



CENTRAL UP GAS LIMITED
(CITY GAS PROJECT IN KANPUR, BAREILLY & JHANSI)

**BID DOCUMENT FOR RATE CONTRACT
FOR THE PROCUREMENT OF NORMAL
DIAPHRAGM GAS METER G1.6 FOR
KANPUR, UNNAO, BAREILLY AND JHANSI
FOR CITY GAS DISTRIBUTION PROJECT
OF M/S. CENTRAL U. P. GAS LIMITED, FOR
THE PERIOD OF 01 YEARS**

BID DOCUMENT NO : CUGL/C&P/TEN2526/31

THROUGH E-TENDERING MODE

OPEN DOMESTIC COMPETITIVE BIDDING

TECHNICAL DOCUMENTATION
TECHNICAL, VOI II OF II

CENTRAL U.P. GAS LTD.
CITY GAS DISTRIBUTION PROJECT IN
KANPUR, UNNAO, BAREILLY & JHANSI

MATERIAL REQUISITION FOR DOMESTIC
DIAPHRAGM (G – 1.6) GAS METER

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1. DESCRIPTION OF GOODS AND/OR SERVICES

Item	Quantity (Nos.)	Description
1.	25,000	Design, Manufacture, Inspection, Testing, Supply of Domestic Diaphragm Natural Gas Meters G 1.6 (Normal) including packaging, insurance, handling, transportation, loading, unloading at sites, designated store.

Note:

1. Bidder to furnish two years operational & Maintenance spares with price indicating the detailed breakup of the items, quantities and its price.
2. The above quantities are indicative only and are subject to change.

2. REMARKS / COMMENTS

Supplier's Compliance

Supplier shall submit his bid in full compliance with the requirements of this MR and attach.

Compliance with Specification

The supplier shall be completely responsible for the design, materials, fabrication, testing, and Inspection, preparation for shipment & transfer of above material to nominated delivery point strictly in accordance with the MR & all attachments thereto.

Supplier's Scope

Supplier's scope of work includes the equipment with all internals & accessories shown on the data sheets, specifications and all parts necessary for a satisfactory operation & testing except those which are indicated to be out of Supplier's supply.

Inspection

Inspection shall be performed by a designated Third Party Inspection agency hired by CUGL as set out & specified in the codes & particular documents forming this MR.

Applicable Documents

General descriptions, requirements and information are listed in Annexure "C" of this Material Requisition.

Supplier's Documents

Supplier shall supply the documentation as listed under Annexure "D" of this Material Requisition.

All documents shall be supplied in English language.

3.0 LIST OF ATTACHMENTS

The table below lists the documents which are integral part of this Material Requisition. The applicable revision index of each document is mentioned in the column below the current Material Requisition revision index.

S.NO	DESCRIPTION	DOCUMENT NO.	REVISION
1.	Technical Specifications of Domestic Diaphragm Gas Meter G1.6		
2.	Quality Assurance Plan of Domestic Diaphragm Gas Meter G 1.6		

4. DOCUMENTS & DATA REQUIREMENTS

The table hereunder specifies the quantities & nature of the documents to be submitted by the CONTRACTOR to the ENGINEER.

The documents required at the inquiry stage to be included in the bid are listed under column A.

The documents required after award of the AGREEMENT and subject to the written approval of the ENGINEER are listed under column B.

The final & certified documents are listed under column C.

Any document even when preliminary shall be binding and therefore duly identified & signed by the CONTRACTOR. It shall bear the ENGINEER's project reference, the MR number and identification number.

THE DOCUMENTS ARE FULLY PART OF THE SUPPLY WHICH SHALL BE COMPLETE ONLY IF AND WHEN THE DOCUMENTS COMPLYING FULLY WITH THE MATERIAL REQUISITION REQUIREMENTS RECEIVED BY THE ENGINEER.

Item	Documents & data	A	B		C	
		No. of Copies	No. of Copies	Required Date	No. of Copies	Required Date
1.	Sizing calculation for each type of Meter	2	3	1 Week	3	1 Week
2.	Detailed GA Drawing, Documents submittal, testing & delivery schedule	~	3	1 Week	3	1 Week
3.	Standard and Code compliance certificate as per format mentioned in Tender	2	3	1 Week	3	1 Week
4.	Meter Tag No. and Name Plate Format	~	3	1 Week	3	1 Week
5.	List of Special Test Equipment / Tools required for maintenance	~	3	1 Week	3	1 Week
6.	Inspection and Test Procedure	~	3	1 Week	3	1 Week
7.	Installation, Operation and Maintenance Manual, Catalogue with Part List	~	3	2 Weeks before shipping	3	1 Week
8.	Test / Calibration / Inspection Certificates / Reports	~	3	1 Week after test	3	1 Week
9.	Packing / Shipping list with weights & dimensions	~	3	1 Week	~	1 Week
10.	Final Technical File (containing all final drawings & documents listed in Col. "C")	~	3	2 Weeks before shipping	~	1 Week

	PTS – DOMESTIC DIAPHRAGM GAS METER (G-1.6)	
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NOTES:

1. Duration in column B (required date) are weeks after purchase order date (=T0).Duration in column C (required date) are weeks after document approval. Due date of each document may be proposed.
2. Final technical file shall be supplied in hard copy as indicated, and in electronic format (pdf acrobat) on two (2) CD-ROMS.

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PART-A

CENTRAL U.P. GAS LTD.

**CITY GAS DISTRIBUTION PROJECT IN KANPUR,
UNNAO, BAREILLY AND JHANSI**

PTS – DOMESTIC DIAPHRAGM (G-1.6) GAS METER

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1.0 INTRODUCTION

The intent of this specification is to establish minimum requirements to manufacture and supply of Diaphragm Gas Meters (G1.6) Normal system required for PNG measurement to domestic customers for City Gas Distribution project in Kanpur, Unnao, Bareilly and Jhansi and any new GAS by CENTRAL U.P. Gas Limited.

2.0 SCOPE

The scope of work shall cover supply, design engineering, documentation, manufacturing, testing, inspection, preparation for shipment and transportation of the Diaphragm type domestic gas meters for Automated Meter Reading system as per this technical specification along with national / international standards specified.

GENERAL

Definitions

Subject to the requirements of the context, the terms (hereafter listed in alphabetical Order) used in this specification are given the following meaning:

AGREEMENT	Designates the agreement concluded between the CLIENT and the CONTRACTOR, under which the latter undertakes to the former the GOODS and/or SERVICES according to the stipulations which are agreed and specified in the form of an order.
CLIENT / OWNER	Designates the purchaser of the GOODS and/or SERVICES, which are the subject of the AGREEMENT.
CONTRACTOR/SUPPLIER	Designates the individual or legal entity with whom the order has been concluded by the CLIENT. The term "CONTRACTOR/SUPPLIER" may be used indifferently for a supplier, a manufacturer, an erection CONTRACTOR/SUPPLIER, etc.
DAYS - WEEKS – MONTHS	Specify the number of calendar days, weeks or months and not of working days, weeks or months.
CLIENT'S REPRESENTATIVE	Designates the individual or legal entity to which the CLIENT has entrusted various tasks in relation with the carrying out of his PROJECT
GOODS and/or SERVICES	Designate, depending on the case, all or part of the drawings or documents, substances, materials, materiel, equipment, structures, plant, tools, machinery, to be studied, designed, manufactured, supplied by the CONTRACTOR/SUPPLIER under the AGREEMENT, including all the studies, tasks, works and services specified by the order. The Terms

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GOODS or SERVICES may be indifferently used one for the other as required by the context.

PROJECT

Designates the aggregate of GOODS and/or SERVICES to be provided by one or more CONTRACTOR/SUPPLIERS.

OWNER CUSTOMER

Party or Individual that engages owner for PNG supply service.

Review And/or Approval

Whenever CLIENT and/or CLIENT'S REPRESENTATIVE review and/or approval is requested on a document to be submitted by the CONTRACTOR/SUPPLIER or before an action is implemented by the CONTRACTOR/SUPPLIER, such review and/or approval shall always be requested in writing by the CONTRACTOR/SUPPLIER to the CLIENT and/or the CLIENT'S REPRESENTATIVE before any action subject of this review and/or approval is taken. CLIENT and/or CLIENT'S REPRESENTATIVE approval shall always be given in writing.

4.0 ABBREVIATIONS

OEM	:	Original Equipment Manufacturer
PNGRB	:	Petroleum and Natural Gas Regulatory Board
RF	:	Radio Frequency
TPIA	:	Third Party Inspection Agency

CODES, STANDARD AND LEGAL REQUIREMENTS

All meters shall comply with the requirements of PNGRB guidelines. In case of dispute between PNGRB and other codes, PNGRB guidelines shall prevail. Below mentioned standards shall be complied by the Bidder.

- Meters shall be approved to EN 1359 latest edition or OIML R137 -1&2 latest edition and also with the other applicable codes, standards and legal requirements.
- The offered diaphragm flow meter model shall have certification for specified flow and accuracy from the Weights & Measurement Department of the country of origin. The certificate(s) shall be in English language or in the language of originating country along with English translation. Bidder shall submit the copy of such certificate(s) to along with bid. Vendor to arrange for Weights and Measures approval from Indian Authorities.
- Meters shall be in compliance of PNGRB requirement. In case of any contradiction between code/standard and PNGRB regulations, PNGRB regulations to be followed.
- Valid certificate of type approval issued by Director of Legal Metrology (Government of India) for each of the offered models of diaphragm gas meters, along with the technical bid.

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DIAPHRAGM GAS METER
(G-1.6) NORMAL

**7.0 DATA SHEET – POST-PAID DIAPHRAGM DOMESTIC TYPE GAS METERS
(G1.6) NORMAL**

General	Service	Natural Gas
	Governing Standard	EN 1359:1999 + A1 Amendment 2006 or latest and OI R 137-1&2 or latest
	Type	Diaphragm Type G1.6
Process Condition	Q _{max} .	2.5m ³ /hr
	Q _{min} .	0.016m ³ /hr
	Accuracy Class	Class 1.5, ±3%(Q _{MIN} to 0.1Q _{MAX}) ; ±1.5% (0.1 Q _{MAX} to Q _{MAX})
	Rangeability	1:150 or better
	Operating Pressure	21 – 23mbar-g
	Pressure loss	<2mbar-g
	Design Pressure	500mbar-g
	Specific Gravity	0.6
	Ambient Temperature	-10 to 55°C
Body	Case/ Body	Steel/Aluminum alloy
	Corrosion protection over Body	Corrosion protective coating effective life span of 20 years
	Meter Case Sealing	Effective sealing as per governing standard

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	Installation	Suitable for indoor & outdoor installation.
	Connection Orientation	Left side inlet and Right-side outlet type-I quantity as per MR/ SOR of tender.
	End Connections	3/4"NPTM at both inlet and outlet conforming to ANSI B1.20.1. In case end connections are different, bidder to provide suitable adaptor (Free Loose Nut type) to meet the required connection size. (Note-1).
Index	Max Index Reading	99999.999 with auto reset facility
	Unit	CM (Cubic Meter)
	Marking	As per governing standard specified above.
	Type	Meter shall have mechanical index
	Ingress Protection	Meter: IP54 or better as per IEC 60529 MIU: IP65 or better as per IEC 60529
Internals	Diaphragm material	Polyester fabric coated with rubber on either side of equipment (Material suitable as per governing standard).
	Distance between inlet & outlet connection	110 ± 2mm.
AMR compatibility	Retrofit	As in future retrofitted with Meter Interface Unit to upgrade for automated meter reading
Others	Testing	As per governing standard

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(G-1.6) NORMAL**

	Reverse Flow Restrictor	Meter shall be equipped with prevention of reverse rotation of index.
	Cyclic volume	To be specified by vendor
NOTE:		
1.	End connections shall be provided with plastic caps for protection during transportation.	

8.0 SPECIFICATION FOR RFID TAGS

Radio Frequency Identification (RFID) chip shall be installed on each gas meter for RFID controlled inventory management by CUGL. The RFID tags shall be attached on each gas meter at BIDDER's workshop before dispatch.

Following are the minimum requirements for the RFID tags.

Operation mode	Passive type
Protocol	EPC Class 1 Gen2v2 (ISO 18000-63)
Standard	ISO 18000-63 : 2015 or latest
Frequency Range (MHz)	865-867 (as per license free bandwidth in India)
Tag Form Factor	Label Tag (CUGL logo printed on it and/or bar code with relevant information)
Tag Materials	White synthetic label
Recommended Ribbon	Full Resin
Material Compatibility	Optimized for all materials
Memory	EPC – 128(96) bits User - 32(64) bits Unique TID - 48 bits
Operation Temperature	-40 to +85°C
Tag attachment	The RFID tags shall be self-adhesive suitable for curved surfaces and suitable for outdoor

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	installation.
Tag life	The RFID tag life shall be guaranteed according to the life of the meters.

10. TECHNICAL EVALUATION REQUIREMENT

All the documents submitted along with technical bid shall be in English Language only. If any document from OEM is in different language, bidder shall submit the English translation of the same along with the bid.

Any deviations from the specification should be submitted in tabular format specifying the clause no with the bid. In case of no deviation bidder should also submit the same mentioning NO DEVIATION. Compliance with technical specifications will be taken for granted if deviations are not specifically mentioned.

Required certificates to submit along with the bid. Refer the Clause No.11.0 of the **specification for the list of certificates.**

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DOCUMENTS TO BE SUBMITTED AT THE TIME OF BIDDING

The bidder shall submit following documents:

- Datasheets
- Pressure drop calculations
- Battery life calculation
- Performance curves
- Technical catalogues for relevant models offered
- Deviations from technical specification, if any
- Supplies against major orders for natural gas application (PTR)
- Type approval certificate as per BS EN 1359:1999 + A1 Amendment 2006 or latest
- Calibration certificate.

11. STATUARY CERTIFICATIONS

11.1 Type approval certificate as per BS EN 1359:1999+ A1 Amendment 2006 or latest for meters.

11.2 Weights and Measures approval certificate for the meters shall be provided along with the bid and supply, notwithstanding which, bid shall be liable for rejection.

11.4 PESO/CCOE certificate electrical/electronic items conforming to Zone 2, IIB shall be provided along with the bid and supply, notwithstanding which, bid shall be liable for rejection.

11.5 Certificate to IEC 60529 (IP protection)

12. INSPECTION AND TESTING

Inspection shall be carried out as per the approved Technical Specification and Inspection Plan/QAP.

SUPPLIER shall submit QAP to CLIENT for approval as per given format with minimum requirements as specified.

For any control, test or examination required under the supervision of TP/IA/Owner/Owner's representative, later shall be informed in writing one (1) week in advance by vendor about inspection date and place along with production schedule.

The SUPPLIER shall provide calibration certificate and accuracy at MAOP of the Domestic Diaphragm Meter for the following flow rates (As per EN 1359):

Q_{MIN}

$0.1Q_{MAX}$

Q_{MAX}

Purchaser shall hire Third Party Inspection Agency to perform inspection work. This agency shall inspect all the equipment/material and issue all inspection certificates/reports as per specifications and codes.

SUPPLIER shall furnish all the material test certificates, proof of approval/ license from specified authority as per specified standard, if relevant, internal test/ inspection reports,

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Accuracy test report for individual meter, as per Technical Specification and specified code for 100% material, at the time of final inspection of each supply lot of material.

Review of calibration certificates for all the measuring instruments at the time of inspection, i.e., used for checking and testing, along with the Master calibration certificate of the measuring instruments from which the instruments is calibrated.

All meters should be sealed properly by the manufacturer after final inspection clearance and before dispatch. Meters found in an unsealed condition will not be accepted.

If the performance of any of the sample meter is not in compliance with the acceptance norms of the respective standards then that the lot of respective item will be rejected.

Vendor should furnish QAP in line with EN 1359:1999+A1 2006 or latest format as attached with the tender as minimum.

Even after third party inspection, CUGL reserves the right to select a sample of Domestic Diaphragm Meters randomly from each manufacturing batch and have these independently tested. Should the results of these tests fall outside the limits specified in Technical specification, then CUGL reserves the rights to reject all production supplied from the batch.

13. MARKING

Each gas meter shall be marked in legible characters, which are permanently visible in accordance with BS EN 1359:1999+A1 Amendment 2006 or latest.

- Type approval number issued by primary lab which has issued the type approval certificate for EN 1359.
- Manufacturer's name & Identification Mark.
- Serial Number and year of manufacture.
- CUGL Logo.
- Flow Rate – Max (Qmax) & Min (Qmin) - (m³/h).
- Maximum Working Pressure Pmax (bar.)
- Flow Direction.
- Nominal value of the cyclic volume, V (dm³).
- Number and date of EN Standard.
- Ambient temperature Range (°C).
- Gas temperature Range (°C).
- Accuracy class of the meter, e.g. Class 1.5.
- Month & Year of Manufacture.

Type approval number issued by Department of Legal Metrology (W&M) (Government of India)

ATEX Marking as per directive 94/9/EC on the Electrical / Electronic device or module certified.

Owner Logo (CUGL) on each of the Meter. Unique serial number to be marked on the meter as per the standard procedure followed, which will be communicated to the successful bidder. Vendor shall ensure that there is no repetition of serial numbers and each meter shall be given unique serial number.

14. POST BID DOCUMENTATION

The bidder shall submit following documents along with the material: (Please refer to Material requisition for exhaustive list)

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- Material test certificates for physical properties and chemical composition.
- Calibration certificates. (Hard copy of original with Soft copy (CD) shall be supplied to CUGL and a copy of calibration certificate shall be enclosed within packing box of each supplied meter)
- Testing reports.
- Catalogue and technical literature of domestic meters in English
- Installation and Operational Manual.
- Dimensional and sectional drawing with material of construction
- Calibration procedure and recommended frequency of calibration of the meters.

15.0 PACKING AND SHIPMENT

Supplier shall mention the Packing size to ensure uniformity in delivery conditions of the material being procured. SUPPLIER shall submit the packaging details during offer and also complied with at the time of delivery.

The calibration certificates of each item shall be enclosed within the package box. Each package box shall be tagged with the purchase order number (unique identification is required). The package box shall be suitable for INLAND transport or seaworthy (if imported). Necessary precautions and pre-requisites shall be considered by supplier for package delivery to the concern client site / location / workshop.

16.0 GUARANTEE / WARRANTY

Guarantee/ Warranty period shall be 24 months from the date of acceptance of meters at CUGL store. If any defects are found in the meter during the warranty period, the meter shall be replaced by the supplier without any cost and time implication to OWNER.

17.0 SPECIFICATION FOR RFID TAGS – The boxes are to be tagged for packed quantity of Meters and upon scanning RFID tags, should flash following Information:

- a. No. of Meters packed in individual boxes.
- b. Meter Nos. for all the Meters (quantity) packed in individual boxes

QUALITY ASSURANCE PLAN FOR DOMESTIC DIAPHRAGM GAS METER (NORMAL)

Project : City Gas Distribution Project in Kanpur,
Unnao, Bareilly and Jhansi
Client : Central U.P. Gas Limited
Consultant :
QAP. No. :
Rev. No.: 0

S.No.	Characteristics / Description	Type of Test	Category	Extent / Quantum of Check	Ref. Doc. & Cl.no.	Acceptance Criteria / Norms	Format of Records	Scope		Remarks
								Manufacturer	TPIA / Client	
1.	External Leak Tightness		Test	100%	BS EN 1359:1999, Clause No. 6.2.2	Conforming to CUGL Tender Technical Specifications and BS EN 1359:1999	Manufacturer/ Inspection Report / Laboratory Test Report	P	W	100% Inspection by Manufacturer and 5% Inspection by TPI
2.	External Soundness Test		Test	100%				P	W	
3.	Calibration of Test for Accuracy of Registration Testing	At Qmin Flow Rate	Test	100%	BS EN 1359:1999, Clause No. 5.1			P	W	
		At Qmax Flow Rate	Test	100%				P	W	
		At 0.1 Qmax Flow Rate	Test	100%				P	W	
4.	Pressure Absorption Test	~	Test	100%	BS EN 1359:1999, Clause No. 5.2			P	W	
5.	Dimensional Inspection	Centre to Centre of End Connections	Visual	100%	CUGL Technical Tender Specification			P	W	
		Inlet & Outlet End Connection Size and Threading	Visual	100%				P	W	
6.	Visual Inspection	Pressure Test Point	Visual	100%				P	W	
		Fascia Palte Marking	Visual	100%				P	W	
		Powder Coating Thickness (Min. 40 micron)	Visual (Use DFT Meter)	100%				P	W	
		Index Reading	Visual	100%				P	W	
		Arrow Marking	Visual	100%				P	W	
		Color & Appearance	Visual	100%				P	W	
		Marking & Packing	Visual	100%				P	W	
		7.	Mechanical & chemical properties of Body Casing							As per manufacturer's MTC
8.	Verification of casing thickness recorded against resistance to internal pressure test (type test report)	Verification to be done by using standard thickness measurement instrument. (tolerance of ±0.05 mm)		1 No. per each batch of casing material	As per type test approval certification obtained against resistance to internal pressure test			P	W	
9.	Fire Resistance i.e. Resistance to High Temperature Test	~	Test		BS EN 1359:1999, Clause No. 6.5.5			P	R	Review of Test

STANDARD OPERATING PROCEDURE

QUALITY ASSURANCE PLAN FOR DOMESTIC DIAPHRAGM GAS METER

Project : City Gas Distribution Project in
Kanpur, Unnao, Bareilly and Jhansi

Client : Central U.P. Gas Limited

Consultant :

QAP. No. :

Rev. No.:

S.No	Characteristics / Description	Type of Test	Category	Extent / Quantum of Check	Ref. Doc. & Cl.no.	Acceptance Criteria / Norms	Form at of Recor ds	Scope		Remarks
								Manufacturer	TPIA / Client	
		Batch Size	Sample Size	Acceptance Number	Rejection Number					
	1	2 to 500	20	0	1					
	2	501 to 3 200	50	1	2					
	3	3 201 to 20 000	80	2	3					
1)	The above-mentioned testing and acceptance criteria are minimum requirements; however, supplier shall ensure that the product also complies the additional requirements as per technical specifications and data sheets.									
2)	The supplier shall submit their own detailed QAP prepared on the basis of the above for approval of Owner / Owner's representative.									
3)	TPIA shall have right to inspect minimum 10% of all manufacturing activities or as specified above.									
4)	TPIA along with Owner / Owner's representative shall review / approve all the documents related to QAP / Quality Manuals Drawings etc. submitted by supplier.									
5)	TPIA shall also review the test certificates submitted by the manufacturer.									
6)	Supplier shall in coordination with sub vendor shall issue detailed production and inspection schedule indicating the dates and the locations to facilitate Owner / Owner's representative to organize Inspection.									
7)	Supplier shall submit meter index format duly signed and stamped.									
8)	TPIA shall review all the reports 100%									
9)	All measuring instruments shall be duly calibrated at the time of inspection.									
10)	Calibration certificates of all measuring instruments shall be reviewed by TPIA at the time of inspection, along with Master Calibration Certificate of the measuring instruments from which the instrument is calibrated. The same shall be submitted along with submission of inspection report, and the same shall be traceable to national / international standards. The Master Calibration Certificate shall be checked. as a must at the time of inspection and submitted along with the inspection report.									
11)	After satisfactory inspection, TPIA to apply their mark (stamp / sticker / embossing etc.) on each gas meter for testing. TPIA has also to apply their mark with unique identification (e.g. stickers which cannot be removed / embossing / stamp along with details such as batch no., date of manufacture, serial no.) on the outer box / gunny bags carrying the inspected materials after verifying the information mentioned in the CUGL Technical Tender Specification.									
Prepared By				Checked By			Approved By			
(Name / Signature / Date / Stamp)				(Name / Signature / Date / Stamp)			(Name / Signature / Date / Stamp)			