

ECLA**EUROPEAN CLASSIFICATION****G02B**

OPTICAL ELEMENTS, SYSTEMS, OR APPARATUS (G02F takes precedence; measuring-instruments, see the relevant subclass of G01, e.g. optical rangefinders G01C; testing of optical elements, systems, or apparatus [G01M11/00](#); spectacles G02C; sound lenses [G10K11/30](#); electron and ion "optics" H01J; X-ray "optics" H01J, [H05G1/00](#); optical elements structurally combined with electric discharge tubes [H01J5/16](#), [H01J29/89](#), [H01J37/22](#); microwave "optics" H01Q; combination of optical elements with television receivers [H04N5/72](#); heating arrangements specially adapted for transparent or reflecting areas [H05B3/84](#); [N: optical apparatus 42H])

[N: WARNING

The following IPC groups are not used in the internal ECLA classification system. Subject matter covered by these groups is classified in the ECLA groups:

[G02B11/00](#) - [G02B11/34](#) covered by [G02B9/00](#) and subgroups and [G02B13/00](#) and subgroups

]

Note

In this subclass, the following terms are used with the meanings indicated :

- "simple lens or prism" means a single lens or prism;
- "compound lens or prism" means an optical member, the constituents of which either are close together without air-space or (except in group [G02B11/00](#)) are "in broken contact",
i.e. with the air-space between the constituents having no essential optical influence;
- "objective" means a lens or an optical system designed to produce a real image of a real object;
- "eyepiece" means a lens or an optical system designed to produce a virtual image for viewing by the eye or by another optical system;
- "front" or "rear" is determined by looking from the more distant conjugate.

G02B1/00

Optical elements characterised by the material of which they are made
(compositions of optical glasses [C03C3/00](#); cements for glass [C03C27/00](#))

G02B1/00M

- [N: made of materials engineered to provide properties not available in nature, e.g. metamaterials] [N1010]

G02B1/00M1

- • [N: made of photonic crystals or photonic band gap materials (photonic band-gap structures or photonic lattices in integrated optics [G02B6/122P](#); photonic band-gap structures or photonic lattices in optical fibres [G02B6/02P](#))] [N1010]

G02B1/00M3

- • [N: made of negative effective refractive index materials] [N1010]

G02B1/02

- made of crystals, e.g. rock-salt, semi-conductors ([G02B1/08](#) takes precedence)

G02B1/04

- made of organic materials, e.g. plastics ([G02B1/08](#) takes precedence)

[N: Note

In this group the use of specific polymers is indicated using the relevant subdivision of [C08L](#) preceded by a plus sign

]

- G02B1/04B . . [N: Lenses]
- G02B1/04B2 . . . [N: Contact lenses]
- G02B1/04D . . [N: Light guides]
- G02B1/04D2 . . . [N: characterised by the core material]
- G02B1/04D4 . . . [N: characterised by the cladding material]

- G02B1/06 . made of fluids in transparent cells

- G02B1/08 . made of polarising materials

- G02B1/10 . [N: Coatings produced by application to, or surface treatment of, optical elements, e.g. anti-reflection coatings ([G02B1/08](#) takes precedence; reflecting coatings [G02B5/08](#); coating of glass in general [C03C17/00](#))] [C1103]

- G02B1/10B . . [N: Protective coatings (anti-fouling arrangements [G02B27/00C](#))] [C0712]
- G02B1/11 . . Anti-reflection coatings [N9611]
- G02B1/11B . . . [N: using one or more layers comprising organic material ([G02B1/11M](#) takes precedence)] [N9611] [C0801]
- G02B1/11D . . . [N: using one or more layers comprising inorganic material only ([G02B1/11M](#) takes precedence)] [N9611] [C0801]
- G02B1/11D2 [N: Multilayers] [N9611]
- G02B1/11D2M [N: including one or more conducting layers] [N0004]
- G02B1/11M . . . [N: having sub-wavelength surface structures designed to provide an enhanced transmittance, e.g. moth-eye structures (anti-glare structures [G02B5/02](#), surface plasmon devices [G02B5/00P](#))] [N0801] [C1101]

- G02B1/12 . . by surface treatment, e.g. by irradiation [N: surface treatment of glass by irradiation [C03C23/00B](#)]

- G02B3/00** **Simple or compound lenses** (artificial eyes [A61F2/14](#); spectacle lenses or contact lenses for the eyes [G02C](#); watch or clock glasses [G04B39/00](#))

- G02B3/00A . [N: Arrays ([G02B3/02](#), [G02B5/18Z1](#) take precedence)] [C0802]
- G02B3/00A1 . . [N: characterised by the manufacturing method] [N9511]
- G02B3/00A1F . . . [N: Reflow, i.e. characterized by the step of melting microstructures to form curved surfaces, e.g. manufacturing of moulds and surfaces for transfer etching] [N0904]
- G02B3/00A1M . . . [N: Machining, e.g. grinding, polishing, diamond turning, manufacturing of mould parts] [N0904]
- G02B3/00A1R . . . [N: Replication or moulding, e.g. hot embossing, UV-casting, injection moulding] [N0904]
- G02B3/00A3 . . [N: characterized by the distribution or form of lenses] [N0904]
- G02B3/00A3I . . . [N: Inhomogeneous or irregular arrays, e.g. varying shape, size, height] [N0904]
- G02B3/00A3L . . . [N: arranged along a single direction only, e.g. lenticular sheets ([G02B3/00A3I](#) takes precedence)] [N0904]
- G02B3/00A3S . . . [N: arranged along two different directions in a plane, e.g. honeycomb arrangement of lenses ([G02B3/00A3I](#) takes precedence; miniaturised objectives for electronic devices employing wafer level optics [G02B13/00M7](#))] [N0904] [C1104]
- G02B3/00A3Z . . . [N: Stacked lens arrays, i.e. refractive surfaces arranged in at least two planes, without structurally separate optical elements in-between] [N0904]

- G02B3/00A3Z1 [N: arranged in a single integral body or plate, e.g. laminates or hybrid structures with other optical elements ([G02B5/18Z1A](#), [G02B17/00A](#), [G02B27/22L](#) take precedence)] [N0904]
- G02B3/00A5 . . [N: characterized by non-optical structures, e.g. having integrated holding or alignment means] [N0904]
- G02B3/00F . [N: having one or more elements with analytic function to create variable power (variable magnification in general [G02B15/00](#))]
- G02B3/00G . [N: with index gradient]
- G02B3/02 . with non-spherical faces ([G02B3/10](#) takes precedence)
- G02B3/04 . . with continuous faces that are rotationally symmetrical but deviate from a true sphere, [N: e.g. so called "aspheric" lenses] [N1205]
- G02B3/06 . . with cylindrical or toric faces
- G02B3/08 . . with discontinuous faces, e.g. Fresnel lens [N: (diffractive Fresnel lenses [G02B5/18Z](#))] [C0802]
- G02B3/10 . Bifocal lenses; Multifocal lenses
- G02B3/12 . Fluid-filled or evacuated lenses
- G02B3/14 . . of variable focal length
- G02B5/00** **Optical elements other than lenses** (light guides [G02B6/00](#); optical logic elements [G02F3/00](#))
- G02B5/00A . [N: Axicons, waxicons, reflaxicons]
- G02B5/00B . [N: Light absorbing elements] [N9901]
- G02B5/00D . [N: Diaphragms (for cameras [G03B9/02](#))]
- G02B5/00D1 . . [N: cooled]
- G02B5/00P . [N: Surface plasmon devices (diffractive gratings with a pitch less than or comparable to the wavelength [G02B5/18D](#); surface plasmons in integrated optics [G02B6/122S](#); optical analysis of materials by means of surface plasmons [G01N21/55B2](#))] [N1010]
- G02B5/02 . Diffusing elements; Afocal elements
- G02B5/02D . . [N: characterised by the diffusing properties] [N1104]
- G02B5/02D2 . . . [N: the diffusion taking place at the element's surface, e.g. by means of surface roughening or micro-prismatic structures] [N1104]
- G02B5/02D2G [N: the surface having a regular structure] [N1104]
- G02B5/02D2N [N: the surface having an irregular structure ([G02B5/02D2P](#) takes precedence)] [N1104]
- G02B5/02D2P [N: having particles on the surface] [N1104]
- G02B5/02D2R [N: the surface having micro-prismatic or micro-pyramidal shape (macroscopic prism arrays [G02B5/04A](#))] [N1104]
- G02B5/02D4 . . . [N: the diffusion taking place within the volume of the element] [N1104]
- G02B5/02D4P [N: by means of dispersed particles] [N1104]

- G02B5/02D4V [N: by means of voids or pores] [N1104]
- G02B5/02D6 [N: using holographic or diffractive means] [N1104]
- G02B5/02D8 [N: creating an anisotropic diffusion characteristic, i.e. distributing output differently in two perpendicular axes] [N1104]
- G02B5/02D10 [N: with positional variation of the diffusing properties e.g. gradient or patterned diffuser] [N1104]
- G02B5/02F [N: characterized by the fabrication or manufacturing method] [N1104]
- G02B5/02U [N: characterized by the use] [N1104]
- G02B5/02U2 [N: used in transmission] [N1104]
- G02B5/02U4 [N: used in reflection] [N1104]
- G02B5/02U6 [N: used as a translector] [N1104]
- G02B5/02U8 [N: adapted to provide an additional optical effect e.g. anti-reflection or filter] [N1104]

- G02B5/04 . . Prisms
- G02B5/04A . . . [N: Prism arrays] [N9602]
- G02B5/06 . . . Fluid-filled or evacuated prisms

- G02B5/08 . . Mirrors [N: (vehicle mirrors involving special optical features [B60R1/08](#))]
- G02B5/08C . . . [N: having a single reflecting layer ([G02B5/08R](#), [G02B5/08V](#) take precedence)] [N0611] [M1103]
- G02B5/08M . . . [N: Multilayer mirrors, i.e. having two or more reflecting layers ([G02B5/08R](#), [G02B5/08V](#) take precedence)] [C1103]
- G02B5/08M1 [N: the reflecting layers comprising dielectric materials only] [N0611]
- G02B5/08M1N [N: comprising inorganic materials only] [N0611]
- G02B5/08M1P [N: comprising organic materials, e.g. polymers] [N0611]
- G02B5/08M2 [N: at least one of the reflecting layers comprising metal] [N0611]
- G02B5/08M2S [N: the reflecting layers comprising a single metallic layer with one or more dielectric layers] [N0611]
- G02B5/08M2S1 [N: incorporating one or more organic, e.g. polymeric layers] [N0611]
- G02B5/08M2T [N: the reflecting layers comprising two or more metallic layers] [N0611]
- G02B5/08R . . . [N: with a refractive index gradient (rugate filters [G02B5/28R](#))] [N0611] [C1103]
- G02B5/08V . . . [N: Ultraviolet (UV) mirrors (apparatus for microlithography exposure [G03F7/20T](#); X-ray multilayer structures [G21K1/06](#))] [N0611] [M1103]
- G02B5/09 . . . Multifaceted or polygonal mirrors [N: , e.g. polygonal scanning mirrors; Fresnel mirrors] [N9607] [C0406]
- G02B5/10 . . . with curved faces

- G02B5/12 . . Reflex reflectors
- G02B5/122 . . . cube corner, trihedral or triple reflector type
- G02B5/124 plural reflecting elements forming part of a unitary plate or sheet
- G02B5/126 including curved refracting surface
- G02B5/128 transparent spheres being embedded in matrix
- G02B5/13 plural curved refracting elements forming part of a unitary body
- G02B5/132 with individual reflector mounting means
- G02B5/134 including a threaded mounting member

- G02B5/136 . . plural reflecting elements forming part of a unitary body ([G02B5/124](#) takes precedence)
- G02B5/18 . Diffraction gratings [N: (holographic optical elements [G02B5/32](#), [G03H](#); integrally combined with optical fibres [G02B6/02G](#); for coupling light guides [G02B6/34](#); integrally combined with optical integrated light guides [G02B6/12](#); grating systems [G02B27/44](#))] [C0802]
- G02B5/18D . . [N: with pitch less than or comparable to the wavelength] [N9709]
- G02B5/18E . . [N: structurally combined with one or more further optical elements, e.g. lenses, mirrors, prisms or other diffraction gratings ([G02B5/18Z3](#) takes precedence)] [N1205]
- G02B5/18E1 . . . [N: Plural gratings positioned on the same surface, e.g. array of gratings (plural diffractive elements positioned sequentially along the optical path [G02B27/42S](#))] [N1205]
- G02B5/18E1A [N: in an overlapping or superposed manner] [N1205]
- G02B5/18F . . [N: having means for producing variable diffraction (controlling the direction of light by means of one or more diffracting elements [G02B26/08D](#); acousto-optical elements [G02F1/11](#), [G02F1/33](#); electro- or magneto-optical diffraction [G02F1/29D](#), [G02F1/295D](#))] [N9709] [C9806]
- G02B5/18G . . [N: comprising birefringent materials (birefringent elements per se [G02B5/30R](#))] [N9709]
- G02B5/18H . . [N: for use with ultraviolet radiation or X-rays] [N9709]
- G02B5/18L . . [N: Gratings for image generation ([G02B5/18M](#) takes precedence)] [N9502]
- G02B5/18M . . [N: Manufacturing methods] [N9709]
- G02B5/18M1 . . . [N: using mechanical means, e.g. ruling with diamond tool, moulding] [N9709]
- G02B5/18M2 . . . [N: using exposure or etching means, e. g. holography, photolithography, exposure to electron or ion beams] [N9709]
- G02B5/18R . . [N: Reflection gratings characterised by their structure, e.g. step profile, contours of substrate or grooves, pitch variations, materials ([G02B5/18D](#), [G02B5/18F](#), [G02B5/18G](#), [G02B5/18H](#) and [G02B5/18M](#) take precedence)] [N9709]
- G02B5/18T . . [N: Transmission gratings characterised by their structure, e.g. step profile, contours of substrate or grooves, pitch variations, materials ([G02B5/18D](#), [G02B5/18F](#), [G02B5/18G](#), [G02B5/18H](#) and [G02B5/18M](#) take precedence)] [N9709]
- G02B5/18T1 . . . [N: Transmissive phase gratings] [N9709]
- G02B5/18Z . . [N: Diffractive Fresnel lenses; Zone plates; Kinoforms ([G02B5/18L](#), [G02B5/18M](#) take precedence; optical systems having diffractive correction means [G02B27/00K2](#); Fresnel lenses operating by refraction [G02B3/08](#))] [C0802]
- G02B5/18Z1 . . . [N: Plurality of such optical elements formed in or on a supporting substrate] [N0802]
- G02B5/18Z1A [N: Arranged as a periodic array] [N0802]
- G02B5/18Z3 . . . [N: Structurally combined with optical elements not having diffractive power] [N0802]
- G02B5/18Z3A [N: such optical elements having dioptric power] [N0802]
- G02B5/20 . Filters (polarising elements [G02B5/30](#); [N: manufacturing optical filters by photographic processes [G03C7/12](#), by lithographic processes [G03F7/00B2](#)]) [C9903]
- G02B5/20A . . [N: in the form of arrays] [N9506]
- G02B5/20G . . [N: comprising a gas or vapour] [N9506]
- G02B5/20H . . [N: having holographic or diffractive elements (diffraction gratings per se [G02B5/18](#); holographic elements per se [G02B5/32](#); generating the spectrum using

- G02B5/20M
 - . . diffraction elements [G01J3/18](#)] [N9506]
 - . . [N: in which spectral selection is performed by means of a conductive grid or array, e.g. frequency selective surfaces (for use with wavelengths longer than the infra-red light [H01Q15/00C](#))] [N9506] [C0910]
- G02B5/20N
 - . . [N: Neutral density filters] [N9506]
- G02B5/20P
 - . . [N: comprising particles embedded in a solid matrix] [N9506]
- G02B5/20S
 - . . [N: comprising semiconducting materials] [N9506]
- G02B5/20V
 - . . [N: for use with infra-red or ultraviolet radiation, e.g. for separating visible light from infra-red and/or ultraviolet radiation] [N9506]
- G02B5/22
 - . . Absorbing filters [N: ([G02B5/20A](#) to [G02B5/20V](#) take precedence)] [C9506]
- G02B5/22D
 - . . . [N: containing organic substances, e.g. dyes, inks or pigments] [N9506]
- G02B5/22G
 - . . . [N: Glass filters] [N9506]
- G02B5/23
 - . . . Photochromic filters
- G02B5/24
 - . . . Liquid filters ([G02B5/23](#) takes precedence)
- G02B5/26
 - . . Reflecting filters ([G02B5/28](#) takes precedence)
- G02B5/26T
 - . . . [N: involving total internal reflection] [N9506]
- G02B5/28
 - . . Interference filters
- G02B5/28A
 - . . . [N: designed for the infra-red light]
- G02B5/28A1
 - [N: reflecting for infra-red and transparent for visible light, e.g. heat reflectors, laser protection]
- G02B5/28B
 - . . . [N: designed for the ultraviolet]
- G02B5/28E
 - . . . [N: of etalon type comprising a resonant cavity other than a thin solid film, e.g. gas, air, solid plates (etalons for fibre optic multiplexing [G02B6/293I10](#); etalons for spectral measurement [G01J3/26](#))] [N0605]
- G02B5/28F
 - . . . [N: comprising deposited thin solid films ([G02B5/28A](#) to [G02B5/28R](#) take precedence; multilayered film filters for fibre optic multiplexing [G02B6/293I12](#))] [N0605]
- G02B5/28F1
 - [N: having four or fewer layers, e.g. for achieving a color effect] [N0605]
- G02B5/28F2
 - [N: comprising at least one layer of organic material] [N0605]
- G02B5/28F3
 - [N: comprising at least one thin film resonant cavity, e.g. in bandpass filters] [N0605]
- G02B5/28R
 - . . . [N: Rugate filters]
- G02B5/30
 - . Polarising elements (light-modulating devices [G02F1/00](#))
- G02B5/30F
 - . . [N: comprising dielectric particles, e.g. birefringent crystals embedded in a matrix] [N0406]
- G02B5/30L
 - . . [N: involving passive liquid crystal elements (optical properties of liquid crystals [G02F1/00B134](#); polarising elements associated with active liquid crystal devices [G02F1/1335P](#))] [N9501]
- G02B5/30P
 - . . [N: Polarisers, i.e. arrangements capable of producing a definite output polarisation state from an unpolarised input state ([G02B5/30F](#), [G02B5/30L](#) take precedence)] [C0406]
- G02B5/30P1
 - . . . [N: in the form of a thin sheet or foil, e.g. Polaroid] [C9501]
- G02B5/30P1S
 - [N: comprising multiple thin layers, e.g. multilayer stacks] [N0406]
- G02B5/30P1S1
 - [N: including organic materials, e.g. polymeric layers] [N0406]
- G02B5/30P2
 - . . . [N: comprising electrically conductive elements, e.g. wire grids, conductive particles] [C9501]

- G02B5/30P3 . . . [N: involving the reflection of light at a particular angle of incidence, e.g. Brewster's angle] [N9501]
- G02B5/30P4 . . . [N: for use in the UV ([G02B5/30P3](#) takes precedence)] [N0503]
- G02B5/30R . . . [N: Birefringent or phase retarding elements ([G02B5/30F](#), [G02B5/30L](#) take precedence; systems for polarisation control [G02B27/28C](#); manufacturing phase modulating patterns by lithographic processes [G03F7/00B3](#))] [C0406]
- G02B5/30R2 . . . [N: for use in the UV] [N0503]
- G02B5/32 . . . Holograms used as optical elements (processes or apparatus for producing holograms [G03H](#); [N: in scanning systems [G02B26/10H](#)])

G02B6/00 **Light guides**

- G02B6/00L . . . [N: specially adapted for lighting devices or systems (lighting or signalling on vehicles using light guides [B60Q1/00](#); lighting devices for vehicle interior using light guides [B60Q3/00L](#); lighting devices mounted on the vehicle rear part using light guides [F21S48/22T4](#); lighting devices for vehicle dashboards [B60Q3/04](#); measuring arrangements having light conducting pointers [G01D13/26L](#); illumination of liquid crystal displays [G02F1/13357](#); illuminated signs [G09F13/00](#))] [N0303] [M1202]
- G02B6/00L2 . . . [N: the light guides being doped with fluorescent agents] [N0303]
- G02B6/00L4 . . . [N: the light guides being of the fibre type ([G02B6/00L2](#) takes precedence)] [N0303]
- G02B6/00L4C . . . [N: Coupling light into the fibre (in general [G02B6/42L](#))] [N0303]
- G02B6/00L4E . . . [N: the light being emitted at the end of the fibre] [N0303]
- G02B6/00L4L . . . [N: the light being emitted along at least a portion of the lateral surface of the fibre] [N0303]
- G02B6/00L6 . . . [N: the light guides being planar or of plate-like form] [N0303] [C0703]
- G02B6/00L6I . . . [N: Means for improving the coupling-in of light from the light source into the light guide (coupling light into light guides in general [G02B6/42](#))] [N0703]
- G02B6/00L6I4 . . . [N: provided on the surface of the light guide or in the bulk of it] [N0703]
- G02B6/00L6I4G . . . [N: Grooves, prisms, gratings, scattering particles or rough surfaces] [N0703]
- G02B6/00L6I4R . . . [N: Redirecting means on the surface of the light guide] [N0703]
- G02B6/00L6I4S . . . [N: by shaping at least a portion of the light guide, e.g. with collimating, focussing or diverging surfaces] [N0703]
- G02B6/00L6I4S4 . . . [N: for housing at least a part of the light source, e.g. by forming holes or recesses] [N0703]
- G02B6/00L6I8 . . . [N: provided by one optical element, or plurality thereof, placed between the light guide and the light source, or around the light source] [N0703]
- G02B6/00L6I8D . . . [N: Diffusing sheet or layer; Prismatic sheet or layer] [N0703]
- G02B6/00L6I8F . . . [N: Wavelength selective element, sheet or layer, e.g. filter or grating] [N0703]
- G02B6/00L6I8G . . . [N: Light guide, e.g. taper] [N0703]
- G02B6/00L6I8L . . . [N: Lens or lenticular sheet or layer] [N0703]
- G02B6/00L6I8R . . . [N: Reflecting element, sheet or layer] [N0703]
- G02B6/00L6O . . . [N: Means for improving the coupling-out of light from the light guide] [N0703]
- G02B6/00L6O4 . . . [N: provided on the surface of the light guide or in the bulk of it] [N0703]
- G02B6/00L6O4B . . . [N: 2-D arrangement of prisms, protrusions, indentations or roughened

		surfaces] [N0703]
G02B6/00L6O4G	. . . . .	[N: Linear indentations or grooves, e.g. arc-shaped grooves or meandering grooves, extending over the full length or width of the light guide] [N0703]
G02B6/00L6O4P	. . . . .	[N: Scattering dots or dot-like elements, e.g. micro-beads, scattering particles, nano-particles] [N0703]
G02B6/00L6O4P2	. . . . .	[N: provided in the bulk of the light guide] [N0703]
G02B6/00L6O4P4	. . . . .	[N: provided on the surface of the light guide] [N0703]
G02B6/00L6O4S	. . . . .	[N: by shaping at least a portion of the light guide] [N0703]
G02B6/00L6O4S4	. . . . .	[N: Tapered light guide, e.g. wedge-shaped light guide] [N0703]
G02B6/00L6O4S4S	. . . . .	{7 dots} [N: with stepwise taper] [N0703]
G02B6/00L6O8	. . . . .	[N: provided by one optical element, or plurality thereof, placed on the light output side of the light guide] [N0703]
G02B6/00L6O8D	. . . . .	[N: Diffusing sheet or layer] [N0703]
G02B6/00L6O8P	. . . . .	[N: Prismatic sheet or layer; Brightness enhancement element, sheet or layer] [N0703]
G02B6/00L6O8R	. . . . .	[N: Reflecting element, sheet or layer] [N0703]
G02B6/00L6O14	. . . . .	[N: for producing polarisation effects, e.g. by a surface with polarizing properties or by an additional polarizing elements] [N0703]
G02B6/00L6O16	. . . . .	[N: varying in density, size, shape or depth along the light guide] [N0703] [C1112]
G02B6/00L6O16B	. . . . .	[N: to produce indicia, symbols, texts or the like] [N1112]
G02B6/00L6O16U	. . . . .	[N: to provide homogeneous light output intensity] [N1112]
G02B6/00L6O18	. . . . .	[N: for extracting light out both the major surfaces of the light guide] [N0703]
G02B6/00L6P	. . . . .	[N: Manufacturing aspects; Material aspects] [N0703]
		[N: Notes
		[N1002] When classifying in this group, classification must also be made in one or more of the groups of G02B6/00L6I or G02B6/00L6O for the related device aspects
]
G02B6/00L6S	. . . . .	[N: characterised by the light source being coupled to the light guide] [N0703]
G02B6/00L6S2	. . . . .	[N: Arrangements of plural sources, e.g. multi-colour light sources] [N0703]
G02B6/00L6S4	. . . . .	[N: Incandescent lamp or gas discharge lamp] [N0703]
G02B6/00L6S4E	. . . . .	[N: with elongated shape, e.g. tube] [N0703]
G02B6/00L6S6	. . . . .	[N: Light emitting diode (LED)] [N0703]
G02B6/00L6T	. . . . .	[N: Arrangements of multiple light guides (G02B6/00L6I8G takes precedence)] [N0703] [C1112]
G02B6/00L6T2	. . . . .	[N: Stacked arrangements of multiple light guides of the same or different cross-sectional area] [N1112]
G02B6/00L6T4	. . . . .	[N: Side-by-side arrangements, e.g. for large area displays] [N1112]
G02B6/00L6T4B	. . . . .	[N: of the partially overlapping type] [N1112]
G02B6/00L6U	. . . . .	[N: Mechanical or electrical aspects of the light guide and light source in the lighting device peculiar to the adaptation to planar light guides, e.g. concerning packaging] [N0703] [C1105]
G02B6/00L6U2	. . . . .	[N: Details of electrical connections of light sources to drivers, circuit boards, or the like] [N1105]

- G02B6/00L6U4 [N: Means for removing heat created by the light source from the package (heat extraction or cooling elements for semiconductor light sources in general [H01L33/64](#))] [N1105]
- G02B6/00L6U6 [N: Positioning aspects] [N1105]
- G02B6/00L6U6G [N: of the light guide or other optical sheets in the package] [N1105]
- G02B6/00L6U6L [N: of the light source in the package ([G02B6/00L6I4S4](#) takes precedence)] [N1105]
- G02B6/00L6U6R [N: of the light source relative to the light guide ([G02B6/00L6I4S4](#) takes precedence)] [N1105]
- G02B6/00L6U12 [N: Means for protecting the light guide] [N1105]
- G02B6/00L6U14 [N: Light guides as housings, housing portions, shelves, doors, tiles, windows, or the like] [N1105]
- G02B6/00L8 . . . [N: the lights guides being of the hollow type] [N0303]
- G02B6/02 Optical fibre with cladding [N: with or without a coating] (mechanical structures for providing tensile strength and external protection [G02B6/44](#)) [C1206]
- G02B6/02A . . . [N: characterised by the core effective area or mode field radius] [N0902]
- G02B6/02A2 [N: Large effective area or mode field radius, e.g. to reduce nonlinear effects in single mode fibres] [N0902]
- G02B6/02A2B [N: Effective area greater than 60 square microns in the C band, i.e. 1530-1565 nm] [N0902]
- G02B6/02A2B2 [N: Effective area greater than 90 square microns in the C band, i.e. 1530-1565 nm] [N0902]
- G02B6/02A2H [N: Based on higher order modes, i.e. propagating modes other than the LP01 or HE11 fundamental mode (mode converters [G02B6/14](#))] [N0902]
- G02B6/02A4 [N: Small effective area or mode field radius, e.g. for allowing nonlinear effects (non-linear optical waveguide devices [G02F1/365](#))] [N0902]
- G02B6/02B . . . [N: Core or cladding made from organic material, e.g. polymeric material ([G02B1/04](#) takes precedence)] [N0508]
- G02B6/02B2 . . . [N: with core or cladding having graded refractive index] [N0902]
- G02B6/02C . . . [N: Multicore optical fibres] [N0508]
- G02B6/02D . . . [N: Dual mode fibre ([G02B6/10P](#) takes precedence)] [N0508]
- G02B6/02E . . . [N: comprising optical elements other than gratings, e.g. filters (comprising gratings [G02B6/02G](#))] [N0508]
- G02B6/02G . . . [N: comprising gratings] [N0508]
- G02B6/02G2 [N: Grating external to the fibre and in contact with the fibre, e.g. evanescently coupled, gratings applied to the fibre end (mechanically induced in the fibre [G02B6/02G6](#), surface relief on the fibre [G02B6/02G4](#))] [N0508]
- G02B6/02G4 [N: Gratings having a surface relief structure, e.g. repetitive variation in diameter of core or cladding] [N0508]
- G02B6/02G6 [N: Mechanically induced gratings, e.g. having microbends ([G02B6/02G4](#) takes precedence; mode converters [G02B6/14](#))] [N0508]
- G02B6/02G8 [N: Refractive index modulation gratings, e.g. Bragg gratings] [N0508]
- G02B6/02G8B [N: characterised by their structure, wavelength response ([G02B6/02G8H](#), [G02B6/02G8R](#), [G02B6/02G8T](#) take precedence; multiple layer cores or claddings [G02B6/036](#), protective coverings [G02B6/44C7](#))] [N0508]
- G02B6/02G8B2 [N: characterised by the grating profile, e.g. chirped, apodised, tilted, helical] [N0508]
- G02B6/02G8B2L [N: Long period gratings, i.e. transmission gratings coupling light

		between core and cladding modes] [N0508]
G02B6/02G8B4	. . . . .	[N: characterised by the core or cladding or coating, e.g. materials, radial refractive index profiles, cladding shape] [N0508]
G02B6/02G8B4C	. . . . .	[N: characterised by the coating external to the cladding, e.g. coating influences grating properties] [N0508]
G02B6/02G8B4P	. . . . .	[N: having polarization sensitive features, e.g. reduced photo-induced birefringence] [N0508]
G02B6/02G8H	. . . . .	[N: characterised by enhanced photosensitivity characteristics of the fibre, e.g. hydrogen loading, heat treatment (treatment of glass fibres by ion diffusion, implantation, radiation, C03C25/60, C03C25/62)] [N0508]
G02B6/02G8H2	. . . . .	[N: Photosensitivity profiles determining the grating structure, e.g. radial or longitudinal] [N0508]
G02B6/02G8M	. . . . .	[N: characterised by the method of manufacture of the grating (photolithography G03F7/00B)] [N0508]
G02B6/02G8M2	. . . . .	[N: Internal inscription, i.e. grating written by light propagating within the fibre, e.g. "self-induced"] [N0508]
G02B6/02G8M4	. . . . .	[N: using beam interference] [N0508]
G02B6/02G8M4M	. . . . .	[N: based on illuminating a phase mask] [N0508]
G02B6/02G8M6	. . . . .	[N: based on illuminating or irradiating an amplitude mask, i.e. a mask having a repetitive intensity modulating pattern] [N0508]
G02B6/02G8M8	. . . . .	[N: Point by point fabrication, i.e. grating elements induced one step at a time along the fibre, e.g. by scanning a laser beam, arc discharge scanning (G02B6/02G8M4 and G02B6/02G8M6 take precedence)] [N0508]
G02B6/02G8M10	. . . . .	[N: involving moving the fibre or a manufacturing element, stretching of the fibre(G02B6/02G8M8 takes precedence)] [N0508]
G02B6/02G8R	. . . . .	[N: characterised by means for compensating environmentally induced changes] [N0508]
G02B6/02G8R2	. . . . .	[N: due to temperature fluctuations] [N0508]
G02B6/02G8R2B	. . . . .	[N: using mounting means, e.g. by using a combination of materials having different thermal expansion coefficients] [N0508]
G02B6/02G8R2D	. . . . .	[N: based on treating the fibre, e.g. post-manufacture treatment, thermal aging, annealing (annealing glass fibres C03B37/15)] [N0508]
G02B6/02G8R2F	. . . . .	[N: based on composition of fibre materials] [N0508]
G02B6/02G8T	. . . . .	[N: characterised by means for tuning the grating] [N0508]
G02B6/02G8T2	. . . . .	[N: using mechanical stress, e.g. tuning by compression or elongation, special geometrical shapes such as "dog-bone" or taper (G02B6/02G8T4 takes precedence; optical modulation using photo-elastic effect G02F1/01M2)] [N0508]
G02B6/02G8T4	. . . . .	[N: using thermal effects, e.g. heating or cooling of a temperature sensitive mounting body (optical modulation using thermo-optic effect G02F1/01T)] [N0508]
G02B6/02G8V	. . . . .	[N: Mounting means, e.g. adhesives, casings (G02B6/02G8R and G02B6/02G8T take precedence)] [N0508]
G02B6/02M	. . . . .	[N: tailored to obtain the desired dispersion, e.g. dispersion shifted, dispersion flattened] [N0508]
G02B6/02M2	. . . . .	[N: Characterised by the wavelength dispersion properties in the silica low loss window around 1550 nm, i.e. S, C, L and U bands from 1460-1675 nm] [N0902]
G02B6/02M2D	. . . . .	[N: Dual window fibres, i.e. characterised by dispersion properties around 1550 nm and in at least another wavelength window, e.g. 1310 nm] [N0902]

G02B6/02M2F	. . . . .	[N: Dispersion flattened fibres, i.e. having a low dispersion variation over an extended wavelength range] [N0902]
G02B6/02M2F2	. . . . .	[N: having at least two dispersion zero wavelengths] [N0902]
G02B6/02M2F4	. . . . .	[N: Low dispersion slope fibres] [N0902]
G02B6/02M2F4L	. . . . .	[N: having a dispersion slope <0.06 ps/km/nm ²] [N0902]
G02B6/02M2M	. . . . .	[N: Dispersion varying along the longitudinal direction, e.g. dispersion managed fibre] [N0902]
G02B6/02M2N	. . . . .	[N: Negative dispersion fibres at 1550 nm] [N0902]
G02B6/02M2N2	. . . . .	[N: Non-zero dispersion shifted fibres, i.e. having a small negative dispersion at 1550 nm, e.g. ITU-T G.655 dispersion between - 1.0 to - 10 ps/nm.km for avoiding nonlinear effects] [N0902]
G02B6/02M2N4	. . . . .	[N: Dispersion compensating fibres, i.e. for compensating positive dispersion of other fibres] [N0902]
G02B6/02M2P	. . . . .	[N: Positive dispersion fibres at 1550 nm] [N0902]
G02B6/02M2P2	. . . . .	[N: Non-zero dispersion shifted fibres, i.e. having a small positive dispersion at 1550 nm, e.g. ITU-T G.655 dispersion between 1.0 to 10 ps/nm.km for avoiding nonlinear effects] [N0902]
G02B6/02M2S	. . . . .	[N: Dispersion shifted fibres, i.e. zero dispersion at 1550 nm] [N0902]
G02B6/02M4	. . . . .	[N: Characterised by the wavelength dispersion slope properties around 1550 nm (G02B6/02M2F takes precedence)] [N0902]
G02B6/02M6	. . . . .	[N: Characterised by the polarisation mode dispersion (PMD) properties, e.g. for minimising PMD (fabrication methods for minimising PMD C03B37/027D)] [N0902]
G02B6/02N	. . . . .	[N: characterised by nanostructures, i.e. structures of size less than 100 nm, e.g. quantum dots] [N0801]
G02B6/02P	. . . . .	[N: Microstructured optical fibre (polarisation properties thereof G02B6/10P and G02B6/024)] [N0508] [C0801]
G02B6/02P2	. . . . .	[N: having different index layers arranged around the core for guiding light by reflection, i.e. 1D crystal, e.g. omniguide] [N0801]
G02B6/02P2A	. . . . .	[N: Core having lower refractive index than cladding, e.g. air filled, hollow core] [N0801]
G02B6/02P4	. . . . .	[N: Structures extending perpendicularly or at a large angle to the longitudinal axis of the fibre, e.g. photonic band gap along fibre axis] [N0801]
G02B6/02P6	. . . . .	[N: Plurality of longitudinal structures extending along optical fibre axis, e.g. holes] [N0801]
G02B6/02P6C	. . . . .	[N: characterised by core or core-cladding interface features] [N0801]
G02B6/02P6C2	. . . . .	[N: Core having lower refractive index than cladding, e.g. photonic band gap guiding] [N0801]
G02B6/02P6C2A	. . . . .	[N: Hollow or gas filled core] [N0801]
G02B6/02P6C4	. . . . .	[N: Core having higher refractive index than cladding, e.g. solid core, effective index guiding] [N0801]
G02B6/02P6C6	. . . . .	[N: Structured core, e.g. core contains more than one material, non-constant refractive index distribution in core, asymmetric or non-circular elements in core unit, multiple cores, insertions between core and clad] [N0801]
G02B6/02P6K	. . . . .	[N: characterised by cladding features, i.e. light confining region] [N0801]
G02B6/02P6K2	. . . . .	[N: Longitudinal structures arranged to form a regular periodic lattice, e.g. triangular, square, honeycomb unit cell repeated throughout cladding] [N0801]

- G02B6/02P6K2M [N: Complex periodic lattices or multiple interpenetrating periodic lattices, e.g. unit cell having more than two materials, partially internally coated holes, for multiple bandgaps] [N0801]
- G02B6/02P6K4 [N: Property of longitudinal structures or background material varies radially and/or azimuthally in the cladding, e.g. size, spacing, periodicity, shape, refractive index, graded index, quasiperiodic, quasicrystals] [N0801]
- G02B6/02P6K6 [N: Longitudinal structures forming multiple layers around the core, e.g. arranged in multiple rings with each ring having longitudinal elements at substantially the same radial distance from the core, having rotational symmetry about the fibre axis] [N0801]
- G02B6/02P6K8 [N: Single ring of structures, e.g. "air clad"] [N0801]
- G02B6/02P6K10 [N: Cross section of longitudinal structures is non-circular] [N0801]
- G02B6/02P6K12 [N: Longitudinal variation along fibre axis direction, e.g. tapered holes] [N0801]
- G02B6/02P6K14 [N: Longitudinal structures having higher refractive index than background material, e.g. high index solid rods] [N0801]
- G02B6/02P6L [N: Comprising liquid, e.g. fluid filled holes] [N0801]
- G02B6/02P6T [N: Comprising means for varying the guiding properties, e.g. tuning means] [N0801]
- G02B6/02U [N: Glass optical fibre with a protective coating, e.g. two layer polymer coating deposited directly on a silica cladding surface during fibre manufacture ([G02B6/02E](#), [G02B6/02G](#), [G02B6/10P](#), [G02B6/024](#), [G02B6/032](#), [G02B6/14](#) take precedence; optical cables, i.e. comprising protective structures external to the protective coating such as a jacket or plural coated optical fibres [G02B6/44](#); coating on fibre gratings [G02B6/02G8B4C](#); coating of glass to obtain optical fibres [C03C25/10P](#); multilayer core or cladding [G02B6/036](#); reinforcing splice joints [G02B6/255R](#))] [N1206]
- G02B6/024 with polarisation maintaining properties [N0508]
- G02B6/028 with core or cladding having graded refractive index [N: ([G02B6/02B](#), [G02B6/02P](#) take precedence)] [N0508] [C0902]
- G02B6/028C [N: Graded index region forming part of the central core segment, e.g. alpha profile, triangular, trapezoidal core ([G02B6/028M](#), [G02B6/028G](#) take precedence)] [N0902]
- G02B6/028E [N: Graded index region external to the central core segment, e.g. sloping layer or triangular or trapezoidal layer ([G02B6/028M](#), [G02B6/028G](#) take precedence)] [N0902]
- G02B6/028E4 [N: Graded index layer adjacent to the central core segment and ending at the outer cladding index] [N0902]
- G02B6/028G [N: Combination of graded index in the central core segment and a graded index layer external to the central core segment ([G02B6/028M](#) takes precedence)] [N0902]
- G02B6/028M [N: Multimode fibre, e.g. graded index core for compensating modal dispersion] [N0902]
- G02B6/032 with non solid core or cladding [N: [G02B6/02P](#) takes precedence] [N0508] [C0801]
- G02B6/036 core or cladding comprising multiple layers [N: (multicore optical fibres [G02B6/02C](#); microstructured properties [G02B6/02P](#); omniguide fibres [G02B6/02P2](#))] [N0508] [C0801]
- G02B6/036H [N: Highest refractive index not on central axis] [N0902]
- G02B6/036H2 [N: Highest index adjacent to central axis region, e.g. annular core, coaxial ring, centreline depression affecting waveguiding] [N0902]

- G02B6/036L . . . [N: Optical fibres characterised both by the number of different refractive index layers around the central core segment, i.e. around the innermost high index core layer, and their relative refractive index difference] [N0902]
- [N: **Notes**[N0902]
- A layer is characterised by an abrupt change in refractive index gradient, e.g. by the layer having a maximum or minimum or the layer being between two points of inflexion, such that a graded boundary as in a trapezoidal core is not counted as a separate layer. 2. The innermost high index core layer is the first layer starting from the central core after which the refractive index decreases. 3. + and - refer respectively to the relative refractive index difference increase/decrease of adjacent layers starting from the innermost highest index core layer and continuing in a radially outward direction]
- G02B6/036L2 [N: having 2 layers only] [N0902]
- G02B6/036L2A [N: arranged - +] [N0902]
- G02B6/036L2N [N: arranged - -] [N0902]
- G02B6/036L3 [N: having 3 layers only] [N0902]
- G02B6/036L3A [N: arranged - + -] [N0902]
- G02B6/036L3N [N: arranged - - +] [N0902]
- G02B6/036L3P [N: arranged - + +] [N0902]
- G02B6/036L4 [N: having 4 layers only] [N0902]
- G02B6/036L4A [N: arranged - + - +] [N0902]
- G02B6/036L4N [N: arranged - - + -] [N0902]
- G02B6/036L4P [N: arranged - + + -] [N0902]
- G02B6/036L4T [N: arranged - - + +] [N0902]
- G02B6/036L5 [N: having 5 or more layers] [N0902]
- G02B6/036U [N: Multiple layers differing in properties other than the refractive index, e.g. attenuation, diffusion, stress properties] [N0902]
- G02B6/04 . . . formed by bundles of fibres ([G02B6/24](#) takes precedence)
- G02B6/06 . . . the relative position of the fibres being the same at both ends, e.g. for transporting images
- G02B6/06D [N: with dynamic image improvement]
- G02B6/08 with fibre bundle in form of plate
- G02B6/10 . . . of the optical waveguide type ([G02B6/02](#), [G02B6/24](#) take precedence; devices or arrangements for the control of light by electric, magnetic, electro-magnetic or acoustic means [G02F1/00](#); transferring the modulation of modulated light [G02F2/00](#); optical logic elements [G02F3/00](#); optical analogue/digital converters [G02F7/00](#); stores using opto-electronic devices [G11C11/42](#), [N: using electro-optical elements [G11C13/04E](#)]; electric waveguides H01P; transmission of information by optical means [H04B10/00](#); multiplex systems [H04J14/00](#))
- G02B6/10L [N: for infra-red and ultra-violet radiation]
- G02B6/10P [N: having optical polarisation effects]
- G02B6/10S [N: Subwavelength-diameter waveguides, e.g. nanowires] [N0508]
- G02B6/12 . . . of the integrated circuit kind (production or processing of single crystals [C30B](#); electric integrated circuits [H01L27/00](#) [N: coupling fibres and integrated optical circuits [G02B6/30](#)])
- G02B6/12B [N: Three-dimensional structures]

G02B6/12D	. . .	[N: Combinations of two or more optical elements]
G02B6/12M	. . .	[N: forming wavelength selective elements, e.g. multiplexer, demultiplexer] [N9510]
G02B6/12M2	. . . .	[N: comprising arrayed waveguide grating [AWG] devices, i.e. with a phased array of waveguides] [N1004]
G02B6/12M2A	. . . . .	[N: characterised by the arrayed waveguides, e.g. comprising a filled groove in the array section] [N1004]
G02B6/12M2F	. . . . .	[N: characterised by the wavefront splitting or combining section, e.g. grooves or optical elements in a slab waveguide] [N1004]
G02B6/12M2I	. . . . .	[N: characterised by the input or output waveguides, e.g. tapered waveguide ends, coupled together pairs of output waveguides] [N1004]
G02B6/12M2O	. . . . .	[N: characterised by the optical interconnection to or from the AWG devices, e.g. integration or coupling with lasers or photodiodes (coupling integrated waveguide to fibre G02B6/30 , to optoelectronic element G02B6/42 ; monolithic integration of integrated waveguides with other optical elements G02B6/12D)] [N1004]
G02B6/12M2O2	. . . . .	[N: Comprising cascaded AWG devices; AWG multipass configuration; Plural AWG devices integrated on a single chip] [N1004]
G02B6/12M2P	. . . . .	[N: characterised by means for reducing the polarisation dependence, e.g. reduced birefringence] [N1004]
G02B6/12M2T	. . . . .	[N: characterised by means for reducing the temperature dependence] [N1004]
G02B6/12M2T2	. . . . .	[N: based on a combination of materials having a different refractive index temperature dependence, i.e. the materials are used for transmitting light] [N1004]
G02B6/12M2T4	. . . . .	[N: using mounting means, e.g. by using a combination of materials having different thermal expansion coefficients] [N1004]
G02B6/12M2V	. . . . .	[N: characterised by means for configuring the device, e.g. moveable element for wavelength tuning (switching G02B6/35 ; thermo-optic devices G02F1/01T)] [N1004]
G02B6/122	. . .	basic optical elements, e.g. light-guiding paths [N0501]
G02B6/122C	. . . .	[N: made from organic materials] [N0501]
G02B6/122H	. . . .	[N: high refractive index type, i.e. high-contrast waveguides] [N0501]
G02B6/122P	. . . .	[N: comprising photonic band-gap structures or photonic lattices] [N0501]
G02B6/122S	. . . .	[N: involving surface plasmon interaction] [N0501]
G02B6/122T	. . . .	[N: Tapered waveguides, e.g. integrated spot-size transformers (for coupling with fibres G02B6/30T)] [N0501]
G02B6/124	. . . .	Geodesic lenses or integrated gratings [N0501]
G02B6/124L	. . . . .	[N: Geodesic lenses] [N0501]
G02B6/125	. . . .	Bends, branchings or intersections [N0501]
G02B6/126	. . . .	using polarisation effects [N: (G02B6/122S takes precedence)] [N0501]
G02B6/13	. . .	Integrated optical circuits characterised by the manufacturing method [N0501]
G02B6/13E	. . . .	by using epitaxial growth (epitaxial growth for semiconductors H01L21/36) [N0501]
G02B6/132	. . . .	by deposition of thin films [N0501]
G02B6/134	. . . .	by substitution by dopant atoms [N0501]
G02B6/134D	. . . . .	[N: using diffusion (diffusion in single crystals C30B31/00 ; diffusion in glass C03C23/00)] [N0501]

- G02B6/134E [N: using ion exchange (ion exchange in glass [C03C21/00](#))] [N0501]
- G02B6/134J [N: using ion implantation (ion implantation in glass [C03C23/00B20](#); ion implantation in general [C23C](#))] [N0501]
- G02B6/136 by etching [N0501]
- G02B6/138 by using polymerisation [N0501]
- G02B6/14 Mode converters

- G02B6/24 Coupling light guides (for electric waveguides [H01P1/00](#))
- G02B6/24A [N: Light guide terminations] [N9502]
- G02B6/24A2 [N: as light absorbers] [N9502]
- G02B6/245 Removing protective coverings of light guides before coupling
- G02B6/25 Preparing the ends of light guides for coupling, e.g. cutting
- G02B6/255 Splicing of light guides, e.g. by fusion or bonding
- G02B6/255B [N: using thermal methods, e.g. fusion welding by arc discharge, laser beam, plasma torch (making optical fibres with heat application [C03B37/15](#))] [C0811]
- G02B6/255K [N: reshaping or reforming of light guides for coupling using thermal heating, e.g. tapering, forming of a lens on light guide ends]
- G02B6/255M [N: Splicing machines, e.g. optical fibre fusion splicer] [N0811]
- G02B6/255P [N: Alignment or adjustment devices for aligning prior to splicing] [N0811]
- G02B6/255P2 [N: including a fibre supporting member inclined to the bottom surface of the alignment means] [N0811]
- G02B6/255P4 [N: using deformable flexure members, flexible hinges or pivotal arms] [N0811]
- G02B6/255R [N: Reinforcement of splice joint] [N0811]
- G02B6/26 Optical coupling means ([G02B6/36](#), [G02B6/42](#) take precedence)
- G02B6/26B [N: Optical details of coupling light into, or out of, or between fibre ends, e.g. special fibre end shapes or associated optical elements]
- G02B6/26C [N: with optical elements between opposed fibre ends which perform a function other than beam splitting (having lens focusing means [G02B6/32](#); utilising prism or grating [G02B6/34](#))]
- G02B6/26C2 [N: the optical element being an attenuator] [N9506] [C9603]
- G02B6/26M [N: for modal dispersion control, e.g. concatenation of light guides having different modal dispersion properties (graded index multimode fibres [G02B6/028M](#); multimodal transmission systems [H04B10/13](#))] [N1002]
- G02B6/27 with polarisation selective and adjusting means ([N: for wavelength selection [G02B6/293B](#); of the integrated waveguide kind [G02B6/126](#)]; polarisation; polarisation systems in general [G02B27/28](#); optical polarisation multiplex systems [H04J14/06](#)) [N0502] [C1004]
- G02B6/27B [N: as bulk elements, i.e. free space arrangements external to a light guide, e.g. polarising beam splitters] [N1004]
- G02B6/27B2 [N: cascade of polarisation selective or adjusting operations] [N1004]
- G02B6/27B2S [N: comprising polarisation means for beam splitting and combining] [N1004]
- G02B6/27L [N: in or on light guides, e.g. polarisation means assembled in a light guide] [N1004]
- G02B6/27L2 [N: Light guides evanescently coupled to polarisation sensitive elements] [N1004]
- G02B6/27L4 [N: based on light guide birefringence, e.g. due to coupling between light

			guides (G02B6/10P , G02B6/024 take precedence; mechanically induced birefringence G02F1/02M2C) [N1004]
G02B6/27R	. . . .	[N: comprising non-reciprocal devices, e.g. isolators, FRM, circulators, quasi-isolators (magneto-optic non-reciprocal devices G02F1/09F)] [N1004]	
G02B6/27W	. . . .	[N: characterised by their function or use, i.e. of the complete device] [N1004]	
G02B6/27W2	. . . . .	[N: Removing selected polarisation component of light, i.e. polarizers] [N1004]	
G02B6/27W4	. . . . .	[N: Manipulating the plane of polarisation from one input polarisation to another output polarisation, e.g. polarisation rotators, linear to circular polarisation converters] [N1004]	
G02B6/27W6	. . . . .	[N: Polarisation splitting or combining] [N1004]	
G02B6/27W8	. . . . .	[N: Controlling polarisation mode dispersion [PMD], e.g. PMD compensation or emulation (PMD minimised transmission systems H04B10/18P)] [N1004]	
G02B6/27W10	. . . . .	[N: Reducing the polarisation degree, i.e. depolarisers, scramblers, unpolarised output] [N1004]	
G02B6/27W12	. . . . .	[N: Controlling polarisation dependent loss, e.g. polarisation insensitivity, reducing the change in polarisation degree of the output light even if the input polarisation state fluctuates] [N1004]	
G02B6/28	. . .	having data bus means, i.e. plural waveguides interconnected and providing an inherently bidirectional system by mixing and splitting signals	
G02B6/28B	. . . .	[N: forming multipart couplers without wavelength selective elements, e.g. "T" couplers, star couplers]	
G02B6/28B2	. . . . .	[N: using a mixing element which evenly distributes an input signal over a number of outputs]	
G02B6/28B21	. . . . .	[N: based on multimode interference effect, i.e. self-imaging] [N9503]	
G02B6/28B4	. . . . .	[N: using reflective elements to split or combine optical signals]	
G02B6/28B6	. . . . .	[N: using lateral coupling between contiguous fibres to split or combine optical signals]	
G02B6/28B6B	. . . . .	[N: using mechanical machining means for shaping of the couplers, e.g. grinding or polishing (grinding , polishing in general B24)]	
G02B6/28B6B2	. . . . .	{7 dots} [N: couplers being tunable or adjustable]	
G02B6/28B6H	. . . . .	[N: formed or shaped by thermal treatment, e.g. couplers]	
G02B6/28B6P	. . . . .	[N: the couplers having polarisation maintaining or holding properties (polarisation preserving light guides G02B6/10P)]	
G02B6/28B8	. . . . .	[N: having refractive means, e.g. imaging elements between light guides as splitting, branching and/or combining devices, e.g. lenses, holograms]	
G02B6/28B10	. . . . .	[N: using tapping light guides arranged sidewardly, e.g. in a non-parallel relationship with respect to the bus light guides (light extraction or launching through cladding, with or without surface discontinuities, bent structures)]	
G02B6/28B12	. . . . .	[N: formed or shaped by thermal heating means, e.g. splitting, branching and/or combining elements]	
G02B6/28B14	. . . . .	[N: using fibre optic delay lines and optical elements associated with them, e.g. for use in signal processing, e.g. filtering (delay lines in general H03H, H01P9/00 ; optical computing devices G06E)]	
G02B6/287	. . . .	Structuring of light guides to shape optical elements with heat application (G02B6/255 takes precedence) [N0502]	
G02B6/293	. . . .	with wavelength selective means ([N: G02B6/02E , G02B6/02G take	

precedence]; for optical elements in use, see the relevant subgroups of this subclass; optical wavelength-division multiplexing systems [H04J14/02](#); [N: in or associated with an integrated waveguide arrangement [G02B6/12M](#); mode multiplexing [G02B6/14](#)] [N0502] [C1002]

G02B6/293A	. . . . .	[N: based on a phased array of light guides (integrated arrayed waveguide gratings G02B6/12M2)] [N1002]
G02B6/293B	. . . . .	[N: based on birefringence or polarisation, e.g. wavelength dependent birefringence, polarisation interferometers] [N1002]
G02B6/293D	. . . . .	[N: operating by diffraction, e.g. grating (G02B6/293A takes precedence ; spectrometers using gratings G01J3/18)] [N1002]
G02B6/293D2	. . . . .	[N: as bulk element, i.e. free space arrangement external to a light guide] [N1002]
G02B6/293D2B	. . . . .	{7 dots} [N: components assembled in or forming a solid transparent unitary block, e.g. for facilitating component alignment] [N1002]
G02B6/293D2F	. . . . .	{7 dots} [N: Diffractive element having focusing properties, e.g. curved gratings (Rowland circle spectrometers G01J3/20)] [N1002]
G02B6/293D2R	. . . . .	{7 dots} [N: Diffractive element operating in reflection] [N1002]
G02B6/293D2T	. . . . .	{7 dots} [N: Diffractive element operating in transmission] [N1002]
G02B6/293D2V	. . . . .	{7 dots} [N: characterised by means for controlling the position or direction of light incident to or leaving the diffractive element, e.g. for varying the wavelength response (switching G02B6/35)] [N1002]
G02B6/293D2V2	. . . . .	{8 dots} [N: by moving or modifying the diffractive element, e.g. deforming] [N1002]
G02B6/293D4	. . . . .	[N: Light guides comprising a diffractive element, e.g. grating in or on the light guide such that diffracted light is confined in the light guide (G02B6/02G , G02B6/293E2 , G02B6/293I8 take precedence)] [N1002]
G02B6/293D4F	. . . . .	{7 dots} [N: Light guides of the optical fibre type] [N1002]
G02B6/293D4F2	. . . . .	{8 dots} [N: With a cascade of diffractive elements or of diffraction operations (forming interferometer by splitting and recombining G02B6/293I2-G02B6/293I10)] [N1002]
G02B6/293D4F2C	. . . . .	{9 dots} [N: comprising a directional router, e.g. directional coupler, circulator] [N1002]
G02B6/293D4F4	. . . . .	{8 dots} [N: Diffractive elements of the tunable type (G02B6/02G8T takes precedence ; optical modulation devices based on a change of the optical properties of the medium G02F1/00)] [N1002]
G02B6/293D4L	. . . . .	{7 dots} [N: Coupling to or out of the diffractive element through the lateral surface of the light guide (evanescent grating couplers G02B6/293E2)] [N1002]
G02B6/293D4S	. . . . .	{7 dots} [N: of the slab or planar or plate like form, i.e. confinement in a single transverse dimension only (integrated circuit planar waveguide arrangements G02B6/12M ; specially adapted for lighting G02B6/00L6)] [N1002]
G02B6/293D4S2	. . . . .	{8 dots} [N: Diffractive elements having focusing properties, e.g. curved gratings (Rowland circle spectrometers G01J3/20)] [N1002]
G02B6/293D4S4	. . . . .	{8 dots} [N: Diffractive elements operating in reflection] [N1002]
G02B6/293D4S6	. . . . .	{8 dots} [N: Diffractive elements operating in transmission] [N1002]

G02B6/293E	. . . . .	[N: operating by evanescent wave coupling] [N1002]
G02B6/293E2	. . . . .	[N: Wavelength selective couplers, i.e. based on evanescent coupling between light guides, e.g. fused fibre couplers with transverse coupling between fibres having different propagation constant wavelength dependency (non wavelength-selective light guide couplers G02B6/28)] [N1002]
G02B6/293E2G	. . . . .	{7 dots} [N: Grating-assisted evanescent light guide couplers, i.e. comprising grating at or functionally associated with the coupling region between the light guides, e.g. with a grating positioned where light fields overlap in the coupler] [N1002]
G02B6/293E4	. . . . .	[N: Evanescent coupling to a resonator cavity, i.e. between a waveguide mode and a resonant mode of the cavity (wavelength selective means based on resonator cavity coupled non-evanescently G02B6/293I8 , G02B6/293I10)] [N1002]
G02B6/293E4L	. . . . .	{7 dots} [N: Cavities of the linear kind, e.g. formed by reflectors at ends of a light guide] [N1002]
G02B6/293E4R	. . . . .	{7 dots} [N: Loop resonators] [N1002]
G02B6/293E4R2	. . . . .	{8 dots} [N: Fibre ring resonators, e.g. fibre coils] [N1002]
G02B6/293E4R4	. . . . .	{8 dots} [N: Loop resonators operating in a whispering gallery mode evanescently coupled to a light guide, e.g. sphere or disk or cylinder (evanescent coupling for sensing fluorescence G01N21/64P8)] [N1002]
G02B6/293E4R6	. . . . .	{8 dots} [N: Cascade of loop resonators] [N1002]
G02B6/293H	. . . . .	[N: operating by modal interference or beating, i.e. of transverse modes, e.g. zero-gap directional coupler, MMI] [N1002]
G02B6/293I	. . . . .	[N: operating by wave or beam interference (interferometers for measuring G01B9/02)] [N1002]
G02B6/293I2	. . . . .	[N: Loop interferometers, e.g. Sagnac, loop mirror] [N1002]
G02B6/293I4	. . . . .	[N: Michelson or Michelson/Gires-Tournois configuration, i.e. based on splitting and interferometrically combining relatively delayed signals at a single beamsplitter] [N1002]
G02B6/293I6	. . . . .	[N: Mach-Zehnder configuration, i.e. comprising separate splitting and combining means] [N1002]
G02B6/293I6F	. . . . .	{7 dots} [N: in a light guide] [N1002]
G02B6/293I6F2	. . . . .	{8 dots} [N: with a wavelength selective element in at least one light guide interferometer arm, e.g. grating, interference filter, resonator] [N1002]
G02B6/293I6F4	. . . . .	{8 dots} [N: Cascade arrangement of interferometers] [N1002]
G02B6/293I8	. . . . .	[N: Interference cavity within a single light guide, e.g. between two fibre gratings (G02B6/293I2 - G02B6/293I6 take precedence; evanescent coupling to a resonator cavity G02B6/293E4)] [N1002]
G02B6/293I10	. . . . .	[N: Multiple beam interferometer external to a light guide, e.g. Fabry-Pérot, etalon, VIPA plate, OTDL plate, continuous interferometer, parallel plate resonator (G02B6/293I2 , G02B6/293I4 , G02B6/293I6 , G02B6/293I12 take precedence; resonator evanescently coupled to light guide G02B6/293E4)] [N1002]
G02B6/293I10F	. . . . .	{7 dots} [N: Cavity formed by light guide ends, e.g. fibre Fabry Pérot (FFP)] [N1002]
G02B6/293I12	. . . . .	[N: Interference filters, e.g. multilayer coatings, thin film filters, dichroic splitters or mirrors based on multilayers, WDM filters] [N1002]
G02B6/293I12C	. . . . .	{7 dots} [N: Serial cascade of filters or filtering operations, e.g. for a

		large number of channels] [N1002]
G02B6/293I12C2	. . . . .	{8 dots} [N: Cascading by a light guide path between filters or filtering operations, e.g. fibre interconnected single filter modules] [N1002]
G02B6/293I12C4	. . . . .	{8 dots} [N: in a multireflection configuration, i.e. beam following a zigzag path between filters or filtering operations] [N1002]
G02B6/293I12C4B	. . . . .	{9 dots} [N: Zigzag path within a transparent optical block, e.g. filter deposited on an etalon, glass plate, wedge acting as a stable spacer] [N1002]
G02B6/293I12F	. . . . .	{7 dots} [N: Light guide comprising the filter, e.g. filter deposited on a fibre end (G02B6/293I10F takes precedence)] [N1002]
G02B6/293I12S	. . . . .	{7 dots} [N: In line lens-filtering-lens devices, i.e. elements arranged along a line and mountable in a cylindrical package for compactness, e.g. 3- port device with GRIN lenses sandwiching a single filter operating at normal incidence in a tubular package] [N1002]
G02B6/293M	. . . . .	[N: operating principle based on material dispersion] [N1002]
G02B6/293M2	. . . . .	[N: utilising a bulk dispersive element, e.g. prism] [N1002]
G02B6/293M4	. . . . .	[N: in an optical light guide (G02B6/02M takes precedence)] [N1002]
G02B6/293M4M	. . . . .	{7 dots} [N: coupling light guides for controlling wavelength dispersion, e.g. by concatenation of two light guides having different dispersion properties (dispersion managed optical transmission systems H04B10/18D2M)] [N1002]
G02B6/293M4M2	. . . . .	{8 dots} [N: controlling dispersion around 1550 nm, i.e. S, C, L and U bands from 1460-1675 nm] [N1002]
G02B6/293W	. . . . .	[N: characterised by the function or use of the complete device] [N1002]
G02B6/293W2	. . . . .	[N: for multiplexing or demultiplexing, i.e. combining or separating wavelengths, e.g. 1xN, NxM] [N1002]
G02B6/293W2B	. . . . .	{7 dots} [N: including at least adding or dropping a signal, i.e. passing the majority of signals] [N1002]
G02B6/293W2B2	. . . . .	{8 dots} [N: Add and drop] [N1002]
G02B6/293W2B4	. . . . .	{8 dots} [N: Channel monitoring, e.g. by tapping (channel monitoring in optical transmission systems H04B10/08)] [N1002]
G02B6/293W2I	. . . . .	{7 dots} [N: Interleaving or deinterleaving, i.e. separating or mixing subsets of optical signals, e.g. combining even and odd channels into a single optical signal] [N1002]
G02B6/293W2L	. . . . .	{7 dots} [N: for lighting or use with non-coherent light] [N1002]
G02B6/293W4	. . . . .	[N: Bandpass filtering, e.g. 1x1 device rejecting or passing certain wavelengths (G02B6/293W2 takes precedence)] [N1002]
G02B6/293W6	. . . . .	[N: Power equalisation of different channels, e.g. power flattening] [N1002]
G02B6/293W8	. . . . .	[N: Controlling dispersion (G02B6/02M takes precedence; modal dispersion control G02B6/26M)] [N1002]
G02B6/293W8C	. . . . .	{7 dots} [N: Compensating wavelength dispersion (G02B6/293M4M takes precedence; dispersion compensated optical transmission systems H04B10/18)] [N1002]
G02B6/293W10	. . . . .	[N: configurable, e.g. tunable or reconfigurable (switching G02B6/35)] [N1002]
G02B6/293W12	. . . . .	[N: Polarisation insensitivity] [N1002]

G02B6/293W14	. . . . .	[N: Temperature insensitivity] [N1002]
G02B6/30	. . . . .	for use between fibre and thin-film device
G02B6/30T	. . . . .	[N: and having an integrated mode-size expanding section, e.g. tapered waveguide] [N9502]
G02B6/32	. . . . .	having lens focusing means [N: positioned between opposed fibre ends (with lens being an integral part of the single fibre end G02B6/26B)]
G02B6/32B	. . . . .	[N: and having centering means being part of the lens for the self-positioning of the lightguide at the focal point, e.g. holes, wells, indents, nibs] [N9502]
G02B6/32P	. . . . .	[N: comprising a transparent member, e.g. window, protective plate] [N9506]
G02B6/32R	. . . . .	[N: with angled interfaces to reduce reflections] [N9502]
G02B6/34	. . . . .	utilising prism or grating [N: (G02B6/293 takes precedence)] [C1002]
G02B6/35	. . . . .	having switching means (optical switching in general G02B26/08 ; by changing the optical properties of the medium G02F1/00) [N0209]
G02B6/35D	. . . . .	[N: involving direct waveguide displacement, e.g. cantilever type waveguide displacement involving waveguide bending, or displacing an interposed waveguide between stationary waveguides] [N0209] [C0804]
G02B6/35D2	. . . . .	[N: Rotating, tilting or pivoting the waveguides, or with the waveguides describing a curved path (rotary joint G02B6/36M)] [N0804]
G02B6/35D4	. . . . .	[N: Translating the waveguides along the beam path, e.g. by varying the distance between opposed waveguide ends, or by translation of the waveguide ends] [N0804]
G02B6/35D6	. . . . .	[N: Lateral or transverse displacement of the whole waveguides, e.g. by varying the distance between opposed waveguide ends, or by mutual lateral displacement of opposed waveguide ends] [N0804]
G02B6/35E	. . . . .	[N: involving stationary waveguides with moving interposed optical elements (G02B6/35L takes precedence; interposed waveguides G02B6/35D)] [N0209] [C0804]
G02B6/35E2	. . . . .	[N: the optical element being reflective, e.g. mirror] [N0804]
G02B6/35E2J	. . . . .	[N: the reflective optical element moving along a line so as to translate into and out of the beam path, i.e. across the beam path] [N0804]
G02B6/35E2L	. . . . .	[N: the reflective optical element moving along the beam path, e.g. controllable diffractive effects using multiple micro-mirrors within the beam] [N0804]
G02B6/35E2M	. . . . .	[N: the reflective optical element being an intrinsic part of a MEMS device, i.e. fabricated together with the MEMS device (MEMS devices in general B81B ; manufacture of MEM devices in general B81C ; micromechanical devices controlling the direction of light G02B26/08M4)] [N0804]
G02B6/35E2S	. . . . .	[N: the reflective optical element having a shaped reflective surface, e.g. a reflective element comprising several reflective surfaces or facets that function together] [N0804]
G02B6/35E4	. . . . .	[N: the optical element enabling or impairing total internal reflection (using evanescent coupling G02B6/35G)] [N0804]
G02B6/35E6	. . . . .	[N: the optical element being refractive] [N0804]
G02B6/35E6L	. . . . .	[N: the optical element being a lens] [N1205]
G02B6/35E6P	. . . . .	[N: the optical element being a prism] [N1205]
G02B6/35E8	. . . . .	[N: the optical element being a shutter, baffle, beam dump or opaque element (absorbers on light guide termination G02B6/24A2)] [N0804]
G02B6/35E10	. . . . .	[N: the optical element being a wavelength independent filter or having spatially dependent transmission properties, e.g. neutral filter or neutral

		density wedge substrate with plurality of density filters] [N1205]
G02B6/35E12	. . . . .	[N: the optical element being diffractive, i.e. a grating] [N1205]
G02B6/35G	. . . . .	[N: involving evanescent coupling variation, e.g. by a moving element such as a membrane which changes the effective refractive index (mode converters G02B6/14 ; adjustable lateral coupling between waveguides G02B6/28B6B2 ; electro-optical refractive index variations G02F1/01C5C)] [N0804]
G02B6/35L	. . . . .	[N: based on displacement or deformation of a liquid (controlling the intensity of light by displacement or deformation of a fluid in general G02B26/02L ; fluid-filled lens of variable focal length G02B3/14)] [N0406] [C0806]
G02B6/35N	. . . . .	[N: Switching arrangements, i.e. number of input/output ports and interconnection types] [N0804]
G02B6/35N2	. . . . .	[N: Non-blocking switch, e.g. with multiple potential paths between multiple inputs and outputs, the establishment of one switching path not preventing the establishment of further switching paths] [N0804]
G02B6/35N4	. . . . .	[N: 2D constellations, i.e. with switching elements and switched beams located in a plane] [N0804]
G02B6/35N4B	. . . . .	[N: NxM switch, i.e. a regular array of switches elements of matrix type constellation] [N0804]
G02B6/35N4D	. . . . .	[N: 1xN switch, i.e. one input and a selectable single output of N possible outputs] [N0804]
G02B6/35N4D2	. . . . .	{7 dots} [N: 1x2 switch, i.e. one input and a selectable single output of two possible outputs] [N0804]
G02B6/35N4D4	. . . . .	{7 dots} [N: 1x1 switch; e.g. on/off switch] [N0804]
G02B6/35N6	. . . . .	[N: 3D constellations, i.e. with switching elements and switched beams located in a volume] [N0804]
G02B6/35N6B	. . . . .	[N: NxM switch, i.e. regular arrays of switches elements of matrix type constellation] [N0804]
G02B6/35N6D	. . . . .	[N: 1xN switch, i.e. one input and a selectable single output of N possible outputs] [N0804]
G02B6/35N8	. . . . .	[N: in an optical cross-connect device, e.g. routing and switching aspects of interconnecting different paths propagating different wavelengths to (re)configure the various input and output links (switching polarized beams G02B6/35U ; power equalizers G02B6/35N8 and G02B6/35U ; path selecting means H04Q11/00P)] [N0804]
G02B6/35N10	. . . . .	[N: Switch of the bypass type, i.e. enabling a change of path in a network, e.g. to bypass a failed element in the network] [N0804]
G02B6/35P	. . . . .	[N: Mechanical details of the actuation mechanism associated with the moving element or mounting mechanism details] [N0804]
G02B6/35P2	. . . . .	[N: involving bending a beam, e.g. with cantilever] [N0804]
G02B6/35P4	. . . . .	[N: characterised by the actuating force] [N0804]
G02B6/35P4E	. . . . .	[N: Electrostatic force (electrostatic forces controlling reflecting elements in general G02B26/08M4E)] [N0804]
G02B6/35P4M	. . . . .	[N: Magnetic force (magnetic forces controlling reflecting elements in general G02B26/08M4M ; magneto-optic devices G02F1/09)] [N0804]
G02B6/35P4P	. . . . .	[N: Mechanical force, e.g. pressure variations] [N0804]
G02B6/35P4T	. . . . .	[N: Temperature or heat actuation (thermal forces controlling reflecting elements in general G02B26/08M4T ; thermo-optic devices G02F1/01T)] [N0804]
G02B6/35P4Z	. . . . .	[N: Piezoelectric force (piezoelectric forces controlling reflecting

elements in general [G02B26/08M4P](#); piezo-optic devices
[G02F1/01M2](#)] [N0804]

- G02B6/35P6 [N: Latching of the moving element, i.e. maintaining or holding the moving element in place once operation has been performed; includes a mechanically bistable system] [N0804]
- G02B6/35P8 [N: Housing means or package or arranging details of the switching elements, e.g. for thermal isolation] [N0804]
- G02B6/35P10 [N: constructional details of an associated actuator having a MEMS construction; i.e. constructed using semiconductor technology such as etching (MEMS per se B81B, B81C)] [N0804]
- G02B6/35R [N: Control or adjustment details, e.g. calibrating (testing optical equipment [G01M11/00](#))] [N0209]
- [N: **WARNING**[N0804]
The scope of this group has been changed: for rotating, tilting or pivoting the waveguides, or with the waveguides describing a curved path see [G02B6/35D2](#)
]
- G02B6/35R2 [N: of the processed beams, i.e. controlling during switching of orientation, alignment, or beam propagation properties such as intensity, size or shape] [N0804]
- G02B6/35R4 [N: of the position of the moving element itself during switching; i.e. without monitoring the switched beams] [N0804]
- G02B6/35S [N: Means for removing polarization dependence of the switching means, i.e. polarization insensitive switching (light guides coupling with polarization selective and adjusting means [G02B6/27](#))] [N1205]
- G02B6/35U [N: Characterised by additional functional means, e.g. means for variably attenuating or branching or means for switching differently polarized beams] [N0804]
- G02B6/35W [N: With planar waveguide arrangement, i.e. in a substrate, regardless if actuating mechanism is outside the substrate] [N0804]
- G02B6/35Y [N: Switching means directly located between an optoelectronic element and waveguides, including direct displacement of either the element or the waveguide, e.g. optical pulse generation (based on changing the optical properties of the medium [G02F1/00](#); optical pulse generation in optical transmitters [H04B10/155](#); optical pulse generation by controlling laser operation [H01S3/00](#))] [N1205]
- G02B6/36 . . . Mechanical coupling means ([N: [G02B6/06](#), [G02B6/30](#), [G02B6/35](#), [G02B6/38](#), [G02B6/255](#), [G02B6/42](#) take precedence) [C1203]
- G02B6/36B [N: Rotary joints allowing relative rotational movement between opposing fibre or fibre bundle ends]
- G02B6/36F [N: Fibre wiring boards, i.e. where fibres are embedded or attached in a pattern on or to a substrate, e.g. flexible sheets (optical ribbon cables in support members [G02B6/44C](#))] [N1203]
- G02B6/36F2 [N: Wiring methods or machines] [N1203]
- G02B6/36H [N: Holders, macro size fixtures for mechanically holding or positioning fibres, e.g. on an optical bench (supporting carriers of a micro-bench type [G02B6/36M4](#); micromanipulators [B25J7/00](#); cassettes, bobbins [G02B6/44C8](#))] [N1203]
- G02B6/36H2 [N: Vacuum holders for optical elements] [N1203]
- G02B6/36H4 [N: Fibre head, e.g. fibre probe termination (optical details of light guide terminations [G02B6/24A](#); reshaping of light guides [G02B6/255K](#); optical details of coupling light into or out of fibre end [G02B6/26B](#))] [N1203]

G02B6/36M	. . .	[N: for mounting fibres to supporting carriers (G02B6/36F , G02B6/36H take precedence)] [N9611] [C1203]
G02B6/36M2	. . . .	[N: characterised by the cross-sectional shape of the mechanical coupling means] [N1203]
G02B6/36M2G	. . . . .	[N: the mechanical coupling means being grooves (G02B6/36M5B takes precedence)] [N1203]
G02B6/36M2G2	. . . . .	[N: inverted grooves, e.g. dovetails] [N1203]
G02B6/36M2H	. . . . .	[N: the coupling means being through-holes or wall apertures] [N1203]
G02B6/36M5	. . . . .	[N: Supporting carriers of a micro-bench type, i.e. with micro-machined additional mechanical structures (micro-structured devices per se B81B)] [N1203]
G02B6/36M5B	. . . . .	[N: the additional structures being prepositioning mounting areas, allowing only movement in one dimension, e.g. grooves, trenches or vias in the micro-bench surface, i.e. self aligning supporting carriers] [N1203]
G02B6/36M5D	. . . . .	[N: the additional structures being micro-positioning, with micro-actuating elements for fine adjustment, or restricting movement, into two dimensions, e.g. cantilevers, beams, tongues or bridges with associated MEMs] [N1203]
G02B6/36M5F	. . . . .	[N: the additional structures allowing for adjustment or alignment in all dimensions, i.e. 3D micro-optics arrangements, e.g. free space optics on the micro-bench, micro-hinges or spring latches, with associated micro-actuating elements for fine adjustment or alignment] [N1203]
G02B6/36M6	. . . . .	[N: 2D cross sectional arrangements of the fibres] [N9611] [C1203]
G02B6/36M6C	. . . . .	[N: with conversion in geometry of the cross section] [N1203]
G02B6/36M6M	. . . . .	[N: with fibres arranged in a regular matrix array] [N1203]
G02B6/36M6S	. . . . .	[N: Stacked arrangement] [N1203]
G02B6/36M8	. . . . .	[N : with pitch conversion between input and output plane, e.g. for increasing packing density] [N1203]
G02B6/36M10	. . . . .	[N: characterised by the manufacturing process of surface profiling of the supporting carrier (manufacturing micro-systems per se B81C1/00C)] [N1203]
G02B6/36M10A	. . . . .	[N: using laser ablation] [N1203]
G02B6/36M10E	. . . . .	[N: with surface micro-machining involving etching, e.g. wet or dry etching steps (surface micro-machining involving subtractive techniques B81C1/00F2D)] [N1203]
G02B6/36M10M	. . . . .	[N: by moulding, e.g. injection moulding, casting, embossing, stamping, stenciling, printing, or with metallic mould insert manufacturing using LIGA or MIGA techniques (shaping the mould surface by machining B29C33/38 ; moulding techniques B29C39/00 , B29C43/00 , B29C45/00 , B29C47/00 , B29C59/00 ; stamping, printing or embossing techniques B81C1/00F2 ; surface micro-machining using LIGA B81C1/00F2B2)] [N1203]
G02B6/38	. . .	having fibre to fibre mating means
G02B6/38B	. . . . .	[N: Permanent connections, i.e. wherein fibres are kept aligned by mechanical means (splices by bonding G02B6/255 ; fusion splices G02B6/255B)] [C0811]
G02B6/38B2	. . . . .	[N: Assembly tools, e.g. crimping tool or pressing bench (splicing machines G02B6/255M)] [C0811]
G02B6/38B4	. . . . .	[N: Adjustment or alignment devices for alignment prior to splicing]
G02B6/38B4B	. . . . .	[N: with a fibre-supporting member inclined to the bottom surface of the alignment means] [N9409]

G02B6/38B8	. . . . .	[N: Semi-permanent connections, i.e. wherein the mechanical means keeping the fibres aligned allow for removal of the fibres (dismountable connectors G02B6/38D)] [C0811]
G02B6/38D	. . . . .	[N: Dismountable connectors, i.e. comprising plugs] [C0811]
G02B6/38D1	. . . . .	[N: without a ferrule embedding the fibre end, i.e. with bare fibre end] [N0811]
G02B6/38D2	. . . . .	[N: of the ferrule type, e.g. fibre ends embedded in ferrules, connecting a pair of fibres]
G02B6/38D2B	. . . . .	[N: having polarisation-maintaining light guides (light guides having polarisation effects per se G02B6/10P)]
G02B6/38D2D	. . . . .	[N: for transmission of high energy beam (coupling high energy sources and light guides G02B6/42H)]
G02B6/38D2F	. . . . .	[N: with cooling or heat dissipation means]
G02B6/38D2H	. . . . .	[N: for use under water, high pressure connectors (provisionally see 6/44C6B1)]
G02B6/38D2J	. . . . .	[N: containing optical and electrical conductors (cables including electrical and optical conductors H01B11/22 ; G092B6/38D2H takes precedence)]
G02B6/38D2K	. . . . .	[N: of a low-reflection-loss type (G02B6/38D2D takes precedence)]
G02B6/38D2K2	. . . . .	{7 dots} [N: with index-matching medium between light guides (provisionally see G02B6/42C3M)]
G02B6/38D2K4	. . . . .	{7 dots} [N: with axial spring biasing or loading means (G02B6/38D6H takes precedence)]
G02B6/38D2K6	. . . . .	{7 dots} [N: with beveled fibre ends] [N0910]
G02B6/38D2L	. . . . .	[N: containing surplus lengths, internal fibre loops (provisionally see also G02B6/44C8A)]
G02B6/38D2N	. . . . .	[N: with an intermediate part, e.g. adapter, receptacle, linking two plugs]
G02B6/38D2S	. . . . .	[N: characterised by form or shape] [N0910]
G02B6/38D2S1	. . . . .	{7 dots} [N: Wrap-back connectors, i.e. containing a fibre having an U shape] [N0910]
G02B6/38D2S2	. . . . .	{7 dots} [N: Bent or angled connectors (G02B6/38D2S1 takes precedence)] [N0910]
G02B6/38D2S3	. . . . .	{7 dots} [N: Hermaphroditic connectors, i.e. two identical plugs mating with one another, each plug having both male and female diametrically opposed engaging parts; electric hermaphroditic coupling H01R24/84 , H01R13/28] [N1205]
G02B6/38D2S5	. . . . .	{7 dots} [N: comprising a keying element on the plug or adapter, e.g. to forbid wrong connection (keying element on the ferrule G02B6/38D6K ; keying element for electrical coupling H01R13/64)] [N0910]
G02B6/38D6	. . . . .	[N: Details of mounting fibres in ferrules; Assembly methods; Manufacture]
G02B6/38D6D	. . . . .	[N: Means for centering or aligning the light guide within the ferrule]
G02B6/38D6D2	. . . . .	{7 dots} [N: using discs, bushings or the like]
G02B6/38D6D2B	. . . . .	{8 dots} [N: forwarding or threading methods of light guides into apertures of ferrule centering means] [N0910]
G02B6/38D6D4	. . . . .	{7 dots} [N: using grooves for light guides]
G02B6/38D6D4B	. . . . .	{8 dots} [N: for a plurality of light guides]

G02B6/38D6D6	. . . . .	{7 dots} [N: using rods, balls for light guides]
G02B6/38D6D6B	. . . . .	{8 dots} [N: for a plurality of light guides]
G02B6/38D6D8	. . . . .	{7 dots} [N: with auxiliary facilities for movably aligning or adjusting the fibre within its ferrule, e.g. measuring position or eccentricity (testing the alignment of axes, including eccentricity, G01B11/27)] [N1205]
G02B6/38D6E	. . . . .	[N: ferrules comprising functional elements, e.g. filters] [N0910]
G02B6/38D6F	. . . . .	[N: with fibre stubs]
G02B6/38D6H	. . . . .	[N: with means preventing fibre end damage, e.g. recessed fibre surfaces]
G02B6/38D6H2	. . . . .	{7 dots} [N: using mechanical protective elements, e.g. caps, hoods, sealing membranes (G02B6/38D2H takes precedence; provisionally see H01R13/44)]
G02B6/38D6I	. . . . .	[N: Accessories for testing or observation of connectors (means for centering or aligning the light guide within the ferrule with auxiliary facilities for movably aligning or adjusting the fibre within its ferrule, measuring position, eccentricity G02B6/38D6D8; mechanical features associated with the optical testing of optical fibres G01M11/08F)] [N1205]
G02B6/38D6K	. . . . .	[N: Ferrules having keying or coding means] [N0910]
G02B6/38D6L	. . . . .	[N: Lens inside the ferrule (lensed connectors G02B6/32)] [N1205]
G02B6/38D6M	. . . . .	[N: Ferrules characterised by materials] [C0910]
G02B6/38D6N	. . . . .	[N: characterised by the method of anchoring or fixing the fibre within the ferrule (G02B6/38D6M takes precedence)]
G02B6/38D6N1	. . . . .	{7 dots} [N: Crimping, i.e. involving plastic deformation] [N0910]
G02B6/38D6N2	. . . . .	{7 dots} [N: Clamping, i.e. with only elastic deformation] [N0910]
G02B6/38D6N2M	. . . . .	{8 dots} [N: Ferrules characterised by use of shape memory material (SMM), e.g. heat recoverable polymers, Ti-Ni compounds (chemical aspects of SMM see the relevant places under C08 and C22; SMM used for shaping by moulding B29C61/00; SMM for electrical coupling H01R4/01, H01R4/72, H01R12/85E, H02G15/18B)] [N1205]
G02B6/38D6N3	. . . . .	{7 dots} [N: Adhesive bonding (adhesives in general C09J)] [N0910]
G02B6/38D6N6	. . . . .	{7 dots} [N: radially-compressed, longitudinally-split ferrules consisting of a pair of identical matching halves] [N0910]
G02B6/38D6P	. . . . .	[N: fabricated by using polishing techniques (grinding of the fibre ends B24B19/22C)] [N0910]
G02B6/38D6R	. . . . .	[N: fabricated by using moulding techniques (shaping techniques of plastic materials in general B29C; producing plastic optical fiber connectors B29D11/00J2)] [N0910]
G02B6/38D6U	. . . . .	[N: Devices, tools or methods for cleaning connectors (cleaning in general B08B)] [N1205]
G02B6/38D6V	. . . . .	[N: comprising air venting holes] [N1205]
G02B6/38D8	. . . . .	[N: Mounting ferrules to connector body, i.e. plugs]
G02B6/38D8P	. . . . .	[N: Connector plugs comprising two complementary members, e.g. shells, caps, covers, locked together] [N0910]
G02B6/38D8R	. . . . .	[N: Ferrule rotatable with respect to plug body, e.g. for setting rotational position (adjusting fibre within the ferrule, G02B6/38D6D8); Fixation of ferrules after rotation [N1205]

G02B6/38D10	. . . . .	[N: Connectors using guide surfaces for aligning ferrule ends, e.g. tubes, sleeves, V-grooves, rods, pins, balls]
G02B6/38D10A	. . . . .	[N: using tubes, sleeves to align ferrules]
G02B6/38D10A2	. . . . .	{7 dots} [N: Floatingly supported sleeves]
G02B6/38D10A4	. . . . .	{7 dots} [N: Split sleeves]
G02B6/38D10A6	. . . . .	{7 dots} [N: comprising a plurality of ferrules, branching and break-out means]
G02B6/38D10A6L	. . . . .	{8 dots} [N: Linking of individual connector plugs to an overconnector, e.g. using clamps, clips, common housings comprising several individual connector plugs] [N9603]
G02B6/38D10B	. . . . .	[N: using grooves to align ferrule ends]
G02B6/38D10C	. . . . .	[N: using rods, pins or balls to align a pair of ferrule ends]
G02B6/38D10C2	. . . . .	{7 dots} [N: using rods, pins or balls to align a plurality of pairs of ferrule ends]
G02B6/38D10G	. . . . .	[N: Multicore or multichannel optical connectors, i.e. one single ferrule containing more than one fibre, e.g. ribbon type (optical ribbon cable G02B6/44C2 , G02B6/44C9B)]
G02B6/38D10M	. . . . .	[N: Magnetic means to align ferrule ends]
G02B6/38D12	. . . . .	[N: Anchoring optical cables to connector housings, e.g. strain relief features, bending protection]
		[N: WARNING Not complete. See also G02B6/44C6B1]
G02B6/38D12A	. . . . .	[N: encapsulating the tensile strength members in a bonding agent, e.g. adhesive, molding or casting resin] [N9502]
G02B6/38D14	. . . . .	[N: characterised by the method of fastening connecting plugs and sockets, e.g. screw- or nut-lock, snap-in, bayonet type]
		[N: WARNING Not complete. See also groups H01R13/625 , H01R13/621 , H01R13/627]
G02B6/38D14B	. . . . .	[N: Bayonet type] [N0508]
G02B6/38D14P	. . . . .	[N: Push-pull type, e.g. snap-in, push-on] [N0508]
G02B6/38D14S	. . . . .	[N: Screw-lock type] [N0508]
G02B6/38D15	. . . . .	[N: identification of connection, e.g. right plug to the right socket or full engagement of the mating parts (keying element on the plug or adapter G02B6/38D2S5 ; keying element on the ferrule G02B6/38D6K ; keying element for electrical connection H01R13/64)] [N1102]
G02B6/38D16	. . . . .	[N: Connectors fixed to housings, casings, frames, circuit boards]
G02B6/38D18	. . . . .	[N: Tools, e.g. handheld; Tuning wrenches; Jigs used with connectors, e.g. for extracting, removing or inserting in a panel, for engaging or coupling connectors, for assembling or disassembling components within the connector, for applying clips to hold two connectors together or for crimping (tools for cleaning, G02B6/38D6U; tools in general B25B)] [N1205]
G02B6/40	. . . . .	having fibre bundle mating means
G02B6/40B	. . . . .	[N: of the ferrule type, connecting a pair of ferrules]
G02B6/40C	. . . . .	[N: of the ferrule type, connecting a plurality of pairs of ferrules]
G02B6/42	. . . . .	Coupling light guides with opto-electronic elements

[N: Notes

In this group, the following expression is used with the meaning indicated:

- "opto-electronic elements" includes light emitting elements, e.g. lasers or LED's, as well as light receiving elements, e.g. photodiodes or phototransistors [N0812]

G02B6/42C	. . .	[N: Packages, e.g. shape, construction, internal or external details]
G02B6/42C2	. . . .	[N: for coupling an active element with fibres without intermediate optical elements, e.g. fibres with plane ends, fibres with shaped ends, bundles]
G02B6/42C2B	. . . . .	[N: Optical features]
G02B6/42C3	. . . . .	[N: the coupling comprising intermediate optical elements, e.g. lenses, holograms (encapsulated active devices H01S3/025 , H01L33/00B2 , H01L33/00B6)]
G02B6/42C3B	. . . . .	[N: Optical features (G02B6/42C3C , G02B6/42C3D take precedence)]
G02B6/42C3C	. . . . .	[N: with optical elements reducing the sensitivity to optical feedback (anti-reflection devices specially adapted for lasers, see H01S3/00F2)]
G02B6/42C3C3	. . . . .	[N: using non-reciprocal elements or birefringent plates, i.e. quasi-isolators (optical isolators per se G02F1/09F , G02F1/095F)] [C9411]
G02B6/42C3C3B	. . . . .	{7 dots} [N: Optical features] [N9506]
G02B6/42C3D	. . . . .	[N: the intermediate optical component consisting of a short length of fibre, e.g. fibre stub]
G02B6/42C3M	. . . . .	[N: the intermediate optical element being a coupling medium interposed therebetween, e.g. epoxy resin, refractive index matching material, index grease, matching liquid or gel]
G02B6/42C3P	. . . . .	[N: the intermediate optical elements being polarisation selective optical elements (G02B6/27 takes precedence)] [N1205]
G02B6/42C3R	. . . . .	[N: the intermediate optical element having redirecting reflective means, e.g. mirrors, prisms for deflecting the radiation from horizontal to down- or upward direction toward a device (G02B6/42C6 takes precedence)] [N9501]
G02B6/42C3W	. . . . .	[N: the intermediate optical elements being wavelength selective optical elements, e.g. variable wavelength optical modules or wavelength lockers (G02B6/42C6 takes precedence)] [N1205]
G02B6/42C4	. . . . .	[N: incorporating polarisation-maintaining fibres (polarisation-maintaining fibres per se G02B6/10P)]
G02B6/42C4B	. . . . .	[N: Optical features]
G02B6/42C5	. . . . .	[N: Mechanical fixtures for holding or positioning the elements relative to each other in the couplings; Alignment methods for the elements, e.g. measuring or observing methods especially used therefor]
G02B6/42C5A	. . . . .	[N: Active alignment, i.e. moving the elements in response to the detected degree of coupling or position of the elements (G02B6/42C5R , G02B6/42C5S take precedence)] [N9506]
G02B6/42C5A2	. . . . .	[N: involving a visual detection of the position of the elements, e.g. by using a microscope or a camera] [N9506]
G02B6/42C5A2B	. . . . .	{7 dots} [N: by observing back-reflected light] [N9506]
G02B6/42C5A2D	. . . . .	{7 dots} [N: using visual alignment markings, e.g. index methods] [N9506]

G02B6/42C5A6	. . . . .	[N: by a direct measurement of the degree of coupling, e.g. the amount of light power coupled to the fibre or the opto-electronic element] [N9506]
G02B6/42C5A8	. . . . .	[N: Positioning means for moving the elements into alignment, e.g. alignment screws, deformation of the mount] [N9506]
G02B6/42C5A10	. . . . .	[N: Active alignment methods, e.g. procedures and algorithms] [N9506]
G02B6/42C5P	. . . . .	[N: Passive alignment, i.e. without a detection of the degree of coupling or the position of the elements (G02B6/42C5S takes precedence)] [N9506]
G02B6/42C5P2	. . . . .	[N: using guiding surfaces for the alignment] [N9506]
G02B6/42C5P21	. . . . .	{7 dots} [N: with intermediate elements, e.g. rods and balls, between the elements] [N9506]
G02B6/42C5P4	. . . . .	[N: using the surface tension of fluid solder to align the elements, e.g. solder bump techniques (flip-chip mounting techniques in assembly of semiconductor devices H01L21/60C4)] [N9506]
G02B6/42C5R	. . . . .	[N: Active alignment along the optical axis and passive alignment perpendicular to the optical axis] [N9506]
G02B6/42C5S	. . . . .	[N: Passive alignment along the optical axis and active alignment perpendicular to the optical axis] [N9506]
G02B6/42C5V	. . . . .	[N: Fixing or mounting methods of the aligned elements] [N1205]
G02B6/42C5V2	. . . . .	[N: Welding] [N9506]
G02B6/42C5V4	. . . . .	[N: Soldering] [N9506]
G02B6/42C5V6	. . . . .	[N: Adhesive bonding; Encapsulation with polymer material] [N9506]
G02B6/42C5V8	. . . . .	[N: Mounting of the optical light guide] [N1205]
G02B6/42C5V8B	. . . . .	{7 dots} [N: Mounting of the optical light guide to the lid of the package] [N1205]
G02B6/42C5V8D	. . . . .	{7 dots} [N: Mounting of the optical light guide into a groove (mounting optical light guides into a groove in general G02B6/36M2G)] [N1205]
G02B6/42C5V10	. . . . .	[N: Mounting of the optical elements] [N1205]
G02B6/42C5V12	. . . . .	[N: Mounting of the opto-electronic elements] [N1205]
G02B6/42C6	. . . . .	[N: Bidirectionally operating package structures]
G02B6/42C7	. . . . .	[N: Feed-through connections for the hermetical passage of fibres through a package wall (see provisionally also G02B6/44C6B1)]
G02B6/42C8	. . . . .	[N: comprising arrays of active devices and fibres]
G02B6/42C8B	. . . . .	[N: Optical features (semiconductor laser arrays H01S5/40 ; hybrid LED arrays H01L25/075N ; monolithic LED arrays H01L27/15B)]
G02B6/42C10	. . . . .	[N: Sealed packages (G02B6/42C7 takes precedence)] [N1205]
G02B6/42C10B	. . . . .	[N: by embedding housing components in an adhesive or a polymer material (G02B6/42C3M takes precedence)] [N1205]
G02B6/42C10D	. . . . .	[N: with an inert gas, e.g. nitrogen or oxygen (gas filled packages for semiconductor lasers H01S5/022G)] [N1205]
G02B6/42C12	. . . . .	[N: Moulded or casted packages] [N1205]
G02B6/42C20	. . . . .	[N: Details of housings] [N1205]
G02B6/42C20B	. . . . .	[N: having a supporting carrier or a mounting substrate or a mounting plate (G02B6/36M5 takes precedence)] [N1205]
G02B6/42C20B2	. . . . .	[N: of the transparent type] [N1205]

G02B6/42C20D	. . . . .	[N: mounting, engaging or coupling of the package to a board, a frame or a panel] [N1205]
G02B6/42C20D2	. . . . .	[N: Packages with mounting structures to be pluggable or detachable, e.g. having latches or rails] [N1205]
G02B6/42C20F	. . . . .	[N: characterised by the shape of the housing (for semiconductor lasers H01S5/022F)] [N1205]
G02B6/42C20F2	. . . . .	[N: of the transistor outline [TO] can type] [N1205]
G02B6/42C20F4	. . . . .	[N: of the Butterfly or dual in line package [DIP] type] [N1205]
G02B6/42C22	. . . . .	[N: Thermal aspects, temperature control or temperature monitoring (thermal aspect of electrical circuits H05K7/20, H05K5/02D, temperature control in general G05D23/19)] [N1205]
G02B6/42C22B	. . . . .	[N: Reduction of thermal stress, e.g. by selecting thermal coefficient of materials] [N1205]
G02B6/42C22D	. . . . .	[N: Cooling (of semiconductor devices H01L23/24; of electric apparatus H05K7/20; of instruments G12B15/00)] [N1205]
G02B6/42C22D2	. . . . .	[N: with heat sinks or radiation fins] [N1205]
G02B6/42C22D4	. . . . .	[N: with thermo electric cooling] [N1205]
G02B6/42C22D6	. . . . .	[N: with mounting substrates of high thermal conductivity] [N1205]
G02B6/42C22I	. . . . .	[N: with heat insulation means to thermally decouple or restrain the heat from spreading] [N1205]
G02B6/42C30	. . . . .	[N: Electrical aspects (G02B6/42C20F2 and G02B6/42C20F4 take precedence)] [N1205]
G02B6/42C30B	. . . . .	[N: Protection against electrostatic discharge [ESD]] [N1205]
G02B6/42C30D	. . . . .	[N: Protection against electromagnetic interference [EMI], e.g. shielding means (shielding of electric apparatus H05K9/00, of instruments G12B17/00)] [N1205]
G02B6/42C30F	. . . . .	[N: related to pluggable or demountable opto-electronic or electronic elements] [N1205]
G02B6/42C30H	. . . . .	[N: Radio frequency signal propagation aspects of the electrical connection, high frequency adaptations] [N1205]
G02B6/42C30J	. . . . .	[N: containing printed circuit boards [PCB]] [N1205]
G02B6/42C30J2	. . . . .	[N: the printed circuit boards being flexible (in general H05K1/14F)] [N1205]
G02B6/42C30L	. . . . .	[N: with electrical insulation means] [N1205]
G02B6/42C30N	. . . . .	[N: of optical modules with disconnectable electrical connectors (latching arms for electrical connectors H01R13/627)] [N1205]
G02B6/42C32	. . . . .	[N: Optical modules characterised by a connectorised pigtail] [N1205]
G02B6/42C34	. . . . .	[N: Optical modules with optical power monitoring] [N1205]
G02B6/42C36	. . . . .	[N: Optical modules with tapping or launching means through the surface of the waveguide (G02B6/28B10, G02B6/42C34 take precedence)] [N1205]
G02B6/42C36B	. . . . .	[N: by inducing bending, microbending or macrobending, to the light guide] [N1205]
G02B6/42C36D	. . . . .	[N: by surface irregularities on the light guide, e.g. by mechanical modification of the surface of the light guide on its exterior] [N1205]
G02B6/42C36F	. . . . .	[N: by accessing the evanescent field of the light guide] [N1205]
G02B6/42D	. . . . .	[N: the light guide being disconnectable from the opto-electronic element, e.g. mutually self aligning arrangements]
G02B6/42D4	. . . . .	[N: hybrid electrical and optical connections for transmitting electrical and

- ical signals] [N1205]
- G02B6/42F . . . [N: coupling with semiconductor devices activated by light through the light guide, e.g. thyristors, phototransistors]
- G02B6/42H . . . [N: coupling with sources of high radiant energy, e.g. high power lasers, high temperature light sources]
- G02B6/42L . . . [N: coupling with non-coherent light sources and/or radiation detectors, e.g. lamps, incandescent bulbs, scintillation chambers (coupling of solar energy into light guides F24J)]
- G02B6/43 . . . Arrangements comprising a plurality of opto-electronic elements and associated optical interconnections (light-emissive or light-sensitive semiconductor devices [H01L27/00](#), [H01L31/00](#), [H01L33/00](#)); [N: Transmitting or receiving optical signals between chips, wafers or boards; Optical backplane assemblies] [N9506]
- G02B6/44 . Mechanical structures for providing tensile strength and external protection for fibres, e.g. optical transmission cables (cables incorporating electric conductors and optical fibres [N: where features relating to the optical fibres are not of interest] [H01B11/22](#)) [C9704]
- G02B6/44C . . [N: Optical cables]
- G02B6/44C1 . . . [N: with one single optical waveguide ([G02B6/44C7](#), [G02B6/44C8](#), [G02B6/44C9](#) take precedence)] [C9602]
- G02B6/44C2 . . . [N: with ribbon structure ([G02B6/44C7](#), [G02B6/44C8](#), [G02B6/44C9](#) take precedence)] [C9602]
- G02B6/44C2M [N: Multi-podded] [N9709]
- G02B6/44C3 . . . [N: with longitudinally spaced waveguide clamping ([G02B6/44C7](#), [G02B6/44C8](#), [G02B6/44C9](#) take precedence)] [C9602]
- G02B6/44C4 . . . [N: with internal fluted support member ([G02B6/44C7](#), [G02B6/44C8](#), [G02B6/44C9](#) take precedence)] [C9602]
- G02B6/44C4A [N: Groove structures in support members to decrease or harmonise transmission losses in ribbon cables] [N0109]
- G02B6/44C4B [N: for ribbons] [N9409]
- G02B6/44C5 . . . [N: built up from sub-bundles ([G02B6/44C7](#), [G02B6/44C8](#), [G02B6/44C9](#) take precedence)] [C9602]
- G02B6/44C5A [N: Matrix structure]
- G02B6/44C5B [N: Helical structure]
- G02B6/44C5C [N: with internal serpentine waveguides]
- G02B6/44C6 . . . [N: Cables for special applications ([G02B6/44C7](#), [G02B6/44C8](#), [G02B6/44C9](#) take precedence)] [C9602]
- G02B6/44C6A [N: Heterogeneous cables]
- G02B6/44C6A1 [N: High voltage aspects, e.g. in cladding]
- G02B6/44C6A1C [N: Preventing corona discharge] [N9409]
- G02B6/44C6A1S [N: Insulators] [N9506]
- G02B6/44C6A1S2 {7 dots} [N: Insulators with helical structure of optical fibre, e.g. fibres wound around insulators] [N0109]
- G02B6/44C6A2 [N: of the overhead type]
- G02B6/44C6A2E [N: Electro-corrosion preventing means] [N0109]
- G02B6/44C6A2S [N: Suppression of galloping oscillation] [N9603]
- G02B6/44C6A2W [N: Reducing drag caused by wired, e.g. by oval cross-section] [N9709]

G02B6/44C6B	. . . .	[N: Pressure resistant cables, e.g. undersea cables]
G02B6/44C6B1	. . . . .	[N: Penetrator systems in pressure-resistant devices]
G02B6/44C7	. . . .	[N: Strengthening and protecting features (G02B6/44C10 , G02B6/44C11 , G02B6/44C13 take precedence)]
G02B6/44C7A	. . . . .	[N: Protective covering]
G02B6/44C7A1	. . . . .	[N: with fibre reinforcements]
G02B6/44C7A1L	. . . . .	[N: Double reinforcement laying in straight line with optical transmission element] [N0109]
G02B6/44C7B	. . . . .	[N: Central member to take up tensile loads]
G02B6/44C7C	. . . . .	[N: Corrugated mantle] [N9709]
G02B6/44C7F	. . . . .	[N: Heat resistant]
G02B6/44C7P	. . . . .	[N: facilitating insertion by fluid drag in ducts or capillaries]
G02B6/44C8	. . . .	[N: Auxiliary devices]
G02B6/44C8A	. . . . .	[N: Systems and boxes with surplus length]
G02B6/44C8A2	. . . . .	[N: Boxes]
G02B6/44C8A2H	. . . . .	[N: Cap coupling boxes]
G02B6/44C8A2H2	. . . . .	{7 dots} [N: Seals] [N9506]
G02B6/44C8A2H4	. . . . .	{7 dots} [N: Divided base plates] [N9506]
G02B6/44C8A2K	. . . . .	[N: Cableboxes]
G02B6/44C8A2K2	. . . . .	{7 dots} [N: with divided shells (G02B6/44C8A2K4 takes precedence)] [N9506] [C9603]
G02B6/44C8A2K4	. . . . .	{7 dots} [N: electro-optic] [N9603]
G02B6/44C8A2K6	. . . . .	{7 dots} [N: with lateral pivoting cover] [N0109]
G02B6/44C8A2U	. . . . .	[N: underground connection boxes (G02B6/44C8A2K4 takes precedence)] [N9603]
G02B6/44C8A4	. . . . .	[N: Distribution frames]
G02B6/44C8A6	. . . . .	[N: Cassettes]
G02B6/44C8A6S	. . . . .	[N: with splices] [N9602]
G02B6/44C8A6S2	. . . . .	{7 dots} [N: characterised by the way of extraction or insertion of the cassette in the distribution frame, e.g. pivoting, sliding, rotating, gliding] [N0109]
G02B6/44C8B	. . . . .	[N: Bobbins; Reels]
G02B6/44C8B1	. . . . .	[N: coiled, e.g. extensible helix]
G02B6/44C8D	. . . . .	[N: Ducts; Conduits]
G02B6/44C8D2	. . . . .	[N: Desiccating features] [N9603]
G02B6/44C8D4	. . . . .	[N: articulated] [N0109]
G02B6/44C8E	. . . . .	[N: Mechanical aspects of installing cables in ducts or the like (methods or apparatus for laying electrical cables through tubing or conduit H02G1/08)]
G02B6/44C8E2	. . . . .	[N: by fluid drag (G02B6/44C8E4 takes precedence)] [C9603]
G02B6/44C8E3	. . . . .	[N: Pulling eyes (G02B6/44C8E4 takes precedence)] [N9506] [C9603]
G02B6/44C8E4	. . . . .	[N: for buildings] [N9603]
G02B6/44C8R	. . . . .	[N: Repair sets] [N9409]
G02B6/44C8S	. . . . .	[N: Security aspects] [N9409]
G02B6/44C8T	. . . . .	[N: locatable, e.g. magnetic means (detection of buried cables G01V)]

- N9409]
- G02B6/44C8Z [N: terminating, fan-out, clamping, strain-relieving or like devices (demountable connectors [G02B6/38D](#))] [N9409]
- G02B6/44C8Z1 [N: Manifolds] [N9409]
- G02B6/44C8Z1D [N: Three-way systems] [N9506]
- G02B6/44C8Z1L [N: with provision for lateral branching ([G02B6/44C12](#) takes precedence)] [N9603]
- G02B6/44C8Z2 [N: with heat-shrinkable elements] [N9409]
- G02B6/44C8Z3 [N: Strain-relieving to interior strengths element] [N9506]
- G02B6/44C8Z4 [N: Bending relief] [N9506]
- G02B6/44C9 [N: Fabrication methods]
- G02B6/44C9B [N: ribbon cables]
- G02B6/44C9C [N: code or colour marking]
- G02B6/44C9F [N: Injection or filling devices (hydrogen absorbing materials [G02B6/44C10](#); water blocking or hydrophobic materials [G02B6/44C11](#))]
- G02B6/44C9L [N: with desired surplus length between fibres and protection feature]
- G02B6/44C9P [N: Installing in protective tubing by fluid drag]
- G02B6/44C9S [N: protective covering]
- G02B6/44C9S1 [N: with metallic tube] [N9603]
- G02B6/44C9T [N: of central supporting member of lobe structure]
- G02B6/44C9V [N: twisting]
- G02B6/44C9V2 [N: in a lobe structure]
- G02B6/44C10 [N: provided with hydrogen absorbing materials ([G02B6/44C8](#), [G02B6/44C9](#) take precedence)] [C9602]
- G02B6/44C11 [N: provided with water blocking or hydrophobic materials ([G02B6/44C8](#), [G02B6/44C9](#) take precedence)] [C9602]
- G02B6/44C12 [N: with provision in the cable protection, e.g. weak line, for gaining access to one or more fibres, e.g. for branching or tapping (break-out terminations [G02B6/44C8](#))] [C9603]
- G02B6/44C13 [N: Freeze-prevention means ([G02B6/44C8](#), [G02B6/44C9](#) take precedence)] [N9409] [C9602]
- G02B6/44C14 [N: Devices for opening or removing the mantle] [N9709]
- G02B6/44C14B [N: for ribbon cables] [N9709]
- G02B6/46 Processes or apparatus adapted for installing optical fibres or optical cables (installation of cables containing electric conductors and optical fibres [H02G](#)) [N9709]
- G02B6/48 Overhead installation [N9709]
- G02B6/48A [N: Installation of aerial type] [N9709]
- G02B6/48A1 [N: by helical wrapping] [N9709]
- G02B6/50 Underground or underwater installation; Installation through tubing, conduits or ducts [N0109]
- G02B6/50D [N: Installation methods in fluid conducts, e.g. pipelines] [N0109]
- G02B6/50F [N: Installation in solid material, e.g. underground] [N0109]
- G02B6/50M [N: Underwater installation] [N0109]
- G02B6/50T [N: Fixation devices in ducts for drawing cables] [N0109]

- G02B6/52 . . . using fluids, e.g. air
 - G02B6/54 . . . using mechanical means, e.g. pulling or pushing devices [N0109]
- G02B7/00 Mountings, adjusting means, or light-tight connections, for optical elements**
- G02B7/00A . [N: Counterbalanced structures, e.g. surgical microscopes]
 - G02B7/00B . [N: Mounting on the human body]
 - G02B7/00C . [N: Alignment of optical elements ([G02B7/00A](#), [G02B7/00B](#) take precedence; for mirrors [G02B7/182C](#))]
 - G02B7/00C1 . . [N: Manual alignment, e.g. micromanipulators]
 - G02B7/00C2 . . [N: Motorised alignment]
 - G02B7/00F . [N: Filter holders]
 - G02B7/00S . [N: Pressure-resistant sight glasses]
 - G02B7/00T . [N: with means for compensating for changes in temperature or for controlling the temperature; thermal stabilisation] [C0503]
 - G02B7/02 . for lenses [N: (supports for magnifying lenses [G02B25/00B](#))]
 - G02B7/02A . . [N: for more than one lens]
 - G02B7/02B . . [N: lens and mount having complementary engagement means, e.g. screw/thread]
 - G02B7/02C . . [N: permitting adjustment]
 - G02B7/02G . . [N: using glue]
 - G02B7/02R . . [N: using retaining rings or springs ([G02B7/02S](#) takes precedence)] [N9409]
 - G02B7/02S . . [N: the lens being in the form of a sphere or ball] [N9409] [C0406]
 - G02B7/02T . . [N: with means for compensating for changes in temperature or for controlling the temperature; thermal stabilisation] [C0503]
 - G02B7/04 . . with mechanism for focusing or varying magnification
 - G02B7/06 . . . Focusing binocular pairs
 - G02B7/08 . . . adapted to co-operate with a remote control mechanism
 - G02B7/09 . . . adapted for automatic focusing or varying magnification (automatic generation of focusing signals [G02B7/28](#))
 - G02B7/10 . . . by relative axial movement of several lenses, e.g. of varifocal objective lens
 - G02B7/10A [N: controlled by a microcomputer (cameras with interchangeable lenses [G03B17/14](#))]
 - G02B7/105 with movable lens means specially adapted for focusing at close distances
 - G02B7/12 . . Adjusting pupillary distance of binocular pairs
 - G02B7/14 . . adapted to interchange lenses [N: ([G02B7/02S](#) takes precedence)] [C9409]
 - G02B7/16 . . . Rotatable turrets
 - G02B7/18 . for prisms; for mirrors
 - G02B7/18P . . [N: for prisms ([G02B7/18T](#) takes precedence)] [C9409]
 - G02B7/18T . . [N: with means for compensating for changes in temperature or for controlling the temperature; thermal stabilisation] [C0503]

- G02B7/18T . . . [N: with cooling or heating systems (cooling arrangements for laser mirrors [H01S3/04B](#))] [N0503]
- G02B7/182 . . for mirrors ([N: [G02B7/18T](#) takes precedence; mounting of MEMS mirrors, e.g. DMDs, [G02B26/08M4](#)]; optical devices or arrangements using movable or deformable optical elements for controlling the intensity, colour, phase, polarisation or direction of light [G02B26/00](#); [N: mirror arrangements in vehicles [B60R1/02](#)]) [C0712]
- G02B7/182B . . . [N: for rotating or oscillating mirrors]
- G02B7/182C . . . [N: comprising means for aligning the optical axis ([G02B7/182B](#) takes precedence)]
- G02B7/182C1 [N: Manual alignment]
- G02B7/182C1A [N: made by screws, e.g. for laser mirrors]
- G02B7/182C2 [N: Motorised alignment]
- G02B7/182C2A [N: using magnetic means]
- G02B7/183 . . . specially adapted for very large mirrors, e.g. for astronomy, [N: or solar concentrators] [N0803]
- G02B7/185 . . . with means for adjusting the shape of the mirror surface (mirrors with curved faces [G02B5/10](#)) [N: not in use, see [G02B26/06](#), [G02B26/08M2](#)] [C0406]
- G02B7/188 Membrane mirrors [N: not in use, see [G02B26/06](#), [G02B26/08M2](#)] [C0406]
- G02B7/192 . . . with means for minimising internal mirror stresses [N: not in use] [C0406]
- G02B7/195 Fluid-cooled mirrors [N: not in use, see [G02B7/18T](#)]
- G02B7/198 . . . with means for adjusting the mirror relative to its support [N: not in use, see [G02B7/182C](#) and subgroups] [C0406]

- G02B7/20 . Light-tight connections for movable optical elements
- G02B7/22 . . Extensible connections, e.g. bellows
- G02B7/24 . . Pivoted connections

- G02B7/28 . Systems for automatic generation of focusing signals (measuring distance per se G01C, S; using such signals to control focus of particular apparatus, see the subclasses for the apparatus, e.g. G03B, G03F, [N: H04N]) [N1204]
- G02B7/28A . . [N: Autofocusing of zoom lenses]
- G02B7/28C . . [N: including two or more different focus detection devices, e.g. both an active and a passive focus detecting device] [N9802]
- G02B7/28D . . [N: including a sight line detecting device] [N9802]
- G02B7/30 . . using parallax triangle with a base line
- G02B7/30A . . . [N: using a scanner]
- G02B7/32 . . . using active means, e.g. light emitter [N: (including both an active and a passive focus detecting device [G02B7/28C](#); using ultrasound [G02B7/40](#))] [C9802]
- G02B7/34 . . using different areas in a pupil plane
- G02B7/34A . . . [N: using light beam separating prisms]
- G02B7/34B . . . [N: using horizontal and vertical areas in the pupil plane, i.e. wide area autofocusing] [C9704]
- G02B7/36 . . using image sharpness techniques [N: , e.g. image processing techniques for generating autofocus signals (in cameras having a solid state image sensor H04N5/232F; image data processing per se G06T)] [N1204]
- G02B7/36A . . . [N: by analysis of the spatial frequency components of the image]
- G02B7/38 . . . measured at different points on the optical axis [N: , e.g. focussing on two or

more planes and comparing image data] [C0712]

- G02B7/40 . . . using time delay of the reflected waves, e.g. of ultrasonic waves
- G02B9/00** **Optical objectives characterised both by the number of the components and their arrangements according to their sign, i.e. + or - (G02B15/00 takes precedence) [N1205]**
- G02B9/02 . . . having one + component only (simple lenses [G02B3/00](#))
- G02B9/04 . . . having two components only
- G02B9/06 . . . two + components
- G02B9/08 arranged about a stop
- G02B9/10 . . . one + and one - component
- G02B9/12 . . . having three components only
- G02B9/14 . . . arranged + - +
- G02B9/16 all the components being simple
- G02B9/18 only one component having a compound lens ([G02B9/30](#) takes precedence)
- G02B9/20 the rear component having the compound
- G02B9/22 the middle component having the compound
- G02B9/24 two of the components having compound lenses ([G02B9/30](#) takes precedence)
- G02B9/26 the front and rear components having compound lenses
- G02B9/28 the middle and rear components having compound lenses
- G02B9/30 the middle component being a - compound meniscus having a + lens
- G02B9/32 the + lens being a meniscus
- G02B9/34 . . . having four components only
- G02B9/36 . . . arranged + -- +
- Note**
In sub-groups [G02B9/38](#), [G02B9/44](#) to [G02B9/56](#) the first mentioned applicable sub-group takes precedence over later-mentioned sub-groups.
- G02B9/38 both - components being meniscus
- G02B9/40 one - component being compound
- G02B9/42 two - components being compound
- G02B9/44 both - components being biconcave
- G02B9/46 one - component being compound
- G02B9/48 two - components being compound
- G02B9/50 both + components being meniscus
- G02B9/52 the rear + component being compound
- G02B9/54 the front + component being compound
- G02B9/56 all components being simple lenses
- G02B9/58 . . . arranged - + + -
- G02B9/60 . . . having five components only

- G02B9/62 . having six components only
- G02B9/64 . having more than six components
- G02B13/00** **Optical objectives specially designed for the purposes specified below (with variable magnification [N: in general] [G02B15/00](#)) [N1205]**
 - [N: **Notes**
Unless specified in the title of the subgroups, this group and its subgroups do not cover objectives comprising reflecting surfaces, which are covered by [G02B17/06](#), [G02B17/08](#) and their subgroups
]
 - G02B13/00A . [N: having F-Theta characteristic (scanning systems employing movable or deformable optical elements [G02B26/10](#))] [C0712]
 - G02B13/00M . [N: Miniaturised objectives for electronic devices, e.g. portable telephones, webcams, PDAs, small digital cameras ([G02B23/24B2B](#) takes precedence)] [N0505] [C1104]
 - G02B13/00M1 . . [N: characterised by the lens design] [N1104]
 - G02B13/00M1A . . . [N: having at least one aspherical surface (aspherical lenses per se [G02B3/02](#))] [N1104]
 - [N: **Note** [N1104]
When classifying in this group, a lens is deemed to be a simple lens or a compound lens
]
 - G02B13/00M1A1 [N: having one lens only] [N1104]
 - G02B13/00M1A2 [N: having two lenses] [N1104]
 - G02B13/00M1A3 [N: having three lenses] [N1104]
 - G02B13/00M1A4 [N: having four lenses] [N1104]
 - G02B13/00M1A5 [N: having five or more lenses] [N1104]
 - G02B13/00M1S . . . [N: having spherical lenses only] [N1104]
 - G02B13/00M3 . . [N: employing a special optical element] [N1104]
 - G02B13/00M3C . . . [N: at least one element being a compound optical element, e.g. cemented elements] [N1104]
 - G02B13/00M3P . . . [N: having a beam-folding prism or mirror] [N1104]
 - G02B13/00M3P1 [N: the beam folding prism having at least one curved surface] [N1104]
 - G02B13/00M3V . . . [N: having an element with variable optical properties] [N1104]
 - G02B13/00M5 . . [N: designed for infrared light] [N1104]
 - G02B13/00M7 . . [N: employing wafer level optics (lens arrays per se [G02B3/00A](#))] [N1104]
 - G02B13/00M9 . . [N: having zoom function (zoom lenses per se [G02B15](#))] [N1205]
 - G02B13/00R . [N: Relay lenses or rod lenses (in instruments for viewing the inside of hollow bodies [G02B23/24B3](#))] [C9903]
 - G02B13/02 . Telephoto objectives, i.e. systems of the type + - in which the distance from the front vertex to the image plane is less than the equivalent focal length
 - G02B13/04 . Reversed telephoto objectives

- G02B13/06 . Panoramic objectives; So-called "sky lenses" [N: including panoramic objectives having reflecting surfaces] [C0406]
- G02B13/08 . Anamorphic objectives
- G02B13/10 . . involving prisms (G02B13/12 takes precedence)
- G02B13/12 . . with variable magnification
- G02B13/14 . for use with infra-red or ultra-violet radiation ([N: G02B13/00M5,] G02B13/16 take precedence) [N1205]
- G02B13/14B . . [N: for use with ultra-violet radiation] [N9712]
- G02B13/14Z . . [N: with corrections for use in multiple wavelength bands, such as infra-red and visible light, e.g. FLIR systems]
- G02B13/16 . for use in conjunction with image converters or intensifiers [N: , or for use with projectors, e.g. objectives for projection TV] [N1205]
- G02B13/18 . with lenses having one or more non-spherical face, e.g. for reducing geometrical aberration [N: (G02B13/00M1A takes precedence)] [C1104]
- G02B13/20 . Soft-focus objectives (diffusing elements in general G02B5/02)
- G02B13/22 . Telecentric objectives or lens systems
- G02B13/24 . for reproducing or copying at short object distances
- G02B13/26 . . for reproducing with unit magnification
- G02B15/00** **Optical objectives with means for varying the magnification (anamorphic objectives G02B13/08)**
- G02B15/02 . by changing, adding, or subtracting a part of the objective, e.g. convertible objective
- G02B15/04 . . by changing a part
- G02B15/06 . . . by changing the front part
- G02B15/08 . . . by changing the rear part
- G02B15/10 . . by adding a part, e.g. close-up attachment
- G02B15/12 . . . by adding telescopic attachments (G02B15/14 takes precedence)
- G02B15/14 . by axial movement of one or more lenses or groups of lenses relative to the image plane for continuously varying the equivalent focal length of the objective
- G02B15/15 . . compensation by means of only one movement or by means of only linearly related movements, e.g. optical compensation
- G02B15/15A . . . [N: Zoom lenses arranged symmetrically around a central plane, e.g. a diaphragm-containing plane]
- G02B15/16 . . with interdependent non-linearly related movements between one lens or lens group, and another lens or lens group (G02B15/22 takes precedence)
- G02B15/16A . . . [N: Zoom lenses having only two lenses or lens groups]
- G02B15/163 . . . having a first movable lens or lens group and a second movable lens or lens group, both in front of a fixed lens or lens group (G02B15/177 takes precedence)

- G02B15/167 having an additional fixed front lens or group of lenses
- G02B15/17 arranged +--
- G02B15/173 arranged ++
- G02B15/177 having a negative front lens or group of lenses
- G02B15/20 having an additional movable lens or lens group for varying the objective focal length
- G02B15/22 with movable lens means specially adapted for focusing at close distances
- G02B15/24 having a front fixed lens or lens group and two movable lenses or lens groups in front of a fixed lens or lens group
- G02B15/26 arranged +--
- G02B15/28 arranged ++

- G02B17/00** **Systems with reflecting surfaces, with or without refracting elements** ([microscopes G02B21/00](#); [telescopes, periscopes G02B23/00](#); for beam splitting or combining [G02B27/10](#); for optical projection [G02B27/18](#))

- G02B17/00A [N: Arrays of reflective systems] [N0606]
- G02B17/00C [N: Systems comprising a plurality of reflections between two or more surfaces, e.g. cells, resonators ([multipass arrangements for optical cuvettes G01N21/03B](#); [laser resonators H01S3/05](#))] [N0606]
- G02B17/00L [N: Systems in which light light is reflected on a plurality of parallel surfaces, e.g. [louvres mirrors](#), [total internal reflection \(TIR\) lenses \(Fresnel mirrors G02B5/09, Fresnel lenses G02B3/08\)](#)] [N0606]
- G02B17/00R [N: Systems specially adapted to form image relays or chained systems] [N0606] [C0712]
- G02B17/02 Catoptric systems, e.g. image erecting and reversing system
- G02B17/02D [N: for extending or folding an optical path, e.g. delay lines] [N0606]
- G02B17/02E [N: having static image erecting or reversing properties only ([G02B17/04E](#) takes precedence; [optical derotators G02B27/64D](#); [optical devices for controlling the direction of light using movable or deformable optical elements G02B26/08](#))] [N0606] [C0712]
- G02B17/04 using prisms only
- G02B17/04E [N: having static image erecting or reversing properties only ([optical derotators G02B27/64D](#); [optical devices for controlling the direction of light using movable or deformable optical elements G02B26/08](#))] [N0606] [C0909]
- G02B17/06 using mirrors only [N: i.e. having only one curved mirror ([used in non-imaging applications G02B19/00](#))] [C0712] [M1207]
- G02B17/06A [N: using two curved mirrors ([G02B17/06N](#), [G02B17/06Z](#) take precedence)] [N9511] [C0505]
- G02B17/06A1 [N: on-axis systems with at least one of the mirrors having a central aperture] [N9511] [C0505]
- G02B17/06A2 [N: off-axis or unobscured systems in which all of the mirrors share a common axis of rotational symmetry] [N0505]
- G02B17/06A3 [N: off-axis or unobscured systems in which not all of the mirrors share a common axis of rotational symmetry, e.g. at least one of the mirrors is warped, tilted or decentered with respect to the other elements] [N0505]

- G02B17/06B . . . [N: using three curved mirrors ([G02B17/06N](#), [G02B17/06Z](#) take precedence)] [N9511] [C0505]
- G02B17/06B1 [N: on-axis systems with at least one of the mirrors having a central aperture] [N9511] [C0505]
- G02B17/06B2 [N: off-axis or unobscured systems in which all of the mirrors share a common axis of rotational symmetry] [N0505]
- G02B17/06B3 [N: off-axis or unobscured systems in which not all of the mirrors share a common axis of rotational symmetry, e.g. at least one of the mirrors is warped, tilted or decentered with respect to the other elements] [N0505]
- G02B17/06C [N: using more than three curved mirrors ([G02B17/06N](#), [G02B17/06Z](#) take precedence)] [N9511] [C0505]
- G02B17/06C1 [N: on-axis systems with at least one of the mirrors having a central aperture] [N9511] [C0505]
- G02B17/06C2 [N: off-axis or unobscured systems in which all of the mirrors share a common axis of rotational symmetry] [N0505]
- G02B17/06C3 [N: off-axis or unobscured systems in which not all of the mirrors share a common axis of rotational symmetry, e.g. at least one of the mirrors is warped, tilted or decentered with respect to the other elements] [N0505]
- G02B17/06N [N: having non-imaging properties] [N0505]
- [N: **WARNING** [C1206]
This group and subgroups are no longer used for the classification of new documents as from May 1, 2012. The backlog is being continuously classified to [G02B19/00](#) and subgroups
]
- G02B17/06N1 [N: for light condensing, e.g. for use with a light emitter (details of lighting devices in general [F21V](#); semiconductor devices with at least one potential-jump barrier or surface barrier specially adapted for light emission [H01L33/00](#))] [N0606]
- G02B17/06N1P [N: specially adapted to emit light in a 360° plane or hemisphere] [N0606]
- G02B17/06N3 [N: for light collecting, e.g. for use with a detector] [N0606]
- G02B17/06N3P [N: specially adapted to receive light from a 360° plane or hemisphere] [N0606]
- G02B17/06Z [N: with variable magnification or multiple imaging planes, including multispectral systems (systems with only refractive elements [G02B15/14](#))] [C0505]
- G02B17/08 Catadioptric systems [N: (used in non-imaging applications [G02B19/00](#))] [N1205]
- G02B17/08A [N: using two curved mirrors ([G02B17/08N](#), [G02B17/08Z](#) takes precedence)] [N0606]
- G02B17/08A1 [N: on-axis systems with at least one of the mirrors having a central aperture] [N0606]
- G02B17/08A2 [N: off-axis or unobscured systems in which all of the mirrors share a common axis of rotational symmetry] [N0606]
- G02B17/08A3 [N: off-axis or unobscured systems in which not all of the mirrors share a common axis of rotational symmetry, e.g. at least one of the mirrors is warped, tilted or decentered with respect to the other elements] [N0606]
- G02B17/08B [N: using three curved mirrors ([G02B17/08N](#), [G02B17/08Z](#) take precedence)] [N0606]
- G02B17/08B1 [N: on-axis systems with at least one of the mirrors having a central aperture] [N0606]

- G02B17/08B2 . . . [N: off-axis or unobscured systems in which all of the mirrors share a common axis of rotational symmetry] [N0606]
 - G02B17/08B3 . . . [N: off-axis or unobscured systems in which not all of the mirrors share a common axis of rotational symmetry, e.g. at least one of the mirrors is warped, tilted or decentered with respect to the other elements] [N0606]
 - G02B17/08C . . [N: using more than three curved mirrors (G02B17/08N, G02B17/08Z take precedence)] [N0606]
 - G02B17/08C1 . . . [N: on-axis systems with at least one of the mirrors having a central aperture] [N0606]
 - G02B17/08C2 . . . [N: off-axis or unobscured systems in which all of the mirrors share a common axis of rotational symmetry] [N0606]
 - G02B17/08C3 . . . [N: off-axis or unobscured systems in which not all of the mirrors share a common axis of rotational symmetry, e.g. at least one of the mirrors is warped, tilted or decentered with respect to the other elements] [N0606]
 - G02B17/08F . . [N: having a field corrector only] [N0606]
 - G02B17/08M . . [N: comprising a refractive element with a reflective surface, the reflection taking place inside the element, e.g. Mangin mirrors] [N0606]
 - G02B17/08M1 . . . [N: wherein the system is made of a single block of optical material, e.g. solid catadioptric systems] [N0606]
 - G02B17/08N . . [N: having non-imaging properties] [N0606]
- [N: **WARNING** [N1206]
This group and subgroups are no longer used for the classification of new documents as from May 1, 2012. The backlog is being continuously classified to [G02B19/00](#) and subgroups
]
- G02B17/08N1 . . . [N: for light condensing, e.g. for use with a light emitter (details of lighting devices in general F21V; semiconductor devices with at least one potential-jump barrier or surface barrier specially adapted for light emission H01L33/00)] [N0606]
 - G02B17/08N1P [N: specially adapted to emit light in a 360° plane or hemisphere] [N0606]
 - G02B17/08N3 [N: for light collecting, e.g. for use with a detector] [N0606]
 - G02B17/08N3P [N: specially adapted to receive light from a 360° plane or hemisphere] [N0606]
 - G02B17/08P . . [N: having a pupil corrector] [N0606]
 - G02B17/08P1 . . . [N: the corrector having at least one aspheric surface, e.g. Schmidt plates] [N0606]
 - G02B17/08U . . [N: specially adapted for the UV] [N0606]
 - G02B17/08Z . . [N: with variable magnification or multiple imaging planes, including multispectral systems (systems with only refractive elements G02B15/14)] [N0606]
- G02B19/00** **Condensers**, [N: e.g. light collectors or similar non-imaging optics] (for microscopes [G02B21/08](#)) [N1205]
- [N: **WARNING** [N1206]
This group and subgroups are not complete pending reclassification, see [G02B17/06N](#) and subgroups
]
- G02B19/00A . . [N: characterised by the optical means employed] [N1205]

- G02B19/00A1 . . [N: having refractive surfaces only] [N1205]
- G02B19/00A1C . . . [N: at least one surface having optical power] [N1205]
- G02B19/00A2 . . [N: having reflective surfaces only (e.g. louvre systems, systems with multiple planar reflectors)] [N1205]
- G02B19/00A2C . . . [N: at least one surface having optical power] [N1205]
- G02B19/00A3 . . [N: refractive and reflective surfaces, e.g. non-imaging catadioptric systems] [N1205]

- G02B19/00B . [N: characterised by the use] [N1205]
- G02B19/00B1 . . [N: for use with ambient light (G02B19/00B8, G02B19/00B9 take precedence)] [N1205]
- G02B19/00B1S . . . [N: for use with direct solar radiation] [N1205]
- G02B19/00B3 . . [N: for use with a light source (G02B19/00B8, G02B19/00B9 take precedence; details of lighting devices in general F21V; non-semiconductor lasers having optical devices external to the laser cavity H01S3/00F)] [N1205]
- G02B19/00B3D . . . [N: the light source comprising a laser diode (coupling into light guides using intermediate optical elements G02B6/42C3; semiconductor lasers having optical devices external to the laser cavity H01S5/00F)] [N1205]
- G02B19/00B3D1 [N: in the form of a laser diode array, e.g. laser diode bar (semiconductor laser arrays with beam combining arrangement H01S5/40C)] [N1205]
- G02B19/00B3L . . . [N: the light source comprising a LED (semiconductor devices with at least one potential-jump barrier or surface barrier specially adapted for light emission H01L33/00)] [N1205]
- G02B19/00B3L1 [N: in the form of an LED array] [N1205]
- G02B19/00B3T . . . [N: adapted to illuminate a complete hemisphere or a plane extending 360 degrees around the source] [N1205]
- G02B19/00B5 . . [N: for use with a detector (G02B19/00B8, G02B19/00B9 take precedence)] [N1205]
- G02B19/00B5T . . . [N: adapted to collect light from a complete hemisphere or a plane extending 360 degrees around the detector] [N1205]
- G02B19/00B7 . . [N: for use with both a detector and a source (e.g. in a transceiver, G02B19/00B8, G02B19/00B9 take precedence)] [N1205]
- G02B19/00B8 . . [N: for use with infra-red radiation] [N1205]
- G02B19/00B9 . . [N: for use with ultra-violet radiation] [N1205]

G02B21/00

Microscopes (eyepieces [G02B25/00](#); polarising systems [G02B27/28](#); measuring microscopes [G01B9/04](#); microtomes [G01N1/06](#); scanning-probe techniques or apparatus [G01Q](#))

- G02B21/00M . [N: specially adapted for specific applications]
- G02B21/00M1 . . [N: Microscopes having a simple construction, e.g. portable microscopes]
- G02B21/00M2 . . [N: Surgical microscopes (counterbalanced structures for surgical microscopes [G02B7/00A](#))]
- G02B21/00M3 . . [N: Technical microscopes, e.g. for inspection or measuring in industrial production processes]
- G02B21/00M4 . . [N: Scanning microscopes (scanning near field optical microscopes [G01Q60/18](#))] [C0406]
- G02B21/00M4A . . . [N: Confocal scanning microscopes (CSOMs) or confocal "macroscopes"; Accessories which are not restricted to use with CSOMs, e.g. sample holders]

C0506]

[N: NotesObjective revolvers or the like are classified in other groups of [G02B21/00](#)]

- G02B21/00M4A1 [N: specially adapted for specific applications, e.g. for endoscopes, ophthalmoscopes, attachments to conventional microscopes] [N0506]
- G02B21/00M4A3 [N: Optical details of illumination, e.g. light-sources, pinholes, beam splitters, slits, fibers ([G02B21/00M4A5](#) to [G02B21/00M4A9](#); means for illumination of specimens in general [G02B21/06](#))] [N0506]
- G02B21/00M4A5 [N: Scanning details, e.g. scanning stages] [N0506]
- G02B21/00M4A5A [N: fixed arrays, e.g. switchable aperture arrays] [N0506]
- G02B21/00M4A5D [N: moving apertures, e.g. Nipkow disks, rotating lens arrays] [N0506]
- G02B21/00M4A5M [N: scanning mirrors, e.g. rotating or galvanomirrors, MEMS mirrors] [N0506]
- G02B21/00M4A7 [N: Optical details of the image generation] [N0506]
- G02B21/00M4A7C [N: based on optical coherence, e.g. phase-contrast arrangements, interference arrangements] [N0506]
- G02B21/00M4A7F [N: focusing arrangements; selection of the plane to be imaged] [N0506]
- G02B21/00M4A7M [N: multi-spectral or wavelength-selective arrangements, e.g. wavelength fan-out, chromatic profiling ([G02B21/00M4A7U](#) takes precedence)] [N0506]
- G02B21/00M4A7P [N: arrangements using polarisation] [N0506]
- G02B21/00M4A7R [N: details concerning resolution or correction, including general design of CSOM objectives] [N0506]
- G02B21/00M4A7U [N: arrangements using fluorescence or luminescence] [N0506]
- G02B21/00M4A9 [N: Details of detection or image processing, including general computer control] [N0506]
- G02B21/00M4A9T [N: time-scale detection, e.g. strobed, ultra-fast, heterodyne detection] [N0506]
- G02B21/00M5 . . . [N: Inverse microscopes]
- G02B21/00M6 . . . [N: Polarisation microscopes] [N0611]

[N: WARNINGNot complete, see also other subgroups of [G02B21/00](#)]

- G02B21/00P . . [N: with photometer devices ([photometers per se G01J](#))]
- G02B21/02 . . Objectives
- G02B21/02Z . . [N: with variable magnification ([variable magnification G02B15/00](#))]
- G02B21/04 . . involving mirrors
- G02B21/06 . . Means for illuminating specimens
- G02B21/08 . . Condensers
- G02B21/08B . . . [N: for incident illumination only]
- G02B21/08B1 . . . [N: having annular illumination around the objective]
- G02B21/08C . . . [N: for transillumination only]

- G02B21/08D . . . [N: for both incident illumination and transillumination]
- G02B21/10 . . . affording dark-field illumination ([G02B21/14](#) [N: and [G02B21/12A](#)] take precedence)
- G02B21/12 . . . affording bright-field illumination ([G02B21/14](#) takes precedence)
- G02B21/12A [N: affording both dark- and bright-field illumination]
- G02B21/14 . . . affording illumination for phase-contrast observation

- G02B21/16 . adapted for ultra-violet illumination; [N: Fluorescence microscopes ([G02B21/00M4A7U](#) takes precedence)] [[N1205](#)]

- G02B21/18 . Arrangements with more than one light path, e.g. for comparing two specimens
- G02B21/20 . . Binocular arrangements
- G02B21/22 . . . Stereoscopic arrangements

- G02B21/24 . Base structure
- G02B21/24B . . [N: Devices for focusing (focusing in general [G02B7/28](#))]
- G02B21/24B1 . . . [N: with coarse and fine adjustment mechanism]
- G02B21/24B2 . . . [N: using image analysis techniques]
- G02B21/24B3 . . . [N: using auxiliary sources, detectors]
- G02B21/24B3D [N: Differential detectors]
- G02B21/24C . . [N: objective (or ocular) turrets]
- G02B21/26 . . Stages; Adjusting means therefor
- G02B21/28 . . with cooling device
- G02B21/30 . . with heating device

- G02B21/32 . Micromanipulators structurally combined with microscopes

- G02B21/33 . Immersion oils, [N: or microscope systems or objectives for use with immersion fluids] [[N9508](#)] [[C0406](#)]

- G02B21/34 . Microscope slides, e.g. mounting specimens on microscope slides (preparing specimens for investigation [G01N1/28](#); means for supporting the objects or the materials to be analysed in electron microscopes [H01J37/20](#))

- G02B21/36 . arranged for photographic purposes or projection purposes ([G02B21/18](#) takes precedence) [N: or digital imaging or video purposes including associated control and data processing arrangements (image data processing per se [G06T](#))] [[C0406](#)]
- G02B21/36D . . [N: Optical details, e.g. image relay to the camera or image sensor ([G02B21/36P](#) takes precedence; illumination details [G02B21/06](#) and subgroups)] [[N0503](#)]
- G02B21/36M . . [N: Mechanical details, e.g. mountings for the camera or image sensor, housings ([G02B21/36P](#) takes precedence)] [[N0503](#)]
- G02B21/36P . . [N: Projection microscopes][[N0503](#)]
- G02B21/36V . . [N: Control or image processing arrangements for digital or video microscopes ([G02B21/36D](#), [G02B21/36M](#) take precedence)] [[N0503](#)]
- G02B21/36V1 . . . [N: providing an output produced by processing a plurality of individual source images, e.g. image tiling, montage, composite images, depth sectioning, image comparison] [[N0503](#)]
- G02B21/36W . . [N: details of associated display arrangements, e.g. mounting of LCD monitor] [[N0503](#)]

- G02B23/00** **Telescopes, e.g. binoculars; Periscopes; Instruments for viewing the inside of hollow bodies (diagnostic instruments [A61B](#)); Viewfinders (objectives [G02B9/00](#), [G02B11/00](#), [G02B15/00](#), [G02B17/00](#); eyepieces [G02B25/00](#)); Optical aiming or sighting devices (non-optical aspects of weapon aiming or sighting devices [F41G](#))**
- [G02B23/02](#) . involving prisms or mirrors ([G02B23/14](#) takes precedence)
- [G02B23/04](#) . . for the purpose of beam splitting or combining, e.g. fitted with eyepieces for more than one observer ([G02B23/10](#) takes precedence)
- [G02B23/06](#) . . having a focussing action, e.g. parabolic mirror
- [G02B23/08](#) . . Periscopes [N: (arrangements on floating structures of underwater viewing devices [B63C11/49](#); arrangement of visual watch equipment on submarines [B63G8/38](#))]
- [G02B23/10](#) . . reflecting into the field of view additional indications, e.g. from collimator (collimators in general [G02B27/30](#); graticules [G02B27/34](#))
- [G02B23/10C](#) . . . [N: Sighting devices with light source and collimating reflector (reflecting sights for small arms having light source [F41G1/34](#))] [N0406]
- [G02B23/12](#) . with means for image conversion or intensification (objectives for image conversion or intensification [G02B13/16](#); electrical image converters with optical input and optical output [H01J31/50](#))
- [G02B23/12H](#) . . [N: head-mounted]
- [G02B23/14](#) . Viewfinders (for photographic apparatus [G03B13/02](#))
- [G02B23/14Z](#) . . [N: Zoom viewfinders] [N0611]
- [G02B23/16](#) . Housings; Caps; Mountings; Supports, e.g. with counterweight (cases or receptacles [A45C](#) [N: ; for submarine periscopes [G02B23/08](#)])
- [G02B23/16E](#) . . [N: Equatorial mounts] [N0406]
- [G02B23/18](#) . . for binocular arrangements [N: (focusing binocular pairs [G02B7/06](#); adjusting pupillary distance of binocular pairs [G02B7/12](#))] [C0406]
- [G02B23/20](#) . . Collapsible housings ([G02B23/18](#) takes precedence)
- [G02B23/22](#) . . Underwater equipment [N: (for submarine periscopes [G02B23/08](#); arrangements on floating structures of underwater viewing devices [B63C11/49](#); arrangement of visual watch equipment on submarines [B63G8/38](#))]
- [N: **Note**
 This group covers housings, mountings, supports or the like for underwater equipment other than periscopes
]
- [G02B23/24](#) . Instruments [N: or systems] for viewing the inside of hollow bodies, e.g. fibrescopes [C0203]
- [G02B23/24B](#) . . [N: Optical details] [N9903]
- [G02B23/24B1](#) . . . [N: Stereoscopic endoscopes] [N9903]
- [G02B23/24B2](#) . . . [N: of the distal end] [N9903]
- [G02B23/24B2B](#) [N: Objectives for endoscopes] [N9903]
- [G02B23/24B2B1](#) [N: Zoom objectives] [N9903]
- [G02B23/24B3](#) . . . [N: of the image relay ([G02B23/26](#) takes precedence)] [N9903]
- [G02B23/24B4](#) . . . [N: of the proximal end] [N9903]

- G02B23/24B5 . . . [N: Illumination] [N9903]
- G02B23/24B5F [N: using optical fibres] [N9903]
- G02B23/24D . . [N: Non-optical details, e.g. housings, mountings, supports] [N9903]
- G02B23/24D1 . . . [N: Arrangements in relation to a camera or imaging device (processing or control of video signals generated by an endoscope H04N5/232, H04N5/235)] [N1204]
- G02B23/24D2 . . . [N: Arrangements for use in a hostile environment, e.g. a very hot, cold or radioactive environment] [N9903]
- G02B23/26 . . using light guides [N: (for illumination [G02B23/24B5F](#))] [C9903]

G02B25/00 **Eyepieces; Magnifying glasses (simple lenses [G02B3/00](#))**

- G02B25/00A . [N: Eyepieces] [N9608]
- G02B25/00B . [N: Magnifying glasses] [N9608]
- G02B25/00B1 . . [N: having binocular arrangement] [N9608]
- G02B25/00B2 . . [N: with means for adjusting the magnifying glass or the object viewed ([G02B25/00B1](#) takes precedence)] [N9608] [C0406]
- G02B25/00B3 . . [N: comprising other optical elements than lenses ([G02B25/00B1](#), [G02B25/00B2](#) take precedence)] [N9608]
- G02B25/00B4 . . [N: comprising two or more lenses ([G02B25/00B1](#) to [G02B25/00B3](#) take precedence)] [N9608]
- G02B25/02 . with means for illuminating object viewed
- G02B25/04 . affording a wide-angle view, e.g. through a spy-hole

G02B26/00 **Optical devices or arrangements using movable or deformable optical elements for controlling the intensity, colour, phase, polarisation or direction of light, e.g. switching, gating, modulating (specially adapted to measuring characteristics of light [G01J](#); using devices or arrangements the optical operation of which is modified by changing the optical properties of the medium of the devices or the arrangements [G02F1/00](#); control of light in general [G05D25/00](#); control of light sources [H01S3/10](#), [H05B37/00](#) to [H05B43/00](#); mechanically operable parts of lighting devices for the control of light [F21V](#))**

- G02B26/00C . [N: based on interference in an adjustable optical cavity (interference filters [G02B5/28](#); devices or arrangements using multiple reflections in spectrometry or monochromators [G01J3/26](#))] [N0406]
- G02B26/00F . [N: the movement or the deformation controlling the frequency of light, e.g. by Doppler effect] [N1204]
- G02B26/00L . [N: based on a displacement or a deformation of a fluid] [N1205]
- G02B26/00L1 . . [N: based on electrowetting] [N1205]
- G02B26/00W . [N: the movable or deformable optical element controlling the colour, i.e. a spectral characteristic, of the light] [N1207]
- G02B26/00W1 . . [N: in the form of devices for effecting sequential colour changes, e.g. colour wheels] [N1207]

- G02B26/02 . for controlling the intensity of light [N: (G02B26/00L takes precedence)] [N1205]
- G02B26/02N . . [N: comprising movable attenuating elements, e.g. neutral density filters] [N1207]
- G02B26/02P . . [N: based on the rotation of particles under the influence of an external field, e.g. gyricons, twisting ball displays (based on orientable dipolar particles [G02F1/17A](#); based on electrophoresis [G02F1/167](#))] [N0406]
- G02B26/04 . . by periodically varying the intensity of light, e.g. using choppers (shutters, diaphragms for cameras [G03B9/00](#); devices for eliminating or reducing the effect of flicker in projection systems [G03B21/40](#))
- G02B26/06 . for controlling the phase of light ([G02B26/08](#) takes precedence [N: , measuring optical phase difference [G01J9/00](#)]) [C0406]
- G02B26/08 . for controlling the direction of light (in light guides [G02B6/35](#)) [C0209]
- G02B26/08D . . [N: by means of one or more diffracting elements]
- G02B26/08M . . [N: by means of one or more reflecting elements]
- G02B26/08M2 . . . [N: the reflecting element being a flexible sheet or membrane, e.g. for varying the focus (flexible mirrors for cosmetic use [A45D42/24](#))] [C0406]
- G02B26/08M4 . . . [N: the reflecting element being a micromechanical device, e.g. a MEMS mirror, DMD ([G02B26/08M2](#) takes precedence; micromechanical devices in general [B81B](#))] [N9511] [C0406]
- G02B26/08M4E [N: the reflecting element being moved or deformed by electrostatic means] [N0504]
- G02B26/08M4M [N: the reflecting means being moved or deformed by electromagnetic means] [N0504]
- G02B26/08M4P [N: the reflecting means being moved or deformed by piezoelectric means] [N0504]
- G02B26/08M4T [N: the reflecting means being moved or deformed by thermal means] [N0504]
- G02B26/08R . . [N: by means of one or more refracting elements]
- G02B26/08R2 . . . [N: the refracting element being a prism]
- G02B26/08R2W [N: forming an optical wedge]
- G02B26/10 . . Scanning systems (for special applications, see the relevant places, e.g. [G03B27/32](#), [N: [G03F7/20](#)], [G03G15/04](#), [G09G3/00](#), [H04N](#)]) [C9511]
- G02B26/10B . . . [N: with both horizontal and vertical deflecting means, e.g. raster or XY scanners (colour television using laser beams scanning a display screen [H04N9/31L](#))] [N9807]
- G02B26/10F . . . [N: having movable or deformable optical fibres, light guides or waveguides as scanning elements (light guides per se [G02B6/00](#))] [N0909]
- G02B26/10G . . . [N: with one or more pivoting mirrors or galvano-mirrors ([G02B26/10B](#) takes precedence)] [C9807]
- G02B26/10H . . . [N: having diffraction gratings as scanning elements, e.g. holographic scanners (holographic optical elements [G02B5/32](#), holography [G03H](#))]
- G02B26/10R . . . [N: having one or more prisms as scanning elements]
- G02B26/12 . . . using multifaceted mirrors [N9607]
- G02B26/12B [N: Mechanical drive devices for polygonal mirrors] [N9607]
- G02B26/12B2 [N: Control of the scanning speed of the polygonal mirror] [N9607]
- G02B26/12D [N: Multibeam scanners, e.g. using multiple light sources or beam splitters] [N9607]

- G02B26/12E [N: Details of the optical system between the light source and the polygonal mirror ([G02B26/12D](#), [G02B26/12G](#) take precedence)] [N9607]
- G02B26/12F [N: Details of the optical system between the polygonal mirror and the image plane ([G02B26/12D](#), [G02B26/12G](#) take precedence; F-Theta lenses [G02B13/00A](#))] [N9607] [C0712]
- G02B26/12F2 [N: including curved mirrors] [N9607]
- G02B26/12G [N: Adaptive control of the scanning light beam, e.g. using the feedback from one or more detectors ([G02B27/00K1](#) takes precedence)] [N9607] [C0406]
- G02B26/12G2 [N: Focus control] [N9607]
- G02B26/12H [N: Systems in which the scanning light beam is repeatedly reflected from the polygonal mirror] [N9607]

G02B27/00

Other optical systems; Other optical apparatus (means for bringing about special optical effects in shop-windows, show-cases [A47F](#), e.g. [A47F11/06](#); optical toys [A63H33/22](#); designs or pictures characterised by special light effects [B44F1/00](#))

- G02B27/00C . [N: with means to keep optical surfaces clean, e.g. by preventing or removing dirt, stains, contamination, condensation (cleaning in general [B08B](#))] [N0406]
- G02B27/00D . [N: Optical design, e.g. procedures, algorithms, optimisation routines] [N0406]
- G02B27/00G . [N: with means for preventing ghost images (anti-reflection coatings [G02B1/11](#))]
- G02B27/00K . [N: for optical correction, e.g. distorsion, aberration]
- G02B27/00K1 . . [N: for scanning purposes]
- G02B27/00K2 . . [N: with diffracting elements ([G02B27/00K5D](#) takes precedence; holographic optical elements [G02B5/32](#); zone systems [G02B5/18Z](#))] [C1110]
- G02B27/00K2R . . . [N: in projection exposure systems, e.g. microlithographic systems] [N0406]
- G02B27/00K5 . . [N: for correction of secondary color or higher-order chromatic aberrations] [N1110]
- G02B27/00K5D . . . [N: by using a diffractive optical element] [N1110]
- G02B27/00K5P . . . [N: by controlling the dispersion of a lens material, e.g. adapting the relative partial dispersion] [N1110]
- G02B27/00K7 . . [N: having means for controlling the degree of correction, e.g. using phase modulators, movable elements (controlling the phase of light using moving or deformable elements [G02B26/06](#))] [N0406]
- G02B27/00M . [N: with means for altering, e.g. increasing, the depth of field or depth of focus] [N0611] [N: WARNING Not complete, see also G02B27/00]
- G02B27/00P . [N: with means for altering, e.g. enlarging, the entrance or exit pupil] [N0406]
- G02B27/00R . [N: Phased arrays] [N0406]
- G02B27/00T . [N: with means for monitoring data relating to the user, e.g. head-tracking, eye-tracking] [N0406]
- G02B27/01 . Head-up displays [N1204]

[N: **Notes**

Details of head-up displays covered by [G02B27/01](#) but not provided for in this group are also to be classified under [S02B27/01](#) and subgroups]

- G02B27/01A . . [N: characterised by optical features ([G02B27/01C1](#) takes precedence)] [N9807]
- G02B27/01A1 . . . [N: comprising holographic elements] [N1204]
- G02B27/01B . . [N: characterised by mechanical features ([G02B27/01C2](#) takes precedence)] [N9508] [C9807]
- G02B27/01C . . [N: Head mounted] [N9508]
- G02B27/01C1 . . . [N: characterised by optical features] [N9807]
- G02B27/01C2 . . . [N: characterised by mechanical features] [N9807]
- G02B27/01D . . [N: Display position adjusting means not related to the information to be displayed] [N1204]
- G02B27/01E . . [N: Sight systems] [N1204]

- G02B27/02 . Viewing or reading apparatus (stereoscopic systems per se [G02B27/22](#); of the projection type [G03B](#); slide-changing apparatus [G03B](#))
- G02B27/02A . . [N: Reading apparatus] [N9608]
- G02B27/02C . . [N: Viewing apparatus ([G02B27/04](#), [G02B27/06](#), [G02B27/08](#) take precedence)] [N9608]
- G02B27/02C1 . . . [N: for viewing X-ray images using image converters, e.g. radiosopes (X-ray screens [G21K4/00](#); X-ray image conversion tubes [H01J31/50](#); circuit arrangements for X-ray apparatus incorporating image intensifiers [H05G 1/64](#))] [N9608]
- G02B27/02C2 . . . [N: comprising a light source, e.g. for viewing photographic slides, X-ray transparencies ([G02B27/02C1](#), and photographic, cine and overhead projectors [G03B21](#) and subgroups)] [N9608] [C0406]
- G02B27/02C2B [N: and magnifying means] [N9608]
- G02B27/02C2D [N: and a display device, e.g. CRT, LCD, for adding markings or signs or to enhance the contrast of the viewed object] [N9608]
- G02B27/02C3 . . . [N: comprising magnifying means ([G02B27/02C1](#), [G02B27/02C2B](#), [G02B27/04](#), [G02B27/06](#) and [G02B27/08](#) take precedence)] [N9608]
- G02B27/02D . . [N: characterised by the supporting structure]
- G02B27/04 . . having collapsible parts
- G02B27/06 . . with moving picture effect
- G02B27/08 . . Kaleidoscopes

- G02B27/09 . Beam shaping, e.g. changing the cross-sectional area, not otherwise provided for [N: (adapting the beam shape of a laser diode [G02B19/B3D](#); adapting the beam shape of an LED [G02B19/B3L](#) ; coupling into light guides using intermediate optical elements [G02B6/42C3](#) ; beam shaping specially adapted for lasers [H01S3/00F](#))] [N9508] [C0504] [M1207]
- G02B27/09A . . [N: Dividing and/or superposing multiple light beams] [N0504] [C0803]
- G02B27/09B . . [N: Anamorphic systems] [N0504]
- G02B27/09F . . [N: Adapting the beam shape of a semiconductor light source such as a laser diode or an LED, e.g. for efficiently coupling into optical fibers (coupling into light guides using intermediate optical elements [G02B6/42C3](#); details of lighting devices in general [F21V](#); semiconductor devices with at least one potential-jump barrier or surface barrier specially adapted for light emission [H01L33/00](#))] [N0801]

[N: **WARNING** [N1206]

This group and subgroups are no longer used for the classification of new documents as from May 1, 2012. The backlog is being continuously classified to [G02B19/00](#) and subgroups

]

- G02B27/09F1 . . . [N: the semiconductor light source comprising an array of light emitters] [N0801]
- G02B27/09H . . [N: Systems for changing the beam intensity distribution, e.g. Gaussian to top-hat] [N0801]
- G02B27/09M . . [N: Systems for active beam shaping by rapid movement of an element] [N0801]
- G02B27/09S . . [N: Using specific optical elements] [N0801]
- G02B27/09S1 . . . [N: Diffractive optical elements, e.g. gratings, holograms (gratings per se [G02B5/18](#); holograms used as optical elements per se [G02B5/32](#))] [N0801]
- G02B27/09S2 . . . [N: Refractive optical elements] [N0801]
- G02B27/09S2L [N: Lenses (lenses per se [G02B3/00](#))] [N0801]
- G02B27/09S2L1 [N: Lens arrays (lens arrays per se [G02B3/00A](#))] [N0801]
- G02B27/09S2L2 [N: Cylindrical lenses (cylindrical lenses per se [G02B3/06](#))] [N0801]
- G02B27/09S2P [N: Prisms (prisms per se [G02B5/04](#))] [N0801]
- G02B27/09S3 . . . [N: Reflective elements] [N0801]
- G02B27/09S3C [N: being curved] [N0801]
- G02B27/09S4 . . . [N: Diaphragms, spatial filters, masks for removing or filtering a part of the beam] [N0801]
- G02B27/09S5 . . . [N: Fibers, light pipes (optical fibers per se [G02B6/02](#))] [N0801]

- G02B27/10 . . . Beam splitting or combining systems (polarising systems G02B27/28; mixing and splitting light signals using optical waveguides G02B6/28; [N: beam shaping, e.g. changing the cross-sectional area, by dividing or superposing multiple light beams G02B27/09A]) [N1205]
- G02B27/10A . . [N: for splitting or combining different wavelengths (G02B27/10Z, G02B27/14A take precedence)] [N1205]
- G02B27/10A1 . . . [N: for color or multispectral image sensors, e.g. splitting an image into monochromatic image components on respective sensors (spectral imaging systems G01J)] [N1205]
- G02B27/10A3 . . . [N: for generating a colour image from monochromatic image signal sources] [N1205]
- G02B27/10A3R [N: for use with reflective spatial light modulators] [N1205]
- G02B27/10A3R1 [N: having a single light modulator for all colour channels] [N1205]
- G02B27/10A3S [N: for use with scanning systems (scanning systems G02B26/10)] [N1205]
- G02B27/10A3T [N: for use with transmissive spatial light modulators] [N1205]
- G02B27/10A3T1 [N: having a single light modulator for all colour channels] [N1205]
- G02B27/10E . . [N: for splitting or combining a plurality of identical beams or images, e.g. image replication] [N1205]
- G02B27/10K . . [N: for enhancing image performance, like resolution, pixel numbers, dual magnifications or dynamic range, by tiling, slicing or overlapping fields of view] [N1205]
- G02B27/10M . . [N: characterized by manufacturing or alignment methods] [N1205]
- G02B27/10S . . [N: for sampling a portion of a beam or combining a small beam in a larger one, e.g. wherein the area ratio or power ratio of the divided beams significantly differs

- from unity, without spectral selectivity] [N1205]
- G02B27/10Z . . [N: operating by diffraction only] [N1205]
- G02B27/10Z1 . . . [N: for use with monochromatic radiation only, e.g. devices for splitting a single laser source] [N1205]
- G02B27/12 . . operating by refraction only
- G02B27/12L . . . [N: The splitting element being a lens or a system of lenses, including arrays and surfaces with refractive power] [N1205]
- G02B27/12P . . . [N: The splitting element being a prism or prismatic array, including systems based on total internal reflection] [N1205]
- G02B27/14 . . operating by reflection only
- G02B27/14A . . . [N: using dichroic mirrors] [N1205]
- G02B27/14C . . . [N: Coating structures , e.g. thin films multilayers] [N1205]
- G02B27/14F . . . [N: using macroscopically faceted or segmented reflective surfaces] [N1205]
- G02B27/14H . . . [N: using partially transparent surfaces without spectral selectivity (G02B27/14V takes precedence)] [N1205]
- G02B27/14S . . . [N: having sequential partially reflecting surfaces] [N1205]
- G02B27/14S1 [N: with a tree or branched structure] [N1205]
- G02B27/14V . . . [N: using averaging effects by spatially variable reflectivity on a microscopic level, e.g. polka dots, chequered or discontinuous patterns, or rapidly moving surfaces (G02B27/10Z takes precedence)] [N1205]
- G02B27/14W . . . [N: including stacked surfaces having at least one double-pass partially reflecting surface] [N1205]
- G02B27/14X . . . [N: using crossed beamsplitting surfaces, e.g. cross-dichroic cubes or X-cubes] [N1205]
- G02B27/16 . . used as aids for focusing
- G02B27/18 . for optical projection, e.g. combination of mirror and condenser and objective [N: not in use, see the relevant ECLA classes according to projector type, e.g. photographic, cine and overhead projectors [G03B27/21](#) and subgroups, photographic projection printing [G03B27/32](#), photolithographic projectors [G03F7/20](#), projection television [H04N5/74](#), colour projection television [H04N9/31](#)] [C0406]
- G02B27/20 . . for imaging minute objects, e.g. light-pointer
- G02B27/22 . for producing stereoscopic or other three dimensional effects (in microscopes [G02B21/22](#); viewing apparatus [G02B27/02](#); [N: stereoscopic television [H04N13/00](#)] [C9508])
- G02B27/22C . . [N: stereoscopic devices based on anaglyph techniques] [N9508] [C9609]
- G02B27/22L . . [N: involving lenticular arrays or parallax barriers] [N9609]
- G02B27/22P . . [N: giving the psychological impression of depth to the observer of a single two dimensional image] [N9609]
- G02B27/22S . . [N: Stereoscopes or similar systems based on providing first and second images situated at first and second locations, said images corresponding to parallaxically displaced views of the same object, and presenting the first and second images to an observer's left and right eyes respectively ([G02B27/22C](#), [G02B27/22T](#), [G02B27/26](#) take precedence)] [N9609]
- G02B27/22S1 . . . [N: including reflecting surfaces in the optical path between the images and the observer] [N9609]
- G02B27/22S2 . . . [N: including refractive beam deviating means, e.g. wedges, prisms, in the optical path between the images and the observer] [N9609]

- G02B27/22S3 . . . [N: of the autostereoscopic type, i.e. left and right images projected to the left and right eyes of an observer who is not required to view the images through optical systems placed adjacent to the eyes (autostereoscopic systems involving lenticular arrays or parallax barriers [G02B27/22L](#))] [N9609]
- G02B27/22S4 . . . [N: Collapsible stereoscopes] [N9609]
- G02B27/22T . . [N: involving time multiplexing, e.g. using sequentially activated left and right shutters] [N9609]
- G02B27/22V . . [N: the image being built up from image elements distributed over a three dimensional volume, e.g. by scanning the volume with modulated beams of radiation] [N9609]
- G02B27/22V1 . . . [N: the volume being constructed from a stack or sequence of two dimensional planes, e.g. depth sampling systems] [N9609]
- G02B27/22V2 . . . [N: the volume being generated by a moving, e.g. vibrating or rotating, two-dimensional surface] [N9609]
- G02B27/22V3 . . . [N: involving projecting an aerial or floating image] [N9609]
- G02B27/24 . . involving reflecting prisms and mirrors only [N: (not used, see [G02B27/22](#) and subgroups)] [N0408]
- G02B27/26 . . involving polarising means [C9609]
- G02B27/28 . for polarising (used in stereoscopes [G02B27/26](#))
- G02B27/28A . . [N: used for attenuating light intensity, e.g. comprising rotatable polarising elements] [C0712]
- G02B27/28B . . [N: used for beam splitting or combining]
- G02B27/28B1 . . . [N: comprising arrays of elements, e.g. microprisms] [N0406]
- G02B27/28C . . [N: for controlling or changing the state of polarisation, e.g. transforming one polarisation state into another ([G02B5/30R](#) takes precedence; light guide coupling means utilising polarising elements [G02B6/34](#))] [C0712]
- G02B27/28F . . [N: Filters employing polarising elements, e.g. Lyot or Solc filters ([G02B5/30L](#) takes precedence)] [C0712]
- G02B27/30 . Collimators
- G02B27/32 . Fiducial marks and measuring scales within the optical system
- G02B27/34 . . illuminated
- G02B27/36 . . adjustable
- G02B27/40 . Optical focusing aids (beam splitting or combining systems [G02B27/10](#))
- G02B27/42 . Diffraction optics [N: , i.e. systems including a diffractive element being designed for providing a diffractive effect] (G02B27/60 takes precedence) [N1205]
- G02B27/42A . . [N: having a diffractive optical element [DOE] contributing to image formation, e.g. whereby modulation transfer function MTF or optical aberrations are relevant] [N1205]
- G02B27/42A1 . . . [N: correcting chromatic aberrations (G02B27/00K5D, G02B27/42A5, G02B27/42A7 take precedence)] [N1205]
- G02B27/42A3 . . . [N: correcting geometrical aberrations] [N1205]
- G02B27/42A5 . . . [N: in projection exposure systems, e.g. photolithographic systems] [N1205]
- G02B27/42A7 . . . [N: in image scanning systems] [N1205]
- G02B27/42B . . [N: having a diffractive element [DOE] contributing to a non-imaging application

- (diffusers having a diffractive element G02B5/02D6; filters having a diffractive element G02B5/20H; systems for controlling the direction of light having diffractive elements G02B26/08D; scanning systems having diffractive elements G02B26/10H; beam shaping systems using diffractive optical elements G02B27/09S1; beam splitting or combining systems operating by diffraction G02B27/10Z)] [N1205]
- G02B27/42B1 . . . [N: in optical recording or readout devices (optical pick-up devices such as for CD, DVD or BD reader or recorder using diffraction optics G11B7/1353)] [N1205]
- G02B27/42B3 . . . [N: in wavelength selecting devices (spectrometry G01J)] [N1205]
- G02B27/42B5 . . . [N: in illumination systems (mask illumination systems in photolithographic systems G03F7/70D16B)] [N1205]
- G02B27/42B7 . . . [N: for alignment or positioning purposes (optical displacement encoding scales G01D5/347)] [N1205]
- G02B27/42P . . [N: having a diffractive element with major polarization dependent properties] [N1205]
- G02B27/42Q . . [N: Diffraction theory; Mathematical models] [N1205]
- G02B27/42S . . [N: having plural diffractive elements positioned sequentially along the optical path] [N1205]
- [N: **WARNING**Not complete, see also [G02B5/18E](#)]
- G02B27/42S1 . . . [N: being separated by an air space] [N1205]
- G02B27/42T . . [N: having a diffractive element with major temperature dependent properties] [N1205]
- G02B27/42W . . [N: having uniform diffraction efficiency over a large spectral bandwidth] [N1205]
- G02B27/42Z . . [N: in multispectral systems, e.g. UV and visible] [N1205]
- G02B27/44 . . Grating systems; Zone plate systems ([G02B27/46](#) takes precedence; [N: beam splitting or combining systems operating by diffraction only [G02B27/10D](#)]; spectrometry G01J)
- [N: **WARNING**
This group is no longer used for the classification of new documents as from May 1, 2012. The backlog is being continuously classified to [G02B27/42](#) and subgroups]
- G02B27/46 . . Systems using spatial filters ([character recognition G06K9/00](#))
- Note**
In this group, the filter may be in any plane, e.g. the image or the Fourier transfer plane.
- G02B27/48 . Laser speckle optics; [N: Speckle reduction arrangements] ([speckle suppression in holography G03H1/32](#)) [C0712]
- G02B27/50 . Optics for phase object visualisation
- G02B27/52 . . Phase contrast optics ([in microscopes G02B21/14](#))
- G02B27/54 . . Schlieren-optical systems
- G02B27/56 . Optics using evanescent waves, i.e. inhomogeneous waves
- G02B27/58 . Optics for apodization or superresolution; Optical synthetic aperture systems

- G02B27/60 . Systems using moiré fringes (means for converting the output of a sensing member using diffraction gratings [G01D5/38](#))
- G02B27/62 . Optical apparatus specially adapted for adjusting optical elements during the assembly of optical systems (adjusting means being part of the system to be assembled [G02B7/00](#))
- G02B27/64 . Imaging systems using optical elements for stabilisation of the lateral and angular position of the image (focusing systems [G02B7/04](#))
- G02B27/64D . . [N: Optical derotators, i.e. systems for compensating for image rotation, e.g. using rotating prisms, mirrors] [N9807]
- G02B27/64G . . [N: compensating for large deviations, e.g. maintaining a fixed line of sight while a vehicle on which the system is mounted changes course] [N9807]
- G02B27/64V . . [N: compensating for small deviations, e.g. due to vibration or shake (movement of one or more optical elements for control of motion blur in cameras, projectors or printers S03B205/00B; image stabilisation in cameras peculiar to the presence or use of an electronic image sensor H04N5/232S)] [N1204]
- G02B27/64V1 . . . [N: for automatically maintaining a reference alignment, e.g. in self-levelling surveying instruments (surveying instruments per se [G01C](#))] [N9901]