AJRALUVCHI BIRIKMALAR

Urishev Adhamjon Ergashaliyevich

1. AJRALUVCHI BIRIKMALAR

Ajraluvchi birikmalar mavzusi mashinasozlik chizmachiligida talabani dastlabki yig‘ish chizmalarini tuzishga o‘rgatuvchi material hisoblanadi. Mashina mexanizmlari, turli moslamalarni tarkibida uchraydigan har xil birikmalarni sozlash, ta’mirlash, yangisiga almashtirishga to‘g‘ri keladi.

Agar birikma tarkibidagi detallarni bir-biridan ajratish jarayonida ularning sifati buzilmasa, yaroqsiz holatga kelib qolmasa, detallar hamda birikmadan yana qayta foydalanish mumkin bo‘lsa, u holda bunday birikmalar *ajraluvchi birikma* deyiladi.

Ajraluvchi birikmalarni hosil qilishda asosiy o‘rinni biriktirish detallari egallaydi. Biriktirish detallariga esa quyidagi detallar kiradi: *boltlar, shpilkalar, vintlar, shuruplar, shponkalar, shtiftlar, shplintlar*. Ushbu biriktirish detallari yordamida ajraluvchi birikmalar hosil qilinadi.

1. AJRALUVCHI BIRIKMALAR

Ajraluvchi birikmalarning turlari ham biriktirish detallari nomi bilan ataladi. Ular quyidagilar:

1. Rezbali birikmalar.

1.1. Boltli birikmalar. ***1.2. Shpilkali birikmalar.***

1.3. Vintli birikmalar. ***1.4. Shurupli birikmalar.***

1.5. Fitingli (truba rezbali) birikmalar.

2. Shtiftli birikmalar.

2.1. Konus shtiftli birikma. ***2.2. Silindrik shtiftli birikma.***

3. Shponkali birikmalar.

3.1. Prizmatik shponkali birikmalar.

3.2. Segmentsimon shponkali birikmalar.

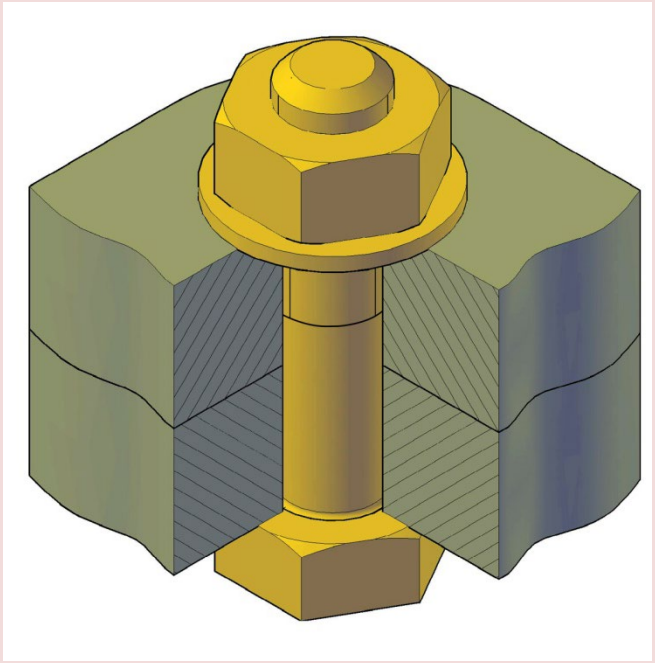
3.3. Ponasimon shponkali birikmalar.

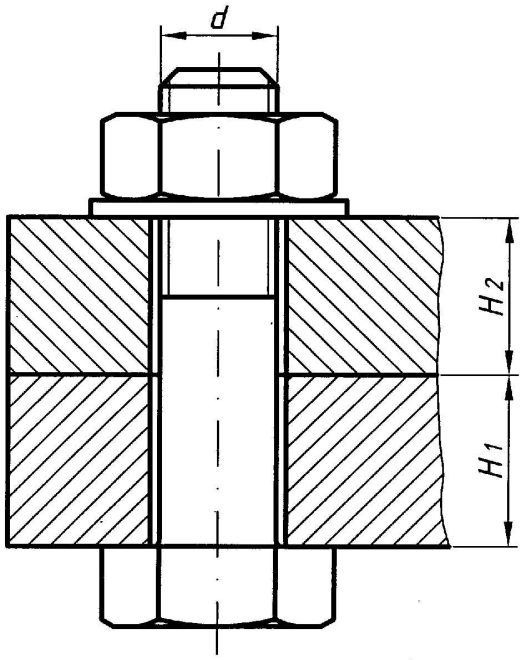
4. Shlitsali birikmalar.

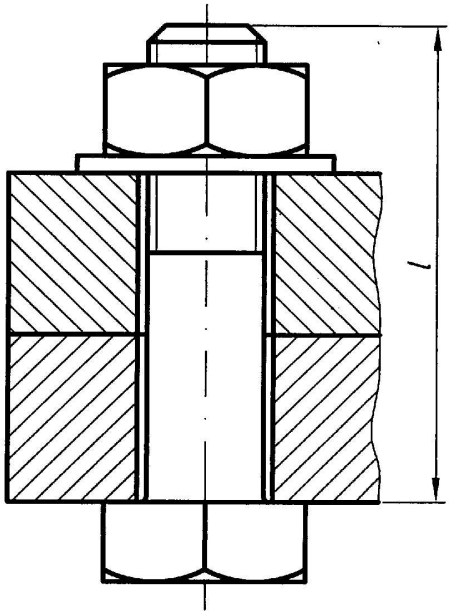
5. Shplintli birikmalar.

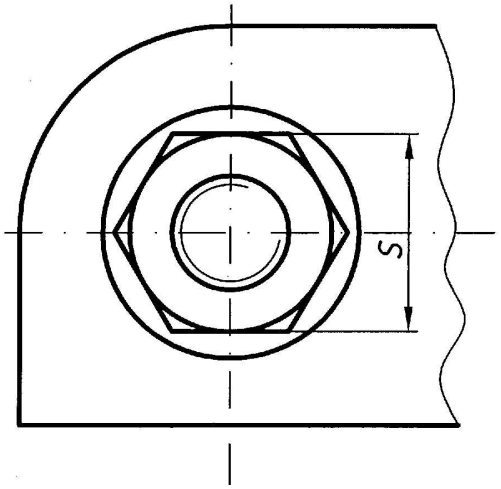
2. BOLTLI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA’MINOTI

Boltli birikmada biriktiriluchi (ikki va undan ortiq) detallar bolt, gayka va shaybalar yordamida o‘zaro biriktiriladi. Quyida boltli birikmaning yaqqol tasviri va ortogonal proyeksiyasi ko‘rsatilgan. Boltli birikmalar o‘zining mustahkamligi bilan ajralib turadi.



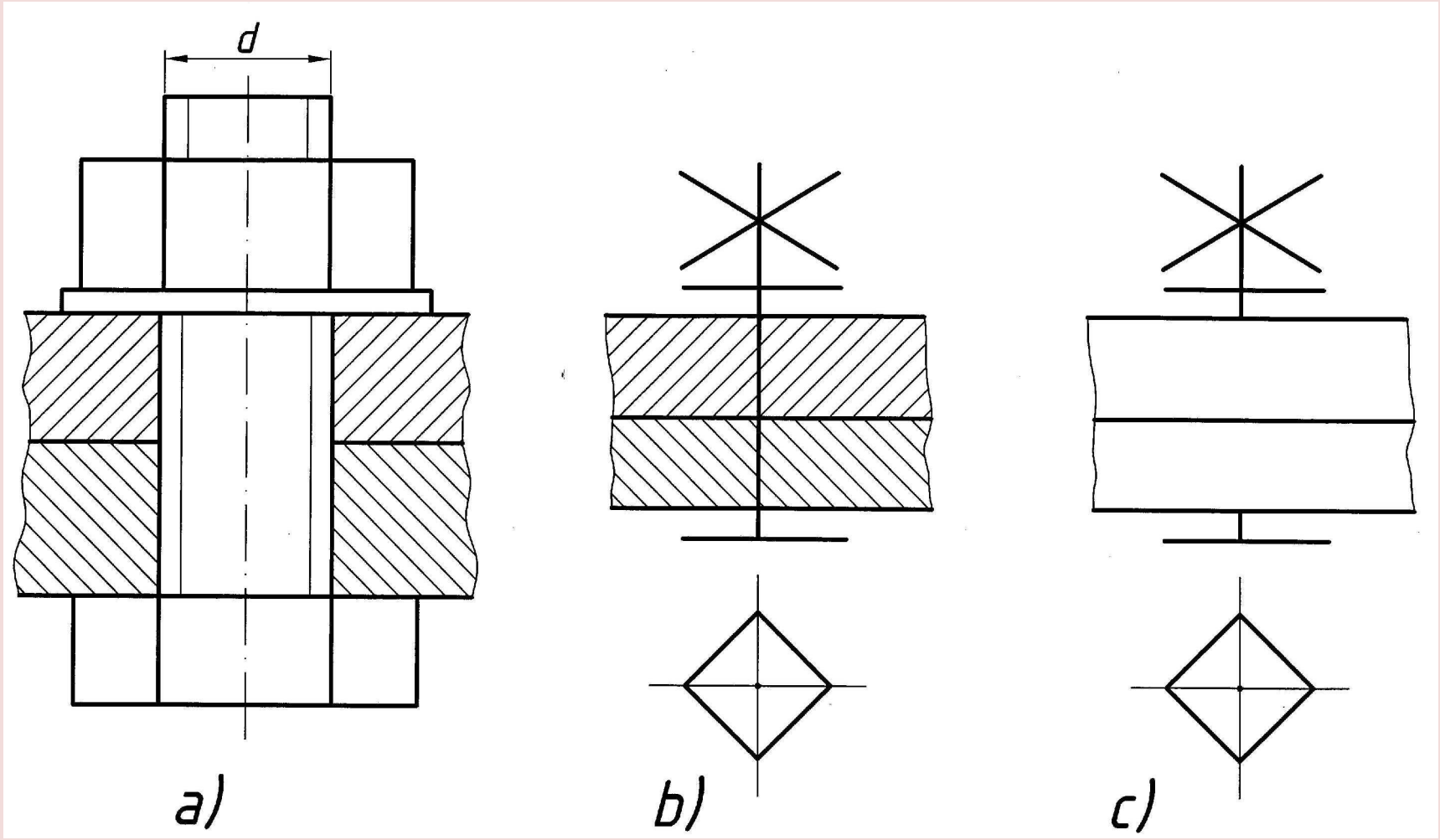






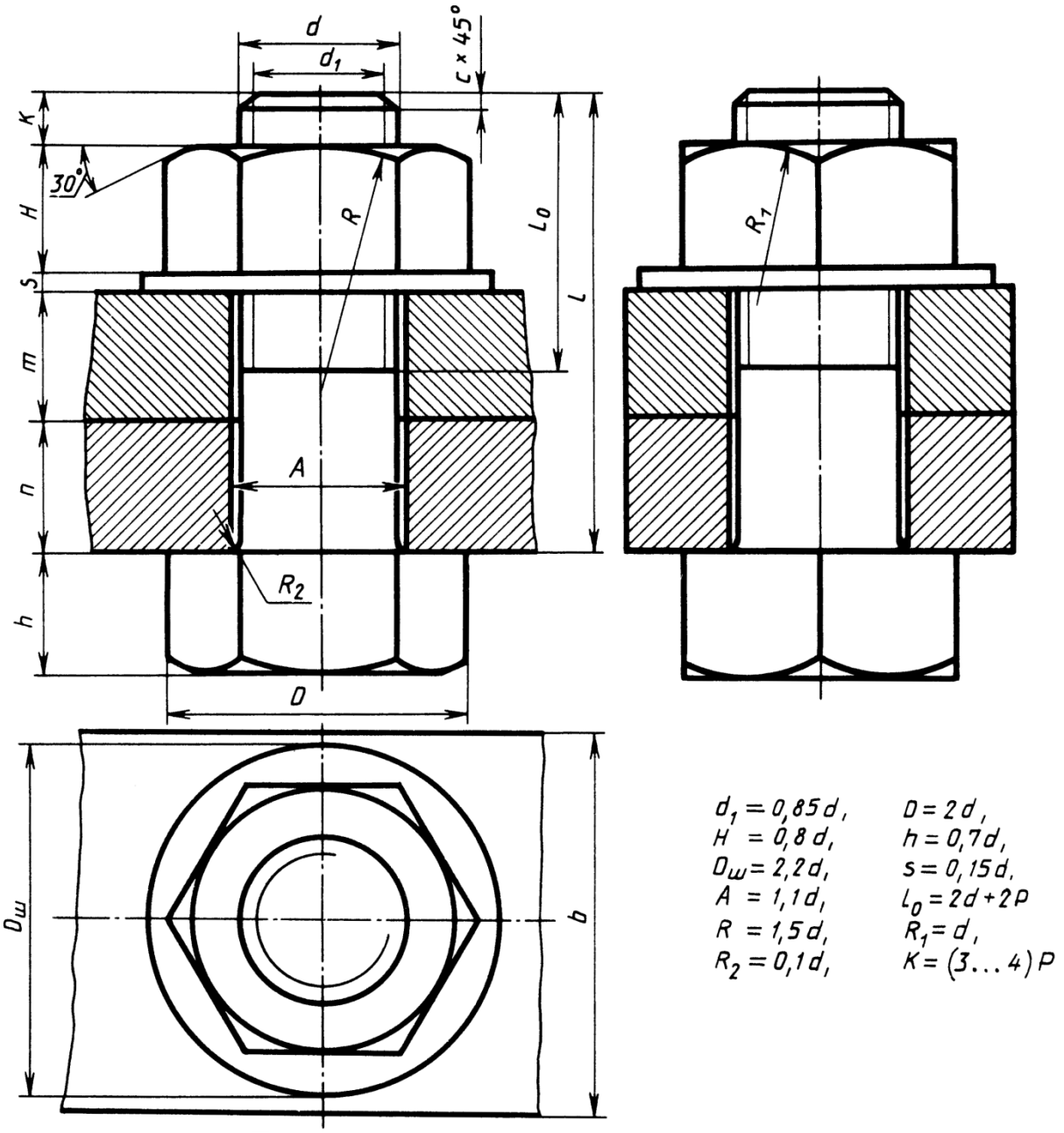
2. BOLTLI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA’MINOTI

Boltli birikmani quyidagidek, soddalashtirib tasvirlash ham mumkin.



2. BOLTLI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA’MINOTI

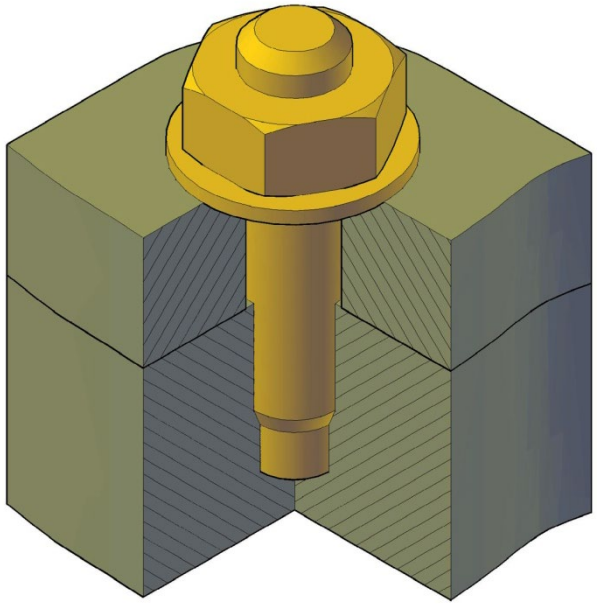
Boltli birikmani bajarishda quyidagi tasvirda keltirilgan parametrik formulalardan foydalaniladi. BMIning qo’lyozmasida talabalar uchun variantlar mavjud.

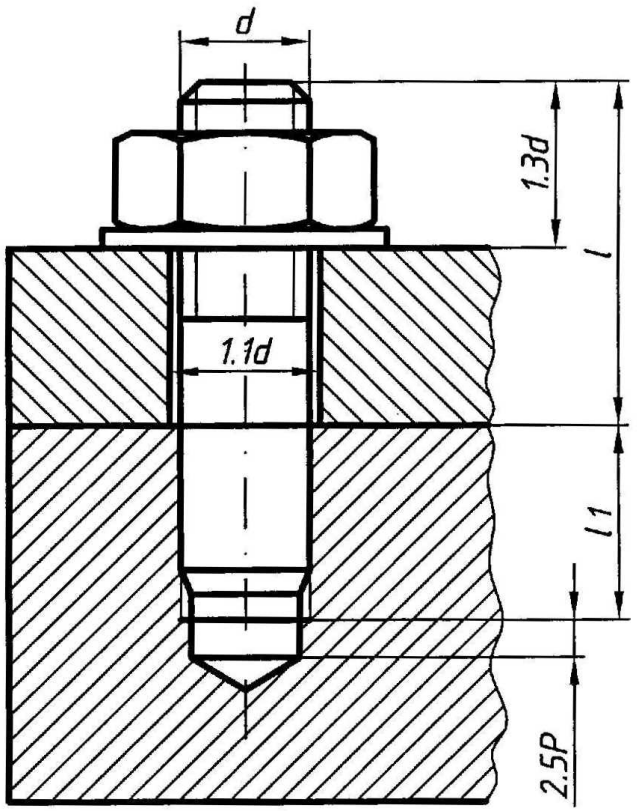


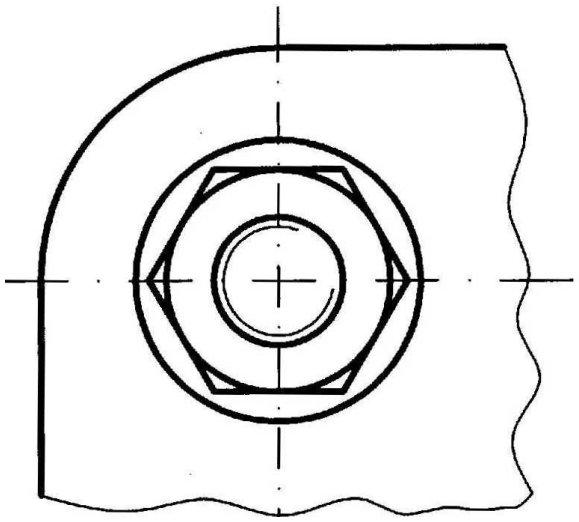
$d_1 = 0,85d$, $D = 2d$,
$H = 0,8d$, $h = 0,7d$,
$D_w = 2,2d$, $s = 0,15d$,
$A = 1,1d$, $L_0 = 2d + 2P$
$R = 1,5d$, $R_1 = d$,
$R_2 = 0,1d$, $K = (3 \dots 4)P$

3. SHPILKALI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA’MINOTI

Bolt kallagi halaqit beradigan joylarda shpilkali birikmadan foydalaniladi. Shpilkali birikma biriktirish detallari shpilka, gayka va shaybalarning o‘zaro birikuvidan hosil qilinadi.



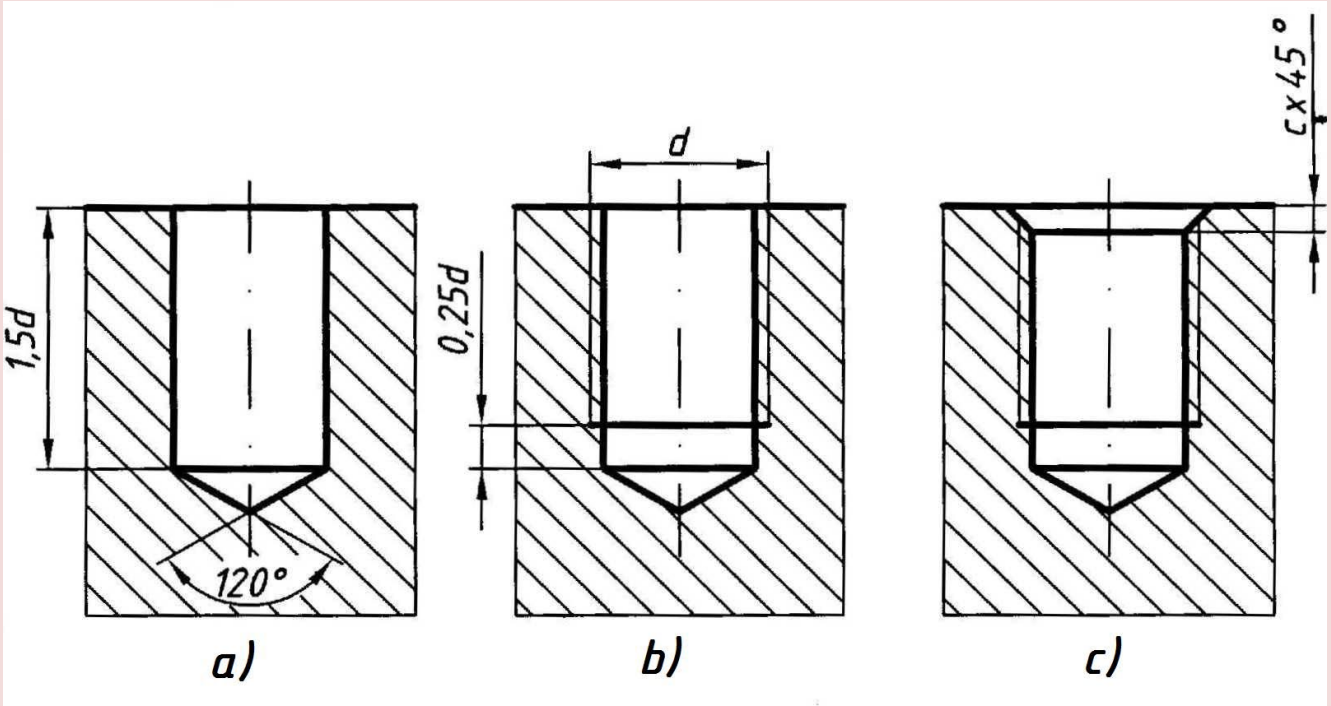




3. SHPILKALI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA’MINOTI

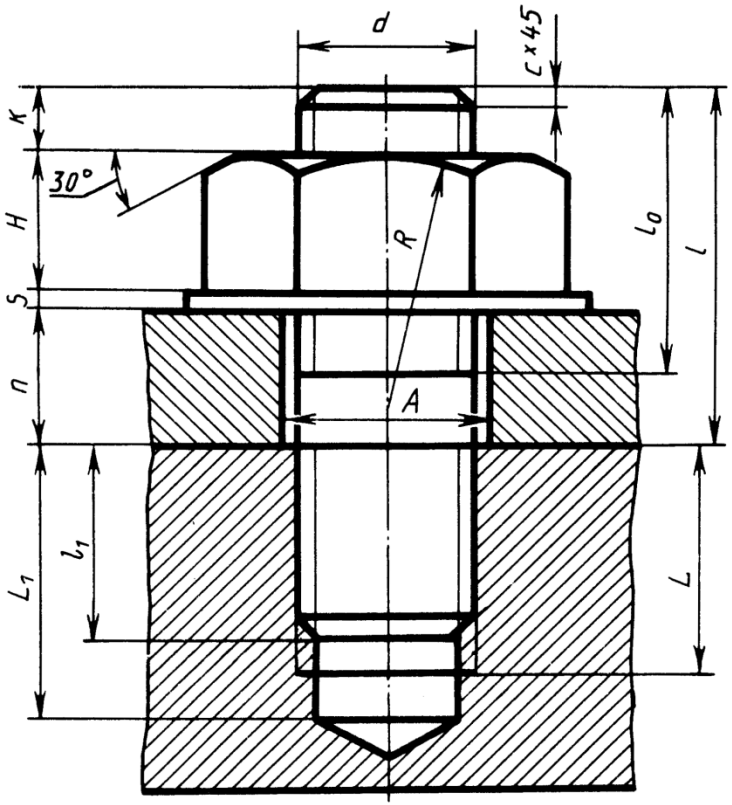
Shpilka ikki uchiga rezba ochilgan silindrik sterjen bo‘lib, uning bir uchi biriktiriluvchi detal (shpilka uyasi)ga burab kirgaziladi. Ikkinchi uchiga keyingi biriktiriluvchi detal kiygizilib, shayba va gayka bilan mos kalit (klyuch) orqali mahkamlanadi.

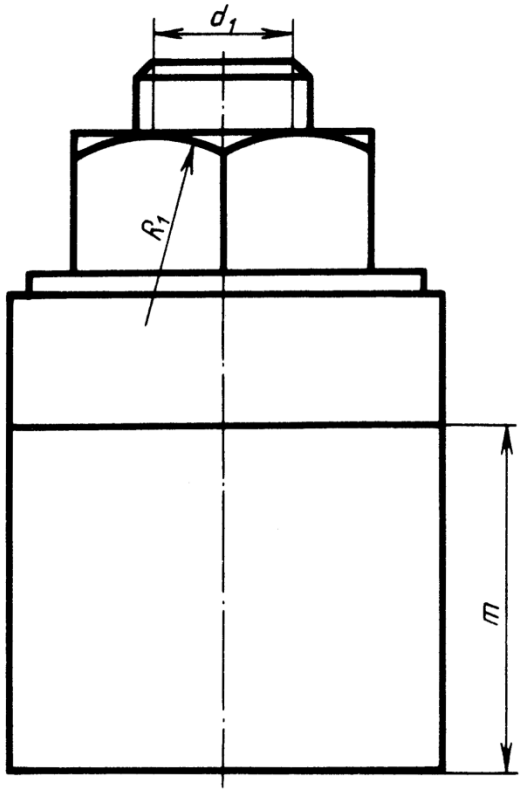
Shpilka uyasi deb birikuvchi detallardan biriga ochilgan uchi berk rezbali teshikka aytiladi. Uya avval parma bilan rezba diametrining ichki diametriga, ya’ni $d = 0{,}85\,d$ ga teng qilib o‘yiladi (*a*). Uyaning tubidagi konus parma uchidagi konus izi bo‘lib, u 120° ga teng. Keyin bu uyaga metchik yordamida rezba o‘yiladi (*b*). So‘ngra shpilkani burab kirgazish qulay bo‘lishi uchun uya og‘ziga faska ochiladi (*c*).

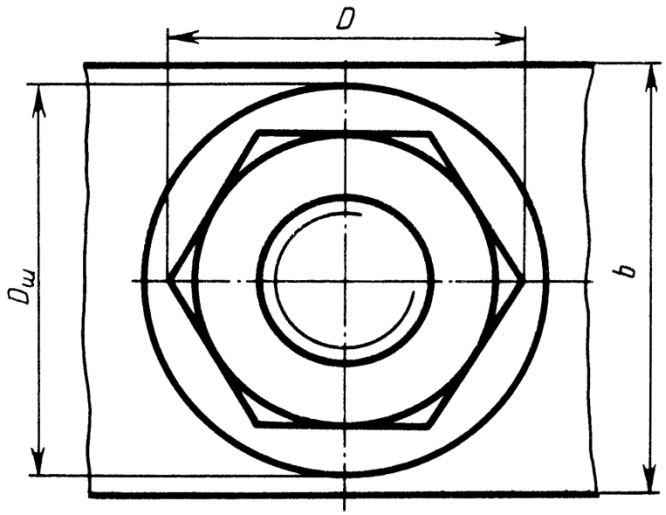


3. SHPILKALI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA’MINOTI

Shpilkali birikmani bajarishda quyidagi tasvirda keltirilgan parametrik formulalardan foydalaniladi. BMIning qo’lyozmasida talabalar uchun variantlar mavjud.







$d_1 = 0{,}85\,d$,
$H = 0{,}8\,d$,
$s = 0{,}15\,d$,
$l_0 = 2d + 2P$,
$R_1 = d$,
$l_1 = d$,
$L_1 = l_1 + 0{,}5d$,

$D = 2d$,
$D_w = 2{,}2d$,
$A \doteq 1{,}1d$,
$R = 1{,}5d$,
$K = (3 \ldots 4)P$,
$l_1 + 2P$
$L = l_1 + 2P$,
$b = 3d$.

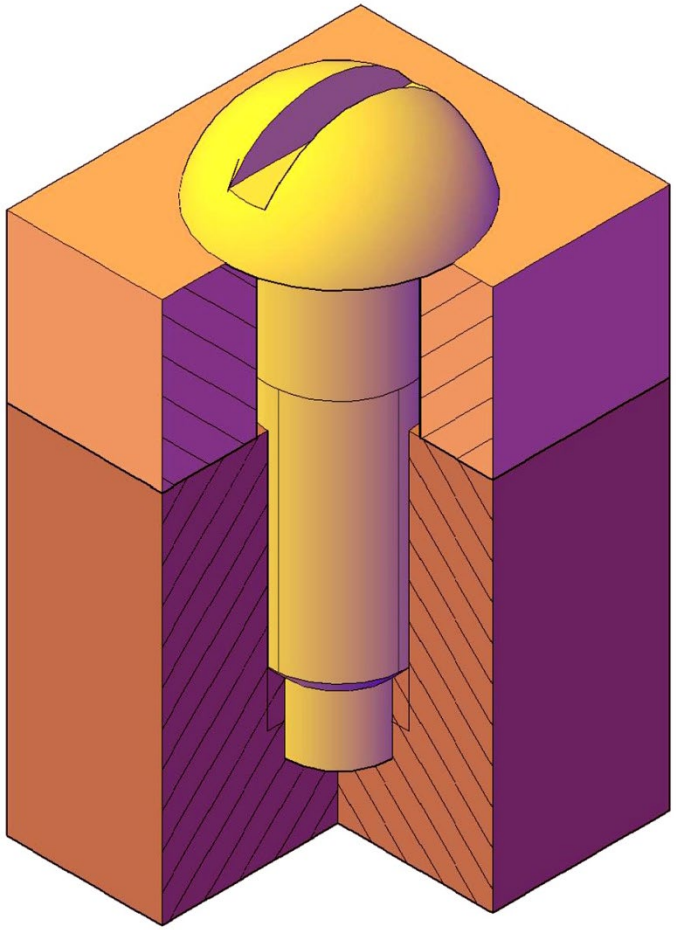
4. VINTLI VA SHURUPLI BIRIKMALARGA OID GRAFIK VAZIFALAR HAMDA UNING METODIK TA’MINOTI

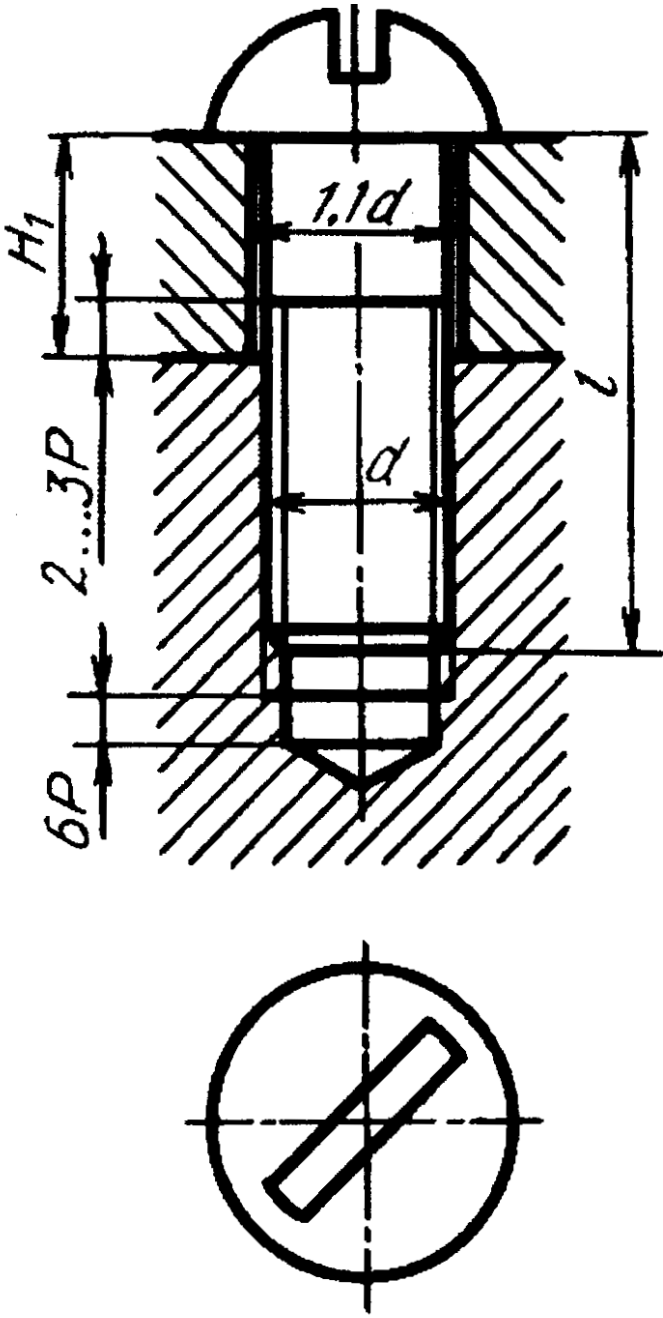
Vintli birikmalar. Mashina va mexanizmlardagi yirik bo‘lmagan detallarni vint yordamida biriktirishga amaliyotda ko‘p duch kelamiz. Vintni birikmada biriktiriluvchi detallardan biriga silindrik ochiq teshik, ikkinchisiga rezba ochiladi. Vintli birikmalarda mustahkamlanadigan detallarda vintning kallagiga moslashtirilgan chuqurchalar ishlanadi.

Yarim yumaloq, silindrik, yashirin va yarim yashirin kallakli vintli birikmalarda biriktiriluvchi detalga vint erkin kirishi uchun GOST 12876-96 ga muvofiq maxsus o‘yiq va uning davomida $1,1\times d$ o‘lchamda silindrik teshik ochiladi. Biriktiriluvchi detallarning ochilgan silndrik teshik va rezbalari mos ravishda o‘rnatiladi. So‘ngra vint silindrik teshikdan o‘tkazilib, rezba ochilgan detalga burab kiritiladi va vint kallagi rezbasiz detalni siqib vintli birikmani hosil bo‘ladi.

4. VINTLI VA SHURUPLI BIRIKMALARGA OID GRAFIK VAZIFALAR HAMDA UNING METODIK TA’MINOTI

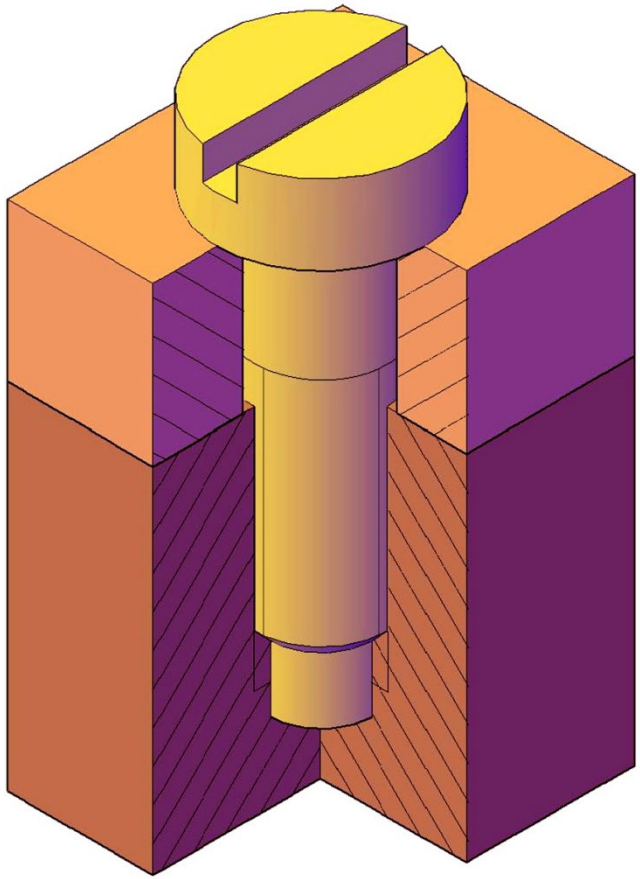
Yarim sferik kallakli vintli birikmaning yaqqol tasviri va ko‘rinishlari.

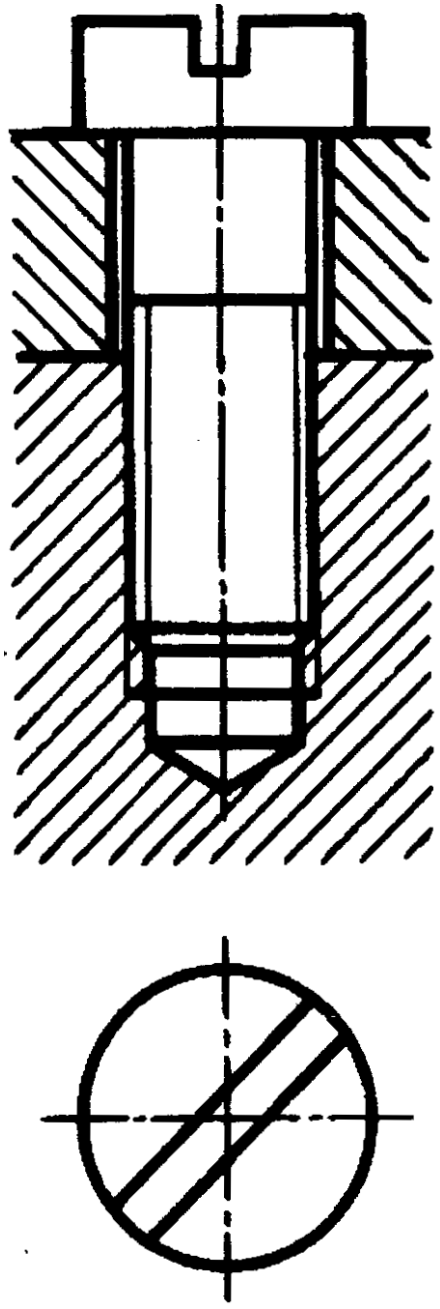




4. VINTLI VA SHURUPLI BIRIKMALARGA OID GRAFIK VAZIFALAR HAMDA UNING METODIK TA’MINOTI

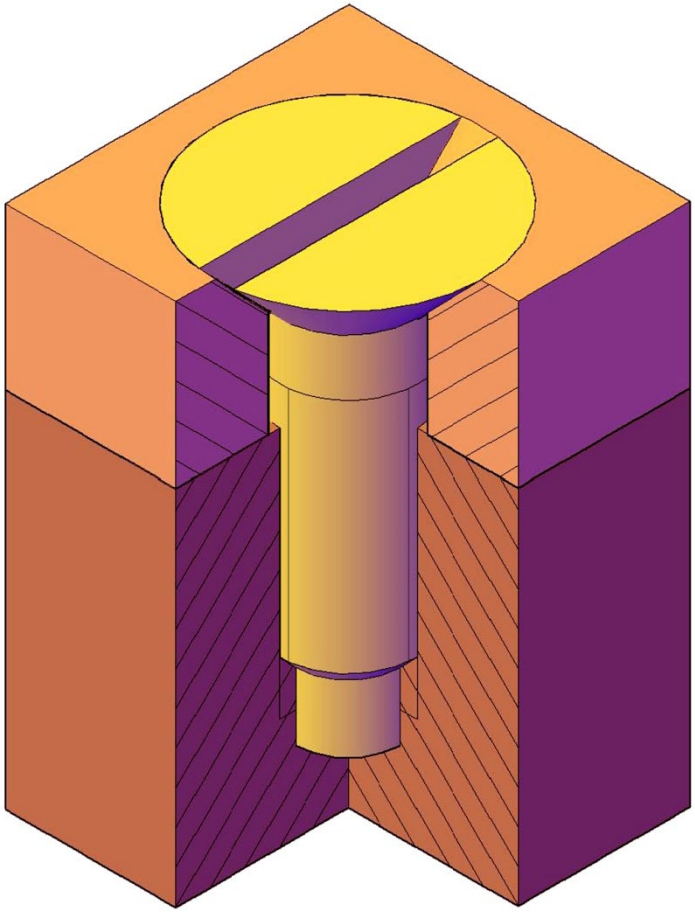
Silindrik kallakli vintli birikmaning yaqqol tasviri va ko‘rinishlari.

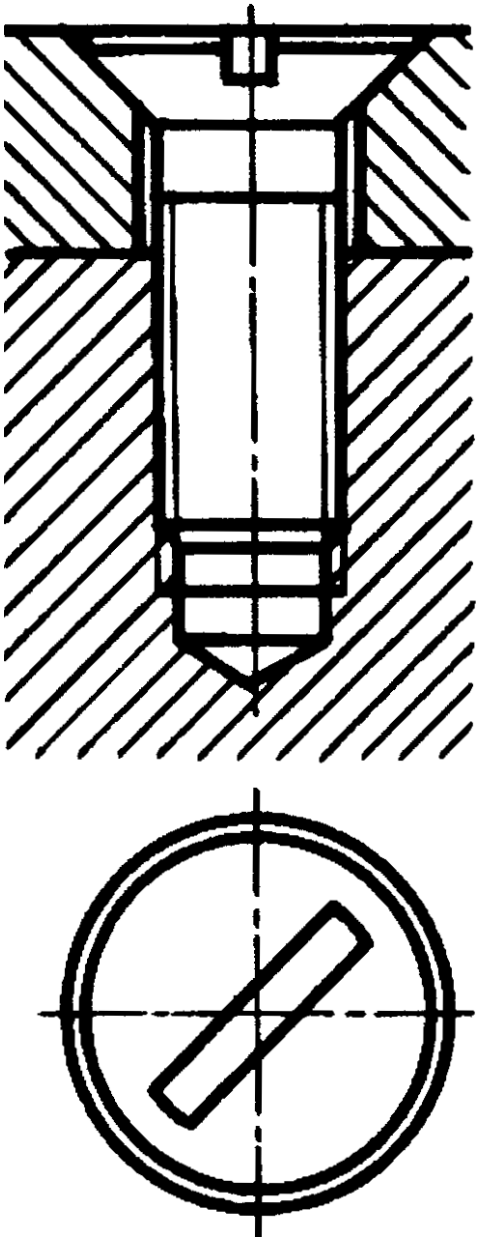




4. VINTLI VA SHURUPLI BIRIKMALARGA OID GRAFIK VAZIFALAR HAMDA UNING METODIK TA’MINOTI

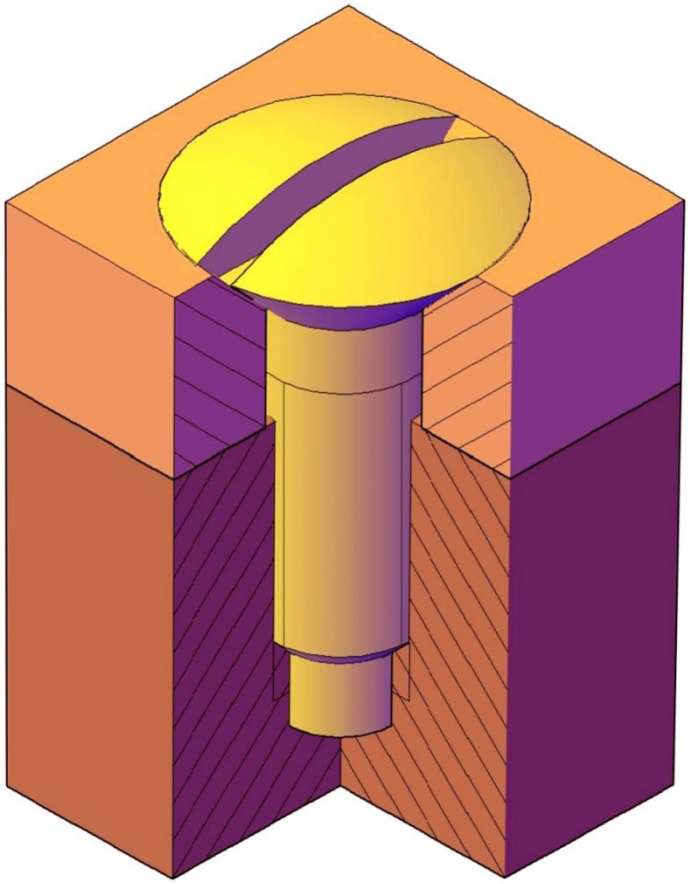
Yashirin kallakli vintli birikmaning yaqqol tasviri va ko‘rinishlari.

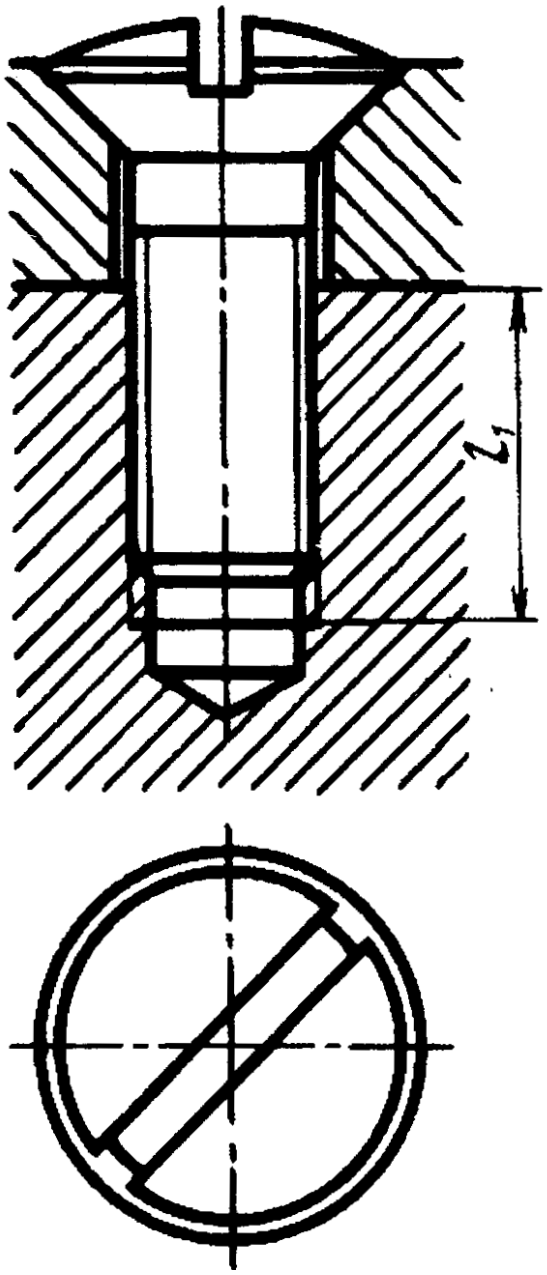




4. VINTLI VA SHURUPLI BIRIKMALARGA OID GRAFIK VAZIFALAR HAMDA UNING METODIK TA’MINOTI

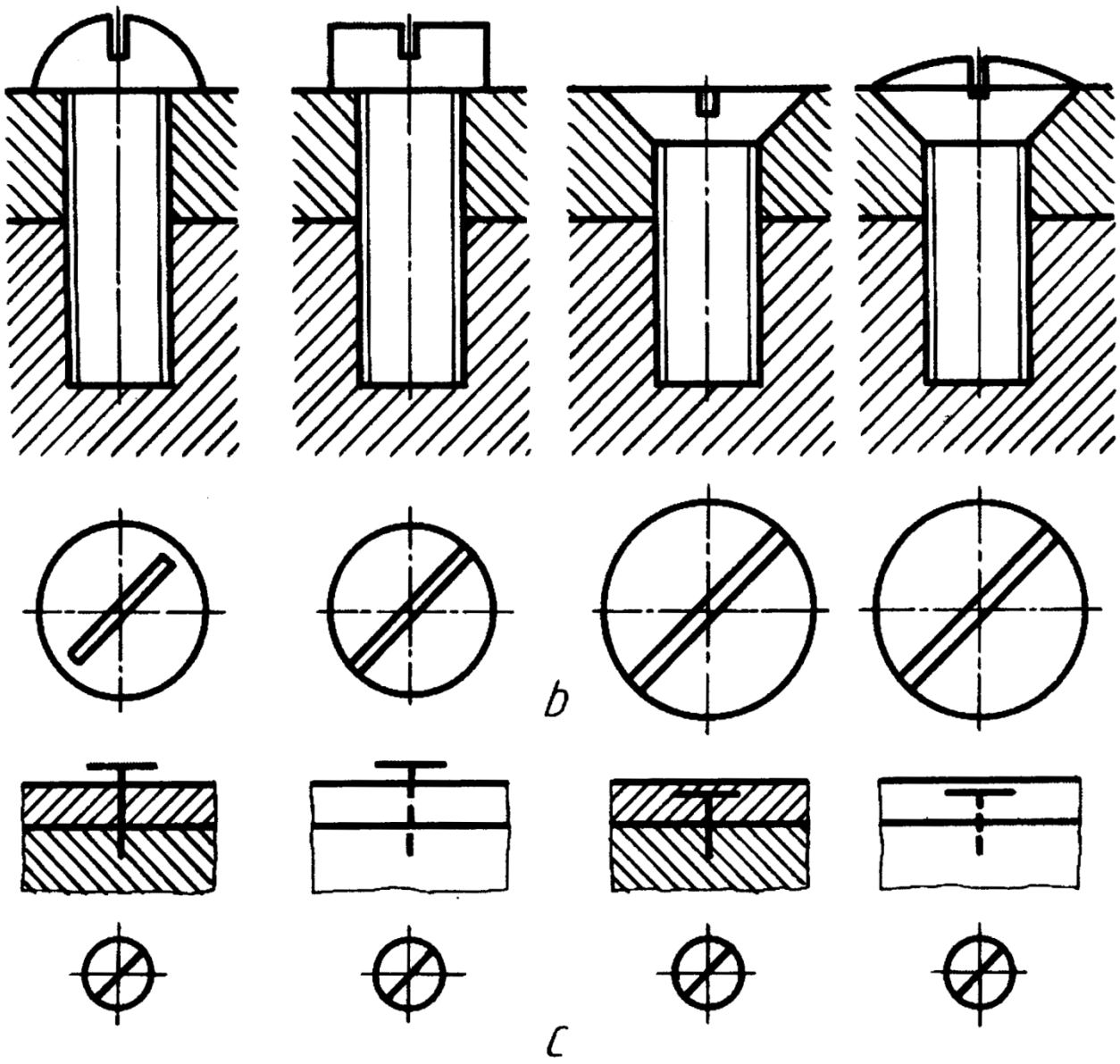
Yarim yashirin kallakli vintli birikmaning yaqqol tasviri va ko‘rinishlari.





4. VINTLI VA SHURUPLI BIRIKMALARGA OID GRAFIK VAZIFALAR HAMDA UNING METODIK TA’MINOTI

Vintlarning ko’rinishlari yig’ish chizmada soddalashtirilib ko’rsatilishi mumkin.



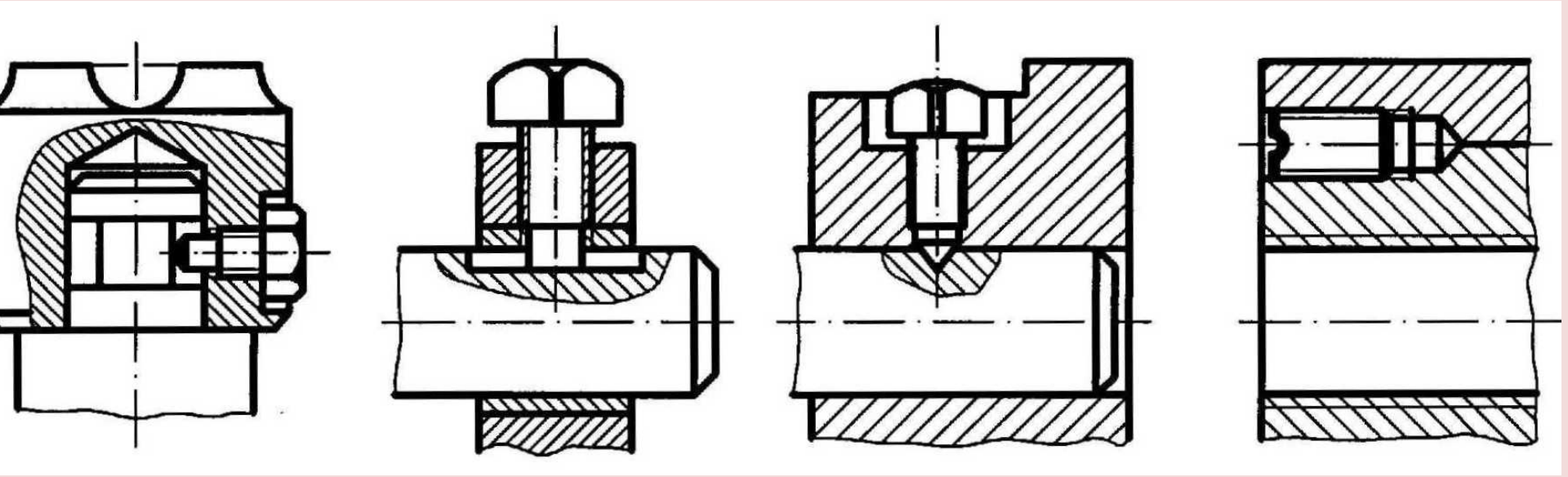
4. VINTLI VA SHURUPLI BIRIKMALARGA OID GRAFIK VAZIFALAR HAMDA UNING METODIK TA’MINOTI

Vintlar mustahkamlovchi va o’rnatish vintlariga bo’linadi. Yuqorida mustahkamlovchi vintli birikmalar ko’rsatildi.

O‘rnatish vintlari mashina va asboblarning ma’lum bir detallarini birini ikkinchisiga moslash (o‘rnatis) va mustahkamlash uchun ishlatiladi.

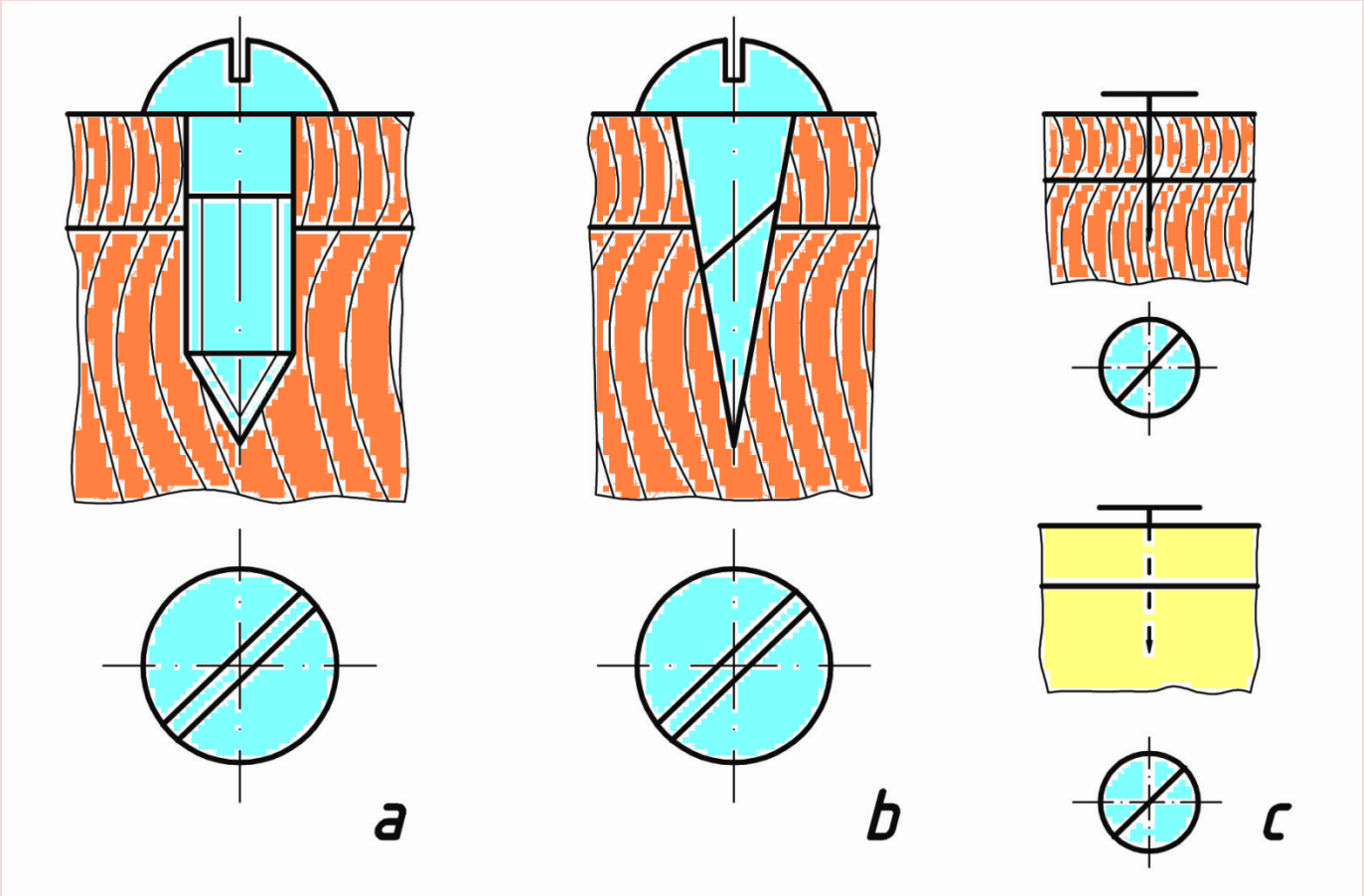
O‘rnatish vintlarining yig‘ish chizmalaridagi konstruksiyasi to‘liq ko‘rsatilgan tasviri quyidagi shaklda berilgan.

O‘rnatish vintlarining kallagi va uchi turli shaklda qilib ishlanadi.



4. VINTLI VA SHURUPLI BIRIKMALARGA OID GRAFIK VAZIFALAR HAMDA UNING METODIK TA’MINOTI

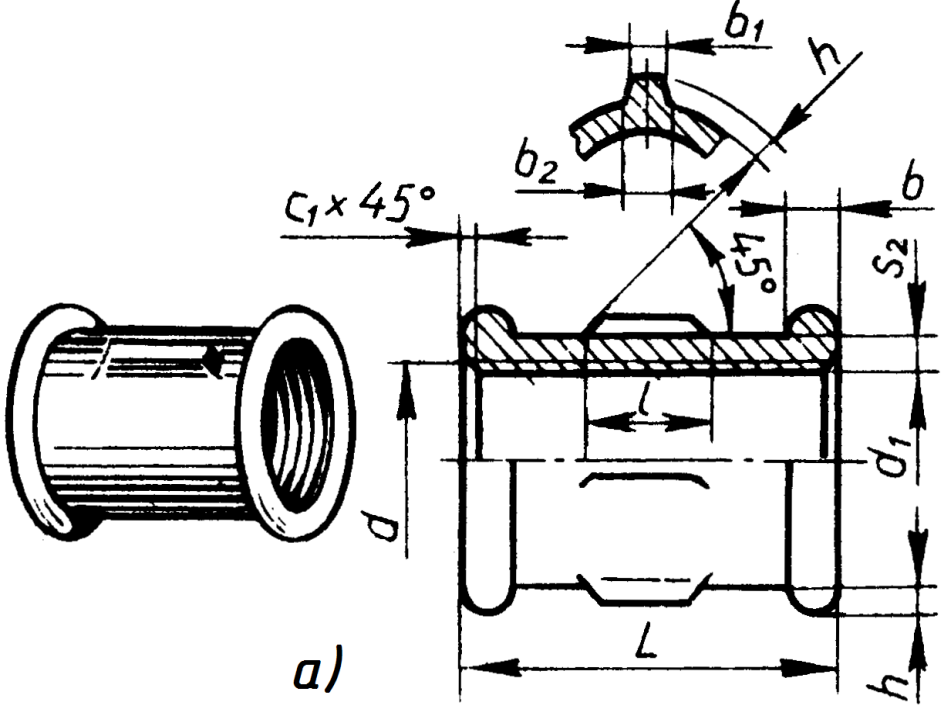
Shurupli birikmalar. Yog‘ochni metalga yoki yog‘ochni yog‘ochga biriktirishda shuruplardan foydalaniladi. Bunday birikmalar *shurupli birikmalar* deyiladi. Shuruplarning ham kallagi vintlarniki kabi turli shaklda bo‘ladi. Shuruplarning uchi 40^0 dagi burchak bilan yakunlanadi. Shuning uchun u otvyortka bilan buralganda o‘ziga uya ochib ketadi, yani shurupga alohida rezbali uya ochish shart emas.



5. TRUBA REZBALI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA’MINOTI

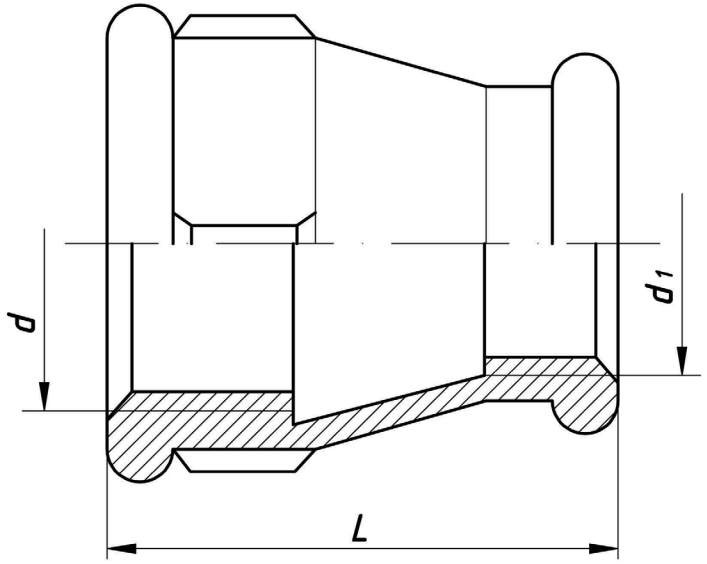
1. To‘g‘ri muftalar.

To‘g‘ri muftalar kalta (GOST 8954-75), uzun (GOST 8955-75) va konpensatsiya qiluvchi (GOST 8956-75) muftalar ko‘rinishida ishlanadi.



2. O‘tish muftalari (GOST 8957-75).

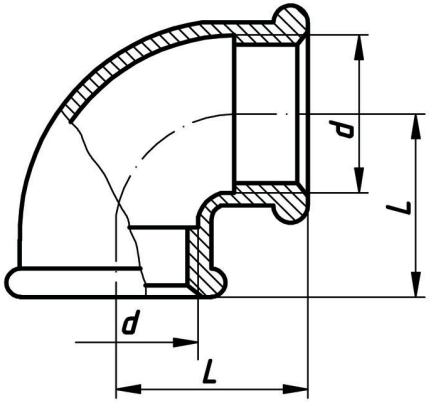
Turli diametrdagi trubalarni bir-biriga ulashda o‘tish muftalaridan foydalaniladi. Shuning uchun uning bir tomoni ikkinchi tomoniga nisbatan katta (yoki kichik) diametrda tayyorlanadi.

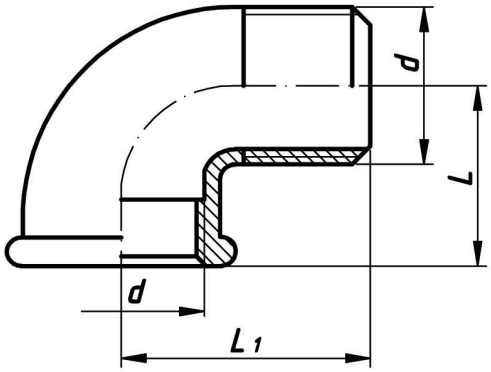


5. TRUBA REZBALI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA'MINOTI

3. Tirsakli muftalar (ugolnik) (GOST 8947-75).

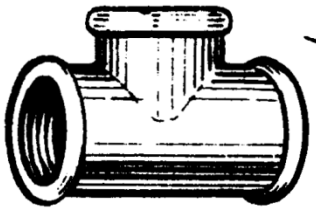
Bunday muftalar ikki xil ko'rinishda ishlanadi. 1- bajarilishida tirsakning ikkala uchiga truba burab, 2-bajarilishining bir tomoniga truba, ikkinchi uchiga fiting burab kiritiladi. To'g'ri tirsaklardan tashqari o'tkir hamda o'tmas burchakli tirsaklar ishlab chiqariladi.





4. Troyniklar.

Troyniklar to'g'ri (GOST 8948-75) va o'tish troyniklari (GOST 8950-75) ko'rinishida tayyorlanadi. Bir xil diametrli 3ta trubani o'zaro biriktirishda to'g'ri troyniklardan, uchala rezbali teshiklarining o'lchamlari har xil bo'lsa o'tish troyniklaridan foydalaniladi.



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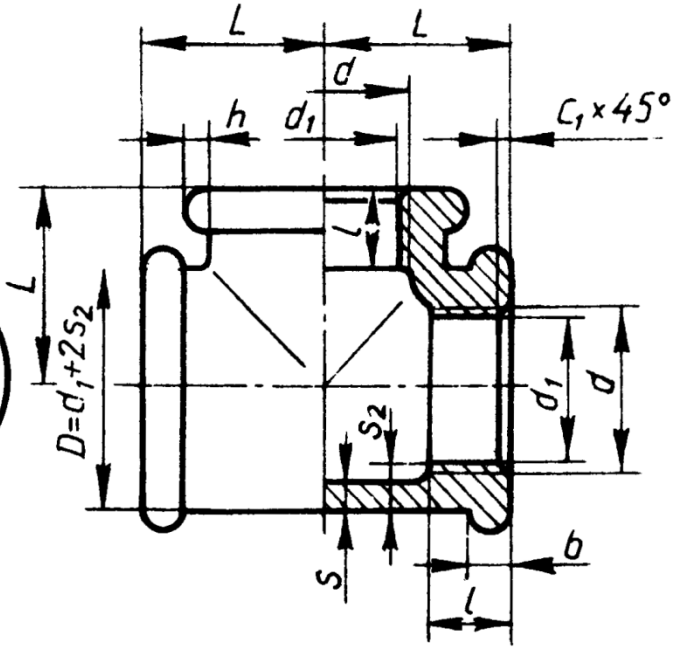
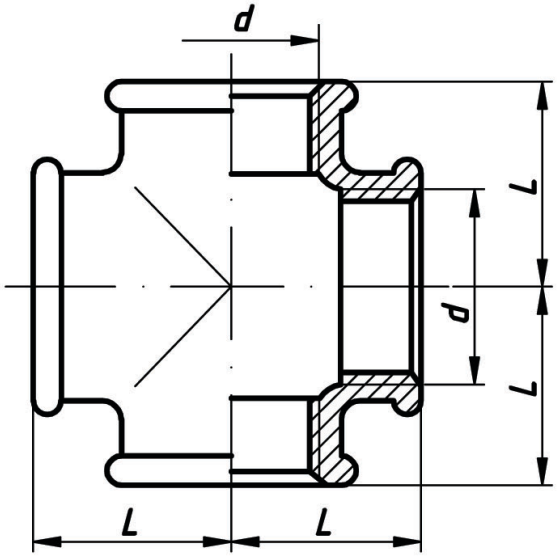


5. TRUBA REZBALI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA’MINOTI

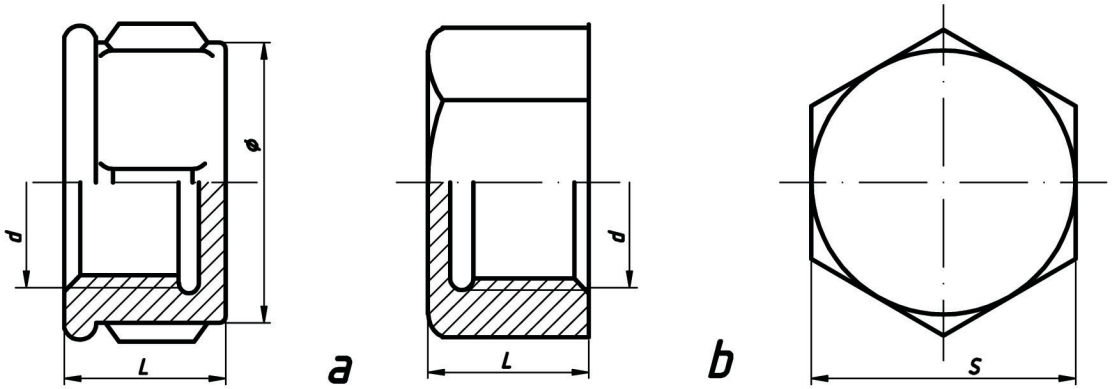
5. Krestlar.

To‘g‘ri (GOST 8951-75), o‘tish (GOST 8952-75) krestlari ishlab chiqariladi. To‘g‘ri krestlarda to‘rttala rezbali teshik o‘lchamlari bir xil bo‘lsa, o‘tish krestlarida har xil bo‘ladi.



6. Qopqoqlar.

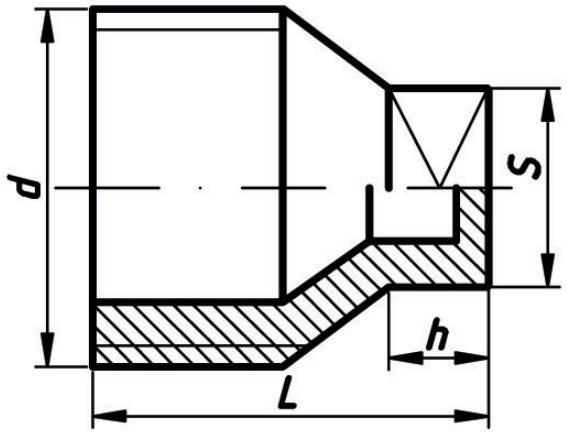
Trubalarning uchlarini berkitish uchun qopqoqlar (GOST 8962-75) ishlanadi, ular ikki xil ko‘rinishda bajariladi. 1-bajarilishida yumaloq yopiq gayka , 2-bajarilishida olti qirrali yopiq gayka kabi ishlab chiqariladi.



5. TRUBA REZBALI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA’MINOTI

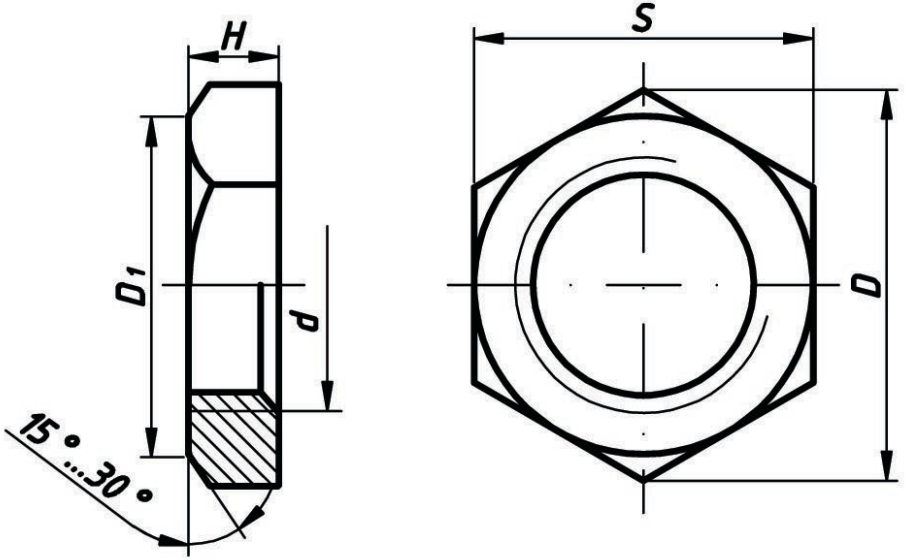
7. Tiqinlar.

Fitinglarning teshiklarini berkitish uchun tiqinlardan (GOST 8963-75) ham foydalaniladi.



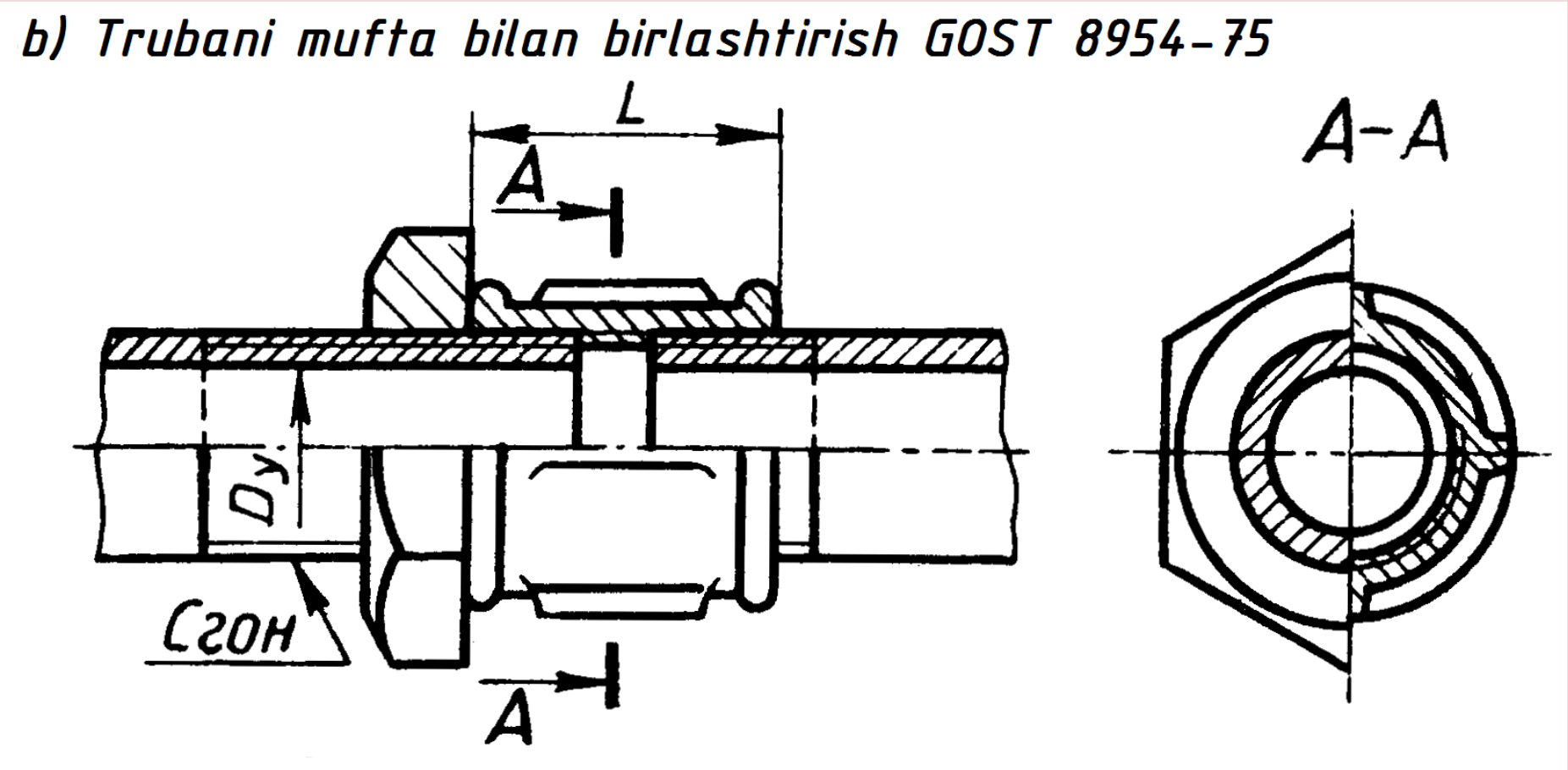
8. Kontrgaykalar.

Trubali birikmalarda gaz yoki suyuqlik sizib chiqishining oldini olish maqsadida kanop tolasidan o‘ralgan moyli zichlagichlarni zichlash uchun kontrgaykalar (GOST 8961-75) ishlatiladi. Kontrgaykaning o‘lchamlari fitinglar kabi standartlashtirilgan.



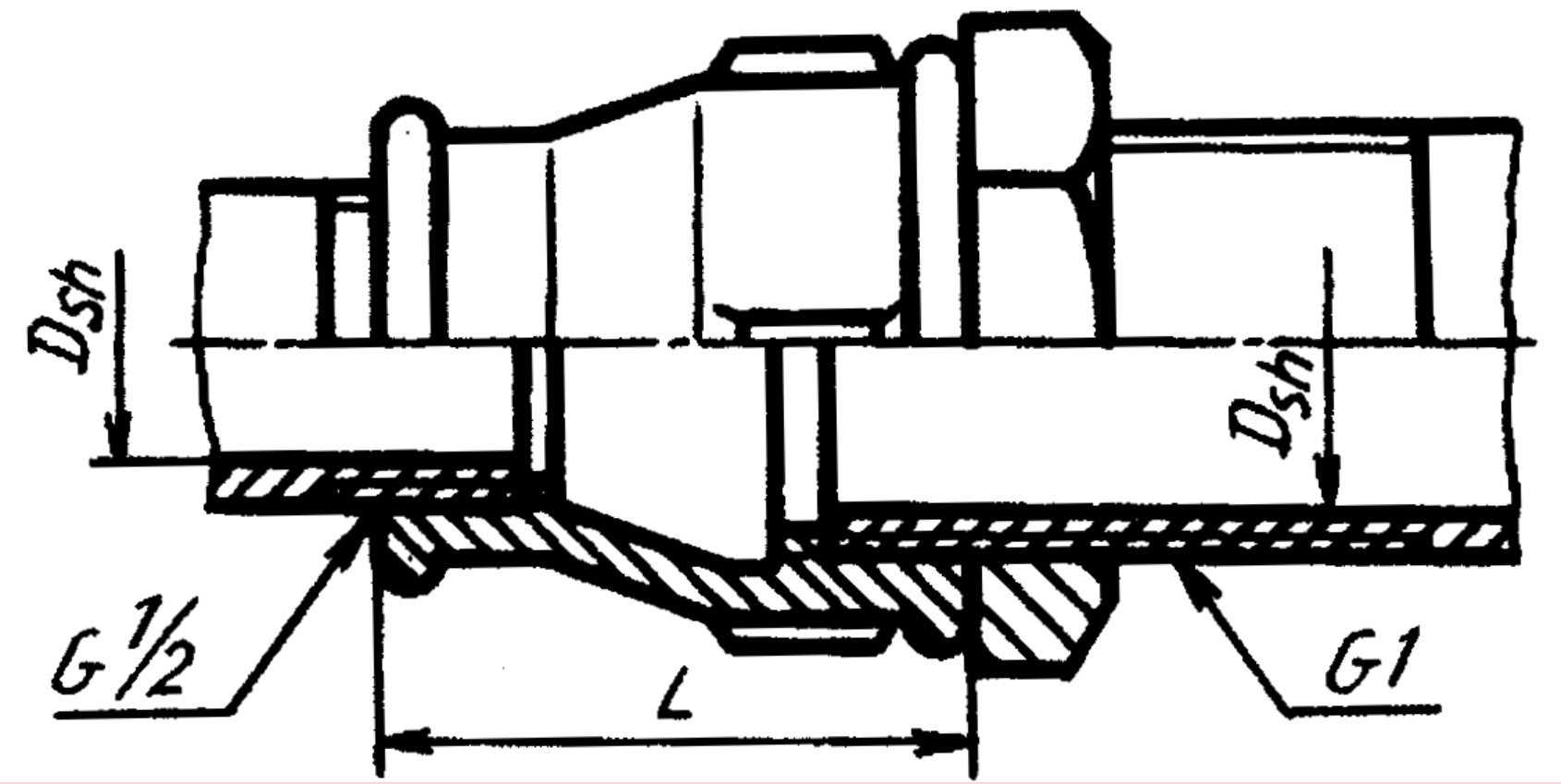
5. TRUBA REZBALI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA’MINOTI

To’g’ri muftali birikma ishchi chizmasi.



5. TRUBA REZBALI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA’MINOTI

O’tish muftali birikma ishchi chizmasi.



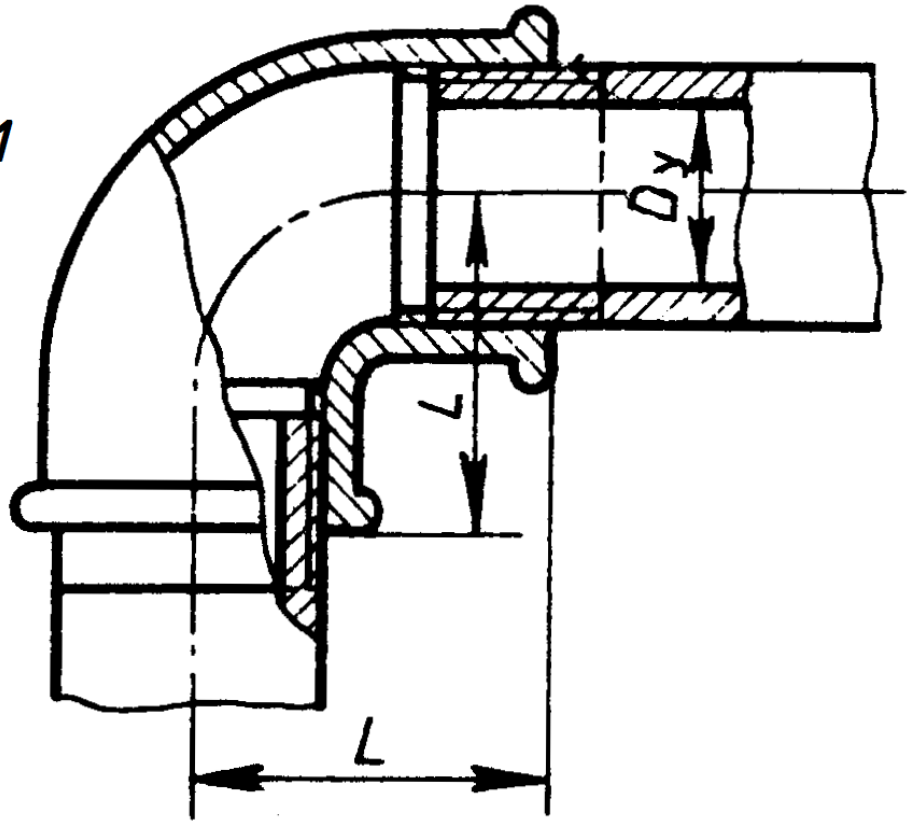
5. TRUBA REZBALI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA'MINOTI

Burchakli (ugolnik) birikma ishchi chizmasi.

v) Trubani ugolnik bilan birlashtirish

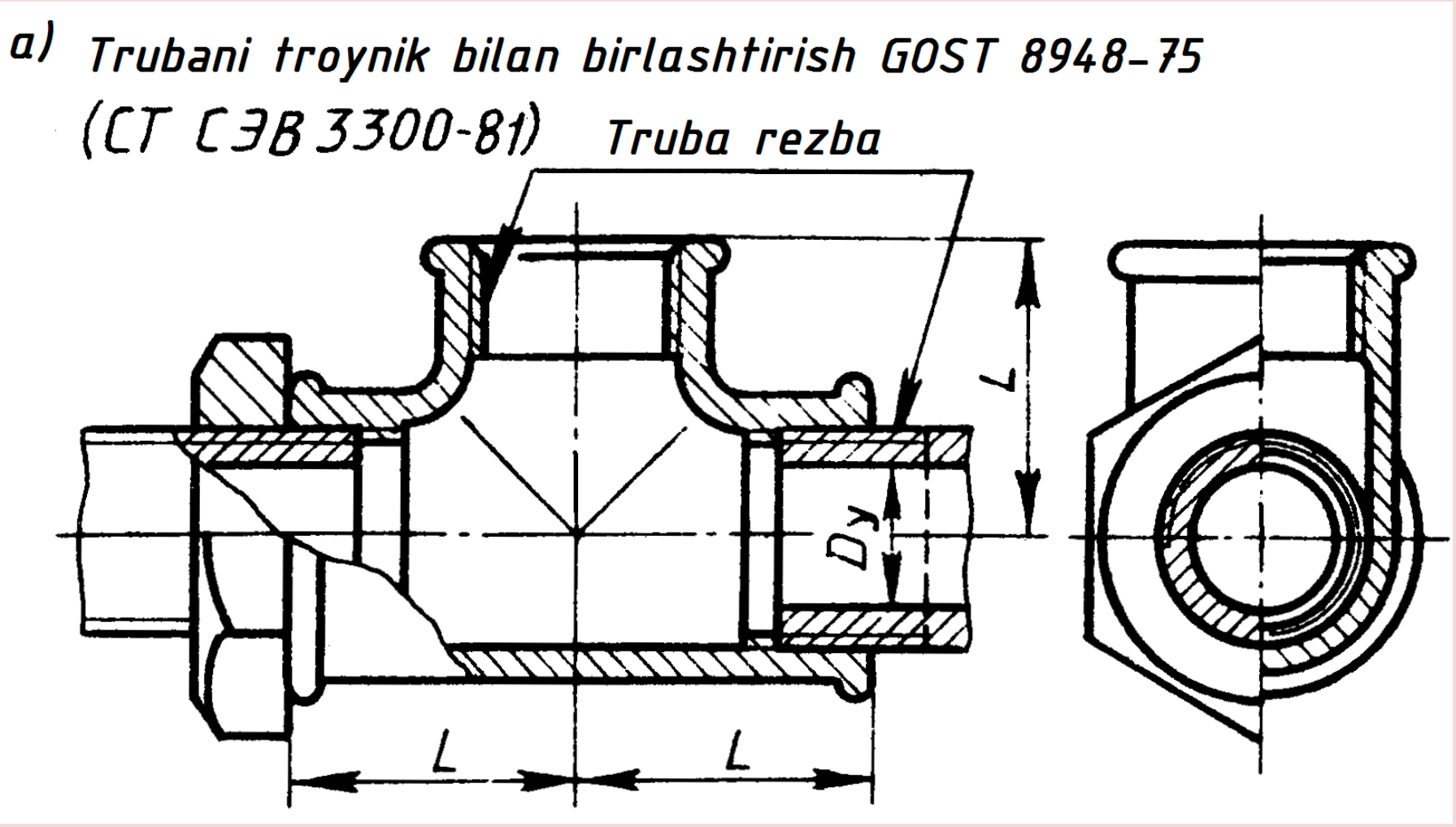
GOST 8946-75

ST SEV 3298-81



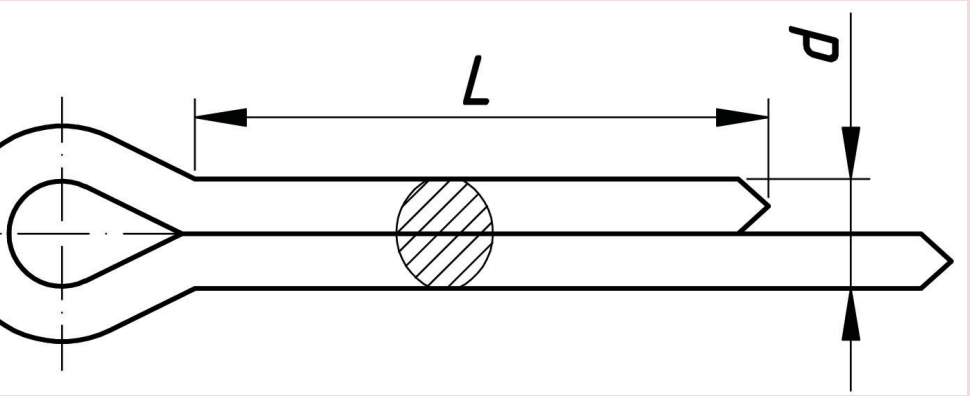
5. TRUBA REZBALI BIRIKMALARGA OID GRAFIK VAZIFALAR VA UNING METODIK TA'MINOTI

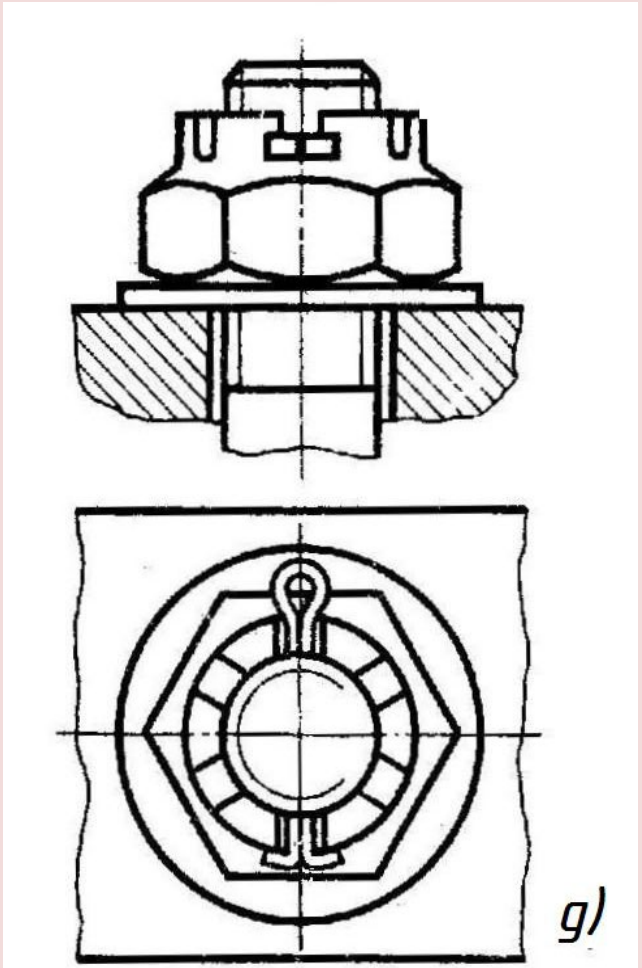
Troynikli (uchtalik) birikma ishchi chizmasi.



6. SHTIFTLI VA SHPLINTLI BIRIKMALAR

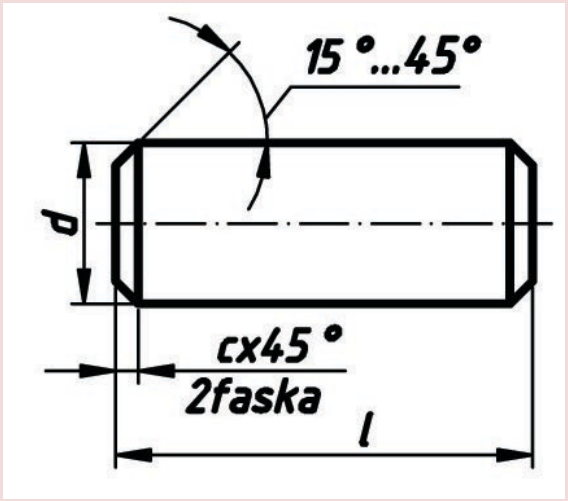
nplintlar **(GOST 397-79). Shplintlar po‘lat sim bo‘laklaridan ikkiga bukib tayyorlanadi.**
lar gaykalarning o‘z-o‘zidan buralib ketishini oldini olish uchun ishlatiladi.
nplintlar tojsimon yoki o‘yiqli gaykalarning o‘yig‘i va bolt yoki shpilka teshiklari orqali
tkazilib, uchlari ikki tomonga qayirib qo‘yiladi. Shplintning asosiy o‘lchamlari – shartli
ametri *d* va uzunligi *l*.

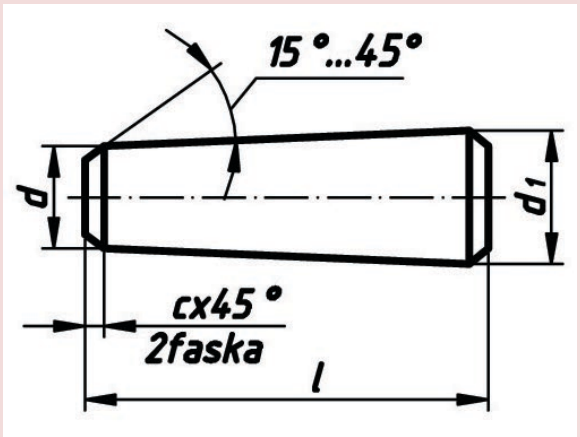


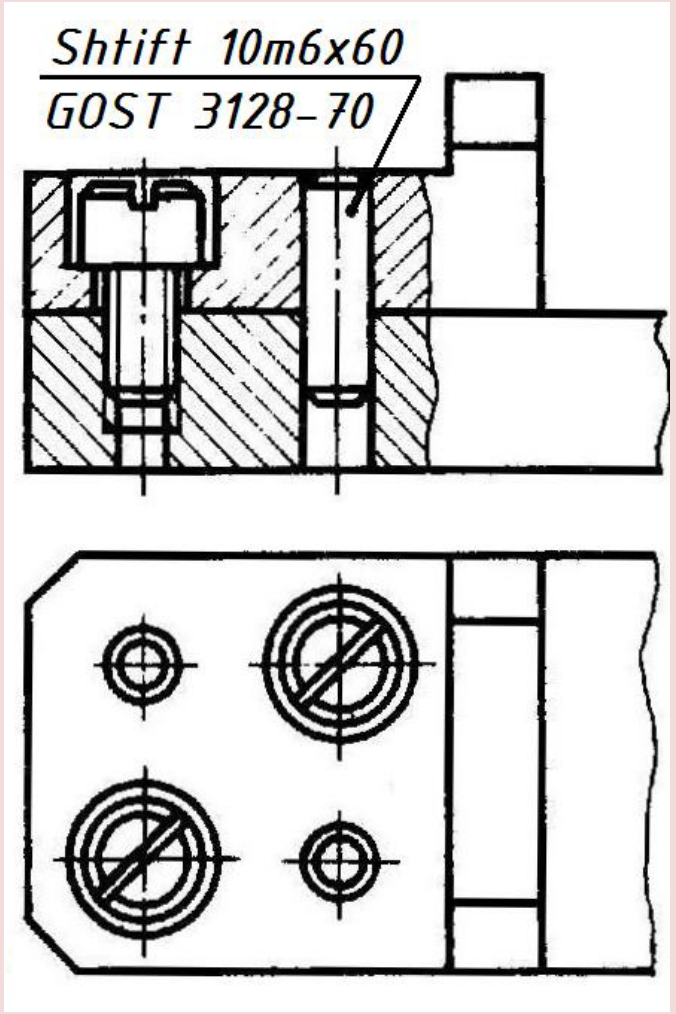


6. SHTIFTLI VA SHPLINTLI BIRIKMALAR

ntiftlar **. Shtiftlardan ajralmas birikma detallarini biriktirishda foydalaniladi. maliyotda shtiftlarning silindrik (GOST 3128-70), konussimon(GOST 3129-70) va sonli (GOST 10773-80) turlari bo‘lib, diametri 0,6 *mm* dan 50 *mm* gacha 45 markali o‘latdan, qoplamasiz tayyorlanadi. Shtiftlar ham saqlovchi vazifasini bajaradi. Ularning onstruksiyasi va o‘lchamlari standartlashtirilgan.**



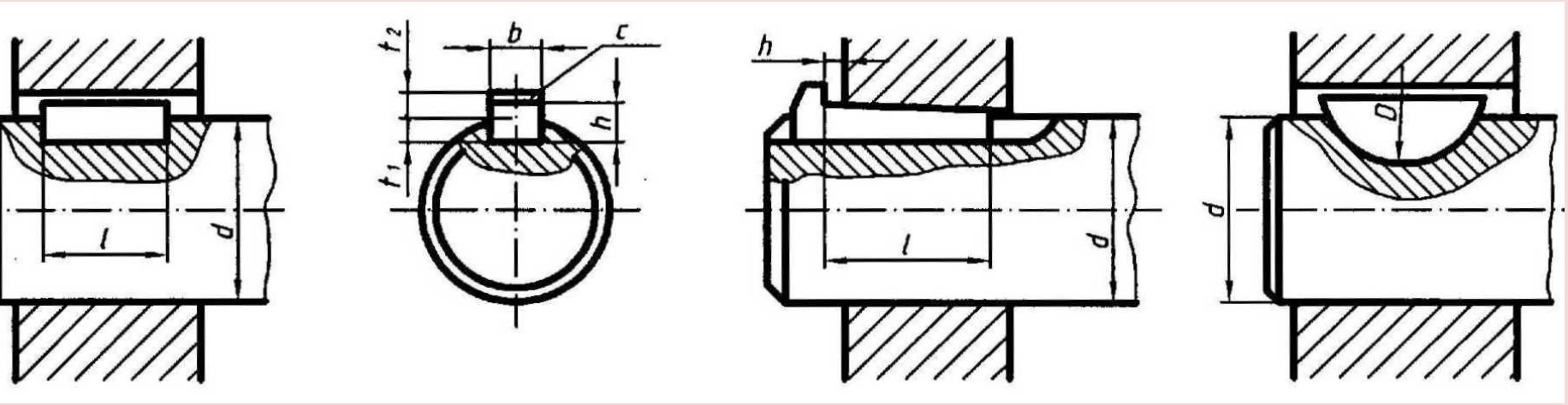




7. SHPONKALI VA SHLITSALI BIRIKMALAR

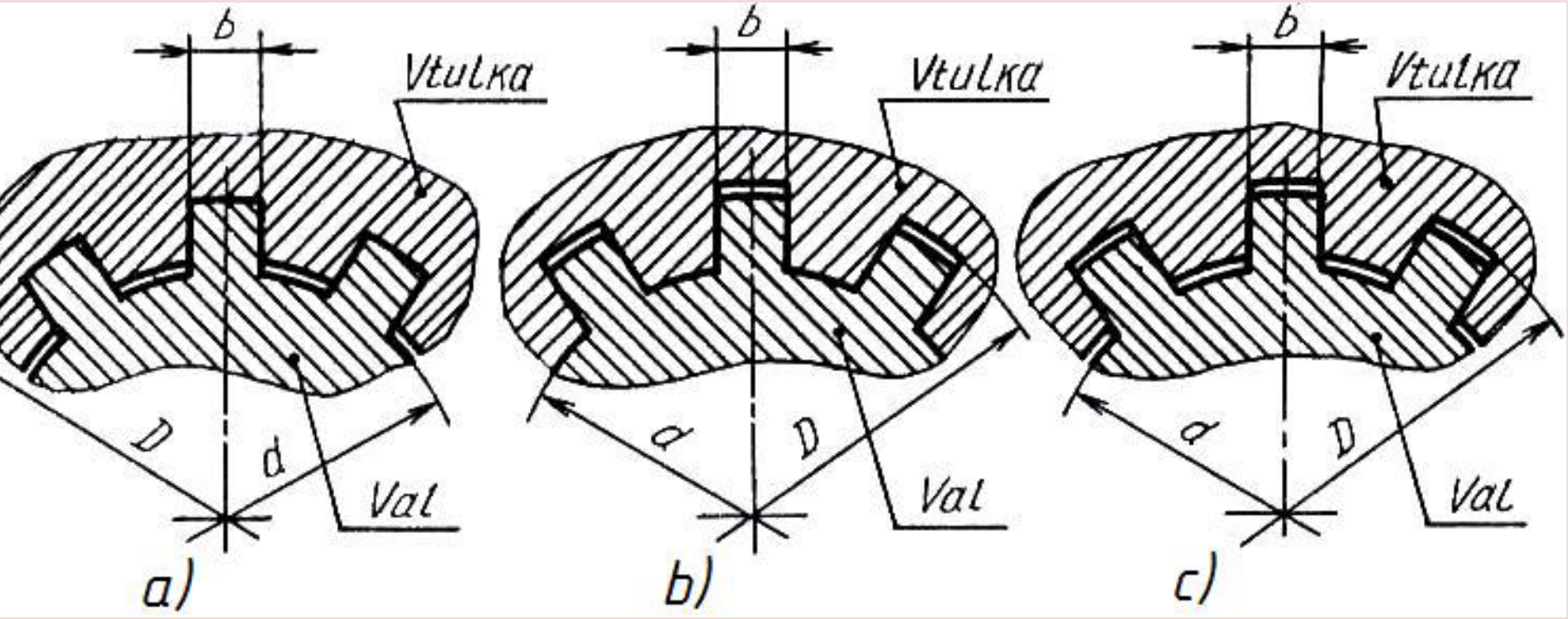
Shponkali birikmalar. Val bilan unga kiydirilgan detallar (tishli g‘ildirak, shkif, mufta)ning shponka vositasida hosil qilingan qo‘zgalmas, ba’zan suriladigan birikmasi *shponkali birikma* deyiladi.

Shponkali birikmalar prizmatik (*a*), ponasimon (*b*) va segment (*c*) shponkalar vositasida bajariladi. Shponka (pona)larning o‘lchamlari valning diametriga qarab tanlanadi.



8. SHPONKALI VA SHLITSALI BIRIKMALAR

2. Shlitsali birikmalar. Mashinasozlikda tishli birikmalar keng ishlatiladi. Tishli
rikmalarda tishlar soni ko‘p bo‘lganligi uchun, shponkali birikmalarga nisbatan katta
uchga ega bo‘lgan aylanma harakatlarni uzatish mumkin.
hlitsali birikmalar mustahkam bo‘lib, yaxshi markazlanadi va o‘q bo‘yicha osongina
ljiydi. Tishlar soni, asosan, birikmaga tushadigan kuchlanish va ularning ish sharoitiga
arab aniqlanadi.
lashinasozlikda to‘g‘ri yonli (GOST 1139-80), evolventasimon (GOST 6033-80),
chburchak (standartlashtirilmagan) profilli tishli birikmalar eng ko‘p tarqalgan.



E’TIBORINGIZ UCHUN KATTA RAHMAT