

**49**                    **Mekanisk metallbearbetning, utom bearbetning av plåt, rör eller tråd**                    **[-68]**

**49**                    **(IPC: B23) Machine tools; Metal-working not otherwise provided for**                    **[68-]**

**Notes**

1. In addition to operations not provided for in any other class, this class provides, in subclass 49l, for combinations of operations provided for in different subclasses of classes 7, 31, 49 and 67, with the exception of subsidiary operations performed in conjunction with main operations covered by a single subclass.

2. In the following elaborations:

(a) The term "metal-working" should be understood as covering the working of other materials unless the context requires otherwise.

(b) The term "kind of operation" and similar expressions relate to such metal-working operations as boring, drilling, milling and grinding.

(c) The term "kind of machine" means a machine designed for a particular kind of metal-working operation (e.g. a lathe).

(d) The term "form of machine" means a machine of a particular kind adapted or arranged for a particular way of working or for particular kind adapted or arranged for a particular work, e.g. face-plate lathe, tailstock lathe, turret lathe).

(e) The term "different machines" is to be understood as covering different forms of machine for performing the same type of metal-working operation, e.g. vertical and horizontal boring machines.

3. Subclass 49m comprises features, specific to machine tools, which relate to a requirement or problem of a nature which is not peculiar to a particular kind of machine tool, e.g. feeding work, although the realisation of these features may differ according to the kind of machine tool concerned.

That subclass provides in general for such features, even if the feature or a specific function, in any particular case, is to some extent peculiar to, or is claimed only for, machine tools designed for one particular operation; only in exceptional cases are such features to be classified in the subclass for the machine tool concerned. Certain features of this general nature are, however, referred to subclasses relating to particular metal-working operations, especially 49a, in which case the subclasses in question are not restricted, in respect of those features, to the kind of machine tool with which they are primarily concerned. If details, components, or accessories have no essential feature specific to machine tools, the more general class, e.g. 47, takes precedence.                    **[68-]**

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**49a**                    **Svarvning, borrarning, centrumborrarning eller centrumkörning av metallföremål; Anordningar för dessa förfaranden kombinerade med anordningar som omfattas av 49b – 49e**                    **[-68]**

**49a**                    **(IPC: B23B) Turning; Boring**                    **[68-]**

**49b**                    **Fräsning**                    **[-68]**

**49b**                    **(IPC: B23C) Milling**                    **[68-]**

**49c**                    **Hyvling; Stickning; Formbrotschning; Klippning; Skärning; Stansning; Sågning; Filning; Brotschning; Skavning; Tillförsel av arbetsstycken**                    **[-68]**

<b>49c</b>	<b>(IPC: B23D) Planing; Slotting; Shearing; Broaching; Sawing; Filing; Scraping; Like operations for working metal by removing material, not otherwise provided for</b>	<b>[68-]</b>
<b>49d</b>	<b>Framställning av kuggar på hjul eller stänger</b>	<b>[-68]</b>
<b>49d</b>	<b>(IPC: B23F) Making gears and toothed racks</b>	<b>[68-]</b>
<b>49e</b>	<b>Gängskärning; Bearbetning av skruvhuvuden eller ändytor på muttrar</b>	<b>[-68]</b>
<b>49e</b>	<b>(IPC: B23G) Thread cutting; Working of screws, bolt heads, or nuts, in conjunction therewith</b>	<b>[68-]</b>
<b>49f</b>	<b>Tillverkning av filar eller raspar</b>	<b>[-68]</b>
<b>49g</b>	<b>Hammare; Smidespressar; Nitmaskiner</b>	<b>[-68]</b>
<b>49h</b>	<b>Smidning; Pressning; Bockning; Riktning; Lödning; Svetsning; Gasskärning</b>	<b>[-68]</b>
<b>49h</b>	<b>(IPC: B23K) Soldering; Welding; Cutting by applying heat locally</b>	<b>[68-]</b>
<b>49i</b>	<b>Framställning av smidesgoods eller pressgoods</b>	<b>[-68]</b>
<b>49k</b>	<b>Framställning av kedjor</b>	<b>[-68]</b>
<b>49l</b>	<b>Metallbearbetning som inte omfattas av 49a – 49k</b>	<b>[-68]</b>
<b>49l</b>	<b>(IPC: B23P) Other working of metal; Combined operations; Universal machine tools</b>	<b>[68-]</b>
<b>49m</b>	<b>(IPC: B23Q) Details, components, or accessories for machine tools; Machine tools in general characterised by the construction of particular details or components; Combinations or associations of machine tools, not directed to a particular metal-working result</b>	<b>[68-]</b>
<b>49a</b>	<b>Svarvning, borrar, centrumborrar eller centrumkörning av metallföremål; Anordningar för dessa förfaranden kombinerade med anordningar som omfattas av 49b – 49e</b>	<b>[-68]</b>
	<b>Svarvar eller liknande anordningar</b>	<b>[-68]</b>
49a-1/01	Svarvar eller förfaranden för svarvning, allmänt	[-68]
49a-1/02	Handdrivna eller fotdrivna svarvar	[-68]
49a-2/01	Svarvar för speciella ändamål som inte omfattas av 49a-3/01 – 49a-18, t.ex. specialsvarvar för hjulnav, nipplar, kommutatorringar eller kolvstänger	[-68]
49a-2/02	Vertikalsvarvar; Karusellsvarvar	[-68]
49a-2/03	Axelsvarvar; Rörsvarvar; Valssvarvar	[-68]
49a-2/04	Svarvar för muttrar, underläggsbrickor eller skruvhuvuden (49a-4; 49a-5/01)	[-68]
49a-2/05	Svarvar för bearbetning av ringar, kolringar eller kolvar (49a-6/01 – 49a-7/02)	[-68]
49a-3/01	Svarvar för gängskärning med ledarskrub; Anordningar för skärning av planspiralgångor eller skruvlinjeformade smörjspår i lagerskålar, t.ex. för automatisk skärdjupsinställning av verktyg eller återföring; Förkopplingsbara hjälpspindelockor	[-68]
49a-3/02	Anordningar för angivande av ledarskrubens ställning; Gängklockor	[-68]
49a-3/03	Svarvar med chaseranordning [gängrulle, gängpatron]	[-68]
49a-3/04	Gängskärning med styrlinjal	[-68]

49a-3/05	Gängskärning med ledarskruv av rör eller muffar (49e-7/01 – 49a-7/02)	[-68]
49a-4	Enspindliga halvautomatiska eller helautomatiska svarvar för stångmaterial	[-68]
49a-5/01	Flerspindliga halvautomatiska eller helautomatiska svarvar för stångmaterial	[-68]
49a-5/02	Multipelsvarvar för stångarbete	[-68]
49a-5/03	Vertikala flerspindliga svarvar för stångarbete	[-68]
49a-6/01	Halvautomatiska svarvar för chuckarbete	[-68]
49a-6/02	Flerspindliga halvautomatiska svarvar för chuckarbete	[-68]
49a-7/01	Helautomatiska svarvar för chuckarbete; Magasinautomater	[-68]
49a-7/02	Flerspindliga magasinautomater	[-68]
49a-8/01	Revolversvarvar som inte omfattas av 49a-4 – 49a-7/02; Detaljer vid revolvervarvar	[-68]
49a-8/02	Vertikala revolvervarvar	[-68]
49a-9	Svarvar för svarvning av vevaxlar eller delar med inbördes förskjutna geometriska axlar (49b-5)	[-68]
49a-10	Svarvar för konsvarvning (49a-3/05; 49a-34; 49a-51)	[-68]
49a-11	Svarvar för formsvarvning eller orund svarvning utan schablon eller formstål	[-68]
49a-12/01	Svarvar för svarvning av välvda ytor	[-68]
49a-12/02	Svarvar för kulsvarvning	[-68]
49a-12/03	Svarvar för svarvning av globoidytor	[-68]
49a-13/01	Svarvar för formsvarvning eller orund svarvning med schablon [kopieringssvarvar]	[-68]
49a-13/02	Svarvar med avvalsningsstål	[-68]
49a-14	Svarvar för efterskärning [skränkning, avbackning] (49a-13; 49b-5)	[-68]
49a-15	Svarvar för hjulbearbetning; Hjulvarvar (49a-25; 49a-30; 49a-31)	[-68]
49a-16	Svarvar med kretsande stålfästen för svarvning av flänsar, ändytor på lager e.d., som inte omfattas av 49a-9 eller 49a-18	[-68]
49a-17	Svarvar för svarvning av tappar, vevtappar, vevskänklar e.d. (49a-9)	[-68]
49a-18	Svarvar för avstickning	[-68]
	<b>Delar till svarvar</b>	<b>[-68]</b>
49a-20	Spindeldockor, spindellagringar e.d.	[-68]
49a-21/01	Drivanordningar; Variabla hjultransmissioner; Frånslag; Säkerhetsanordningar; Kopplingar	[-68]
49a-21/02	Elektriska drivanordningar	[-68]
49a-21/03	Hydrauliska eller pneumatiska drivanordningar	[-68]
49a-21/04	Omkastbara hjultransmissioner	[-68]
49a-21/05	Planetväxlar	[-68]
49a-21/06	Remväxlar	[-68]
49a-21/07	Kopplingstrummor	[-68]
49a-22/01	Anordningar för tillförel eller matning av stångmaterial (49a-27)	[-68]
49a-22/02	Anordningar för tillförel eller matning av enstaka arbetsstycken (49a-7)	[-68]
49a-23	Kopplingsanordningar e.d. vid supportar för automatisk plansvarvning eller längdsvärvning; Anordningar för ömsesidig blockering av olika matningsrörelser	[-68]
49a-24/01	Verktygshållare; Försättare e.d.; Skärdjupsinställning; Återföring (49a-3); Förebyggande av dödgång hos matningsskruvar	[-68]
49a-24/02	Tvärslider; Drivanordningar för tvärslider	[-68]
49a-24/03	Svarvprismor; Svarvstativ; Svarvstyrningar	[-68]
49a-25	Kurvsupportar för hjulringar (49a-13/01; 49a-13/02; 49a-15)	[-68]
49a-26/01	Dubbdockor (49b-4/06)	[-68]
49a-26/02	Dubbar	[-68]
49a-27/01	Uppspänningsanordningar, chuckar, backskivor, planskivor, stångchuckar eller spännhylsor som inte omfattas av 49a-22/01 – 49a-22/02 eller 49a-29/01 – 49a-29/03	[-68]
49a-27/02	Spänning genom spindeln	[-68]

49a-27/03	Elektriskt påverkade chuckar	[-68]
49a-27/04	Chuckar påverkade med hjälp av tryckluft, tryckvatten e.d.	[-68]
49a-28	Spännordnar e.d.	[-68]
49a-29/01	Uppspänningsanordningar för speciella arbetsuppgifter utom 49a-30 (49c-31)	[-68]
49a-29/02	Vinkelhyllor	[-68]
49a-29/03	Anordningar för excentrisk uppspanning	[-68]
49a-30	Uppspänningsanordningar för hjulpar för rälsfordon (49a-15)	[-68]
49a-31	Medbringare	[-68]
49a-32	Stöddockor (49a-34/01; 49a-34/02)	[-68]
49a-33/01	Svarvningsverktyg [svarvstål], t.ex. avstickningsverktyg, innerverktyg, insticksverktyg eller lätttringsverktyg; Stålunderlägg	[-68]
49a-33/02	Formstål	[-68]
49a-33/03	Avvalsningsstål (49a-13/02)	[-68]
49a-33/04	Svarvstål med insatta skär, t.ex. arbetsdiamanter	[-68]
49a-34/01	Verktygshållare som inte omfattas av 49a-35/01 – 49a-35/03 (49c-9)	[-68]
49a-34/02	Verktygshållare med motstöd	[-68]
49a-35/01	Flerverktygshållare (49a-4 – 49a-8/02)	[-68]
49a-35/02	Monterbara eller omkopplingsbara, t.ex. vridbara, verktygshållare (49a-35/03)	[-68]
49a-35/03	Revolverhuvuden; Omkopplingsanordningar eller andra anordningar för revolverhuvuden, t.ex. omkopplingsbara anslag	[-68]
49a-36/01	Speciella anordningar	[-68]
49a-36/02	Anordningar för indikering, inställning, provning, mätning, utjämning eller balansering; Räkneapparater	[-68]
49a-36/03	Skyddsanordningar; Anordningar för belysning, smörjning, kylning eller avlägsnande av spån	[-68]
49a-37	Anordningar för plansvarvning eller instickssvarvning för revolvervarvar; Halvautomatiska eller helautomatiska svarvar	[-68]
	<b>Borrmaskiner; Borranordningar (borrmaskiner för trä 38b)</b>	<b>[-68]</b>
49a-38	Borrmaskiner i allmänhet som inte omfattas av 49a-39/01 – 49a-52; Förfaranden i allmänhet för borring	[-68]
49a-39/01	Borrmaskiner eller borranordningar för speciella ändamål som inte omfattas av 49a-40/01 – 49a-52, t.ex. automatiska borrmaskiner för byggnadsdelar till broar eller skeppsskrov, borrmaskiner för långa hål eller nycklar eller maskiner för borring på svåråtkomliga ställen	[-68]
49a-39/02	Horisontalborrverk; Horisontalfräsmaskiner	[-68]
49a-39/03	Borrmaskiner för balkar eller plåt; Anordningar för borring utan föregående märkning av arbetsstycket	[-68]
49a-39/04	Maskiner för borring och gängning	[-68]
	Bärbara borrmaskiner drivna med ånga, tryckluft eller tryckfluidum (46d-5; 14b-3; 5b-1 – 5b-3)	[-68]
49a-40/01	drivna av turbiner eller lamellrotorer	[-68]
49a-40/02	drivna med hjälp av fram-och-återgående kolvar	[-68]
49a-41/01	Elektriskt drivna handborrmaskiner	[-68]
49a-41/02	Stativ eller hållare för elektriskt drivna handborrmaskiner	[-68]
49a-42	Radialborrmaskiner	[-68]
49a-43/01	Flerspindliga borrmaskiner	[-68]
49a-43/02	Flerspindliga borrmaskiner med rätlinjigt förskjutbara hållare för arbetsstycken eller verktyg	[-68]
49a-43/03	Flerspindliga borrmaskiner med cirkelformigt förskjutbara hållare för arbetsstycken eller verktyg	[-68]
49a-43/04	Flerspindliga borrmaskiner med mot varandra, t.ex. radiellt riktade, spindlar; Borrmaskiner för hjulnav	[-68]

49a-44	Maskiner eller anordningar för uppborrning av metallcylindrar, lager, lager i kolvstänger e.d.	[-68]
49a-45/01	Maskiner eller anordningar för bearbetning av eldrör till kanoner eller gevär, t.ex. uppborrning, svarvning eller instickning av spår (72a-27/01 – 72a-27/07; 72c-15; 72d-14/01 – 72d-17/08)	[-68]
49a-45/02	Maskiner för räffling	[-68]
49a-45/03	Borrning eller svarvning av projektiler	[-68]
49a-46	Borranordningar vid metallsvarvar	[-68]
49a-47/01	Handborrmaskiner eller handborranordningar för metall (borrmaskiner med spärrsockar 49a-48); Borrning på svåråtkomliga ställen (49a-39/01)	[-68]
49a-47/02	Handborrmaskiner eller handborranordningar för balkar eller skenor	[-68]
49a-47/03	Växelborrskaft; Drivning med hjälp av dragband	[-68]
49a-48	Borrmaskiner med spärrsockar	[-68]
49a-49	Hängande rörliga borranordningar	[-68]
49a-50	Maskiner eller anordningar för borrning av orunda eller kantiga hål (49a-11; 49a-13/01; 49a-13/02)	[-68]
49a-51	Maskiner eller anordningar för borrning av koniska hål (49a-10)	[-68]
49a-52	Anordningar för att borra hål i under tryck stående rör e.d.	[-68]
49a-53	Borrmaskiner för ångpannor e.d.	[-68]
	<b>Delar till borrmaskiner eller borranordningar</b>	<b>[-68]</b>
49a-54/01	Drivanordningar för borrmaskiner (47h)	[-68]
49a-54/02	Elektriska drivanordningar (49a-41)	[-68]
49a-54/03	Hydrauliska eller pneumatiska drivanordningar (49a-40)	[-68]
49a-54/04	Växlingsbara eller omkastbara drivanordningar	[-68]
49a-54/05	Anordningar för remdrift eller kedjedrift	[-68]
49a-55/01	Anordningar för frammatning som automatiskt stoppar vid brott på borret	[-68]
49a-55/02	Hydrauliskt eller pneumatiskt drivna frammatningsanordningar	[-68]
49a-56/01	Detaljer eller speciella anordningar vid borrmaskiner, t.ex. borrspindlar, styrningar eller utbalansering med motvikt	[-68]
49a-56/02	Borrbord eller fastspänningsanordningar för arbetsstycken	[-68]
49a-56/03	Anordningar för tillförsel av arbetsstycken	[-68]
49a-56/04	Kylanordningar; Smörjanordningar	[-68]
49a-56/05	Skyddsanordningar eller indikatorer; Anordningar för förhindrande av sidorörelse av borrspetsen eller avbrytning av borret vid genombrott; Förhindrande av dödgång hos frammatningsspindeln	[-68]
49a-56/06	Anordningar för avlägsnande av spån ur borrhål; Spånskydd	[-68]
49a-56/07	Anordningar för provning av borrhål	[-68]
49a-57	Borrstänger e.d.; Instickning av invändiga spår; Efterskärning	[-68]
49a-58	Jiggar; Borrbusningar; Styrningar för borrspindlar	[-68]
49a-59	Drillborrar	[-68]
49a-60/01	Flatborrar; Spiralborrar	[-68]
49a-60/02	Rörborrar; Borrar för avskärning av kärnor	[-68]
49a-60/03	Borrar med smörjning	[-68]
49a-60/04	Försänkare; Avgradningsverktyg	[-68]
49a-61	Borrvudens (49a-50)	[-68]
49a-62	Flerspindliga borranordningar med förkopplingsbara spindlar för fästning vid en borrmaskinspindel (49a-3/01)	[-68]
49a-63	Anordningar för att skära hål i plåt e.d.	[-68]
	<b>Fästanordningar för borrar</b>	<b>[-68]</b>
49a-64/01	Borrchuckar	[-68]
49a-64/02	Pendelchuckar	[-68]
49a-64/03	Chuckar för avbrutna borrar	[-68]

49a-64/04	Reduceringshylsor	[68]
49a-64/05	Utdrivare	[68]
49a-64/06	Skydd mot brytning av borrets	[68]
49a-65	Borrbyglar; Sugskålar; Mothåll för bormaskiner	[68]
	<b>Centrerung</b>	<b>[-68]</b>
49a-66	Anordningar för centrumborring av metallföremål (42b-23/01 – 42b-23/04)	[68]
49a-67	Körnare; Anordningar för centrumkörning av metallföremål (42b-23/01 – 42b-23/04)	[68]
49a-68	Kombinationer av svarvar eller bormaskiner med andra verktygsmaskiner för metallbearbetning	[68]
<b>49a</b>	<b>(IPC: B23B) Turning; Boring (arrangements for copying or controlling 49m)</b>	<b>[68-]</b>
	<b><u>Turning</u></b>	<b>[68-]</b>
<b>49a-1/00</b>	<b>Methods for turning or working essentially requiring the use of turning-machines; Use of auxiliary equipment in connection with such methods</b>	<b>[68-]</b>
<b>49a-3/00</b>	<b>General-purpose turning-machines or devices, e.g. centre lathes with feed rod and lead screw; Sets of turning-machines</b>	<b>[68-]</b>
49a-3/02	. Small lathes, e.g. for toolmakers (specially designed for watchmakers 83c-2)	[68-]
49a-3/04	. Turning-machines in which the workpiece is rotated by means at a distance from the headstock	[68-]
49a-3/06	. Turning-machines or devices characterised only by the special arrangement of constructional units (49m-37/00 takes precedence; structural features of details, see the relevant groups; such features of general applicability 49m)	[68-]
49a-3/08	. Turning-machines characterised by the use of faceplates	[68-]
49a-3/10	. . with the faceplate horizontal, i.e. vertical boring and turning machines	[68-]
49a-3/12	. . with the faceplate vertical, i.e. face lathes	[68-]
49a-3/14	. . Mountings or drives of faceplates	[68-]
49a-3/16	. Turret lathes for turning individually-chucked workpieces	[68-]
49a-3/18	. . with horizontal working-spindle	[68-]
49a-3/20	. . with vertical working-spindle	[68-]
49a-3/22	. Turning-machines or devices with rotary tool heads	[68-]
49a-3/24	. . the tools of which do not perform a radial movement; Rotary tool heads therefor	[68-]
49a-3/26	. . the tools of which perform a radial movement; Rotary tool heads thereof	[68-]
49a-3/28	. Turning-machines in which the feed is controlled by a copying device, i.e. copying lathes (features of copying devices 49m-35/00)	[68-]
49a-3/30	. Turning-machines with two or more working-spindles, e.g. in fixed arrangement	[68-]
49a-3/32	. . for performing identical operations simultaneously on two or more workpieces	[68-]
49a-3/34	. Short turning-machines with one or multiple working-spindles attended from the end (49a-3/12 takes precedence)	[68-]
49a-3/36	. Associations of only turning-machines directed to a particular metal-working result (if the metal-working result is not essential 49m-39/00)	[68-]
<b>49a-5/00</b>	<b>Turning-machines or devices specially adapted for particular work; Accessories specially adapted therefor</b>	<b>[68-]</b>
49a-5/02	. for turning hubs or brake drums (49a-5/04 takes precedence)	[68-]
49a-5/04	. for reconditioning hubs or brake drums or axle spindles without removing same from the vehicle	[68-]
49a-5/06	. for turning valves or valve bodies	[68-]
49a-5/08	. for turning axles, bars, rods, tubes, rolls, i.e. shaft-turning lathes, roll lathes; Centreless turning	[68-]
49a-5/10	. . for turning pilgrim rolls	[68-]
49a-5/12	. . for peeling bars or tubes by making use of cutting bits arranged around the workpiece	[68-]
49a-5/14	. Cutting-off lathes (shearing 49c)	[68-]

49a-5/16	. for bevelling, chamfering, or deburring the ends of bars or tubes	[68-]
49a-5/18	. for turning crankshafts, eccentrics, or cams, e.g. crankpin lathes	[68-]
49a-5/20	. . without removing same from the engine	[68-]
49a-5/22	. . Holding the workpiece in the machine, e.g. chucking devices	[68-]
49a-5/24	. for turning pistons or other workpieces to a slightly non-circular cross-section	[68-]
49a-5/26	. for simultaneously turning internal and external surfaces of a body	[68-]
49a-5/28	. for turning wheels or wheel sets or cranks thereon, i.e. wheel lathes	[68-]
49a-5/30	. . Arrangements providing for tool control by templates	[68-]
49a-5/32	. . for reconditioning wheel sets without removing same from the vehicle; Underfloor wheel lathes for railway vehicles	[68-]
49a-5/34	. . Holding the workpiece in the machine, e.g. chucking devices therefor; Drivers therefor	[68-]
49a-5/36	. for turning specially-shaped surfaces by making use of relative movement of the tool and work produced by geometrical mechanisms, i.e. forming-lathes	[68-]
49a-5/38	. . for turning conical surfaces inside or outside, e.g. taper pins	[68-]
49a-5/40	. . for turning spherical surfaces inside or outside	[68-]
49a-5/42	. . for turning relieving surfaces, i.e. relieving-lathes	[68-]
49a-5/44	. . for turning polygonal or other non-circular surfaces controlled by gear or guide mechanisms, i.e. eccentric lathes	[68-]
49a-5/46	. . for turning helical or spiral surfaces (thread cutting 49e)	[68-]
49a-5/48	. . . for cutting grooves, e.g. oil grooves of helicoidal shape	[68-]
<b>49a-7/00</b>	<b>Automatic or semi-automatic turning-machines with a single working-spindle, e.g. controlled by cams; Equipment therefor; Features common to automatic and semi-automatic turning-machines with one or more working-spindles</b>	<b>[68-]</b>
49a-7/02	. Automatic or semi-automatic machines for turning of stock	[68-]
49a-7/04	. . Turret machines	[68-]
49a-7/06	. . with sliding headstock	[68-]
49a-7/08	. . with the working-spindle vertical	[68-]
49a-7/10	. . Accessories, e.g. guards	[68-]
49a-7/12	. Automatic or semi-automatic machines for turning of workpieces	[68-]
49a-7/14	. . with the working-spindle horizontal	[68-]
49a-7/16	. . with the working-spindle vertical	[68-]
<b>49a-9/00</b>	<b>Automatic or semi-automatic turning-machines with a plurality of working-spindles, e.g. automatic multiple-spindle machines with spindles arranged in a drum carrier able to be moved into pre-determined positions; Equipment therefor</b> (equipment applicable to single-spindle machines 49a-7/00)	<b>[68-]</b>
49a-9/02	. Automatic or semi-automatic machines for turning of stock	[68-]
49a-9/04	. . with the working-spindles horizontal	[68-]
49a-9/06	. . with the working-spindles vertical	[68-]
49a-9/08	. Automatic or semi-automatic machines for turning of workpieces	[68-]
49a-9/10	. . with the working-spindles horizontal	[68-]
49a-9/12	. . with the working-spindles vertical	[68-]
<b>49a-11/00</b>	<b>Automatic or semi-automatic turning-machines incorporating equipment for performing other working procedures, e.g. slotting, milling, rolling</b>	<b>[68-]</b>
<b>49a-13/00</b>	<b>Arrangements for automatically conveying or chucking or guiding stock</b>	<b>[68-]</b>
49a-13/02	. for turning-machines with a single working-spindle	[68-]
49a-13/04	. for turning-machines with a plurality of working-spindles	[68-]
49a-13/06	. Arrangements for switching-off the drive of turning-machines after the stock has been completely machined	[68-]
49a-13/08	. Arrangements for reducing vibrations in feeding-passages or for damping noise (damping noise in general 42g-1/10)	[68-]
49a-13/10	. with magazines for stock	[68-]
49a-13/12	. Accessories, e.g. stops, grippers	[68-]

<b>49a-15/00</b>	<b>Arrangements for conveying, loading, adjusting, reversing, chucking, or discharging workpieces specially designed for automatic or semi-automatic turning-machines</b>	<b>[68-]</b>
	<b>Components or accessories particularly for turning machines</b>	<b>[68-]</b>
<b>49a-17/00</b>	<b>Lathe beds</b> (foundation frames, carriage guides as such 49m-1/00)	<b>[68-]</b>
<b>49a-19/00</b>	<b>Headstocks; Equivalent parts of any machine tools</b>	<b>[68-]</b>
49a-19/02	. Working-spindles; Features relating thereto, e.g. supporting arrangements (49a-13/00 takes precedence)	[68-]
<b>49a-21/00</b>	<b>Lathe carriages; Cross-slides; Tool posts</b> (tool holders 49a-29/00); <b>Similar parts of any machine tools</b>	<b>[68-]</b>
<b>49a-23/00</b>	<b>Tailstocks; Centres</b>	<b>[68-]</b>
49a-23/02	. Dead centres	[68-]
49a-23/04	. Live centres	[68-]
<b>49a-25/00</b>	<b>Accessories or auxiliary equipment for turning-machines</b> (for machine tools in general 49m; cooling or lubricating 49m-11/12)	<b>[68-]</b>
49a-25/02	. Arrangements for chip-breaking in turning-machines (on cutting tools 49a-27/22)	[68-]
49a-25/04	. Safety guards specially designed for turning-machines (in general 47a4)	[68-]
49a-25/06	. Measuring, gauging, or adjusting equipment on turning-machines for setting-on, feeding, controlling, or monitoring the cutting tools or work (measuring devices or gauges 42b)	[68-]
<b>49a-27/00</b>	<b>Tools for turning or boring machines</b> (for drilling machines 49a-51/00); <b>Tools of a similar kind in general; Accessories therefor</b>	<b>[68-]</b>
49a-27/02	. Cutting tools with straight main part and cutting edge at an angle (49a-27/04 to 49a-27/08 take precedence)	[68-]
49a-27/04	. Cutting-off tools (49a-27/08 takes precedence)	[68-]
49a-27/06	. Profile cutting tools, i.e. forming-tools	[68-]
49a-27/08	. Cutting tools with blade- or disc-like main parts	[68-]
49a-27/10	. Cutting tools with special provision for cooling	[68-]
49a-27/12	. . with a continuously-rotated circular cutting edge; Holders therefor	[68-]
49a-27/14	. Cutting tools of which the bits or tips are of special material	[68-]
49a-27/16	. . with exchangeable cutting bits, e.g. able to be clamped	[68-]
49a-27/18	. . with cutting bits or tips rigidly mounted, e.g. by brazing	[68-]
49a-27/20	. . with diamond bits	[68-]
49a-27/22	. Cutting tools with chip-braking equipment	[68-]
49a-27/24	. Knurling tools	[68-]
<b>49a-29/00</b>	<b>Holders for non-rotary cutting tools</b> (49a-27/12 takes precedence); <b>Boring bars or boring heads; Accessories for tool holders</b>	<b>[68-]</b>
49a-29/02	. Boring bars	[68-]
49a-29/03	. Boring heads	[68-]
49a-29/034	. . with tools moving radially	[68-]
49a-29/04	. Tool holders for a single cutting tool	[68-]
49a-29/06	. . Tool holders equipped with longitudinally-arranged grooves for setting the cutting tool	[68-]
49a-29/08	. . Tool holders equipped with grooves arranged crosswise to the longitudinal direction for setting the cutting tool	[68-]
49a-29/10	. . . with adjustable counterbase for the cutting tool	[68-]
49a-29/12	. . Special arrangements on tool holders	[68-]
49a-29/14	. . . affording a yielding support of the cutting tool, e.g. by spring clamping	[68-]
49a-29/16	. . . for supporting the workpiece in a backrest	[68-]
49a-29/18	. . . for retracting the cutting tool	[68-]
49a-29/20	. . . for placing same by shanks in sleeves of a turret	[68-]
49a-29/22	. . . for tool adjustment by means of shims or spacers	[68-]
49a-29/24	. Tool holders for a plurality of cutting tools, e.g. turrets	[68-]
49a-29/26	. . Tool holders in fixed position	[68-]



49a-29/28	. . Turrets manually adjustable about a vertical pivot	[68-]
49a-29/30	. . Turrets manually adjustable about a horizontal pivot	[68-]
49a-29/32	. . Turrets adjustable by power drive, i.e. turret heads	[68-]
49a-29/34	. . Turrets equipped with triggers for releasing the cutting tools	[68-]
<b>49a-31/00</b>	<b>Chucks; Expansion mandrels; Adaptations thereof for remote control</b> (similar devices not intended for use on spindles 49m; face-plates 49m; holding by magnetic or electrical force acting directly on work 49m-3/152)	<b>[68-]</b>
49a-31/02	. Chucks	[68-]
49a-31/04	. . for the shanks of tools, e.g. drills	[68-]
49a-31/06	. . . Features relating to the removal of tools; Accessories therefor	[68-]
49a-31/08	. . . Holding tools yieldably	[68-]
49a-31/10	. . characterised by the gripping devices or their immediate operating means	[68-]
49a-31/12	. . . Chucks with simultaneously-acting jaws, whether or not also individually adjustable	[68-]
49a-31/14	. . . . involving the use of centrifugal force	[68-]
49a-31/16	. . . . moving radially	[68-]
49a-31/18	. . . . pivotally movable in planes containing the axis of the chuck	[68-]
49a-31/19	. . . . moving parallel to the axis of the chuck	[68-]
49a-31/20	. . . . Collet chucks	[68-]
49a-31/22	. . . . Jaws in the form of balls	[68-]
49a-31/24	. . characterised by features relating primarily to remote control of the gripping means	[68-]
49a-31/26	. . . using mechanical transmission through the working-spindle	[68-]
49a-31/28	. . . using electric or magnetic means in the chuck	[68-]
49a-31/30	. . . using fluid-pressure means in the chuck	[68-]
49a-31/32	. . with jaws carried by diaphragm	[68-]
49a-31/34	. . with means enabling the workpiece to be reversed or tilted	[68-]
49a-31/36	. . with means for adjusting the chuck with respect to the working-spindle	[68-]
49a-31/38	. . with overload clutches	[68-]
49a-31/40	. Expansion mandrels	[68-]
49a-31/42	. . characterised by features relating primarily to remote control of the gripping means	[68-]
49a-31/44	. Taper shanks, e.g. Morse-cones	[68-]
<b>49a-33/00</b>	<b>Drivers; Driving centres; Nose clutches, e.g. lathe dogs</b>	<b>[68-]</b>
	<b><u>Boring; Drilling</u> (by electro-erosion 49I-1/00)</b>	<b>[68-]</b>
<b>49a-35/00</b>	<b>Methods for boring or drilling, or for working essentially requiring the use of boring or drilling machines; Use of auxiliary equipment in connection with such methods</b>	<b>[68-]</b>
<b>49a-37/00</b>	<b>Boring by making use of ultrasonic energy</b> (essentially using abrasive material 67a)	<b>[68-]</b>
<b>49a-39/00</b>	<b>General-purpose boring or drilling machines or devices; Sets of boring or drilling machines</b>	<b>[68-]</b>
49a-39/02	. Boring machines; Combined horizontal boring and milling machines	[68-]
49a-39/04	. Co-ordinate boring or drilling machines; Machines for making holes without previous marking	[68-]
49a-39/06	. . Equipment for positioning work	[68-]
49a-39/08	. . Devices for programme control	[68-]
49a-39/10	. characterised by the drive, e.g. by fluid-pressure drive, pneumatic power drive	[68-]
49a-39/12	. Radial drilling machines	[68-]
49a-39/14	. with special provision to enable the machine or the drilling or boring head to be moved into any desired position, e.g. with respect to immovable work	[68-]
49a-39/16	. Drilling machines with a plurality of working-spindles; Drilling automatons	[68-]
49a-39/18	. . Setting work or tool carrier along a straight index line	[68-]
49a-39/20	. . Setting work or tool carrier along a circular index line; Turret head drilling machines	[68-]
49a-39/22	. . with working-spindles in opposite headstocks	[68-]

49a-39/24	. . designed for programme control	[68-]
49a-39/26	. in which the working position of tool or work is controlled by copying discrete points of a pattern (features of copying devices 49m-35/02)	[68-]
49a-39/28	. Associations of only boring or drilling machines directed to a particular metal-working result (if not producing a particular metal-working result 49m-39/00)	[68-]
<b>49a-41/00</b>	<b>Boring or drilling machines or devices specially adapted for particular work; Accessories specially adapted therefor</b>	<b>[68-]</b>
49a-41/02	. for boring deep holes; Trepanning, e.g. of gun or rifle barrels	[68-]
49a-41/04	. for boring polygonal or other non-circular holes	[68-]
49a-41/06	. for boring conical holes	[68-]
49a-41/08	. for boring, drilling, or tapping holes in tubes under fluid or gas pressure (sealing features or operations, combined with placing branch parts 47f1-41/04)	[68-]
49a-41/10	. for boring holes in steam boilers	[68-]
49a-41/12	. for forming working surfaces of cylinders, of bearings, e.g. in heads of driving rods, or of other engine parts	[68-]
49a-41/14	. for very small holes	[68-]
49a-41/16	. for boring holes with high-quality surface	[68-]
<b>49a-43/00</b>	<b>Boring or drilling devices able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool (if specially adapted for particular work 49a-41/00)</b>	<b>[68-]</b>
49a-43/02	. to the tailstock of a lathe	[68-]
<b>49a-45/00</b>	<b>Hand-held or like portable drilling machines, e.g. drill guns; Equipment therefor</b>	<b>[68-]</b>
49a-45/02	. driven by electric power	[68-]
49a-45/04	. driven by fluid-pressure or pneumatic power	[68-]
49a-45/06	. driven by man-power	[68-]
49a-45/08	. . for drilling rails or profiled stock	[68-]
49a-45/10	. . by using a fiddle bow or a belt	[68-]
49a-45/12	. . by using a ratchet brace	[68-]
49a-45/14	. Means for holding or guiding the drilling device or for securing it to the work (49a-41/08 takes precedence); Thrust stands	[68-]
<b><u>Components or accessories for boring or drilling machines</u></b>		<b>[68-]</b>
<b>49a-47/00</b>	<b>Constructional features of components specially designed for boring or drilling machines; Accessories therefor (working-spindles, bearing sleeves therefor 49a-19/02; for machine tools in general 49m)</b>	<b>[68-]</b>
49a-47/02	. Drives; Gearings (49a-39/10 takes precedence)	[68-]
49a-47/04	. . for rotating the working-spindle	[68-]
49a-47/06	. . . driven essentially by electrical means	[68-]
49a-47/08	. . . driven essentially by fluid-pressure or pneumatic power	[68-]
49a-47/10	. . . . equipped with turbines or other rotating machines	[68-]
49a-47/12	. . . . equipped with oscillating pistons	[68-]
49a-47/14	. . . Change-speed gearings; Reversing gearings	[68-]
49a-47/16	. . . Belt or chain drives	[68-]
49a-47/18	. . for feeding or retracting tool or work	[68-]
49a-47/20	. . . actuated essentially by electric power	[68-]
49a-47/22	. . . actuated essentially by fluid-pressure or pneumatic power	[68-]
49a-47/24	. . . Stops or feed interruption owing to fracture or overload of the boring or drilling tool	[68-]
49a-47/26	. Lifiable and lowerable drill heads or headstocks; Balancing arrangements therefor	[68-]
49a-47/28	. Drill jigs for workpieces (equipment for setting or guiding the drill 49a-49/00)	[68-]
49a-47/30	. Additional gear with one or more working-spindles attachable to the main working-spindle and mounting the additional gear	[68-]
49a-47/32	. Arrangements for preventing the running-out of drills or fracture of drills when getting through	[68-]
49a-47/34	. Arrangements for removing chips out of the holes made; Chip-breaking arrangements attached to the tool	[68-]

<b>49a-49/00</b>	<b>Measuring or gauging equipment on boring machines for positioning or guiding the drill; Devices for indicating failure of drills during boring; Centring devices for holes to be bored</b> (measuring devices, gauges 42b)	<b>[68-]</b>
49a-49/02	. Boring templates or bushings	[68-]
49a-49/04	. Devices for boring or drilling centre holes in workpieces	[68-]
49a-49/06	. Devices for drilling holes in brake bands or brake linings	[68-]
<b>49a-51/00</b>	<b>Tools for drilling machines</b>	<b>[68-]</b>
49a-51/02	. Twist drills	[68-]
49a-51/04	. Drills for trepanning; Tools for cutting discs from sheet	[68-]
49a-51/06	. Drills with lubricating or cooling equipment	[68-]
49a-51/08	. Drills combined with tool parts or tools for performing additional working	[68-]
49a-51/10	. Bits for countersinking	[68-]
49a-51/12	. Adapters for drills or chucks; Tapered sleeves	[68-]
49a-51/14	. . Adapters for broken drills	[68-]
49a-51/16	. for making chamfers or undercuttings	[68-]
<b>49b</b>	<b>Fräsning (fräsning av trä 38b-5)</b>	<b>[-68]</b>
	Fräsmaskiner	[-68]
49b-1/01	allmänt	[-68]
49b-1/02	med en horisontell spindel	[-68]
49b-1/03	med en vertikal spindel	[-68]
49b-1/01	med flera horisontella spindlar	[-68]
49b-1/05	med flera vertikala spindlar	[-68]
49b-1/06	med horisontell och vertikal spindel	[-68]
49b-1/07	med vridbara arbetsbord	[-68]
49b-1/08	med ett flertal arbetsbord	[-68]
49b-1/09	Bärbara fräsmaskiner; Handfräsmaskiner	[-68]
49b-2	Starrfräsmaskiner	[-68]
49b-3	Universalfräsmaskiner	[-68]
	Delar till fräsmaskiner	[-68]
49b-4/01	Drivanordningar, allmänt	[-68]
49b-4/02	Drivanordningar med elektromotor	[-68]
49b-4/03	Hydrauliska drivanordningar	[-68]
49b-4/04	Omkastbara växlar; Frånslagningsanordningar (manövrerbara axelkopplingar i allmänhet 47c-6 – 47c-16, 47d-20, 47d-21)	[-68]
49b-4/05	Arbetsbord; Matningstransmissioner; Matningsomkopplare (kraftöverföringar 47h)	[-68]
49b-4/06	Verktygsspindlar; Spindelnosar; Dubbdockor; Stödbommar	[-68]
49b-4/07	Andra detaljer	[-68]
	Fräsmaskiner	[-68]
49b-5/01	för rundfräsning	[-68]
49b-5/02	för fräsning av vevaxlar	[-68]
49b-5/03	för fräsning av tappar	[-68]
49b-5/04	för efterskärning (svarvar för efterskärning 49a-14)	[-68]
49b-5/05	för kopieringsfräsning (kopieringsmaskiner 75a-13 – 73a-15)	[-68]
49b-5/06	för framställning av kurvor	[-68]
49b-5/07	för bearbetning av plåtkanter	[-68]
49b-5/08	för fräsning av nyckelax	[-68]
49b-5/09	för avfräsning av göt före valsningen	[-68]
49b-5/10	för bearbetning av turbinskovlar eller bladytor på propellrar	[-68]
49b-5/11	för avgradning av rörändar; för avgradning eller avfräsning av muttrar	[-68]
49b-5/12	för bearbetning av sänken, matriser e.d.	[-68]

49b-5/15	för framställning av tandläkareinstrument, t.ex. borrar	[68]
49b-5/14	för fräsning av delar till musikinstrument	[68]
49b-5/16	för framställning av slitsar i silplåtar	[68]
49b-5/17	för bearbetning av spiralborrar för trä	[68]
49b-5/30	för andra ändamål	[68]
49b-6/01	för bearbetning av runda eller prismatiska föremål	[68]
49b-6/02	för bearbetning av kantiga hål	[68]
49b-7	för framställning av kulor	[68]
49b-8	för framställning av spiralborr	[68]
49b-9/01	för framställning av spår, allmänt	[68]
49b-9/02	för framställning av kilspår	[68]
49b-9/03	för framställning av smörjspår	[68]
49b-10/01	Fräsanordningar vid svarvar	[68]
49b-10/02	Frasanordningar vid hyvelmaskiner	[68]
49b-10/03	Fräsanordningar vid andra verktygsmaskiner än svarvar eller hyvelmaskiner	[68]
49b-11	Fräsmaskiner för bearbetning av ventilsåten e.d.	[68]
	Fräsverktyg (verktyg för framställning av kuggjul eller kuggstänger 49d-14/01 – 49d-14/05)	[68]
49b-12/01	Valsfräsar med fasta skärorgan	[68]
49b-12/02	Valsfräsar med insatta skärorgan	[68]
49b-12/03	Skivfräsar med fasta skärorgan	[68]
49b-12/04	Skivfräsar med insatta skärorgan	[68]
49b-12/05	Spårfräsar med skaft	[68]
49b-12/06	Valsfräsar eller spårfräsar med ställbara skärorgan	[68]
49b-12/07	Fråshuvuden för planfräsning med insatta skärorgan	[68]
49b-12/08	Ändfräsar eller försänkingsfräsar med fasta skärorgan	[68]
49b-12/09	Fräsar, t.ex. med invändiga skär, för fräsning av tappar, bultändar e.d.	[68]
49b-12/10	Fästning eller inställning av skärorgan i fråshuvuden	[68]
49b-12/11	Fästning av fräsar på dorn eller frässpindlar	[68]
49b-12/12	Fräsar för avgradning av rörändar eller hålkanter	[68]
49b-12/13	Andra detaljer eller tillbehör till fräsar	[68]
49b-12/14	Smörjning eller kylning av fräsar	[68]
49b-12/15	Fräsar för speciella ändamål	[68]
49b-12/16	Tillverkning av fräsar	[68]
49b-12/17	Fräsar med fällbara skärorgan	[68]
49b-13	Delningsdockor; Delningsanordningar (för framställning av kuggjul 49d-15/04)	[68]
<b>49b</b>	<b>(IPC: B23C) Milling (broaching 49c; broach-milling in making gears 49d; arrangements for copying or controlling 49m)</b>	<b>[68-]</b>
<b>49b-1/00</b>	<b>Milling machines not designed for particular work or special operations</b>	<b>[68-]</b>
49b-1/02	. with one horizontal working-spindle	[68-]
49b-1/04	. with a plurality of horizontal working-spindles	[68-]
49b-1/06	. with one vertical working-spindle	[68-]
49b-1/08	. with a plurality of vertical working-spindles	[68-]
49b-1/10	. with both horizontal and vertical working-spindles	[68-]
49b-1/12	. with spindle adjustable to different angles, e.g. either horizontally or vertically	[68-]
49b-1/14	. with rotary work-carrying table	[68-]
49b-1/16	. specially designed for control by copying devices	[68-]
49b-1/18	. . for milling while revolving the work	[68-]
49b-1/20	. Portable devices or machines; Hand-driven devices or machines	[68-]

<b>49b-3/00</b>	<b>Milling particular work; Special milling operations; Machines therefor</b> (milling gear-teeth 49d)	<b>[68-]</b>
49b-3/02	. Milling surfaces of revolution (49b-3/06, 49b-3/08 take precedence)	[68-]
49b-3/04	. . while revolving the work	[68-]
49b-3/06	. Milling crankshafts	[68-]
49b-3/08	. Milling cams, camshafts, or the like	[68-]
49b-3/10	. Relieving milling (lathes or turning devices for relieving 49a-5/42)	[68-]
49b-3/12	. Trimming or finishing edges, e.g. deburring welded corners	[68-]
49b-3/14	. Scrubbing or peeling ingots or similar workpieces	[68-]
49b-3/16	. Working surfaces curved in two directions	[68-]
49b-3/18	. . for shaping screw-propellers, turbine blades, or impellers	[68-]
49b-3/20	. . for shaping dies	[68-]
49b-3/22	. Forming overlapped joints, e.g. of the ends of piston-rings	[68-]
49b-3/24	. Making square or polygonal ends on workpieces, e.g. key studs on tools	[68-]
49b-3/26	. Making square or polygonal holes in workpieces, e.g. key holes in tools	[68-]
49b-3/28	. Grooving workpieces (thread-cutting by milling 49e-1/32)	[68-]
49b-3/30	. . Milling straight grooves, e.g. keyways	[68-]
49b-3/32	. . Milling helical grooves, e.g. in making twist-drills	[68-]
49b-3/34	. . Milling grooves of other forms, e.g. circumferential	[68-]
49b-3/35	. . Milling grooves in keys	[68-]
49b-3/36	. Milling milling-cutters (49b-3/28 takes precedence)	[68-]
<b>49b-5/00</b>	<b>Milling-cutters</b> (for cutting gear-teeth 49d-21/12)	<b>[68-]</b>
49b-5/02	. characterised by the shape of the cutter	[68-]
49b-5/04	. . Plain cutters, i.e. having essentially a cylindrical or tapered cutting surface of substantial length (49b-5/10 takes precedence)	[68-]
49b-5/06	. . Face-milling cutters, i.e. having only or primarily a substantially flat cutting surface	[68-]
49b-5/08	. . Disc-type cutters	[68-]
49b-5/10	. . Shank-type cutters, i.e. with an integral shaft	[68-]
49b-5/12	. . Cutters specially designed for producing particular profiles (49b-5/10 takes precedence)	[68-]
49b-5/14	. . . essentially comprising curves	[68-]
49b-5/16	. characterised by physical features other than shape	[68-]
49b-5/18	. . with permanently-fixed cutter-bits or teeth	[68-]
49b-5/20	. . with removable cutter-bits or teeth	[68-]
49b-5/22	. . . Securing arrangements for bits or teeth	[68-]
49b-5/24	. . . . adjustable	[68-]
49b-5/26	. Securing milling-cutters to the driving spindle	[68-]
49b-5/28	. Features relating to lubricating or cooling	[68-]
<b>49b-7/00</b>	<b>Milling devices able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool</b>	<b>[68-]</b>
49b-7/02	. to lathes	[68-]
49b-7/04	. to planing or slotting machines	[68-]
<b>49b-9/00</b>	<b>Details or accessories so far as specially adapted to milling machines or cutters</b> (drives, control devices, or accessories, in general 49m)	<b>[68-]</b>
<b>49c</b>	<b>Hyvling; Stickning; Formbrotschning; Klippning; Skärning; Stansning; Sågning; Filning; Brotschning; Skavning; Tillförel av arbetsstycken</b> (graving 75a-6 – 75a-12)	<b>[-68]</b>
	<b>Hyvling; Stickning; Formbrotschning</b>	<b>[-68]</b>
49c-1/01	Portalhyvelmaskiner; Enpelarhyvelmaskiner	[-68]
49c-1/02	Handhyvelmaskiner	[-68]
49c-1/03	Hyvelmaskiner med speciella supportar, t.ex. frässupportar eller slipsupportar	[-68]
49c-1/04	Stativ, bäddar, arbetsbord e.d. för hyvelmaskiner	[-68]
49c-1/05	Supportar; Anordningar för matningsrörelserna	[-68]
49c-1/06	Förskjutning eller fastlåsning av tvärbalkar	[-68]

49c-1/07	Drivning av fram-och-återgående bärare för arbetsstycken eller verktyg med hjälp av kuggstänger, omkastbara remväxlar, hjulväxlar eller linväxlar (kraftöverföringar 47h)	[-68]
49c-1/08	Hydrauliska drivanordningar för fram-och-återgående bärare för arbetsstycken eller verktyg	[-68]
49c-1/09	Drivning av hyvelmaskiner med hjälp av elektromotorer	[-68]
49c-1/10	Bromsning vid rörelseomkastning	[-68]
49c-1/11	Andra detaljer	[-68]
49c-2/01	Hyvelmaskiner med stötslid; Kipphyvlar [shapingmaskiner]	[-68]
49c-2/02	Vertikala stickmaskiner	[-68]
49c-2/03	Stativ; Arbetsbord; Stötslider; Supportar	[-68]
49c-2/04	Drivning av stötslider med hjälp av vevmekanismer, kulissmekanismer e.d.	[-68]
49c-2/05	Hydraulisk drivning av stötslider	[-68]
49c-2/06	Reglering eller drivning av sekundära drivanordningar	[-68]
49c-2/07	Andra detaljer	[-68]
49c-3/01	Rundhyvelmaskiner; Kurvhyvelmaskiner	[-68]
49c-3/02	Maskiner för hyvling av bladytorna på propellar	[-68]
49c-3/03	Hyvelmaskiner för bearbetning av plåtkanter	[-68]
49c-3/04	Hyvelmaskiner för andra ändamål	[-68]
49c-4	Hyvelmaskiner eller stickmaskiner för muttrar eller andra prismatiska föremål	[-68]
49c-5	Maskiner för upptagning av spår	[-68]
49c-6	Maskiner eller anordningar för hyvling eller stickning under både framåtslag och återgångsslag av bäraren för arbetsstycket eller verktyget	[-68]
49c-7	Anordningar för hyvling eller stickning vid andra verktygsmaskiner	[-68]
	Maskiner för formbrotschning	[-68]
49c-8/01	Maskiner för invändig formbrotschning	[-68]
49c-8/02	Maskiner för utvändig formbrotschning	[-68]
49c-8/03	Detaljer vid maskiner för formbrotschning, t.ex. drivanordningar eller verktygshållare	[-68]
49c-8/04	Verktyg för maskiner för formbrotschning	[-68]
49c-9/01	Verktyg för hyvelmaskiner eller stickmaskiner	[-68]
49c-9/02	Verktygshållare; Verktygsfästen	[-68]
49c-9/03	Verktygshållare för flera, samtidigt arbetande verktyg	[-68]
49c-9/04	Lyftanordningar e.d. för stål	[-68]
	<b>Klippning; Stansning; Hålupptagning</b>	<b>[-68]</b>
49c-10/01	Saxar med parallellt rörliga skär	[-68]
49c-10/02	Gradsaxar	[-68]
49c-10/03	Fasthållningsanordningar	[-68]
49c-11/01	Saxar med svängande skär; Hävstångssaxar	[-68]
49c-11/50	Hydrauliska saxar	[-68]
49c-12/01	Saxar med roterbara cirkelformade skär	[-68]
49c-12/02	Maskiner för skärning av rör (för handbruk 7c-19)	[-68]
49c-12/03	Saxar för formklippning; Kurvklippmaskiner	[-68]
49c-13/01	Saxar för löpande valsgods	[-68]
49c-13/02	Roterande saxar för löpande valsgods	[-68]
49c-13/03	Sammansatta saxar för att dela och kantskära löpande valsgods	[-68]
49c-14/01	Saxar för klippning av profiljärn eller stångjärn	[-68]
49c-14/02	Geringsaxar	[-68]
49c-14/03	Vridsaxar	[-68]
49c-15/01	Saxar för sönderdelning av metall; Tackjärnsknäckare	[-68]

49c-15/02	Maskiner för att sönderdela spån	[-68]
49c-16/01	Handsaxar för plåt, tråd e.d. (saxar i allmänhet (69-1 – 69-9)	[-68]
49c-16/02	Handsaxar med elektrisk drivning	[-68]
49c-16/03	Handsaxar med hydraulisk drivning eller tryckluftdrivning	[-68]
49c-17/01	Stansmaskiner för metall i allmänhet (stansning av plåt eller rör i allmänhet 7c-10)	[-68]
49c-17/02	Stansmaskiner med flera stansar	[-68]
49c-17/03	Revolverstansmaskiner	[-68]
49c-17/04	Tångformade stansar	[-68]
49c-17/05	Kombinerade stansar och saxar	[-68]
49c-17/06	Elektrisk eller hydraulisk drivning för stansar	[-68]
49c-17/07	Kopplingar för stanslöpare	[-68]
49c-17/08	Axelkopplingar	[-68]
49c-17/09	Matning av stansbordet	[-68]
49c-17/10	Elektriska kopplingsanordningar för matning eller till- och frånslagning	[-68]
49c-17/11	Skydd mot brott	[-68]
49c-17/12	Andra detaljer	[-68]
49c-18/01	Saxar, hålmaskiner eller stansmaskiner för speciella metallbearbetningsändamål	[-68]
49c-18/02	Kapning av och hålupptagning i syllar	[-68]
49c-18/03	Gradborttagning av bultändar	[-68]
49c-19	Verktyg för klippning eller stansning; Skär, stansar, matriser e.d.; Fästning av verktyg	[-68]
	<b>Sågning; Filning; Brotschning; Skavning</b>	<b>[-68]</b>
	Metallsågar med cirkelklingor	[-68]
49c-20/01	Cirkelsågar	[-68]
49c-20/02	Friktionssågar	[-68]
	Metallsågar med bandformiga sågblad	[-68]
49c-21/01	Bygelsågmaskiner	[-68]
49c-21/02	Bågfilar	[-68]
49c-21/03	Bandsågar	[-68]
49c-22/01	Skränkningsverktyg	[-68]
	Maskiner eller anordningar	[-68]
49c-22/02	för skränkning	[-68]
49c-22/03	för skärpning av sågar genom filning	[-68]
49c-22/04	för skärpning av sågar genom slipning	[-68]
49c-22/05	för skärpning av sågar genom stukning av tänderna	[-68]
49c-22/06	Kombinerade anordningar för skränkning och skärpning	[-68]
49c-22/07	Fastspänningsanordningar för sågar vid skränkning eller skärpning	[-68]
49c-22/08	Formning, riktning eller prövning av sågtänder	[-68]
49c-23/01	Cirkelsågklingor framställda i ett stycke	[-68]
49c-23/02	Cirkelsågklingor med insatta tandringar	[-68]
49c-23/03	Cirkelsågklingor med insatta tandsegment	[-68]
49c-23/04	Cirkelsågklingor med insatta tänder	[-68]
49c-23/05	Cirkelsågklingor med inåtriktade tänder	[-68]
49c-23/06	Raka sågblad	[-68]
49c-23/07	Anordningar för att avlägsna spån från sågen	[-68]
49c-24/01	Stansning eller huggning av sågar	[-68]
49c-24/02	Fräsning av sågar	[-68]
49c-24/03	Slipning av sidoytorna på sågar	[-68]
	Filningsmaskiner	[-68]
49c-25/01	med fram-och-återgående verktyg	[-68]

49c-25/02	med roterande filskivor; med kedjeformigt utformade verktyg	[-68]
49c-25/03	för speciella ändamål	[-68]
49c-25/04	Verktyg; Anordningar för fastspänning av verktyg	[-68]
49c-25/05	Anordningar för handfilning	[-68]
49c-26/01	Handfilar; Raspar (49f)	[-68]
49c-26/02	Filar eller raspar med utbytbara filplattor eller motsvarande (49f)	[-68]
49c-26/03	Filar eller raspar sammansatta av skivor eller motsvarande (49f)	[-68]
	<b>Brotschar</b>	[-68]
49c-27/01	med fasta skär	[-68]
49c-27/02	med insatta skär	[-68]
49c-27/03	med ställbara skär	[-68]
49c-27/04	med elastiskt utspärrbara skär	[-68]
49c-27/05	för speciella ändamål	[-68]
49c-27/06	Inspänningsanordningar; Pendlande brotschar	[-68]
49c-27/07	Anordningar för brotschning	[-68]
49c-28	Förfaranden, anordningar eller verktyg för skavning av metall	[-68]
	<b>Allmänt användbara anordningar för tillförel av arbetsstycken till metallbearbetningsmaskiner</b>	[-68]
49c-30/01	Anordningar för tillförel och ordnande av arbetsstycken av metall (anordningar för tillförel av arbetsstycken vid gängskärning eller bearbetning av skruvhuvuden 49e-13)	[-68]
49c-30/02	Anordningar för frammatning, ordnande och rättvändning av arbetsstycken av metall	[-68]
49c-30/03	Anordningar för frammatning av arbetsstycken vid saxar eller hålstansningsmaskiner	[-68]
	<b>Uppspänningsbord i allmänhet med tillbehör för arbetsstycken av metall vid metallbearbetningsmaskiner (maskinskruvstycken, parallellskruvstycken 87a-1; chuckar 49a, 49b)</b>	[-68]
49c-31/01	Mekaniska uppspänningsbord	[-68]
49c-31/02	Hydrauliska eller pneumatiska uppspänningsbord	[-68]
49c-31/03	Elektromagnetiska uppspänningsplattor eller uppspänningsbord	[-68]
49c-31/05	Permanentmagnetiska uppspänningsplattor eller uppspänningsbord	[-68]
49c-31/10	Tillbehör för mekaniska uppspänningsbord, t.ex. fastspänningsanordningar	[-68]
49c-31/12	Tillbehör för hydrauliska eller pneumatiska uppspänningsbord	[-68]
<b>49c</b>	<b>(IPC: B23D) Planing; Slotting; Shearing; Broaching; Sawing; Filing; Scraping; Like operations for working metal by removing material, not otherwise provided for (making toothed gears or the like 49d; cutting metal by applying heat locally 49h; arrangements for copying or controlling 49m)</b>	<b>[-68-]</b>
	<b><u>Planing; Slotting</u></b>	<b>[-68-]</b>
<b>49c-1/00</b>	<b>Planing or slotting machines cutting by relative movement of the tool and workpiece in a horizontal straight line only</b>	<b>[-68-]</b>
49c-1/02	. by movement of the work-support	[-68-]
49c-1/04	. . with the tool supported only on one side of the bed	[-68-]
49c-1/06	. . with the tool supported on both sides of the bed	[-68-]
49c-1/08	. by movement of the tool	[-68-]
49c-1/10	. . with means for adjusting the tool-guide vertically	[-68-]
49c-1/12	. . . with the tool supported only on one side of the bed	[-68-]
49c-1/14	. . . with the tool supported on both sides of the bed	[-68-]
49c-1/16	. . without means for adjusting the tool-guide vertically	[-68-]
49c-1/18	. cutting on both the forward and the return stroke	[-68-]



49c-1/20	. with tool-supports or work-supports specially mounted or guided for working in different directions or at different angles; Special purpose machines	[68-]
49c-1/22	. . for planing ingots or the like	[68-]
49c-1/24	. . for planing inner surfaces, e.g. of moulds	[68-]
49c-1/26	. . for planing edges or ridges or cutting grooves (cutting helical grooves 49c-5/02)	[68-]
49c-1/28	. . in which the tool or workpiece is fed otherwise than in a straight line, e.g. for planing profiled stock	[68-]
49c-1/30	. . . in which the direction of feed is controlled by a copying device, e.g. by a pattern (features of copying devices 49m-35/00)	[68-]
<b>49c-3/00</b>	<b>Planing or slotting machines cutting by relative movement of the tool and workpiece in a vertical or inclined straight line</b>	<b>[68-]</b>
49c-3/02	. for cutting grooves (cutting helical grooves 49c-5/02)	[68-]
49c-3/04	. in which the tool or workpiece is fed otherwise than in a straight line	[68-]
49c-3/06	. . in which the direction of feed is controlled by a copying device, e.g. by a pattern (features of copying devices 49m-35/00)	[68-]
<b>49c-5/00</b>	<b>Planing or slotting machines cutting otherwise than by relative movement of the tool and workpiece in a straight line</b>	<b>[68-]</b>
49c-5/02	. involving rotary and straight-line movements only, e.g. for cutting helical grooves	[68-]
49c-5/04	. controlled by a copying device, e.g. by a pattern (features of copying devices 49m-35/00)	[68-]
<b>49c-7/00</b>	<b>Planing or slotting machines characterised only by constructional features of particular parts</b> (constructional features of these parts per se 49m)	<b>[68-]</b>
49c-7/02	. of frames, of work-table beds	[68-]
49c-7/04	. of pillars, of cross-beams	[68-]
49c-7/06	. of tool-carrying arrangements	[68-]
49c-7/08	. of work-tables	[68-]
49c-7/10	. of drives for reciprocating parts	[68-]
49c-7/12	. of arrangements for impact damping or regenerating energy	[68-]
<b>49c-9/00</b>	<b>Hand-operated planing devices; Portable planing apparatus</b>	<b>[68-]</b>
<b>49c-11/00</b>	<b>Planing or slotting devices able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool</b>	<b>[68-]</b>
<b>49c-13/00</b>	<b>Tools or tool holders specially designed for planing or slotting machines</b> (features applicable also to turning-machines 49a-27/00, 49a-29/00; for cutting gear teeth 49d-21/04)	<b>[68-]</b>
49c-13/02	. Pivotaly-mounted holders	[68-]
49c-13/04	. Holders for tool sets	[68-]
49c-13/06	. Devices for lifting or lowering the tool	[68-]
<b><u>Shearing; Similar cutting</u></b>		<b>[68-]</b>
<b>49c-15/00</b>	<b>Shearing machines or shearing devices cutting by blades which move parallel to themselves</b>	<b>[68-]</b>
49c-15/02	. having both upper and lower moving blades	[68-]
49c-15/04	. having only one moving blade	[68-]
49c-15/06	. Sheet shears	[68-]
49c-15/08	. . with a blade moved in one plane, e.g. perpendicular to the surface of the sheet	[68-]
49c-15/10	. . with a blade moved in a curved surface, e.g. for producing an edge with a curved cross-section	[68-]
49c-15/12	. characterised by drives or gearings therefor	[68-]
49c-15/14	. . actuated by fluid or gas pressure	[68-]

<b>49c-17/00</b>	<b>Shearing machines or shearing devices cutting by blades pivoted on a single axis</b> (on an axis parallel to the blade 49c-15/10; hand-held devices 49c-29/00)	<b>[68-]</b>
49c-17/02	. characterised by drives or gearings therefor	[68-]
49c-17/04	. . actuated by a rotary shaft	[68-]
49c-17/06	. . actuated by fluid or gas pressure	[68-]
49c-17/08	. . actuated by hand or foot operated lever mechanism	[68-]
<b>49c-19/00</b>	<b>Shearing machines or shearing devices cutting by rotary discs</b> (by friction saw-discs 49c-45/00)	<b>[68-]</b>
49c-19/02	. having both a fixed shearing blade and a rotary shearing disc	[68-]
49c-19/04	. having rotary shearing discs arranged in co-operating pairs	[68-]
49c-19/06	. . with several spaced pairs of shearing discs working simultaneously, e.g. for trimming or making strips	[68-]
49c-19/08	. for special use, e.g. for cutting curves, for chamfering edges	[68-]
<b>49c-21/00</b>	<b>Machines or devices for shearing or cutting tubes</b> (by sawing, see the relevant groups for sawing machines or sawing devices; as additional equipment for deep-drawing presses 7c-24/16)	<b>[68-]</b>
49c-21/02	. otherwise than in a plane perpendicular to the axis of the tube, e.g. for making mitred cuts, for making bicycle frames	[68-]
49c-21/04	. Tube-severing machines with rotating tool-carrier	[68-]
49c-21/06	. Hand-operated tube cutters	[68-]
49c-21/08	. . with cutting wheels	[68-]
49c-21/10	. . with other cutting blades or tools	[68-]
49c-21/12	. . . with provision for hammering on the tool	[68-]
49c-21/14	. cutting inside the tube	[68-]
<b>49c-23/00</b>	<b>Machines or devices for shearing or cutting profiled stock</b> (hand-held devices 49c-29/00)	<b>[68-]</b>
49c-23/02	. otherwise than in a plane perpendicular to the axis of the stock	[68-]
49c-23/04	. by means of holding-dies, arranged side by side, subjecting the stock to torsional stress	[68-]
<b>49c-25/00</b>	<b>Machines or arrangements for shearing stock while the latter is travelling otherwise than in the direction of the cut</b> (controlling slack in travelling flexible stock 7b-47/10)	<b>[68-]</b>
49c-25/02	. Flying shearing machines (49c-25/12 takes precedence)	[68-]
49c-25/04	. . in which a cutting unit moves bodily with the work while cutting (49c-25/06 takes precedence)	[68-]
49c-25/06	. . having a cutting device mounted on an oscillating lever	[68-]
49c-25/08	. . having two coacting shearing blades mounted independently	[68-]
49c-25/10	. . . on co-operating beams moving parallel to each other and attached to lever mechanisms	[68-]
49c-25/12	. Shearing machines with blades on coacting rotating drums	[68-]
49c-25/14	. without regard to the exact dimensions of the resulting material, e.g. for cutting-up scrap	[68-]
49c-25/16	. Control arrangements specially adapted for machines for shearing travelling stock	[68-]
<b>49c-27/00</b>	<b>Machines or devices for cutting by a nibbling action</b>	<b>[68-]</b>
49c-27/02	. Hand-held devices	[68-]
49c-27/04	. . actuated by electric power	[68-]
49c-27/06	. . actuated by fluid or gas pressure	[68-]
<b>49c-29/00</b>	<b>Hand-held metal-shearing or metal-cutting devices</b> (with nibbling action 49c-27/02; hand-operated devices for metal-cutting otherwise than by shearing 69)	<b>[68-]</b>
49c-29/02	. Hand-operated metal-shearing devices	[68-]

<b>49c-31/00</b>	<b>Shearing machines or shearing devices covered by none or more than one of the groups 49c-15/00 to 49c-29/00; Combinations of shearing machines</b>	<b>[68-]</b>
49c-31/02	. for performing different cutting operations on travelling stock, e.g. slitting and severing simultaneously	[68-]
49c-31/04	. for trimming stock combined with devices for shredding scrap	[68-]
<b>49c-33/00</b>	<b>Accessories for shearing machines or shearing devices</b> (feeding stock to machines or removing stock 7c-43/00)	<b>[68-]</b>
49c-33/02	. Arrangements for holding, guiding, or feeding work during the operation	[68-]
49c-33/04	. . for making circular cuts	[68-]
49c-33/06	. . in which the direction of feed is controlled by a copying device, e.g. by a pattern (features of copying devices 49m-35/00)	[68-]
49c-33/08	. Press-pads; Counter-bases; Hold-down devices	[68-]
49c-33/10	. Stops for positioning work	[68-]
49c-33/12	. Equipment for indicating where to cut	[68-]
<b>49c-35/00</b>	<b>Tools for shearing machines or shearing devices; Holders or chucks for shearing tools</b>	<b>[68-]</b>
<b><u>Broaching</u></b>		<b>[68-]</b>
<b>49c-37/00</b>	<b>Broaching machines or broaching devices</b>	<b>[68-]</b>
49c-37/02	. Broaching machines with horizontally-arranged working tools	[68-]
49c-37/04	. . for broaching inner surfaces	[68-]
49c-37/06	. . for broaching outer surfaces	[68-]
49c-37/08	. Broaching machines with vertically-arranged working tools	[68-]
49c-37/10	. . for broaching inner surfaces	[68-]
49c-37/12	. . for broaching outer surfaces	[68-]
49c-37/14	. Broaching machines with rotatably-arranged working tools	[68-]
49c-37/16	. . for broaching helical grooves	[68-]
49c-37/18	. Broaching machines with working tools mounted on an endless chain or belt	[68-]
49c-37/20	. Broaching machines with arrangements for working in opposite directions	[68-]
49c-37/22	. for special purposes (49c-37/14 takes precedence)	[68-]
<b>49c-39/00</b>	<b>Accessories for broaching machines or broaching devices</b>	<b>[68-]</b>
<b>49c-41/00</b>	<b>Broaching machines or broaching devices characterised only by constructional features of particular parts</b> (constructional features of these parts per se 49m)	<b>[68-]</b>
49c-41/02	. of frames; of work supports	[68-]
49c-41/04	. of tool-carrying arrangements	[68-]
49c-41/06	. of devices for feeding, clamping, or ejecting workpieces	[68-]
49c-41/08	. of drives; of control devices	[68-]
<b>49c-43/00</b>	<b>Broaching tools</b> (for cutting gear teeth 49d-21/26)	<b>[68-]</b>
49c-43/02	. for cutting by rectilinear movement (49c-43/08 takes precedence)	[68-]
49c-43/04	. . having inserted cutting edges	[68-]
49c-43/06	. for cutting by rotational movement	[68-]
49c-43/08	. mounted on an endless chain or belt	[68-]
<b><u>Sawing</u></b> (sawing wood or similar material 38a)		<b>[68-]</b>
<b>49c-45/00</b>	<b>Sawing machines or sawing devices with circular saw blades or with friction saw discs</b> (shearing machines with rotary discs 49c-19/00 to 49c-25/00)	<b>[68-]</b>
49c-45/02	. with a circular saw blade or the stock mounted on a carriage	[68-]
49c-45/04	. with a circular saw blade or the stock carried by a pivoted lever	[68-]
49c-45/06	. with a circular saw blade arranged underneath a stationary work-table	[68-]
49c-45/08	. with a ring blade having inside saw teeth	[68-]
49c-45/10	. with a plurality of circular saw blades	[68-]
49c-45/12	. with a circular saw blade for cutting tubes	[68-]

49c-45/14	. for cutting otherwise than in a plane perpendicular to the axis of the stock, e.g. for making a mitred cut	[68-]
49c-45/16	. Hand-held sawing devices with circular saw blades	[68-]
49c-45/18	. Machines with circular saw blades for sawing stock while the latter is travelling otherwise than in the direction of the cut	[68-]
49c-45/20	. . Flying sawing machines, the saw carrier of which is reciprocated in a guide and moves with the travelling stock during sawing	[68-]
49c-45/22	. . Flying sawing machines with lever-supported saw carrier which moves in a complete circular path	[68-]
49c-45/24	. . Flying sawing machines with lever-supported saw carrier which oscillates in an arc	[68-]
49c-45/26	. With high-speed cutting discs, performing the cut by frictional heat melting the material	[68-]
<b>49c-47/00</b>	<b>Sawing machines or sawing devices working with circular saw blades, characterised only by constructional features of particular parts</b> (constructional features of these parts per se 49m)	<b>[68-]</b>
49c-47/02	. of frames; of guiding arrangements for work-table or saw-carrier	[68-]
49c-47/04	. of devices for feeding, positioning, clamping, or rotating work	[68-]
49c-47/06	. . for stock of indefinite length	[68-]
49c-47/08	. of devices for bringing the circular saw blade to the workpiece or removing same therefrom	[68-]
49c-47/10	. . actuated by fluid or gas pressure	[68-]
49c-47/12	. of drives for circular saw blades	[68-]
<b>49c-49/00</b>	<b>Machines or devices for sawing with straight reciprocating saw blades, e.g. hacksaws</b>	<b>[68-]</b>
49c-49/02	. Hacksaw machines with straight saw blades secured to a rectilinearly-guided frame, e.g. with the frame fed stepwise in the plane of the guide	[68-]
49c-49/04	. Hacksaw machines with straight saw blades secured to a pivotally-arranged frame	[68-]
49c-49/06	. Hacksaw machines with straight saw blades for special use	[68-]
49c-49/08	. Pad-saw machines, i.e. machines in which the blade is attached to a carrier at one end only	[68-]
49c-49/10	. Hand-held or hand-operated sawing devices with straight saw blades	[68-]
49c-49/12	. . Hacksaws (49c-49/16 takes precedence; bows adjustable in length or height 49c-51/12)	[68-]
49c-49/14	. . Pad saws (49c-49/16 takes precedence)	[68-]
49c-49/16	. . actuated by electric or magnetic power or prime movers	[68-]
<b>49c-51/00</b>	<b>Sawing machines or sawing devices working with straight blades, characterised only by constructional features of particular parts</b> (constructional features of these parts per se 49m); <b>Carrying or attaching means for tools, dealt with in this subclass, which are connected to a carrier at both ends</b>	<b>[68-]</b>
49c-51/02	. of beds; of guiding arrangements for work-tables or saw carriers	[68-]
49c-51/04	. of devices for feeding, positioning, clamping, or rotating work	[68-]
49c-51/06	. . for stock of indefinite length	[68-]
49c-51/08	. of devices for mounting straight saw blades or other tools	[68-]
49c-51/10	. . for hand-held or hand-operated devices	[68-]
49c-51/12	. . for use with tools, dealt with in this subclass, which are connected to a carrier at both ends, e.g. bows adjustable in length or height	[68-]
49c-51/14	. . . Attachment of the tool	[68-]
49c-51/16	. of drives or feed mechanisms for straight tools, e.g. saw blades, or bows	[68-]
49c-51/18	. . actuated by fluid or gas pressure (49c-51/20 takes precedence)	[68-]
49c-51/20	. . with controlled feed of the tool, or with special arrangements for relieving or lifting the tool on the return stroke	[68-]

<b>49c-53/00</b>	<b>Machines or devices for sawing with strap saw blades which are effectively endless in use, e.g. for contour cutting</b>	<b>[68-]</b>
49c-53/02	. with stationarily-mounted wheels carrying the strap (49c-53/06 takes precedence)	[68-]
49c-53/04	. with the wheels carrying the strap mounted shiftably or swingingly, other than merely for adjustment	[68-]
49c-53/06	. with shiftable or swinging work-table	[68-]
49c-53/08	. for cutting profiled stock	[68-]
49c-53/10	. Sawing devices working with strap saw blades able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool	[68-]
49c-53/12	. Hand-held or hand-operated sawing devices working with strap saw blades	[68-]
<b>49c-55/00</b>	<b>Sawing machines or sawing devices working with strap saw blades, characterised only by constructional features of particular parts</b> (constructional features of these parts per se 49m)	<b>[68-]</b>
49c-55/02	. of frames; of tables	[68-]
49c-55/04	. of devices for feeding or clamping work	[68-]
49c-55/06	. of drives for strap saw blades; of wheel mountings	[68-]
49c-55/08	. of devices for guiding or feeding strap saw blades	[68-]
49c-55/10	. of devices for tensioning strap saw blades (49c-55/06 takes precedence; incorporated in the strap 49c-61/12)	[68-]
<b>49c-57/00</b>	<b>Sawing machines or sawing devices not covered by one of the preceding groups 49c-45/00 to 49c-55/00</b>	<b>[68-]</b>
49c-57/02	. with chain saws	[68-]
<b>49c-59/00</b>	<b>Accessories specially designed for sawing machines or sawing devices</b> (lubricating or cooling machine tools in general 49m-11/12)	<b>[68-]</b>
49c-59/02	. Devices for lubricating or cooling circular saw blades	[68-]
49c-59/04	. Devices for lubricating or cooling straight or strap saw blades	[68-]
<b>49c-61/00</b>	<b>Tools for sawing machines or sawing devices</b> (tools for trepanning 49a-51/04); <b>Clamping devices for these tools</b>	<b>[68-]</b>
49c-61/02	. Circular saw blades	[68-]
49c-61/04	. . with inserted saw teeth	[68-]
49c-61/06	. . . in exchangeable arrangement	[68-]
49c-61/08	. . Ring saw blades with internal saw teeth	[68-]
49c-61/10	. . clamped between hubs; Clamping or aligning devices therefor	[68-]
49c-61/12	. Straight saw blades; Strap saw blades	[68-]
49c-61/14	. . with inserted saw teeth	[68-]
49c-61/16	. . . in exchangeable arrangement	[68-]
49c-61/18	. Sawing tools of special type, e.g. wire saw strands, saw blades or saw wire equipped with diamonds or other abrasive particles in selected individual positions	[68-]
<b>49c-63/00</b>	<b>Dressing the tools of sawing machines or sawing devices for use in cutting any kind of material, e.g. in the manufacture of sawing tools</b>	<b>[68-]</b>
49c-63/02	. Setting saw teeth by means of hand-operated devices	[68-]
49c-63/04	. Setting saw teeth of circular, straight, or strap saw blades by means of power-operated devices	[68-]
49c-63/06	. Upsetting the cutting edges of saw teeth, e.g. swaging	[68-]
49c-63/08	. Sharpening the cutting edges of saw teeth	[68-]
49c-63/10	. . by filing	[68-]
49c-63/12	. . by grinding	[68-]
49c-63/14	. . . Sharpening circular saw blades	[68-]
49c-63/16	. . of chain saws (of mortise chain cutters 67a-1)	[68-]
49c-63/18	. Straightening damaged saw blades; Reconditioning the side surfaces of saw blades, e.g. by grinding	[68-]
49c-63/20	. Combined processes for dressing saw teeth, e.g. both hardening and setting	[68-]

<b>49c-65/00</b>	<b>Making tools for sawing machines or sawing devices for use in cutting any kind of material</b>	<b>[68-]</b>
49c-65/02	. Making saw teeth by punching, cutting, or planing	[68-]
49c-65/04	. Making saw teeth by milling	[68-]
	<b><u>Filing or rasping (sharpening saw teeth thereby 49c-63/10)</u></b>	<b>[68-]</b>
<b>49c-67/00</b>	<b>Filing or rasping machines or devices (securing arrangements for files or rasps 49c-71/00)</b>	<b>[68-]</b>
49c-67/02	. with reciprocating tools, mounted on a yoke or the like	[68-]
49c-67/04	. with reciprocating tools, attached to a carrier at one end only	[68-]
49c-67/06	. with rotating tools	[68-]
49c-67/08	. with tools mounted on an endless chain or belt	[68-]
49c-67/10	. for special use, e.g. for filing keys; Accessories therefor	[68-]
49c-67/12	. Hand-held or hand-operated filing or rasping devices (hand files or rasps 49c-71/04)	[68-]
<b>49c-69/00</b>	<b>Filing or rasping machines or devices, characterised only by constructional features of particular parts, e.g. guiding arrangements, drives (constructional features of these parts per se 49m); Accessories for filing or rasping (attached to the tool 49c-71/10)</b>	<b>[68-]</b>
49c-69/02	. Guiding arrangements for hand tools	[68-]
<b>49c-71/00</b>	<b>Filing or rasping tools; Securing arrangements therefor (tool holders for machine tools 49m-3/00; handles for hand implements 87d)</b>	<b>[68-]</b>
49c-71/02	. for filing or rasping machines or devices	[68-]
49c-71/04	. Hand files or hand rasps (carrying or attaching means for tools which are connected to a carrier at both ends 49c-51/12; guiding arrangements 49c-69/02)	[68-]
49c-71/06	. . using a single interchangeable blade	[68-]
49c-71/08	. . using a plurality of interchangeable cutting elements	[68-]
49c-71/10	. Accessories for filing or rasping tools, e.g. for preventing scoring of workpieces by the edges of the tool	[68-]
<b>49c-73/00</b>	<b>Making files or rasps</b>	<b>[68-]</b>
49c-73/02	. Preliminary treatment of blanks, e.g. grinding, polishing, specially adapted for the manufacture of files or rasps	[68-]
49c-73/04	. Methods or machines for the manufacture of files or rasps (non-mechanical methods in the relevant classes)	[68-]
49c-73/06	. . Cutting the working surfaces by means of chisels	[68-]
49c-73/08	. . Milling, planing, slotting, knurling, or broaching the working surfaces	[68-]
49c-73/10	. . Grinding the working surfaces	[68-]
49c-73/12	. . Peculiar procedures for sharpening or otherwise treating the working surfaces (special treatment by sand-blast 67b; sharpening files by etching 48d1-1/06)	[68-]
49c-73/14	. Tools or accessories specially adapted for making files or rasps, e.g. chisels, supporting-frames	[68-]
	<b><u>Reaming bored holes</u></b>	<b>[68-]</b>
<b>49c-75/00</b>	<b>Reaming machines or reaming devices (tool holders for machine tools 49m-3/00; handles for hand implements 87d)</b>	<b>[68-]</b>
<b>49c-77/00</b>	<b>Reaming tools</b>	<b>[68-]</b>
49c-77/02	. Reamers with inserted cutting edges	[68-]
49c-77/04	. . with cutting edges adjustable to different diameters along the whole cutting length	[68-]
49c-77/06	. Reamers with means for compensating wear (49c-77/04 takes precedence)	[68-]
49c-77/08	. . by spreading slotted parts of the tool body	[68-]
49c-77/10	. . by expanding a tube-like non-slotted part of the tool body	[68-]
49c-77/12	. Reamers with cutting edges arranged in tapered form	[68-]
49c-77/14	. Reamers for special use, e.g. for working cylinder ridges	[68-]

<b>49c-79/00</b>	<b>Methods, machines or devices not covered elsewhere, for working metal by removal of material</b> (by combined operations 49c-81/00; tool holders for machine tools 49m-3/00; handles for hand implements 87d)	<b>[68-]</b>
49c-79/02	. Machines or devices for scraping (turning machines for bevelling, chamfering, or deburring the ends of bars or tubes 49a-5/16)	[68-]
49c-79/04	. . with rotating cutting-tool, e.g. for smoothing linings of bearings	[68-]
49c-79/06	. . with reciprocating cutting-tool	[68-]
49c-79/08	. . Hand scraping-implements	[68-]
49c-79/10	. . Accessories for holding scraping tools or work to be scraped	[68-]
<b>49c-81/00</b>	<b>Methods, machines, or devices for working metal, covered by more than one main group in this subclass</b> (in combination with other metal-working operations 49l-13/00, 49l-23/00)	<b>[68-]</b>

**49d Framställning av kuggar på hjul eller stänger [-68]**

	Framställning av kuggar med hjälp av verktyg vilkas snittprofil motsvarar den avsedda kuggprofilen	[68]
49d-1/01	Slipning med fasonslipskiva	[68]
49d-1/02	Hyvling eller stickning med fasonstål	[68]
49d-1/03	Fräsning med fasonfräs	[68]
49d-1/04	Framställning av kuggar med hjälp av brotschning	[68]
	Framställning av kuggar under avkänning av kuggformen från en schablon	[68]
49d-2/01	Slipning	[68]
49d-2/02	Hyvling; Stickning	[68]
49d-2/03	Fräsning	[68]
	Åstadkommande av kuggflanken genom avvalsningsmetoden	[68]
49d-3/01	Slipning enligt avvalsningsmetoden	[68]
49d-3/02	Hyvling eller stickning med hjälp av verktyg, vilkas skärande kant motsvarar kuggflanken av kuggarna på en kuggstång eller ett kronhjul	[68]
49d-3/03	Hyvling eller stickning med hjälp av verktyg som motsvarar en del av en kuggstång, hyvling med kamstål	[68]
49d-3/04	Hyvling eller stickning med hjälp av kugghjulslänkande verktyg; Skärhjul	[68]
49d-3/05	Bearbetning av kuggflanker med ett eller flera stål som förs utefter kuggflankens krökningslinje	[68]
49d-3/06	Fräsning enligt avvalsningsmetoden, t.ex. med hjälp av snäckfräs	[68]
49d-4	Framställning av pilkuggar	[68]
	Framställning av kuggar som är krökta i längdriktningen	[68]
49d-5/01	Framställning med hjälp av snäckfräs enligt avvalsningsmetoden	[68]
49d-5/02	Framställning genom hyvling med roterande skärhuvud	[68]
49d-5/03	Framställning med hjälp av svängande enstaka stål, kugghjulslänkande verktyg, skivfräsar eller andra verktyg	[68]
49d-6	Framställning av snäckhjul	[68]
49d-7	Framställning av snäckor	[68]
49d-8	Framställning av hjul med varandra korsande axlar, t.ex. skruvhjul eller hyperboliska hjul	[68]
49d-9	Framställning av hjul av andra slag, t.ex. orunda eller elliptiska hjul; Framställning av cykloidkurvor	[68]
49d-10	Framställning av klockhjul	[68]
49d-11	Speciella framställningsförfaranden eller anordningar	[68]
49d-12	Inkörning eller inslipning av hjul av alla slag; Tappning	[68]
49d-13	Avrundning av kanterna på kugghjul	[68]

	Verktyg för framställning av kuggar	[-68]
49d-14/01	Slipverktyg	[-68]
49d-14/02	Fasonfräsar	[-68]
49d-14/03	Valsfräsar	[-68]
49d-14/04	Hyvelverktyg; Kamstål; Skärhjul; Brotschningsverktyg	[-68]
49d-14/05	Roterande skärhuvuden för hyvling av krökta kuggar	[-68]
	Detaljer till maskiner för framställning av kuggar	[-68]
49d-15/01	Hållare för arbetsstycken; Verktygshållare; Mothåll	[-68]
49d-15/02	Anordningar för avvalsning	[-68]
49d-15/03	Anordningar för skärpning av slipskivor	[-68]
49d-15/04	Delningsanordningar	[-68]
49d-15/05	Utjämning av fel i delningsanordningar	[-68]
49d-15/06	Andra anordningar	[-68]
<b>49d</b>	<b>(IPC: B23F) Making gears and toothed racks</b> (by stamping 7c; by rolling 7f; by forging or pressing 7h; by casting 31b; arrangements for copying or controlling 49m)	<b>[68-]</b>
	<b>Notes</b>	<b>[68-]</b>
	<b>This subclass includes primarily the use of methods and apparatus specially designed to produce accurately the shapes of gear teeth which are essential for proper intermeshing of toothed gearing elements to ensure the required relative motions. It also includes the use of similar methods and apparatus in the production of other articles of toothed or like form, e.g. dog clutches, splined shafts, milling cutters, but the production of such articles using other methods and apparatus is not included.</b>	<b>[68-]</b>
	<b>In this subclass:</b>	
	<b>(1) The term "gear teeth" is to be understood as covering the teeth or lobes of other accurately-intermeshing members having relative movement of a similar kind, such as rotors of rotary pumps and blowers.</b>	
	<b>(2) The term "profile" may include the outline of both faces or only one face of a tooth, or the opposing faces of adjacent teeth.</b>	
	<b>(3) The term "straight" means that a tooth as a whole (ignoring any curvature of the tooth-face alone, e.g. crowning) is straight in the direction of its length, for example as seen in the direction of a radius of a spur wheel. It accordingly includes the teeth of helical gears and of the normal type of bevel gear.</b>	
	<b>(4) "Broach-milling" means milling with a rotary cutter having a number of teeth of progressively increasing depth or width.</b>	<b>[68-]</b>
<b>49d-1/00</b>	<b>Making gear teeth by tools of which the profile matches the profile of the required surface</b> (special adaptations for making curved teeth 49d-9/00)	<b>[68-]</b>
49d-1/02	. by grinding	[68-]
49d-1/04	. by planing or slotting	[68-]
49d-1/06	. by milling	[68-]
49d-1/08	. by broaching; by broach-milling	[68-]
<b>49d-3/00</b>	<b>Making gear teeth involving copying operations controlled by templates having a profile which matches that of the required tooth face or part thereof or a copy thereof to a different scale</b> (copying systems or devices per se 49m-35/00)	<b>[68-]</b>



<b>49d-5/00</b>	<b>Making straight gear teeth involving moving a tool relatively to a workpiece with a rolling-off or an enveloping motion with respect to the gear teeth to be made</b>	<b>[68-]</b>
49d-5/02	. by grinding	[68-]
49d-5/04	. . the tool being a grinding worm	[68-]
49d-5/06	. . the tool being a grinding disc with a plane front surface	[68-]
49d-5/08	. . the tool being a grinding disc having a profile which is the same as the tooth or teeth of a rack	[68-]
49d-5/10	. . the tool being a grinding disc having a profile which is the same as the tooth or teeth of a crown wheel	[68-]
49d-5/12	. by planing or slotting	[68-]
49d-5/14	. . the tool having the same profile as a tooth or teeth of a rack	[68-]
49d-5/16	. . the tool having a shape similar to that of a spur wheel or part thereof	[68-]
49d-5/18	. . the tool having the same profile as a tooth of a crown wheel	[68-]
49d-5/20	. by milling	[68-]
49d-5/22	. . the tool being a hob for making spur gears	[68-]
49d-5/24	. . the tool being a hob for making bevel gears	[68-]
49d-5/26	. . the tool having the same profile as a tooth or teeth of a rack, for making spur gears	[68-]
49d-5/28	. by broaching; by broach-milling	[68-]
<b>49d-7/00</b>	<b>Making herring-bone gear teeth</b>	<b>[68-]</b>
<b>49d-9/00</b>	<b>Making gears having teeth curved in their longitudinal direction</b>	<b>[68-]</b>
49d-9/02	. by grinding	[68-]
49d-9/04	. by planing or slotting with reciprocating cutting tools	[68-]
49d-9/06	. . having a shape similar to a spur wheel of part thereof	[68-]
49d-9/08	. by milling, e.g. with helicoidal hob	[68-]
49d-9/10	. . with a face-mill	[68-]
<b>49d-11/00</b>	<b>Making worm wheels, e.g. by hobbing</b>	<b>[68-]</b>
<b>49d-13/00</b>	<b>Making worms by methods essentially requiring the use of machines of the gear-cutting type (making screw-thread 49e)</b>	<b>[68-]</b>
49d-13/02	. Making worms of cylindrical shape	[68-]
49d-13/04	. . by grinding	[68-]
49d-13/06	. Making worms of globoidal shape	[68-]
49d-13/08	. . by grinding	[68-]
<b>49d-15/00</b>	<b>Methods or machines for making gear wheels of special kinds not covered by 49d-7/00 to 49d-13/00</b>	<b>[68-]</b>
49d-15/02	. Making gear teeth on wheels of varying radius of operation, e.g. on elliptical wheels	[68-]
49d-15/04	. Making fine-pitch gear teeth on clock wheels or the like by special machining	[68-]
49d-15/06	. Making gear teeth on the front surface of wheels, e.g. for clutches or couplings with toothed faces	[68-]
49d-15/08	. Making intermeshing rotors, e.g. of pumps	[68-]
<b>49d-17/00</b>	<b>Special methods or machines for making gear teeth, not covered by the preceding groups</b>	<b>[68-]</b>
<b>49d-19/00</b>	<b>Finishing gear teeth by other tools than those used for manufacturing gear teeth</b>	<b>[68-]</b>
49d-19/02	. Lapping gear teeth	[68-]
49d-19/04	. . Lapping spur gears by making use of a correspondingly shaped counterpart	[68-]
49d-19/06	. Shaving the faces of gear teeth	[68-]
49d-19/08	. . by means of a tools moving depthwise relatively to the teeth	[68-]
49d-19/10	. Chamfering the end edges of gear teeth	[68-]
49d-19/12	. . by grinding	[68-]

<b>49d-21/00</b>	<b>Tools specially adapted for use in machines for manufacturing gear teeth</b>	<b>[68-]</b>
49d-21/02	. Grinding discs; Grinding worms (truing grinding tools, grinding tools in general 67c)	[68-]
49d-21/04	. Planing or slotting tools	[68-]
49d-21/06	. . having a profile which matches a gear tooth profile	[68-]
49d-21/08	. . having the same profile as a tooth or teeth of a rack	[68-]
49d-21/10	. . Gear-shaper cutters having a shape similar to a spur wheel or part thereof	[68-]
49d-21/12	. Milling tools	[68-]
49d-21/14	. . Profile cutters of disc type	[68-]
49d-21/16	. . Hobs	[68-]
49d-21/18	. . . Taper hobs, e.g. for bevel gears	[68-]
49d-21/20	. . Fly cutters	[68-]
49d-21/22	. . Face-mills for longitudinally-curved gear teeth	[68-]
49d-21/24	. Broach-milling tools	[68-]
49d-21/26	. Broaching tools	[68-]
49d-21/28	. Shaving cutters	[68-]
<b>49d-23/00</b>	<b>Accessories or equipment combined with or arranged in, or specially designed to form part of, gear-cutting machines</b> (tool-guiding mechanisms, see the relevant groups for making gear teeth; accessories or equipment not restricted to gear-cutting machines 49m)	<b>[68-]</b>
49d-23/02	. Loading arrangements; Chucking arrangements	[68-]
49d-23/04	. . Loading arrangements	[68-]
49d-23/06	. . Chucking arrangements	[68-]
49d-23/08	. Index mechanisms	[68-]
49d-23/10	. Arrangements for compensating irregularities in drives or indexing mechanisms	[68-]
49d-23/12	. Other devices, e.g. tool holders; Checking devices for controlling workpieces in machines for manufacturing gear teeth	[68-]

<b>49e</b>	<b>Gängskärning</b> (i svarvar med ledarskriv 49a; fräsning av spiralborrar 49b-8; gängslipning 67a-3; gänggrullning 7f-9); <b>Bearbetning av skruvhuvuden eller ändtyor på muttrar</b>	<b>[-68]</b>
49e-1	Enspindliga gängmaskiner, allmänt	[-68]
49e-2	Flerspindliga gängmaskiner, allmänt	[-68]
49e-3	Gängmaskiner med kugghjulsliknande roterande skärverktyg, t.ex. för träskruvar	[-68]
49e-4	Enspindliga innergängmaskiner	[-68]
49e-5	Flerspindliga innergängmaskiner	[-68]
49e-6	Gängfräsmaskiner; Gängfräsar (49b)	[-68]
49e-7	Gängning av rör (49a-3/05; 80a-50/01; 80a-50/05)	[-68]
49e-8	Gängkloppor	[-68]
49e-9	Gängsnitt	[-68]
49e-10	Gängtappar; Gänghuvuden för innergängning; Svängjärn	[-68]
49e-11	Gänghuvuden för yttergängning	[-68]
49e-12	Maskiner för bearbetning av skruvhuvuden eller ändtyor på muttrar, t.ex. maskiner för spårupptagning i skruvhuvuden	[-68]
49e-13	Anordningar för tillförsel av arbetsstycken i samband med gängning eller bearbetning av skruvhuvuden (49c-30/01 – 49c-30/03)	[-68]
49e-14	Speciella förfaranden, anordningar eller verktyg för gängning; Maskiner för pådragning av muttrar	[-68]

**49e (IPC: B23G) Thread cutting; Working of screws, bolt heads, or nuts, in conjunction therewith** (thread-forming by corrugating tubes 7c-15/04; by rolling 7f-3/02, by forging, pressing, or hammering 7h-1/56; making helical grooves by turning 49a5/48, by milling 49b-3/32; by grinding 67a-3; arrangements for copying or controlling 49m) **[68-]**

**Note:** **[68-]**  
**The term "thread cutting" is to be understood as including the use of tools similar both in form and in manner of use to thread-cutting tools, but without removing any material.** **[68-]**

**49e-1/00 Thread cutting; Automatic machines specially designed therefor** **[68-]**

- 49e-1/02 . on an external or internal cylindrical or conical surface, e.g. on recesses (49e-1/16, 49e-1/22, 49e-1/32, 49e-1/36 take precedence) **[68-]**
- 49e-1/04 . . Machines with one working-spindle **[68-]**
- 49e-1/06 . . . specially adapted for making conical screws, e.g. wood-screws **[68-]**
- 49e-1/08 . . Machines with a plurality of working-spindles **[68-]**
- 49e-1/10 . . . specially adapted for making conical screws, e.g. wood-screws **[68-]**
- 49e-1/12 . . Machines with a toothed cutter in the shape of a spur gear or the like which is rotated to generate the thread profile as the work rotates **[68-]**
- 49e-1/14 . . . specially adapted for making conical screws, e.g. wood-screws **[68-]**
- 49e-1/16 . in holes of workpieces by taps (49e-1/26, 49e-1/32, 49e-1/36 take precedence) **[68-]**
- 49e-1/18 . . Machines with one working-spindle **[68-]**
- 49e-1/20 . . Machines with a plurality of working-spindles **[68-]**
- 49e-1/22 . Machines specially designed for operating on pipes or tubes **[68-]**
- 49e-1/24 . . portable **[68-]**
- 49e-1/26 . Manually-operated thread-cutting devices (features of the threading tool per se 49e-5/00) **[68-]**
- 49e-1/28 . . with means for adjusting the threading tool **[68-]**
- 49e-1/30 . . without means for adjusting the threading tool, e.g. with die-stocks (tap wrenches 87a-22) **[68-]**
- 49e-1/32 . by milling **[68-]**
- 49e-1/34 . . with a cutting bit moving in a closed path arranged eccentrically with respect to the axis of the rotating workpiece **[68-]**
- 49e-1/36 . by grinding **[68-]**
- 49e-1/38 . . with grinding discs guided along the workpiece in accordance with the pitch of the required thread **[68-]**
- 49e-1/40 . . with grinding discs guided radially to the workpiece **[68-]**
- 49e-1/42 . Centreless grinding **[68-]**
- 49e-1/44 . Equipment or accessories specially designed for machines or devices for thread cutting **[68-]**
- 49e-1/46 . . for holding the threading tools **[68-]**
- 49e-1/48 . . for guiding the threading tools **[68-]**
- 49e-1/50 . . for cutting thread by successive operations **[68-]**
- 49e-1/52 . . for operating on pipes or tubes **[68-]**

**49e-3/00 Arrangements or accessories for enabling machine tools not specially designed only for thread cutting to be used for this purpose, e.g. arrangements for reversing the working-spindle** **[68-]**

- 49e-3/02 . for withdrawing or resetting the threading tool **[68-]**
- 49e-3/04 . . for repeatedly setting the threading tool in a predetermined working position **[68-]**
- 49e-3/06 . for compensating inaccuracies in the pitch of the lead-screw **[68-]**
- 49e-3/08 . for advancing or controlling the threading tool or the work by templates, cams, or the like **[68-]**
- 49e-3/10 . . for cutting thread of variable pitch **[68-]**
- 49e-3/12 . . for using several adjacently-arranged threading tools, e.g. using several chasers **[68-]**
- 49e-3/14 . . for cutting thread of conical shape **[68-]**

<b>49e-5/00</b>	<b>Thread-cutting tools; Die-heads</b>	<b>[68-]</b>
49e-5/02	. without means for adjustment	[68-]
49e-5/04	. . Dies	[68-]
49e-5/06	. . Taps (chucks therefor 49a-31/00)	[68-]
49e-5/08	. with means for adjustment	[68-]
49e-5/10	. . Die-heads	[68-]
49e-5/12	. . . self-releasing	[68-]
49e-5/14	. . Tapping-heads	[68-]
49e-5/16	. . . self-releasing	[68-]
49e-5/18	. Milling cutters	[68-]
49e-5/20	. combined with other tools, e.g. drills	[68-]
<b>49e-7/00</b>	<b>Forming thread by means of tools similar both in form and in manner of use to thread-cutting tools, but without removing any material</b> (features of machines or devices not specially adapted to the particular mode of forming the thread 49e-1/00)	<b>[68-]</b>
49e-7/02	. Tools for this purpose	[68-]
<b>49e-9/00</b>	<b>Working screws, bolt heads or nuts in conjunction with thread cutting, e.g. slotting screw heads or shanks, removing burrs from screw heads or shanks; Finishing, e.g. polishing, any screw thread</b>	<b>[68-]</b>
<b>49e-11/00</b>	<b>Feeding or discharging mechanisms combined with, or arranged in, or specially adapted for use in connection with, thread-cutting machines</b> (for machine tools in general 49m)	<b>[68-]</b>
<b>49f</b>	<b>Tillverkning av filar eller raspar</b> (38e-5; 49c-25/01 – 49c-26/03)	<b>[-68]</b>
49f-1	Huggning av filar eller raspar	[-68]
49f-2	Framställning av filar genom fräsning eller slipning	[-68]
49f-3	Framställning av filar genom hyvling, stickning, svarvning eller brotschning	[-68]
49f-4	Andra framställningsförfaranden	[-68]
49f-5	Förberedande bearbetning av filämnen, t.ex. avhyvling av tänderna, fräsning, slipning eller dragning	[-68]
49f-6	Efterslipning av filar	[-68]
49f-7	Verktyg för framställning av filar eller raspar	[-68]
<b>49g</b>	<b>Hammare</b> (handhammare 87b); <b>Smidespressar; Nitmaskiner</b>	<b>[-68]</b>
	<b>Hammare</b>	<b>[-68]</b>
49g-1	Ånghammare; Gashammare	[-68]
49g-2	Lufthammare (tryckluftdrivna 87b-2/01 – 87b-2/20)	[-68]
49g-3	Elektriskt drivna hammare (elektriska utrustningen 21c, 21d; handhammare 87b-3/01 – 87b-3/05)	[-68]
49g-4	Mekaniska hammare, t.ex. fjäderhammare (mekaniskt drivna handhammare 87b-3/01 – 87b-3/05)	[-68]
49g-5	Roterande slagverktyg (handhammare 87b-3/01 – 87b-3/05; pannstensknackare 13e-4/01 – 13e-4/02)	[-68]
49g-6	Stånghejare, t.ex. drivna med ånga eller tryckluft	[-68]
49g-7	Remhejare	[-68]
49g-8	Skafthammare; Stjärthammare	[-68]
49g-9	Detaljer vid hammare, t.ex. städ eller fallvikter	[-68]
	<b>Smidespressar</b> (smidesmaskiner, stukmaskiner 49h-11)	<b>[-68]</b>
49g-10/01	Rent hydrauliska pressar (hydrauliska pressar i allmänhet 58a)	[-68]
49g-10/02	Elektrohydrauliska pressar	[-68]
49g-11	Ånghydrauliska pressar; Pressar med andra anordningar för trycköverföring	[-68]

49g-12	Mekaniska pressar, t.ex. hävstångspressar, friktionspressar, spindelpressar, vevpressar, excenterpressar eller knähävtvagspressar (smidesmaskiner 49h-3/01 – 49h-3/03; pressar i allmänhet 58b; dragpressar 7c)	[-68]
	<b>Nitmaskiner</b>	<b>[-68]</b>
49g-13	Hydrauliska nitmaskiner; Hydrauliskt pneumatiska nitmaskiner	[-68]
49g-14	Pneumatiska nitmaskiner (trycklufthandhammare 87b)	[-68]
49g-15/01	Mekaniska nitmaskiner	[-68]
49g-15/02	Tångliknande nitanordningar (plombtänger 87b)	[-68]
49g-16/01	Anordningar för nitning, t.ex. mothållare	[-68]
49g-16/02	Anordningar för nitning av hålkroppar	[-68]
49g-16/03	Anordningar för tillförel av nitar	[-68]
49g-16/04	Anordningar för centrering, diktning eller avlägsnande av nitar	[-68]
49g-16/05	Hjälpanordningar för nitning	[-68]
49g-16/06	Förfaranden för nitning; Utformning av nitar	[-68]
49g-16/07	Detaljer vid nitmaskiner	[-68]
49g-17	Elektriskt drivna nitmaskiner (21h)	[-68]
<b>49h</b>	<b>Smidning; Pressning; Bockning; Riktning; Lödning; Svetsning; Gasskärning</b> (härdningsugnar, uppvärmningsugnar 18c, 40d-2/10 – 40d-2/40; elektrisk värmealstring vid metallbearbetning med hjälp av elektrisk uppvärmning 21h-29/01 – 21h-32/12)	<b>[-68]</b>
	<b>Smidning; Hålslagning i metallblock; Pressning</b>	<b>[-68]</b>
49h-1	Stukning vid smidning (7d-5)	[-68]
49h-2	Hålslagning i metallblock (7b-10/10)	[-68]
	Smidesmaskiner	[-68]
49h-3/01	med i tvärriktningen mot pressriktningen rörliga klämbackar	[-68]
49h-3/02	med roterande slagverktyg; Sträckmaskiner	[-68]
49h-3/03	Andra smidesmaskiner	[-68]
	Hjälpverktyg	[-68]
49h-4	Städ	[-68]
49h-5	Vändanordningar	[-68]
49h-6	Andra hjälpverktyg, t.ex. sänken	[-68]
	Uppvärmningsanordningar	[-68]
49h-7	Smidesformar	[-68]
49h-8	Smidesugnar	[-68]
49h-9	Smidesässjor	[-68]
49h-10	Uppvärmningsanordningar för hjulringar e.d.	[-68]
49h-11	Pressning av metall i allmänhet (smidespressar 49g-10/01 – 49g-12; framställning av smidesgods eller pressgods av metall 49i)	[-68]
	<b>Böjning eller riktning</b> (av plåt 7b-17; 7c-4/02 – 7c-4/06; av tråd 7d-1; 7d-2; av räls 19a-28/02, 19a-31/08)	<b>[-68]</b>
49h-12	Böjning av metallstänger, t.ex. profiljärn eller skenor, med hjälp av formstycken	[-68]
49h-13	Maskiner för böjning av armeringsjärn	[-68]
	Böjning med hjälp av två stöd och bockningsklots	[-68]
49h-14/01	av metallstänger	[-68]
49h-14/02	av bladfjädrar	[-68]
49h-15	Böjning av metallstänger med hjälp av roterbara valsar	[-68]
49h-16	Vridning av metallstänger; Vridning av vevaxlar med flera vevslängar	[-68]

	Böjning av metallrör med hjälp av formstycken	[-68]
49h-17/01	utan dorn	[-68]
49h-17/02	med dorn	[-68]
49h-18	Böjning av metallrör med hjälp av två stöd och bockningsklots	[-68]
49h-19	Tänger för böjning (för isoleringsrör 21c-18/02)	[-68]
49h-20	Skruvformig böjning av metallstänger, metallrör eller rörspiraler	[-68]
	Riktning av metallstänger eller metallrör	[-68]
49h-21	med hjälp av två stöd och bockningsklots	[-68]
49h-22	Riktning med hjälp av roterbara valsar eller genom böjning fram och åter med hjälp av roterbara delar	[-68]
49h-23	Slagmaskiner för packning av sandfyllningen före böjning av metallrör	[-68]
49h-24	Speciella förfaranden eller anordningar för böjning eller riktning; Anordningar för kalibrering av rörkrökar	[-68]
	<b>Lödning; Svetsning</b> (elektrisk värmealstring vid elektrisk lödning eller svetsning 21h-29/01 – 21h-32/12); <b>Gasskärning</b> (rälskarvar, utom speciella sätt att löda eller svetsa, 19a-26, 19a-11/44)	<b>[-68]</b>
	Lödning av tungmetaller	[-68]
49h-25	Förfaranden	[-68]
49h-26/01	Lod kännetecknade av materialsammansättning	[-68]
49h-26/02	Lod kännetecknade av form eller yttre beskaffenhet (framställning av lodtråd genom dragning eller annan sträckning 7b-14/60)	[-68]
49h-27	Lödmedel (49h-31/13, 49h-36/10)	[-68]
49h-28/01	Lödkolvar	[-68]
49h-28/02	Anordningar eller ugnar för uppvärmning av lödkolvar (brännare för upphettning av lödkolvar 4g-44/01 – 4g-44/50)	[-68]
49h-28/03	Lödkolvar försedda med uppvärmningsanordningar	[-68]
49h-28/04	Lödkolvar med lodbehållare	[-68]
49h-29	Lödlampor; Lödbrännare (brännare för lödlampor 4g-29)	[-68]
49h-30	Hjälpverktyg för lödning som inte omfattas av 49h-28/01 – 49h-29	[-68]
	Lödning eller svetsning av lättmetaller	[-68]
49h-31/01	Lod eller tillsatsmaterial för svetsning kännetecknade av materialsammansättning	[-68]
49h-31/02	Lod eller tillsatsmaterial för svetsning kännetecknade av form eller yttre beskaffenhet	[-68]
49h-31/10	Förfaranden för lödning eller svetsning	[-68]
49h-31/13	Medel för lödning eller svetsning	[-68]
	Lödning av burkar, t.ex. konserverburkar	[-68]
49h-32/01	Lödning av längsfogen på burkmantlar	[-68]
49h-32/02	Lödning av bottenfogar eller lockfogar	[-68]
49h-33	Lödugnar (lödapparater för tandläkare 30b-17)	[-68]
	Svetsning av tungmetaller	[-68]
49h-34/01	Smältsvetsning (elektrisk värmealstring vid elektrisk svetsning 21h-29/01 – 21h-32/12; brännare 4g-44/01 – 4g-44/50)	[-68]
49h-34/02	Påsvetsning, t.ex. för reparationsändamål	[-68]
49h-34/03	Framställning av sparverktyg genom lödning eller svetsning	[-68]
49h-35/01	Termitsvetsning	[-68]
49h-35/02	Andra förfaranden eller anordningar för svetsning	[-68]
49h-36/01	Tillsatsmaterial kännetecknade av materialsammansättning	[-68]
49h-36/02	Tillsatsmaterial, t.ex. svetsstavar eller svetsstråd, kännetecknade av form eller yttre beskaffenhet (svetselektroder 21h-30/16)	[-68]

49h-36/10	Svetsmedel	[-68-]
49h-37	Gasskärning (brännare 4g-44/01 – 4g-44/50)	[-68-]

**49h (IPC: B23K) Soldering; Welding; Cutting by applying heat locally, e.g. flame cutting (plating 49l-3/00; arrangements for copying or controlling 49m) [68-]**

**Note: [68-]**  
**Electric circuits specially adapted for these purposes are dealt with in this subclass.**  
**Soldering, i.e. uniting metals using solder and applying heat without melting either of the parts to be united (essentially requiring the use of welding machines or welding equipment, in the relevant groups for the welding machines or welding equipment) [68-]**

<b>49h-1/00</b>	<b>Soldering metal (49h-3/00 takes precedence; characterised only by the use of special materials or media 49h-35/00)</b>	<b>[68-]</b>
49h-1/02	. Soft soldering	[68-]
49h-1/04	. Brazing or high-temperature soldering	[68-]
49h-1/06	. making use of vibrations, e.g. supersonic vibrations	[68-]
49h-1/08	. Soldering by means of dipping in molten solder	[68-]
49h-1/10	. Arc-stud soldering	[68-]
49h-1/12	. specially adapted for particular articles of work	[68-]
49h-1/14	. . for soldering seams (making tubes involving operations other than soldering 7b)	[68-]
49h-1/16	. . . longitudinal seams, e.g. of shells	[68-]
49h-1/18	. . . circumferential seams, e.g. of shells	[68-]
49h-1/20	. Preliminary treatment of work or areas to be soldered, e.g. in respect of a galvanic coating (preparation of surfaces in particular ways in the relevant classes for the treatments or the materials treated, e.g. 48b, 80b)	[68-]

<b>49h-3/00</b>	<b>Tools, devices, or special appurtenances for soldering, not adapted for special methods (materials used for soldering 49h-35/00)</b>	<b>[68-]</b>
49h-3/02	. Soldering irons; Bits	[68-]
49h-3/04	. Heating appliances (soldering lamps or blowpipes 4g; electric heating elements 21h)	[68-]
49h-3/06	. Solder feeding devices; Solder melting pans	[68-]

**Flame welding or cutting [68-]**

<b>49h-5/00</b>	<b>Gas flame welding</b>	<b>[68-]</b>
49h-5/02	. Seam welding (making tubes involving operations other than welding 7b)	[68-]
49h-5/04	. . using additional profiled strips or like of welding metal along seam edges	[68-]
49h-5/06	. . Welding longitudinal seams	[68-]
49h-5/08	. . Welding circumferential seams	[68-]
49h-5/10	. Welding workpieces essentially comprising layers of different metals, e.g. plated workpieces	[68-]
49h-5/12	. taking account of the properties of the material to be welded	[68-]
49h-5/14	. . of non-ferrous metals (49h-5/16 takes precedence)	[68-]
49h-5/16	. . of different metals	[68-]
49h-5/18	. for purposes other than joining parts, e.g. built-up welding	[68-]
49h-5/20	. making use of vibrations, e.g. supersonic vibrations	[68-]
49h-5/22	. Auxiliary equipment, e.g. backings, guides	[68-]
49h-5/24	. . Arrangements for supporting torches (not restricted to flame welding 49h-37/02)	[68-]

<b>49h-7/00</b>	<b>Cutting, scarfing, or desurfacing by applying flames</b>	<b>[68-]</b>
49h-7/02	. Machines, apparatus, or equipment for cutting plane workpieces, e.g. plates	[68-]
49h-7/04	. Machines, apparatus, or equipment specially adapted for cutting curved workpieces, e.g. tubes	[68-]
49h-7/06	. Machines, apparatus, or equipment specially designed for scarfing or desurfacing	[68-]

49h-7/08	. by applying additional compounds or means favouring the cutting, scarfing, or desurfacing procedure	[68-]
49h-7/10	. Auxiliary devices, e.g. for guiding or supporting the torch (guiding means applicable to other metal-working machines 49m)	[68-]
<b>Other welding or cutting; Working metal by laser beam</b>		<b>[68-]</b>
<b>49h-9/00</b>	<b>Arc welding or cutting</b> (electro-slag welding 49h-25/00; welding transformers 21d2; welding generators 21d1, 21d2, 21d3)	<b>[68-]</b>
49h-9/02	. Seam welding; Backing means; Inserts	[68-]
49h-9/04	. Welding for other purposes than joining, e.g. built-up welding	[68-]
49h-9/06	. Arrangements or circuits for generating ignition voltage and stabilising the arc	[68-]
49h-9/08	. Arrangements or circuits for magnetic control of the arc	[68-]
49h-9/10	. Other electric circuits therefor; Protective circuits; Remote controls	[68-]
49h-9/12	. Automatic feeding of electrodes or work for spot or seam welding or cutting	[68-]
49h-9/14	. making use of insulated electrodes	[68-]
49h-9/16	. making use of shieldings gas	[68-]
49h-9/18	. Submerged-arc welding	[68-]
49h-9/20	. Stud welding	[68-]
49h-9/22	. Percussion welding	[68-]
49h-9/24	. Features related to electrodes (form or composition of electrodes 49h-35/00)	[68-]
49h-9/26	. . Accessories for electrodes, e.g. ignition tips	[68-]
49h-9/28	. . Supporting devices for electrodes (not restricted to arc welding or cutting 49h-37/02)	[68-]
49h-9/30	. . . Vibrating holders for electrodes	[68-]
49h-9/32	. Accessories	[68-]
<b>49h-11/00</b>	<b>Resistance welding; Severing by resistance heating</b>	<b>[68-]</b>
49h-11/02	. Pressure butt welding	[68-]
49h-11/04	. Flash butt welding	[68-]
49h-11/06	. using roller electrodes	[68-]
49h-11/08	. Seam welding not restricted to one of the preceding subgroups	[68-]
49h-11/10	. Spot welding; Stitch welding	[68-]
49h-11/12	. . making use of vibrations	[68-]
49h-11/14	. Projection welding	[68-]
49h-11/16	. taking account of the properties of the material to be welded	[68-]
49h-11/18	. . of non-ferrous metals (49h-11/20 takes precedence)	[68-]
49h-11/20	. . of different metals	[68-]
49h-11/22	. Severing by resistance heating	[68-]
49h-11/24	. Electric supply or control circuits therefor	[68-]
49h-11/26	. . Storage discharge welding	[68-]
49h-11/28	. Portable welding equipment	[68-]
49h-11/30	. Features relating to electrodes (form or composition of electrodes 49h-35/00)	[68-]
<b>49h-13/00</b>	<b>Welding by induction heating</b>	<b>[68-]</b>
49h-13/02	. Seam welding	[68-]
<b>49h-15/00</b>	<b>Electron-beam welding or cutting</b>	<b>[68-]</b>
<b>49h-17/00</b>	<b>Using the energy of nuclear particles in welding or related techniques</b>	<b>[68-]</b>
<b>49h-19/00</b>	<b>Welding by applying impact or other pressure after or during heating of the workpieces</b> (forging, hammering, pressing 7g, 7h)	<b>[68-]</b>
<b>49h-21/00</b>	<b>Cold pressure welding</b> (forging, hammering, pressing 7g, 7h)	<b>[68-]</b>
<b>49h-23/00</b>	<b>Alumino-thermic welding</b>	<b>[68-]</b>
<b>49h-25/00</b>	<b>Slag welding, i.e. using a heated layer or mass of powder, slag, or the like in contact with the material to be joined</b> (49h-23/00 takes precedence; submerged-arc welding 49h-9/18)	<b>[68-]</b>



<b>49h-27/00</b>	<b>Welding or cutting otherwise than mentioned before, e.g. electrolytic welding by laser beam</b> (working of metal by electro-erosion 49I-1/00, e.g. electrolytic cutting 49I-1/04)	<b>[68-]</b>
<b>49h-29/00</b>	<b>Welding not restricted to procedures covered by one of the preceding main groups</b>	<b>[68-]</b>
<b>49h-31/00</b>	<b>Processes relevant to this subclass, specially adapted for particular articles or purposes, but not covered by only one of the preceding main groups</b> (making tubes or profiled bars involving operations other than soldering or welding 7b-37/04, 7b-37/08)	<b>[68-]</b>
49h-31/02	. relating to soldering or welding	[68-]
49h-31/04	. . Connecting cutting edges or the like to tools	[68-]
49h-31/06	. . Making tubes with soldering or welding	[68-]
49h-31/08	. . Making profiled bars with soldered or welded seams	[68-]
49h-31/09	. . Schweißen von Schienen, Gittern usw., nur elektrisch	[69-]
49h-31/10	. relating to cutting or desurfacing	[68-]
<b>49h-33/00</b>	<b>Specially-profiled edge portions of workpieces for making soldering or welding connections; Filling the seams formed thereby</b>	<b>[68-]</b>
<b>49h-35/00</b>	<b>Rods, electrodes, materials, or media, for use in soldering, welding, or cutting</b>	<b>[68-]</b>
49h-35/02	. characterised by mechanical features, e.g. shape	[68-]
49h-35/04	. . specially designed for use as electrodes (ignition tips for arc welding or cutting 49h-9/26)	[68-]
49h-35/06	. . . of non-circular cross-section; with special arrangement, e.g. internal	[68-]
49h-35/08	. . . . multi-cored; multiple	[68-]
49h-35/10	. . . . with more than one layer of coating or sheathing material	[68-]
49h-35/12	. . not specially designed for use as electrodes	[68-]
49h-35/14	. . . for soldering	[68-]
49h-35/16	. . . of non-circular cross-section; with special arrangement, e.g. internal (49h-35/14 takes precedence)	[68-]
49h-35/18	. . . . multi-cored; multiple	[68-]
49h-35/20	. . . . with more than one layer of coating or sheathing material	[68-]
49h-35/22	. characterised by the composition or nature of the material	[68-]
49h-35/24	. . Selection of soldering or welding materials proper (49h-35/34 takes precedence)	[68-]
49h-35/26	. . . with the principal constituent melting at less than 400 °C	[68-]
49h-35/28	. . . with the principal constituent melting at less than 950 °C	[68-]
49h-35/30	. . . with the principal constituent melting at less than 1550 °C	[68-]
49h-35/32	. . . with the principal constituent melting at more than 1550 °C	[68-]
49h-35/34	. . comprising compounds which yield metals when heated	[68-]
49h-35/36	. . Selection of non-metallic compositions, e.g. coatings, fluxes (49h-35/34 takes precedence)	[68-]
49h-35/38	. . Selection of media, e.g. special atmospheres for surrounding the working area	[68-]
49h-35/40	. Making wire or rods for soldering or welding (processes involving a single technical art, see the relevant classes, e.g. 75c, 7b)	[68-]
<b>49h-37/00</b>	<b>Auxiliary devices not specially adapted to a procedure covered by only one of the preceding main groups</b> (applicable to metal-working machines other than soldering, welding, and flame-cutting machines 49m; eye-shields for welders worn on the operators's body or carried in the hand 30d-27/01 – 30d-27/02; other protective shields 47a4-1/06)	<b>[68-]</b>
49h-37/02	. Carriages for supporting the welding or cutting element	[68-]
49h-37/04	. for holding or positioning work	[68-]
49h-37/06	. for positioning the molten material, e.g. confining it to a desired area	[68-]
<b>49i</b>	<b>Framställning av smidesgods eller pressgods, t.ex. hästskor, bultar, skruvar eller hjul</b>	<b>[-68]</b>
49i-1	Framställning av hästskor	[-68]

49i-2	Framställning av hästskohakar eller hästskogrepp	[-68]
49i-3	Framställning av klackjärn	[-68]
49i-4	Framställning av bultar eller skruvbultar	[-68]
49i-5	Framställning av stagbultar	[-68]
49i-6	Framställning av nitar (7e-20)	[-68]
49i-7	Framställning av skruvmuttrar	[-68]
49i-8	Framställning av hjul	[-68]
49i-10	Framställning av borr, t.ex. spiralborr (49a-59 – 49a-60/04; 49b-8)	[-68]
49i-11	Framställning eller skärpning av stenborr	[-68]
49i-12	Framställning av järnvägsmaterial (20e-25)	[-68]
49i-13	Återställning av slitna eller skadade överbyggnadsdetaljer e.d. för järnvägar	[-68]
49i-14	Framställning av skärverktyg, t.ex. knivar eller saxar	[-68]
49i-15	Framställning av kulor	[-68]
49i-16	Framställning av annat smidesgods eller pressgods	[-68]
<b>49k</b>	<b>Framställning av kedjor (cykelkedjor 63k-29; kedjor som maskinelement 47d-13 – 47d-15; kedjor för rengöring av flaskor e.d. 64b-3; transportkedjor 81e; prydnadskedjor 44a-40; säkerhetskedjor 68b-8; bindslen för djur 45h-2, 45h-1/06; framställning av kätting genom gjutning 31c-22)</b>	<b>[-68]</b>
49k-1	Framställning av kedjor genom bockning av rundjärn eller plattjärn och efterföljande svetsning	[-68]
49k-2	Framställning av kedjor genom enbart bockning av tråd utan efterföljande svetsning	[-68]
49k-3	Framställning av kedjor genom upplindning av tråd, rundjärn eller plattjärn och svetsning	[-68]
49k-4	Framställning av kedjor genom smidning eller valsning ur hela ämnesstänger utan svetsning	[-68]
49k-5	Elektrisk svetsning av kedjor	[-68]
49k-6	Formgivning eller avskärning av kedjelänkar	[-68]
49k-7	Framställning av drivkedjor	[-68]
<b>49l</b>	<b>Metallbearbetning som inte omfattas av 49a – 49k, t.ex. framställning av bladguld eller slaglod (av bronspulver 50c; av bronsfärger 22f), plätering, pulvrisering, infattning av verktygsdiamanter eller framställning av turbinskovlar</b>	<b>[-68]</b>
49l-2	Framställning av bladmetall, t.ex. bladguld (22g-10/04)	[-68]
49l-3	Framställning av metallpulver (genom krossning 50c-17/01, 50c-17/40); Framställning av metallkolor, metallkorn eller slaglod	[-68]
49l-5	Plätering av tråd, rör (ommantling av tråd eller rör 7b-6/01, 7b-21), plattor e.d.; Framställning av metall med flera lager (40b; 48b-11 – 48b-12; 48d)	[-68]
49l-6	Infattning av verktygsdiamanter (32a-33, 32a-33/10; infattning av dragstenar 7b-4/10)	[-68]
49l-7	Framställning av turbinskovlar (7f; 14c; 31c)	[-68]
49l-8	Framställning av parkettstålspån e.d.	[-68]
49l-9	Framställning av kolvringar	[-68]
49l-10	Framställning av kolvar	[-68]
49l-11	Framställning av spröjsförbindningar	[-68]
49l-12	Andra förfaranden eller anordningar för metallbearbetning, t.ex. stationära maskiner eller anordningar för isärtagning eller sammansättning av hjul, bussningar eller maskindelar, eller för tillverkning av ledförband (handverktyg 87a-22, 63d-5/02)	[-68]

**49I (IPC: B23P) Other working of metal; Combined operations; Universal machine tools (arrangements for copying or controlling 49m) [68-]**

**Notes: [68-]**

**Attention is drawn to the notes immediately following the title of class 49. [68-]**

**(1) In interpreting the phrase "combined operations", the assembly of parts is regarded as an operation if it is not an essential feature of the next metal-working operation. [68-]**

**(2) The term "Working of metal" and equivalent terms are to be understood as covering non-mechanical treatment of metal so far as it is not provided for in a single other class such as 18c, 40b, 40d, 48. Thus, combinations of such treatment with other metal-working may be classified in this subclass. [68-]**

**(3) In so far as non-mechanical treatments other than those specifically mentioned in this subclass are concerned (see (2) above), non-metallic materials are excluded. [68-]**

**49I-1/00 Working of metal by electro-erosion, i.e. removing particles from metal objects by direct action of high concentrations of electric current applied by devices taking the place of tools; Other metal-working using the same technique (tools for electrolytic grinding 67c; electrolytic surface treatment in general 48a; using low concentrations of electric current, i.e. electrolytic etching or polishing 48a-3/00) [68-]**

49I-1/02 . Apparatus; Devices; Electric circuits [68-]

49I-1/04 . . for performing electro-erosion within an electrolytic medium [68-]

49I-1/06 . . for arc discharge [68-]

49I-1/08 . . for spark discharge [68-]

49I-1/10 . . for combined erosion procedures; for simultaneous erosion and mechanical working of metal (mechanical grinding or polishing 67) [68-]

49I-1/12 . Electrodes; Moving or positioning electrodes relatively to work [68-]

49I-1/14 . . Maintaining the desired spacing between electrodes and work [68-]

49I-1/16 . Applications of particular working media, e.g. dielectrics, electrolytes [68-]

49I-1/18 . for built-up working, e.g. hard facing [68-]

49I-1/20 . for producing effects on surfaces, e.g. smoothing or roughening [68-]

49I-1/30 . Working by means of plasma [68-]

49I-1/32 . Working by means of laser beams [68-]

**49I-3/00 Plating metal; Joining metal workpieces by the same procedures (plating by extrusion 7b; procedures or apparatus covered by a single other subclass, and not restricted to plating, see the relevant subclass, e.g. 7c-39/00; by sintering metallic powder 31b3; by adhesives 47a1-11/00) [68-]**

49I-3/02 . by application of pressure only, or pressure and heat; Preparation of workpieces therefor [68-]

49I-3/04 . . by means of a press [68-]

49I-3/06 . . by passing through a rolling mill [68-]

49I-3/08 . . by cold pressure welding [68-]

49I-3/09 . . of blast pressure [68-]

49I-3/10 . involving melting the metal of one layer [68-]

49I-3/12 . Preventing air access during plating; Using protective gases or vacuum during plating (formed by means of an interposed layer of material 49I-3/14) [68-]

49I-3/14 . by interposing a special layer, e.g. for absorbing or producing gas, favouring the formation of the connection of the parts [68-]

49I-3/16 . Zonal plating by interposing weld-preventing substances between zones not to be welded [68-]

49I-3/18 . . for making hollow objects of interjoined sheets or strips to be inflated or otherwise expanded (processes involving the inflation 7c); Pretreatments therefor [68-]

49I-3/20	. of laminations of different materials, e.g. bimetallic strip, not covered by one of the preceding subgroups	[68-]
49I-3/22	. Joining to specific portions of workpieces parts of another quality	[68-]
49I-3/24	. . Attaching reinforcements to workpieces, e.g. wear-resisting zones to table ware	[68-]
49I-3/26	. . for forming the working portions of tools, e.g. cutting edges	[68-]
49I-3/28	. Special methods allowing subsequent separation, e.g. of metals of high quality from scrap material	[68-]
<b>49I-5/00</b>	<b>Setting gems or the like on metal parts, e.g. diamonds on tools</b>	<b>[68-]</b>
<b>49I-7/00</b>	<b>Restoring or reconditioning objects</b> (by casting 31b2-19/10; procedures or apparatus covered by a single other subclass, and not restricted to restoring or reconditioning, see the relevant subclass)	<b>[68-]</b>
49I-7/02	. pistons or cylinders	[68-]
49I-7/04	. Repairing fractures or cracked metal parts or products, e.g. castings	[68-]
<b>49I-9/00</b>	<b>Treating or finishing surfaces mechanically, with or without calibrating, primarily to resist wear or impact, e.g. smoothing or roughening turbine blades or bearings</b> (treatment covered by a single other subclass, see the relevant subclass, e.g. 67b, 18c-7/00, 40d-1/00); <b>Features of such surfaces not otherwise provided for, their treatment being unspecified</b>	<b>[68-]</b>
49I-9/02	. Treating or finishing by applying pressure, e.g. knurling (49I-9/04 takes precedence)	[68-]
49I-9/04	. Treating or finishing by hammering or applying repeated pressure	[68-]
<b>49I-11/00</b>	<b>Connecting metal parts or objects by metal-working procedures, not covered wholly by either 7g or 49h</b> (49I-3/00 takes precedence; connecting sheet metal or metal tubes, rods or profiles 7c-39/00; objects produced by methods not important per se, see the relevant subclasses dealing with the objects, e.g. 7d-15/00, 7i-19/00; hand tools for connecting wire or strip 87a-21; connecting metal parts by adhesives 47a1-11/00)	<b>[68-]</b>
49I-11/02	. by first expanding and then shrinking or vice versa, e.g. by using pressure fluids; by making force fits	[68-]
<b>49I-13/00</b>	<b>Making metal objects by operations essentially involving machining but not covered by a single other subclass</b> (making specific objects 49I-15/00)	<b>[68-]</b>
49I-13/02	. in which only the machining operations are important	[68-]
49I-13/04	. involving slicing of profiled material	[68-]
<b>49I-15/00</b>	<b>Making specific metal objects by operations not covered by a single other subclass or a group in this subclass</b>	<b>[68-]</b>
	<b>Note:</b>	<b>[68-]</b>
	<b>This group is to be understood as restricted to objects covered by its subgroups.</b>	<b>[68-]</b>
49I-15/02	. turbine or like blades from one piece	[68-]
49I-15/04	. turbine or like blades from several pieces	[68-]
49I-15/06	. piston rings from one piece	[68-]
49I-15/08	. piston rings from several pieces	[68-]
49I-15/10	. pistons	[68-]
49I-15/12	. gratings	[68-]
49I-15/14	. gear parts, e.g. gear wheels	[68-]
49I-15/16	. plates with holes of very small diameter e.g. for spinning or burner nozzles	[68-]
49I-15/18	. brake shoes	[68-]
49I-15/20	. railroad requirements, e.g. buffers	[68-]
49I-15/22	. cartridges or like shells	[68-]
49I-15/24	. dies (7b-3/18, 7b-25/10, 7c-37/20 take precedence)	[68-]
49I-15/26	. heat exchangers or the like	[68-]
49I-15/28	. cutting tools (sawing tools 49c-63/00, 49c-65/00; files or rasps 49c-73/00)	[68-]

49I-15/30	. . lathe or like tools	[68-]
49I-15/32	. . twist-drills	[68-]
49I-15/34	. . milling cutters	[68-]
49I-15/36	. . . for thread cutting	[68-]
49I-15/38	. . planing or slotting tools (49I-15/30 takes precedence)	[68-]
49I-15/40	. . shearing tools	[68-]
49I-15/42	. . broaching tools	[68-]
49I-15/44	. . scraping or shaving tools	[68-]
49I-15/46	. . reaming tools	[68-]
49I-15/48	. . threading tools (milling cutters for thread-cutting 49I-15/36)	[68-]
49I-15/50	. . . dies	[68-]
49I-15/52	. . . taps	[68-]
<b>49I-17/00</b>	<b>Metal-working operations, not covered by a single other subclass or another group in this subclass</b>	<b>[68-]</b>
49I-17/02	. Single metal-working processes; Machines or apparatus therefor	[68-]
49I-17/04	. characterised by the nature of the material involved or the kind of product independently of its shape	[68-]
49I-17/06	. . Making steel wool or the like	[68-]
<b>49I-19/00</b>	<b>Machines for simply fitting together or separating metal parts or objects whether or not involving some deformation (interference fits 49I-11/00); Tools or devices therefor so far as not provided for in other classes (hand tools in general 87)</b>	<b>[68-]</b>
49I-19/02	. for connecting objects by press fit or for detaching same	[68-]
49I-19/04	. for assembling or disassembling parts	[68-]
49I-19/06	. . Screw or nut setting or loosening machines	[68-]
49I-19/08	. . Machines for placing washers, circlips, or the like on bolts or other members	[68-]
<b>49I-21/00</b>	<b>Machines for assembling a multiplicity of different parts to compose units, with or without preceding or subsequent working of such parts, e.g. with programme control</b>	<b>[68-]</b>
<b>49I-23/00</b>	<b>Machines or arrangements of machines for performing specified combinations of different metal-working operations not covered by a single other subclass (if the particular kinds of operation are not essential 49m-37/00 to 49m-41/00; features relating to operations covered by a single subclass, see the relevant subclass for the operation)</b>	<b>[68-]</b>
49I-23/02	. Machine tools for performing different machining operations (lathes, e.g. capstan lathes, 49a; combined horizontal boring and milling machines 49a-39/02)	[68-]
49I-23/04	. for both machining and other metal-working operations	[68-]
49I-23/06	. Metal-working plant comprising a number of associated machines or apparatus	[68-]
<b>49I-25/00</b>	<b>Auxiliary treatment of workpieces, before or during machining operations, to facilitate the action of the tool or the attainment of a desired final condition of the work, e.g. relief of internal stress</b>	<b>[68-]</b>

**49m (IPC: B23Q) Details, components, or accessories for machine tools, e.g. arrangements for copying or controlling (tools of the kind used in lathes or boring machines 49a-27/00); Machine tools in general characterised by the construction of particular details or components; Combinations or associations of machine tools, not directed to a particular metal-working result [68-]**

**Note: [68-]**  
**Attention is drawn to the notes immediately following the title of class 49. [68-]**  
**In this subclass groups designating parts of machine tools are to be understood as covering machine tools characterised by constructional features of such parts. [68-]**

**49m-1/00 Members which are comprised in the general build-up of a form of machine, particularly relatively large fixed members (49m-37/00 takes precedence) [68-]**

- 49m-1/02 . Frames, beds, pillars, or analogous members; Work-tables not designed to be fed or driven (rotatable 49m-1/16); Arrangements of ways [68-]
- 49m-1/04 . . Work-tables or other members, variable or adjustable in inclination [68-]
- 49m-1/06 . . Work-tables interchangeably movable into operating positions [68-]
- 49m-1/08 . carrying working-spindles for attachment of tools or work or of devices for supporting or holding same (49m-1/02 takes precedence; if designed to be fed or driven 49m-1/14; headstocks or the like, working-spindle supports 49a-19/00) [68-]
- 49m-1/10 . . Movable members, e.g. swinging arms [68-]
- 49m-1/12 . . variable or adjustable in inclination [68-]
- 49m-1/14 . Work-tables or analogous members, designed to be fed or driven; Similar members carrying tool mountings [68-]
- 49m-1/16 . . Rotatable members, e.g. faceplates [68-]
- 49m-1/18 . . Members slidable in a line, e.g. reciprocable [68-]
- 49m-1/20 . Carriages, cross-slides, or analogous members (of lathe or similar type 49a-21/00; non-driven tool holders 49a-29/00) [68-]
- 49m-1/22 . Other stationary supporting devices for tools or moving work (parts holding tools or work 49m-3/00; tailstocks 49a-23/00) [68-]
- 49m-1/24 . . Auxiliary devices, e.g. steadies, rests [68-]
- 49m-1/26 . Constructional features relating to the co-operation of relatively slidable members; Means for preventing relative movement of such members (bearings for linearly-moving parts 47b-29/00) [68-]
- 49m-1/28 . . Means for securing sliding members in any desired position [68-]
- 49m-1/30 . . controlled in conjunction with the feed mechanism [68-]

**49m-3/00 Devices holding, supporting, or positioning, work or tools more or less directly, of a kind normally removable from the machine (work-tables or other parts, e.g. faceplates, normally not incorporating means for securing work 49m-1/00; positioning controlled by indicating or measuring equipment 49m-17/00; rotary tool heads for turning-machines 49a-3/24, 49a-3/26; non-driven tool holders 49a-29/00; general features of turrets 49a-29/24) [68-]**

- 49m-3/02 . for mounting on a work-table, tool-slide, or analogous part (49m-3/15 takes precedence) [68-]
- 49m-3/04 . . adjustable in inclination [68-]
- 49m-3/06 . . Work-clamping means (if not specially adapted for machine tools 87a) [68-]
- 49m-3/08 . . . other than mechanically-actuated [68-]
- 49m-3/10 . . Auxiliary devices, e.g. bolsters, extension members [68-]
- 49m-3/12 . for securing to a spindle in general (49m-3/152 takes precedence; chucks 49a-31/02) [68-]
- 49m-3/14 . . Mandrels in general (expansion mandrels 49a-31/40) [68-]
- 49m-3/15 . Devices for holding work using magnetic or electric force acting directly on the work [68-]
- 49m-3/152 . . Rotary devices [68-]
- 49m-3/154 . . Stationary devices [68-]

49m-3/155	. Arrangements for automatic insertion or removal of tools	[68-]
49m-3/157	. . of rotary tools	[68-]
49m-3/16	. controlled in conjunction with the operation of the tool	[68-]
49m-3/18	. for positioning only	[68-]
<b>49m-5/00</b>	<b>Driving or feeding mechanisms; Control arrangements therefor</b> (copying 49m-33/00, 49m-35/00; specially adapted for boring or drilling machines 49a-39/10, 49a-47/02; automatic control of a series of stops 42r1-19/00)	<b>[68-]</b>
49m-5/02	. Driving main working members	[68-]
49m-5/04	. . rotary shafts, e.g. working-spindles	[68-]
49m-5/06	. . . driven essentially by fluid pressure or pneumatic power	[68-]
49m-5/08	. . . . electrically controlled	[68-]
49m-5/10	. . . driven essentially by electrical means	[68-]
49m-5/12	. . . Mechanical drives with means for varying the speed ratio	[68-]
49m-5/14	. . . . step-by-step	[68-]
49m-5/16	. . . . infinitely-variable	[68-]
49m-5/18	. . . . Devices for preselecting speed of working-spindle	[68-]
49m-5/20	. . . Adjusting or stopping working-spindles in a predetermined position	[68-]
49m-5/22	. Feeding members carrying tools or work directly or indirectly	[68-]
49m-5/24	. . not mechanically connected to the main drive, e.g. with separate motor(s) (connected to main drive through servomotors 49m-5/36)	[68-]
49m-5/26	. . . Fluid-pressure drives	[68-]
49m-5/28	. . . Electric drives	[68-]
49m-5/30	. . mechanically derived from main drive	[68-]
49m-5/32	. . . feeding working-spindles (feeding working-spindle supports 49m-5/34)	[68-]
49m-5/34	. . . Feeding other members supporting tools or work, e.g. saddles, tool-slides, through mechanical transmission	[68-]
49m-5/36	. . . . in which a servomotor forms an essential element	[68-]
49m-5/38	. . . . feeding continuously	[68-]
49m-5/40	. . . . . by feed shaft, e.g. lead screw	[68-]
49m-5/42	. . . . . Mechanism associated with headstock	[68-]
49m-5/44	. . . . . Mechanism associated with the moving member	[68-]
49m-5/46	. . . . . with variable speed ratio	[68-]
49m-5/48	. . . . . by use of toothed gears	[68-]
49m-5/50	. . . . feeding step-by-step	[68-]
49m-5/52	. . Limiting feed movement	[68-]
49m-5/54	. Arrangements or details not restricted to group 49m-5/02 or group 49m-5/22 respectively	[68-]
49m-5/56	. . Preventing backlash	[68-]
49m-5/58	. . Safety devices	[68-]
<b>49m-7/00</b>	<b>Arrangements for handling work specially combined with or arranged in, or specially adapted for use in connection with, machine tools, e.g. for conveying, loading, positioning, discharging, sorting</b> (incorporated in working-spindles 49a-13/00, 49a-19/02)	<b>[68-]</b>
49m-7/02	. by means of drums or rotating tables or discs	[68-]
49m-7/04	. by means of grippers	[68-]
49m-7/06	. by means of pushers	[68-]
49m-7/08	. by means of slides or chutes	[68-]
49m-7/10	. by means of magazines	[68-]
49m-7/12	. Sorting arrangements	[68-]
49m-7/14	. co-ordinated in production lines	[68-]
<b>49m-9/00</b>	<b>Arrangements for supporting or guiding portable metal-working machines or apparatus</b> (for tapping pipes 49a-41/08; specially designed for drilling 49a-45/14)	<b>[68-]</b>
49m-9/02	. for securing machines or apparatus to workpieces, or other parts, of particular shape, e.g. to beams of particular cross-section	[68-]

<b><u>Accessories</u></b>		[68-]
<b>49m-11/00</b>	<b>Accessories fitted to machine tools for keeping tools or parts of the machine in good working condition or for cooling work; Safety devices specially combined with or arranged in, or specially adapted for use in connection with, machine tools</b> (in respect of boring or drilling machines 49a-47/24, 49a-47/32 take precedence; safety devices in general 47a4)	<b>[68-]</b>
49m-11/02	. Devices for removing scrap from the cutting teeth of circular cutters	[68-]
49m-11/04	. Arrangements preventing overload of tools, e.g. restricting load	[68-]
49m-11/06	. Safety devices for circular cutters	[68-]
49m-11/08	. Protective coverings for parts of machine tools; Splash guards	[68-]
49m-11/10	. Arrangements of devices for cooling or lubricating tools or work (incorporated in tools, see the relevant subclass for the tool)	[68-]
49m-11/12	. Arrangements for cooling or lubricating machine parts	[68-]
49m-11/14	. Measures or means for maintaining a constant temperature in parts of machine tools	[68-]
<b>49m-13/00</b>	<b>Equipment for use with tools or cutters when not in operation, e.g. protectors for storage</b>	<b>[68-]</b>
<b><u>Measuring; Indicating; Controlling</u></b> (automatic control of a series of steps, automatic production of records 42r1-19/00)		<b>[68-]</b>
<b>49m-15/00</b>	<b>Measuring or gauging equipment for controlling the feed movement of tool or work</b> (measuring or gauging instruments per se 42b)	<b>[68-]</b>
49m-15/02	. according to the instantaneous size and the required size of the workpiece acted upon (49m-15/06 takes precedence)	[68-]
49m-15/04	. according to the final size of the previously machined workpiece (49m-15/06 takes precedence)	[68-]
49m-15/06	. according to measuring results produced by two or more gauging methods using different measuring principles, e.g. by both optical and mechanical gauging	[68-]
<b>49m-17/00</b>	<b>Indexing equipment; Arrangements of indicating or measuring equipment on machine tools</b> (instruments per se 42); <b>Support or mounting of indicating or measuring equipment; Control of position of tool or work by such equipment</b> (particularly for co-ordinate boring or drilling machines 49a-39/06)	<b>[68-]</b>
49m-17/02	. Indexing equipment	[68-]
49m-17/04	. . for dividing angles; Dividing heads	[68-]
49m-17/06	. of vernier dials	[68-]
49m-17/08	. of equipment for measuring cutting pressure	[68-]
49m-17/10	. of equipment for measuring cutting speed or number of revolutions	[68-]
49m-17/12	. of equipment for measuring vibration	[68-]
49m-17/14	. of autocollimator equipment	[68-]
49m-17/16	. of measuring faces on component parts of machine tools, e.g. on tool holders	[68-]
49m-17/18	. Controlling position of tool or work	[68-]
<b>49m-19/00</b>	<b>Arrangements, e.g. optical projecting means, for enabling the operator to see the position of the tool in relation to the work</b>	<b>[68-]</b>
<b>49m-21/00</b>	<b>Equipment for controlling starting or stopping of the movement of tool or work in a predetermined position, e.g. for exact in-feed</b>	<b>[68-]</b>
49m-21/02	. with means for withdrawing tool or work during reverse movement	[68-]
<b>49m-23/00</b>	<b>Arrangements for compensating for irregularities or wear, e.g. of ways, of setting mechanisms</b>	<b>[68-]</b>
<b>49m-27/00</b>	<b>Geometrical mechanisms for the production of work of particular shapes, not fully provided for in another subclass</b>	<b>[68-]</b>



<b>Copying</b>		<b>[68-]</b>
	<b>Note:</b>	<b>[68-]</b>
	<b>The term "copying" is to be understood as covering the derivation of a required shape from a pattern, of the same or a different shape or scale, by a mechanism or equivalent means controlled by a member following the pattern. The pattern may be a model or drawing, or an element such as a cam incorporated in the operating mechanism of a machine. The term "copying" does not cover the derivation of a required shape from simple geometrical shapes, e.g. generating a cycloid by a rolling circle, which in general is provided for in group 49m-27/00</b>	<b>[68-]</b>
<b>49m-33/00</b>	<b>Methods for copying</b>	<b>[68-]</b>
<b>49m-35/00</b>	<b>Control systems or devices for copying directly from a pattern or a master model; Devices for use in copying manually</b>	<b>[68-]</b>
49m-35/02	. Copying discrete points from the pattern, e.g. for determining the position of holes to be drilled	[68-]
49m-35/04	. using a feeler or the like travelling along the outline of the pattern, model or drawing; Feelers, patterns, or models therefor	[68-]
49m-35/06	. . specially adapted for controlling successive operations, e.g. separate cuts, on a workpiece	[68-]
49m-35/08	. . Means for transforming movement of the feeler or the like into feed movement of tool or work	[68-]
49m-35/10	. . . mechanically only	[68-]
49m-35/12	. . . involving electrical means	[68-]
49m-35/121	. . . . using mechanical sensing	[68-]
49m-35/122	. . . . the feeler opening or closing electrical contacts	[68-]
49m-35/123	. . . . the feeler varying the impedance in a circuit	[68-]
49m-35/124	. . . . . varying resistance	[68-]
49m-35/125	. . . . . varying capacitance	[68-]
49m-35/126	. . . . . varying inductance	[68-]
49m-35/127	. . . . using non-mechanical sensing	[68-]
49m-35/128	. . . . . Sensing by using optical means	[68-]
49m-35/129	. . . . . Sensing by means of electric discharges	[68-]
49m-35/13	. . . . . Sensing by using magnetic means	[68-]
49m-35/14	. . . . controlling one or more electromotors	[68-]
49m-35/16	. . . . controlling fluid motors	[68-]
49m-35/18	. . . involving fluid means (49m-35/16 takes precedence)	[68-]
49m-35/20	. . . with special means for varying the ratio of reproduction	[68-]
49m-35/22	. . . specially adapted for compensating for wear of the tool	[68-]
49m-35/24	. . Feelers; Feeler units	[68-]
49m-35/26	. . . designed for physical contact with a pattern or a model	[68-]
49m-35/28	. . . . for control of a mechanical copying system	[68-]
49m-35/30	. . . . for control of an electrical or electro-hydraulic copying system	[68-]
49m-35/32	. . . . . in which the feeler makes and breaks an electrical contact or contacts, e.g. with brush-type tracers	[68-]
49m-35/34	. . . . . in which the feeler varies an electrical characteristic in a circuit, e.g. capacity, frequency	[68-]
49m-35/36	. . . . for control of a hydraulic or pneumatic copying system	[68-]
49m-35/38	. . . designed for sensing the pattern, model, or drawing without physical contact (sensing by means of a fluid jet 49m-35/36)	[68-]
49m-35/40	. . . . involving optical or photoelectrical systems	[68-]
49m-35/42	. . Patterns; Master models	[68-]
49m-35/44	. . . provided with means for adjusting the contact face, e.g. comprising flexible bands held by set-screws	[68-]
49m-35/46	. . . Supporting devices therefor	[68-]
49m-35/48	. Using a feeler or the like travelling to-and-fro between opposite parts of the outline of the pattern, model, or drawing	[68-]

**Machines comprising units or subassemblies; Transfer machines; Associations of machines or units** [68-]

<b>49m-37/00</b>	<b>Metal-working machines, or constructional combinations thereof, built-up from units designed so that at least some of the units can form parts of different machines or combinations; Units therefor in so far as the feature of interchangeability is important</b> (features relating to particular metal-working operations, see the relevant subclasses, e.g. 49l-23/00)	[68-]
<b>49m-39/00</b>	<b>Machines incorporating a plurality of subassemblies, each capable of performing a metal-working operation</b> (49m-33/00, 49l-23/00 take precedence; if the operations are similar and the kind of operation is essential, see the relevant subclass for the operation)	[68-]
49m-39/02	. the subassemblies being capable of being brought to act at a single operating station	[68-]
49m-39/04	. the subassemblies being arranged to operate simultaneously at different stations, e.g. with an annular work-table moved in steps (associations of machines connected only by work-transferring means 49m-41/00)	[68-]
<b>49m-41/00</b>	<b>Combinations or associations of machines covered by classes 7, 31b, 38, 39a, 49, 58, 67 or 80d</b> (49m-37/00, 49m-39/00 take precedence; features relating to the operation performed, if the latter is of one particular kind, see the subclass for the kind of operation; features essentially relating to specified combinations of different metal-working operations 49l-23/00)	[68-]
49m-41/02	. Features relating to transfer of work between machines	[68-]
49m-41/04	. Features relating to relative arrangements of machines	[68-]
49m-41/06	. Features relating to organisation of working of machines	[68-]
49m-41/08	. Features relating to maintenance of efficient operation	[68-]