International Standard 3019/3

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Hydraulic fluid power — Positive displacement pumps and motors — Dimensions and identification code for mounting flanges and shaft ends — Part 3 : Polygonal flanges (including circular flanges)

Transmissions hydrauliques — Pompes volumétriques et moteurs — Dimensions et code d'identification des flasques de montage et des bouts d'arbres — Partie 3 : Flasques polygonaux (y compris les flasques circulaires)

First edition — 1981-12-15

UDC 621.225 : 621.651 : 621.8.032 **Ref. No. ISO 3019/3-1981 (E)**

Descriptors : hydraulic fluid power, hydraulic equipment, pumps, positive displacement pumps, hydraulic motors, shaft ends, dimensions, designation, codes, metric system.

Price based on 5 pages

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 3019/3 was developed by Technical Committee ISO/TC 131, *Fluid power systems and components*, and was circulated to the member bodies in October 1980.

It has been approved by the member bodies of the following countries :

Australia	Hungary	Romania
Austria	India	Sweden
Belgium	Ireland	Switzerland
China	Italy	United Kingdom
Czechoslovakia	Japan	USA
Finland	Netherlands	USSR
France	Norway	
Germany, F. R.	Poland	

No member body expressed disapproval of the document.

This International Standard is Part 3 of ISO 3019 and is based upon a metric series of mounting flanges and shaft ends for hydraulic pumps and motors. It contains polygonal flanges including circular flanges.

Part 3 is an additional document to Part 2 and includes special figures depending on special construction.

Printed in Switzerland

Hydraulic fluid power — Positive displacement pumps and motors — Dimensions and identification code for mounting flanges and shaft ends — Part 3 : Polygonal flanges (including circular flanges)

0 Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. Pumps are components which convert rotary mechanical power into hydraulic fluid power. Motors are components which convert hydraulic fluid power into rotary mechanical power.

1 Scope and field of application

1.1 This part of ISO 3019 specifies dimensions and an identification code for mounting flanges of positive displacement hydraulic fluid power pumps and motors whose geometry cannot accept a flange covered in part 2.

1.2 It also specifies dimensions and an identification code for positive displacement hydraulic fluid power pump and motor shaft ends of the following types :

— cylindrical shaft end with key;

— conical shaft end with key and external thread.

NOTE — A series of metric involute spline shaft ends will be added later taking into account ISO 4156.

1.3 This part of ISO 3019 establishes a metric series of mounting flanges and shaft ends for positive displacement hydraulic fluid power pumps and motors.

1.4 This part of ISO 3019 provides :

— a minimum number of flanges and shaft sizes to cover probable present and future requirements;

— dimensional interchangeability of flange and shaft end mountings;

— flange and spigot dimensions that allow for recommended sealing arrangements when sealing is required between a flange and its mating housing;

— identification codes for flanges and shaft ends. These codes can be used separately or in combination.

2 References

ISO 261, *ISO general purpose metric screw threads — General plan.*

ISO 286, *ISO system of limits and fits.* [1]

ISO/R 773, *Rectangular or square parallel keys and their corresponding keyways (Dimensions in millimetres).*

ISO/R 775, *Cylindrical and 1/10 conical shaft ends.*

ISO 1101, *Technical drawings — Geometrical tolerancing — Tolerances of form, orientation, location and run-out — Part 1 : Generalities, definitions, symbols, indications on drawings.* [2]

ISO 1302, *Technical drawings — Method of indicating surface texture on drawings.*

ISO 2692, *Technical drawings — Geometrical tolerancing — Maximum material principle.* [3]

ISO 3019/1, *Hydraulic fluid power — Positive displacement pumps and motors — Dimensions and identification code for mounting flanges and shaft ends — Part 1 : Inch series shown in metric units.*

ISO 3019/2, *Hydraulic fluid power — Positive displacement pumps and motors — Dimensions and identification code for mounting flanges and shaft ends — Part 2 : 2 and 4-hole flanges and shaft ends — Metric series.*

ISO 3912, *Woodruff keys and keyways.*

ISO 4156, *Straight cylindrical involute splines — Metric module, side fit — Generalities, dimensions and inspection.*

ISO 5598, *Fluid power systems and components — Vocabulary.* [4]

1) At present at the stage of draft. (Revision of ISO/R 286-1962.)

2) At present at the stage of draft. (Revision of ISO/R 1101/1-1969.)

3) At present at the stage of draft. (Revision of ISO/R 1101/2-1974.)

4) At present at the stage of draft.

3 Definitions

See ISO 5598 for definitions of terms used.

4 Dimensions

4.1 Tolerances

4.1.1 Dimensions shown without tolerances are nominal.

4.1.2 Tolerances of form and of position are shown in accordance with ISO 1101 and ISO 2692.

4.2 Selection of sizes

Select mounting flange and shaft dimensions for pumps and motors manufactured in accordance with this International Standard as follows :

— flanges from the table;

— shaft ends from 4.4.

4.3 Mounting flanges — polygonal and circular flanges

Select mounting flange dimensions from figure 1 and the table.

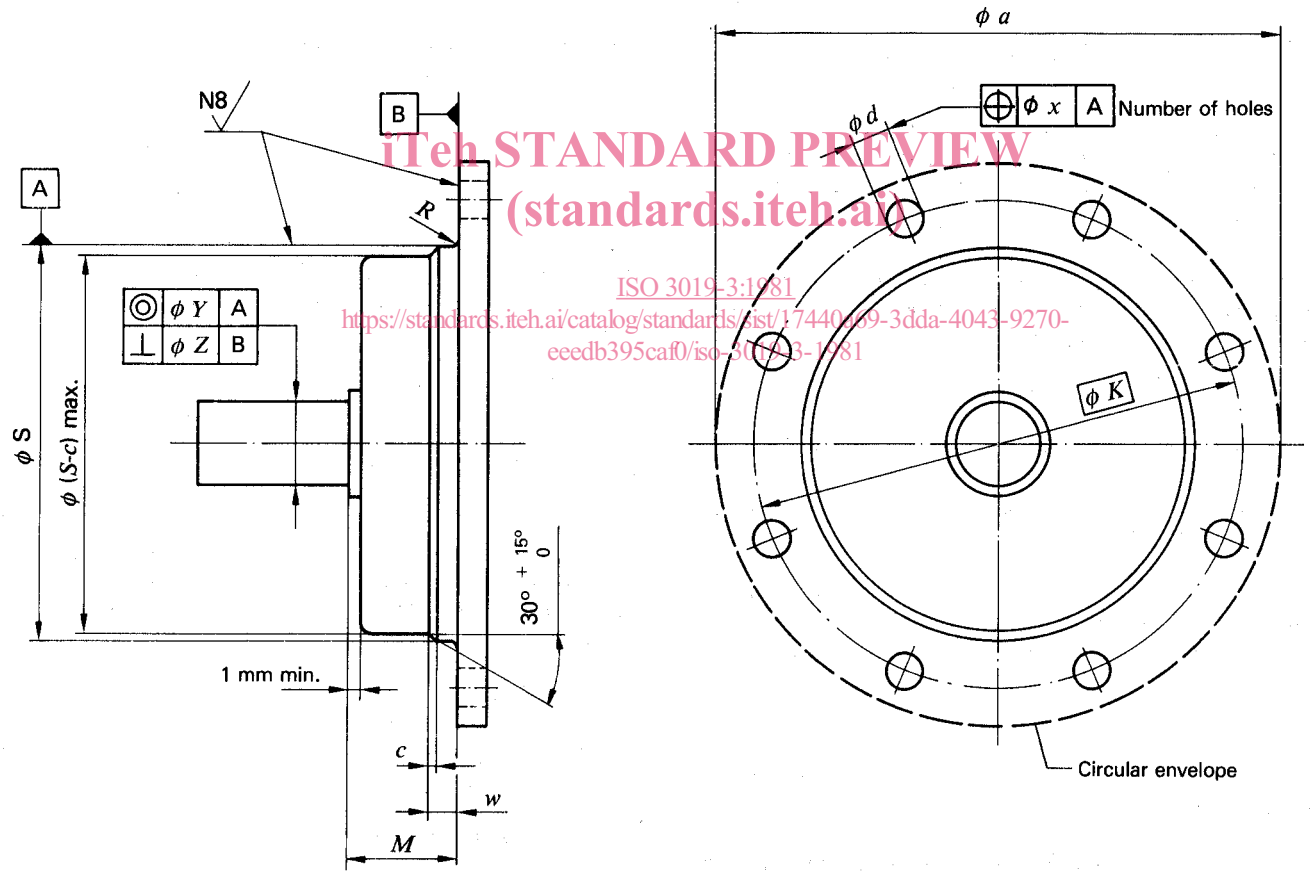

Figure 1 — Basic layout of polygonal flanges

Table — Range of polygonal flanges

Dimensions in millimetres

S (h8)[1]	K	Fixings				a max.	w +1 0	c max.	R max. (R min. = 0)	Y[3]	Z[3] mm/mm	M
		Bolts		Clearance holes[2]								
		Number	Nom. dia.	d (H13)[1]	x							
80	103	5, 6, 7 or 8	M8	9	0,5	125	7	2	1,6	0,25	0,0015	20 ± 1
100	125		M10	11		160	9			0,30		
125	160		M12	13,5		200	12			0,35	0,002	25 ± 1
160	200		M16	17,5		250						
180	224					280						40 ± 1,5
200	250					300						
224	280					335						
250	300		M20	22		355						
280	320				1,0	375	16	3				50 ± 2
315	360					425						
355	400					465						
400	450					515						
450	510	5, 7, 8, 10, 12 or 14	M24	26		585	20	5				60 ± 3
500	560					635						
560	630					710						
630	710		M30	33	1,5	800						
710	800					900						
800	900					1 000						
900	1 000					1 100						
1 000	1 100					1 200						

1) For tolerance values, see ISO 286.

2) Threaded holes or slots instead of clearance holes by agreement between purchaser and supplier.

3) Tolerances stated are for the unladen condition (rigid coupling may require closer tolerances).

4.4 Shaft ends

The following characteristics have been taken from ISO/R 775, unless otherwise stated :

4.4.1 Select nominal diameters (d_1) of shaft ends from the following series :

16 - 20 - 25 - 32 - 40 - 50 - 63 - 70 - 80 - 90 - 100 - 110 - 125 - 140 - 160 - 180 - 200

4.4.2 Shaft ends shapes will be one of the following types :

a) cylindrical shaft end with key, see figure 2;

b) conical shaft end with key and external thread, see figure 3.

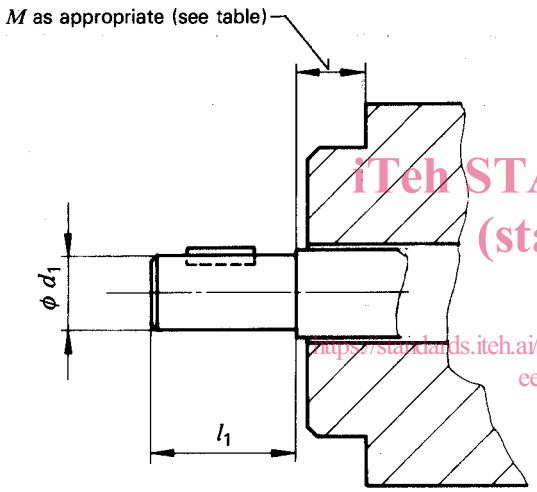

Figure 2 — Cylindrical shaft end with key

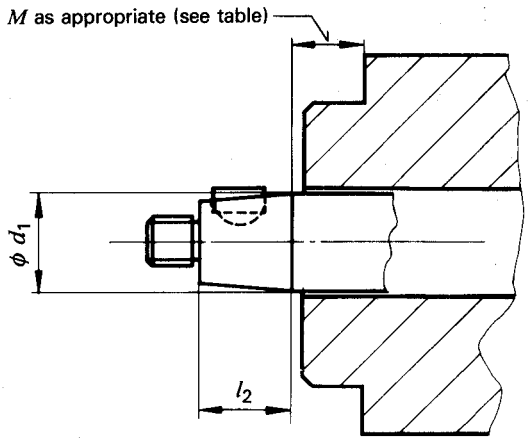

Figure 3 — Conical shaft end with key and external thread

4.4.3 Only parallel keys to ISO/R 773 or Woodruff keys to ISO 3912 are to be used.

4.4.4 Select shaft end lengths from the short series in ISO/R 775.

4.4.5 Select other shaft end dimensions from ISO/R 775 except for the tolerances on the diameter of cylindrical shaft ends to be of grade 7 instead of 6.

5 Identification code

5.1 Code for mounting dimensions

Identify mounting flanges in accordance with this International Standard with the following codes :

a) use the word "flange";

b) indicate the size reference of the flange by using the spigot diameter (S) in millimetres;

c) indicate the flange shape, using the following code :

— polygonal flanges (inclusive circular flanges), D;

d) the number of fixing holes;

NOTE — Slots can be used in place of holes by agreement between the user and the supplier.

e) "H" indicates clearance holes
"T" indicates tapped holes;

NOTE — Tapped fixing hole option for mounting flanges (by agreement between the user and the supplier). Tapped holes of the same nominal diameter as the flange fixing bolts and conforming with ISO 261 can be substituted for the "d" clearance holes in all flange sizes.

f) reference to this International Standard : ISO 3019/3.

NOTE — When both a flange and shaft are coded jointly, omit reference.

5.1.1 See 5.3 for examples of designation.

5.2 Code for shaft ends

Identify shaft ends in accordance with this International Standard with the following codes :

a) use the word "shaft end";

b) indicate the shape of the shaft end using the following code :

— cylindrical shaft end with key but without internal thread, E;

— conical shaft end with external thread, F;

— cylindrical shaft end with key and internal thread, G;

c) indicate the size reference of the shaft by using its nominal diameter (d_1 in millimetres);

d) reference to this International Standard : ISO 3019/3.

5.2.1 See 5.3 for examples of designation.

5.3 Examples of designation

5.3.1 Designate a circular mounting flange of spigot diameter 100 mm, with 5 holes, with clearance holes as follows :

Flange 100D5H. ISO 3019/3

5.3.2 Designate a conical shaft end, with external thread, of nominal diameter (d_1), 63 mm as follows :

Shaft end F63. ISO 3019/3

5.3.3 Designate the combination of both elements defined in clause 5.3.1 and 5.3.2 as follows :

Flange 100D5H/Shaft end F63. ISO 3019/3

6 Identification statement (Reference to this International Standard)

Use the following statement in test reports, catalogues and sales literature when electing to comply with this International Standard :

"Dimensions and identification code for mounting flanges and shaft ends, metric series, are in accordance with ISO 3019/3, *Hydraulic fluid power — Positive displacement pumps and motors — Dimensions and identification code for mounting flanges and shaft ends — Part 3 : Polygonal flanges (including circular flanges).*"

Bibliography

The following document served as reference in the preparation of ISO 3019/3 and will be helpful in the utilization of this International Standard :

ISO 273, *Fasteners — Clearance holes for bolts and screws.*