DEPARTMENT OF INDUSTRY AND COMMERCE

COMMERCIAL TARIFF CONCESSION ORDER APPLICATION (CTC 1)

B442(8.83)

Your Reference No.	84K 3203
Your Telex No.	AA24542
Departmental Reference No.	

1. This Application must be lodged with:
Tariff Concession Branch
Department of Industry and Commerce
CANBERRA ACT 2600
17 AUG 84 09 58
INDUSTRY & COMMERCE
CTC BRANCH No. 01
2. It must be lodged in accordance with instructions in the Information Booklet issued by the Department of Industry and Commerce.
3. It should clearly indicate that you have researched the market place for goods that may serve similar functions to the goods being imported. Approaches must be made to Australian manufacturers of goods in the market area you identified using the "Approach to Australian Manufacturers" CTC 2.

Applicant's Name (Importer)	KOOR INTER TRADE (A/ASIA) PTY LIMITED	Address (NOT P.O. Box Number)	15/19 BOUNDARY STREET RUSHCUTTERS BAY NSW
Name and Address for Correspondence (If same write: 'AS ABOVE')	PROFESSIONAL CONSULTING SERVICES P.O. BOX 96 REDFERN NSW 2016		

Precise Description of Goods to be Imported

WATER-POWER FERTILIZER INJECTOR

Suggested Commercial Tariff Concession Order Wording

PUMPS, WATER POWERED, FERTILIZER, PROPORTIONAL CONTROLLED

Function that the Goods are Intended to Serve

TO CONTINUOUSLY DISTRIBUTE FERTILIZER EVENLY IN SMALL CONTROLLED CONCENTRATIONS

Other Functions Goods May Serve

NIL

Tariff Classification	84.10.900 ADTC(C6)	Names of Australian Manufacturers Contacted
Rate of Duty	15%	refer to attached letter
Item Sought	2%	
Completed forms CTC 2 and any other correspondence exchanged between parties	☑ YES ☐ NO	
Technical, illustrative, descriptive material	☑ YES ☐ NO	
Sample (if considered necessary)	☐ YES ☐ NO	

I, s47F (Name in Full) s47F (Position Held) s47F (Telephone Number)

declare that:

1. To the best of my knowledge and belief the information contained in this form and accompanying submission is correct;
2. I understand that admission of goods under a Commercial Tariff Concession Order does not absolve me from the obligation to comply with any other law or regulation relating to the importation of goods; and
3. I am aware that any Commercial Tariff Concession Order issued as a result of this submission may be revoked if the circumstances for granting the concession cease to exist.

s47F

17 AUG 1984 Central Registry Dept. of Industry & Commerce

OFFICE USE ONLY

PENFOLDS STATIONERS
TELEPHONE 502 4555

SUPPLIER T.M.B. ISRAEL

84.10.900 C 15%

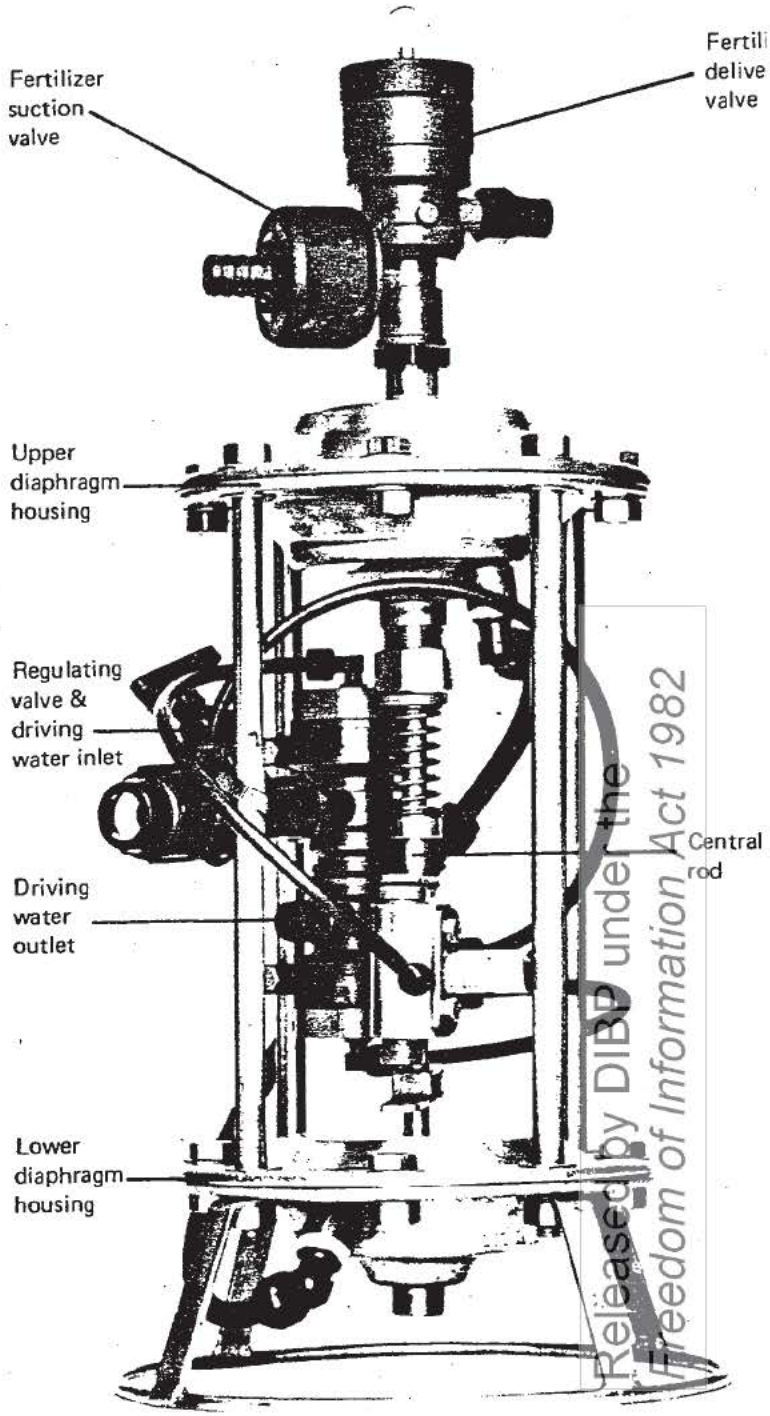
WATER-POWER FERTILIZER INJECTOR

INJECTS FERTILIZERS INTO THE IRRIGATION WATER.

FERTILIZERS UNIFORMLY DISTRIBUTED IN THE FIELD.

SAVES FERTILIZER.

INCREASES CROP YIELD.



T.M.B.
FERTILIZER PUMPS LTD.
P.O.Box 1 Kiriat Bialik 27 100, ISRAEL
Tel : Haifa - 714528, 717031
Telex: 46633 SDSI IL
Cables: FERPUMPS HAIFA

FERTILIZER INJECTOR

With the current method of applying fertilizer in massive doses, a great part of the fertilizer may not be utilized be cause subsequent irrigations tend to wash it down beyond the depths of the roots. The T.M.B. fertilizer injector will - through the irrigation water – continuously distribute the fertilizer very evenly in small controlled concentrations ove the whole area of the field. Thus regulated doses of fertilizer uniformly reach the roots of all plants being irrigated This assures reduced fertilizer costs and greater crop yields.

The new MAGIC - POWER fertilizer injector is operated solely and only by water. In the field it is driven by wate supplied from the irrigation line itself. It sucks the fertilizer solution from an open tank and injects it by positiv displacement downstream into that same irrigation line. Thus the pump injects fertilizer at a higher pressure tha that of the water which drives it. The installation of the pump requires only two connections – ¾" & ½" on th irrigation line.

PRINCIPLE OF OPERATION

DRIVING UNIT

The top and bottom diaphragms are connected to each other by a vertical rod. During the "Up"-power stroke, wate from the irrigation line enters the lower chambers of both diaphragms and forces the "Up"-stroke. During the "Return"-down stroke, the spent driving water is evacuated from the lower chambers. This cycle automatically repeats itself.

INJECTOR

During the "Return"-down stroke the fertilizer solution is sucked into the upper chamber above the top diaphragm. The "Up"-power stroke forces the fertilizer solution into the irrigation pipe line.

SPECIFICATIONS

Fertilizer Solution	-	3 - 65 gal/hour (10 - 250 liters/hour) (see performance curve). The flow rate is varied by adjustment of the regulating valve.
Working Pressure	-	30 - 140 psi (2 -10 kg/cm2) in the irrigation line. 207 – 965 kPa.
Pipe Connections	-	Standard ¾" & ½".
Water Consumption	-	The volume of water consumed for driving the injector is about twice the volume of the fertilizer solution injected.
Materials of Constraction	-	Stainless Steel, long life flexible diaphragms, high grade plastic.
Weight	-	35 lbs. (16 kgs.)
Dimensions	-	28" (80 cm) height 12" (30 cm) diameter

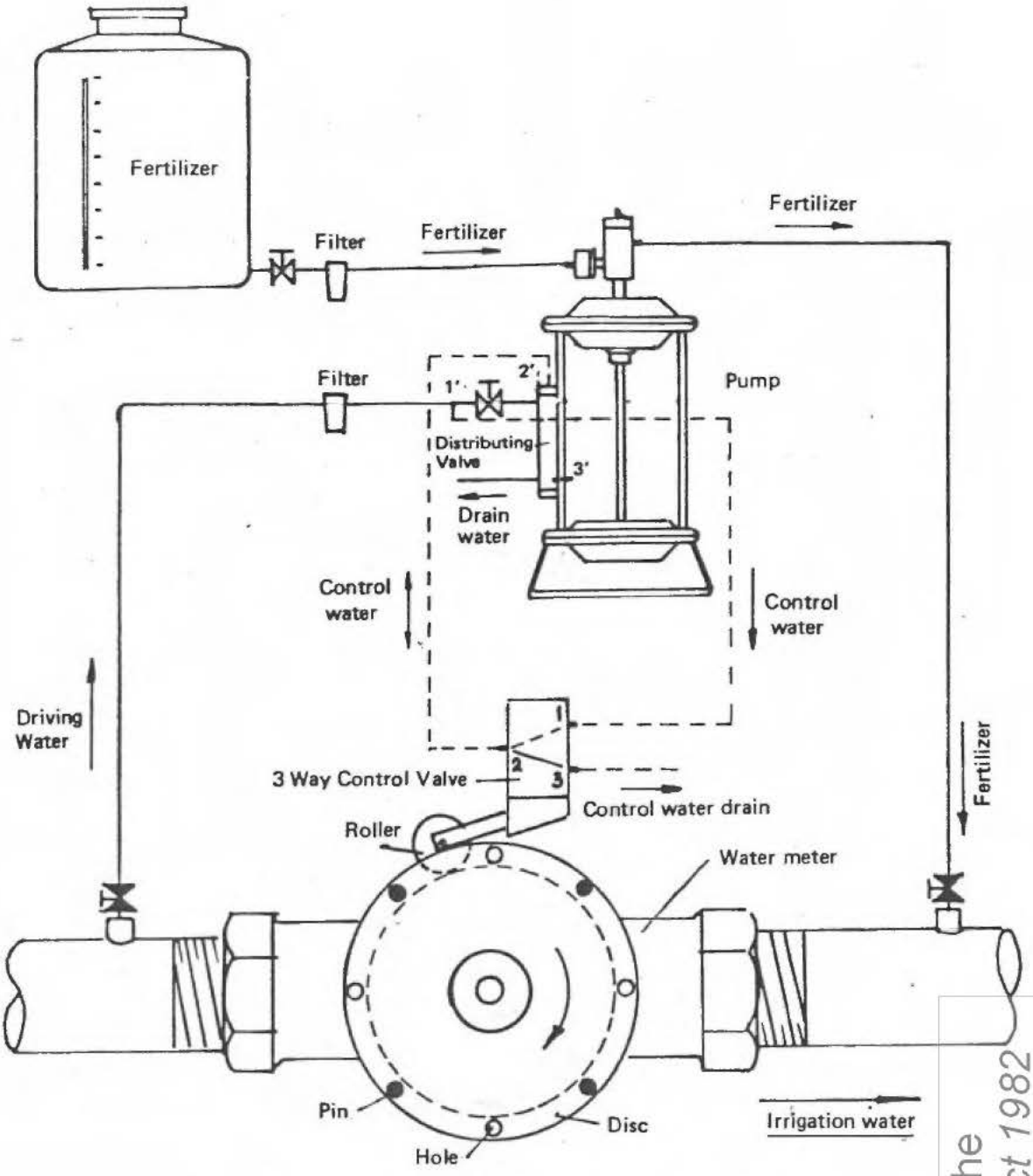
FIELD OPERATION:

LIQUID FERTILIZER

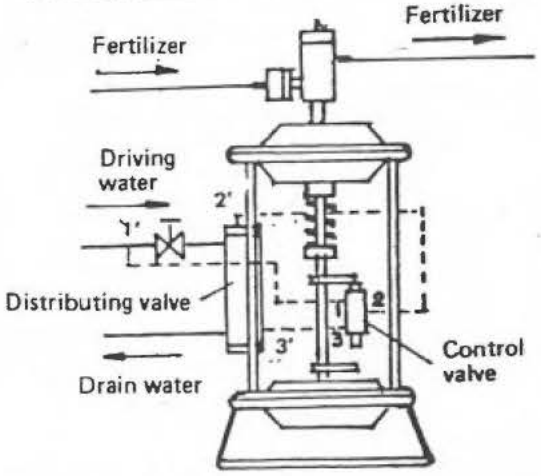
Use a tank with sufficient fertilizer holding capacity. A pre-set metering cut-off device installed at the "driving water" inlet will shut down the injector when it has delivered the predetermined quantity of fertilizer. Set it and forget it! The field will automatically and uniformly be fed with the amount of fertilizer which you planned.

SOLID FERTILIZER

When using solid fertilizer, it must first be dissolved into a solution. When you are dealing with small quantities, say up to 200 lbs., the fertilizer can be dissolved by hand mixing in the tank. When dealing with tons of fertilizer, dissolving has to be done by mechanical means.



Proportional control for T.M.B. Fertilizer pump



Every T.M.B. Fertilizer Pump is supplied with its own pilot valve and can therefore be operated without a proportional controller. All you have to do is connect the three control tubes as shown in dotted lines in the sketch on the left.

P.O.B. 1, KIRIAT BIALIK, HAIFA, ISRAEL Tel. Haifa 714528 CABLES: FERPUMPS HAIFA

(5)

T.M.B. FERTILIZER PUMPS LTD.

PROPORTIONAL CONTROL FOR T.M.B. FERTILIZER PUMP

GENERAL

The "Controller" operates the fertilizer pump (injector) in a proportional regime. This means that the concentration of the fertilizer in the irrigation water will remain constant as pre-set by the farmer. If the flow of irrigation water increases owing to the transfer of irrigation to a new section in the field, the controller will make the pump run faster so that the proportion between fertilizer & irrigation water will remain constant. Vice versa, if the flow of irrigation water decreases, the controller will run the pump slower.

CONSTRUCTION & OPERATION - drawing on last page

- A disc mounted on a water metering device revolves at the rate of 1 turn per 10 cubic meters (2650 gallons) flowing in the irrigation line.
- The disc has 20 holes into which pins can be introduced. Each pin, when in its turn passes under the roller, will raise it and thus operate the 3 way control valve.
- When the roller is engaged by a pin, the control valve opens its passage 1 – 2 & lets control pressure reach the top plug of the distributing valve. This forces down the piston in the distributing valve which causes the pump to rise & stay in its "up" position. When the pin has advanced (owing to the rotation of the disc), the roller is disengaged, passage 1 – 2 in the control valve is closed & passage 2 – 3 is opened. This drains the control pressure from the top plug of the distributing valve, its piston rises & causes the pump to descend. Thus, every pin causes one stroke (up and down movement) of the pump which injects 0.25 litres (0.066 gal.) of fertilizer solution into the irrigation water.

CONCENTRATION OF THE FERTILIZER SOLUTION IN THE IRRIGATION WATER

- Disc rotates 1 turn per 10 cubic meters – 2650 U. S. gallons.
- Disc has holes for 20 pins.
- When all 20 pins are introduced, the 3 way valve becomes engaged 20 times per 10 cubic meters i.e. once per every ½ cubic meter. Equally – 20 times per 2650 gallons i.e. once every 132.5 gallons.
- As each pin causes the injection of 0.25 liters (0.0662 gal.), the concentration of the fertilizer solution in the irrigation water will be:

$$\frac{0.25 \text{ lit}}{500 \text{ lit}} = \frac{500 \text{ cc}}{1{,}000{,}000 \text{ cc}} = 500 \text{ parts per million – ppm.}$$

and in U. S. gallons:

$$\frac{0.0662 \text{ gal.}}{132.5 \text{ gal.}} = \frac{500 \text{ gal}}{1{,}000{,}000 \text{ gal.}} = 500 \text{ ppm.}$$

- In the above arrangement of 1 disc turn per 10 cubic meters, every pin is equivalent to 25 ppm, (500 : 20 = 25). Therefore, if we desire the concentration of 125 ppm, we have to insert 5 pins i.e. a pin every fourth hole.
- the ratio of 1 disc turn per 10 cubic meters which gives a maximum concentration of 500 ppm (when all 20 pins are inserted), was taken as an example.
- Following is a list showing available controllers & their maximum possible concentrations (when all 20 pins are inserted). The units can be ordered with lower maximum concentrations than those indicated below, e.g. the 2" controller can be ordered with only 500 max. possible concentration where every pin will again be equivalent to 25 ppm.

AVAILABLE CONTROLLERS & THEIR CHARACTERISTICS.

Pipe Diameter		Maximum Concentration	Concentration Per Pin	Irrigation Water Flow – m^3/hr	
inches	mm			Minimum	Maximum
2"	50	2500	125	4	30
3"	75	1500	75	8	70
4"	100	1000	50	15	120

PROGRAMMING THE CONTROLLER

It should be remembered that the above ppm refer to the concentration of the "tank solution" in the irrigation water where "tank solution" is the solution that has been prepared by the farmer in his fertilizer tank. This is by no means the concentration of the pure fertilizer. Following is an example showing how to program the controller.

- Fertilizer used – Amonium Sulphate
- Concentration of pure Nitrogen in Ammonium Sulphate – 20%
- Concentration of pure Nitrogen desired in irrigation water – 100 ppm.
- Convenient dissolving ratio for Ammonium Sulphate in water – 1:3 i.e. to dissolve 1 kg. of the fertilizer we need 3 liters of water.

The concentration of pure Nitrogen in the fertilizer is only 20%. This means that only 1/5 of the fertilizer is the active element we are concerned with. Therefore, to achieve 100 ppm of pure nitrogen in the irrigation water we shall need a concentration 5 times stronger of the fertilizer i.e. 500 ppm. Further, because we have dissolved 1 kg of fertilizer in 3 liters of water, we shall have to inject into the irrigation system 3 liters of tank solution for every kg of fertilizer. Therefore, when multiplying the concentration of 500 ppm by 3 we arrive at 1500 ppm. This means that in the above example, in order to achieve a concentration of 100 ppm of pure Nitrogen in the irrigation water, we have to maintain a concentration of 1500 ppm of our tank solution in the irrigation water. If we use a 2" proportional controller with a maximum concentration of 2500 ppm, every pin is equivalent to 125 ppm and we shall introduce 12 pins.

EMISSION OF ELECTRIC PULSES

The addition of a special water-tight micro-switch operated by cavities on the periphery of the disc, will emit a pulse every time a fixed quantity of water (say 100 litres) passes through the irrigation line. The controller can therefore replace the special pulse emitting water-meter otherwise needed in electronic controlled irrigation systems.

MAIN VALVE

The 2" & 4" controllers include a built-in diaphragm operated valve. Applying water pressure to the side fitting (which leads to the chamber above the diaphragm), will cause the controller's valve to shut down the irrigation water. Draining the water from the side fitting will open the valve.

INSTALLATION & OPERATION

- Install the controller & fertilizer pump according to drawing on last page.
- Connect the two ¼" control water tubes according to the numbers stamped on the roller operated 3 way control valve.
- Insert pins according to the desired concentration of fertilizer.

SPECIFICATIONS FOR ORDER

We need the following information in order to adjust the characteristic of the controller to your needs. Therefore please fill in the following details carefully:

- Diameter of main water line where controller is to be installed
- Maximum flow in m^3/hr in main water line
- Minimum flow in m^3/hr in main water line
- Kind of fertilizer to be used
- Maximum concentration of fertilizer desired in irrigation water in ppm – parts per million of the fertilizer itself (not the pure element)
- Minimum concentration of the fertilizer in the irrigation water in ppm
- Maximum duration of irrigation per section
- Minimum duration of irrigation per section
- Minimum pressure in irrigation line

NOTE

T.M.B. Fertilizer Pumps can be operated with or withouth the proportional controller. See drawing on the bottom of last page.

78

FERTILISER INJECTOR PUMPS

FILE	APPLICANT	AGENT	BRAND	OPERATION	PUMP TYPE	MAINS FLOW RATE	INJECTION FLOW RATE	PRESSURE
84/32676	KOOR	PCS	TMB	WATER POWERED HYDRAULIC	PISTON		10-250 L/HR	207-965 kPa
s22(1)(a)(ii)	[redacted]							
LOCAL MANUFACTURE								
WALLACE + TIERNAN			PENNWALT	WATER POWERED HYDRAULIC	DIAPHRAGM		9.5 L/HR MAX	70-860 kPa

* PERCENTAGE OF MAINS FLOW RATE

C.T.C. 107

93

THE TABLE

Tariff Reference Column 1	Description of Particular Goods Column 2	Prescribed Item No. Validity Date Column 3
84.10	Injectors, fertilizer, water or air powered, having a maximum injection rate of NOT less than 250 L/HR Op. 17.8.84 - TC 8432676	50
	Stated use: Injection of fertilizers to irrigation systems	

L/HR Lh

INTERNAL CHECK No. .....

CHECKED TO FOLIO 93

8/10/86

SIGNED s22(1)(a)(ii)

CTCO (PUB) Please publish a gazette notice vide S.269L(a)

s22(1)(a)(ii)

ADTC (188) 29.9.86

Gazetted by TC Gazette 86/39 of 8.10.86 s22(1)(a)(ii)

In the absence of responses to Gazette notification to this date I am satisfied that a Tariff Concessions Order should be issued.

s22(1)(a)(ii)

DELEGATE OF THE COMPTROLLER-GENERAL OF CUSTOMS 11.11.86

a7

SCHEDULE OF CONCESSIONAL INSTRUMENTS

PART 1 – TARIFF CONCESSION ORDERS

Tariff Reference	Description of Goods	Prescribed Item and Validity Date
s22(1)(a)(ii) [redacted]		
* 84.10	INJECTORS, fertilizer, water or air powered, having a maximum injection rate of NOT less than 250 L/h Op. 17.8.84 - Dec. date 11.11.86 - Ex Gaz 86/39 - TC 8432676	50
s22(1)(a)(ii) [redacted]		

INTERNAL CHECK No.

CHECKED TO FOLIO 97

3/12/86

SIGNED s22(1)(a)(ii) [redacted]

s22(1)(a)(ii) [redacted]