

3.21	VORTEX-FLOW DRIVE AND CLUTCH	219.1	...Hill-holder
3.22	.With means to effect torque reversal	219.2	....One-way brake
3.23	.With brake	219.3	.....Ball or roller
3.24	..Alternatively operative clutch and brake	219.4	...Emergency or parking brake
3.25	.With additional drive or clutch	219.5	....Parking pawl
3.26	..Simultaneously operative clutches	219.6	....With separate manual operator
3.27	..Alternatively operative clutches	219.7	.....Foot operated
3.28	.Including drive-lockup clutch	220	..Brake control affects transmission change
3.29	..Having fluid-pressure operator	220.1	...Brake application neutralizes transmission
3.3	...With auxiliary source of pressure	220.2	...Park-lock device
3.31	..Having speed-responsive operator	220.3	....Floor-mounted shift lever
3.32	..Alternatively operative drive and clutch	220.4	.....Solenoid operated lock
3.33	..Fluid-pressure operator for engaging clutch	220.5	.....Rotary bushing
3.34	VORTEX-FLOW DRIVE AND BRAKE	220.6	.....Override
3.51	TRANSMISSION CONTROL AND CLUTCH CONTROL	220.7	.....Override
3.52	..Planetary transmission and coaxial clutch	221	..Fluid operated
3.53	..Including separate, reversing pedal	221.1	...Brake and gearing at axle end
3.54	.Common control	222	..Electromagnetic
3.55	..Power-operated clutch	223	.Torque-responsive brake
3.56	...Electromagnetically operated	223.1	..Transversely engaged positive brake
3.57	...Fluid-press operated	223.2	..Ball or roller type brake
3.58	....Electrically triggered	223.3	..With cam mechanism for axially moving brake member
3.59	....Vacuum operated	223.4	..Wrap-spring brake
3.61	..Stepped ratio transmission	224	.Belt or chain transmission
3.62	..With control lever	224.1	..Belt tensioner affects brake operation
3.63	.Interrelated (e.g., with interlock)	224.2	..Belt failure operates brake
215	TRANSMISSION AND BRAKE	224.3	..Belt shipper affects brake operation
216	.Internal resistance brake	225	.Fluid operated
217	.Velocipede	226	.Electromagnetic
217.1	..Back-pedaling brake (e.g., coaster brake)	12 R	CLUTCH AND BRAKE
217.2	...Rotatable crank axle	13 R	.Vehicle type
217.3	...Wheel hub	13 A	..Clutch-released brake holder
217.4	....With change-speed transmission	14	.Same member
217.5	.....Plural sprockets	15	.Automatic check and release
217.6	....With screw operator	16	..Clutch and brake same member
217.7	....Multidisc brake	17 R	.Peripheral brake
218	.Motor vehicle	17 A	..Fluid operator
219	..Transmission control affects brake	17 C	..Electric
		17 D	..Coil
		18 R	.Sliding operation
		18 A	..Fluid operator
		18 B	..Electric and magnetic
		19	.Crank control
		12 A	.Internal resistance
		12 B	.One-way engaging
		12 BA	..Coil spring type
		12 C	.Fluid operator

12 D	.Electric	48.7	..With means to actuate or deactuate clutch-assemblages sequentially
20	CLUTCH AND GEAR		
21	.Reversing		
21.5	FIELD RESPONSIVE FRICTIONAL MEDIA TYPE	48.8	..Associated with three or more shafts
22	LATCH OPERATED	48.9	...Alternatively operative assemblages
23	.Corn-planter type		
24	.Longitudinally moving transmission member	48.91	...Having common clutch-element support
25	..Pin	48.92	..Including unirotationally engaging clutch-elements
26	.Transversely moving transmission member	49	..Parallel vehicle wheels
27	..Ball or roller	50	...Free wheel
28	..Positive	51	..Reversing
29	...Rotating key	52.1	.Progressive engagement
30 R	CLUTCHES	52.2	..Surface area
31	.Automatic	52.3	...Yielding
32	..Manual control	52.4	..Variable force
33 R	...Definite-position release	52.5	...Initial engagement causes increase in applied force
33 C	....Coil		
34	...Shaft thrust	52.6	..Yielding
35	...Pilot mechanism	53.1	..Frictional and positive
36	...Brake band	53.2	...Magnetic or electromagnetic operated friction clutch
37	...Transversely moving		
38	....Ball or roller	53.3	...With blocker
39	....Positive	53.31	....Self-energizing
40	...Electric	53.32	....Interposed friction members
41 R	..One-way engaging	53.33	....Member extending axially between friction surfaces
42	...Free-engine type		
43	...Reversible	53.331	....Blocker on axially extending stepped pin
43.1	....Pivoted pawls		
43.2	....Slidable pawls	53.332	.....Resilient detent pin
44	....Ball or roller	53.34	....Outward tooth or lug on friction member
45	...Ball or roller		
45.1	..Wedging pawl or block	53.341	....With thrust member
45.2	...Two-point gripper	53.342	.....Resilient thrust bar
46	...Positive	53.343	.....Resilient expander ring
47	..Manual control	53.35	....Inward tooth or lug on friction member
41 S	...Spring		
41 A	...Sprags	53.36	....Radially movable blocker
48.1	.Plural clutch-assemblage	53.361	....Detent acts as blocker
48.2	..Including electrically actuated clutch assemblage	53.362	.....Rocker lever actuates friction clutch
48.3	..Diverse clutch-assemblages	53.363	....Radially movable friction element acts as blocker
48.4	...Including three or more assemblages	53.364	.....Resilient friction element
48.5	...Including one clutch-assemblage having interdigitated clutch-elements	53.4	...Lock for positive clutch
48.6	....And another clutch-assemblage having unirotationally engaging clutch elements	53.5	...Axially projecting positive clutch
		53.51	....Cylindrical pin
		53.6	...Transversely moving positive clutch
		54.1	.Torque responsive

54.2	..Hub clutch	58.4	...Viscous shear
54.5	..Cam operated	58.41	....Multiple plate
54.51	...Screw operated	58.42	.....Variable gap or volume
54.52	...Ball or roller type	58.43	....Variable gap or volume
55.1	..With overload release coupling	58.5	....Separate reservoir
55.2	..With flexible shaft coupling permitting limited relative rotation	58.6	.....Automatic regulation
55.3	...Separate resilient member between clutch element and its shaft	58.61	.....Magnetic or electric
55.4	....Fluid damper	58.62	.....Temperature and speed
55.5	....Coil spring coaxial with rotation axis	58.63	.....Temperature
55.51	.....Radially overlapping convolutions	58.64	.....Coolant and clutching medium
55.6	....Plural resilient members	58.65	.....Ambient and clutching medium
55.61	.....Coil springs with center line spaced from rotational axis	58.66	.....Ambient and coolant
55.62	.....Center line of coil springs parallel to rotational axis	58.67	.....Clutching medium
55.7	....Coil spring with center line spaced from rotational axis	58.68	.....Ambient
56.1	..Overload release	58.681	.....Bi-metallic
56.2	...Coil	58.682	.....Spiral
56.3	...Fluid-operated clutch	58.683	.....Resilient or adjustable mounting feature
56.31	....Axially engaged	58.684	.....Mounting feature
56.32	.....Positive	58.7	....Pump-out feature
56.33	.....Ball or roller	58.8	....Specific valve
56.4	...Magnetic or electromagnetic	58.9	...Radial vane
56.41	....Axially engaged	58.91	...Vaness on inner member
56.42	.....Positive	58.92	....Spring-biased
56.43	.....Ball or roller	59	..Axially movable piston
56.5	...Clutch elements remain disengaged after overload corrected	60	..Transversely movable piston
56.51	....Having separate latch to hold clutch elements disengaged	61	..Gear-pump type
56.52	.....Axially engaged	62	.Plow-lifting type
56.53	.....Positive	63	.Free-engine type
56.54	.....Ball or roller	64	.Velocipede free wheel
56.55	....Axially engaged	65	.Axially and transversely engaging
56.56	.....Positive	66.1	.Axially engaging
56.57	.....Ball or roller	66.2	..Conical or frustoconical
56.6	...Axially engaged	66.21	...Plural radially spaced surfaces
56.61	....Positive	66.22	...Spring engaged
56.62	.....Ball or roller	66.23	...Spring released
54.3	..Fluid operated	66.3	..Planar radially extending
54.4	..Magnetic or electromagnetic	66.31	...Spring engaged
57	.Fluent material and mechanical	66.32	...Spring released
58.1	.Fluent material	69	..Positive
58.2	..Fluid	69.1	...Pivoting positive clutch element
58.3	...Vane clutch	69.2	...Plunger disconnect
		69.3	...Pilot pawl
		69.4	...Wheel hub clutched to axle
		69.41	....Fluid pressure
		69.42	....Electromagnetic
		69.43	....Manual
		69.5	...Ball or roller
		69.6	...Cylindrical pin

69.61	....Axial pin on only one member	70.27	...With spring means to move clutch-element axially
69.62	.....Pin engages aperture in other member	70.28	....To separate engaged clutch-elements
69.63	....Radial pin	70.29	....And actuator lever pivoted on pressure plate
69.7	...Axial-radial	70.3	...With actuator lever pivoted on pressure plate or back plate to move clutch-element axially
69.71	....Axially extending projection engages aperture		.Transversely engaged
69.8	...Axial-axial	71	..Positive
69.81	....Sawtooth	72	..Interior and exterior
69.82	....Square tooth	73	...Opposing
69.83	.....With lead-in	74	..Interior
69.9	...Radial-radial	75	...Expanding
69.91	....Outward projection on movable member	76	....Radial
70	..Spreading	77	....Split ring
70.11	..Interposed, mating clutch-elements	78	....Cam operated
70.12	...With means to cool or lubricate clutch parts	79	..Exterior
70.13	...With removable or replaceable or interchangeable clutch parts	80	...Strap
70.14	...Including surface characteristics of clutch-element	81 R	....Multiple folds
70.15	....Axially tapered mating surfaces	81 C	....Coil
70.16	...With torque connection between clutch-element and its shaft	82 R	.Operators
70.17	....Resilient torque connection (e.g., for damping vibration)	83	..Multiple for same clutch
70.18	.....Including chordally disposed connection	84.1	..Electric or magnetic
70.19	....Axially slidable connection	84.2	...Plural coils
70.2	.....Spline connection for multiple clutch-elements	84.21	....Plural armatures
70.21	...With means to move multiple clutch-elements axially and sequentially	84.3	...Including permanent magnet
70.22	...With means to move clutch-element axially and latch into engaged or disengaged position	84.31	....And electromagnet
70.23	...With cam or wedge contacting clutch-element or pressure plate for axial movement thereof	84.4	...Electrostatic
70.24	....By cam surface on bell-crank	84.5	...Air gap adjustment
70.251	...With adjustable means to move clutch-element axially (e.g., to compensate for wear)	84.51	....Automatic
70.252	....Automatic	84.6	...Rotary electric motor is clutch actuator
70.26	....Including plural adjusting screws (e.g., to equalize pressure angularly)	84.7	..Mechanical force increasing means
		84.8	...Operator for transversely engaging elements
		84.81	....Coil spring
		84.9	...Operator for axially engaging elements
		84.91	....Interposed friction elements
		84.92	....Positively engaging elements
		84.93	....Magnetic flux path spaced from engaging elements
		84.94	....Specified torque transmitting spring
		84.941	....Nonmetallic
		84.95	....With slip rings
		84.951	....With pulley or gear
		84.96	....Fixed concentric coil
		84.961	....With pulley or gear
		85 R	..Fluid pressure
		86	...Double acting

- 87.1 ...Multiple clutches
- 87.11Having independent operators
- 87.12Responsive to rotational speed of clutch-element
- 87.13With selective distributor for fluid pressure
- 87.14Alternatively operative clutches
- 87.15Clutches coaxial with operators
- 87.16Common or interconnected operator(s)
- 87.17Operator between clutches
- 87.18With selective distributor for fluid pressure
- 87.19Having neutral position
- 88 R ...Flexible motor
- 88 A ...Flexible fluid motor-axially engaged
- 88 B ...Radially engaged
- 85 A ...Axially engaging-rotating motor and clutch
- 85 AA ...Axially engaging clamping rotating motor and clutch
- 85 AB ...Axially engaging spreading rotating motor and clutch
- 85 AT ...Transversely engaging rotating motor and clutch
- 85 C ...Clutch and nonrotating motor
- 85 CA ...Clutch and nonrotating motor
- 85 F ...Centrifugal fluid clutches
- 85 V ...Vacuum clutches and operators
- 89.1 ..Weight operated
- 89.2 ..Spring engaged
- 90 ...Electric release
- 91 R ...Fluid release
- 91 AMotor concentric with clutch shaft
- 89.21 ...Cam release
- 89.22 ...Belleville disc spring
- 89.23Push-type
- 89.24Pull-type
- 89.25Geometric configuration
- 89.26 ...Plural coil springs spaced from clutch axis
- 89.27 ...Coil spring coaxial to clutch axis
- 89.28Transversely engaged
- 89.29 ...Quick throw spring
- 92 ..One-direction apply and release
- 93 R ..Cam
- 93 A ...Axially thrusting cams rotatable about clutch axis
- 93 B ...Axially moving cam acting on pivoted lever
- 93 C ...Axially moving cam acting on transversely moving wedge or clutch member
- 94 ..Screw
- 95 ..Handwheel
- 96 ..Central pin
- 97 ...Screw operated
- 98 ..Shipper saddles
- 99 R ..Lever systems
- 99 A ...Levers mounted on axially engaging clutch
- 99 B ...Levers mounted on transversely engaging clutch
- 99 S ...Stationary levers
- 100 ..Follow-up
- 101 ..Releasing
- 102 ..Check of driven member
- 103 R ..Speed responsive
- 104 R ...Fixed-speed release
- 104 BTransversely engaged-interior
- 104 CTransversely engaged-exterior
- 104 FFluid clutches and operators
- 105 R ...Fixed-speed engagement
- 105 ACentrifugal (fluid or powder) nonpivoted weights (radially movably or slidable) i.e., mercury clutch
- 105 BAxially engaged with nonpivoted weights-weights movable radially or slidable
- 105 BATransversely engaged with nonpivoted weights
- 105 BBTransversely engaged positive with nonpivoted weights
- 105 CAxially engaged with pivoted weights
- 105 CPWeights pivoted on axis parallel to clutch axis-axially engaged
- 105 CSSingle pair clutching elements axially engaged with pivoted weights
- 105 CDTransversely expanding clutch with pivoted weights
- 105 CETransversely engaged-pivoted weights and clutching elements movable separately
- 105 CFTransversely contracting
- 105 FFluid controls for centrifugal clutches
- 106 R ...Release

106 F	....Devices to prevent fluid clutches from being operated by centrifugal forces acting on fluid	107 C	..Clutch plate axially compressible
103 A	...Centrifugal operated, axially engaged	109 R	.Thrust members, retarders, and stops
103 B	...Centrifugal operator transversely engaged	109 A	..Resilient operators and pressure plates
103 C	...Acceleration and inertia responsive	109 B	..Resilient backing plates
103 F	...Fluid operated	109 F	..Cushioning devices for fluid operators
103 FA	...Fluid pressure engaged with centrifugal valve	109 D	..Dashpot
82 P	..Rack and pinion operator	110 R	.Shafts, bearings, and adjusting devices
82 T	..Temperature operator	110 B	..Bearings
30 W	.Warning, indicating, and signal devices	110 S	..Shafts for removable clutches or discs
30 V	.Vibration dampers	111.1	.Wear compensators
	ELEMENTS	111.11	..Compensator in actuating mechanism outside of the clutch (EPO)
200	.Clutch element resiliently carried on hub	111.12	...Automatic
201	..Speed-responsive	111.13	..Compensator in or near release bearing (EPO)
202	..Manually adjustable	111.14	...Automatic
203	..Coil spring detail	111.15	..Compensator on or inside clutch cover (e.g., acting on diaphragm or pressure plate) (EPO)
204	..Specified bushing	111.16	...Automatic
205	..Separate seat detail	111.17	....Worm mechanism
206	..Relatively axially movable hub sections	111.18	....Relatively rotatable cam rings
207	..Circumferential resilience	111.19	....Between cover and diaphragm spring
208	...With fluid damping	111.2	....Between diaphragm spring and pressure plate
209	...Nonmetallic	111.3	.....Having clearance sensor bridging gap between clutch members and moveable only during engagement
210	....Interposed friction element	111.4	....Having clearance sensor bridging gap between clutch members and moveable only during engagement
210.1	.....Biasing means	111.5	...Relatively rotatable cam rings
211	....And coil spring	111.6	...Threaded element centered on clutch axis
212	...Coil spring	111.7	....Threaded in clutch cover
213	....Plural helical coil spring damping stages	112	.Casings
213.1	.....Plural axially spaced springs	113.1	.Lubricating, insulating, or cooling
213.11	.....Interposed friction element	113.2	..Air cooling
213.12	.....Biasing means	113.21	...Heat radiating structure
213.2	....Plural radially spaced springs in a common radial plane	113.22	...Grooved surfaces
213.21	.....Interposed friction element	113.23	...Air directing structure
213.22	.....Biasing means	113.24	....Rotating cover
213.3	....Interposed friction element		
213.31	.....Biasing means		
214	....Interposed friction element		
214.1	.....Biasing means		
107 R	.Engaging surfaces		
108	..Positive		
107 M	..Material		
107 T	..Transversely engaging		

113.25Spring
 113.26Clutch plate
 113.3 ..Liquid cooled or lubricated
 clutch surfaces
 113.31 ...Entire coolant path is spaced
 from clutch surfaces
 113.32 ...Overrunning clutch
 113.33 ...Positive
 113.34 ...Lubricant or coolant between
 engaging surfaces
 113.35With change of coolant flow
 during disengagement
 113.36Grooved surfaces
 113.4 ..Thermal insulating
 113.5 ..Lubrication of ancillary clutch
 parts
 114 R ..Locks
 114 T ..Interlocking clutch teeth or
 splines
 115 ..Supports
 116.5 **STOP MECHANISM**
 125 R ..Material control
 126 ..Sheet material
 127 ...Electrical
 128 ...Pneumatic
 125 A ..Power stop-material control-
 electrical
 125 B ..Mechanical
 125 C ..Pneumatic
 125 D ..Granular material
 125 E ..Work start
 125 F ..Length of material stop
 129 R ..Safety device
 130 ..Hand protector
 131 R ...Two hand
 131 HHand and foot
 132 ...Delayed action drive
 133 ..Automatic guard
 134 ...Punch-press type
 135 ...Cover
 136Centrifugal-machine type
 137 ...Disabled transmission
 129 A ..Electrical
 129 B ..Pneumatic
 138 ..Limit stop
 139 ..Rotary-member control
 140 ...Speed responsive
 141 ...Screw
 142 R ...Electrical
 142 ARadio tuner type
 143 ..Reciprocating-member control
 144 ..Drive release and brake
 145 ..Multiple clutch
 146 ..Change speed

147 ..Speed responsive
 148 ..Positive stop
 149 ...Cushioned
 150 ..Overload release

FOREIGN ART COLLECTIONS**FOR 000 CLASS-RELATED FOREIGN DOCUMENTS**

Any foreign patents or non-patent literature from subclasses that have been reclassified have been transferred directly to FOR Collections listed below. These Collections contain ONLY foreign patents or non-patent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

CLUTCHES (192/30)

.Operators (192/82 R)
 FOR 100 ..Electric (192/84 R)
 FOR 101 **TRANSMISSION CONTROL AND BRAKE
 (192/4 R)**
 FOR 102 ..Back-pedaling brake (192/5)
 FOR 103 ..Hub brake (192/6 R)
 FOR 104 ...With change speed transmission
 (192/6 A)
 FOR 105 ...Rotatable axle (192/6 B)
 FOR 106 ..Automatic brake (192/7)
 FOR 107 ..Responsive to drive release
 (192/8/R)
 FOR 108 ...Cable (192/8 A)
 FOR 109 ...Coil brake (192/8 C)
 FOR 110 ..Electric control (192/9)
 FOR 111 ..Belt shipper (192/10)
 FOR 112 ..Belt tightener (192/11)
 FOR 113 ..Automatic type (192/4 A)
 FOR 114 ..Internal resistance brake (192/4
 B)
 FOR 115 ..Forward and reverse gearing
 (192/4 C)

DIGESTS

DIG 1 **REMOVABLE MEMBERS**
 DIG 2 **UNIVERSAL JOINT**

