GRIP MASTER

GRIP FORCE CHECKER

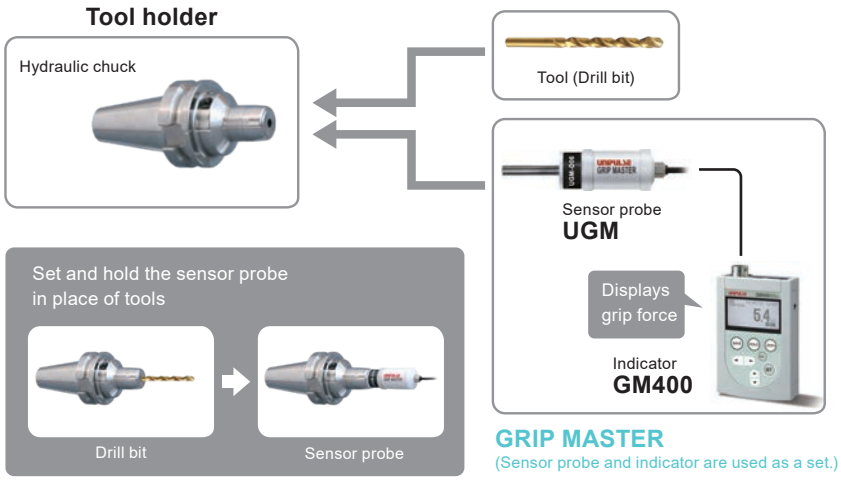


Quantifies gripping force
Daily management tool
to support precision machining

GRIP MASTER quantifies grip force in metalworking for stabilizing metalworking process.
Properly managing the grip force of tools such as a blade, it supports the preventive maintenance of the machine tools as well as the improvements of the machining quality.
Huge line up of sensor probe from ϕ4 to ϕ32 is available, besides that various functions such as memory function ensure an easy management of grip force.

Safe and easy inspection with quantified grip force

Grip force of tool holders can be easily checked by simply inserting and gripping the sensor probe by a tool holder.



GRIP MASTER
(Sensor probe and indicator are used as a set.)

A variety of sensor probe product lines

Wide range of the sensor probes is available.

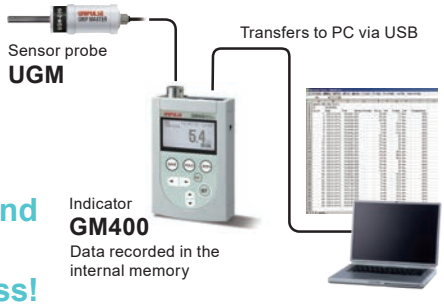


No calibration required

Information of the sensor is stored in the memory of sensor probe itself.
There is no need to enter information for calibration each time when sensor probe is changed.

Easy data recording by pressing "SAVE" button

Measurement data will be recorded with date and time when "SAVE" button is pressed.
Recorded data can be easily exported to PC via USB interface.



Did you know that tool holders also have lifespan?

It does not mean that the same grip force is applied always, even if tools are set in a usual way.
Gripping force of tools declines over time due to wear and over use.
Reduction of the gripping force may not only cause to worsen machining accuracy, but also lead to break tools or workpieces. As a result, it will be a reason for a significant drop in manufacturing efficiency.

By checking the grip force of tool holder, you can…

- Check if enough force is applied to hold bits
- Detect deterioration of tool holders in advance

Prevents damages and problems during metalworking process!

Carrying case

Carrying case included



Multi-storage carrying case (sold separately)

UGM-CC



Model for set	Product Configuration
GRIP-MASTER_D04	Sensor probes ϕ4, GM400, Carrying case
GRIP-MASTER_D05	Sensor probes ϕ5, GM400, Carrying case
GRIP-MASTER_D06	Sensor probes ϕ6, GM400, Carrying case
GRIP-MASTER_D07	Sensor probes ϕ7, GM400, Carrying case
GRIP-MASTER_D08	Sensor probes ϕ8, GM400, Carrying case
GRIP-MASTER_D10	Sensor probes ϕ10, GM400, Carrying case
GRIP-MASTER_D12	Sensor probes ϕ12, GM400, Carrying case
GRIP-MASTER_D16	Sensor probes ϕ16, GM400, Carrying case
GRIP-MASTER_D20	Sensor probes ϕ20, GM400, Carrying case
GRIP-MASTER_D25	Sensor probes ϕ25, GM400, Carrying case
GRIP-MASTER_D32	Sensor probes ϕ32, GM400, Carrying case

UGM: sensor probe

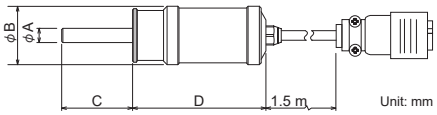
Specifications

Model	UGM-D04	UGM-D05	UGM-D06	UGM-D07	UGM-D08	UGM-D10	UGM-D12	UGM-D16	UGM-D20	UGM-D25	UGM-D32
Diameter	4 mm	5 mm	6 mm	7 mm	8 mm	10 mm	12 mm	16 mm	20 mm	25 mm	32 mm
Rated capacity (Grip pressure)	140.4 MPa	79.6 MPa	124.3 MPa	106.6 MPa	93.3 MPa	101.6 MPa	83.8 MPa	91.8 MPa	108.5 MPa	83.0 MPa	86.5 MPa
Rated capacity (Grip force) *1	10 kN	10 kN	20 kN	20 kN	20 kN	40 kN	40 kN	60 kN	100 kN	150 kN	200 kN
Calculated slipping torque at R.C.*2	15.0 N m	18.8 N m	45.0 N m	52.5 N m	60.0 N m	150.0 N m	180.0 N m	360.0 N m	750.0 N m	1406.3 N m	2400.0 N m
Sensing length	17 mm	24 mm	25.6 mm	25.6 mm	25.6 mm	37.6 mm	38 mm	39 mm	44 mm	69 mm	69 mm
Maximum safe overload	120% R.C.										
Safe temperature range	+10 to +40℃										
Cable	ϕ3 shielded cable 1.5 m connector included								ϕ5 shielded cable 1.5 m connector included		
Material	Sensor probe: stainless steel Cover: polyacetal (it cannot be removed.)										
Weight (excluding cable)	Approx. 100 g	Approx. 100 g	Approx. 100 g	Approx. 100 g	Approx. 100 g	Approx. 120 g	Approx. 150 g	Approx. 220 g	Approx. 360 g	Approx. 800 g	Approx. 1000 g

*1 Grip Force (N) = Grip Pressure (Pa) × ((Diameter (m) × π × Sensing Length (m)) / 3

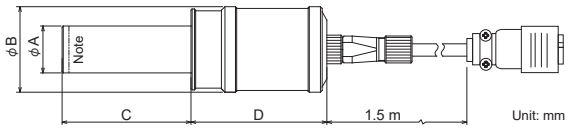
*2 Slip Torque (N m) = Grip Force (N) × 3 × Radius (m) × Friction Coefficient (0.25)

External dimension (ϕ4, ϕ5, ϕ6, ϕ7, ϕ8, ϕ10, ϕ12, ϕ16)



Unit: mm

External dimension (ϕ20, ϕ25, ϕ32)



Unit: mm

Note:
The tip (5 mm from the end) of ϕ25 and ϕ32 probes is slightly tapered, and the diameter is smaller.

Model	ϕA	B	C	D
UGM-D04	ϕ4h6	24.5	27	56
UGM-D05	ϕ5h6		27	
UGM-D06	ϕ6h6		33	
UGM-D07	ϕ7h6		34	
UGM-D08	ϕ8h6		34	
UGM-D10	ϕ10h6		44	
UGM-D12	ϕ12h6		44	
UGM-D16	ϕ16h6	30.5	45	
UGM-D20	ϕ20h6	36.5	55	58
UGM-D25	ϕ25h6	44.5	78.5	60.5
UGM-D32	ϕ32h6	46.5	85.5	56.5

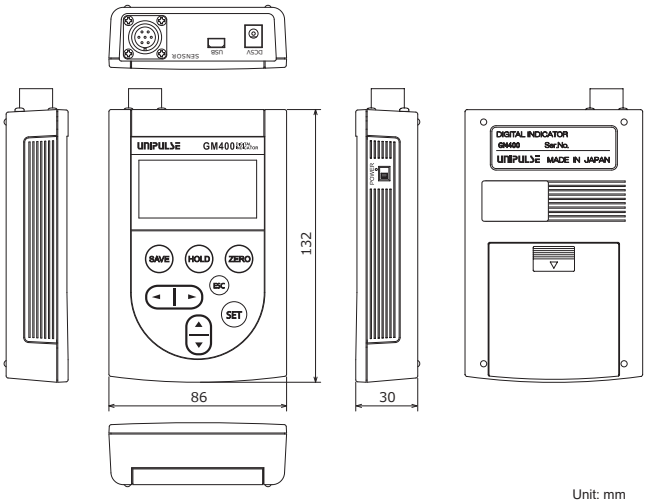
GM400: indicator

Specifications

Model		GM400
Analog	A/D converter	80 times/sec.
Display	Display unit	128 × 64 dot black and white LCD
	Display value	2 decimal places + sign
	Display contents	Switchable numeric display (grip pressure/grip force/slip torque)
Recorder	Recording function	Record when [SAVE] is pressed
	Recording media	Internal memory
	Recording method	Texts in CSV format
	Recorded data	ID, sensor number, date and time, indicated value/reading (grip pressure/grip force/torque), unit, and temperature
	Memory for recorded data	8000 data
Function	Hold	Sample/peak
Interface		USB interface
General specifications	Internal power supply	AA alkaline batteries or nickel metal hydride batteries (4 pcs.)
	External power supply	AC adapter for 100 Vac (sold separately)
	Max. continuous operating time	Approx. 30 hours (when backlight is off)
	Operating conditions	Temperature: +10 to +40℃ Humidity: 80% RH or less (non-condensing)
	External dimension	86(W) × 132(H) × 30(D) mm (Not including projections)
	Weight	Approx. 290 g (including the 95 g weight of battery)
Attachments		AA alkaline battery……4, Operation manual……1
Optional accessories		AP0516: Special AC adapter (for AC 100 V) CA81-USB: USB cable (TypeA-Bmini) 1.8 m UGM-CC: Carrying case

* Please note that there are possibilities of individual differences in a color tone on display devices such as LEDs, fluorescent display tubes and LCDs due to manufacturing process or production lots.

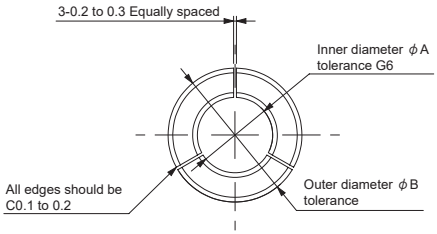
External dimension



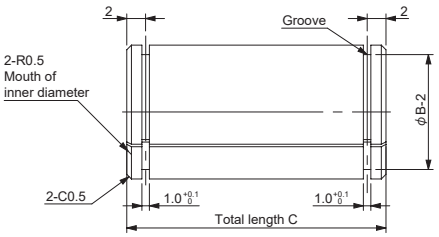
Unit: mm

Adapter

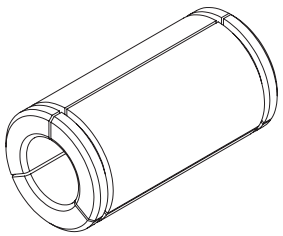
In case of producing an adapter converting a shaft diameter <Produce with reference to the following drawing.>



● Decide the tolerance of Outer diameter ϕB after confirming grip diameter specifications of a tool holder you are using.



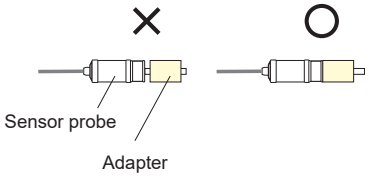
● The groove part is for attaching an O-ring (A ring-shaped spring is also acceptable.) Hold with the O-rings so that the three-jaw is not separated.
● Total length C of the diameter conversion adapter is recommended to be the same length as the sensing length of UGM.



Material: HPM38 (Approx. HRC27 to 30) is recommended.
SUS304 and SUS316 are also acceptable.

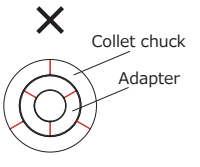
unit:mm

Use adapter with caution

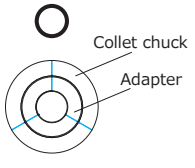


Please insert the sensor probe entirely into the adapter.

The grip force would be different when measurement is made without adapter and with adapter, however there's no difference in repeatability.



Slit positions of the collet chuck and the adapter mismatched



Slit positions of the collet chuck and the adapter matched

Please ensure that the slit positions of chuck and adapter are matched before using.

Please note that a measurement value measured with a diameter conversion adapter will not be guaranteed.