machine, Big hammer

- Picture of the problem

a) Chain



Figure 107: Chains are broken by Anti-tank blast

b) Holder



Figure 108: Holder are bending by Anti-tank blast

c) Anti-blast upper plate



Figure 109: Anti-blast upper plate are blown away by Anti-tank blast