Алматы (7273)495-231
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курган (3522)50-90-47
Курск (4712)77-13-04
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Ноябрьск (3496)41-32-12
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Пермь (342)205-81-47
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саранск (8342)22-96-24
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
Тверь (4822)63-31-35
Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Улан-Удэ (3012)59-97-51
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Чебоксары (8352)28-53-07
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Чита (3022)38-34-83
Якутск (4112)23-90-97
Ярославль (4852)69-52-93

Россия +7(495)268-04-70 **Казахстан** +7(7172)727-132 **Киргизия** +996(312)96-26-47

https://tecfluid.nt-rt.ru || tdf@nt-rt.ru

Счетчики суммирования программируемые серии CIP2

TECFLUID

instrumentation
for fluids

Programmable Totalizing Counter CIP II

Instructions Manual

1. INTRODUCTION

The pulse counter CIP II is designed to work with Tecfluid's volumetric counters (Covol) and turbines.

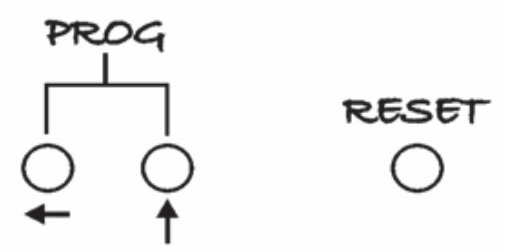
The circuit is based on a microprocessor that, in function of the pulses per unit of volume programmed, totalizes the volume that flows through the meter and shows this value on the display. The CIP II has two volume totalizers, one that can be reset (partial) and the other that cannot be reset (total).

This instrument is battery powered and doesn't require any wiring. This makes its installation very easy.

2. OPERATION

To adapt the counter to the meter, the pulses per unit factor specified on the meter must be programmed. To do this, the plastic front cover must be removed by unscrewing the four screws on the corners. After that, the push buttons will be accessible.

There are three push buttons with the following functions:

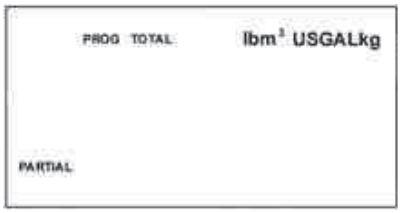


2.1 Programming

By pushing the two push buttons PROG at the same time for at least two seconds, the display will change to the first stage of the programming mode.

2.1.1 Measuring Units

In this screen the measuring units should be programmed.



There are seven options of units: pounds (lb), cubic metres (m^3), U.S. Gallons (USGAL), litres (L), kilograms (kg), grams (g), and without specific units selected (all units off). The selected unit will be flashing on the display (except when no specific units are selected). Use the push button marked with the arrow pointing upwards to change from one unit to the next. By pushing the two push buttons PROG at the same time (do not keep the push buttons pushed) the selected unit will be saved in memory and the next programming screen for the pulses per unit will appear. If the RESET push button is pressed then the the next programming screen for the pulses per unit will appear but the selected unit will not be saved in memory and the previous measuring unit will be retained.

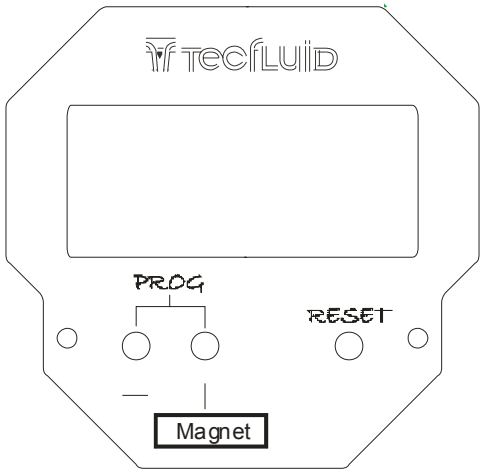
2.1.2 Pulses per Unit

In this mode there are 7 digits (five whole numbers and two decimals). The value that must be introduced is the pulses per unit factor given on the label of the Covol or Turbine. If the totalising unit selected is litres then introduce directly the value on the flowmeter label. If you wish to totalise in m^3 then the pulses per litre of the flowmeter must be multiplied by 1000. For example, if the turbine has a pulse per litre value of 21,02 then 21020,00 should be entered in the configuration. If the selected unit is U.S. Gallons then the pulses/litre factor must be multiplied by 3.785. A turbine with 21.02 pulses/litre would give a value of 79.56 pulses/USGAL. To totalise in any other unit, the pulses per litre marked on the flowmeter must be multiplied by the conversion factor of litres/unit.

To introduce the required values, pushing the push button marked with the arrow pointing upwards, the blinking digit will increase. Once the desired value of the digit is achieved, by pressing the push button marked with the arrow pointing left, the blinking digit will be the next digit to be modified. On the seventh digit, by pressing this push-button the blinking digit will be the first digit on the display.

When the value of the pulses per unit is correct, by pushing the two push buttons PROG at the same time for at least 2 seconds, this value will be automatically saved in the memory and the instrument will return to normal working mode. Again, if the RESET push button is pressed then the instrument will return to normal working mode without making any changes in the pulses per unit factor.

NOTE: During the process of programming, the counter increases its power consumption. In order to optimise the battery life time, if during 30 seconds no push buttons are pushed, the counter will return to the normal working mode. In this case the data in the memory will not be changed.



2.2 RESET

The partial totalizer can be reset in two ways:

By pushing the RESET push button during two seconds the counter will be set to zero.

It is possible to reset the counter without removing the plastic front cover by holding a magnet horizontally just below the arrow pointing upwards during two seconds.

2.3 COUNTER OVERFLOW

If one of the counters overflow, this condition is indicated at the right of the partial totalizer. If neither of the counters has overflowed then this part of the display is blank. When either of the counters overflows then the display will show “A/B”, where “A” is the number of times that the partial counter has overflowed and “B” is the number of times the

total counter has overflowed. The digit that indicates the number of times the counter has overflowed can be effectively placed in front of the digits of the counter to give an extra digit. If a counter overflows more than 9 times then the digit will be shown as “X”.

If the partial counter overflows and the total counter has not, and then the partial counter is reset, the display will then go blank again. The overflow indication of the partial counter is reset when this counter is reset.

In the above screen the total counter is shown as having overflowed once (this would be equivalent to a count of 10002501) and the partial counter as having overflowed eight times (this would be equivalent to a count of 810288).

3. ELECTRICAL CONNECTION

No electrical connections are required for the local indication models. Just screw the connector at the back of the counter onto the connector base of the flowmeter, previously checking that the sealing gland is correctly situated in the bottom of the connector base. The counters are supplied already configured for the type of flowmeter to be used (COVOL or turbine).

For the remote wall mounting models, the connections should be made as follows:

The earth terminal of the CIP II connector should not be connected.

TM44 turbine flowmeter

Flowmeter terminal N.	Connection	CIP II terminal N.
1	Shield	1
2	Live Coil	2
3	Live Coil	3

COVOL Flowmeter

Flowmeter terminal N.	Connection	CIP II terminal N.
1	Reed	1
2	Reed	2

4. MAINTENANCE

The battery has a life time of about 5 years. To change the battery, the plastic front cover must be removed. Then the battery, that is situated below the push buttons, can be replaced.

After replacing the battery, it is not necessary to reprogram the pulses per litre factor of the meter.

CR2450 batteries are easily found in the shops. If you prefer, we can change it in our factory.

5. MEASUREMENT ERROR CORRECTIONS

The calibration of the mechanical flow meters is made with water at 20 ^{o}C to obtain a calibration for a liquid of density 1 kg/l and viscosity of 1 mPa·s. If the flow meter is used with a liquid of other characteristics from the above specified or for reasons of turbulences in the flow, measurement errors can be induced.

To correct these types of errors we can modify the pulses per litre factor programmed in the instrument.

Example 1 - Shortage of volume

If we have a flow meter body which specifies i/l = 1.985, and when we check the volume of a batch, we find that instead of having 100 litres as programmed, we only have 105 litres (5% more) and we must apply the following correction:

i/l = Original Pulses per litre Factor	= 1.985
V = Expected Volume	= 100
Vr = Real Volume	= 105

$$i/l\ n = i/l \frac{V}{Vr}$$

i/l n = New Pulses per litre Factor = ? (1.887)

6. CHANGE OF UNITS OF MEASUREMENT

In some cases we need to change the measurement units, for example, instead of working in litres we need to work in kilograms. In this case we will need to know the density of the liquid (ρ).

To change from litres to kg we must divide the pulse per litre factor by the density of the liquid to obtain the new factor for programming the CIP II. For example, if the liquid has a density of 0.9 kg/litre, the meter gives us 200 pulses per litre and we must count in kg, we will program the CIP II using 222.222 as the new pulses per litre factor to be able to count directly in kg.

Fk = Pulses per litre factor to count in kg
F = Original pulses per litre factor
ρ = Density of the liquid in kg/litre

$$F_k = \frac{F}{\rho}$$

7. MODELS

CIP II

—	—	
	C	COVOL input
	T	Turbine input
L		Local mounting on the flow meter (IP65)
M		Remote wall mounting (IP65)

8. TECHNICAL CHARACTERISTICS

8.1. Power supply

CR-2450 lithium battery

Nominal voltage:	3V
Capacity:	560 mAh
Power consumption:	8 µA

8.2. Totalizer Counter

N. of digits:	7
Size of the digit:	8 mm
Reset:	Cannot be reset

8.3. Partial Counter

N. of digits:	5
Size of the digit:	6 mm
Reset:	By means of push button or magnet.

8.4. General characteristics

Ingress protection:	IP65
Ambient temperature range:	0 … +60 ºC

8.5. Input terminals for CIP II for local mounting

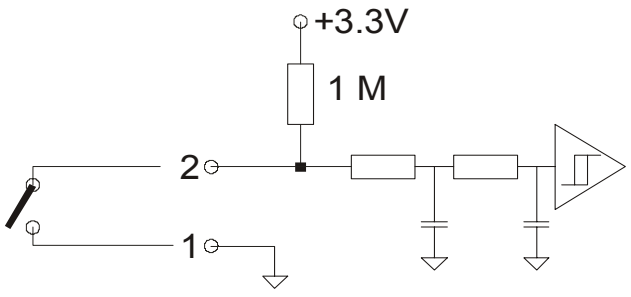
Terminal n.	COVOL	Turbine
1	Common	Ground
2	Live	Live
3	—	Live

Input characteristics

8.5.1. COVOL

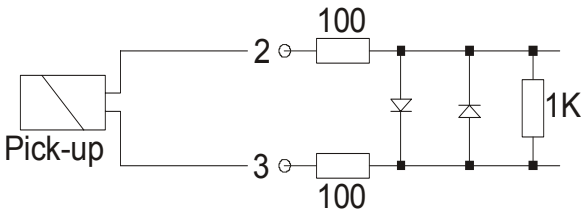
This input is designed for a potential free contact between terminals 1 & 2 of the connector. Terminal 1 is connected to the common of the instrument. This input has a 1 MΩ pull-up resistor connected to terminal 1 and to the 3,3 V power supply. The input has a hysteresis with the switching points situated at about 1 V & 2,1 V. If an open collector transistor is to be used as the switching element instead of a COVOL, then the aforementioned parameters must be taken into account.

Due to the presence of a filter to avoid the effects of contact bounce, the maximum pulse frequency for the COVOL input is 300 Hz.
The minimum input frequency is 0.06 Hz



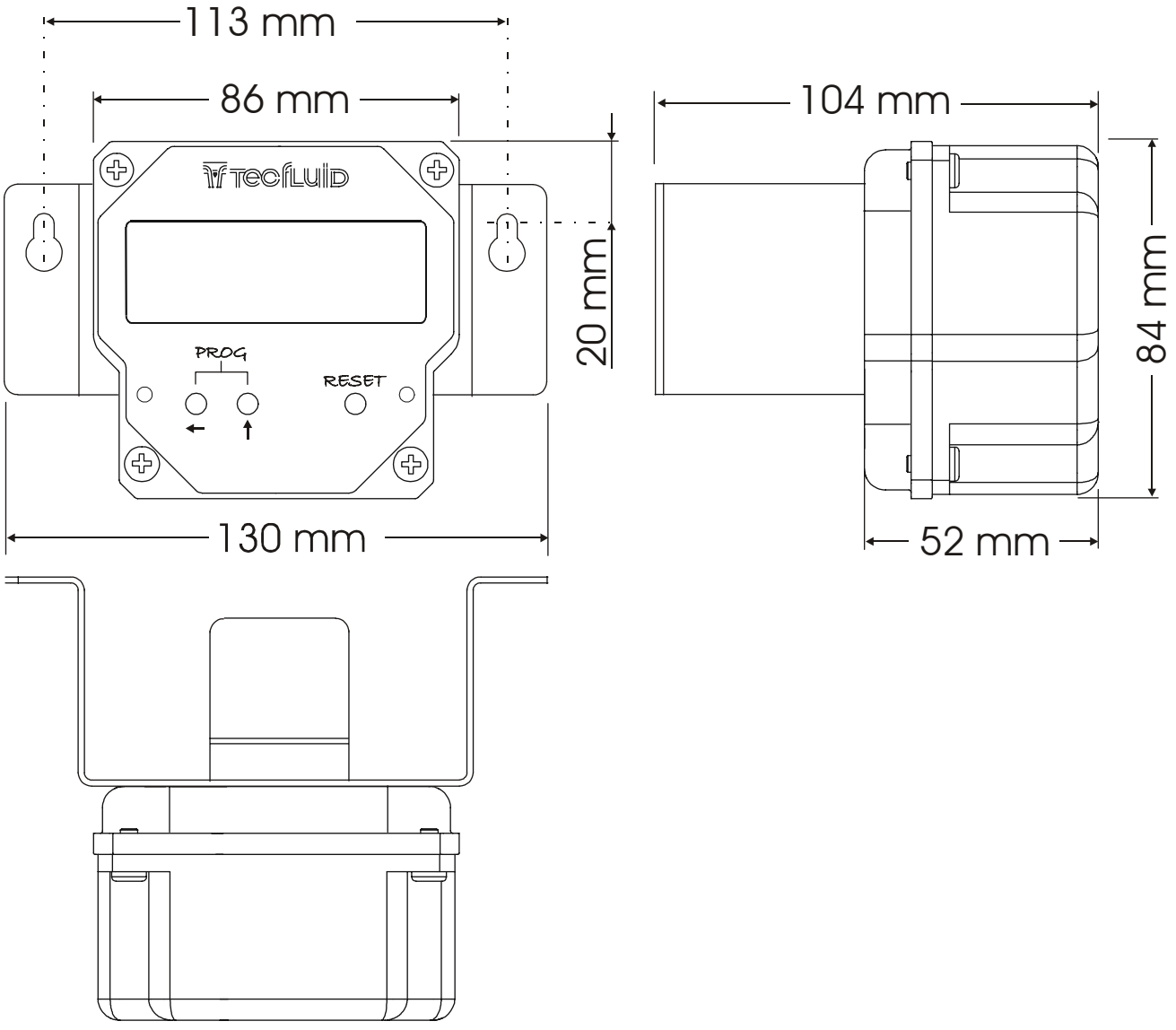
8.5.2.Turbine

The turbine input is designed for connecting to the coil of a magnetic pick-up.
The input impedance is 1,2 KΩ. This input is protected to limit the maximum applied voltage to the circuit. This protection consists of two diodes in parallel and two 100 Ohm resistors.
The maximum voltage that can be applied to the input is 10 Vpp. Voltages higher that this can cause damage to the equipment.
The maximum input frequency is 5000 Hz
The minimum input voltage is 7 mVpp

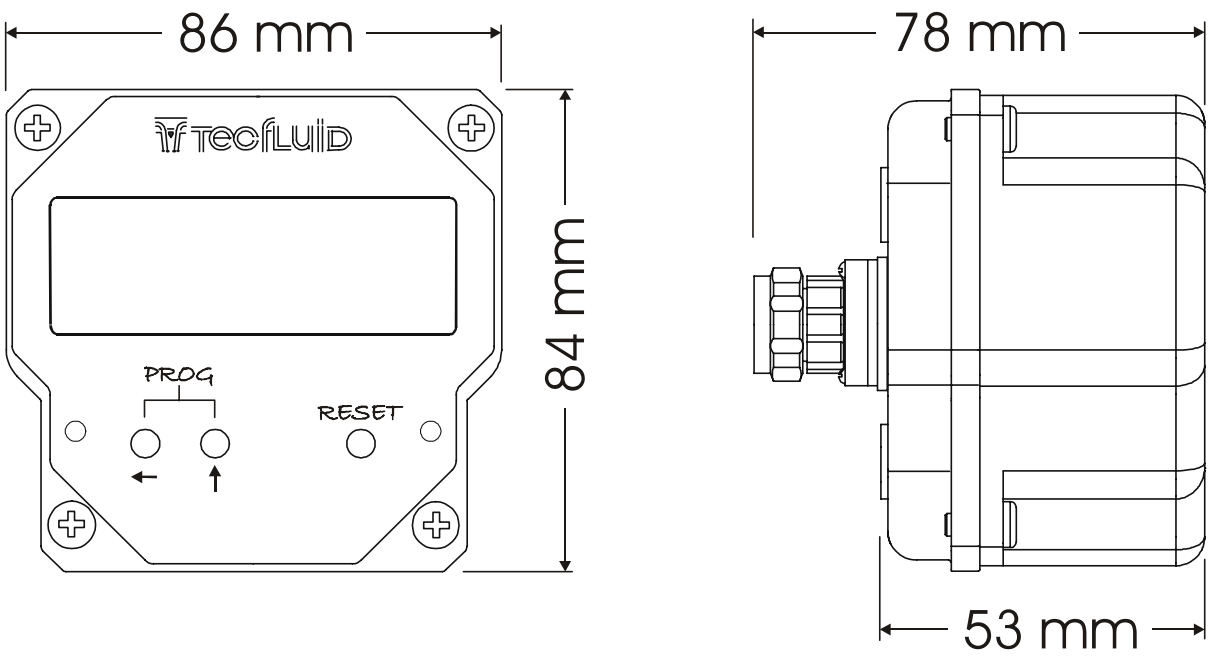


Complies with the Directive EMC 89/336/EEC CE

9. DIMENSIONS FOR CIP II M



10. Dimensions for CIP II L



WARRANTY

Tecfluid S.A. GUARANTEES ALL ITS PRODUCTS FOR A PERIOD OF 24 MONTHS, after consignment, against all defects in materials and workmanship.

This warranty does not cover failures which can be imputed to misuse, use in an application different to that specified in the order, the result of service or modification by un-authorized persons, bad handling or accident.

This warranty is limited to cover the repair or replacement defective parts which have not been damaged by misuse.

This warranty is limited to the repair of the equipment and all further and eventually following damages are not covered by this warranty.

Any consignment of equipment to our factory or distributor must be previously authorised. The consignment should be done with the equipment well packed, clean of any liquids, grease or hazardous materials. Tecfluid S.A. will not accept any responsibility for damage done during transport.

Together with the equipment, a note should be enclosed indicating the failure observed, the name, address and telephone number of the sender.

По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курган (3522)50-90-47
Курск (4712)77-13-04
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Ноябрьск (3496)41-32-12
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Пермь (342)205-81-47
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саранск (8342)22-96-24
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
Тверь (4822)63-31-35
Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Улан-Удэ (3012)59-97-51
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Чебоксары (8352)28-53-07
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Чита (3022)38-34-83
Якутск (4112)23-90-97
Ярославль (4852)69-52-93

Россия +7(495)268-04-70 **Казахстан** +7(7172)727-132 **Киргизия** +996(312)96-26-47

https://tecfluid.nt-rt.ru || tdf@nt-rt.ru