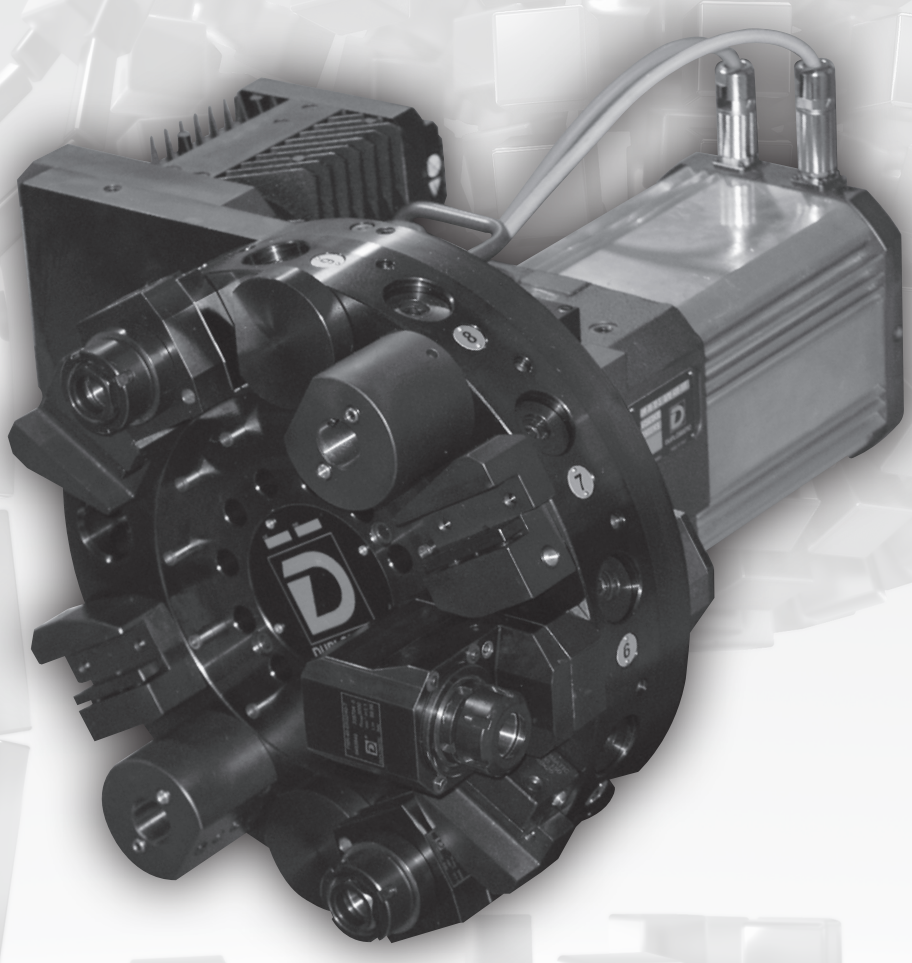
DUPLOMATIC
AUTOMATION



# ODT-N * series 50

## MODULAR DRIVEN TOOL DEVICE FOR AXIAL SYSTEM DIN 1809 COUPLING

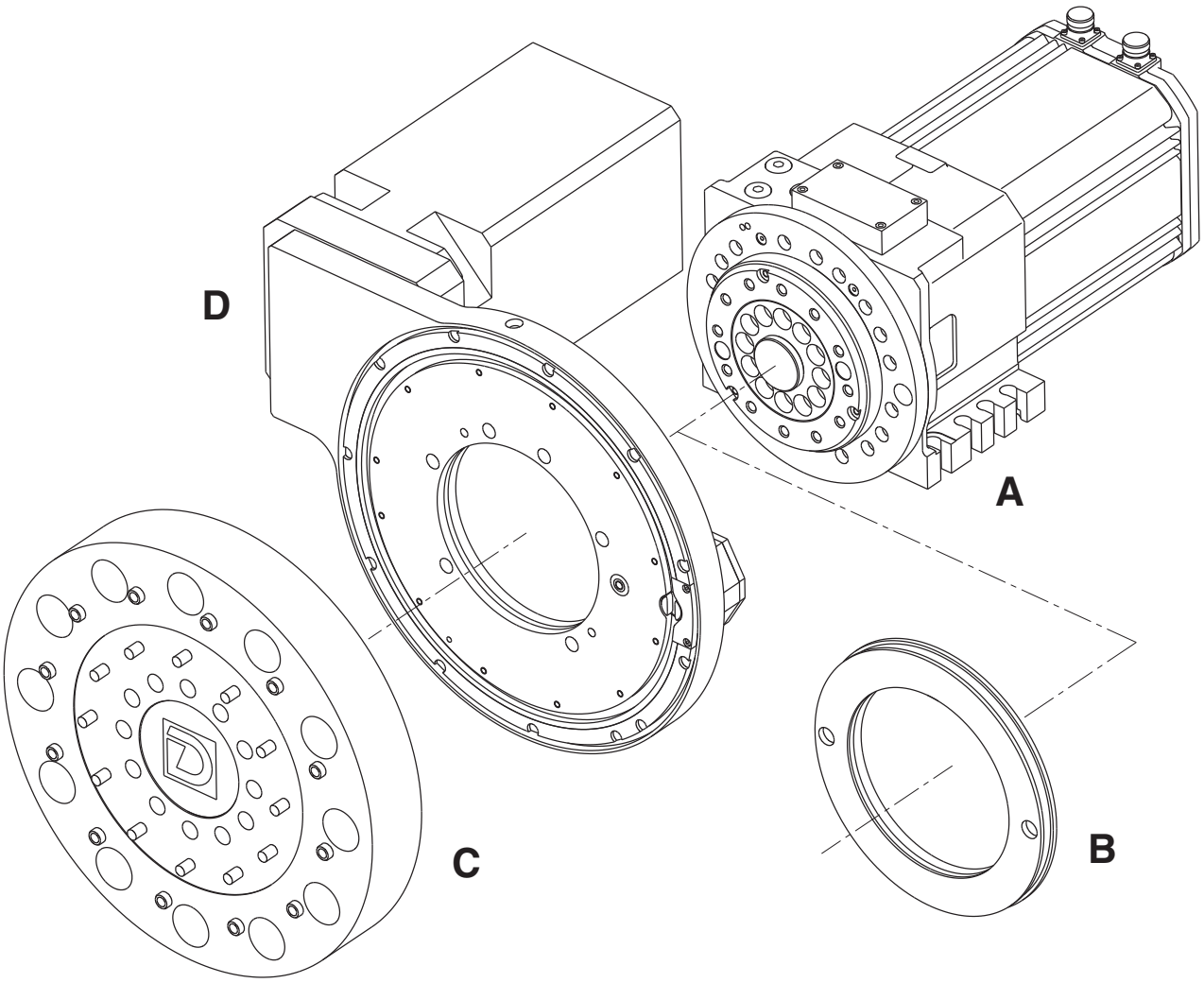

TECHNICAL INFORMATION

I.T. 6482

GB ISSUED 06-09

# ODT-N * / series 50
## MODULAR PRINCIPLE

The **ODT-N** device is a module that can be applied externally to the DM, SM or BSV-N standard turrets, taking place in the space between disc and turret housing normally used for the coolant group.




**A** Turret
**B** Coolant group
**C** Tool disc
**D** Driven tools device

| | A | B | C | D |
|---|---|---|---|---|
| Static tools only | ● | ● | ● | |
| Turn-mill applications | ● | | ● | ● |

# ODT-N * / series 50
## MAIN FEATURES

The new **ODT-N/50 series** modular driven tool device, has been developed strictly applying the **Value Engineering** technique, taking benefits of design similarity, reduced number of components and common parts, for a **lean mechanical design**.

Still based on the original, patented and well known principle of "**automatic engagement without additional devices**" of the previous series, the new design offers an upgraded product, using advanced technology and modern solutions for the increased needs of CNC turning centers.

- **No dead times** thanks to:
– Automatic engagement/disengagement of the tenon type coupling (1), only with the turret movement, without any additional device.
– Faster zero-setting positioning, directly managed by the motor/driver (2) with high zero speed.

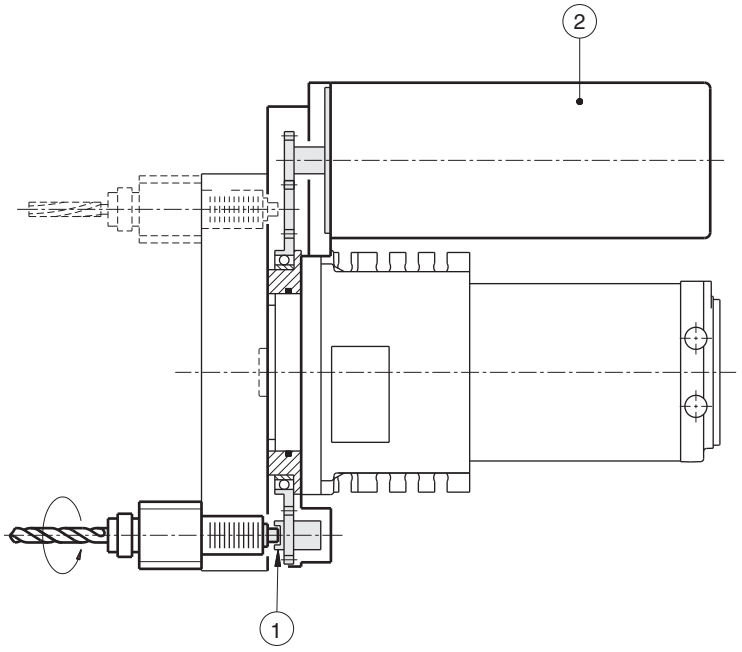
- **Powerful** : High speeds and transmittable torques.

- **Advanced features** :
– Standard range of coolant pressure up to 30 bar.
– Pressurizing air function for prevent external contamination.
– Centralized lubrication system for heavy duty cycle and/or extreme working conditions.

### Important:

In the ODT-N/ series 50 the zero setting is managed directly by the servomotor, **that must be provided with "orientation function" by the CNC**.

The motor driver enable must always be "ON", keeping the zero position to allow the turret rotation.
If servomotor with brake is used, the driver can be "disable" at the end of orientation, always keeping the brake on and the motor position control.



DUPLOMATIC AUTOMATION

# ODT-N * / series 50

## CHARACTERISTICS AND PERFORMANCES

### TECHNICAL DATA

| SIZE | | ODT-N | 10 | 12 | 16 | 20 | 25 | 32 | 40 |
|---|---|---|---|---|---|---|---|---|---|
| For turret size | **SM** / **DM** / **BSV-N** | | 10 | 12 | 16 | 20 | 25 | 32 | 40 |
| Toolholder size | DIN 69880-ød1 | mm | 16 | 20 | 30 | 40 | 50 | 60 | 80 |
| Max power | S3 - 40% - 10 min | kW | 1,5 | 5 | 6 | 8 | 10 | 12,5 | 15 |
| Max torque | (1) | Nm | 5 | 15 | 28 | 45 | 66 | 130 | 160 |
| Max speed at the spindle | | RPM | 6.000 | 6.000 | 6.000 | 5.000 | 4.000 | 3.200 | 2.500 |
| Transmission ratio | | $\tau$ | 1:1 | 1:1 | 1:1 | 1:1 | 1:1 | 1:1 | 1:1 |
| **Optional :** | (2) | | | | | | | | |
| Siemens A.C. Motor | | type | 1FT 6041 | 1FT 6064 | 1FT 6084 | 1FT 6086 | 1FT 6105 | 1FT 6132 | 1FT 6134 |
| – Torque | S1<br>S3 - 40% - 10 min | | 2,5<br>7,5 | 9<br>14 | 20<br>25 | 27<br>35 | 48<br>60 | 75<br>115 | 105<br>140 |
| – Max speed | | RPM | 6.000 | 6.000 | 6.000 | 5.000 | 4.000 | 3.200 | 2.500 |
| Fanuc A.C. Motor | (2) | type | $\alpha$ 0,5 | $\alpha$ 1,5 | $\alpha$ 2 | $\alpha$ 3 | $\alpha$ 6 | $\alpha$ 12/15 | $\alpha$ 18 |
| – Torque | S1<br>S3 - 40% - 10 min | | 1,75<br>3,5 | 7<br>15 | 14<br>24 | 23,5<br>35 | 35<br>50 | 70/95<br>95/120 | 117<br>140 |
| – Max speed | | RPM | 6.000 | 6.000 | 6.000 | 5.000 | 4.000 | 3.200 | 2.500 |
| Mass (motor excluded) | | ~ Kg | 10 | 18 | 20 | 32 | 40 | 68 | 115 |

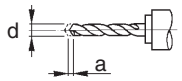
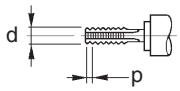
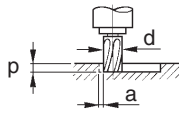
(1) These values are valid for shock-free operations.
In case of interrupted-cut (milling, etc.) or other shock-operations, a reduction of these values up to 50% must be considered.

(2) Protection on shaft side ≥ IP65.

# ODT-N * / series 50

## CHARACTERISTICS AND PERFORMANCES

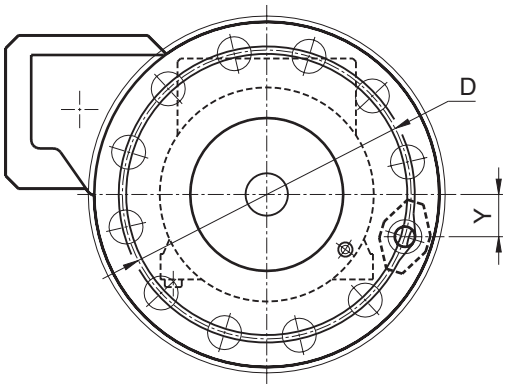
**INDICATIVE CUTTING CAPACITY**
for 600 N/mm$^2$ steel, HSS tools
(With fit motors)

| SIZE | | ODT-N | 10 | 12 | 16 | 20 | 25 | 32 | 40 |
|---|---|---|---|---|---|---|---|---|---|
| Twist drilling | d x a<br>[mm] x [mm/u] |  | 8x0,15 | 10x0,20 | 14x0,15 | 20x0,20 | 22x0,20 | 30x0,20 | 32x0,25 |
| Tapping | d x p<br>[mm] x [mm] |  | M6x1 | M8x1,25<br>M12x1 | M10x1,5<br>M24x1 | M16x2<br>M24x1,5 | M18x2<br>M27x1,5 | M22x2,5<br>M33x2 | M27x3 |
| Slot milling | d x p x a<br>[mm] x [mm] x [mm/min] |  | 10x6x45 | 12x8x45 | 20x10x40 | 25x14x40 | 25x20x40 | 40x20x35 | 40x30x35 |

# ODT-N * / series 50
## SIZES, DIMENSIONS AND TYPES

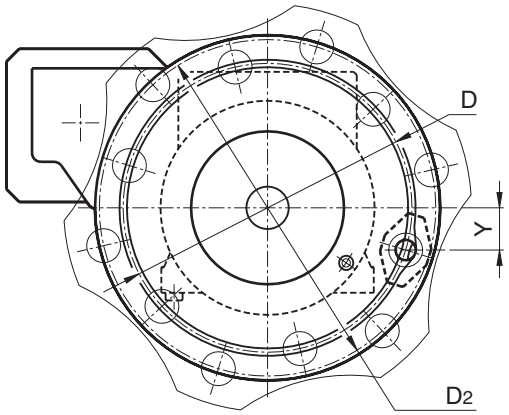
**Toolholder locations on one pitch diameter**

Disc **DN**




**Toolholder locations on two pitch diameters**

Disc **DN 2**




**D** for driven and static tools

**D2** for static tools only

| For **ODT-N** size | **10** | | **12** | | | | **16** | | | | | | **20** | | | | | | **25** | | **32** | | **40** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Toolholder size **DIN 69880** (1) | 16 | | 20 | | | | 30 | | | | | | 40 | | | | | | 50 | | 60 | | 80 | |
| Diamiter **"D"** [mm] | **160** | | | | **240** | | | | **270** | | | | | | **340** | | | | **400** | | **460** | | **580** | |
| Offset **"Y"** [mm] | **0** | 25 | | | **0** | 17 | | | **0** | 25 | | | | | **0** | 32 | | | **0** | 35 | **0** | 40 | **0** | 50 |

**For tool discs type :**

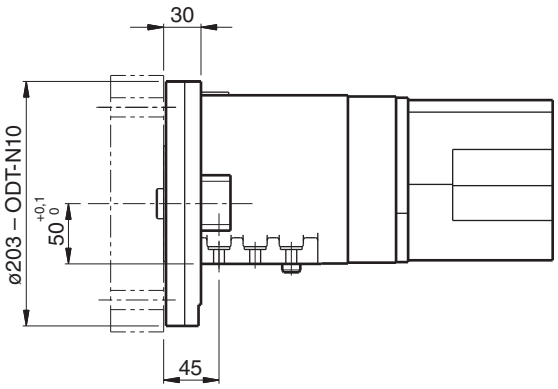
| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DN** 8 pos. | ● | ○ | | | ● | ○ | | | ● | ○ | | | | | ● | ○ | | | ● | ○ | ● | ○ | ● | ○ |
| **DN** 12 pos. | ● | ○ | | | ● | ○ | | | ● | ○ | | | | | ● | ○ | | | ● | ○ | ● | ○ | ● | ○ |
| **DN 2** 12 pos. | | | | | | | | | ● | ○ | | | | | ● | ○ | | | ● | ○ | ● | ○ | | |

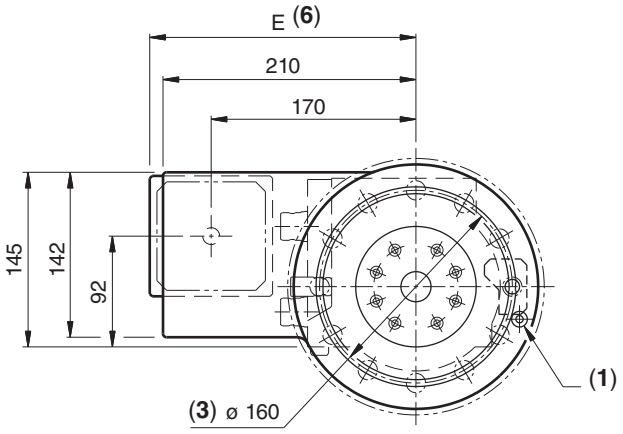
● Standard dimensions.
○ Optional dimensions.
– Other dimensions on request.

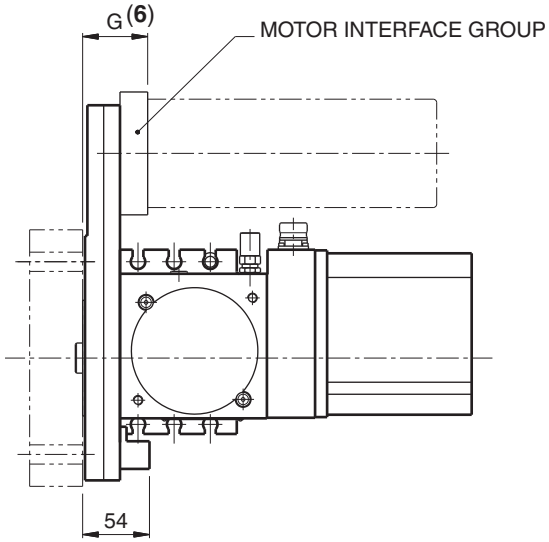
Notes:

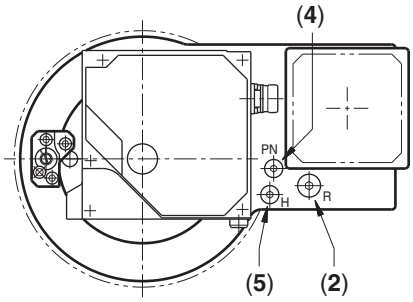
1) Special version or different combinations between ODT-N size and toolholder size, on request.

# ODT-N 10 / series 50
## OVERALL DIMENSIONS

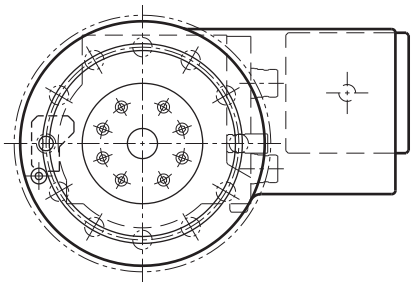


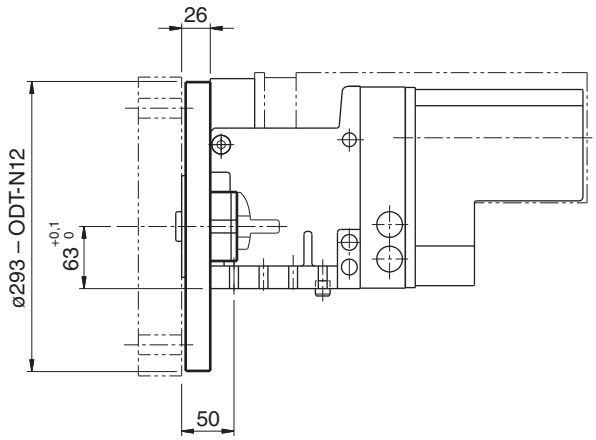

BACK VIEW

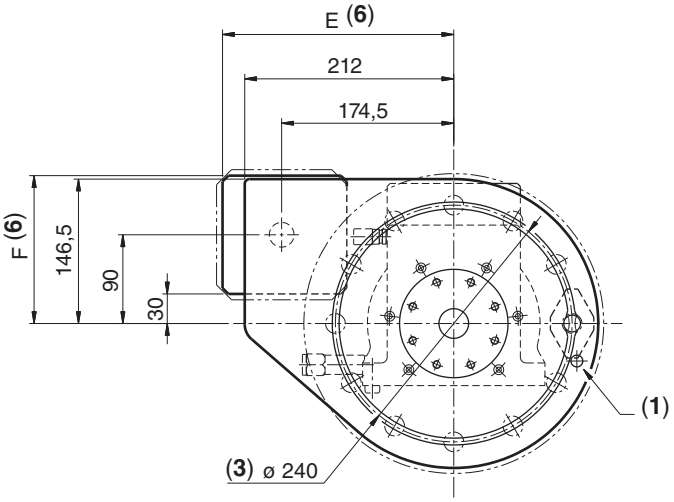


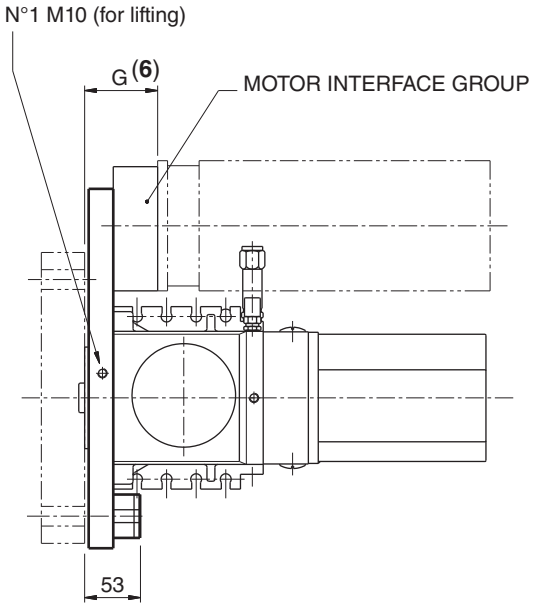
LEFT VERSION:
Overall dimensions for left version are mirror image

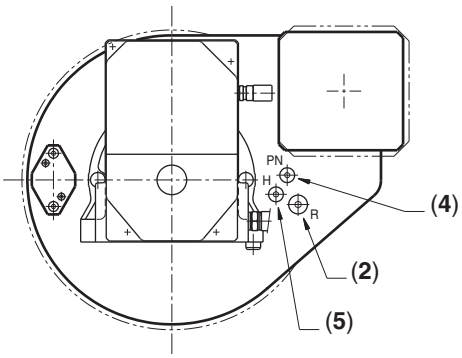
1) Outlet coolant valve.
2) Inlet coolant 1/4" GAS.
3) Rotating toolholder locations diameter on the disc.
   Diameter tolerance: ± 0,02 mm.
   For standard toolholder locations dimensions see sheet 21.
4) Pressurizing air inlet 1/8" GAS. (see sheet 18).
5) Centralized lubrication inlet 1/8" GAS. (see sheet 19).
6) The max dimensions (E) and (G) depend from the motor.

# ODT-N 12 / series 50
## OVERALL DIMENSIONS

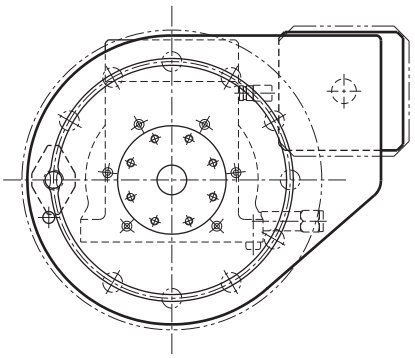


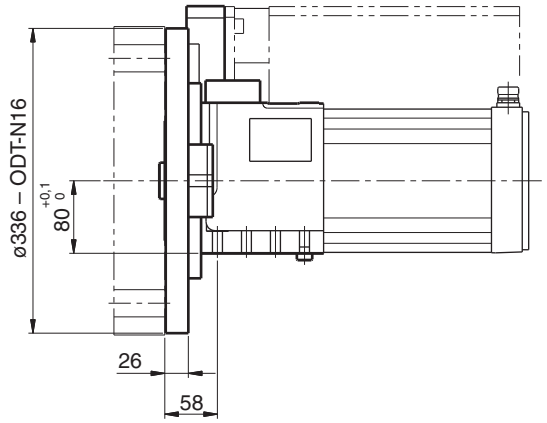

BACK VIEW

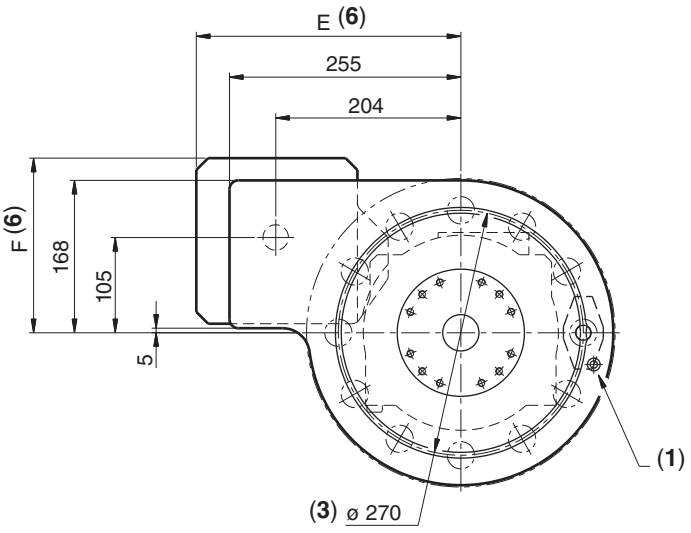


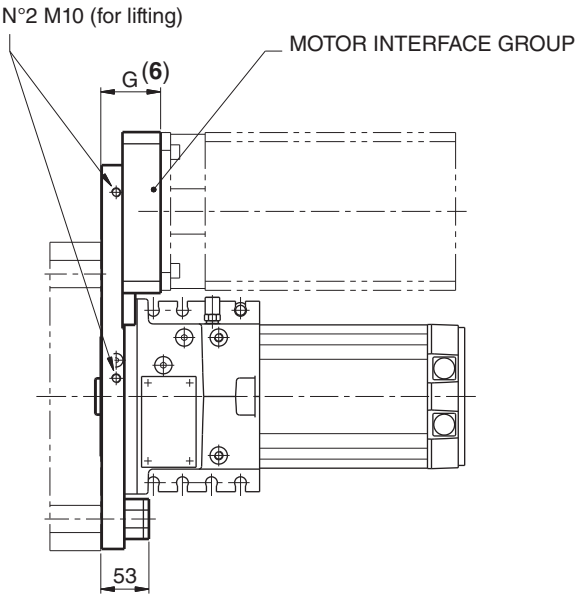
LEFT VERSION:
Overall dimensions for left version are mirror image

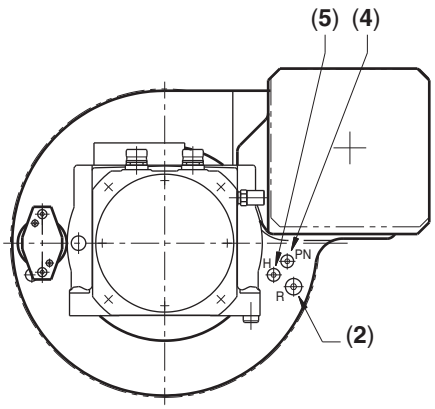
1) Outlet coolant valve.
2) Inlet coolant 1/4" GAS.
3) Rotating toolholder locations diameter on the disc.
   Diameter tolerance: ± 0,02 mm.
   For standard toolholder locations dimensions see sheet 21.
4) Pressurizing air inlet 1/8" GAS. (see sheet 18).
5) Centralized lubrication inlet 1/8" GAS. (see sheet 19).
6) The max dimensions (E) (F) and (G) depend from the motor.

# ODT-N 16 / series 50
## OVERALL DIMENSIONS

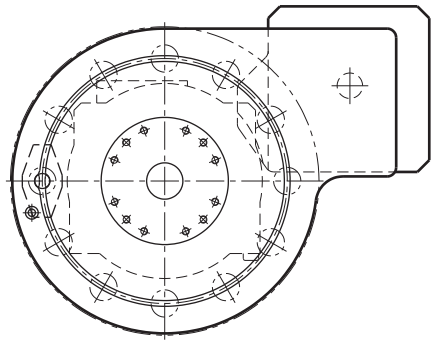


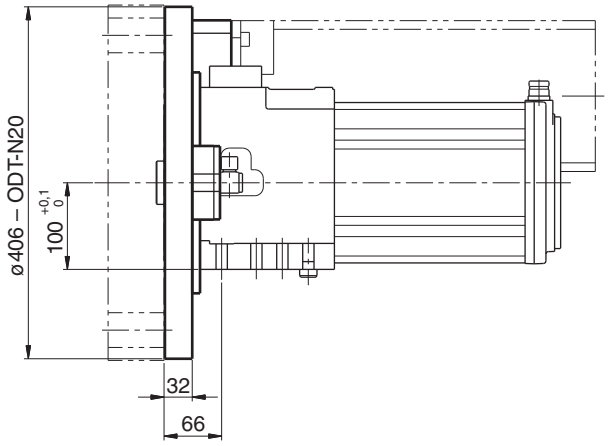

BACK VIEW

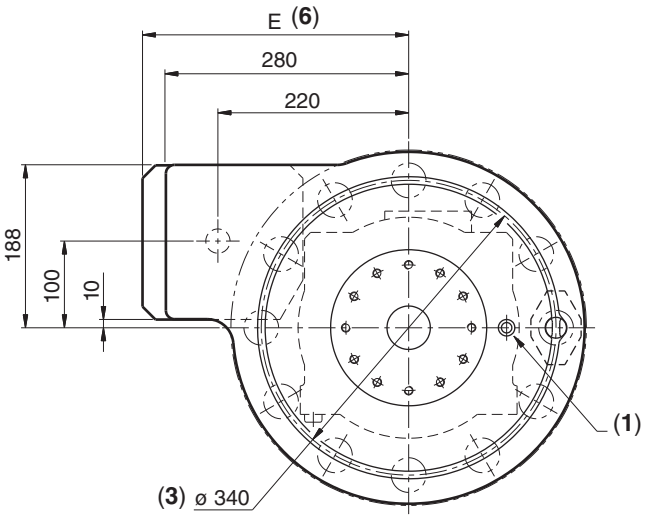


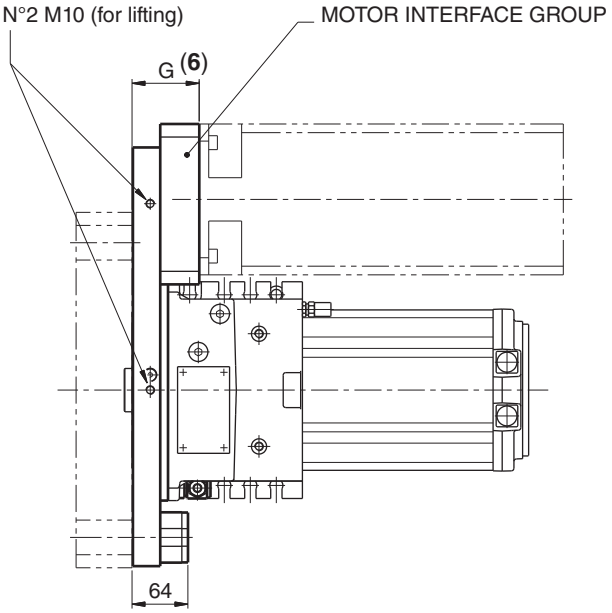
LEFT VERSION:
Overall dimensions for left version are mirror image

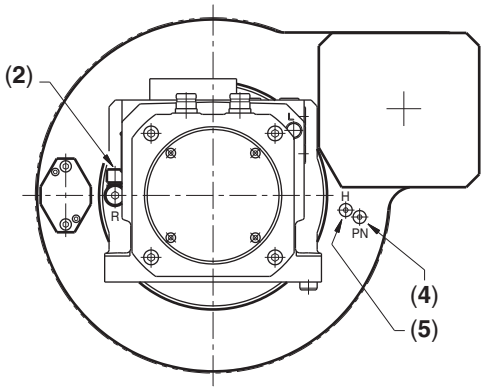
1) Outlet coolant valve.
2) Inlet coolant 1/4" GAS.
3) Rotating toolholder locations diameter on the disc.
   Diameter tolerance: ± 0,02 mm.
   For standard toolholder locations dimensions see sheet 21.
4) Pressurizing air inlet 1/8" GAS. (see sheet 18).
5) Centralized lubrication inlet 1/8" GAS. (see sheet 19).
6) The max dimensions (E) (F) and (G) depend from the motor.

# ODT-N 20 / series 50
## OVERALL DIMENSIONS

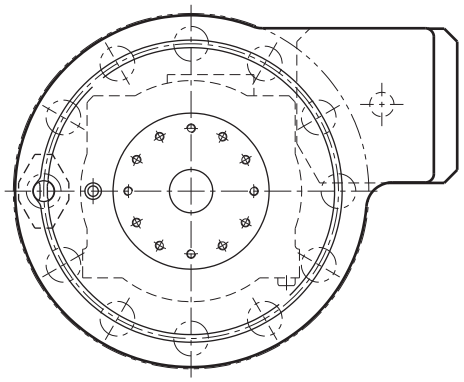


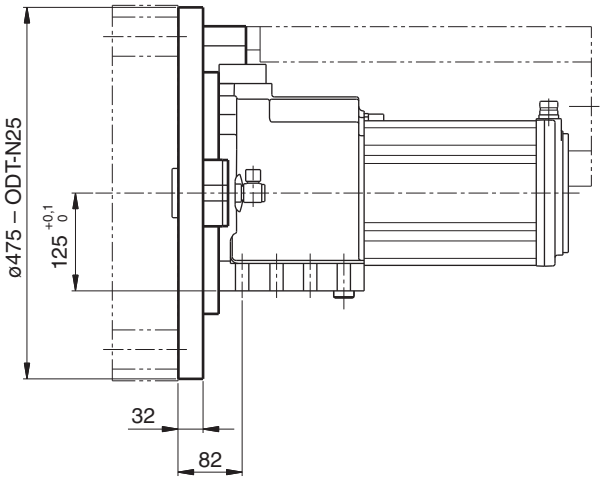

BACK VIEW

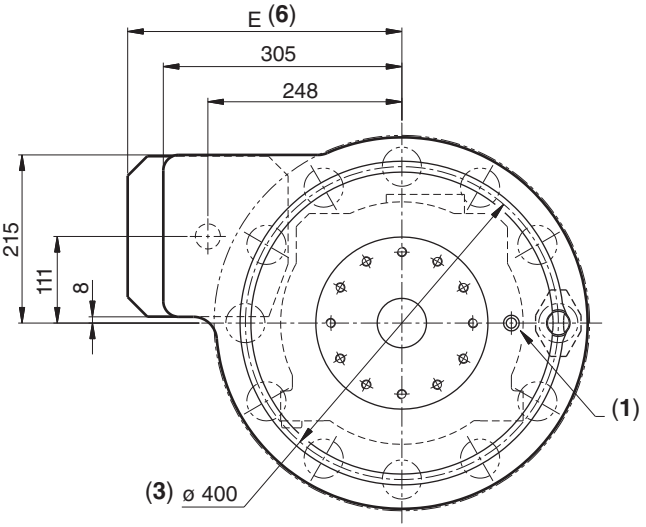


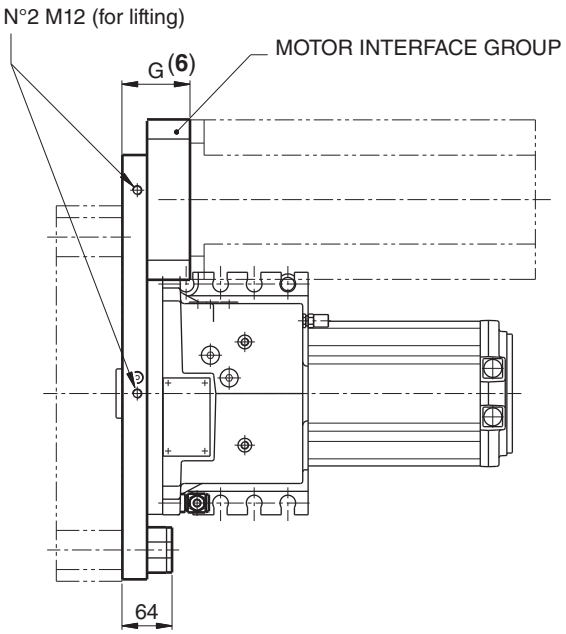
LEFT VERSION:
Overall dimensions for left version are mirror image

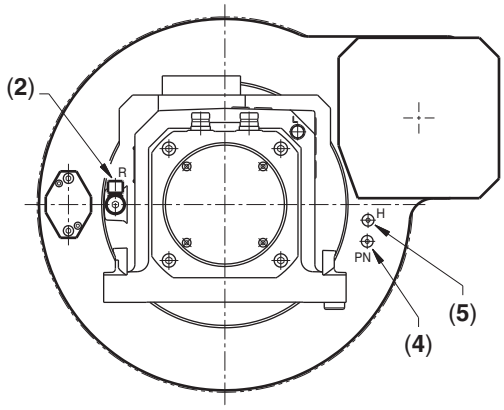
1) Outlet coolant valve.
2) Inlet coolant with fitting for pipe ø10.
3) Rotating toolholder locations diameter on the disc.
   Diameter tolerance: ± 0,02 mm.
   For standard toolholder locations dimensions see sheet 21.
4) Pressurizing air inlet 1/8" GAS. (see sheet 18).
5) Centralized lubrication inlet 1/8" GAS. (see sheet 19).
6) The max dimensions (E) and (G) depend from the motor.

# ODT-N 25 / series 50
## OVERALL DIMENSIONS

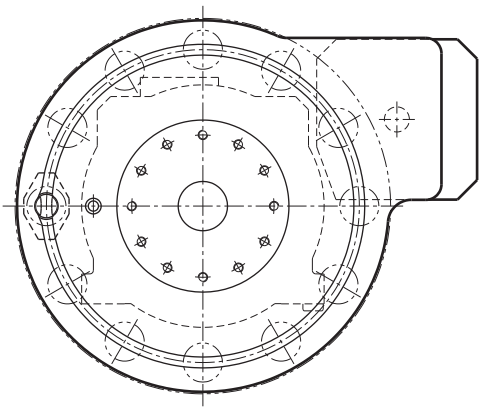


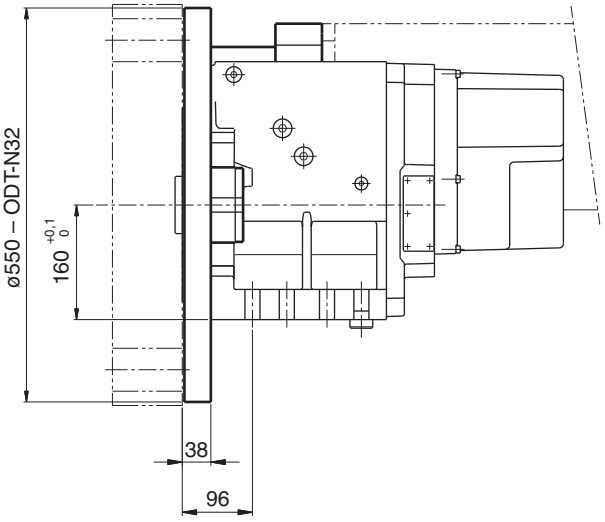

BACK VIEW

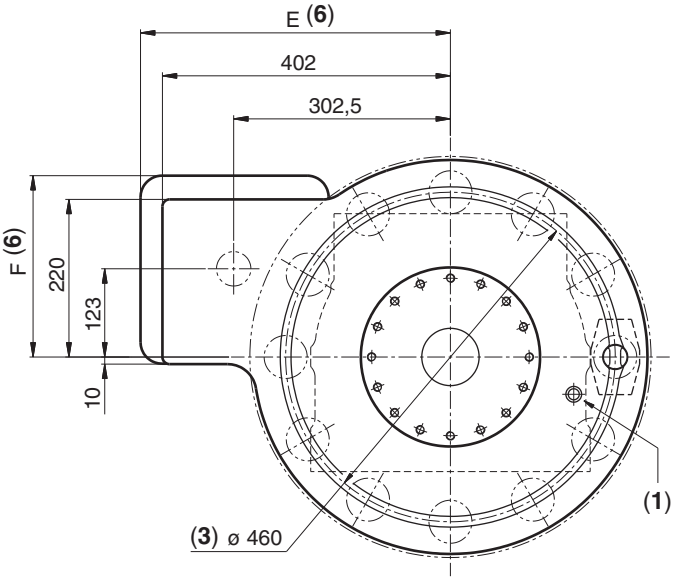


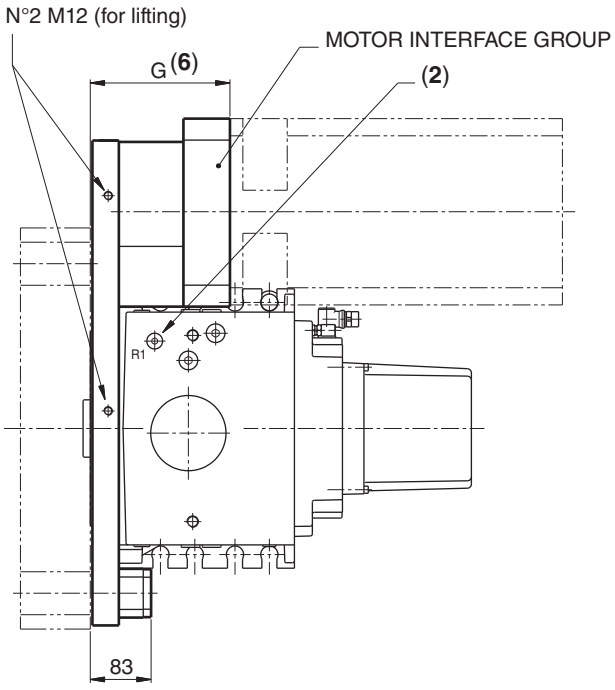
LEFT VERSION:
Overall dimensions for left version are mirror image

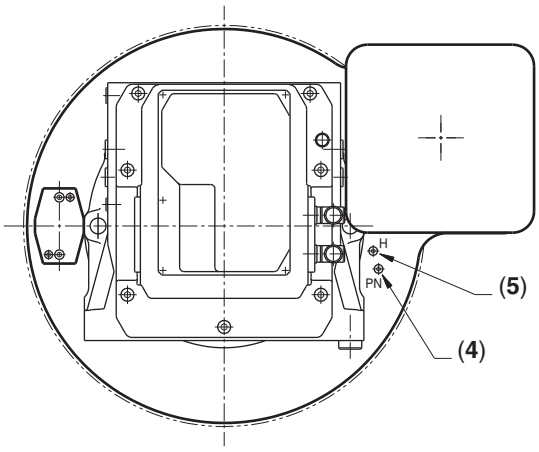
1) Outlet coolant valve.
2) Inlet coolant with fitting for pipe ø10.
3) Rotating toolholder locations diameter on the disc.
   Diameter tolerance: ± 0,02 mm.
   For standard toolholder locations dimensions see sheet 21.
4) Pressurizing air inlet 1/8" GAS. (see sheet 18).
5) Centralized lubrication inlet 1/8" GAS. (see sheet 19).
6) The max dimensions (E) and (G) depend from the motor.

# ODT-N 32 / series 50
## OVERALL DIMENSIONS

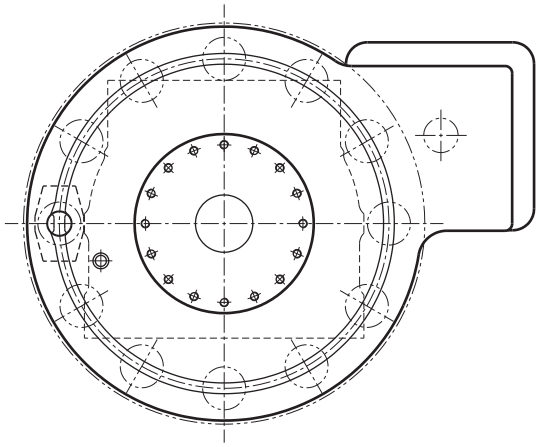


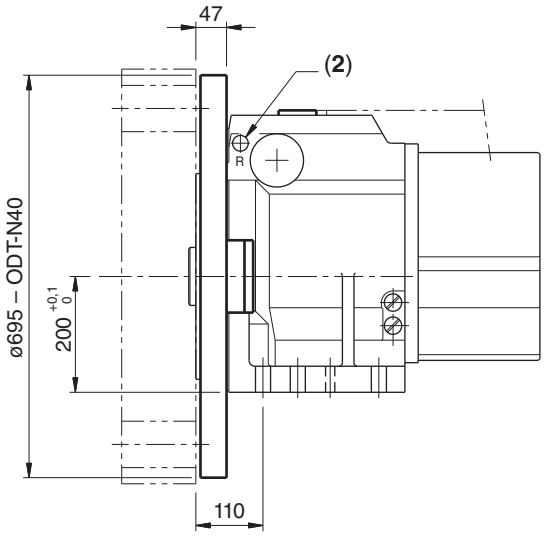

BACK VIEW

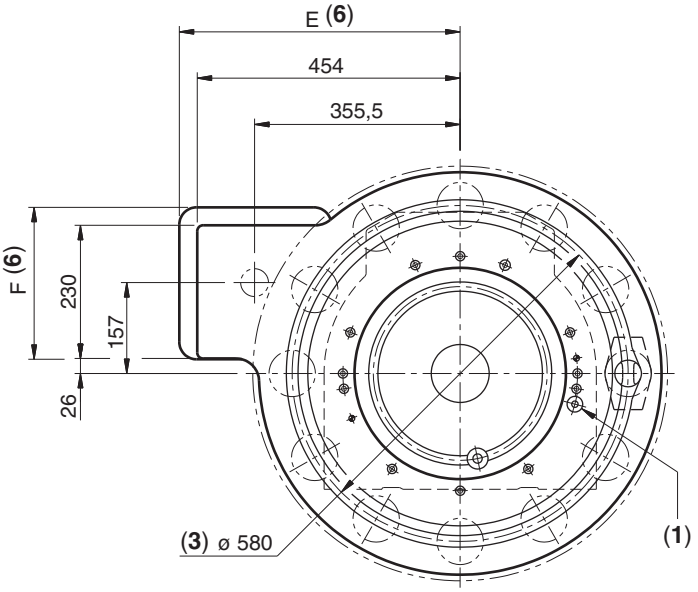


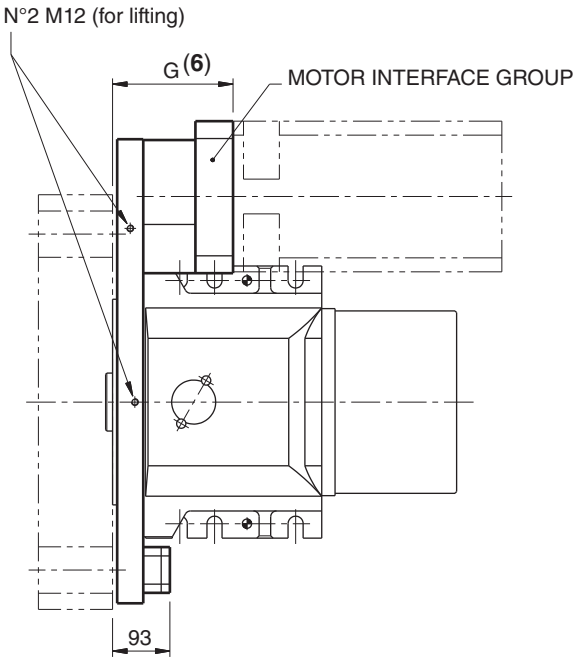
LEFT VERSION:
Overall dimensions for left version are mirror image

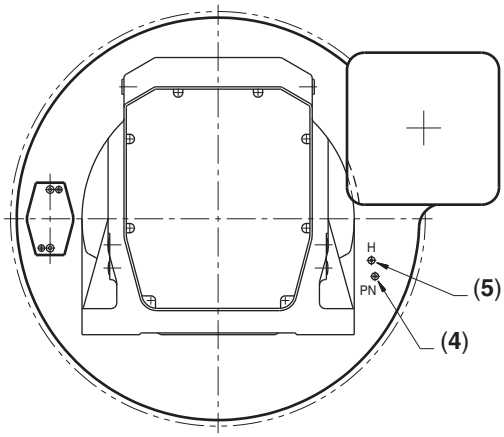
1) Outlet coolant valve.
2) Inlet coolant 3/8" GAS (turret side).
3) Rotating toolholder locations diameter on the disc.
   Diameter tolerance: ± 0,02 mm.
   For standard toolholder locations dimensions see sheet 21.
4) Pressurizing air inlet 1/8" GAS. (see sheet 18).
5) Centralized lubrication inlet 1/8" GAS. (see sheet 19).
6) The max dimensions (E) (F) and (G) depend from the motor.

# ODT-N 40 / series 50
## OVERALL DIMENSIONS

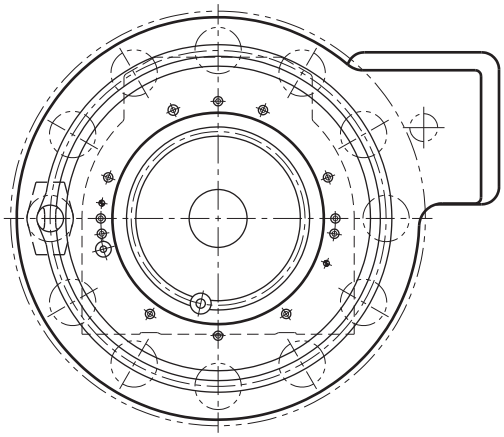



BACK VIEW



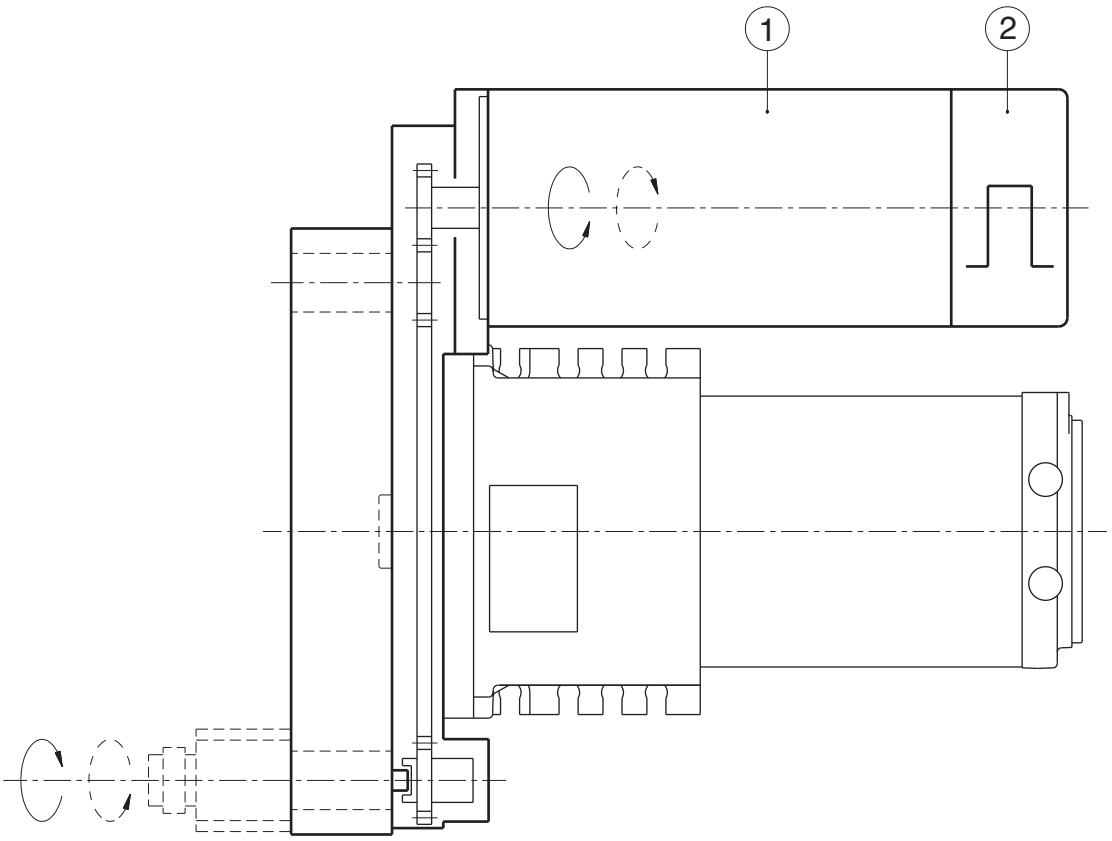
1) Outlet coolant valve.
2) Inlet coolant 1/2" GAS (turret side).
3) Rotating toolholder locations diameter on the disc.
   Diameter tolerance: ± 0,02 mm.
   For standard toolholder locations dimensions see sheet 21.
4) Pressurizing air inlet 1/8" GAS. (see sheet 18).
5) Centralized lubrication inlet 1/8" GAS. (see sheet 19).
6) The max dimensions (E) (F) and (G) depend from the motor.

LEFT VERSION:
Overall dimensions for left version are mirror image

# ODT-N ∗ / series 50
## WIRING DIAGRAM

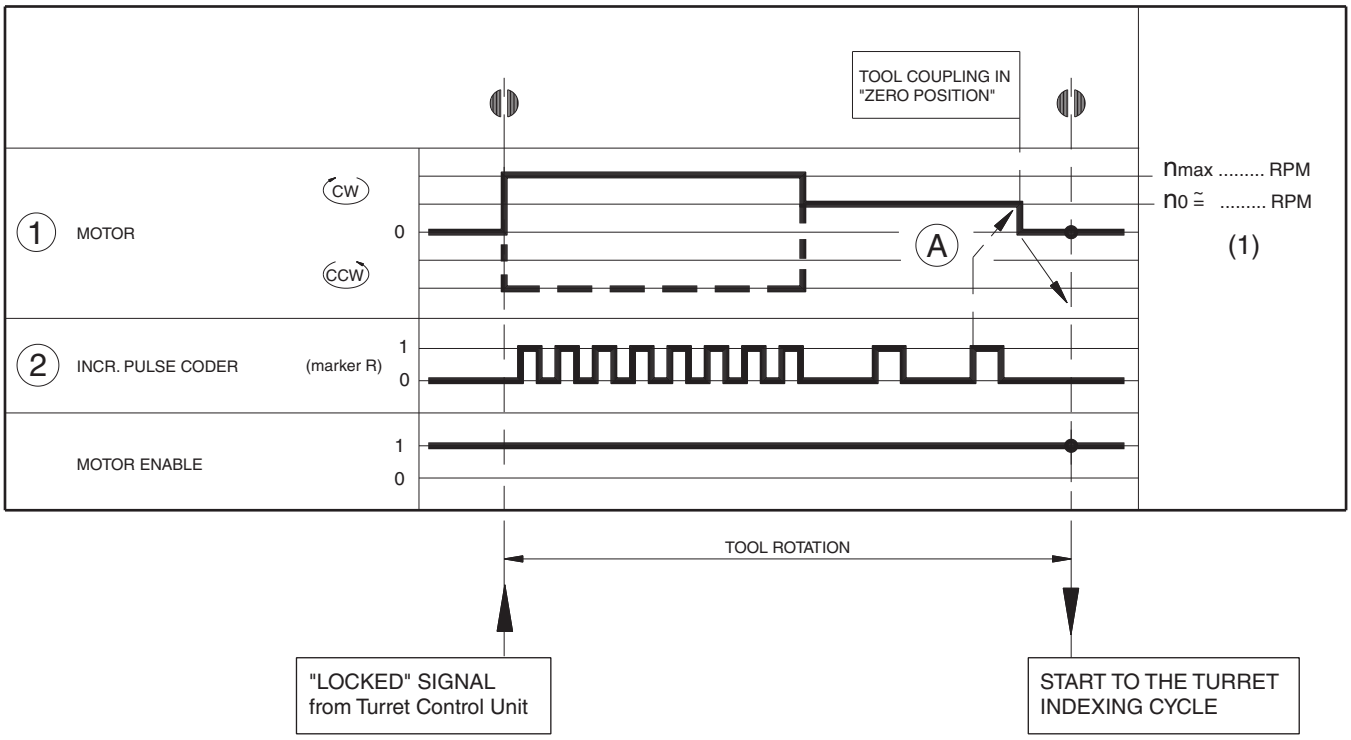
The new **ODT-N/50 series** device has no additional electrical elements to be managed by the machine PLC.
The driven tool cycle is completly managed by the motor with its driver and machine CNC.

**IMPORTANT** : **Servomotors with "orientation function" by CNC must be used.**




| REF. | COMPONENT | CHARACTERISTICS | SIMBOLS | WIRING NUMBER and COLOUR | SIGNALS |
|---|---|---|---|---|---|
| 1 | MOTOR | See data sheet of selected motor | M 3~ | | |
| | THERMAL DETECTOR | | | | |
| 2 | INCREMENTAL PULSE CODER | | | | |

# ODT-N * / series 50
## CYCLE

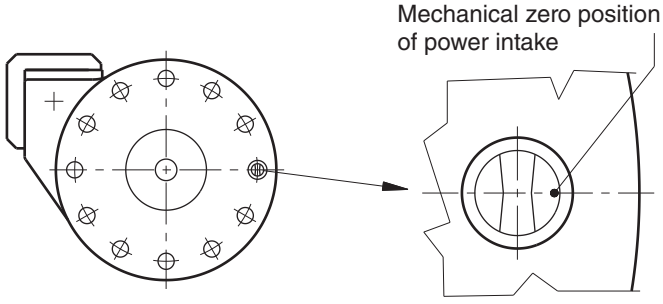



**IMPORTANT** :
Servomotor with "**orientation function**" by CNC must be used.

1) • Max motor speed for tool rotation:
   – nmax = 6.000 RPM for ODT-N 10, 12 and 16.
   – nmax = 5.000 RPM for ODT-N 20.
   – nmax = 4.000 RPM for ODT-N 25.
   – nmax = 3.200 RPM for ODT-N 32.
   – nmax = 2.500 RPM for ODT-N 40.
   • The motor speed n0 for tool zero setting must be according to CN/ driver specs.

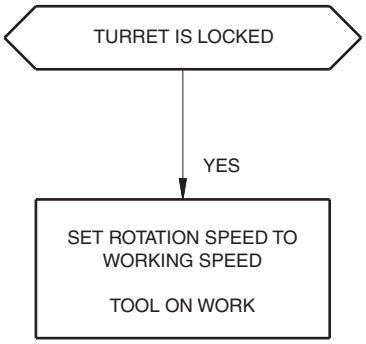
2) Motor driver enable must be always "ON" , keeping the zero position, to allow the turret rotation.
   **Important** : If servomotor with brake is used, the driver can be "disable" at the end of orientation, always keeping the brake on and the motor position control.

(A) The distance between coder marker and ODT-N coupling zero position must be set.

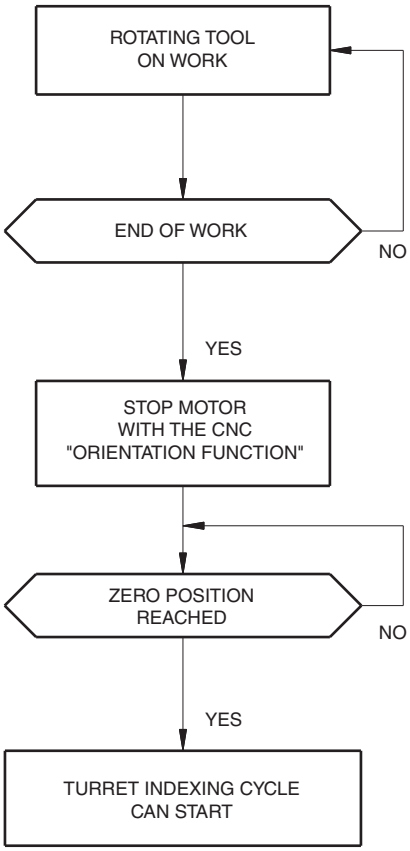


# ODT-N * / series 50
## FLOW CHART

### DRIVEN TOOL CYCLE START




### ZERO SETTING CYCLE

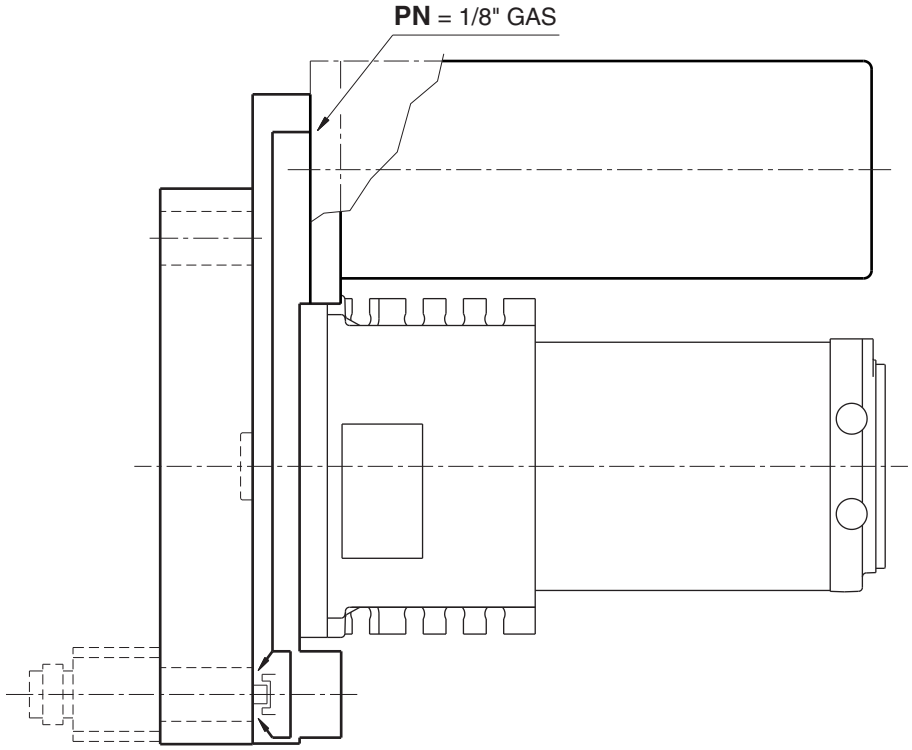



**IMPORTANT** :
Motor driver must be always “ON”, keeping the zero position

# ODT-N * / series 50
## ADDITIONAL FEATURES

- **PRESSURIZING AIR SYSTEM**

This new **ODT-N/50 series** has been preset with a “pressurizing function”, that can be used in order to prevent external agent contamination in the rotary seal area of the power intake.
We suggest to use this function, mainly for machining on materials that create dust or sting-form chips.

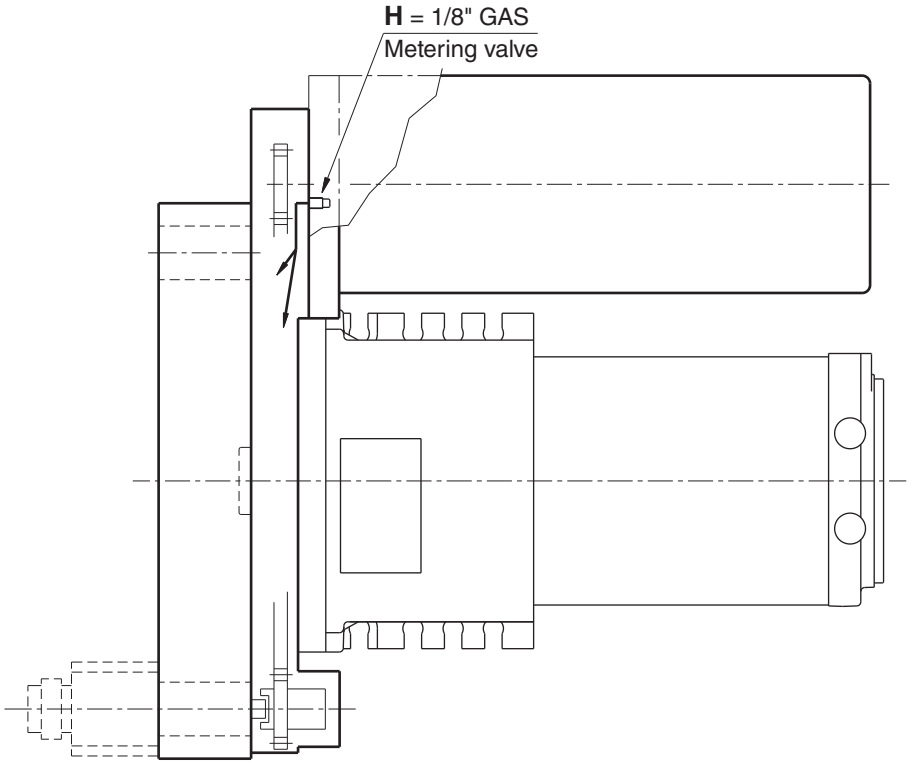



**PN • PRESSURIZING AIR INLET** :

Air supply : • Max pressure .... 0,5÷1,0 bar.
• Flow ..... ~ 30 l/min.
• Filtering ..... ≤ 150 µm.

- **CENTRALIZED LUBRICATION SYSTEM**

The **ODT-N/50 series** has been preset with a lubrication function, that can be used in order to prevent wearing increasing due to heavy driven tool duty cycle.




### H • LUBRICATION INLET :

– Lubrication supply : • Pressure : ..... min 18 bar

..... max 70 bar

• Required oil volume : ..... 0,06 $cm^3$ / cycle

• Lubrication frequency : ..... 6 cycle / h

Note: Depending on driven tool duty cycle.

• Type of lubricant : Oil with viscosity ≤ 750 cSt (40°) or fluid grease.

### DRAIN POINTS :

According to the angled fitting position of the turret on the machine, proper drain points must be open.
(Please contact our Technical Dept.)

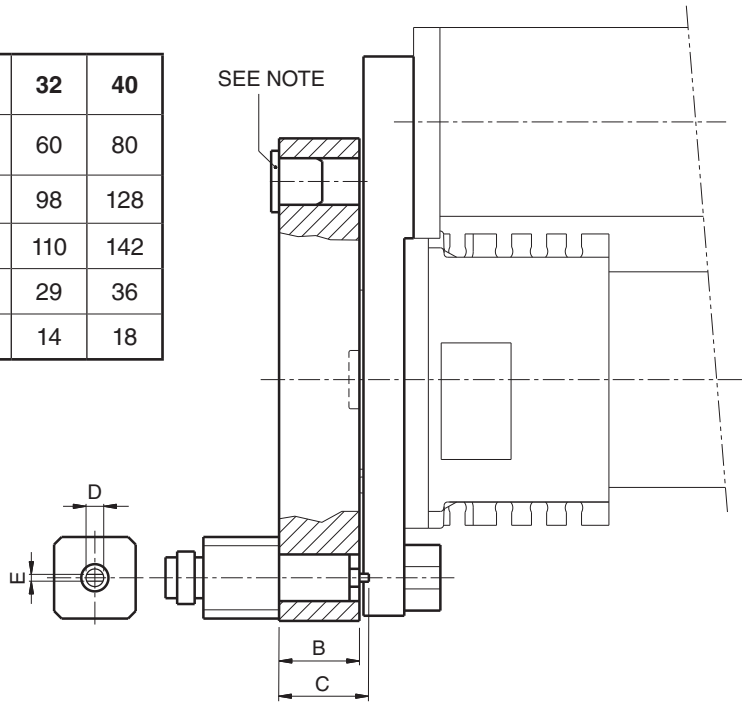
# ODT-N * / series 50
## ROTATING TOOLHOLDERS SPECS

**• POWER INTAKE : Tenon drive according to DIN 1809**

| Size | ODT-N | 10 | 12 | 16 | 20 | 25 | 32 | 40 |
|---|---|---|---|---|---|---|---|---|
| Toolholders size | | 16 | 20 | 30 | 40 | 50 | 60 | 80 |
| B | [ mm ] | 33 | 43 | 56 * | 65 * | 84 | 98 | 128 |
| C ± 0,5 | [ mm ] | 37 | 48 | 62 | 72 | 92 | 110 | 142 |
| D | [ mm ] | 9 | 10 | 12 | 18 | 24 | 29 | 36 |
| E h12 | [ mm ] | 4,5 | 5 | 6 | 8 | 13 | 14 | 18 |

(*) For DN-2(Y) discs the thickness “B” is:
57 for ODT-N 16.
66 for ODT-N 20.

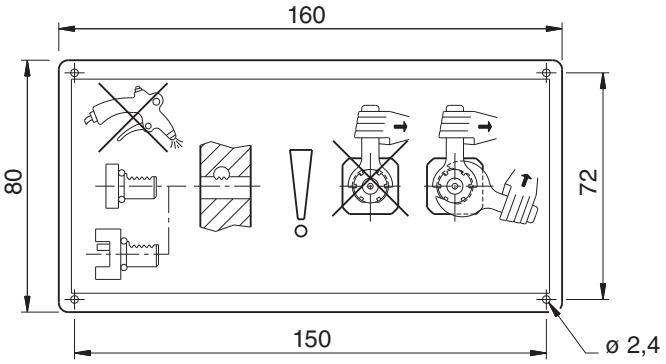
Note: Housing not engaged with toolholders must be properly plugged (DIN 69880 Shape Z2).



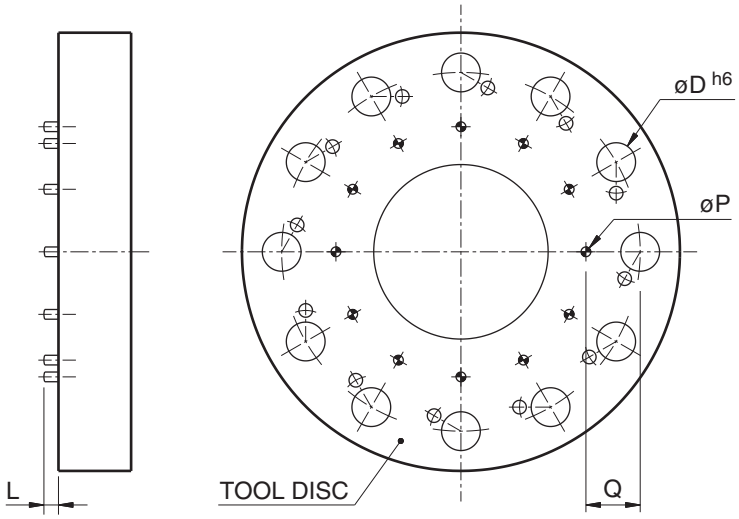

**• TOOL CLAMPING**

– It is recommended to clamp the tools with two wrenches. The use of one only wrench causes damages to ODT-N device.

– This plate is supplied with the ODT-N device, and it must be fitted on the machine so as to be very clearly seen.




**• ANGULAR ADJUSTING PINS ON DISC (for radial rotating units)**

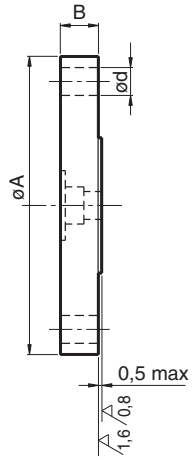


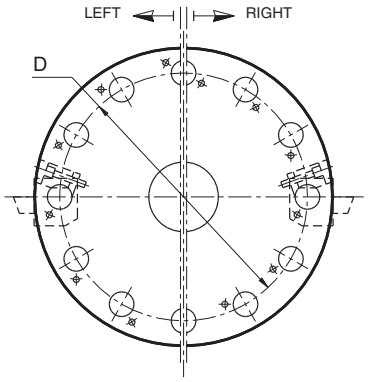

| ODT-N Size | 10 | 12 | 16 | 20 | 25 | 32 | 40 |
|---|---|---|---|---|---|---|---|
| ø D | 16 | 20 | 30 | 40 | 50 | 60 | 80 |
| ø P | 6 | 8 | 8 | 10 | 10 | 16 | 16 |
| Q | 40 | 40 | 40 | 63 | 63 | 90 | 90 |
| L | 8 | 10 | 10 | 15 | 15 | 15 | 15 |

[ mm ]

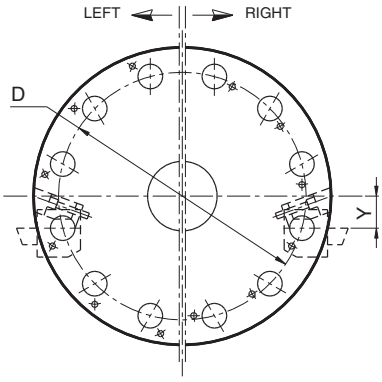
# ODT-N ∗ / series 50
## TOOL DISCS SPECS

### TOOLDISCS WITH 8/12 DIN 69880 SEATS ON ONE PITCH DIAMETER



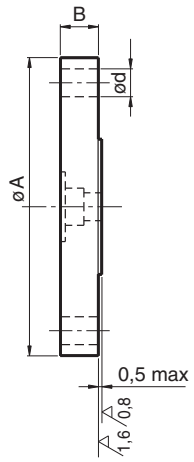

**"DN"** TYPE

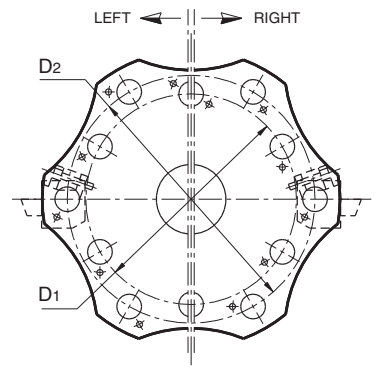



**"DN Y"** TYPE

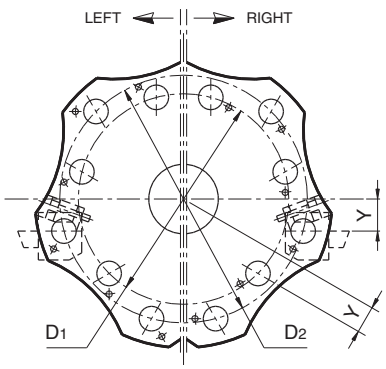
| For **ODT-N** size | **10** | **12** | **16** | **20** | **25** | **32** | **40** |
|---|---|---|---|---|---|---|---|
| Toolholder size **d** | 16 | 20 | 30 | 40 | 50 | 60 | 80 |
| Nr. positions | 8/12 | 8/12 | 8/12 | 8/12 | 8/12 | 8/12 | 8/12 |
| ø **A** [mm] | **205** | **295** | **340** | **410** | **480** | **560** | **700** |
| **B** [mm] | **33** | **43** | **56** | **65** | **84** | **98** | **128** |
| **D** ± 0,02 | **160** | **240** | **270** | **340** | **400** | **460** | **580** |
| **Y** [mm] | **0** 25 | **0** 17 | **0** 25 | **0** 32 | **0** 35 | **0** 40 | **0** 50 |

### TOOLDISCS WITH 12 DIN 69880 SEATS ON TWO PITCH DIAMETERS




**"DN 2"** TYPE

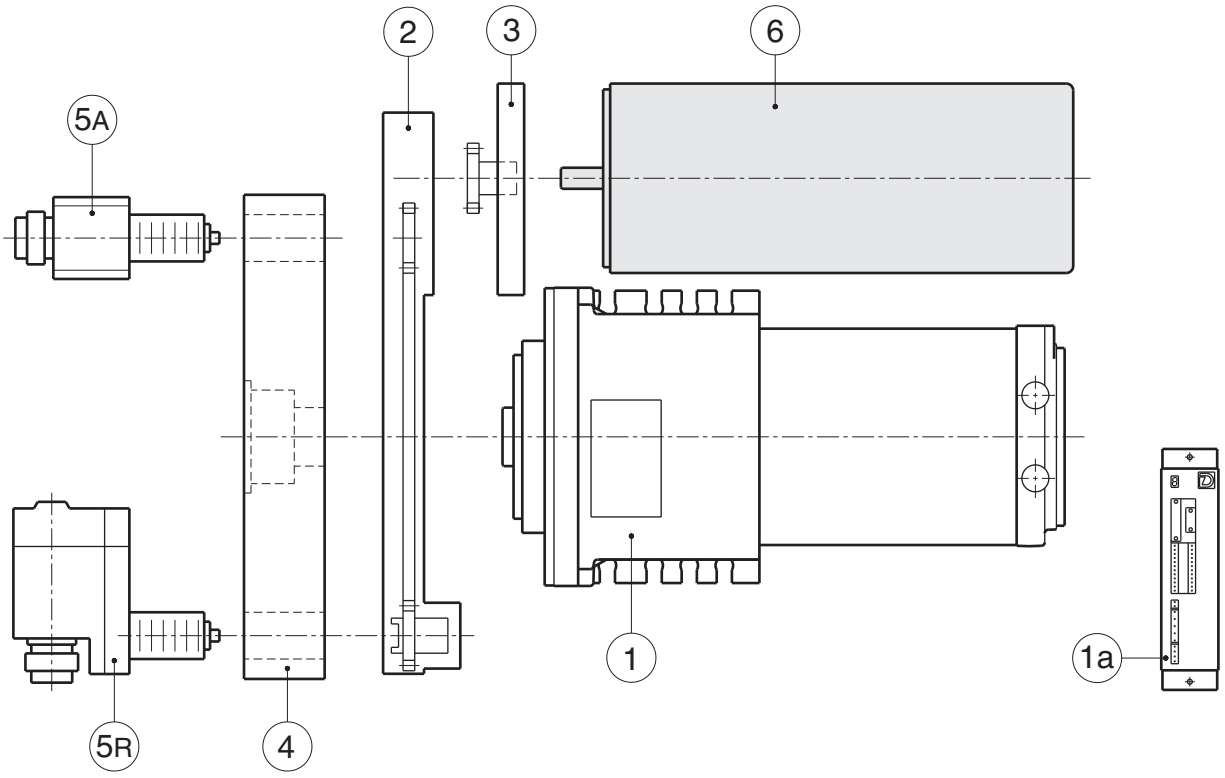



**"DN 2Y"** TYPE

| For **ODT-N** size | **10** | **12** | **16** | **20** | **25** | **4032** | **40** |
|---|---|---|---|---|---|---|---|
| Toolholder size **d** | 16 | 20 | 30 | 40 | 50 | 60 | 80 |
| ø **A** [mm] | | | **400** | **470** | **540** | **630** | |
| **B** [mm] | | | **57** | **66** | **84** | **98** | |
| **D1** ± 0,02 [mm] | | | **270** | **340** | **400** | **460** | |
| **D2** [mm] | | | **340** | **400** | **460** | **530** | |
| **Y** [mm] | | | **0** 25 | **0** 32 | **0** 35 | **0** 40 | |

# ODT-N * / series 50
## COMPLETE TURN MILL SYSTEM

Thanks to the modular concept of all its products and to a wide range of components, Duplomatic represents the one-source better partner for a ***"complete turn-mill system"*** supply.




## SYSTEM COMPOSITION

### (1) **Turret**:

– **DM** new direct drive type, complete with **TMC** control unit (1a) ..... ( see I.T. 6458)
– **SM** servomotor type, complete with **DDC4** control unit (1a) ..... ( see I.T. 6427)
– **BSV-N** electromechanical type ..... ( see I.T. 6430)

### (2) **ODT-N/ series 50**:

Modular driven tool device for axial applications ..... (see I.T. 6482)

### (3) **Motor interface group**:

Flange and gear according to Customer motor choice.
(The servomotor (6) is excluded from our supply.)

### (4) **DN tool disc**, with DIN 69880 axial seats ..... (see I.T. 6484)

### (5) **PR* rotating toolholders**:

A wide range of versions, morphologies and tool mountings ..... (see I.T. 6483)

Please contact our Sales Engineering Dept. for doing your best choice.

# ODT-N ∗ / series 50
## IDENTIFICATION CODE

To be used for ordering the ODT-N modular device only, without turret.

**ODT-N - ∗ - ∗ - ∗ - ∗ - ∗ /50 - (∗)**

OPTIONALS

TURRET

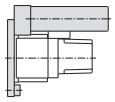
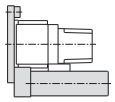
VDI SIZE (1)

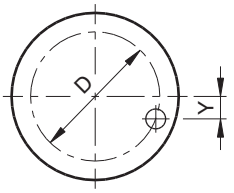
**D** DIAMETER, **Y** QUOTE

| SERIE | **50 ÷ 59** | (2) |
|---|---|---|

| TURRET | |
|---|---|
| BSV-N | — |
| SM∗/DM | **M** |

| SIZE | TURRET | VDI SIZE (1) | **D** / **Y** [mm] STANDARD | **D** / **Y** [mm] OPTIONALS |
|---|---|---|---|---|
| **10** | SM-P10<br>BSV-N 100 | **16** | **160/0** | 160/25 |
| **12** | DM 12<br>SM∗ 12<br>BSV-N 120 | **20** | **240/0** | 240/17 |
| **16** | DM 16<br>SM∗ 16<br>BSV-N 160 | **30** | **270/0** | 270/25 |
| **20** | DM 20<br>SM∗ 20<br>BSV-N 200 | **40** | **340/0** | 340/32 |
| **25** | DM 25<br>SM∗ 25<br>BSV-N 250 | **50** | **400/0** | 400/35 |
| **32** | SM-H 32<br>BSV-N 320 | **60** | **460/0** | 460/40 |
| **40** | BSV-N 400 | **80** | **580/0** | 580/50 |

| CODE | VERSION |
|---|---|
| — | Right  |
| **S** | Left  |




(1) For the standard toolholder shank dimensions, the code can be not included. For special toolholder shank dimensions, the code must be indicated.
(2) From 50 to 59 the performance and the overall dimensions do not change.
(3) The electrical motor is excluded from supply.

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**www.duplomaticautomation.com**